

TfNSW QA SPECIFICATION M322

LANDSCAPE RESTORATION

NOTICE

This document is a Transport for NSW QA Specification. It has been developed for use with roadworks and bridgeworks contracts let by Transport for NSW or by local councils in NSW. It is not suitable for any other purpose and must not be used for any other purpose or in any other context.

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REVISION REGISTER

Ed / Rev Number	Clause Number	Description of Revision	Authorised By	Date
M318				
Ed 1 / Rev 0		First edition	GM, RNIC	11/11/04
Ed 1 / Rev 1	Notes & 1.1	New clauses re use of specification	GM, IC	03.09.07
Ed 1 / Rev 2	Most	Format corrected	GM, IC	24.10.07
M322				
Ed 2 / Rev 0	1.2	Added install and run irrigation systems to scope	GM, IC	04.08.08
	All	To match new Maintenance Activities: <ul style="list-style-type: none">• Changed number• Changed Pay Items Changed references to other similarly changed specifications		
	5.3	Changed internal referencing format		
		Added clause re Accomplishment reporting.		
Ed 2/Rev 1	Global	References to “Roads and Maritime Services” or “RMS” changed to “Transport for NSW” or “TfNSW” respectively.	DCS	22.06.20

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NOTES

THESE NOTES ARE NOT PART OF THE SPECIFICATION, CONTRACT OR AGREEMENT.

The following notes are intended to provide guidance to TfNSW personnel on the application of the Specification. They do not form part of the Specification, Contract or Agreement.

USING THIS SPECIFICATION

This specification has been specifically developed for TfNSW maintenance works. It should not be used without a review of its suitability for the application and in the contractual environment.

It is a QA specification. The use of QA specifications requires the implementation of a quality system by the service provider which meets the quality system requirements specified in TfNSW Q.

EDITION 2

This is the second edition of the Specification. Further improvement and upgrading based on field experience is expected. Comments and suggestions for improvement should be forwarded to the Asset Planning & Performance Manager, Road Information & Asset Management Technology, ROES.

TECHNICAL REFERENCE NOTES

The following notes are intended to provide guidance to TfNSW personnel on the application of the specification. They do not form part of the Contract.

DETAILS OF WORK

The detail provided in Annexure A must be adequate to fully define the work required.

Plant Establishment Period

Ideally, the establishment period should encompass the time required by the planting to become acclimated to the growing conditions at the planting site. Annexure A.4 should clearly indicate the length of the establishment period, which may vary from one area of the state to another, depending on the local conditions, climate, and the type of plants used. Generally, the period should last for between 6 to 12 months.



Transport
for NSW

QA SPECIFICATION M322

LANDSCAPE RESTORATION

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RNIC-QA-M322

VERSION FOR: DATE:

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FOREWORD

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When this document forms part of a contract

This document should be read with all the documents forming the Contract.

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REVISIONS TO THE SPECIFICATION

This document has been revised from Specification TfNSW M322 Edition 2 Revision 0.

All revisions to the previous version (other than minor editorial and project specific changes) are indicated by a vertical line in the margin as shown here, except when it is a new edition and the text has been extensively rewritten.

PROJECT SPECIFIC CHANGES

Any project specific changes have been indicated in the following manner:-

- (a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. ***Additional Text***.
- (b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. ~~Deleted Text~~.

TfNSW QA SPECIFICATION M322

LANDSCAPE RESTORATION

1 GENERAL

- | | | |
|-----|---|--------------------------------|
| 1.1 | M322 has been developed specifically for TfNSW maintenance works. It should not be used in any type of contract without consideration of its suitability in the prevailing circumstances. | Intended use |
| 1.2 | This Specification describes the reinstatement of existing landscaped areas. The work includes replacement turf, mulch and plants and, where specified in Annexure A.3, the installation and operation of irrigations systems. | Scope |
| 1.3 | Some words or abbreviations have a special meaning in this specification and they are explained in the Interpretation Guide or Annexure M hereof. These words are highlighted in capitals eg DEFINED TEXT. | Definitions |
| 1.4 | The standards, specifications and test methods referred to by this specification are referenced using an abbreviated form (eg AS 1478). The titles are given in Annexure M. | Reference documents |
| 1.5 | Unless otherwise specified, the issue of an Australian Standard or TfNSW Test Method to be used is the issue current one week before closing date for tenders. The TfNSW specification to be used is the issue contained in the contract documentation. | Applicable issue |
| 1.6 | Details of work to be carried out under the Specification are described in Annexure A. | Details of work |
| 1.7 | Payment for the activities associated with completing the work detailed under this Specification must be made using the Pay Item(s) referred to in Annexure B. | Measurement and payment |
| 1.8 | YOU must provide all responsibilities, such as actions, works, supply of materials, unless specifically stated otherwise. Accordingly, this specification does not generally use wording such as "the YOU shall ..." or "YOU must ..." because this is the underlying requirement. However, it is used where actions in a clause involve both YOU and the PRINCIPAL and the roles need to be unambiguous. | Interpretation |

