



July 2011

ENVIRONMENTAL MANAGEMENT STRATEGY (EMS)
AMENITY BERMS MANAGEMENT PLAN

Former QUARRY SITE AT OLD WALLGROVE ROAD EASTERN CREEK
MATERIALS PROCESSING CENTRE (MPC)
WASTE TRANSFER FACILITY associated with an adjacent
SOLID WASTE LANDFILL
Document Control

Reference Documents:

LandPartners plan, attached in Appendix B (**LandPartners Plan**).

Plans DS144_1-6 (**Landscape Plans**), attached in Appendix C.

For controlled copies of this EMS the copy number is shown below and initialled in Red by the Light Horse Business Centre and the ThaQuarry Unit Trust Project Manager.

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| Controlled Copy No: | Issued by: |
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AMENITY BERMS

CRITERIA

The relevant criteria is set out in condition Schedule 3 Condition 54 and Schedule 3 Condition 55 points f) and g) within Development Consent MP 06_0239 dated 22 November 2009.

Condition 54 states as follows:

The Proponent shall prepare design details for the visual screens, impervious barriers and amenity berms being implemented for the facility, having regard to adjoining landowners. This design detail must be submitted to the Director-General for approval prior to the commencement of construction or regrading of the amenity berms, visual screens or impervious barriers.

Condition 55 states as follows:

Prior to the commencement of operations, the Proponent shall:

- a) construct and maintain, for the duration of the operations, amenity berms, impervious barriers and visual screens around the perimeter of the operational area (as detailed in the EA, the site plan at Appendix 1 and Schedule 3, Condition 53 above);
- b) retain the existing amenity berm to the north east of the quarry void at the perimeter;
- c) vegetate the berms in accordance with the Landscape and Vegetation Management Plan at Schedule 3, condition 59;
- d) maintain the height of the amenity berms at no less than 10 metres; and
- e) conduct all earth works required to reshape the amenity berms on site, without impacting on adjoining landowners.

ACHIEVEMENT OF REQUIREMENTS

Table 1.1 lists the consent conditions under Condition 54; provides a summary of the current compliance status and provides recommendations to achieve compliance and to improve the presentation of the project.

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Table 1.1 Consent Conditions (Condition 54 of Schedule 3)

| CONSENT REQUIREMENTS | COMPLIANCE STATUS |
|--|---|
| The Proponent shall prepare design details for the visual screens, impervious barriers and amenity berms being implemented for the facility, having regard to adjoining landowners. This design detail must be submitted to the Director-General for approval prior to the commencement of construction or regrading of the amenity berms, visual screens or impervious barriers | Complies Refer to Landscaping Plans in Appendix C; |

Table 1.2 lists the consent conditions under Condition 55; provides a summary of the current compliance status and provides recommendations to achieve compliance and to improve the presentation of the program.

Table 1.2 Consent Conditions (Condition 55 of Schedule 3)

| CONSENT REQUIREMENTS | COMPLIANCE STATUS |
|---|---|
| Prior to the commencement of operations, the Proponent shall: | |
| a) construct and maintain, for the duration of the operations, amenity berms, impervious barriers and visual screens around the perimeter of the operational area (as detailed in the EA, the sit plan at Appendix 1 and Schedule 3, Condition 53 above); | Complies For existing berms and reshaping of berms refer to the LandPartners Plan in Appendix B. |
| b) retain the existing amenity berm to the north east of the quarry void at the perimeter; | Complies |
| c) vegetate the berms in accordance with the Landscape and Vegetation Management Plan at Schedule 3, condition 59; | Complies |
| d) maintain the height of the amenity berms at no less than 10 metres; and | Complies |
| e) conduct all earth works required to reshape the amenity berms on site, without impacting on adjoining landowners. | Will comply |

AIMS AND OBJECTIVES

To establish, maintain and provide a visual screen around the Project.

To maintain the berms as noise attenuation measures.

To provide a shield against windblown litter and to mitigate airborne particle generation from stockpiles.

