

## 1. Landscape Drawings

Landscape drawings must be prepared, preferably by a landscape architect, professional landscape designer or qualified horticulturalist, and submitted for Council's approval.

Plans must focus on the use of local species, have an appropriate scale, and should show as a minimum:

- Location, north point and scale;
- Existing and proposed contours;
- Existing vegetation and vegetation to be retained and removed;
- Street names, street frontages, existing buildings and fence lines;
- Details of ground treatment, including soft landscape and hard areas;
- Plant legend, including names, sizes, numbers and density;
- Irrigation details;
- Completion criteria; and
- Annual costs of management and maintenance.

In addition to the standard drawings, the Shire ordinarily requires the submission of a Landscape and Vegetation Management Plan.

## 2. Landscape and Vegetation Management Plans

Landscape and Vegetation Management Plans shall be prepared, approved and implemented. Key elements include:

- Landscape drawings;
- Planting purpose, height at maturity, irrigation drawings and completion criteria;
- Costs of establishment and maintenance;
- Management and maintenance schedule over at least two years and responsibilities;
- Purpose, outdoor facilities, benches, playgrounds, picnic tables, art, and turf areas;
- Planting of indigenous vegetation; and
- Weed management for all areas.

The Plan shall include a vegetation schedule, nominating species, spacing, and numbers. The subdivider shall maintain vegetation planted on private land, or plant sufficient numbers to allow for natural loss. The owners of the lots shall be responsible after purchase for the maintenance and replacement of the vegetation. Vegetation planted on public land shall be maintained for a minimum of two summer periods following establishment, and until the required densities are achieved.

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## Contact Us

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### 3. Key Standards

- **Hard infrastructure:**
  - Proposed structures may require a building licence as a separate approval.
  - Coloured concrete footpaths (terracotta or similar).
  - Robust, fire resistant, suitably mounted and safe outdoor furniture and facilities.
  - No pea gravel or artificial turf without written approval.
  - Lighting on 4.5m high poles with solar panel attachments.
  - Solid one piece recycled material bollards at 1.1m to 1.5m spacing.
  - Removable bollards for maintenance and fire access.
  - Gas BBQs with 20-minute timers at no cost to users.
  - 240L Rubbish/Recycling Bins, Heritage Green colour, and lockable.
  - Boardwalks with steel structural members and jarrah timber.
- **Earthworks:**
  - Stabilize areas gaining or losing soil, control erosion, and stabilise creek channels.
  - Retain existing contours where possible, unless specified on the landscape plans.
  - Imported fill to be clean, with NATA certification.
  - Rock work to be laterite and in keeping with the natural environment.
- **Vegetation and planting:**
  - Retain existing local native vegetation and protect from operations.
  - Eliminate weed growth prior to works and carry out comprehensive weed control.
  - Install trees, shrubs and plants with appropriate fertilizer and watering regimes.
  - Include an onsite nursery for plants on site for more than 48 hours prior to planting.
  - Use approved blended soil conditioning at recommended rates.
  - Use existing site mulch where possible.
  - Maintain, prune, fertilize, water, spray and mulch as detailed.
  - Install a root control barrier to all trees within 2m of footpaths.
- **Turf and grass:**
  - Provide a minimum 200mm wide and deep concrete mowing kerb.
  - Establish and maintain Kikuyu turf as detailed in the turf/grass management calendar.
  - Design, establish and maintain the irrigation system as detailed.
  - Turf root base to finish 10-15mm below adjacent hard surfaces.
- **Known sites of Aboriginal significance** to be detailed and protected where possible.

### 4. Site Preparation

#### Clearing

All trees to be retained are to be clearly identified prior to the commencement of works. All other trees, logs and stumps, boulders, roots, scrub and existing infrastructure are to be removed and disposed of. Seven days' notice of intention to clear shall be given to enable identification of additional vegetation for protection.



Limits of clearing are one metre outside slope alterations or other limits as detailed. The movement of plant and equipment and stockpiling of materials shall be confined within the limits of clearing.

