SPECIFICATION 304

REVEGETATION

REVISION REGISTER			
Clause Number	**Description of Revision**	**Authorised By**	**Issued Date**
Whole Document	New Revision	ME	21 Oct 2019

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SPECIFICATION 304

REVEGETATION & LANDSCAPING

GENERAL

304.01 SCOPE

1. The work under this specification consists of the supply of all products, materials and equipment, all preparation and construction and all revegetation and landscaping operations required to complete the Works as shown in the Drawings or specified in the Contract.

304.02 REFERENCES

1. Australian Standards, MAIN ROADS Western Australia Standards and MAIN ROADS Western Australia Test Methods are referred to in abbreviated form (e.g. AS 1234, MRS 67-08-43 or WA 123). For convenience, the full titles are given below:

Australian Standards

AS 3743 Potting Mixes
AS 4419 Soils for Landscaping and Garden Use
AS 4454 Composts, soil conditioners and mulches

Australian/New Zealand Standards

AS/NZS 3500 Part 1.2 Water Supply – Acceptable Solutions

Other Publications

Health (Pesticides) Regulations, 1956
NATSPEC Guide: Specifying Trees, ISBN 0 9586187 7 1.

MAIN ROADS Test methods

WA 0.1 Random Sample Site Location

MAIN ROADS Standard Drawings

Guide Sign - Roadside Revegetation. Standard Drawing No. MR-GM-14

MAIN ROADS Specifications

Specification 202	TRAFFIC
Specification 204	ENVIRONMENTAL MANAGEMENT
Specification 301	VEGETATION CLEARING AND DEMOLITION
Specification 302	EARTHWORKS
Specification 303	MATERIAL AND WATER SOURCES
Specification 406	ROCK PROTECTION
Specification 601	SIGNS

304.03 DEFINITIONS

1. The Installation Period shall mean the period starting from the commencement through to the end of the revegetation and landscaping works as specified in the Contract. ***Installation Period***

2. The Establishment Period shall mean the period starting from the completion of the revegetation and landscaping works and extending for a duration as nominated in Annexure 304A of this Specification. ***Establishment Period***

3. "Establishment" shall mean the continuing care and maintenance of the revegetation and landscaping works by accepted horticultural practises, as well as rectifying any defects that become apparent in the works under normal use. For the duration of the Establishment Period the Contractor is fully responsible for the continuing good appearance of the works. ***Establishment***

4. The Contractor is required to carry out all activities necessary to establish and promote the growth of all plant materials and maintain all works in good order and functional condition during the Installation Period.

304.04 OTHER REQUIREMENTS

304.04.01 PERSONNEL

1. The Contractor must ensure that personnel under the sole responsibility and supervision of the Contractor must be competent, experienced, and skilled in all aspects of the required revegetation installation and establishment practices. ***Skilled Personnel***

304.04.02 TRAFFIC MANAGEMENT

1. The Contractor must ensure that all traffic management and control measures necessary to undertake the works are implemented in accordance with Specification 202 TRAFFIC. ***Traffic Management***

PRODUCTS AND MATERIALS

304.05 GENERAL PRODUCTS AND MATERIALS

1. The manufacturer's published product details and instructions for use must be provided to the Superintendent upon request. ***General***

2. Water used must be potable water where available or obtained from a source containing no substances that will have an effect on the pesticides used or be detrimental to seed germination or vegetation growth. ***Water***

3. Only pesticides registered for the treatment of pests and weeds in Western Australia can be used for the Works. The supply, storage, handling and use of any product must comply with regulations, restrictions and government policy, relating to pesticides and in accordance with manufacturer's published specification. ***Pesticides***

4. Fertiliser(s) specified in the Contract must be delivered on site in unopened bags or containers bearing the manufacturer's description, analysis of constituents and quantity. Fertiliser(s) must be stored in waterproof sealed bags and sheltered away from water and direct sunlight. ***Fertiliser***

5. Unless otherwise specified in the Contract, the fertiliser(s) must be manufactured for the purpose used in the Contract and must be stored, handled and applied in accordance with the manufacturer's published specification.

6. Timed-release water (water storage crystals/gel) if specified must be manufactured for the purpose and delivered on site in sealed containers. ***Timed-Release Water***

7. Soil wetting agents must be active in the soil for a minimum of six months, must be non-ionic, non-toxic, pH neutral range of 6-8 and must be applied in accordance with the manufacturer's published specifications. ***Soil Additives***

8. Soil bio-amendments and inoculates must be free of any substances detrimental to plant life, and only be applied in accordance with the manufacturer's published specifications.

9. Unless otherwise specified in the Contract, soil conditioners must comply with AS 4454 and be applied in accordance with the manufacturer's published specifications. The Contractor must supply to the Superintendent certified test reports that the soil conditioners to be used in the Works comply with AS 4454. ***Soil Conditioners***

10. The phosphate content of soil conditioners must not exceed three percent and the pH must be in the neutral range of 6-8.

11. The Contractor must use all topsoil stockpiled on site that has been nominated for re-use as topsoil in accordance with Specification 301 VEGETATION CLEARING AND DEMOLITION. ***Insitu Topsoil***

12. Suitable spoil material to be used in the Works must be clean material in accordance with Specification 301 VEGETATION CLEARING AND DEMOLITION and must be free of any weeds and materials toxic to plant growth. Contaminated soil must not be used as fill within the Works. ***Suitable Spoil***

13. The Contractor must nominate, prepare and manage all stockpiles of topsoil and/or mulch materials in accordance with Specification 301 VEGETATION CLEARING AND DEMOLITION. ***Stockpiles of Topsoil or Mulch***

304.06 HARD LANDSCAPING

1. Any large feature rocks or boulders retained for use in the works must be placed as shown in the Drawings. ***Placement of Large Rocks and Boulders***

2. Unless specified otherwise in the Drawings, each rock or boulder placed for the purpose of restricting access must be buried 10-30% below finished soil levels.

304.07 MULCH, WEED AND EROSION CONTROL MATTING

1. Mulch refers to any chipped site vegetation or inorganic materials such as crushed rock, coarse aggregate, river pebbles, or pea gravel, spread as a soil surface protection measure. ***Definition***

2. Mulch materials must be clean of any weed, grass stolons, seeds and other extraneous materials and free from all matter and substances toxic to plant growth. ***General***

3. Stockpiled chipped site vegetation or uncontaminated chipped vegetative material naturally occurring within the local area must be approved as suitable by the Superintendent, prior to use as mulch. ***Site Vegetation Mulch***

4. All imported un-composted chipped vegetation material must be aged for at least three months, be free of fine or fibrous particles, live grass stolons, be Dieback and Weed Free and approved as suitable for use as mulch by the Superintendent. ***Imported Vegetation Mulch***

5. Unless specified otherwise in the Drawings or in Annexure 304B, the mulch material must be an average size of between 15 mm to 50 mm, with no individual pieces greater than 100 mm. ***Mulch Size***

6. Straw for use in hydro-mulch operations, weed control or erosion control must be derived from cereal crops and certified free of viable seed and cured to less than 20% moisture content by weight. ***Straw***

7. Mulch control netting must be a lightweight woven biodegradable mesh product manufactured for the purpose of holding organic mulch surfaces in place. ***Mulch Control Netting***

