

11 June 2019

Our ref: 13211

Gregory Hills Corporate Park Pty Ltd
Suite 8, 410 Church Street Parramatta, NSW 2150
PO Box 119 Oatlands, NSW 2117

Attention: Satwant Calais

Dear Satwant,

Vegetation Management Works – Gregory Hills Corporate Park

Eco Logical Australia Pty Ltd (ELA) has been engaged by Gregory Hills Corporate Park Pty Ltd (GHCP) to undertake an assessment of vegetation management works implemented by Greater West Landscapes (GW) for the riparian corridor at Gregory Hills Corporate Park. A Vegetation Management Plan (VMP) was prepared for the site by ELA in 2017 to accompany the Development Application (DA) for 49 industrial / retails lots, bulk earthworks, construction of roads and stormwater management facilities associated with the Gregory Hills Corporate Park.

The VMP was prepared in accordance with the Turner Road Waterfront Land Strategy (NSW Department of Planning 2009) controls for a Category 2 Watercourse, as follows:

- Provide and emulate a stable naturally functioning watercourse;
- Provide a Riparian Protection Area of a minimum of 60m width, including a Core Riparian Zone (CRZ) of an average of 40m measured from Top of Bank (TOB) and an additional 10 m wide Vegetation Buffer (VB) either side of the CRZ;
- Restore and rehabilitate the CRZ and VB with local provenance vegetation;
- Ensure vegetation in the CRZ is at a density that would occur naturally;
- Minimise the number of road crossings and ensure riparian connectivity is maintained;
- Provide later connectivity for in-stream function.
- Emulate and preserve wherever possible a stable naturally functioning watercourse.
- Engineered drainage solutions are to be as a last resort within the CRZs with appropriate WSUD (Water Sensitive Urban Design) approaches to be used within these sensitive areas.

The VMP also aims to achieve the outcomes of a Category 3 Watercourse, as follows:

- **Outcome 1:** To retain, maintain and restore where possible the natural functions of the watercourse including bed and bank stability to protect local water quality;

- **Outcome 2:** Where the natural functions of a stream are proposed to be retained and restored, a continuous, viable CRZ which emulates the native vegetation communities in the area is to be provided to facilitate a stable watercourse; and
- **Outcome 3:** Where it is not possible to retain the natural functions of a stream, an engineered solution to the watercourse will be considered subject to the proposed development satisfactorily demonstrating minimal impacts on downstream riparian protection areas.

The VMP (ELA 2017) also contains a number of performance criteria with which to assess the success of achieving these outcomes.

An inspection of Management Zone 1 (see **Appendix A**) was undertaken by ELA Restoration Ecologist Jason Snape on 9 May 2019 accompanied by Satwant Calais (GHCP), Robert Corby (Camden Council) and Daniel Atkins (GW). Photos summarising the condition of the VMP area have been provided as **Appendix B**.

As per the Section 3 of the VMP (ELA 2017), ELA can confirm that in Management Zone 1 the following VMP works have been completed:

- Minor earthworks to recreate the streamline
- Installation of jute matting and mulch to stabilise creek bed and banks
- Installation of transverse rock armouring placed at scour locations and in particular areas that may suffer damage during 1:5 year flood events
- Revegetation of the creek bed, banks and batters using tubestock corresponding to the *River-Flat Eucalypt Forest* (RFEF) vegetation community. A list of installed groundcover species and numbers have been provided as **Appendix C**. Canopy species were identified on site as *Angophora subvelutina* (Broad Leaved Apple), *Eucalyptus amplifolia* (Cabbage Gum) and *Eucalyptus tereticornis* (Forest Red Gum)

Maintenance weed control appears to be underway, and weed densities were low at the time of inspection.

Revegetation has been undertaken using a total of 17 of the 30 RFEF species that were listed in the VMP (ELA 2017). The provenance of the groundcover species installed are from Western Sydney as identified in **Appendix C**. Revegetation placement was undertaken as per the Landscape Site Plan and Planting Plans prepared by Coco Design Landscape (drawing numbers CC-LA-00 to CC-LA-09 dated 1 October 2018, see **Appendix D**), which is broadly consistent with the VMP (ELA 2017). The landscape plan was prepared to ensure compliance with Inner Protection Area (IPA) requirements as specified in the NSW Rural Fire Service's *Planning for Bushfire Protection 2006*.

ELA recommends the ongoing control of all weeds within the VMP area to encourage establishment of native plantings and promote recruitment of native vegetation from surrounding areas. Revegetation should be monitored for survival during maintenance weed control works. It is recommended that if supplementary planting is undertaken to maintain the densities required in the VMP, it should be comprised of RFEF species not used in initial revegetation works to maximise species diversity as per the objectives of the VMP.

A list of recommended RFEF species to be used in supplementary revegetation works is provided as **Appendix E**.

If you have any questions about the content of this letter, I can be contacted on 0409 833 968 or by email at JSnape@ecoaus.com.au.