### **Disposal of Spoil and Rubbish Off-Site**

Surplus excavated material, building rubbish, vegetative refuse and the like shall be disposed of in the correct manner at an approved rubbish tip.

### **Earthworks**

Bulk earthworks are followed by minor levelling and grading to transform the existing levels to the proposed levels. Fill shall be obtained generally from the excavation. Any material imported for fill shall meet approved standards, with classification and compaction test results on representative samples from a NATA registered testing authority supplied for approval prior to importation. Fill shall be placed in horizontal layers of less than 300mm, compacted to at least 95% and tested with a Perth Sand Penetrometer.

### **Work Near Existing Trees**

All trees specified or shown to be retained shall be protected from damage by site works. Necessary precautions shall be taken, including:

- Materials shall not be stored or placed under or near trees, spoil is not to be placed against tree trunks, damage to bark shall be prevented, harm from wind-blown materials shall be prevented, stays and/or guys and the like are not to be attached to trees.
- If excavation within the drip line is necessary, use hand methods and leave excavations under tree canopies open for as short a period as possible. Ripping is not to occur within 5m of the drip line of trees.
- Tree roots exceeding 50mm diameter shall not be cut unless approved, cutting shall not disturb the remaining root system, and a fungicidal sealant is to be immediately applied.
- Backfilling shall not occur around tree trunks to more than 300mm above the original ground surface. The root zone shall then be immediately and thoroughly watered.
- Avoid compaction of the ground under trees, and if it occurs, loosen the soil by coring.

## **5. Weeds and Planting**

### **Weed Eradication and Management**

Eliminate all weed growth prior to any other works, while minimising disturbance to existing vegetation. Within creek channels, start at the upstream end of the weed infestation and continue downstream. Use physical removal or an approved non-residual herbicide. Time weed removal to ensure a sufficient period between the initial phase and any follow-up.

### **Plant Selection**

All species selected for reserves are to be local natives, which should be ordered sufficiently in advance to guarantee availability. Densities and predicted coverage shall be shown on the landscape plan. With favourable conditions a 75% survival rate can be achieved.

### **Plant Installation**

- ***Pre-planting preparation:***



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- Plants should be installed during winter to enhance short and long term survival.
  - Plants should be placed clear of services which must be protected from damage.
  - Provide a minimum 200mm wide and deep concrete mowing kerb between planting beds and adjacent soft surfaces.
  - Plants shall be from approved suppliers and in accordance with the Plant Schedule and Drawings.
  - A warranty from the supplier shall attest that the plants are true to the specified species and type, and free from diseases, pests, weeds and the like.
  - Plants shall be of an approved standard quality and may be rejected if substandard.
  - No substitutions shall be made unless approved in writing.
  - Label at least one plant of each species or variety in a batch.
  - Sufficient quantities shall be ordered to allow for plant failures and damage during works, to be replaced with plants of the same type, quality and size.
  - Plants should be installed immediately after delivery, or kept in good condition by appropriate storage methods and protected from theft, drying out or damage.
  - **Planting:**
    - Remove plants from containers without disturbing roots and tease out if necessary.
    - Place upright in holes and backfill with topsoil or approved site soil mixture to top of root-ball, lightly tamp down and water.
    - Holes should be deeper and wider than the root system.
    - Prior to backfilling all plants are to receive approved fertilizer tablets.
  - **Post-planting management:**
    - Each tree or shrub of 200mm pot size and above shall have a watering basin, consisting of a raised ring of soil of minimum diameter of 1000mm capable of holding at least 10L of water.
    - Support each tree and large shrub with four stakes and approved flat tree ties in a figure of eight around stake and stem. Broken ties shall be replaced quickly and adequately to prevent damage.
    - At planting, provide a minimum of 5L of water to each plant, repeated on alternate days by hand or approved reticulation system.
    - On completion, ensure that plants are in first class, presentable condition. After inspection, remove labels from plants.
    - Give at least three working days' notice before completing each project so that the work can be inspected upon completion.