8. Weed control matting must be manufactured for weed suppression and made from stable long-life materials such as polypropylene fabric, heavy weight jute or coir. ***Weed Control Matting***

9. Unless detailed otherwise in the Drawings, all erosion control matting, blanket, or netting must be manufactured from organic fibre products and be biodegradable, permeable to air and water and remain intact when wet and in contact with the soil. ***Erosion Control Matting***

10. Erosion control cells and products designed to be placed on slopes to hold topsoil and mulch must be manufactured from non-degradable, UV stabilised materials. ***Erosion Control Cells***

304.08 HYDRO-MULCHING AND HYDRO-SEEDING MATERIALS

1. Cellulose fibre must be biodegradable, free of any contaminated materials and suitable for use in hydro-seeding and hydro-mulching to form a slope stabilisation mat. ***Cellulose Fibre***

2. Binders, tacifiers, or emulsions used must be manufactured for the purpose of hydro-seeding and hydro-mulching used in the Contract and must be miscible in water, free from components toxic to seed germination, plant growth or aquatic life and applied according the manufacturer's published instructions for use. ***Binder***

3. All water used in hydro-seeding and hydro-mulching must be free from materials likely to be toxic to plant growth. ***Water***

4. Coloured dye used to aid visual application of hydro-seeding and hydro-mulching must be a non-toxic water-soluble biodegradable dye. ***Dye***

5. Dispersing agents must be free from components toxic to seed germination, plant growth or aquatic life and mixed according the manufacturer's published instructions for use. ***Dispersing Agent***

6. Equipment for the mixing and application of hydro-mulching and hydro-seeding must have the operating capacity to allow for the mixing of materials in continuous agitation to produce a homogeneous mixture and a discharge system to apply the mixture at a continuous and uniform rate. The Contractor must demonstrate the capacity of the equipment to the Superintendent upon request. ***Equipment***

7. All machinery must be in good working order to uniformly mix and apply hydro-mulch and hydro-seed and the calibration of the equipment must be demonstrated to the Superintendent upon request. ***Calibration***

304.09 PLANT MATERIALS

304.09.01 SEED

1. The Contractor must undertake the collection and or purchase of all seed stock for use in direct seeding of the species and quantities listed in Annexure 304B. ***Seed List***

2. The Contractor must notify the Superintendent 28 days prior to the collection of any seed stock to be supplied by the Principal. ***Seed Supplied by Principal***

3. Prior to any seed collection the Contractor must ensure that all seed suppliers are holders of appropriate and current seed collection/supply licences. ***Seed Collection Licence***

4. All seed collected and or supplied by the Contractor must be clean and dry to accepted industry practices for seed processing, and free from mould, pest and disease. ***Seed Material***

5. Seed must be supplied with a certificate from the Contractor detailing the names of the suppliers, species as nominated in Annexure 304B, date and origin of seed collection and a guarantee that the seed is free of declared noxious plant seed or foreign vegetative parts. ***Seed Quality Control***

6. Where specified, certified test reports signed by the Contractor must be supplied for each batch of seed detailing the seed purity using accepted industry practices for seed testing. ***Seed Purity Testing***

7. Where specified, certified test reports signed by the Contractor must be supplied for each batch of seed detailing the seed viability using accepted industry practices for seed testing. ***Seed Viability Testing***

8. The Contractor must store all seed in secure, dry, well-ventilated storage facilities protected from temperature extremes. The seed material must be stored in vermin proof containers above ground level. Seed must be inspected for pest damage, mould and fungus on a regular basis and action taken to avoid seed deterioration. ***Seed Storage***

9. Where specified, the seed must be sourced to meet the provenance requirements of the project if nominated in Annexure 304B. Any variation must be confirmed with the Superintendent. ***Seed Provenance***

304.09.02 PLANTS

1. The Contractor must supply plants of the species, size and number as shown in the Drawings or specified in Annexure 304B. The Contractor must order or arrange for the propagation of all plant species and quantities to ensure that the correct numbers of plants will be available by the projected date of planting. ***Plant List& Propagation***

2. All plants supplied by the Contractor must be obtained from nurseries operating under the Nursery Industry Accreditation Scheme of Australia. ***Plant Supply***

3. Plant seed must be germinated and cuttings sown in sufficient time to ensure the suitable maturity of the stock for mass planting at the optimum planting time for the Region as nominated in Annexure 304B. All seed used, either in the initial supply or for substituted species, must meet the provenance requirements of the project if nominated in Annexure 304B. Any proposed variation to the nominated plant species must be submitted to the Superintendent for approval.

4. Plants must be grown in potting mix meeting the requirements of AS 3743 Potting mixes and supplied in industry-approved containers. Soil in containers at the time of delivery must be free of weeds, insects and disease.

5. All plants must have been grown in their final containers for not less than eight weeks, be true to species name, be well-formed and hardened off nursery stock.

Inspection of Nursery

6. The Superintendent reserves the right to inspect the development of seedlings during the period of propagation. The Superintendent reserves the right to inspect 100% of the total number of seedlings to be used in the Works. The presence of declared weeds in the soil accompanying plants or at the nursery will be a cause for rejection of any or all plants.

Hardening off

7. All plants must be hardened off by growing in open areas receiving sun for around 75% of the day for at least eight weeks prior to delivery on site and reducing fertiliser at least two weeks prior to delivery on site.

Plant Condition

8. The Contractor must ensure all supplied plants are in good condition and:

a) The root system must be fibrous and firmly established but not root bound and with no large roots growing out of the container.

b) The root mass must retain its shape and hold 90% of the root ball material when removed from the container.

c) Leaves must be of normal size, colour and texture for the specified species.

d) The quality of all supplied tree species must conform to the requirements in NATSPEC Guide: Specifying Trees, Appendix 2.

Warranty for Plants

9. The Contractor must obtain written warrants from the nursery suppliers attesting that the plants are true to the specified species, size and free from disease, pests and weeds and forward the warrants to the Superintendent upon request.

Delay in Plant Supply

10. The Superintendent must be notified of any plant supply delays. No extension of time for Practical Completion will be granted if plant materials are not available due to late ordering.

Substitution

11. No substitutions can be made without written approval from the Superintendent. Any proposed substitutions must include details of the species, size, number and be forwarded to the Superintendent for approval. Should the Superintendent consider the substitutions not adequate then the originally specified plants must be grown and planted in the following planting season.

12. All individual plant containers and trays of plants must have nametags that are water resistant and tied securely to the plant or inserted into the plant container/trays. Labelled trays must contain only one species of plant. ***Plant Labels,***

13. Unless otherwise specified in the Drawings, all stakes must be durable, straight, free from knots and twists and pointed at one end, stakes must not be made of metal. Plant ties must be a minimum 25 mm rubber or hessian cloth, rubber ring lock or other approved non-abrasive material. ***Stakes and Ties***

304.10 NOT USED

CONSTRUCTION

304.11 SEQUENCE OF OPERATIONS

1. Unless otherwise detailed the sequence of operations must be: ***Sequence of Operations***

a) Weed control.

b) Clearing and topsoil stripping.

c) Preparation of batters and ground surfaces, including additional weed control.

d) Ripping and topsoil/mulch respread.

e) Seeding and planting.

f) Establishment of vegetation.