Regards,



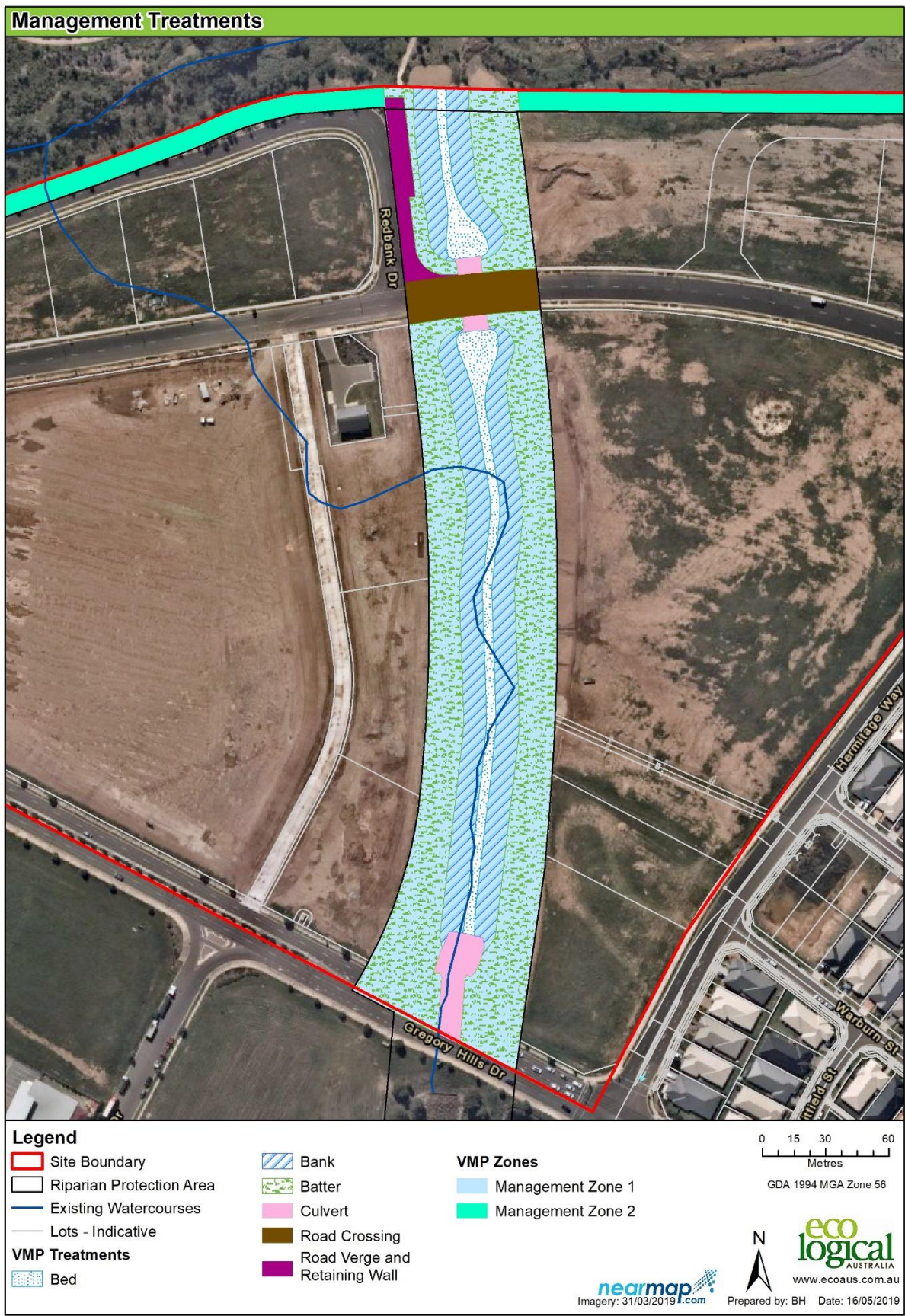
Jason Snape
Restoration Ecologist

References

Eco Logical Australia Pty Ltd 2017. *Vegetation Management Plan – Gregory Hills Corporate Park*. Prepared for Gregory Hills Development Company Pty Ltd.

NSW Department of Planning 2009. *Oran Park and Turner Road Waterfront Land Strategy, July 2009*. NSW Government Gazette No. 105.

Appendix A Vegetation management treatments (ELA 2017)



Appendix B VMP inspection photos



Bed, bank and batters within the northern portion of Management Zone 1, Gregory Hills Corporate Park. Taken 9 May 2019 by ELA Restoration Ecologist Jason Snape.



Bed, bank and batters within the southern portion of Management Zone 1, Gregory Hills Corporate Park. Taken 9 May 2019 by ELA Restoration Ecologist Jason Snape.



Native RFEF tubestock installed within the creek bed primarily comprised of *Juncus usitatus* (Common Rush), Management Zone 1, Gregory Hills Corporate Park riparian corridor. Taken 9 May 2019 by ELA Restoration Ecologist Jason Snape.

Appendix C Revegetation species list (Greater West Landscapes)



LANDSCAPES

Thursday 30th May 2019

Attention: Satwant Calais
Gregory Hills Corporate Park Pty Ltd
Suite 8, 410 Church Street
Paramatta NSW 2150

Re: Gregory Hills Corporate Park Riparian Corridor VMP: Plant Species List – Zone 1

Dear Satwant,

Please find below our plant species list that was utilised within the above-mentioned project.

All stock was sourced from the Western Sydney region.

Greater West Landscapes have selected the below species based on their hardy characteristics and ability to successfully grow in South West Sydney.

Plant Species List

146 x *Bursaria spinosa*
10,017 x *Commelina cyanea*
7,513 x *Dianella longifolia*
5,009 x *Dichondra repens*
7,513 x *Echinopogon ovatus*
7,513 x *Einadia hastata*
3,006 x *Goodenia hederacea*
148 x *Indigofera australis*
10,017 x *Juncus usitatus*
13,523 x *Lomandra longifolia*
15,026 x *Microlaena stipoides*
3,006 x *Oplismenus aemulus*
3,006 x *Pultenaea microphylla*
15,026 x *Themeda australis*