## Mulching

Site mulch shall be utilised where possible. Any additional mulch shall be of an approved composition, from an approved supplier and free of weeds, seeds, fungus, insect pests and other deleterious material. A sample will be required for approval prior to commencement of works. Place mulch 80mm deep to the extent of each watering basin and mulched bed. Minor preparation will be required, and the mulch consolidated to produce smooth and even grades finishing 10mm below surrounding hard surfaces.



## 6. Vegetation Establishment and Maintenance

### Vegetation Establishment, Maintenance and Monitoring Tips

- Clearly delineate all vegetation and trees to be retained prior to commencement of works;
- Maximize retention of vegetation and trees through minor realignments;
- Support long-term survival, regeneration and reproduction of native vegetation, including staged plantings with priority for habitat restoration and erosion control;
- Mulch vegetation that cannot be retained, and utilise the mulch, branches and logs locally;
- Remove and mulch all non-native species that have no other values such as heritage;
- Prohibit ripping within 5m of the drip line of existing trees;
- Implement ongoing weed control for the maintenance period;
- Use Glyphosate for weed control, with Roundup Bioactive near brooks or open water;
- Prevent use of broadcast fertilizers to minimize interference with natural mycorrhizal fungi;
- Monitor survival, re-planting requirements and weed emergence in spring and autumn;
- Water seedlings during dry summer periods where required;
- Provide a fringe of perennial vegetation around nutrient stripping basins or swales;
- Provide management, including performance criteria, and a maintenance schedule;
- Deep rip and mound to assist water infiltration and vegetation establishment; and
- Design revegetation in accordance with its purpose, taking into consideration catchment hydrological benefits and fire management requirements.

### Tree Maintenance

- Maintain, prune, fertilise, water, mulch and spray as required;
- Maintain weed growth and turf grasses away from tree wells, and spray or grub out;
- Inspect for pests and pathogens, and control by recognised horticultural practices;
- Replenish mulch as necessary to maintain an 80mm depth; and
- Inspect and test irrigation systems regularly.

### Pruning of Trees

- Maintain or encourage healthy plant growth and allow clear sightlines;
- Select and develop a permanent single leader with smaller scaffold branches;
- Develop vertical branch spacing of 500-1000mm with radial orientation;
- Remove dead or degenerating parts and make repairs to wounds;
- Pinch back lower branches on younger trees, instead of stripping, and remove suckers;
- Primary prune deciduous trees whilst dormant with a secondary prune after foliation;
- Defer substantial tree surgery until mid-spring to reduce risk of disease; and
- Prune evergreens or semi-deciduous trees as required with preference to spring-summer.

### Staking and Guying of Trees

- Inspect and maintain monthly to ensure sound condition and prevent girdling and rubbing;
- Consider removing stakes and ties when trees attain a trunk calliper of 100mm;
- Install 4 x 2.1m hardwood stakes for 100L trees and 2 x 1.8m for 45L; and
- Ensure guying occurs with hessian or rubber ties.

**Fertilising**

- Trees 15L to 500L to receive 4 x 20g tree tablets per year in proximity to roots;
- Periodic checks made and deficiencies in quality reported and amended immediately;
- Garden beds fertilised twice a year, in April and October, with slow release at 20g/m<sup>2</sup>; and
- Weed growth removed at regular intervals.

**Garden Beds**

- Maintain mulched garden beds in a neat and tidy manner;
- Remove rubbish, debris and unsightly material;
- Remove dead, dying or diseased plant material and weed growth;
- Ensure all grass, plants and mulch are contained within the garden beds; and
- Reinstate mulch to a depth of 80mm, with an approved type.

**Vandalism, Theft and Plant Death**

- Take all reasonable steps to minimise and prevent plant vandalism, theft or death;
- Replace plants with the same species and size unless otherwise advised;
- Provide a plant list to ensure replacements match those originally planted;
- Monitor, report and supply quotes for theft or vandalism of plants and/or material; and
- Replacement costs shall be borne by the developer during the maintenance period.