Any changes to the sequence of operations must be confirmed with the Superintendent.

2. The revegetation works must commence as early as practicable after completion of the earthworks, and within the optimum time of year as nominated in Annexure 304B, to minimise soil erosion and ensure the effective revegetation of all disturbed soil areas. ***Timing of Works***

304.12 WEED CONTROL

1. Operations must be undertaken to meet the requirements for weed control as specified in Specification 204 ENVIRONMENTAL MANAGEMENT and in accordance with Specification 301 VEGETATION CLEARING AND DEMOLITION.

2. The Contractor must implement an approved weed control program as nominated in Annexure 304B, and as necessary to control all weed species prior to undertaking any other works.

3. Any changes to the timing and sequence of weed control operations must be confirmed with the Superintendent.

4. Existing plants to be retained and new planting areas must be protected during any herbicide spraying if necessary by fitting guards onto spray units or around existing plants. ***Protection of Existing Vegetation***

5. The Contractor must exercise absolute care in the application of herbicide to avoid spray drift onto private property or public thoroughfares. ***Protection of Other Areas***

6. For spot spraying a non-toxic, water-soluble, biodegradable coloured dye must be added to the herbicide spray mix that will be clearly visible for at least 48 hours after the herbicide application. ***Dye***

7. Treated areas must remain undisturbed for two weeks or as recommended by the herbicide manufacturer. ***Disturbance***

8. Treated areas must display signs of dying off within 14 days of application as evidence of compliance. If weed mortality rate is less than 100% the Contractor must repeat the application at their own expense until the desired mortality rate is achieved. ***Compliance***

304.13 CLEARING OF SITE

1. Existing vegetation and topsoil must be removed where nominated in the Drawings. All clearing, stockpiling and treatment of cleared vegetation must be undertaken in accordance with Specification 301 VEGETATION CLEARING AND DEMOLITION. ***Clearing***

304.14 TRANSPLANT & SALVAGE OF EXISTING VEGETATION

1. Where nominated in the Drawings or as specified in 301 VEGETATION CLEARING AND DEMOLITION Annexure 301A, the Contractor must undertake the lifting, transport and storage of selected vegetation using accepted industry practices. The replanting of this vegetation must be in accordance with this Specification at the locations as shown in the Drawings or in Annexure 304B. ***Transplanting***

2. The Contractor must remove tree trunks nominated for salvage as specified in the Drawings or in 301 VEGETATION CLEARING AND DEMOLITION Annexure 301A, and ensure that the tree trunks are not broken by equipment during removal, transport or placement. ***Salvage of Tree Trunks***

3. Unless specified otherwise in the Drawings or in Annexure 304B, the Contractor must place nominated tree trunks salvaged from clearing operations and retained for use as fauna habitat logs or in the landscaping works parallel to the contours. ***Placement of Tree Trunks***

304.15–304.17 NOT USED

304.18 PREPARATION OF BATTERS AND GROUND SURFACES

1. All areas nominated for revegetation must be cleared of all surface rubbish and any material that may hinder plant growth before any further surface preparation works are commenced. ***Clearing Surface***

2. The Contractor must prepare all nominated finished soil surfaces where necessary by ripping, disking, harrowing, tilling, mounding, furrowing, raking, tracking or other means to form a loose and roughened surface in preparation for other revegetation and landscaping works to a minimum depth of 500 mm and at not more than 500 mm spacing or as otherwise specified in the Drawings or Revegetation Plan. ***Surface Preparation***

3. Surface preparation must be carried out along the contour unless ripping a redundant road/track or detailed otherwise in the Drawings or Revegetation Plan. Ripping along a redundant road/track must be in a manner that prevents channelling of runoff along the road/track.

4. Unless specified otherwise in the Drawings or in Annexure 304B all batter surfaces with a slope of 4 Horizontal in 1 Vertical or flatter and more than five metres from a shoulder or table drain must be prepared, to a minimum depth of 300 mm to alleviate compaction and prepare a loose surface. Benched and stepped batters must not be ripped prior to topsoil/mulch respread. ***Depth of Cultivation on Batters***

5. Batter slopes in hard ground must be ripped and reinstated in accordance with this Specification unless the Contractor can demonstrate that the material meets the requirements for the definition for rock in accordance with Specification 302 EARTHWORKS. ***Rocky Ground***

6. The Contractor must protect all finished and prepared soil surfaces from soil erosion and weed infestation as necessary, in accordance with Specification 204 ENVIRONMENTAL MANAGEMENT until further revegetation works as nominated can occur or a Certificate of Practical Completion has been issued. ***Temporary Protection Measures***

304.19 TOPSOIL RESPREAD

1. Approved site suitable topsoil and/or imported topsoil (as specified) must be respread as soon as practical following construction operations with regard for the weed control program as nominated in Annexure 304B. Where suitable spoil has been identified from the works this must be spread first, followed by the topsoil. ***Timing***

2. Topsoil must be uniformly spread over the nominated finished and prepared ground surfaces to the depth, levels and slope as shown in the Drawings or in accordance with Annexure 304B. ***Respreading Topsoil***

3. If not specified in the Drawings or Annexure 304B a nominal depth of 75 mm of topsoil but not more than 100 mm must be placed before any planting. ***Topsoil Depth***

4. The finished surface of the placed topsoil must be free from large stones, lumps and clods.

304.20 SOIL IMPROVEMENTS

Soil Additives

1. The Contractor must incorporate soil additives in the topsoil and or individual planting holes, if specified in the Drawings or in Annexure 304B, in accordance with the manufacturer's published specifications.

Improvement of Sandy Soil Surfaces

2. The Contractor must incorporate chipped vegetation mulch as an improvement to sand or other suitable soils, as detailed in the Drawings or in Annexure 304B. Unless specified otherwise, the chipped vegetation mulch must be spread on the soil surface to the nominated depth with suitable equipment. On steep batter slopes the chipped vegetation mulch must be tracked into the soil by a tracked vehicle running perpendicular to the contour.

304.21 WEED CONTROL MATTING

1. Weed control matting sheets must be placed and fixed in accordance with the manufacturer's published specifications.

Laying of matting

2. Surface obstructions and protuberances must be removed prior to laying out the matting. The matting sheets must be laid loosely to make good contact with the soil surface and not stretched taut over the surface. The matting must be laid to provide a complete cover over the finished surfaces with sufficient overlap along joins to ensure no open spaces between sheets of matting. Matting around individual retained plants must be cut and placed as detailed in the Drawings or in accordance with the manufacturer's published specifications.

Mulch Cover

3. Unless detailed otherwise in the Drawings, the Contractor must spread a complete cover of suitable mulch over the matting sheets to a nominal depth of 50 mm.

304.22 EROSION CONTROL

1. Revegetation operations must be undertaken to meet the requirements for erosion and sedimentation control as specified in Specification 204 ENVIRONMENTAL MANAGEMENT.

Erosion Control Measures

2. The Contractor must implement erosion control measures as detailed in the Drawings or Annexure 304B.

3. The product must be installed in accordance with the manufacturer's published instructions for the required site application and a copy must be provided to the Superintendent prior to installation.

4. Unless detailed otherwise in the Drawings or Annexure 304B, the Contractor must place the matting within 24 hours of surface preparation.