2 PLANNING

2.1 PROJECT QUALITY PLAN REQUIREMENTS

- | | | |
|-------|---|--------------------------------|
| 2.1.1 | The requirements of the PROJECT QUALITY PLAN are defined in TfNSW Q. In addition, the PROJECT QUALITY PLAN must address the following requirements: | General |
| .1 | Address the HOLD and WITNESS POINTS required by this specification and summarised in Annexure C.1. The PRINCIPAL will consider the submitted documents prior to the release of any HOLD POINT. | Hold and Witness Points |
| .2 | Address each of the construction process requirements listed in this Specification. | Construction process |
| .3 | Include a requirement for the routine submission of data, which will certify conformity of all work and materials to the Specification's requirements and include supporting documentation (refer Table 5). | Conformity data |
| .4 | Be submitted to the PRINCIPAL at least 5 BUSINESS DAYS prior to commencement of work. | Submission |

- | | | |
|-------|---|-------------------|
| 2.1.2 | Process Held: Commencement of work | HOLD POINT |
| | Submission: PROJECT QUALITY PLAN conforming to requirements in Clause 2.1. | |

2.2 SETTING OUT

- | | | |
|-------|--|---|
| 2.2.1 | Plants must be placed where shown in the LANDSCAPE DRAWINGS or where directed by the PRINCIPAL. The PRINCIPAL will advise: | Principal will nominate replacement plants |
| .1 | The time within which the replacement is to be completed. | |
| .2 | The size and number of the replacement plants. | |
| 2.2.2 | Replacement plants must be of identical species and variety to the plant being replaced or in accordance with the LANDSCAPE DRAWINGS and Annexure A.2. | Identical species |
| 2.2.3 | Except where otherwise directed by the PRINCIPAL: | Requirements |
| .1 | Trees or shrubs must not be planted within 2.5 m of any pavement edge. | |
| .2 | Only low shrubs and ground covers must be planted within 2.5 m of the face of a safety barrier. | |

- .3 Trees or large shrubs must not be planted within the clear zone shown on the Drawings or, where no clear zone is shown, within 10 m of any pavement edge.
- .4 Trees or shrubs must not be planted which, at maturity, is likely to obstruct a driver's view of a road sign.
- .5 Trees or shrubs must not be planted which, at maturity, will exceed 1.5 metres in height if it would be under an electricity transmission line or close enough to the line for the mature canopy to come within 5 metres of any conductor.

2.2.4	<p>Process Held: Commencement of planting operations.</p> <p>Submission Details: Advice that the setting out of all tree, shrub and ground cover planting positions is complete.</p> <p>Release of Hold Point: The PRINCIPAL may inspect the positions of trees and shrubs prior to release of the HOLD POINT.</p>	HOLD POINT
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2.3 TRANSPORTATION OF PLANTS

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|-------|---|--|
| 2.3.1 | Inspect all plants before transporting them to the site and again on arrival and reject any which do not conform to the Specification. | Inspection of plants |
| 2.3.2 | The loading, transporting and unloading of plants must be undertaken in a manner that causes minimal disturbance to the rootball and the overall stability of the plants. During transportation and on site storage, plant containers must be kept moist at all times to prevent dehydration. | Loading, transporting and unloading |
| 2.3.3 | The storage of plants must be at a site located in an area protected from wind, dust and vermin and accessible to an adequate water supply. | Storage of plants |
| 2.3.4 | Plants deemed by the PRINCIPAL to be suffering from stress or to have been damaged, due to YOUR neglect and/or mishandling may be rejected. Plants so rejected must be replaced by YOU at YOUR expense. | Plants suffering from stress |

3 RESOURCES

3.1 IMPORTED TOPSOIL

Where imported topsoil is required it must comply with the requirements of AS 4419 and:

Requirements

- .1 Be of a friable porous nature.
- .2 Contain no refuse or materials toxic to plant growth;
- .3 Contain no stumps, roots, clay lumps or stones larger than 50 mm in size;
- .4 Have an organic content of at least 5% by mass as determined by the method specified in AS 1289 D1.1 Part D;
- .5 Have a pH in the range of 5 to 6.5 when tested in accordance with TfNSW T123;
- .6 Have a soluble salt content not exceeding 0.06% by mass; and
- .7 Be suitable for phosphorus sensitive plants.

