CESSNOCK CITY COUNCIL

AUS-SPEC

Infrastructure Specifications

0257 Landscape – road reserve ~~and street trees~~

0257 LANDSCAPE - ROAD RESERVE ~~AND STREET TREES~~

IMPORTANT: This document has been adapted from the NATSPEC suite of specification templates for use in the Cessnock City Council area by both Council and industry. NATSPEC regularly updates the base templates (currently in April and October each year), and Council may incorporate changes into its version of AUS-SPEC from time to time. To assist in highlighting any changes made by Council to the NATSPEC templates, the following conventions are used.

- See ANNEXURE M at the end of this document which contains (where practical) Cessnock City Council customisations (also known as 'office master' text). References to the Annexure are to also be inserted at relevant clauses in the main body of the document.
- Where content is added to the main body of the document, it is to be shown in brown text like this.
- Where content is deleted or excluded from the main body of the document, it is to be shown ~~struck through like this~~. Such clauses are to have no effect.

Where there is a conflict between main body text and Cessnock City Council specific clauses, Council's specific clauses shall prevail.

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide road reserve landscaping ~~and street trees~~, as documented.

1.2 CROSS REFERENCES

General

Requirement: This worksection is not a self-contained specification. In addition to the requirements of this worksection, conform to the following:

- *0136 General requirements (Construction)*.
- *0152 Schedule of rates (Construction)*.
- *0161 Quality management (Construction)*.
- *1101 Traffic management*.
- *1102 Control of erosion and sedimentation (Construction)*.

1.3 STANDARDS

General

Storage and handling of pesticides: To AS 2507 (1998).

Tree stock: To AS 2303 (2018).

Public Trees- To Cessnock Tree Strategy- Cessnock City Council.

1.4 INTERPRETATION

Abbreviations

General: For the purposes of this worksection the following abbreviations apply:

- N:P:K: Nitrogen: Phosphorus: Potassium ratio.

Definitions

General: For the purposes of this worksection the definitions given in AS 2303 (2018) and the following apply:

- Ameliorant material: Additives used to make or improve soil.
- Anionic bitumen: A type of bituminous emulsion where dispersed particles comprise a bituminous binder and are negatively charged.

- Imported topsoil: Similar to local natural soil, suitable for the establishment and ongoing viability of the selected vegetation, free of weed propagules and of contaminants, and classified by texture to AS 4419 (2018) Appendix K Table K1, as follows:
  - . Fine: Clay loam, fine sandy clay loam, sandy clay loam, silty loam, loam.
  - . Medium: Sandy loam, fine sandy loam.
  - . Coarse: Sand, loamy sand.
- Plant establishment period: The period between the date of practical completion and the end of the defects liability period.
- Size index: Numerical expression of the size or physical bulk of a tree stock above ground.
- Top dressing: A soil that is suitable for surface application to turf and lawns.
- Topsoil: Includes landscape soil, low density soils and soils for turf and lawns.

1.5 SUBMISSIONS

Execution details

Soil amelioration recommendations: If required, the source of ameliorant material, rates and methods of incorporation.

Plant material: Submit details of proposed fertiliser to be used.

Soil conditioning: If other than gypsum is proposed, submit details.

Transplanting trees: Submit a program for regular fertiliser applications during the plant establishment and maintenance period.

Products and materials

Imported topsoil: Submit evidence verifying the following:

- Suitability of each soil type for its documented use.
- Similarity to naturally occurring local soil.
- Suitability for establishment and on-going viability of the site vegetation.
- Absence of any weed propagules or contaminants.

Plant provenance: Submit documentation that all plant material has been grown from locally provenanced stock. If this is not achievable, give notice.

Plant source: Submit documentation that all plant material has been grown from locally sourced stock (or local endemic species). If this is not achievable, give notice.

- Species: Submit certification as evidence that all plant material is true to the required species and type.

Trees: Submit evidence of conformity to AS 2303 (2018).

Seed supply: Submit the name(s) of the proposed seed supplier(s).

Samples

General: Submit representative samples of each material, packed to prevent contamination and labelled to indicate source and content.

Bulk materials: Submit a 5 kg sample of each type documented with required test results.

Note: Bulk materials include filling, topsoil, topsoil additives, compost and mulch.

Tests

Results: Submit results of testing to **ANNEXURE - MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES**.

1.6 INSPECTIONS

Notice

General: Give notice so that inspection may be made of the following:

- Slopes and drains: Prepared surface for cultivation and conditioning.
- Plants on arrival at site.
- Landscape planting: Set out of plants, soil conditioner and fertiliser.
- ~~Transplanting street trees:~~
  - ~~. Final orientation of the tree.~~
  - ~~. Watering, fertilising and root cutting: In existing location.~~

~~. Watering, fertilising and root cutting: In relocated location.~~

2 MATERIALS

2.1 GENERAL

Specimen plants

Plant source: Conform to the following:

- Obtain plants from nursery stock located in an area with similar climate to the site of the Works.