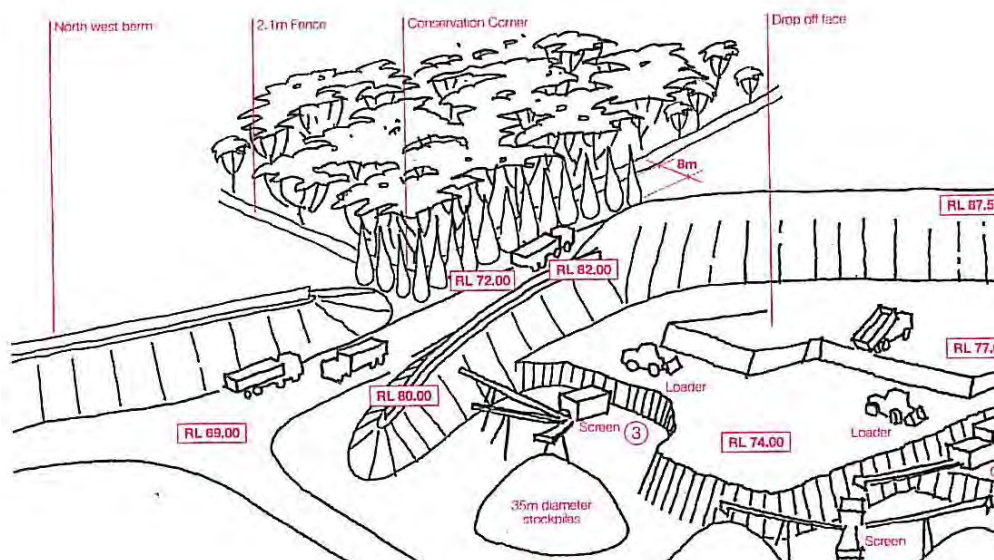
To ensure that Site security is able to be adequately maintained without unduly impeding internal traffic flows.

EXISTING BERMS AND SCREENS.

To the North, North East, East and West of the Project area are existing mounds of overburden excavated from the Quarry. These overburden mounds vary in height to a maximum of about 30 metres. To the south East of the Quarry void is a natural hill which provides an existing berm relative to the adjoining project road of about 10 metres in height.

It is to regrade the berms and to ensure that they are stabilised, that drainage is provided and that they are landscaped in a low maintenance regime, in a manner to give an appearance consistent with surrounding lands and attractive to future developments.

Sketch Perspective



VISUAL SCREENS NORTH-WESTERN CORNER OF PROJECT AREA

At the north-western corner of the Project/Operations area is the Conservation Area, which largely provides a visual screen between the suburb of Minchinbury, the M4 Motorway, and the Project/Operations area.

This Conservation Area is fenced and maintained. This existing visual screen will be augmented by a reshaping of the western and northern berms so as to create a chicane between through which vehicles can pass.

The effect of the reshaping is shown in the LandPartners Plan is Appendix B.

MANAGEMENT AND MITIGATION

The works included in this section shall include the supply of labour and materials to install and/or construct:

- Embankment stabilisation,
- Soil preparation,
- Soil works,
- Planting preparation,
- Planting installation, and
- Hydroseeding.

EMBANKMENT STABILISATION

Where necessary to prevent soil erosion or soil movement, stabilise embankments. As a minimum this should be on slopes ≥ 1 in 3. Stabilise embankments using a proprietary geotextile fabric suitable and fit for the purpose of embankment stabilisation. Plant after matting is installed.

SUBSOIL

Excavate all areas of matrix planting to allow for imported topsoil.

Cultivate the subsoil to a further depth of 100mm. Remove stones exceeding 25mm, clods of

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earth exceeding 50mm, and weeds, rubbish or other deleterious material brought to the surface during cultivation. Do not disturb services or tree roots. If necessary cultivate these areas by hand.

During cultivation, thoroughly mix in materials required to be incorporated into the subsoil, as recommended in the soil testing results and to manufacturer's recommendations. Trim the surface to design levels after cultivation.

TOPSOIL

Import topsoil for the matrix planting, do not use site topsoil.

Spread the topsoil on the prepared subsoil and grade evenly, compact lightly and uniformly in 150mm layers. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics:

- Finished to design levels,
- Smooth and free from stones greater than 30mm dia.or lumps of soil,
- Graded to drain freely, without ponding, to catchment points,
- Graded evenly to adjoining surfaces, and
- Ready for planting.

SOIL TESTING

Sampling: As recommended in AS 4419.