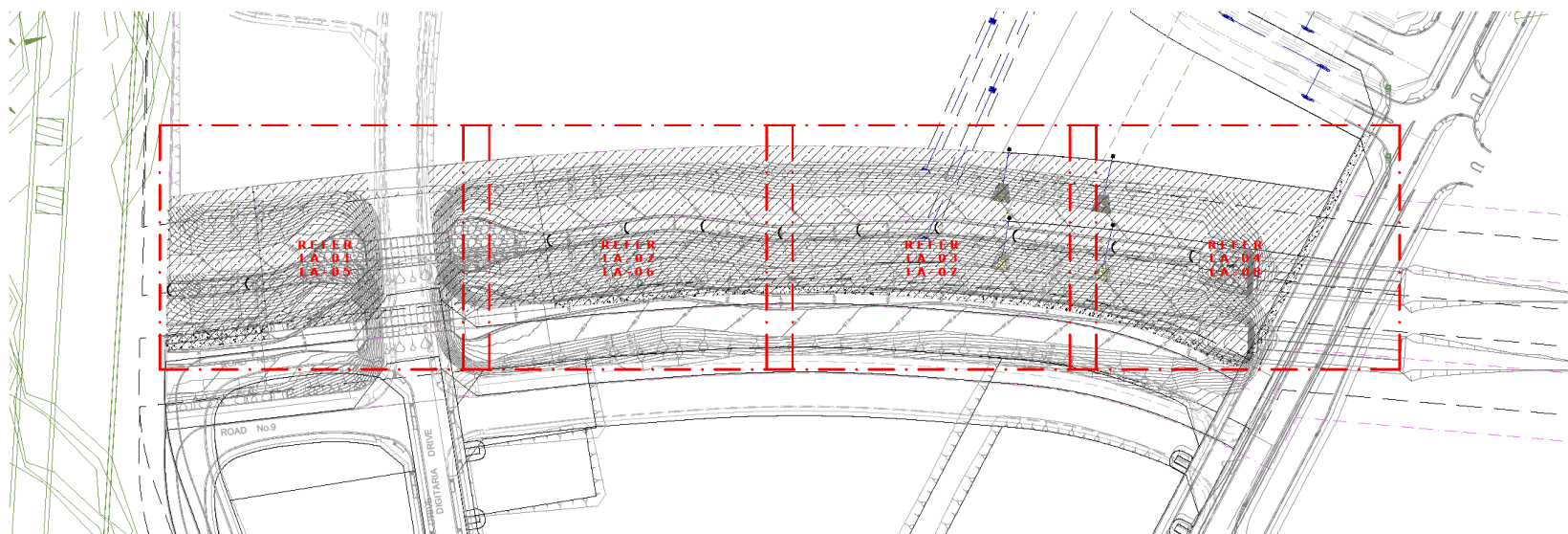
Regards,

A handwritten signature in black ink, appearing to read 'Simon Coco'.

Simon Coco
General Manager

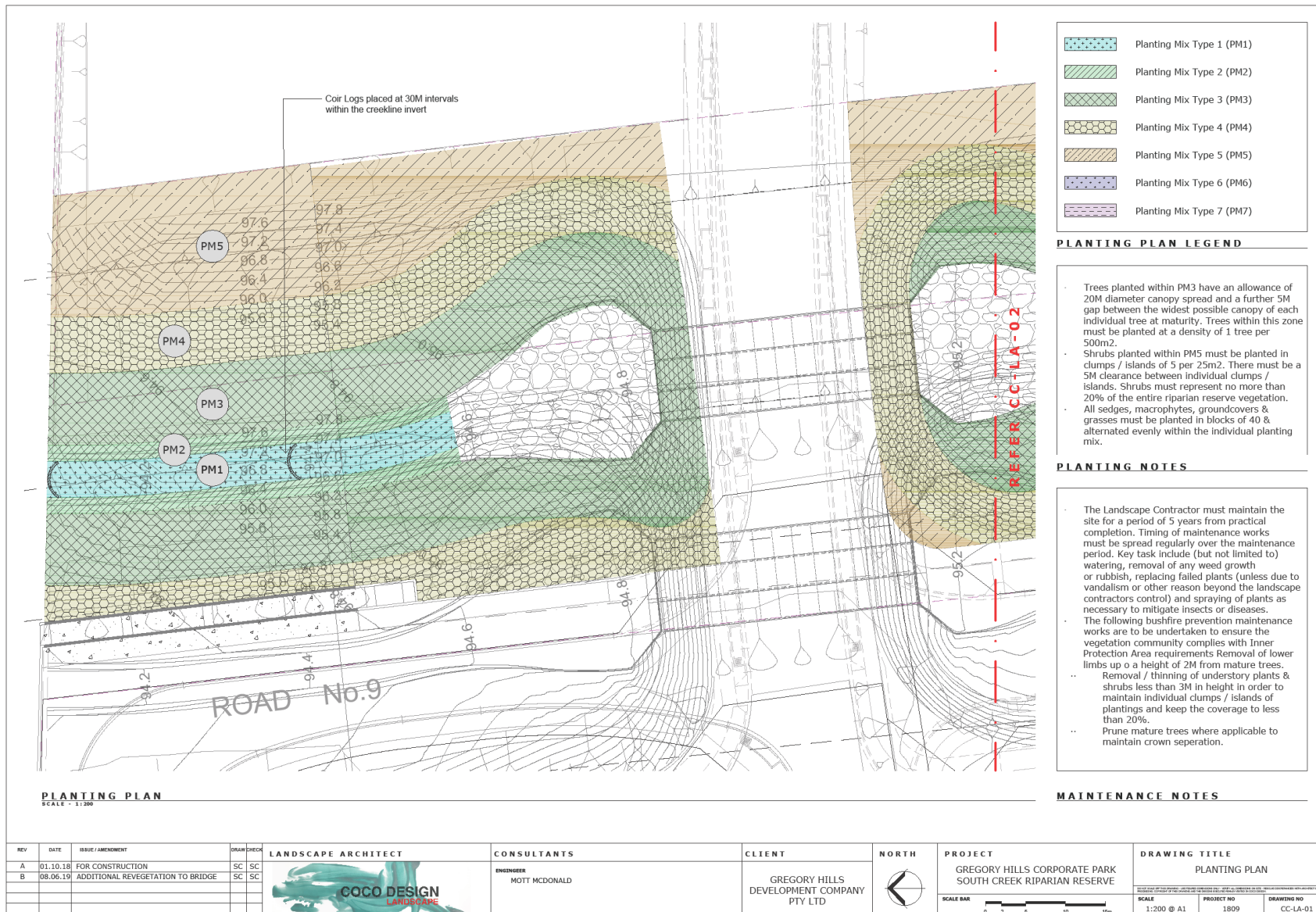
Appendix D Landscape site plan and planting plans (Coco Design Landscape 2018)