5. If a rainfall event occurs before the matting can be installed and results in soil erosion, the Contractor must replace the eroded material and prepare the soil surface before installing the matting.

Installation of Erosion Control Matting

6. Erosion control matting sheets must be anchored, rolled out down slopes or along open drains, overlapped and fixed in accordance with the manufacturer's published specifications.

7. Disturbance of adjoining soil surfaces must be minimised during installation.

Laying of Matting

8. All surface obstructions and protuberances must be removed prior to laying out the matting. The matting sheets must be laid loosely to make good contact with the soil surface and not stretched taut over the surface. The matting must be laid to provide a complete cover over the finished surfaces with sufficient overlap along joins between sheets of matting.

9. Fixing intervals must be sufficient for the steepness and slope to maximise contact between the matting and soil and prevent runoff flows beneath the matting.

10. Unless detailed otherwise in the Drawings or Annexure 304B, the Contractor must apply a binding agent and or a complete cover of approved mulch over the matting sheets to a nominal depth of 50 mm.

304.23 MULCH RESPREAD

Timing

1. Unless detailed otherwise in the Drawings or Annexure 304B, the Contractor must spread approved mulch (as specified) as soon as is practical after surface preparation, topsoiling, soil improvements, and the placement of weed control or erosion control matting.

2. Unless otherwise specified or detailed in the Drawings, mulch must be placed before any planting.

3. If a rainfall event occurs before the mulch can be spread, creating soil erosion, the Contractor must replace the eroded material and prepare the soil surface before spreading the mulch.

Mulch Depth

4. If not specified in the Drawings or Annexure 304B a nominal depth of 75 mm of mulch but not more than 100 mm must be placed.

Even Depth of Mulch

5. Mulch must be uniformly spread over the ground surface to an even depth by hand, machine or blower unit and if required the surface raked to present an even surface.

Fertiliser

6. Unless specified otherwise the Contractor must apply fertiliser over mulch that has not been aged for at least three months, to neutralise any potential soil nitrogen loss.

7. Unless specified otherwise in the Drawings or if being used as a soil improver, mulch must not be mixed in with the in situ soil or buried in the soil during the spreading operations. ***Avoid Mixing Mulch***

8. The Contractor must avoid spreading mulch on plants, structures, roadways, and paths, road shoulders and grassed areas and leave the site in a neat, clean condition. Mulch must not be placed closer than 250 mm from the stem of any existing vegetation or new plantings. Existing vegetation or new plants accidentally covered by mulch must be uncovered as soon as possible. ***Avoid Over Spreading Mulch***

304.24 HYDRO-MULCHING AND HYDRO-SEEDING

304.24.01 GENERAL

1. The Contractor must carry out hydro-mulching and hydro-seeding operations where nominated in the Drawings using revegetation industry best practice and equipment.

2. Hydro-mulching and hydro-seeding mixes and rates must be as specified in Annexure 304B.

3. Hydro-mulching and hydro-seeding operations must be carried out as soon as practical following preparation of finished soil surfaces, at the optimal time for the Region as nominated in Annexure 304B to match seasonal rainfall and as soon as the local weather conditions are optimal. ***Timing***

4. Prior to commencing any operations the Contractor must assess the risk of surface runoff flows causing damage to any areas to be treated and confirm there are no obstruction, obstacle, hazard or factor likely to cause delays or failures of the operations. The Contractor must notify the Superintendent of any necessary works required to minimise the risk of delays or failures of the operations. ***Obstruction***

5. Not less than 5 working days prior to commencing any hydro-mulching and hydro-seeding operations on site, the Contractor must certify to the Superintendent that: ***HOLD POINT***

a) The nominated areas are correctly defined.

b) No obstructions, obstacles, hazards or factors likely to cause delays or failures of the operations have been identified.

c) The soil surfaces are ready for the hydro-mulching and hydro-seeding operations.

d) The soil moisture content is conducive to seed germination.

e) Details of the procedures, materials and equipment to be used are documented and have been submitted for approval.

f) Equipment has been calibrated to mix and discharge a homogeneous mixture at a continuous and uniform rate.

g) A program for the hydro-mulching and hydro-seeding operations is documented and submitted for approval.

The Contractor must confirm with the Superintendent any changes to the operations that may be necessary following approval.

304.24.02 HYDRO-MULCH

1. Unless specified otherwise in Annexure 304B, the hydro-mulch must consist of water, cellulose fibre mulch, binder and dispersing agents.

304.24.03 HYDRO-SEED

1. Seed species (grass, native plants or other nominated plant species) and other materials as specified must be added to the hydro-mulch slurry at the rates nominated in Annexure 304B or in the Drawings. ***Hydro-seeding***

2. Seed must be pre-treated as nominated in Annexure 304B.

304.24.04 HYDRO-MULCH AND HYDRO-SEED OPERATIONS

1. The Contractor must delineate areas on site nominated for hydro-mulch and hydro-seed by the use of stakes or site features or other means, to suit the project site conditions and specified mix requirements, so that the areas are clearly marked prior to the start of operations. ***Delineation of Areas***

2. The soil surface must be prepared in response to the site soil conditions to provide a suitable soil surface environment for the hydro-mulching and hydro-seeding operations. ***Soil Preparation***

3. Unless detailed otherwise in Annexure 304B, all materials making up the hydro-mulch and hydro-seed slurry must be mixed on site. The Superintendent may request a review of all proposed ingredients and mixing prior to the start of operations. ***Mixing***

4. The hydro-mulch and hydro-seed slurry mix must be kept continuously agitated so the ingredients are kept uniformly dispersed throughout the slurry prior to the application.

5. The hydro-mulch and hydro-seed slurry mix must be uniformly applied to suit the size and location of the site area, the slope and soil and local weather conditions. ***Application***

6. The hydro-mulch and hydro-seed slurry mix must be applied in a uniform and continuous motion in overlapping passes to achieve an unbroken surface, with no bare or incomplete areas and to prevent over saturation of the soil surface and minimise soil movement.

7. The Contractor must ensure that all reasonable precautions are taken to avoid over spraying onto adjacent vegetation, paths and sealed surfaces.

8. Unless otherwise detailed in the Annexure 304B the thickness of the hydro-mulch must be a minimum of 3 mm and no more than 5 mm. ***Thickness***

9. Areas subject to concentrated surface runoff flows must be treated with thicker applications of hydro-mulch, or higher concentration of binder as specified.

10. Hydro-mulch must not be applied in heavy rain or when the wind speed exceeds 25 km per hour except by direct hand held hose application. ***Heavy Rain or Wind***

11. The Contractor must ensure seeded areas are not disturbed by equipment and vehicles, or by pedestrians and animal traffic during the seeding operations and during the Establishment Period. ***Disturbance of Seeded Areas***

304.25 DIRECT SEEDING

304.25.01 GENERAL

1. The Contractor must carry out direct seeding operations where nominated in the Drawings, using horticultural/revegetation industry accepted practice and equipment, to achieve the completion criteria as specified in Annexure 304C.

2. Seed mixes and rates to be used in the direct seeding operations must be as specified in the Drawings or Annexure 304B.