Non-containerised stock: Program the preparation of specimen plants so that they are ready for transplanting to site when required.

Transportation

Requirement: Transport plants to the site without physical damage or drying out.

Optimal plant condition

General: Maximum initial impact at the time of project opening.

2.2 TOPSOIL

General

Topsoil: To AS 4419 (2018) and as follows:

- Free of weed propagules and contaminants and suitable for the establishment and ongoing viability of the selected vegetation.
- Maximum soluble salt content: 0.06% by mass.

Health warning: To AS 4419 (2018), on packaging or invoice for bulk supply.

Management of stockpiles and batters

Requirement: To **Management of stockpiles and batters** in *1102 Control of erosion and sedimentation (Construction)*.

2.3 FERTILISER AND MULCHES

Fertiliser

Type: Organic.

N:P:K ratio:

- Slopes and open drains: 80:36:20.
- Mass planting: 63:18:28.

General mulch types

Organic landscape mulch: To AS 4454.

Composition:

- Fines (by volume): < 5%.
- Woodchip (maximum size): < 50 mm.
- Leaf mulch (by volume): < 25%.

Quality: Free of deleterious and extraneous matter including weeds, soil, sticks and stones.

Synthetic weed blocking fabric: To AS 4843 (2001).

Hydromulch

Material: Straw, chaff, wood fibre paper pulp finely shredded to a maximum dimension of 10 mm.

Prohibited material: Meadow hay and weeds. If using paper pulp, do not exceed 50% by mass of total mulch.

Binder: Grade ASS, slow setting anionic bitumen to AS 1160 (1996).

Note: Grade ASS, slow setting anionic bitumen is defined in AS 1160 (1996) as a general purpose emulsion with sufficient stability for mixing with water for surface enrichment and for dust laying, suitable for mixing with soil or graded aggregates and for use in the grassing of batters and jute meshing.

Straw mulch

Material: Straw matrix.

Prohibited material: Meadow hay and weeds.

Binder: Grade ASS slow setting anionic bitumen to AS 1160 (1996).

Straw mat finished thickness: > 20 mm.

Hardwood stakes

General: Pointed at one end, as follows:

- Marker stakes (for tube stock): 15 x 15 x 800 mm.
- Stakes (for advanced stock): 2 stakes, 25 x 25 x 2000 mm.
- Stakes (for super advanced stock): 3 stakes, 50 x 50 x 3000 mm.

2.4 PLANT MATERIAL

Seed

Requirement: Conform to the following:

- Grass and clover: Pre-packed commercially with an accompanying certificate of germination.
- Native seed: Deliver to the site in separate lots for each species and variety, clearly labelled to show species, variety and weight.

Storage: Do not take possession of the seed more than seven days before sowing is to occur. Store seed in clean, airtight containers and keep away from direct sunlight. Do not expose seed to the elements at any stage during storage.

Replacement: Replace if seed batch is not true to type.

Turf

Description: 25 mm depth of dense, well rooted, vigorous grass growth with 25 mm depth of topsoil and free of weeds, soil pests and diseases.

Prohibited material: Kikuyu grass.

Supply: As rolls in long lengths of uniform widths, in sound unbroken condition.

Width of rolls: > 300 mm.

Seed and turf table

Material	**Species**	**Minimum application rate (kg/ha)**
Seed		
- Grass	Rye Corn (April-August) or Japanese Millet (September-March)	60
	Hulled Couch	5
	Red Clover (Inoculated)	5
	White Clover (Inoculated)	5
	‘Elka’ Perennial Rye	5
- Native	Acacia dealbata	4
	Acacia buxifolia	1
	Acacia decurrens	1
	Acacia pravissima	1
	Leptospermum lanigerum	1
	Hardenbergia violacea	0.5
	Kennedia prostrata	0.5
	Acacia implexa	0.2
	Banksia marginata	0.2
	Bursaria spinosa	0.2
	Callistemon pallidus	0.2
	Dodonaea viscoca	0.2

Material	Species	Minimum application rate (kg/ha)
Turf grass		
- Medians - Verges/Footpaths - Other Areas	- Couch - Buffalo - Couch	Refer to Drawings

Plant supply

Requirement: Supply plants with the following properties:

- Healthy, of good form and not soft or forced.
- Large robust root systems.
- Not root bound.
- Pests and disease: Free from attack by pests and disease.
- Hardening off: Deliver all plants to a site within the locality of the works at least four weeks before planting out.
- Plant root systems: Maintain root moisture at all times with particular attention to watering during the on-site period before and during planting.
- Planting hole depths: Equal to the depth of container soil.
- Trees: Single leading shoot.