**Insect and Disease Control**

- Conduct fortnightly inspections to identify disease and pest problems;
- Maintain all plants free from insects or disease using approved methods as required;
- Give preference to low toxicity systemically absorbed chemicals when required;
- Precisely calibrate applicators and take care to minimise effects on plants or animals;
- Provide particular attention to plant species that attract frequent pests; and
- Recognise that infestations can become a problem for nearby areas of bush.

## 7. Street Trees and Verges

Vegetated verges containing street trees help to create a liveable community. Minimum requirements are streets with uniform trees, a preference for local native trees and shrubs, and mulch.

At clearance, landscape and street tree establishment costs can be bonded through a bank guarantee. Maintenance periods for all public open space areas are to be bonded to ensure the vegetation is maintained and managed.

- **Services and Earthworks:**
  - Earthworks for swales or services, or the placement of fill, should not occur near tree root systems or within the drip zone.
- **Clearing:**
  - There is a general presumption against the clearing of existing vegetation and trees. Trees should be retained wherever possible.



- Appropriate local native species are to be used, and important trees retained and protected during and after any development.
- **Verge Treatment:**
  - Species that are local and low maintenance are strongly encouraged.
  - Lawns on verges are generally not supported.
- **Preferred Street Tree Species:**
  - *Eucalyptus rudis* – Flooded Gum
  - *Eucalyptus lane-poolei* – Salmon Barked White Gum
  - *Eucalyptus laeliae* – Darling Range Ghost Gum
  - *Jacaranda mimosifolia* – Jacaranda
  - *Eucalyptus torquata* – Coral Gum
  - *Sapium sebiferum* – Chinese Tallow
  - *Agonis flexuosa* – WA Peppermint
  - *Allocasuarina fraseriana* – Sheoak
  - *Casurina obesa* – Swamp Sheoak
  - *Corymbia calophylla* – Red Gum or Marri
  - *Corymbia ficifolia* – Red Flowering Gum
  - *Eucalyptus wandoo* – Wandoo

## 8. Creeks and Waterways

Works to any creek line are to be according to current best practice for living streams, providing stability rather than replicating the original natural system.

### Creek Bank Earthworks

Batter proposed creek line realignments to a maximum grade of 1:6, or 1:4 when retaining significant vegetation. Reduce the maximum grade of existing creek lines to 1:4 where required. Lowering the grade may result in the removal of some vegetation, but will minimize erosion and enhance the prospects for revegetation installation and survival.

### Revegetation

Revegetation stabilises and strengthens upper banks, as root systems reduce erosion by binding the soil. Channels are gradually stabilised through revegetation and engineering works. Species selection aims for diversity in stem and root structure. In more stable areas, planting density shall be 4 plants/m<sup>2</sup>, or 6 plants/m<sup>2</sup> where erosion is likely. Shallow rooted sedges and rushes strip nutrients from surface run-off and sediments before infiltration.

### Creek Bank Stabilisation

Creek banks can be stabilised by jute matting or similar, which is used for temporary erosion control and is biodegradable. It lasts for one to three years depending on the environment. The fibrous material will minimise erosion to the banks and assist establishment of plant stock.

### Rock Riffles



Rock riffles constructed from natural laterite provide a crossing point and channel stability by controlling flow velocity and reducing sediment movement. Riffles are located at the entry and exit of bends, with a height typically less than 0.3m and the lowest point central to the channel. The upstream face should have a maximum 1:4 slope and the downstream face 1:10. A mix of rock sizes (minimum 200mm), hard, clean and angular, is required for interlocking and greater strength.

### **Drainage Swale Planting**

Bio-retention, sedimentation and flood storage basins are to include local native tree, reed and sedge species, selected for specific location and hydrological requirements. Areas immediately adjacent to drainage outlets should be planted with 200mm pot size reeds and sedges to maximize nutrient uptake and minimize scouring, erosion and mosquito infestation. As these plants are relatively mature in size, irrigation will be required during establishment.