3. Seeding must be undertaken as soon as practical following construction activities, at the optimal time for the Region as nominated in Annexure 304B and to match seasonal rainfall. ***Timing***

304.25.02 PREPARATION OF SEED MATERIALS

1. Seed must be pre-treated to break seed dormancy mechanisms in preparation for sowing, using generally accepted industry practices or as specified in Annexure 304B. ***Seed Pre-treatment***

2. Seed, in separate labelled bags for each species, must be delivered for batching into the nominated seed mixes as nominated in Annexure 304B. ***Seed Batching***

3. The Contractor must give the Superintendent not less than 5 working days notice when and where the batching of seed is to occur. The Superintendent reserves the right to attend this seed batching.

4. The prepared seed mixes must be delivered on site, in containers labelled to identify seed mix and weight, ready for use in the direct seeding operations.

5. Seed mixes must be blended with a carrier-bulking agent (such as clean washed sand, vermiculite, or similar) in the proportions by volume of bulking agent to seed, to suit the project requirements and allow for the even spreading of seed. ***Bulking of Seed Mixes***

6. Fertiliser as specified in Annexure 304B must either be mixed with the bulking agent or uniformly applied over the soil surface, as a separate operation, at the time of sowing. ***Fertiliser***

7. Unless specified otherwise only a granular, low phosphorous, slow release, fertiliser suitable for native plants must be used in the direct seeding operations.

304.25.03 SEEDING OPERATIONS

1. Prior to commencing any operations the Contractor must assess the presence of weed species, the soil moisture and the risk of surface runoff flows causing damage to any areas to be treated and confirm there are no obstruction, obstacle, hazard or factor likely to cause delays or failures of the operations. The Contractor must notify the Superintendent of any necessary works required to minimise the risk of delays or failures of the operations. ***Obstruction***

2. Not less than 5 working days prior to commencing any direct seeding operations on site, the Contractor must certify to the Superintendent that: ***HOLD POINT***

a) The nominated areas are correctly defined.

b) No obstructions, obstacles, hazards or factors likely to cause delays or failures of the operations have been identified.

c) The soil surfaces are ready for cultivation.

d) Details of the seed pre-treatment and batching of the seed mixes are documented.

e) Certificates of seed purity and viability are provided for each batch, if specified.

f) Details of the procedures, materials and any equipment to be used are documented.

g) Equipment (if required to be used) has been calibrated to uniformly apply the nominated seed.

h) A program for the direct seeding operations is documented and submitted for approval.

The Contractor must confirm with the Superintendent any changes to the operations that may be necessary following approval.

3. The Contractor must delineate areas on site nominated for direct seeding by the use of stakes or site features or other means, to suit the project site conditions and specified mix requirements, so that the areas are clearly marked prior to the start of operations. ***Delineation of Areas to be Seeded***

4. The soil surface must be prepared in response to the site soil conditions to provide a suitable soil surface environment for seed germination and unless specified otherwise, the soil surface must be lightly cultivated immediately prior to seeding to form a loose and roughened surface. ***Soil Preparation***

5. Seed must be sown uniformly in overlapping passes to allow for complete seed coverage of the prepared surfaces, within the marked areas. ***Seeding***

6. Unless detailed otherwise in the Annexure 304B, hand broadcasting, farm machinery, calibrated blower or spreader (handheld or mechanical) may be used as necessary to suit the size and location of the area to be seeded, the slope and soil and local weather conditions.

7. Seeding must not occur when the wind speed exceeds 25 km per hour, or in heavy rain if a mechanical blower or spreader is used. ***Heavy Rain or Wind***

8. Unless otherwise detailed in the in the Drawings or Annexure 304B seed on batter surfaces with a slope equal to or steeper than 6 Horizontal in 1 Vertical must be covered by light harrowing, rolling, scarifying, dragging or raking of the seeded area as soon as practical and within 24 hours of seeding. ***Covering of Seed***

9. Unless detailed otherwise in the Drawings or in Annexure 304B, mulch must not be spread over any areas of direct seeding. ***No Mulch Over Seed***

10. All machinery must be in good working order to uniformly apply seed and the calibration of the equipment must be demonstrated to the Superintendent upon request. ***Calibration***

11. The Contractor must ensure that no disturbance of seeded areas, by equipment and vehicles, or by pedestrians and animal traffic occurs during the operations and the Establishment Period. ***Disturbance of Seeded Areas***

304.26 PLANTING

304.26.01 GENERAL

1. The Contractor must carry out the planting operations as specified, using accepted industry practices and equipment, to achieve the completion criteria as specified in Annexure 304C. ***Completion Criteria***

2. The Contractor must ensure that all staff engaged in the planting operations are competent, and skilled in the required works. Staff must be supervised during the Works by an experienced supervisor competent and skilled in the required revegetation installation and establishment practices. ***Supervision of Staff***

3. The Contractor must undertake planting where nominated in the Drawings using the species and numbers as nominated in Annexure 304B. ***Species and Numbers***

4. Prior to purchase the Contractor must supply a list of proposed sources for all the specified plants for the Superintendents approval. ***Ordering and Purchase***

5. The list of proposed sources must include; the name of supplier, contact details, and conformation from the nursery stating the list of plants to be supplied and the date of supply.

6. The purchase of plants must not occur until the Superintendent approves the list of plant supply. ***HOLD POINT***

7. The Contractor must reinstate at no cost to the Principal any other site works disturbed or damaged during the planting works. ***Damage***

8. Unless specified otherwise in Annexure 304B, planting operations must be undertaken following construction activities, at the optimum time to match seasonal rainfall in the Region and the effectiveness of the weed control. ***Timing***

9. The Contractor must obtain approval from the Superintendent in writing prior to commencing any planting works outside this period.

10. Prior to commencing any operations the Contractor must assess the presence of weed species, feral animals, the soil moisture and the risk of surface runoff flows causing damage to any areas to be planted and confirm there are no obstruction, obstacle, hazard or factor likely to cause delays or failures of the operations. ***Obstruction***

11. The Contractor must notify the Superintendent of any necessary works required to minimise the risk of delays or failures of the operations.

12. Not less than 5 working days prior to commencing any planting operations on site, the Contractor must certify to the Superintendent that: ***HOLD POINT***

a) The nominated areas for planting are correctly defined.

b) No obstructions, obstacles, hazards or factors likely to cause delays or failures of the operations have been identified.

c) The soil surfaces are ready for the planting operations.

d) Adequate soil moisture content is present for planting.

e) All staff are competent, experienced, and skilled in planting operations.

f) A program for the planting operations is documented and submitted for approval.

The Contractor must confirm with the Superintendent any changes to the operations that may be necessary following approval.

304.26.02 DELIVERY ON SITE

1. Plants must be delivered to the Site and where no onsite storage exists planted immediately and before the end of the same day. ***Delivery***

2. The Superintendent must be notified at least 24 hours before each scheduled delivery of plants to site, the Superintendent reserves the right to inspect the plant material.

3. Plants must not be damaged or allowed to dry out during transport. On arrival at the Site if not left in the transport vehicle/trailer, plants must be placed in a sheltered position and thoroughly watered from a suitable water supply and not allowed to dry out until required for planting. ***Transport***

4. If an on-site storage area for plants is necessary, the Contractor must provide details (including location, fencing and watering regime) of the proposed storage area in writing to the Superintendent for approval. ***Onsite Storage***

5. Any on-site nursery for holding plants prior to planting must be a vermin proof compound of sufficient size, with provision for watering of plants and adequately protected from sun, wind, storm, theft and accidental damage by workers etc.