Undertake at least two (2) soil tests, in locations as advised by Site Project Manager, and provide results and recommendations for the improvement of plant growth and to adjust the soil to achieve appropriate planting medium (including pit levels) for successful plant growth.

Provide a complete chemical composition test equal to that provided by Sydney Environment and Soil Laboratory, telephone (02) 9980 6554.

PLANTS

Supply plants in accordance with the landscape drawings and schedules in Appendix C, which have the following characteristics:

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- Large healthy root systems, with no evidence of root curl, restriction or damage,
- Vigorous, well established, free from disease and pests, of good form consistent with the species or variety,
- Hardened off, not soft or forced, and suitable for planting in the natural climatic conditions prevailing at the site, and in particular shade conditions,
- Grown in their final containers for not less than twelve weeks, and
- Containers shall be free from weeds and of appropriate size in relation to their container.

All plant specimens are to be true to name and variety listed in the plant schedules on the landscape drawings. Make no substitutions of species type or container size unless approved by the Landscape Architect and Site Project Manager.

Plants shall not exhibit signs of having been stressed at any stage during their development and delivery due to inadequate watering, excessive shade/sunlight, physical damage or have restricted growth due to nursery conditions.

FERTILISER

Provide proprietary fertilisers, delivered to the site in sealed bags marked to show manufacturer or vendor, weight, fertiliser type, N:P:K ratio, recommended uses and application rates.

- Mass planted areas – apply 500g/m² of Nutricote Blue slow release fertiliser (with N:P:K ratio of 16:4.4:8.3) or equivalent.

INSTALLATION OF PLANTS

Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.

Do not vary the plant locations from those shown on the drawings unless otherwise directed. If it appears necessary to vary the locations and spacings to avoid service lines, or to cover the area uniformly, or for other reasons, apply for directions. Allow for sufficient notice for approval by the Landscape Architect and Project Manager of the location of mature and feature trees and plants.

For tree plantings, excavate a hole to twice the diameter of the root ball and at least 200mm deeper than the root ball. Break up the base of the hole to a further depth of 100mm, and loosen compacted sides of the hole to prevent confinement of root growth.

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Virocell or Virotube: 1 tablet, or
Advanced ($\geq 75\text{L}$): 3 tablets.

Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress. No plant material shall show signs of water stress at any time.

When placing, remove the plant from the container with minimum disturbance to the root ball. Ensure that the root ball is moist and place it in its final position, in the centre of the hole and plumb, and with the top soil level of the plant root ball level with the finished surface of the surrounding soil. All plants are to be positioned in the centre of the hole.

In planting beds and individual plantings, apply fertiliser pellets, as recommended in the soil testing results and in accordance with the manufacturer's recommendations around the plants at the time of planting. Provide proprietary fertilisers, delivered to the site in sealed containers displaying manufacturer or vendor's name, weight, fertiliser type, N:P:K ratio, recommended uses and application rates.

Backfill the planting holes with topsoil mixture. Lightly tamp and water to eliminate air pockets. Ensure the topsoil is not placed over the top of the rootball, so that the plant stem remains the same height above the ground as it was in the container.

HYDROMULCHING

Supply a specification to industry standards of hydromulching application of indigenous grassland species to areas indicated. Seed stock to be certified local provenance only.

Final seed mix application to be subject to availability and is to be approved by Landscape Architect and Site Project Manager prior to application.

The hydromulching mixture is to contain a slurry of seed mixture, fertilizer, mulch and water, with application rates as follows:

- Location: as shown on the landscape drawings
- Seed mix: native grasses certified as local provenance only, at 5-10kg/Ha or to rate recommended by supplier,
- Mulch Type: defibrated pinus radiata fibre or approved equivalent at 1500-2000kg/Ha or

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to rate recommended by supplier,

- Fertiliser Type: to suit native grasses, at 250-500kg/Ha or to rate recommended by supplier,
- Binder: bituminous emulsion or approved equivalent, at 250-500kg/Ha or to rate recommended by supplier, and
- Water: at a rate, suitable to the site conditions, sufficient to assist in the distribution of the seed, fertilizer and mulch.