## **9. Turf Installation and Maintenance**

### **Minor Preparation**

Clear the area of objects greater than 10mm in diameter and grade out to finish flush with adjoining hard infrastructure or 75mm below overflow level of plumbing disconnect traps and rainwater relief overflows. Grade by hand or machine as appropriate, but always by hand within 600mm of fixed reticulation. Finish shall be perfectly even and well consolidated.

### **Selected Grass Species**

Grass shall be hybrid Kikuyu turf (*Pennisetum clandestinum*), obtained from a specialist grower with a warranty that the grass is true to species and free from weeds, fungus, insect pests and other deleterious matter. Grass shall be planted within eighteen (18) hours of being dug, delivered in approved covered containers and fully protected from drying out, damage or contact with injurious substances. Turf of poor quality shall be rejected. Replacement of poor or failed turf shall occur as quickly as possible. Lay along contours so the finish is flush with adjacent surfaces, roll or lightly tamp into place.

### **Watering**

Ensure adequate watering services and equipment are available and properly functioning before planting. Water areas to be planted to a depth of 100mm and plant immediately. Keep the planted turf areas moist to 100mm, by irrigation system or hand, at two-day intervals.

### **Top Dressing**

When the turf is established, mow closely, remove cuttings and lightly top dress to 10mm. Rub the approved dressing well into the joins and correct any unevenness in the surface.

### **Fertilising**

One week after laying, apply an approved lawn starter fertilizer at 50g/m<sup>2</sup> and thoroughly water in. Apply five more applications after initial fertilizing. Each application shall be three to four weeks after previous fertilizing and thoroughly watered in. Submit on request a sample of fertilizers used. Fertilizer not in accordance with the specification may be rejected. Areas not in accordance with the specification shall be given an additional application of fertilizer.



**Mowing**

All newly grassed areas are to receive four mows using an approved mower. Each cut shall occur when grass growth has exceeded 50mm, shall not remove more than 50% of growth and cuttings shall be caught and removed. Repair all failed turf after mowing. After the second mowing the newly grassed areas shall be rolled and finished to remove irregularities.

**Maintenance**

- All turf shall be mown using cylinder mowers, with edging and line trimming after each alternate mow. Special care shall be taken to ensure trees are not damaged. Mulched tree wells shall be maintained and edged weekly.
- Fertilisers shall be applied using a tractor-mounted fertiliser spreader or 40kg spinner.
- A complete post-emergent herbicide programme shall be implemented.
- Aerate annually, or as required for areas compacted due to excessive pedestrian traffic.
- Top dressing shall be with five even covers of dressing sand or as otherwise approved. Allow for an additional 10m<sup>2</sup> to fill, repair or top up any damage or subsidence.
- Turf shall be dethatched annually, with a light verticut toward the end of summer.

**Turf / Grass Management Calendar**

Month	Mow	Water	Fertilise	Treat
January-February	Weekly, 10mm	4-5 times weekly 30-40mm	Nitrogen as specified	Post emergent for crab grass Light verticut
March	Weekly, 10mm	4-5 times weekly 30-40mm	CSBP Turf Special as specified	Aerate with 10mm tynes to 75-100mm
April	Weekly, 12mm	2-3 times weekly 20mm	Nitrogen as specified	
May	10 days, 12mm	Weekly 10-20mm		Kerb post emergent for winter grass
June	14-21 days, 12mm			Banvel M post emergent for broad leafs Reapply Kerb if required Repair bare patches
July-August	21 days, 12mm		Nitrogen as specified	
September	21 days, 10-12mm	Weekly 20mm	CSBP Hort. Special as specified	Pre-emergent for crab grass Dethatch with Verticutter



		2-3 times weekly 30mm	CSBP NPK Blue	Remove/replace diseased patches
October	10-14 days, 10mm		Nitrogen as specified	
November	7 days, 10mm	3-4 times weekly 50mm		
December	7 days, 10mm	4-5 times weekly 50mm		Top dress with 5mm sand

### **Vandalism and Theft**

Monitor, check and report any theft or vandalism. Quotes for replacement or reinstatement require written approval. Costs during the maintenance period shall be borne by the developer.