6. The Contractor must maintain any plants in an onsite storage area in the condition as supplied by the nursery.

7. Transplanted trees and other plant material to be replanted within the Site must receive root pruning and or preparation in accordance with accepted industry transplanting practice to ensure delivery on Site in good condition and ready for placement. ***Transplanted Stock***

8. The Superintendent reserves the right to inspect and reject any plants not meeting the requirements of this Specification. Root bound containers and plants that do not retain the root mass can be rejected by the Superintendent. Rejected plants must be replaced by approved stock at no additional cost to the Principal. ***Rejecting Plants***

304.26.03 PREPARATION OF PLANTING AREAS

1. The Contractor must ensure the accurate marking out of all planting areas, zones and edges of planting beds prior to beginning any planting operations, in accordance with the Drawings. ***Marking out Planting Areas***

2. The Contractor must confirm that adequate soil moisture is present at a minimum depth of 100 mm prior to starting any planting operations. ***Soil Moisture***

3. Planting areas nominated in the Drawings for cultivation must be improved by the application of topsoil, fertiliser, soil additives and/or soil conditioners to the soil surface as specified and thoroughly mixed by rotor tilling the soil to 150 mm minimum depth to achieve a loose and friable condition, suitable for fine grading and planting. ***Cultivated Planting Areas/Beds***

4. In confined spaces, or close to irrigation fixtures, the cultivation must be by hand.

5. Weed control matting and or mulch as specified must be applied over the cultivated surfaces of planting beds.

6. Where only individual planting holes are nominated in the Drawings, no cultivation is to occur. ***Individual Planting Holes***

7. Only the individual planting hole must be excavated and topsoil, soil conditioner, fertiliser and soil additives as specified must be added with the backfill.

8. Where specified weed control mats and/or mulch must be installed around each plant.

9. Areas nominated for ripline planting must be ripped to a minimum depth of 500 mm and at not more than 500 mm spacing and if specified mounds formed above the riplines at the spacing and layout shown in the Drawings. ***Areas for Ripline Planting***

10. Unless detailed otherwise in the Drawings the planting mounds must be a minimum 300 mm in height in wet areas and in dry areas 150 mm in height at the spacing and layout shown in the Drawings. ***Mounding***

304.26.04 SETTING OUT OF PLANTING

1. The Contractor must set out individual plants within a planting area in accordance with the spacings, layout and setbacks shown in the Drawings. ***Setting Out Planting***

2. For plants which have been given location coordinates, setting out will be to a tolerance of + or – 100 mm.

3. If not specified otherwise individual plants must typically be setback in accordance with Table 304.01 below. The Contractor must have regard for clear zone distances when planting non-frangible species where no safety barrier is present. ***Planting Setbacks***

TABLE 304.01 TYPICAL PLANTING SETBACKS

Features	Shrubs or Ground Covers	Trees
Dual use paths.	2 metres	3 metres
Boundary fence.	3 metres	5 metres
Painted edge line or kerb.	5 metres	10 metres
Structures, roadside furniture and light standards. Excludes timber bridges which is a minimum 10 setback for all plantings.	3 metres	5 metres

4. If the placement of transplanted materials or advanced plants is not nominated in the Drawings, the Contractor must request the Superintendent for direction on Site prior to setting out and planting. ***Advanced Plants***

304.26.05 PLANTING OUT

1. Prior to any planting into weed control matting, each individual planting hole must be prepared by first slitting open and laying back the matting to allow for each planting hole to be excavated and prepared for planting. ***Planting in Weed Control Matting***

2. Prior to planting any mature plants into mulch, each individual planting hole must be prepared by first moving clear sufficient mulch to allow for each planting hole to be excavated and prepared for planting and space for the excavated soil. ***Planting in Mulch***

3. For each planting hole any substandard excavated material or excess soil must be spread evenly around the planting hole, used to create a watering well around the plant or disposed of as specified. ***Planting Hole***

4. If not detailed in the Drawings, the planting hole must be excavated vertically to accommodate the root ball of the plant, such that the top of the plant root ball finishes below the existing ground surface and creates a watering saucer suitable for the size of the plant.

5. If necessary the base of the hole must be broken up to a minimum depth of 100 mm and the sides of the planting hole loosened.

6. Individual plants must be removed from containers so as to minimise damage to leaves, stem and root ball. ***Handling of Plants***

7. The root ball of plants must not be left exposed or allowed to dry out and planted without delay.

8. Plants must not be planted into standing water within an individual planting hole.

9. Individual plants must be placed in the centre of the planting hole and set plumb. The backfill must be firmed progressively after placing to eliminate air pockets and minimize settlement.

10. After firming and settlement the top of the root ball must be covered with soil and sit below the finished lowest level of the surrounding watering saucer shaped during planting.

11 The outside lip of the watering saucer must be approximately three times the diameter of the plant container and capable of holding a sufficient volume of water necessary for any follow-up watering for the plant container size. ***Watering Saucer***

12. When planting on batter slopes a raised horizontal terrace must be formed as a watering saucer, down slope and equal to the diameter of the planting hole. ***Sloping Ground***

13. Frayed or broken roots of bare rooted plants must be cut cleanly before planting. ***Bare Roots***

14. Fertiliser as specified must be applied to each plant in accordance with good horticultural practice. Unless specified otherwise in Annexure 304B only a granular, low phosphorous, slow release fertiliser suitable for native plants must be used for tube stock plantings. ***Fertiliser***

15. Mulch must be respread so that the mulch tapers down to soil level 25 mm from the stem of the plant. ***Mulch***

16. Plant guards must be installed in accordance with the manufacturer’s instructions. ***Guards***

17. Where specified individual plants must be secured by plant ties to stakes complying with this Specification. Once completed any stakes that were holding the plant from the nursery must be removed. ***Stakes and Ties***

18. Where specified, individual weed control mats must be placed around each planting hole in accordance with the manufacturer's published instructions. ***Weed Control Mats***

19. Unless specified otherwise, plants larger than one litre container size must be watered in immediately after planting, sufficient to thoroughly saturate the soil to twice the area of the root ball. ***Watering In***

20. The Contractor must protect all plantings from trespass and traffic until the plants are well established. Protective fencing must be clearly visible to all traffic day and night, and not constitute a safety hazard. ***Protection of Plantings***

304.26.06 TRANSPLANTING INTO PLACE

1. If not specified in the Drawings, the location of the planting hole for advanced plants must be confirmed with the Superintendent before the excavation. ***Planting Hole***

2. Each planting hole must be excavated to a depth and width sufficient to take the root ball plus 200 mm minimum clearance at the base and sides and to form a watering saucer suitable for the size of the plant.

3. Where specified, root control barriers must be installed in accordance with the manufacturer's instructions. ***Control Barriers***

4. Rock and other unsuitable materials must be removed from the planting hole and not used as backfill. ***Backfill***

5. The planting hole must be backfilled in 200 mm lifts with the specified soil mix, fertiliser and any specified soil additives and consolidated progressively by saturating with potable water.