3.2 FERTILISER

3.2.1 Fertiliser used must be an organic type having an N:P:K analysis (stated in elemental form) within the following range:

Organic type

- .1 N: 5.0% to 9.0%
- .2 P: 1.0% to 4.0%
- .3 K: 2.0% to 4.0%

3.2.2 Fertiliser must be delivered to the site in unopened standard bags or containers bearing the manufacturer's description, analysis of constituents and quantity.

Delivery

3.3 MULCH

3.3.1 Mulch must be derived from trees and shrubs (other than weeds) obtained during clearing and pruning works on the site. If the mulch produced in this way is insufficient the shortfall must be made up by using imported woodchip.

Source

3.3.2 Imported woodchip must comply with the following requirements:

Imported woodchip

- .1 Woodchip must only be derived from waste timber. Under no circumstances shall the PRINCIPAL accept woodchip, derived from trees that have been specifically harvested for that purpose.

- .2 The material must comprise hardwood chips with not more than 5% fines by volume. Except pine-flake may be used as per Clause 4.2.3.2. The material must not contain any bark.
- .3 The average size of the woodchip must be approximately 30 mm x 20 mm x 5 mm and the maximum length of chip is not to exceed 50 mm, and
- .4 It must be free of soil, weeds, stones, vermin, insects or other foreign material.

3.3.3 YOU must test the mulch for conformance to these requirements prior to using the mulch.

Testing

3.3.4 **Process Held:** Source of woodchips.

HOLD POINT

Submission Details: The source of woodchips prior to supply. Provide written confirmation regarding compliance with the stated origin.

Release of Hold Point: The PRINCIPAL will consider the nominated source before releasing the HOLD POINT.

3.4 PLANT MATERIAL

3.4.1 Plants must be well grown, of good form, not soft or forced and with large healthy root systems. They must not be rootbound and must be free from disease and insect pests. Trees must have a single leading shoot.

General requirements

3.4.2 All plants are to be supplied in the containers and have been grown to the approved heights as specified below:

Height

Table 1 – Plant sizes

Plant Size	Container Size	Approved Plant Height
'Forestry-tube'	50 mm dia x 125 mm deep	200 mm - 300 mm
'Semi Advanced'	150 mm dia x 150 mm deep	300 mm - 400 mm
'Advanced'	200 mm dia x 200 mm deep	300 mm - 500 mm
'Super Advanced'	35 Litre container size	2000 mm - 2500 mm
'Semi Mature'	100 Litre container size	2000 mm - 3000 mm

- 3.4.3 All plants must be grown by a nursery located in an area of similar climate to that of the existing plants. **Nursery**

3.4.4	<p>Process Held: Growing of plant material</p> <p>Submission Details: The name and location of the proposed nursery subcontractor.</p> <p>Release of Hold Point: The PRINCIPAL will consider the nominated subcontractor and may visit the nursery before releasing the HOLD POINT.</p>	HOLD POINT
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- 3.4.5 There must be no substitution of any species without the PRINCIPAL'S approval. All plant material must be true to species and sizes. **No substitution**

3.5 STAKES AND TIES

- 3.5.1 Timber stakes must be hardwood sharpened to a point at one end. The size of the stakes and the number per plant must be as shown below. **Stakes**

Table 2 – Stakes

Plant Size	Stake Size	Number of Stakes
'Advanced'	25 mm x 25 mm x 1500 mm long	1
'Super Advanced'	50 mm x 50 mm x 2500 mm long	2
'Semi Mature'	50 mm x 50 mm x 2500 mm long	3

- 3.5.2 Bamboo stakes must be 750 mm long heavy duty. **Bamboo stakes**
- 3.5.3 Ties must be 50 mm wide hessian webbing. **Ties**

3.6 SOIL MOISTURISER

The soil moisturiser must be a hydroscopic material and must be pre-mixed with water and incorporated into the excavated planting hole during the planting operations.