Moisten the ground to its full depth before applying the slurry. Apply the slurry with, a suitable marker dye mixed through, using high pressure pumping equipment operated by trained personnel. Spray the mixed slurry under pressure, maintaining a thoroughly mixed supply, operating on a front so that the mixture is evenly distributed over the area. Complete each front before commencing the next.

Water the seeded area with a fine spray until the topsoil is moistened to its full depth. Continue watering until germination. Keep the surface damp and the topsoil moist but not waterlogged. After germination, water to maintain a healthy condition, progressively hardening off to the natural

LOGBOOK

Keep a Maintenance Logbook recording when and what maintenance work has been done and what materials, including chemical materials, have been used. The records shall show when and where identified chemicals were used and why. Submit the initial logbook for inspection prior to Practical Completion and again at the end of the Defects Liability Period as a prerequisite for granting Practical and Final Completion Certificates.

Record all major events and activities in the logbook. Make the logbook available for inspection on request.

PLANTS

Replace failed plants. A "failed" plant may not mean complete death of soft tissue but failure due to poor growth, appearance, or unacceptable time for plant to re-establish new growth following damage or vandalism. Replacement plants shall be in a similar size and quality and identical species or variety to the plant that has failed. Replacement of plants shall be at the cost of the

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Landscape Contractor unless advised otherwise. Failure of the plant shall be at the sole discretion of the Landscape Architect.

FERTILISING

Fertilise gardens with a proprietary slow release fertiliser applied in accordance with the manufacturer's directions and recommendations. Record in the logbook all relevant details of fertilising including:

- Product brand / manufacturer's name,
- Fertiliser / product name,
- Application quantity and rate, and
- Date of application and location.

MULCHED SURFACES

Maintain the surface in a clean, tidy and weed free condition and reinstate the mulch as necessary to ensure correct depth as before specified.

WATERING

Provide watering as necessary to ensure healthy plant growth.

EROSION CONTROL MEASURES

Where necessary, maintain the erosion control devices in a tidy and weed free condition and reinstate as necessary to ensure control measures are effective where deemed necessary.

WEEDING AND RUBBISH REMOVAL

During the plant establishment period remove by hand, rubbish and weed growth that may occur or re-occur throughout all planted, mulched and paved areas.

COMPLETION

A final inspection shall be made by the Site Project Manager, Landscape Contractor and Landscape Architect before the completion of the 12 month Plant Establishment Maintenance

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Period (Defects Liability Period). Any items requiring rectification shall be repaired before completion of the relevant works and finally approved prior to certification.

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Appendix A - Maintenance Schedule.

| Table | ACTIVITY | FREQUENCY | | | | | | ACTION Daily, Weekly, Monthly |
|-------|--------------------------|-----------|---|----|----|---|-------|--|
| | | D | W | 2W | 3W | M | 3or6M | |
| 1 | Logbook | + | | + | | + | | Complete a logbook entry every day at site and at least every two weeks. All actions listed below require a logbook entry. Upon request, make the logbook available for inspection. Submit copies of new entries in the logbook to the Contract Administrator on a monthly basis. Please note that more frequent, short, occasional inspection should result in less maintenance work when problems are observed earlier than they might otherwise have been seen. |
| 2 | Plant replacement | | | + | | + | | Inspect and replace failed plants within 2 weeks of observation of failure. Match species, size (original) and location of new with old. |
| 3 | Mulch | | | + | | + | | Inspect and replace mulch deficiencies within 2 weeks of observation. Prior to placing new mulch aerate the soil by fork turning to a depth of at least 100mm, roughly level the soil and then place mulch. Do not disturb major plant roots while aerating soil. |
| 4 | Erosion control | | | + | | | | Inspect every two weeks and repair ground, soil and mulch immediately. Maintain erosion control device as necessary. |
| 6 | Weed and rubbish removal | | | + | | | | Inspect and remove immediately upon observation. Leave no waste on site. Dispose of waste material at a designated waste disposal site. |
| 9 | Urgent works | | + | | | | | Complete within 1 week (7 days) of notification. Inspect and clear drains. |

| | | | | | | | | |
|----|--------------------------|---|--|---|--|--|-----|---|
| 10 | Planting and fertilising | | | + | | | 3M+ | Inspect every 2 weeks and remove spent flowers and dead stalks as they become apparent. Fertilise gardens every 3 months or other frequency in accordance with fertiliser manufacturer's directions. |
| 11 | Watering | + | | + | | | | Water when and where necessary. Do not allow soil and plants to dehydrate. Allow for prolonged rain, windy and dry periods. Water in the early morning or late afternoon to avoid excessive evaporation during the heat of the day. |