### **Grass Death**

Take all steps to prevent death, including monitoring health and applying remedial measures, and ensuring that reticulation remains functioning at all times and to the capacities required.

### **Disease, Weed and Pest Control**

Conduct fortnightly inspections and maintain free from insects, disease and weeds using approved methods as required. Where chemicals are required, preference shall be given to low toxicity systemically absorbed types. Mechanical applicators shall be precisely calibrated and care taken to minimise effects on grass or animals. Infestations can become a problem for nearby areas of bush. Ensure all grass is contained within the limits of turf areas.

## **10. Maintenance of Hard Works**

### **Pathways and Paved Areas**

Paths, paved areas and kerbing shall be swept or blown down after each mow or as required, and maintained free of weeds or unwanted vegetation. Any obstruction or obvious defect will be barricaded and reported for repair.

### **Vandalism, Theft and Graffiti Removal**

All reasonable steps shall be taken to minimise vandalism and theft. Inspect regularly for graffiti and report immediately. Any damage shall be reinstated to equal or equivalent (including reapplication of graffiti coating). During the maintenance period, the cost will be borne by the developer.

### **Litter**

Litter shall be removed twice weekly, or from pathways and high profile areas as required.



### **Irrigation**

A registered Irrigation Contractor shall check, adjust and report on the system weekly. Any repairs, servicing and modification to the system are to be reported with a costing for approval. Ensure the twice annual inspection and review of the bore, pump and controller.

Obtain a quotation from the Irrigation Contractor for irrigation design, installation and maintenance, including:

- Check, Adjust and Report;
- Check for irrigation breakage or sprinkler failure after each mow or twice weekly;
- Adjust spray pattern of sprinklers and arc adjustment as required;
- Adjust irrigation controller times as seasonal conditions require;
- Report on any defects and refit or repair as necessary; and
- Check bore for pressure.

### **Erosion Control**

Use recognised methods of preventing wind, water or incidental erosion, including:

- Temporary drainage lines, diversion and dispersal of overland water flow;
- Silt trap construction and cleaning;
- Temporary fencing for wind protection and of disturbed areas; and
- Contour ploughing disturbed areas.

Areas where erosion control and prevention are not required include areas of housing construction, residential lots and unlandscaped road reserves. Should erosion control be required but the source is external, apply for direction while taking all reasonable steps to prevent or minimise continuing erosion.

## **11. Maintenance**

Undertake all works and provide all tools, equipment, labour and machinery necessary to maintain the landscape using approved horticultural and landscape management techniques. The Maintenance Period shall be a minimum of two years.

### **Scope of Works**

Maintenance of the hard and soft landscape and specific feature items shall include:

- Mowing and fertilising according to the programme;
- Control of weeds, pests and disease;
- Top up and rotation of mulch;
- Litter removal;
- Hand watering as required to supplement irrigation;
- Replacement or repair of tree stakes;
- Report any defect or vandalism for action;
- Monitoring, maintenance, pruning, and replacement of all plants;
- Maintenance of rock riffles to creek channels; and
- General care and maintenance of other works as constructed.

**Quality of Goods and Workmanship**

All goods and workmanship shall be of the best available quality sympathetic to the local natural environment. Any goods or workmanship that does not meet the specified standard will be rejected and subsequent damages repaired and replaced.

**Inspections**

Periodic inspections shall be carried out without notice, with examination of any works not completed to a satisfactory standard. Initial and final inspections at commencement and completion shall form the “hand-over” to the Local Authority.

**Clean Up and Finishing**

At the end of the Maintenance Period, ensure that the landscape works are of an acceptable standard and that all obligations have been fulfilled. All stockpiles, tools and machinery, debris, rubbish etc. shall be removed and disposed of. All landscape shall have a healthy, presentable appearance according to the design intent, objectives and requirements.

**Handover Requirements:**

- Civil ‘As Constructed’ Drawings
- Landscape ‘As Constructed’ Drawings.
- Irrigation System ‘As Constructed’ Drawings.
- Bore Licences transferred as necessary.