6. If not specified otherwise, a blended soil mix must be prepared for the plant that conforms to the requirements of AS 4419 for organic sandy loam soils.

7. Between backfill lifts the plant hole must be flooded with sufficient potable water to consolidate the soil and eliminate air pockets. The watering saucer must be filled and the root ball thoroughly soaked immediately after planting. ***Watering***

8. If not specified otherwise in the Drawings, stakes and/or guys must be installed such that the plant is held firmly with its trunk vertical. Cables in contact with the plant trunk must be covered with rubber hose or similar, to avoid damage to the plant tissue. ***Supporting Cables and Stakes***

9. Tree grates; frames and/or guards must be installed as shown in the drawings. Grates must be placed flush with the pavement and guards plumb. ***Tree Grates and Frames***

304.27–304.28 NOT USED

304.29 REVEGETATION SIGNS

1. Unless detailed otherwise in the Drawings the Contractor must supply and install a Main Roads Guide Sign, Drawing No. MR-GM-14 (Roadside Revegetation Sign, with the year of the works) in the locations nominated in the Drawings or Annexure 304B and in accordance with Specification 601 SIGNS.

Roadside Revegetation Signs

ESTABLISHMENT PERIOD

304.30 COMPLETION OF WORKS

1. Prior to completion of the works the Contractor must remove all rubbish and surplus materials accumulated during construction and the Site must be left in a neat and tidy condition.

Tidying Up

2. Prior to the commencement of the Establishment Period the Contractor must ensure that:

Completion of Works

a) As constructed drawings detailing all seeding, planting and grassing works are signed by a suitably experienced and qualified person, in environmental, botanical, horticultural and/or related fields who is familiar with Main Roads requirements, have been prepared and presented to the Superintendent.

b) A **Vegetation Establishment Program** for the Works is documented and submitted to the Superintendent for approval.

c) A monitoring program for the Works is documented and submitted to the Superintendent for approval.

3. The Contractor must give the Superintendent at least 7 days notice that the works are ready to be inspected for completion.

Notice for Inspection

4. The Contractor must certify to the Superintendent that all the revegetation and landscaping works have been completed in accordance with the requirements of the Contract and the Vegetation Establishment Program has commenced before seeking approval to commence the Establishment Period.

HOLD POINT

304.31 VEGETATION ESTABLISHMENT

1. The Contractor must establish and monitor the condition and development of the Works during the Establishment Period as nominated in Annexure 304A.

Establishment Period

2. Prior to commencing the Establishment Period, the Contractor must provide to the Superintendent for approval, a detailed program of all activities including timing to be undertaken by the Contractor to establish the vegetation in accordance with this Specification.

Vegetation Establishment Program

3. The approved Vegetation Establishment Program must include at least one monthly inspection of the Works and the Contractor must notify the Superintendent of any vandalism of the Works, any faults or defects to irrigation, or any other damage within 5 days of detection.

4. The Contractor must be responsible for the operation, inspection and maintenance of the irrigation system until the end of the Establishment Period for the Works. The Contractor must adjust the height of all sprinkler heads, valve boxes and any other associated plant and equipment as directed by the Superintendent during the irrigation warranty period.

Irrigation System

5. The designated activities to establish the works must include but not be limited to:

Designated Establishment Activities

a) Progressive weed control.

b) Inspections.

d) Repair and replace any erosion rills in soil surfaces.

e) Repairs and replacement of damaged or failed areas of seeding or hydro-mulching or hydro-seeding.

f) Replacement of plants that have failed.

h) Watering of all plantings as necessary.

i) Maintenance of tree stakes, tree ties, tree bags (including removal if required) and grates.

6. Water must be applied to all plants as often and in sufficient amount as conditions may require to keep the plants in a healthy and growing condition until the end of the vegetation Establishment Period.

7. Failed or damaged plants or plants that do not meet the acceptance criteria must be removed and replaced during the Establishment Period to the original plant specifications. The Superintendent may determine this requires an extension of the vegetation Establishment Period at the Contractor's expense.

Replacement

304.32 MONITORING PROGRAM

1. The Contractor must undertake monitoring and reporting on the condition and development of the works during the Establishment Period as nominated in Annexure 304A.

Monitoring and Reporting

2. Prior to commencing the Establishment Period, the Contractor must provide to the Superintendent, a detailed program of all the monitoring and reporting activities including timing to be undertaken by the Contractor.

Monitoring Program

3. Each monitoring report must:

Monitoring Reports

a) Outline the works undertaken during the reporting period.

b) Compare development of revegetation and landscaping with the relevant outcome-based completion criteria (Annexure 304C).

c) Identify any follow up remedial works to be undertaken.

d) Set out a program for the remedial works.

4. Electronic copies of each report must be supplied to the Superintendent within 14 days of the end of the reporting period.

5. The final monitoring report at the end of the Vegetation Establishment Period must be included in the Hand-over report submitted at Final Completion.

Final Monitoring Report

304.33–304.80 NOT USED

AS BUILT AND HANDOVER REQUIREMENTS

304.81 HANDOVER REQUIREMENTS

1. The Contractor must be responsible for preparing reproducible as constructed drawings of the works in accordance with Main Roads Design and Drawing Presentation standards.

As Constructed Drawings

2. As Constructed Drawings must be completed detailing all seeding and planting works signed by a suitably experienced and qualified person, in environmental, botanical, horticultural and / or related fields who is familiar with Main Roads requirements.

3. The hand-over report must include:

Hand-Over Report

a) The Final monitoring report.

b) Record any outstanding defects for correction and the proposed timing.

c) Provide a summary of activities undertaken during the Establishment Period and detail the recommended on-going maintenance activities for the Contract area.

304.82 FINAL COMPLETION

1. The Contractor must give the Superintendent at least 7 days notice that the works are ready to be inspected at the end of the Establishment Period.

2. Acceptance of the works by the Superintendent at the end of the nominated Vegetation Establishment Period, shall be subject to

Final Completion

a) Satisfactory preparation and submission of monitoring reports.

b) Satisfactory preparation and submission of As Constructed Drawings

c) Satisfactory completion of all additional maintenance and remedial works as directed by the Superintendent.

d) The landscaping and revegetation Works meeting the completion criteria as detailed in Annexure 304C for final completion.

304.83– 304.90 NOT USED

CONTRACT SPECIFIC REQUIREMENTS

304.91– 304.99 NOT USED

ANNEXURE 304A – SPECIFIC REQUIREMENTS

(Complete the blank template schedules to match the specific requirements of the Contract, and delete this note)

304A.1. LIST OF CONTRACT DRAWINGS

Drawing Number	Drawing Name

304A.2. The Establishment Period shall be: ……...

304A.3. Monitoring must occur during the Establishment Period and after Completion of the Works at:

Monitoring Requirements

304A.4. The Completion Criteria for this project are nominated in Annexure 304C.