~~**2.5 STREET TREES - ABOVE GROUND ASSESSMENT**~~

~~**General**~~

~~Requirement: Supply tree stock conforming to AS 2303 (2018), **Small container grown trees height ranges table** and the following:~~

- ~~Site environment: Grown and hardened off to suit anticipated site conditions at time of delivery.~~
- ~~Root development: Grown in their final containers for more than 12 weeks.~~
  - ~~Plants less than 25 L size: over more than 6 weeks.~~
  - ~~Plants greater than 25 L size: over more than 12 weeks.~~
- ~~Native species susceptible to attack by native pests: Maximum 15% of a trees foliage showing evidence of previous attack and no actively feeding insects.~~
- ~~Pruning wounds: Restrict fresh (i.e. recent, non-calloused) pruning wounds) to less than 20% of total tree height.~~

~~Balance assessment criteria: To AS 2303 (2018) Appendix D.~~

~~**Labelling**~~

~~General: To AS 2303 (2018) clause 4.2.1.~~

~~Label type: To withstand transit without erasure or misplacement.~~

~~Indication of north:~~

- ~~Trees in containers greater than 100 L or of Size Index greater than 140: Label the northerly aspect during growth in the nursery and maintain during transit.~~

~~**Small container-grown trees height ranges table**~~

~~**Container size or minimum rootball diameter**~~	~~**Height range above soil (m)**~~	
	~~**Thin-stemmed species**~~	~~**Thick-stemmed species**~~
~~150 mm (1.8 L)~~	~~0.4 – 0.6~~	~~0.3 – 0.5~~
~~170 mm (2.6 L)~~	~~0.5 – 0.7~~	~~0.4 – 0.6~~
~~200 mm pot (4 L)~~	~~0.7 – 0.9~~	~~0.6 – 0.8~~
~~200 mm bag (5 L)~~	~~0.8 – 1.0~~	~~0.7 – 0.9~~
~~250 mm (8 L)~~	~~1.0 – 1.2~~	~~0.8 – 1.0~~
~~300 mm (15 L)~~	~~1.2 – 1.5~~	~~1.0 – 1.2~~

~~**2.6 STREET TREES - BELOW-GROUND ASSESSMENT**~~

~~**General**~~

~~Requirement: Supply tree stock conforming to AS 2303 (2018) and the following:~~

- ~~Trees with a calliper at ground level less than 40 mm: Make sure the diameter of any non-conforming roots at the extremity of the rootball is less than 25% of the calliper.~~
- ~~Trees with a calliper at ground level greater than or equal to 40 mm: Make sure diameter of any non-conforming roots at the extremity of the rootball is less than 10 mm.~~
- ~~Rootball depth: Not greater than maximum depth documented.~~

~~**Testing**~~

~~**Quality**~~

~~Requirement: Test for all characteristics in conformance with **ANNEXURE - MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES**.~~

~~Quality verification: If material/product quality verification can be obtained from the supplier, documented tests need not be repeated.~~

3 EXECUTION

3.1 GENERAL

Transport and storage

Requirement: Inspect all plants at the time of delivery and reject non-conforming plants.

Program

Requirement: Conform to the following:

- Between September and May: Plant exposed surfaces before the area exceeds 1 ha.
- Between June and August: Do not carry out planting to exposed surfaces without approval.

Preparation

Herbicide treatment: Spray herbicide as follows:

- Type: Glyphosphate.
- Rate: 9 litres/200 litres water/ha.
- Program: Maintain sprayed areas undisturbed for 2 weeks.

Pesticide treatment: In the following form, as documented:

- Liquid:
  - . Application rate: 5 litres/hydromulch/ha.
  - . Powder: 10 kg/ha.

Herbicides and pesticides: To the Australian Pesticides and Veterinary Medicines Authority (APVMA) register.

Soil conditioning: Provide as follows:

- Gypsum application rate: 400 g/m².
- Application: Conform to the following:
  - . Spread evenly over the subsoil by a mechanical spreader and topsoil on the same day.
  - . Thoroughly mix into the topsoil whilst the topsoil is being removed from stockpiles.
  - . Apply conditioners other than gypsum to the supplier’s recommendations.

Fertiliser treatment: Provide as follows:

- Application rate: 1000 kg/ha.

Seed mixing: Provide as follows:

- Mix, pre-treat and place seed in the sowing equipment for each operation on site.
- Sow seed on the day of mixing with pesticide.

Watering

General: Conform to the following:

- Potable or sourced from areas without toxins, pollutants or any substance which may adversely affect plant growth.
- Initial watering: To a uniform moisture condition without run-off.

- After turfing: Re-water to a uniform moisture condition without run-off.
- After sowing: If required, re-water to a uniform moisture condition without causing rills in the surface, daily for 15 days.
- Excessive rilling: If watered areas result in excessive rilling, rehabilitate by re-preparing and re-sowing the affected area.

3.2 SLOPES FLATTER THAN 3H TO 1V

Surface preparation

Cultivation: Before applying topsoil, tine to a depth of 200 mm to produce a loose surface and remove all large stones, rubbish and other materials that may delay germination.

Cultivation depth: 50 mm for a roughened surface with soil lumps not exceeding 50 mm.