3.7 WEEDMAT AND FIXING PINS

- 3.7.1 Unless it is covered by scoria weedmat must be a 100% organic fibre type, 600 mm square. Nominal thickness of the mat must be 6 mm with a density of 600-650 gm/square metre. **General**
- 3.7.2 Where the weedmat is covered by scoria the weedmat must be a synthetic fibre type. **Weedmat covered by scoria**
- 3.7.3 Fixing pins must be “U” shaped made from 4 mm to 6 mm diameter plain steel wire with 150 mm legs 50 mm apart. **Fixing pins**

3.8 TREE GUARDS

Tree guards must be green plastic type tree guards 255 mm dia. x 450 mm long, and must be secured with three bamboo stakes.

3.9 WATER

Water applied to plants must be potable or obtained from a source which contains no toxins or pollutants or any substance which would adversely affect the growth of any of the plants.

3.10 TURF AND FIXING PINS

3.10.1 Turf must consist of 25 mm of dense, well rooted, vigorous grass growth with 25 mm of topsoil. Kikuyu grass must not be used. Turf must be free of weeds, soil pests and diseases. The turf must be close mown and freshly cut in long lengths of uniform width, not less than 300 mm, and in sound unbroken condition.

Turf

3.10.2 Fixing pins must be “U” shaped made from 4 mm to 6 mm diameter plain steel wire with 150 mm legs 100 mm apart.

Fixing pins**3.11 TRADES PERSON**

All work specified must be carried out by a competent Landscape Trades person who is experienced in planting techniques. The minimum educational requirement for personnel engaged in site supervision must be NSW TAFE Landscape Trade Certificate or equivalent.

4 EXECUTION**4.1 PROTECTION OF EXISTING VEGETATION**

4.1.1 Existing vegetation must be preserved and protected except where otherwise specified or directed.

Protect existing vegetation

4.1.2 The work must be organised so as to minimise damage to existing vegetation. Protective measures must include:

Protective measures

- .1 Movement of plant and machinery over and disturbance to existing vegetation must be kept to a minimum. Vehicles must not be parked in vegetated or mulched beds.
- .2 Deleterious material including oil, petrol, cement, bitumen, spillage from washing operations and similar contaminants must be kept clear of mulch, trees, shrubs and grass including their root systems.
- .3 Materials must not be stockpiled over root systems.
- .4 Damage to overhead tree trunks or canopies by machine or truck operations must be avoided.

4.1.3 Damage to the existing vegetation caused by YOUR operations must be rectified at YOUR expense.

Damage

4.2 MULCH

- 4.2.1 Reinstatement mulched areas where specified in the LANDSCAPE DRAWINGS or as directed by the PRINCIPAL. **Principal will nominate areas**
- 4.2.2 The mulch must be placed over the existing weed-free mulched area and must be kept clear of plant stems. Mulch must be uniformly applied at a rate of 1 m³ per 10 m² of mulched bed. **Placing mulch**
- 4.2.3 To avoid mulch being washed into drainage pits the following measure must be implemented: **Avoid mulch being washed into drainage pits**
- .1 Install 'Nioaka' native turf 3 m wide around drainage pits and provide native turf 1 m wide along upstream depressed median channels where channels are not concrete lined.
 - .2 In the vicinity of drainage pits lay 75 mm thick pine-flake as mulch instead of hardwood chips. The 75 mm thick pine-flake must be held in place by biodegradable bird netting on steep batters (> 1:4 slope) to prevent wash out.
 - .3 Install a 200 mm high silt fence around the drainage pit apron, held in place by hardwood pegs at each corner, to catch all likely mulch carried off by stormwater. The silt fence will require periodic maintenance to clear away debris following storms.
- 4.2.4 Maintain mulched areas in a weed free condition as specified in M321. **Weed control**

4.3 TURF

- 4.3.1 Turf must be placed where shown in the LANDSCAPE DRAWINGS or where directed by the PRINCIPAL. **Areas to be treated**
- 4.3.2 Before placing turf the area must be lightly tyned and topsoil uniformly applied. **Areas to be lightly tyned and topsoiled**
- 4.3.3 Topsoil must be applied at a rate of 1 cubic metre per 20 square metres except stepped batters. Where batters have been stepped the steps must be loosely covered to provide a wedge of topsoil on each step which is 30-70 mm deep against the vertical face at the back of the step. **Topsoil application rate**
- On slopes 5 to 1 and flatter, the topsoiled area must be cultivated to a depth of 50 mm by a diamond harrow to provide a roughened surface with soil lumps not exceeding 50 mm dimension.
- 4.3.4 Runs of turf must butt hard against each other and be placed perpendicular to the direction of water flow. Turf must be pinned into position at 500 mm centres. **Runs of turf**