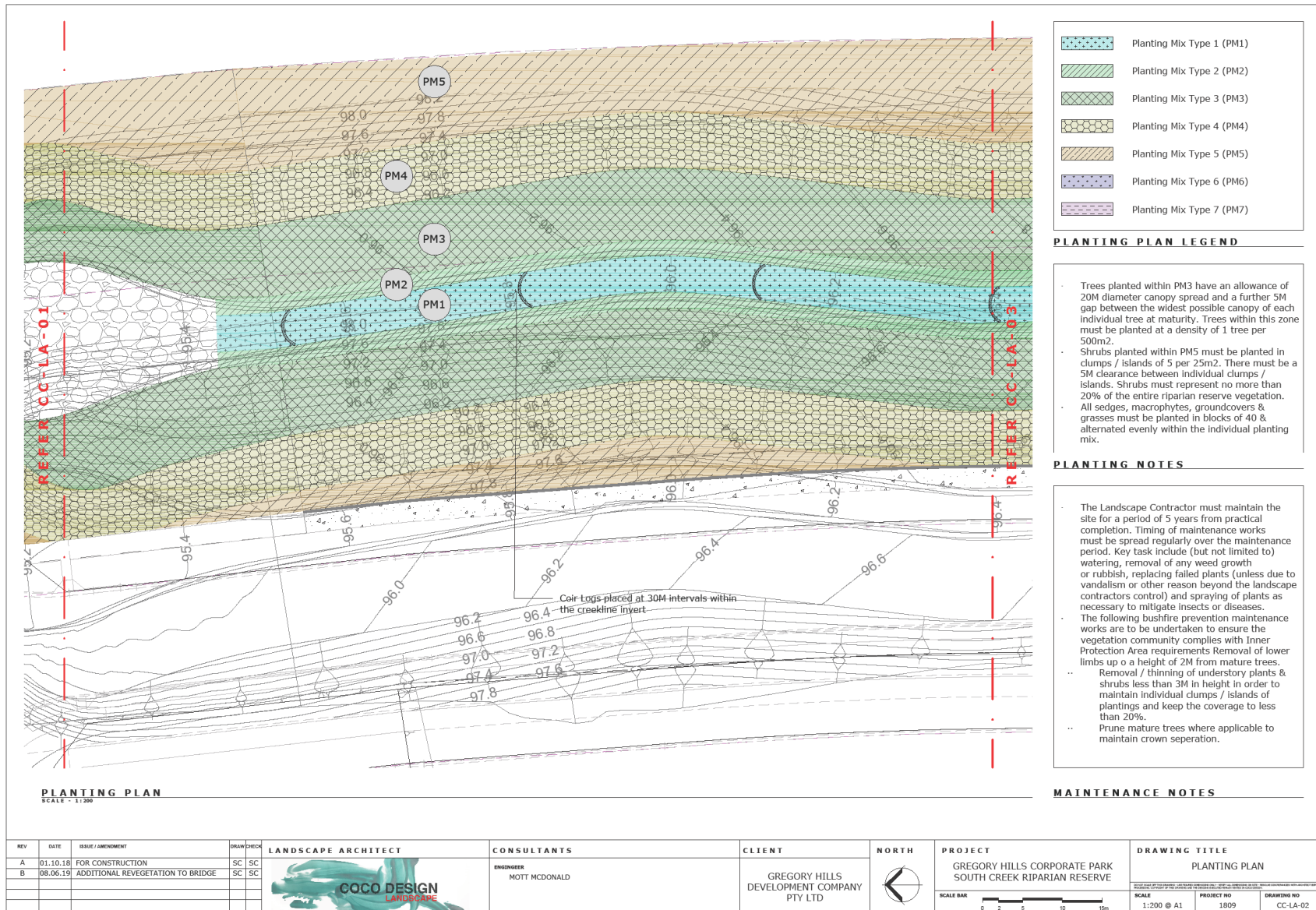
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CC - LA - 00	B	COVERSHEET
CC - LA - 01	B	PLANTING PLAN
CC - LA - 02	B	PLANTING PLAN
CC - LA - 03	B	PLANTING PLAN
CC - LA - 04	B	PLANTING PLAN
CC - LA - 05	B	FINISHES PLAN
CC - LA - 06	B	FINISHES PLAN
CC - LA - 07	B	FINISHES PLAN
CC - LA - 08	B	FINISHES PLAN
CC - LA - 09	B	PLANT SCHEDULE & TYPICAL DETAILS