Topsoil

Application: Apply uniformly to an average compacted thickness of 50 mm with a minimum compacted thickness of 30 mm at any location.

Pesticide application

Timing: Immediately before sowing.

Pesticide type: Powder form.

Application: Mix thoroughly with the seed, in conformance with **EXECUTION, GENERAL**, to the equivalent mass of seed to be spread on 1 hectare of the surface.

Grassing

Seeding:

- Application: Distribute evenly, by a mechanical seeder following the finished contours wherever possible.
- Depth: 5 mm as sown, or 5 mm cover by raking or harrowing.
- Fertiliser: Apply concurrently with seeding, as documented.

Turfing:

- Laying: On the prepared topsoiled surface and perpendicular to the direction of water flow.
- Joints: Butt runs of turf hard against each other and top dress with topsoil.
- Slopes 5:1 to 3:1: Peg turf and remove pegs when established.
- Top dressing:
  - Timing: 4 to 6 weeks after laying turf.
  - Requirement: Correct any undulations or unevenness in the established turf.

Maximum slope for areas to be maintained by a ride-on mower with a 2 m wide deck: 4:1.

3.3 SLOPES STEEPER THAN 3H TO 1V

Methods

General: Vegetate slopes by one of the following methods, as documented:

- Apply topsoil and hydromulch.
- Apply topsoil, hydroseed and straw mulch.
- Hydroseed.

Surface preparation

General: Remove all loose material from fill batters and cut batters.

Timing: No more than seven days before seeding.

Cultivation: Lightly tine or roughen the surface parallel to the contours.

Topsoil

Application: Conform to the following:

- General: Apply uniformly to an average thickness of 50 mm, with a minimum compacted thickness of 30 mm at any location.
- Stepped batters: Loosely fill with topsoil.

Hydromulching or hydroseeding

Watering: Water dry surfaces with a fine spray before applying the hydromulch.

Pesticide:

- Timing: Apply during preparation of the hydromulch or hydroseed slurry.
- Pesticide type: Liquid.

Equipment: Clean and free of contamination from previous operations.

Mix: Add materials as documented to the slurry storage tank and agitated to maintain a uniform consistency during application.

Application: Uniformly over the whole surface.

Weather conditions: Do not apply hydromulch or hydroseed under the following weather conditions at the site:

- Temperature: > 35°C.
- Winds exceed: 15 km/hr.
- During rain periods or when rain appears imminent or if the surface is saturated.

Wetting agent:

- Application rate: 1 litre/1000 litres of mix water.

Hydromulching or hydroseeding table

Material	**Application rate per hectare of surface: Hydromulching**	**Application rate per hectare of surface: Hydroseeding**
Vegetable mulch (kg)	1500	Nil
Water (L)	35,000	20,000
Binder (L)	1200	Nil
Wetting agent (L)	35	20

Straw mulching

Application: Apply uniformly with a suitable blower.

Rate: 250 bales (each of 20 kg) of straw per hectare of surface.

Bitumen emulsion: Incorporate as a spray into the air stream of the mulch blower.

- Application rate: 2500 litres per hectare of surface.

Straw mat thickness: ≥ 20 mm at any location.

3.4 OPEN DRAINS

Surface preparation

Topsoil: Spread to an average compacted thickness of 50 mm, with a minimum compacted thickness of 30 mm at any location.

Timing: Complete vegetation within 7 days of the completion of open drain excavation.

Grass seeding

Application: Apply uniformly by one of the following methods and conform to the **Seed and turf table**:

- Mechanical sowing.
- Hydromulching or hydroseeding.
- By hand.

Surface protection

Requirement: Protect all or part of the sown surface by one of the following methods, as documented:

- Bitumen emulsion: Spray the surface with an anionic slow setting bitumen emulsion to Grade ASS of AS 1160 (1996) at a rate of 1 litre of bitumen emulsion per square metre of surface.
- Organic fibre mat: Line the channel with an organic fibre mat and conform to the following:
  - Lay runs of matting along the direction of water flow loosely on the soil surface and not stretched.
  - Slot upstream end of matting into a trench 150 mm wide by 150 mm deep and pinned to the base of the trench at 200 mm centres.
  - Backfill the trench with soil and compact by foot.
  - Overlap adjacent runs of matting 100 mm with the higher run lapped over the lower run and pinned matting along the sides of each run at 500 mm centres and along the middle of each run at 1000 mm centres.

  . Overlap ends 150 mm wide with the higher run end lapped over the start of the lower run and pinned at 200 mm centres.
- Pins: U shaped pins of 4 mm gauge wire, 50 mm wide and 150 mm long legs.
- Turfing: Butt runs of turf hard against each other and place perpendicular to the direction of water flow in the drain. Pin into position at 500 mm centres. Top dress seams of turf with topsoil.

3.5 LANDSCAPE PLANTING

Conditions

General: Do not carry out landscape planting when temperature is below 10°C or above 35°C.