4.3.5 The turf must be kept moist at all times during transport and site storage, and laid in its final position as early as possible after delivery. **Keep moist**

4.3.6 The time delay between the lifting of turf and the laying of turf must not exceed seven days. **Time delay**

4.4 PLANTS

4.4.1 Planting must not be carried out into dry soil in extreme summer weather conditions unless otherwise directed by the PRINCIPAL. **Dry soil**

4.4.2 Plant root systems must be maintained moist at all times with particular attention paid during the on-site period prior to and during planting. **Ensure moist root system**

4.4.3 Cultivate all mulched planting areas to a depth of 200 mm by tractor mounted rotary hoe or similar equipment. The areas must then be raked to provide an even surface for the installation of the weedmat. **Cultivation**

4.4.4 Where individual planting is to be carried out in locations of 3 to 1 slope or flatter, the cove area must be ripped to a depth of 400 mm along each line of planting with tractor mounted tynes set at 300 mm centres. Each line of planting must require two passes with the second pass in the opposite direction to the first. **Locations of 3 to 1 slope or flatter**

4.4.5 Planting holes must be excavated to the dimensions in Table 3: **Dimension of holes**

Table 3– Planting holes

Plant Size	Planting Hole
'Forestry-tube'	200 mm x 200 mm x 200 mm deep
'Semi Advanced'	300 mm x 300 mm x 300 mm deep
'Advanced'	400 mm x 400 mm x 400 mm deep
'Super Advanced'	600 mm x 600 mm x 600 mm deep
'Semi Mature'	1000 mm x 1000 mm x 1000 mm deep

4.4.6 Excavation of the holes must be by hand tools. The use of an auger or similar implement to excavate planting holes is not acceptable. **Excavation of holes**

4.4.7 Following excavation of the planting hole, place and spread a soil moisturiser, pre mixed with water in accordance with the manufacturer's recommendations, at the bottom of each planting hole. **Bottom of each planting hole**

4.4.8	During planting and backfilling with site topsoil, fertiliser tablets must be placed underneath the rootball of each plant. The number of tablets must be in accordance with the LANDSCAPE DRAWINGS.	Fertiliser tablets
4.4.9	The backfilling of each hole must be completed and lightly compacted by tamping down so that on completion the backfilled area is flush with the level of the surrounding soil.	Backfilling
4.4.10	Weedmat, dimensions 600 mm x 600 mm or larger, must be placed around the base of each plant and secured at the centre and each corner with steel pins. Unless otherwise specified in the LANDSCAPE DRAWINGS, mulch must be placed 75 mm thick over the disturbed area and must be kept clear of the plant stem.	Weedmat and mulch
4.4.11	A tree guard must be installed around each plant and secured with three bamboo stakes.	Tree guard
4.4.12	A hardwood stake must be driven 200 mm clear of each plant. The plant must be attached to the stake by a hessian tie.	Stakes
4.4.13	Each 'Forestry-Tube', 'Semi Advanced' and 'Advanced' plant must receive 10 litres of water per plant and each 'Super Advanced' and 'Semi Mature' size plant must receive 20 litres of water per plant, in a manner which causes minimum disturbance to the mulch.	Initial watering
4.5	IRRIGATION SYSTEMS	
4.5.1	The location and other details of irrigation systems to be installed are specified in Annexure A.3.	Location of irrigation systems
4.5.2	Irrigation systems must be installed in accordance with Manufactures instructions.	Installation
4.6	LANDSCAPE ESTABLISHMENT PERIOD	
4.6.1	YOU are responsible for the maintenance needs of all planting works from the time of installation, during construction, and throughout the LANDSCAPE ESTABLISHMENT PERIOD. This includes the proper operation of the irrigation systems, performing replacement and landscape maintenance works as described below.	General requirement
4.6.2	The LANDSCAPE ESTABLISHMENT PERIOD begins from receipt of the written "Notice of Substantial Landscape Completion" from the PRINCIPAL and lasts for the period nominated in Annexure A.4.	Commencement and duration of period
4.6.3	YOU must visit the site at intervals not exceeding one (1) month to determine the status of the replacement planting and the effectiveness of maintenance previously carried out and in progress.	Inspection