ANNEXURE 304B – MATERIAL REQUIREMENTS

(Complete the blank template schedules or insert drawing numbers to match the specific requirements of the Contract and delete this note)

304B.1. PLANTING LIST

SPECIES	SIZE	QUANTITY

304B.2. SEED

(Insert N/A if no provenance requirements for the project)

SPECIES	PROVENANCE	QUANTITY

304B.3. TOPSOIL RESPREAD REQUIREMENTS

Type/Topsoil Condition	Location	Depth (mm)

304B.4. MULCH REQUIREMENTS

Type/Mulch Size	Location	Depth (mm)

304B.5. TRANSPLANTING REQUIREMENTS

Planting Location	Amount	Notes

304B.6. HYDRO-MULCH AND HYDRO-SEED MIX

Ingredient	Material	Rate per ha
Cellulose fibre mulch		
Tacifier/Binder		
Water	Potable	
Fertiliser		
Seed		

304B.7. SURFACE PREPARATION AND SOIL IMPROVEMENTS

Location	Details

304B.8. EROSION CONTROL REQUIREMENTS

Location	Details

304B.9. FAUNA HABITAT LOGS

Placement Location	Amount	Notes

304B.10. TIMING OF WORKS

Item	Optimum Time Period	Notes
Seeding		
Planting		
Transplanting		
Hydro-mulching		

304B.11. WEED CONTROL REQUIREMENTS

The Contractor must identify all weed species within the Contract area and prepare a Weed Control Program in accordance with 204 ENVIRONMENTAL MANAGEMENT. Weed species and locations include but are not limited to the listing below.

Weed species	Timing of control	Control measures

Locations of designated weeds nominated for removal are summarised as:

Co-ordinates or Chainage		Weed species	Treatment details
North	East		

304B.12. REVEGETATION SIGNS

Item	Number	Notes

ANNEXURE 304C – COMPLETION CRITERIA

(Complete the blank template schedules to match the specific requirements of the Contract and delete this note)

304C.1. ADVANCED PLANTINGS

Criterion	Twelve weeks after Completion	After one Autumn	At Final Completion
Plants surviving (%)			
Plants meeting acceptance criteria (%)			
Weed free zone (radius) around base of each plant.			
Healthy foliage cover of weeds (%) within each nominated planting zone.			

304C.2. TUBESTOCK PLANTINGS

Criterion	Twelve weeks after Completion	After one Autumn	At Final Completion
Plants surviving (%) within each representative plot.			
Species richness (% of the species planted still present) within each nominated planting zone.			
Surviving plants meeting acceptance criteria (%)			
Healthy foliage cover of weeds (%) within each nominated planting zone.			
Foliage cover (or demonstrated progress towards this level by monitoring reports).			

Two or more randomly selected representative plots (... m x ... m or equal area) per nominated planting zone within the project area. Nominated planting zones are as shown in the Drawings.

Acceptance criteria for plants shall be:

a) Plants are well formed and exhibit signs of healthy growth

b) Plants are free of disease symptoms (eg yellowing, wilting, etc.)

c) Plants are free from signs of insect pests

304C.3. HYDRO-MULCHING AND HYDRO-SEEDING

Acceptance criteria shall be full compliance with the specifications for product and material and construction requirements.

304C.4. EROSION CONTROL

Criterion	Twelve weeks after Practical Completion	After one Autumn	At Final Completion
Maximum number of active rills > 150 mm in depth within each nominated zone.			

Acceptance criteria shall be full compliance with the specifications for product and material and construction requirements.

304C.5. WEED CONTROL

Criterion	Twelve weeks after Practical Completion	After one Autumn	At Final Completion
Healthy foliage cover of weeds (%) within each representative plot.			
Compliance with acceptance criteria (%).			

Two or more randomly selected representative plots (... m x ... m or equal area) per nominated zone within the project area. Nominated planting/seeding and grassing zones are as shown in the Drawings.

Acceptance criteria for weed control shall be:

a) The approved weed control program is implemented as required.

b) Treated areas display signs of dying off within 14 days of application.

304C.6. DIRECT SEEDING OF PLANTS

Criterion	Twelve weeks after Practical Completion	End of second Spring	At Final Completion
Mean number of stems (excluding weed species) / m^2 within each representative plot.			

Number of species within each representative plot.			
Species richness (% of species sown) within each nominated seeding zone.			
Bare soil areas (excluding weed species) > 1m^2 within each representative plot.			

Two or more randomly selected representative plots (..m x ..m or equal area) per nominated seeding zone within the project area. Nominated seeding zone are as shown in the drawings.

Acceptance criteria for individual seedlings from direct seeding shall be:

a) Plants are well formed and exhibits signs of healthy growth

b) Plants are free of disease symptoms (e.g. yellowing, wilting, etc.)

c) Plants are free from signs of insect pests

304C.7. REGENERATION FROM TOPSOIL

Criterion	Twelve weeks after Completion	End of second Spring	At Final Completion
Mean number of stems (excluding weed species) / m^2 within each representative plot.			
Number of species within each representative plot.			
Bare soil areas (excluding weed species) > 4m^2 within each representative plot.			

Two or more randomly selected representative plots (..m x ..m or equal area) per nominated zone within the project area. Nominated zones are as shown in the drawings.

SPECIFICATION 304 GUIDANCE NOTES

DELETE THESE GUIDANCE NOTES FROM FINAL DOCUMENT AFTER USING FOR REFERENCE

All edits to downloaded TDP documents should be tracked with deletions struck through e.g. ~~example~~ and insertions in italics e.g. *example*. If **all** information relating to a clause is deleted then the clause number should be retained and the words "**NOT USED**" should be inserted.

The proposed documents with tracked changes is then submitted to the Project Manager for review, prior to printing the final batch of documents. When this final printing is carried out, the tracked changes option is to be **turned off**.

The Custodian of this specification is the Manager Environment.

For more guidance on completing this specification and the historical Author's Notes see "Environmental Procedure Specification 304 Revegetation & Landscaping" D18#843784.

SPECIFICATION AMENDMENT CHECKLIST

Specification Name: No: **304** Revision No: _____Title: **REVEGETATION**

Project Manager: Name: _____Signature: _____Date:_____

Checked By: Name: _____Signature: _____Date:_____

Contract No: _____Contract Description: _____

ITEM	DESCRIPTION	SIGN OFF
*Note: All changes/amendments **must** be shown in Tracked Change mode until approved.*		
1.	Project Manager has reviewed Specification and identified Additions and Amendments.	
2.	**CONTRACT SPECIFIC REQUIREMENTS** addressed? – Contract specific materials/products/clauses added? (Refer Specification Guidance Notes for guidance).	
3.	Any unlisted Materials/Products proposed and approved by the Project Manager? – if "Yes" provide details at 15.	
4.	Standard Clauses amended? – **MUST SEEK** approval from Manager Contracts	
5.	Clause deletions shown as 'NOT USED'.	
6.	Appropriate **INSPECTION & TESTING** parameters included in Spec 201 (Test Methods, Minimum Testing Frequencies verified).	
7.	**ANNEXURES** completed (Refer Specification Guidance Notes).	
8.	**HANDOVER** and **AS BUILT** requirements addressed.	
9.	Main Roads QS has approved changes to **SMM**.	
10.	Project Manager certifies completed Specification reflects intent of the design.	
11.	Completed Specification – independent verification arranged by Project Manager	
12.	Project Manager's review completed.	
13.	**SPECIFICATION GUIDANCE NOTES** deleted.	
14.	**TABLE OF CONTENTS** updated.	
15	Supporting information prepared and submitted to Project Manager.	
Further action necessary:		

Signed: _____ *(Project Manager)* Date: _____