Timing: Carry out planting within 7 days of site seeding operations.

Preparation

Weed management: Conform to the following:

- Herbicide spray: Conform to EXECUTION, **GENERAL** and the following:
  . Program: Maintain sprayed areas undisturbed for 2 weeks.
  . Spray drift: Make sure there is no contact with planted material.
- Weed management by synthetic weed blocking fabric:
  . Extent: 800 mm surrounding each proposed planting.

Fertilising (N:P:K): Conform to the following:

- Ratio: 63:18:28.
- Application rate: 5 kg/m².

Mass planting in mulched bed

Surface preparation: Rip the surface at 500 mm centres to a depth of 300 mm and break up the top 200 mm of the planting bed by cultivation to a maximum size of 50 mm.

Mulch: Spread 75 mm thick.

Individual planting

Preparation: Loosen a planting area 600 mm diameter to a depth of 400 mm.

Mulch: Spread 75 mm thick to 600 mm radius around the plant.

Planting

Method: Remove the localised mulch. If required, root prune to make sure all circling roots have been either severed or aligned radially into the surrounding soil. Place the plant, backfill the planting hole with topsoil and compact lightly so as to minimise subsidence without compacting the backfill. Avoid mixing mulch with topsoil.

Stakes and ties: Advanced and super advanced stock:

- Drive stakes 300 mm deep and 200 mm clear of the plant.
- Ties: 50 mm wide hessian webbing strips, attached loosely.

Watering: 10 litres of water per hole before the mulch is respread over the disturbed area.

Mulching: Replace, and leave the plant stem clear.

Care of landscape planting

Watering: Water all plants, from the time of planting, every second day for the first twelve weeks at the following rates, per plant:

- Tube stock: 5 L.
- Advanced trees: 10 L.
- Super advanced (25 L): 30 L.
- Semi-mature (75 to 100 L): 50 L.

Replacement: Replace missing plants, dead plants and unhealthy plants with plants of similar size and quality and of identical species and variety to the plant being replaced.

Weed and grass growth in mulched areas: Control with herbicide, in conformance with the manufacturer’s recommendations at monthly intervals during the construction period and contract maintenance period. Replace plants damaged by herbicide application.

3.6 STREET TREES

Unpaved areas

Excavation:

- Containers < 75 litre: Twice the diameter of the rootball.
- Containers ≥ 75 litre: Three times the diameter of the rootball.
- Depth: Rootball plus 100 mm. Loosen the compacted sides, and the bottom a further 100 mm.

Soil conditioning: If clay is present, add 1 kg of agricultural gypsum soil conditioning.

Accessories and drainage: Fit trunk collar guard, root barrier and subsoil drainage measures before backfilling.

Backfill: Topsoil.

Mulch: 75 mm thick and 50 mm clear of plant stem.

Initial watering: 50 litres per tree applied in stages during backfilling.

Watering basin: Construct around the base of each individual plant, consisting of a raised ring of soil capable of holding at least 10 L.

Paved areas

Excavation:

Containers < 75 litre: Twice the diameter of the rootball.

Containers ≥ 75 litre: Three times the diameter of the rootball.

Depth: Rootball plus 100 mm. Loosen the compacted sides, and the bottom a further 100 mm.

Accessories and drainage: Fit trunk collar guard, root barrier and subsoil drainage measures before backfilling.

Mulch: 10 mm screenings 75 mm thick.

Initial watering: 50 litres per tree applied gradually.

Structural soil table

Type	**Description**	**Fertiliser**	**Depth**	**Location**
Structural soil 20 mm	75% 20 mm crushed river gravel 25% filler soil of 1 part screeded dolomite to 1 part screeded sandy loam	Trace element mix: 300 g/m^3 Potassium nitrate: 500 g/m^3 Ammonium nitrate: 500 g/m^3 Superphosphate: 500 g/m^3 Ion sulfate: 1.5 kg/m^3 8/9 month Controlled release: 2 kg/m^3 Gypsum: 500 g/m^3 Magnesium sulfate: 400 g/m^3 Magrilime: 600 g/m^3	100 mm	If pavements are installed around existing trees, replace 20 mm roadbase when the total soil depth available is 100 mm or less.
Structural soil 40 mm	80% 40 mm basalt aggregate 20% filler soil of 1 part screeded dolomite to 1 part screeded sandy loam	Trace element mix: 300 g/m^3 Potassium nitrate: 500 g/m^3 Ammonium nitrate: 500 g/m^3 Superphosphate: 500 g/m^3	Varies	Tree plantings in pavements, courtyards, carparks and kerbsides.

Type	Description	Fertiliser	Depth	Location
		Ion sulfate: 1.5 kg/m^3 8/9 month Controlled Release: 2 kg/m^3 Gypsum: 500 g/m^3 Magnesium sulfate: 400 g/m^3 Magrilime: 600 g/m^3		

Porous bonded gravel

Backfill: Allow for base aggregate and gravel.