- 4.6.4 *Watering*, other than by the use of an irrigation system, must be carried out as specified in Table 4. Notwithstanding Table 4, YOU must ensure that a distinct level of moisture is maintained at all times during the first 26 weeks after planting and that plants are not permitted to dry out during this period. **Watering**

Table 4 – Watering Application Rates

Period	Application Rates
First eight (8) weeks from planting	Twenty (20) litres of water per plant at weekly intervals
From nine (9) weeks since planting to end of LANDSCAPE ESTABLISHMENT PERIOD	Ten (10) litres of water per plant at fourteen (14) day intervals

- 4.6.5 Notify the PRINCIPAL in advance of each watering (except by irrigation system) for verification of payment purposes. **Notify when watering**
- 4.6.6 Watering by the use of an irrigation system must be in accordance with the times defined in Annexure A.4. **Watering by irrigation system**
- 4.6.7 The frequency of watering may be varied during periods of adequate rainfall and in accordance with the PRINCIPAL'S directions. **Varying frequency of watering**
- 4.6.8 Irrigation systems must be maintained in full working order. Outlets must be cleaned, adjusted, repaired or replaced as necessary and leaking pipes and fittings repaired or replaced. The timer and any sensors must be maintained in accordance with the manufacturers recommendations and adjusted as required to ensure that watering is carried out at the times and for the periods required according to the season and water restrictions (if any). **Irrigation systems**
- 4.6.9 Check all heads for water delivery, spray arc, and droplet size. Deviations from their normal performance will require servicing of the sprinkler head. Check that the head has not sunken in the ground and that water flow is unobstructed. Make appropriate adjustments if watering pattern is hitting road surfaces or footpaths. **Sprinkler heads**
- 4.6.10 Formative pruning of young trees (PRUNING TYPE F) is required for all new plantings. This consists of the selective removal of specific branches to enhance form and improve structure, or to directionally shape the young tree. **Type F pruning**
- 4.6.11 Dead and severely damaged plants should be removed immediately and replaced within 21 days. **Dead and damaged plants**
- 4.6.12 New planting and young trees must be maintained to ensure that they are not 'choked' by supporting ties. **Avoid choking new plantings**

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| 4.6.13 | Maintain the tree guards around each replacement plant so that the natural plant growth is not impeded or restricted. Damaged and missing tree guards must be replaced as soon as practicable after being identified. | Tree guards |
| 4.6.14 | Maintain mulch in a weed free condition in accordance with M321 and, where deemed necessary by the PRINCIPAL, reinstate damaged or displaced mulch/weedmat. | Mulch/weedmat |
| 4.6.15 | YOU must remove all tree guards and stakes and any surplus materials or litter from the site and recycle or responsibly dispose of them on completion of the LANDSCAPE ESTABLISHMENT PERIOD. The site must be left in a clean and tidy condition. | At the end of the
Landscape
Establishment
Period |
| 4.6.16 | YOU must conduct a training and orientation session on-site for PRINCIPAL nominated maintenance personnel covering the operation, adjustment, and maintenance of the irrigation system. The as-built plans must be available so they can be reviewed and all features explained. One copy of the as-built plans must be made available to the maintenance personnel, along with parts lists and service manuals for all equipment. | Handover -
Training and
orientation session |

5 CONFORMITY

5.1 GENERAL

- | | | |
|-------|--|---|
| 5.1.1 | Landscaping works must comply with the process controls and conformity criteria listed in Table 5. | Process control and
conformity |
| 5.1.2 | A certificate, from the supplier, must accompany supply of all materials to certify that their quality complies with this Specification. The PRINCIPAL, at its option, may request such documentation for audit. Minimum period for retention must be until the end of the LANDSCAPE ESTABLISHMENT PERIOD. | Supply of materials |

Supplied materials found to be unsuitable must not be used in the WORKS.