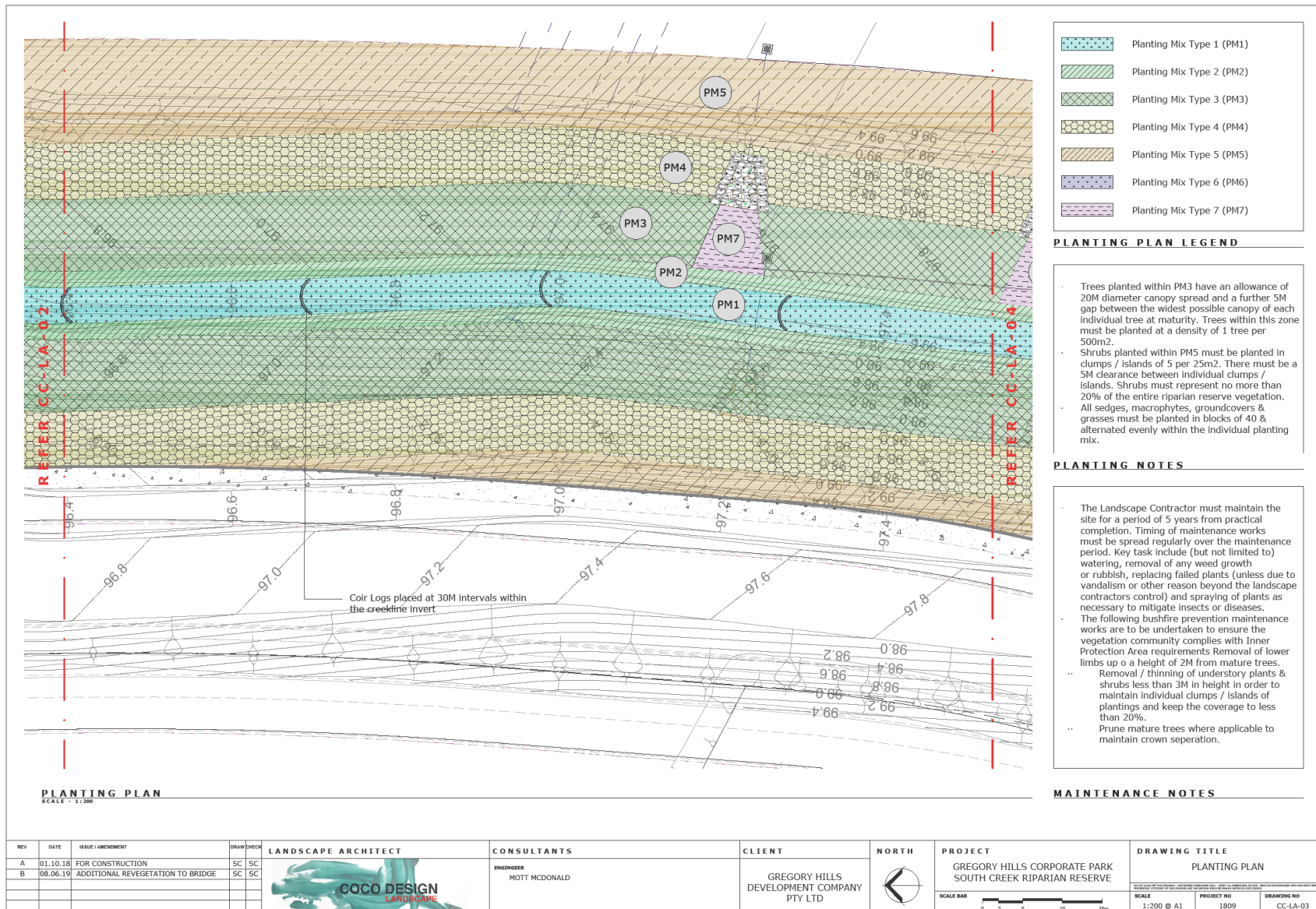


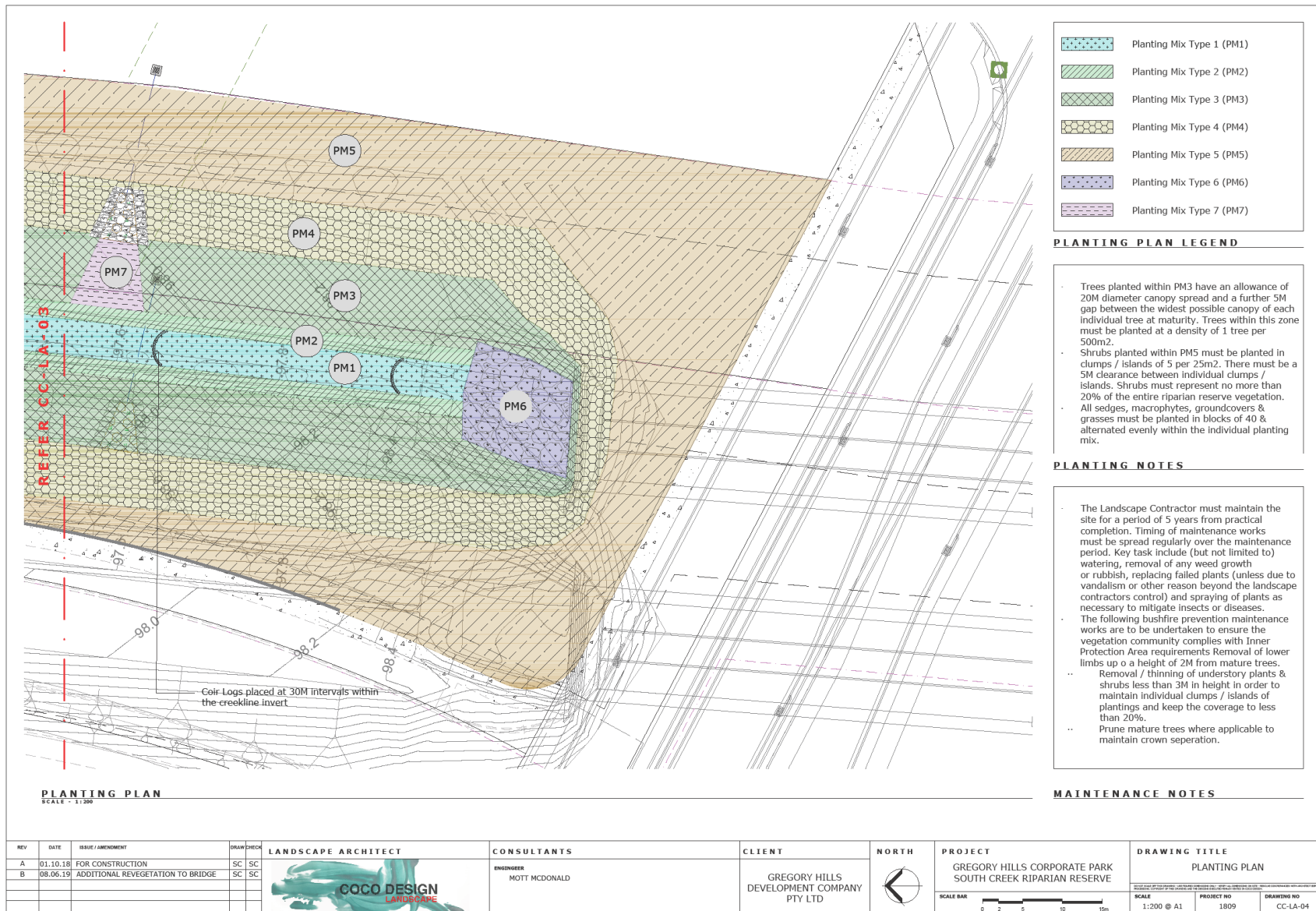
SITE PLAN

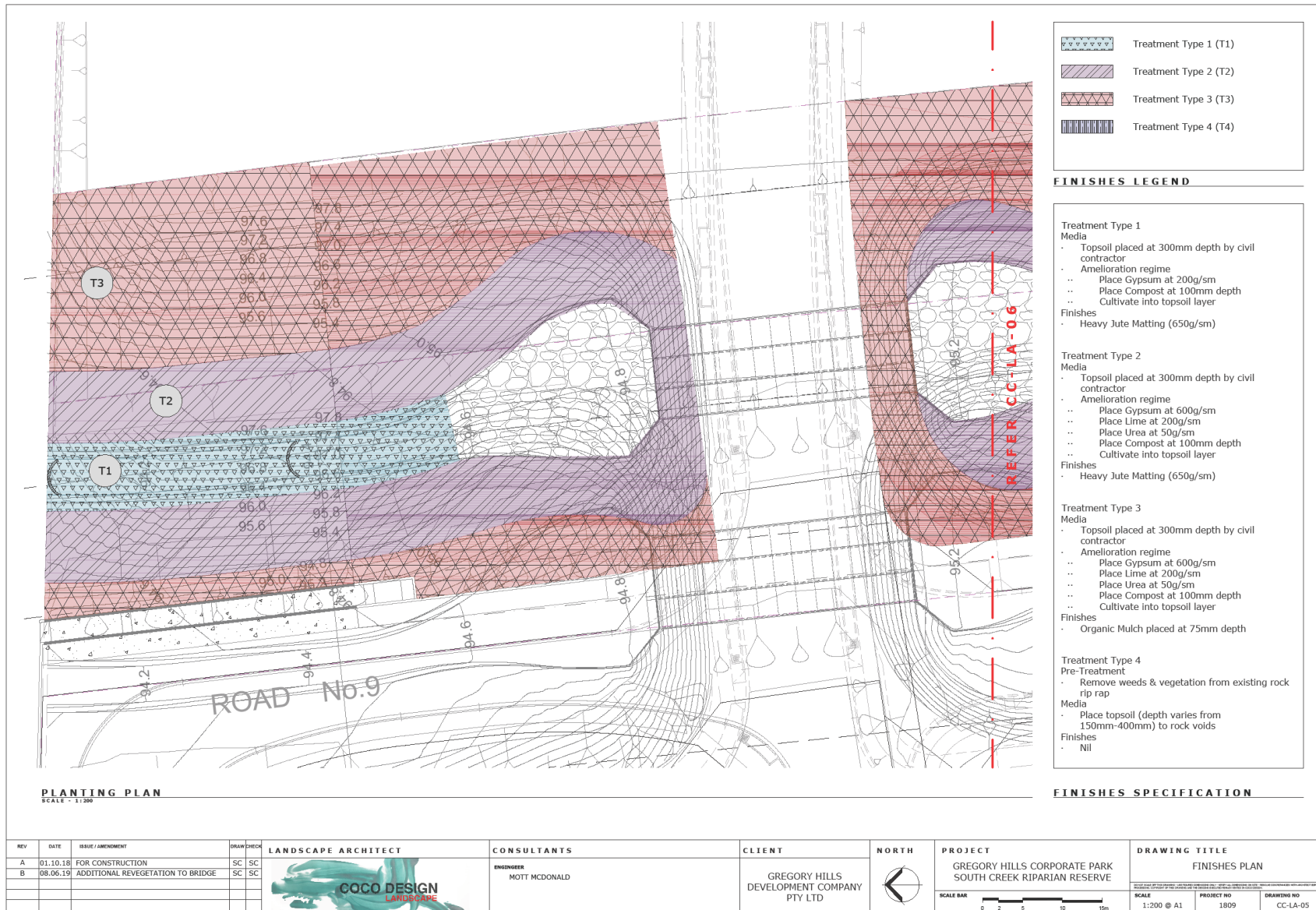