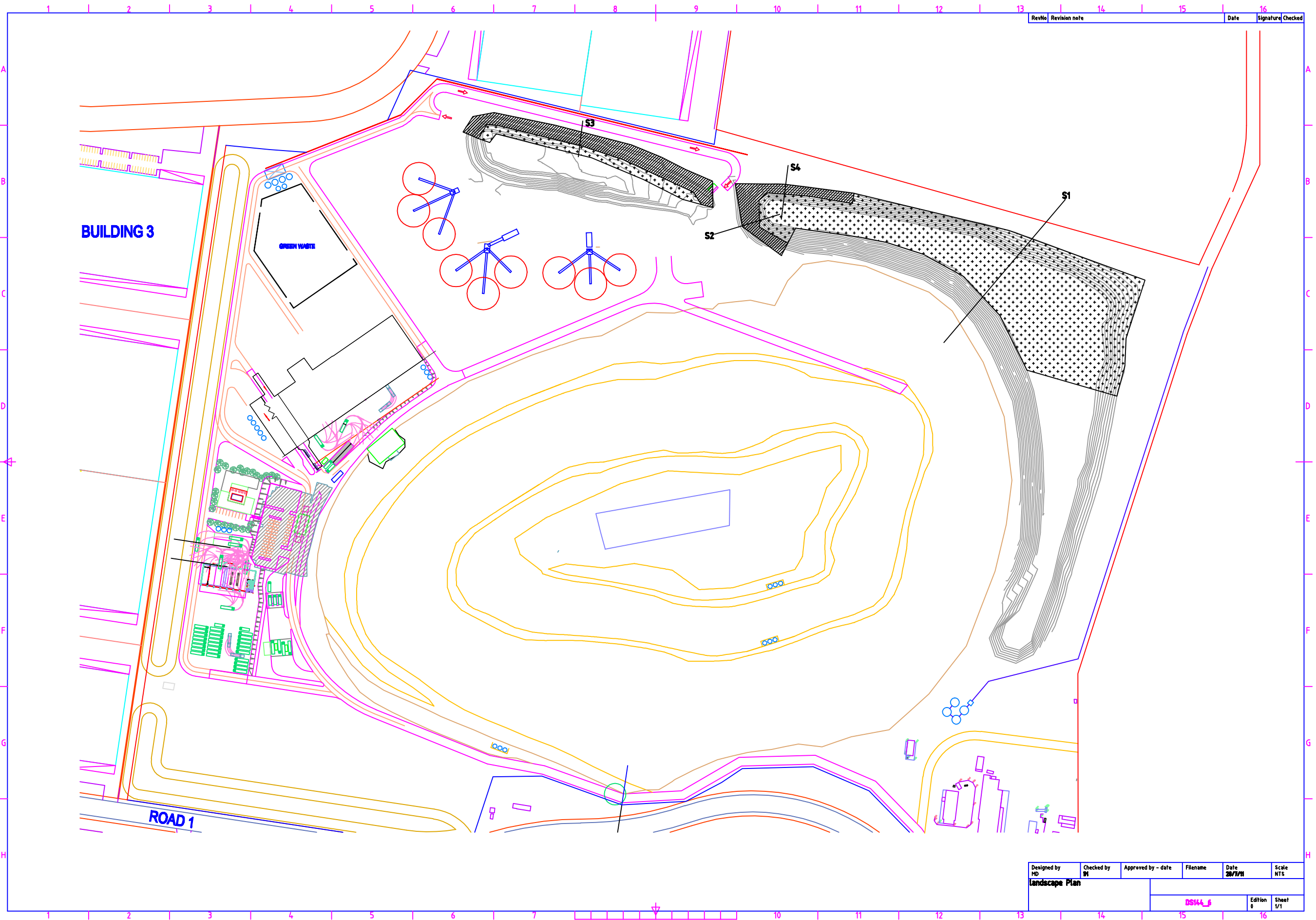
Appendix B

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Appendix C

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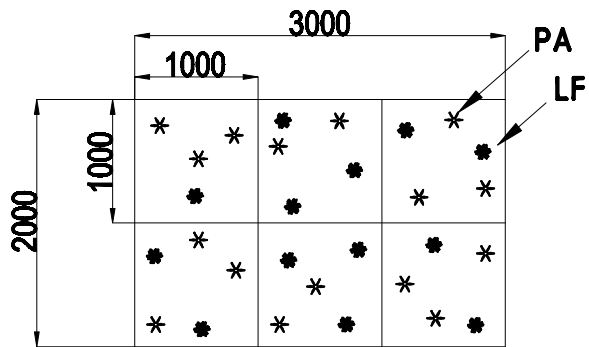


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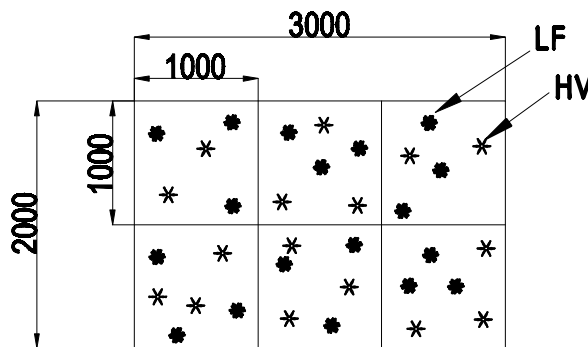
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| Designed by MD | Checked by M | Approved by - date | Filename | Date 28/7/11 | Scale NTS |
| Landscape Plan | | | | | |
| | | | DS144_6 | Edition 0 | Sheet 1/1 |

| Plant Schedule(For 1x matrix) | | | | | |
|-------------------------------|--------------------------|-----------------------|-----------------------------------|-------------------|--------|
| Code | Botanical Name | Common Name | Approx Mature Height x Weight (m) | Installation Size | Number |