Table 5 – Process controls and conformity criteria

Item	Clause Ref in M322	Property	Test Method	Criteria	Minimum Testing Frequency
■ Protection of existing vegetation	4.1.2	Protective measures	Inspection	Clause 4.1.2	When on-site
	4.1.3	Condition of existing vegetation	Inspection	Rectify damage	When on-site
■ Mulch	4.2.2	Application rate	Measure	1 m ³ per 10 m ²	
■ Turf	4.3.3	Topsoil application rate	Measure	1 m ³ per 20 m ²	1 per 20 m ²
	4.3.4	Adjacent runs of turf	Inspection	Butt hard	Each run
	4.3.5	Moisture	Inspection	Keep moist	Before laying
	4.3.6	Time delay between lifting and laying	Measure	< 7 days	All turf
■ Plants	4.4.1	Planting conditions	Inspection	Avoid extreme summer and dry soil	Before planting
	4.4.2	Root system	Inspection	Keep moist	At all times
	4.4.3	Cultivation	Measure	Depth must be at least 200 mm	After cultivation
	4.4.5	Planting holes	Measure	Table 3	After excavation
	4.4.12	Stakes	Measure	> 200 mm clear of plants	After driving stake
	4.4.13	Initial watering	Measure	Clause 4.4.13	When watering
■ Irrigation System	4.5.2	Installation	Inspection	Manufacturer's instructions and system working	As necessary
■ LANDSCAPE ESTABLISHMENT PERIOD	4.6.2	Status of plants and proper operation of irrigation system	Inspection	Clause 4.6	Monthly
	4.6.4	Water application rate	Measure	Table 4	When watering
	4.6.8	Irrigation system – general	Inspection	Full working order	When watering
	4.6.9	Sprinkler heads	Inspection	Clause 4.6.9	When watering
	4.6.10	TYPE F PRUNING	Inspection	AS 4373	During pruning

5.2 WARRANTY PERIOD

5.2.1 YOU must warrant the work for the LANDSCAPE ESTABLISHMENT PERIOD. A pre-final inspection should occur approximately one month prior to the end of the LANDSCAPE ESTABLISHMENT PERIOD.

Pre-final inspection

5.2.2 Missing, diseased, dead or dying plants and other rectification work nominated by the PRINCIPAL must be repaired or replaced at YOUR cost within fourteen (14) days of notification by the PRINCIPAL.

Need for rectification work

5.2.3 Replacement plants must be of similar size and quality and of identical species and variety to the plant being replaced unless otherwise directed by the PRINCIPAL. All replacement plants must be planted in accordance with Clause 4.4 any disturbed areas reinstated.

Replacement plants

5.2.4 A final inspection at the end of the LANDSCAPE ESTABLISHMENT PERIOD will be made to determine if all plants are growing in a healthy manner.

Final inspection**5.2 ACCOMPLISHMENT REPORTING**

The accomplishment of conforming work must be reported as set down in Table 6.

Table 6.

Code	Description	Spec	UOM	Accomplishment Reporting
322	Landscaping Restoration	M322	m ²	Report square metre of landscape restored

ANNEXURE M322/A – DETAILS OF WORK**A.1 LANDSCAPE DRAWINGS**

The LANDSCAPE DRAWINGS reference number is:	###
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A.2 PLANT MATERIAL

The following plant materials are to be supplied:

Species	Number	Size	Stake	
			Timber	Bamboo
		Forestry-tube		
		Semi Advanced'		
		Advanced'		
		Super Advanced		
		Semi Mature		

A.3 IRRIGATION SYSTEM

Details of irrigation system:	
Watering requirements during the LANDSCAPE ESTABLISHMENT PERIOD:	

A.4 LANDSCAPE ESTABLISHMENT PERIOD

The LANDSCAPE ESTABLISHMENT PERIOD is:	12 months
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ANNEXURE M322/B – MEASUREMENT AND PAYMENT

B.1 GENERAL

- | | | |
|-------|---|-----------------------------|
| B.1.1 | Pay items are identified in Annexure B.2. | Pay Items to be used |
| B.1.2 | The price(s) of pay items with a quantity of work in the schedule must be costed with due allowance for all costs of the activity.

Any pay item with a quantity of work that is not priced is understood to be included in other priced pay items. | Prices |
| B.1.3 | Any overheads must be distributed between pay items. | Overheads |
| B.1.4 | Pay items with a quantity of work specified must not be tendered as a lump sum price. | No Lump Sum |
| B.1.5 | YOU are not paid for any rework required to achieve conformity. | No payment |