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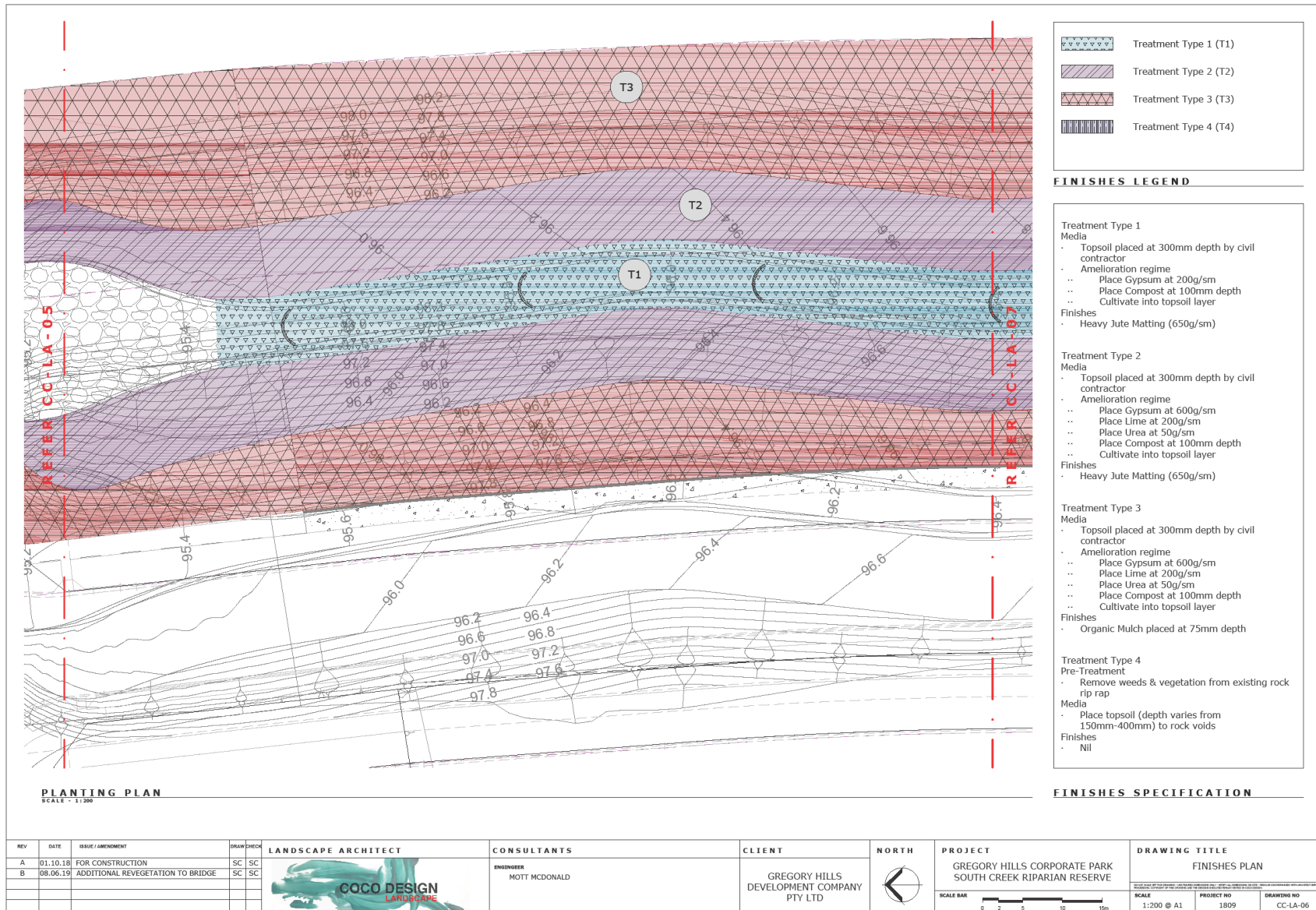