| PA | Pennisetum alopecuroides | Purple Fountain Grass | 0.8 x 0.6 | Tubestock | 17 |
| LF | Lomondra Fillformis | Wattle Mat-Rush | 0.5 x 0.5 | Tubestock | 13 |
| | | | | | |

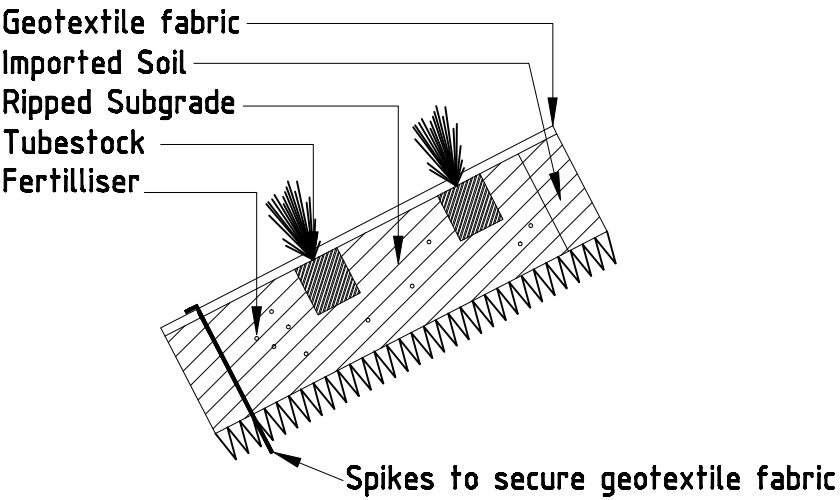
| Plant Schedule(For 1x matrix) | | | | | |
|-------------------------------|-----------------------|-----------------|-----------------------------------|-------------------|--------|
| Code | Botanical Name | Common Name | Approx Mature Height x Weight (m) | Installation Size | Number |
| | Matrix Plant Type 2. | | | | |
| HV | Hardenbergia Violacea | Happy Wanderer | 3.0 x 1.5 | Tubestock | 15 |
| LF | Lomondra Fillformis | Wattle Mat-Rush | 0.5 x 0.5 | Tubestock | 18 |
| | | | | | |



Matrix Planting-Type 1



Matrix Planting-Type 2



Typical Matrix Planting