B.2 SCHEDULE OF PAY ITEMS

Pay Item *	Item Name and Description	What to claim and Units
	The rates include supply, site preparation, excavation (in all types of material), planting, backfilling, fertilising, incorporating soil moisturiser, installation of weedmat and tree guard, staking, mulching and initial watering. Payment for the initial watering of replacement plants before and during planting must be included under Pay Item M322P1.n or Pay Item M322P2.n	Each new plant
M322P1	Landscape planting - Mulched bed	Each
M322P1.1	Landscape planting - Mulched bed 'Forestry-tube' size	Each
M322P1.2	Landscape planting - Mulched bed 'Semi Advanced' size	Each
M322P1.3	Landscape planting - Mulched bed 'Advanced' size	Each
M322P1.4	Landscape planting - Mulched bed 'Super Advanced' size	Each
M322P1.5	Landscape planting - Mulched bed 'Semi Mature' size	Each
M322P2	Landscape planting – Individual planting	Each
M322P2.1	Landscape planting – Individual planting 'Forestry-tube' size	Each
M322P2.2	Landscape planting – 'Semi Advanced' size	Each
M322P2.3	Landscape planting – 'Advanced' size	Each
M322P2.4	Landscape planting – 'Super Advanced' size	Each
M322P2.5	Landscape planting – 'Semi Mature' size	Each
	The rates include all costs of supply, transport and spreading of mulch from off-site. The costs of preparing and stockpiling mulch produced on-site from prunings must be included under Pay Item M321P1 .	Square metre of mulched bed reinstated.
M322P3	Mulch and turf	m²
M322P3.1	Mulch and turf - Mulch prepared on site from prunings	m ²
M322P3.2	Mulch and turf - Imported mulch	m ²
M322P3.3	Mulch and turf - Native turf	m ²
M322P4	Watering During the Establishment Period – no mains water. The rate includes all costs of supply and transport of the water and maintenance watering the replacement plants. Payment for watering by way of an irrigation system is included under Pay Item M322P5	Volume in kilolitres determined by calibrated dipstick readings or other approved method.
M322P5	Install, Operate and Maintain an Irrigation system in Est 't Period Rate includes all costs of installation, maintenance and operation of an irrigation system during the Establishment Period,.	Lump Sum Item

Continued overleaf

M322

Landscape restoration

Pay Item *	Item Name and Description	What to claim and Units
M322P6	<p>Establishment</p> <p>Note: It is taken that you have included all the following in tendering your establishment rate - no further payment will be made for them:</p> <ul style="list-style-type: none"> • Plant float to/from the site or project; • Set up and removal of site facilities (eg: office, sheds, toilets); Principals facilities (if required, • Initial travel to site or project • Daily travel to/from site or project; • Accommodation (eg: on site or motel/hotel). 	<p>Item</p> <p>Establishment is paid once per Work Order</p>
<p>* Pay Items are primarily for guidance in preparing Work Orders (which can be Lump Sum or Schedule of Rates).</p> <p>When preparing a Work Order, any or all of the Pay Items may be incorporated: the aim is to improve the accuracy of the Service Provider's estimation and pricing by:</p> <ol style="list-style-type: none"> a) selecting those Pay Items which denote the activities that are to be undertaken and b) requiring the Service Provider to estimate and price each Pay Item individually. <p>When Establishment is a significant cost, the Pay Item specific to it must be incorporated in the Work Order – the cost must not be amortised / absorbed across the other Pay Items.</p> <p>Similarly, when Traffic Control is a significant cost, its Pay Item(s) must be incorporated. See TfNSW G10 for a list of these.</p>		

ANNEXURE M322/C – SCHEDULE OF HOLD AND WITNESS POINTS AND IDENTIFIED RECORDS

C.1 SCHEDULE OF HOLD AND WITNESS POINTS

Reference Clause	Type	Process Held
2.1.2	HOLD POINT	Commencement of work.
2.2.4	HOLD POINT	Commencement of planting operations.
3.3.4	HOLD POINT	Source of woodchips.
3.4.4	HOLD POINT	Nomination of the proposed nursery subcontractor.

ANNEXURE M322/D TO L (NOT USED)

ANNEXURE M322/M – REFERENCED DOCUMENTS AND DEFINITIONS

M.1 REFERENCE DOCUMENTS

M.1.1 Australian Standards

AS 4373 Pruning of amenity trees

M.1.2 TfNSW Documents

Interpretation guide

TfNSW G10 Traffic Management

TfNSW M321 Landscape maintenance

M.2 ABBREVIATIONS AND DEFINED TERMS

Landscape Drawings The drawings referenced in Annexure A.1.

Landscape Establishment Period The period beginning from receipt of the written "Notice of Substantial Landscape Completion" from the PRINCIPAL and lasting for the period nominated in Annexure A.4.

Pruning Type F Formative pruning of young trees as described in AS 4373.

LAST PAGE