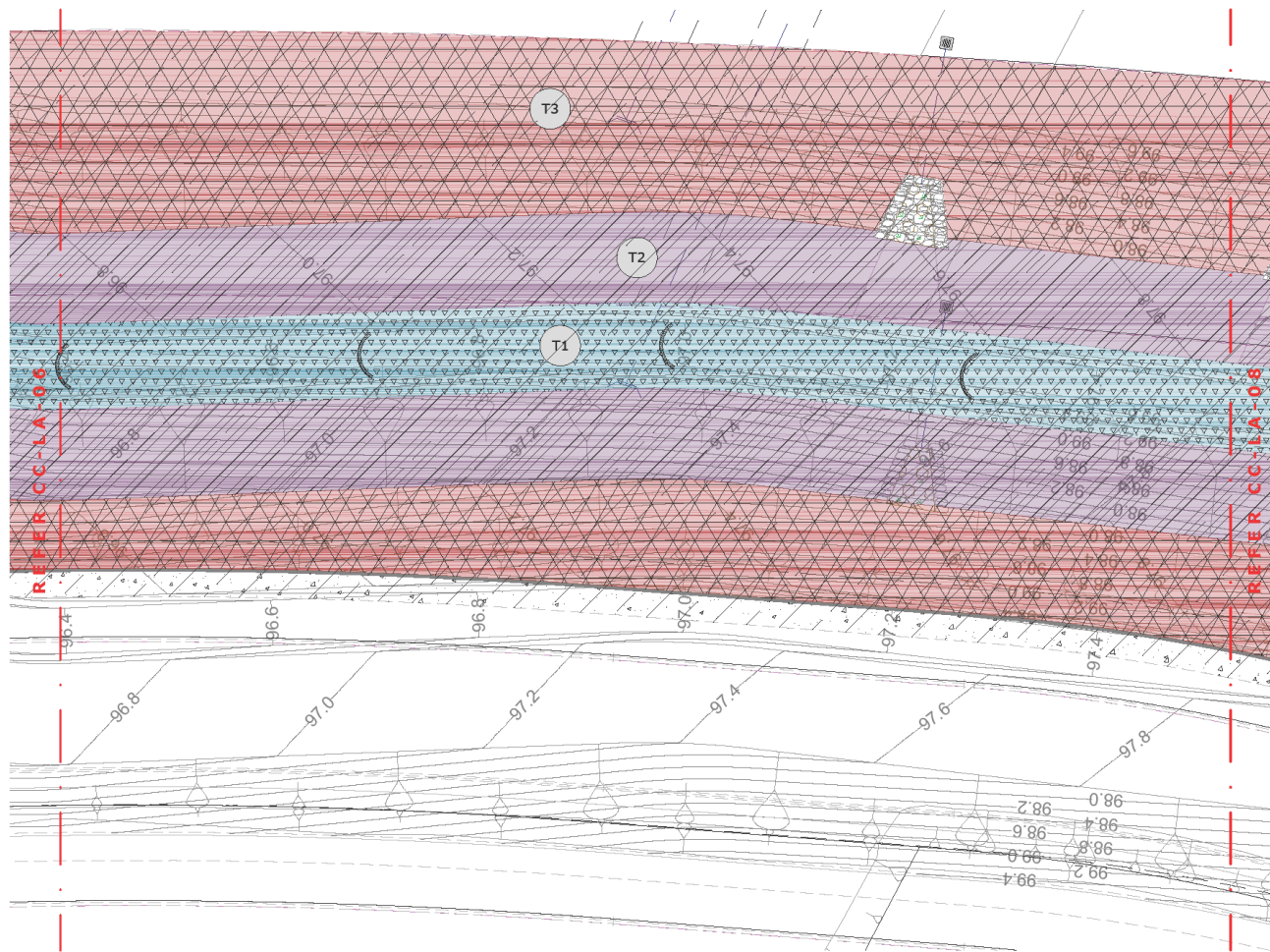












PLANTING PLAN
SCALE - 1:200

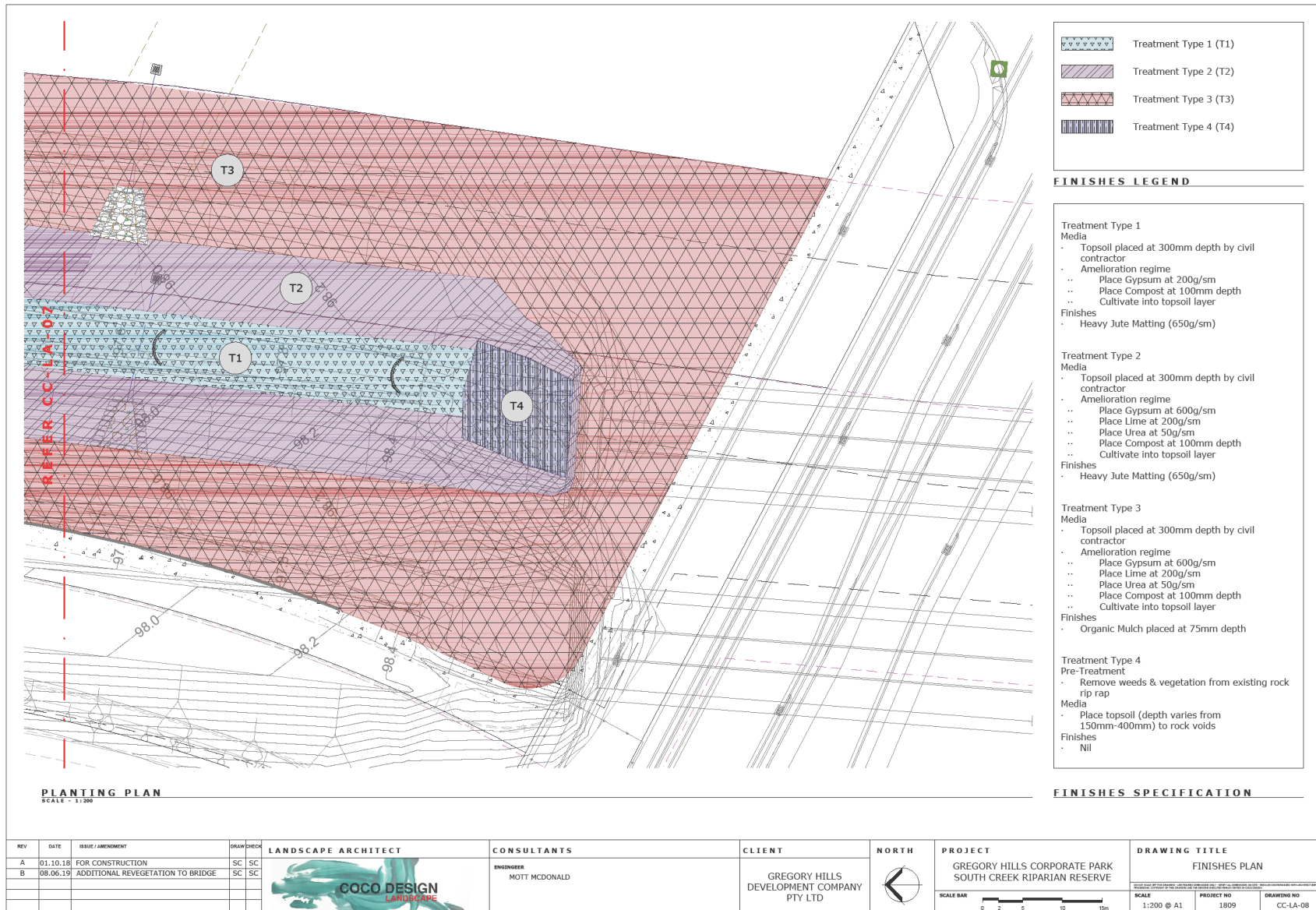
	Treatment Type 1 (T1)
	Treatment Type 2 (T2)
	Treatment Type 3 (T3)
	Treatment Type 4 (T4)

FINISHES LEGEND

Treatment Type 1 Media - Topsoil placed at 300mm depth by civil contractor - Amelioration regime - Place Gypsum at 200g/sm - Place Compost at 100mm depth - Cultivate into topsoil layer Finishes - Heavy Jute Matting (650g/sm)	Treatment Type 2 Media - Topsoil placed at 300mm depth by civil contractor - Amelioration regime - Place Gypsum at 600g/sm - Place Lime at 200g/sm - Place Urea at 50g/sm - Place Compost at 100mm depth - Cultivate into topsoil layer Finishes - Heavy Jute Matting (650g/sm)	Treatment Type 3 Media - Topsoil placed at 300mm depth by civil contractor - Amelioration regime - Place Gypsum at 600g/sm - Place Lime at 200g/sm - Place Urea at 50g/sm - Place Compost at 100mm