Filter fabric: Lay over growing medium and pre-cut to size.

Base aggregate: 5 to 7 mm crushed blue metal, laid 70 mm deep and hand consolidated.

Porous paving: Mix and place to the manufacturer's recommendations.

3.7 TRANSPLANTING STREET TREES

General

Requirement: Conform to the **Transplanting schedule**.

Conditions: Select a time for transplanting taking into account to the appropriate season, time of actual operation, rootball diameter and depth, lifting methods and weather conditions.

Preparation

Watering: Establish a temporary drip irrigation system, or manually water the intended trees for a period of two weeks before ball excavation work.

Fertilising: Apply one application of liquid fertiliser mix to the foliage and roots as appropriate to the species. Apply sufficient liquid fertiliser mix to allow the spray to drip from foliage and soak into the rootball. Do not spray the fertiliser mix on excessively hot, dry or windy days.

Rootball

General: Minimise the cutting of roots. Use only sharp tools, water blasting or water cutting.

Initial cut:

- Method: Manually or by chain trenching machine. Trees whose rootballs have been excavated by backhoe or excavator will be rejected.
- Location: 250 mm beyond the required finished rootball dimensions on all sides to allow any damaged roots to be trimmed back to final dimensions and sealed.

Hand trimming:

- Extent: To 100 mm less than the required finished rootball dimension. Cut back and seal roots greater than 25 mm diameter with an approved horticultural sealer.

Outcome: Cut rootball:

- Appearance: Symmetrical about the trunk and in proportion to the overall size of the tree except where the limitations of individual tree planter openings require specific tailoring of the rootball dimension.
- Size: Cut to maximise the rootball in the best interests of each specimen. Rootball size not less than 10 x calliper.

Trench: Backfill and lightly compact with clean sand, free of any foreign matter, pathogens or any substances likely to be deleterious to future root growth. Apply sufficient root inducing formulation, at the manufacturer's recommended concentration, to effectively saturate the backfill in the trench.

Maintenance of on-site plant material

Watering: Maintain a temporary drip irrigation system around each tree, located within the trenched rootball perimeter. Program the system to supply water at an optimum rate to encourage healthy growth and avoid desecration through excessive transpiration following the pruning of the roots. Monitor the system continuously until the tree is lifted and transplanted.

~~Requirement: Take precautions to safeguard the health and wellbeing of all on-site plant material before lifting and transplanting.~~

~~**Above ground**~~

~~Pruning: If selected pruning of branches appears necessary to balance root loss, obtain approval before pruning.~~

~~Pruning requirements and qualifications: In conformance with AS 4373 (2007) and by a fully qualified and experienced arborist. Carry out all required works in a safe and progressive manner.~~

~~Lifting: Thoroughly irrigate to the full depth of the rootball two days before transplanting of each specimen. Do not fracture the ball of soil around the root system. Maintain ball in firm condition during transplanting by wrapping in hessian or other appropriate open weave material, securely tied.~~

~~Storage: Transport transplanted trees to a designated nursery site. Store and maintain until ready for planting.~~

~~Planting: Avoid disturbance to the rootball during moving and planting. After placement, remove the rootball wrapping and ties by cutting.~~

~~Backfill level: Replant trees at the same level or slightly higher than their original grade.~~

~~Watering: At the completion of transplanting, water the rootball thoroughly and continue to water until established. Use 10% rootball volume, per application, as a guide to watering volume.~~

~~3.8 LOCATION OF PLANTING~~

~~**General**~~

~~Requirement: Do not obstruct access to services or sightlines to signage. Do not obstruct pedestrian or vehicular traffic.~~

~~**Street trees**~~

~~Ground clearance:~~

- ~~Clearance height at maturity: 2.4 m.~~
- ~~Clearance height at time of planting: 1.5 m.~~

~~Setbacks: Locate trees to achieve mature canopy clearances from the following:~~

- ~~Electricity or telecommunications poles or pillars: > 4 m.~~
- ~~Streetlights: > 7.5 m.~~
- ~~High voltage transmission lines: > 4 m radius.~~
- ~~Stormwater drainage pits: > 2 m.~~
- ~~Kerbs measured to the back of the kerb: 750 mm to 1000 mm.~~
- ~~Driveways: > 3 m.~~
- ~~Intersections measured from the face of the kerb of the adjoining street: > 10 m.~~
- ~~Existing trees: The combined mature canopy width.~~

~~**Roundabouts**~~

~~Setback: From the inside edge of the kerb as follows:~~

- ~~0 to 1 m: Pavement material.~~
- ~~1 to 3 m: Shrubs/groundcovers, as documented with a maximum mature unpruned height of 600 mm above the road pavement.~~
- ~~3 m and over: Trees and shrubs/groundcovers, as documented.~~

~~**Median islands**~~

~~Setback: From the inside edge of the kerb as follows:~~

- ~~0 m to 0.3 m: Pavement material.~~
- ~~0 m to 1 m: Groundcovers, as documented, 200 mm high with minimal pruning requirements.~~

4 ANNEXURE A

4.1 ANNEXURE – SELECTIONS

This Annexure should be completed for Council or private development projects to specify parameters required in conjunction with the contract Drawings. Where there is an inconsistency between the approved Drawings and this Annexure, the approved Drawings shall prevail unless specifically noted

otherwise.

Project requirements schedule

Property	**Value/Required?**	
Samples	Yes ☐	No ☐
Plants freight responsibility agreement	Yes ☐	No ☐
~~Street trees~~:		
- Labelling frequency		
- Specific pruned form	Yes ☐	No ☐
- Included bark: Exception	Yes ☐	No ☐
- Paved areas: Excavation for structural support soil	Yes ☐	No ☐
- Porous bonded gravel thickness (mm)		
Note: Check the box applicable for the project.		

Plant material supply schedule

Project stage	**Botanical name**	**Common name**	**Container volume size (L)**	**Height range (m)**	**Calliper (mm)**	**Quantity (+10%)**

Transplanting schedule

Project stage	**Species**	**Description**

Specimen plants schedule

Project stage	**Species**	**Description**

Street tree accessories schedule

	A	**B**	**C**
Tree guards: Product			
Tree guards: Size			
Tree guards: Finish			
Tree grates: Product			
Tree grates: Size			
Tree grates: Size of openings			
Tree grates: Material			
Tree grates: Finish			
Tree collar guards	200 mm length of 100 mm diameter		

	A	B	C
	agricultural pipe split lengthways.		

Note to schedule:

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Tree guards: Select a proprietary item, or detail a custom guard and edit accordingly. Confirm the selection with the local authority.

Tree grates: Select a proprietary item, or describe generically. Detail vandal-proof fixings.

Street tree subsoil drainage schedule

	A	B	C
Drainage cells: Product			
Drainage cells: Size of cell panel			
Drainage cells: Filter fabric			
Drainage cells: Location	Planting excavations adjacent roadway kerbing		
Subsoil drainage disposal			
Root barrier: Product			
Root barrier: Depth	600 mm		
Root barrier: Location	Planting excavation adjacent to, and within 4 m of roadway kerbing		

Note to schedule:

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Subsoil drainage disposal: Refer to *1171 Subsurface drainage* and *1172 Subsoil and formation drains*.

Root barrier location: Make sure the selection of the root barrier does not unrealistically restrict root development.

Porous bonded gravel schedule

	A	B	C
Tree surround surfacing: Product			
Tree surround surfacing: Filter fabric			
Tree surround surfacing: Gravel			

Note to schedule:

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Tree surround surfacing: Product: Describe gravel and resinous bonding agent or nominate a product.

Tree surround surfacing: Gravel: Select colour and type.

4.2 ANNEXURE - SUMMARY OF HOLD AND WITNESS POINTS

For private developments, certain Hold and Witness Points where specifically noted below require representatives of both the Superintendent and the Principal Certifier (e.g. Council) to authorise release.

Clause and description	Type	Submission/Inspection details	Submission/Notice times	Process held
INSPECTIONS, Notice Slopes and drains	W	Preparation of surface for cultivation and conditioning	2 days after preparing surface	
INSPECTIONS, Notice Plants on arrival at site	H	Physical damage or drying out	3 days before planting	Planting
INSPECTIONS, Notice Landscape planting	H	Set out of plants, soil conditioner and fertiliser	2 days before backfilling	Backfilling
INSPECTIONS, Notice Transplanting street trees	H	Final orientation of the tree	2 days before rootball pruning	Rootball pruning.
INSPECTIONS, Notice Transplanting street trees	W	Watering, fertilising and root cutting in existing location	2 days before transplanting	
INSPECTIONS, Notice Transplanting street trees	W	Watering, fertilising and root cutting in relocated location	2 days before transplanting	
Note: H = Hold Point, W = Witness Point				

4.3 ANNEXURE - MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES

Seed, imported soil and mulch supply

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
Trees	Dispatch tree stock inspection form	1 Contract	1 Contract	AS 2303 (2018) Appendix C
Imported topsoil	Material quality:			
	- pH	10,000 m²	1 per 500 m³ [a]	AS 4419 (2018)
	- Organic content	10,000 m²	1 per 500 m³ [a]	AS 4419 (2018)
	- Soluble salt content	10,000 m²	1 per 500 m³ [a]	AS 4419 (2018)
Mulch for planting	Material quality	1 Contract	1 Contract	AS 4454 (2012)
a. or part thereof, per lot.				

4.4 ANNEXURE - PAY ITEMS

This schedule assumes the contract is tendered on a Schedule of Rates basis. For private development works use of this schedule is optional, at the Superintendent's discretion.

Pay items	Unit of measurement	Schedule Rate inclusions
0257.1 Vegetation of slopes flatter than 3H to 1V		
0257.1(1) Vegetation - Seeding	m^2	All costs associated with the vegetation of slopes by seeding other than the cost of watering, and supply of imported topsoil.
0257.1(2) Vegetation - Turfing	m^2	All costs associated with the vegetation of such slopes by turfing other than the cost of watering, and supply of imported topsoil.
0257.1(3) Watering determination of volume: By calibrated dipstick readings or other approved method.	kL	All costs associated with supply and delivery of the water and the watering of the seeded and/or turfed areas.
0257.2 Vegetation of slopes steeper than 3H to 1V		
0257.2(1) Preparation of surface other than stepped batters	m^2	All costs associated with the preparation of the surface for vegetation other than the cost of supply of imported topsoil.
0257.2(2) Preparation of surface of stepped batters	m^2 on the batter slope	All costs associated with the preparation of the batter slope for vegetation other than the cost of supply of imported topsoil.
0257.2(3) Hydromulching	m^2	All costs associated with hydromulching other than the watering of dry surfaces.
0257.2(4) Hydroseeding	m^2	All costs associated with hydroseeding other than the watering of dry surfaces.
0257.2(5) Straw mulching	m^2	All costs associated with straw mulching.
0257.2(6) Watering Determination of volume: By calibrated dipstick readings or other method approved.	kL	All costs associated with supply and delivery of the water and the watering of dry surfaces.
0257.3 Vegetation of open drains		
0257.3(1) Preparation and Topsoiling of drains	m^2	All costs associated with preparation of the surface for sowing.
0257.3(2) Mechanical sowing	m^2	All costs associated with sowing and fertilising.
0257.3(3) Hydromulching	m^2	All costs associated with hydromulching other than the watering of dry surfaces.
0257.3(4) Hydroseeding	m^2	All costs associated with hydroseeding other than the watering of dry surfaces.
0257.3(5) Hand sowing	m^2	All costs associated with sowing by hand.
0257.3(6) Spray with bitumen emulsion	m^2	All costs associated with the supply and spraying of bitumen emulsion.
0257.3(7) Lining with organic fibre mat	m^2	All costs associated with the supply and placement of organic fibre mat.
0257.3(8) Turfing	m^2	All costs associated with the supply and placement of turf.
0257.3(9) Watering determination of volume: By calibrated dipstick readings or other method approved	kL	All costs associated with supply and delivery of the water and the watering of dry surfaces and all treated drain areas.

Pay items	Unit of measurement	Schedule Rate inclusions
0257.4 Landscape planting		
0257.4(1) Provision of mulched bed for mass planting	m^2	All costs associated with the preparatory work of the mulched bed before planting.
0257.4(2) Mass planting	Each plant	All costs associated with the planting in the mulched bed and subsequent care of each plant.
0257.4(3) Individual landscape planting of stock	Each plant	All costs associated with the preparatory work, planting and subsequent care of each plant.
0257.5 Supply of imported topsoil	The cubic metre measured loose in the truck as delivered	All costs associated with the supply and delivery of the topsoil to the site. Placing and spreading of the topsoil is excluded from this pay item and is included in the specific activity pay items for vegetation or planting as appropriate.
0257.6 Street trees		All costs associated with supply and delivery of paved and unpaved areas and porous bonded gravel.
0257.7 Transplanting street trees		All costs associated with preparation, rootball pruning and maintenance of on-site plant material.
Traffic management	Lump sum	To *1101 Traffic management*
Erosion and sedimentation		To *1102 Control of erosion and sedimentation (Construction)*
Earthworks		To *1112 Earthworks (Road reserve)*

4.5 ANNEXURE - REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1160	1996	Bitumen emulsions for construction and maintenance of pavements
AS 2303	2018	Tree stock for landscape use
AS 2507	1998	The storage and handling of agricultural and veterinary chemicals
AS 4373	2007	Pruning of amenity trees
AS 4419	2018	Soils for landscaping and garden use
AS 4454	2012	Composts, soil conditioners and mulches
AS 4843	2001	Synthetic weed blocking fabric
EN 15804	2012	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
ISO 14025	2006	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 21930	2017	Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services
Cessnock City Council		Development Engineering Handbook

5 ANNEXURE M – CESSNOCK CITY COUNCIL SPECIFIC CLAUSES

M1.	Variations to or non-conformances with Council's AUS-SPEC are to be evaluated with reference to the procedure in Council's *Development Engineering Handbook*. Acceptance is to be obtained in writing from: a) an authorised representative of Council's Director of Infrastructure and Engineering Services.	**Variation procedure**
M2.	This specification applies in addition to any development consent (DA) conditions. If there is any inconsistency, the conditions of consent shall prevail.	**DA Conditions**
M3.	Refer to the Cessnock City Council Development Engineering Handbook for final inspection, works-as-executed and handover requirements.	**Completion**

6 AMENDMENT HISTORY

0	15/01/2024	First Published