depth - Cultivate into topsoil layer Finishes - Organic Mulch placed at 75mm depth	Treatment Type 4 Pre-Treatment - Remove weeds & vegetation from existing rock rip rap Media - Place topsoil (depth varies from 150mm-400mm) to rock voids Finishes - Nil
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FINISHES SPECIFICATION

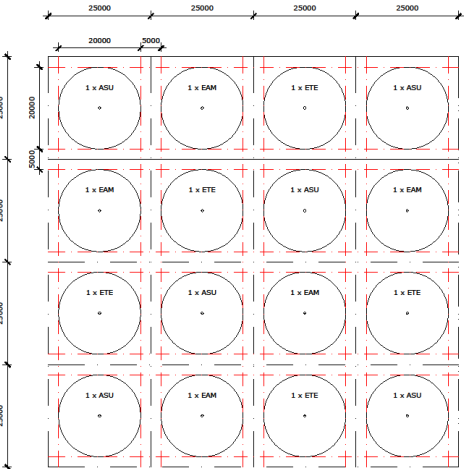
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A	01.10.18	FOR CONSTRUCTION	SC	SC		ENGINEER MOTT McDONALD	GREGORY HILLS DEVELOPMENT COMPANY PTY LTD		GREGORY HILLS CORPORATE PARK SOUTH CREEK RIPARIAN RESERVE	FINISHES PLAN
B	08.06.19	ADDITIONAL REVEGETATION TO BRIDGE	SC	SC						



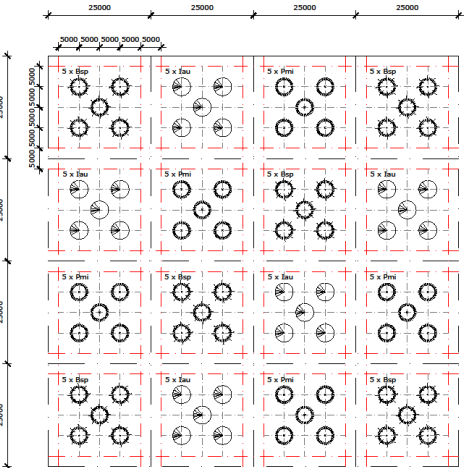
CODE	SPECIES	COMMON NAME	HEIGHT	POT SIZE	QUANTITY
PLANTING MIX TYPE 1 (PM1)					
SEDGES					
cap	Carex appressa	Tall Sedge	1M	tubestock	2594
ctr	Cyperus trinervis	Cyperus	1M	tubestock	2594
ino	Isolepis nodosa	Knobby Club Rush	1.4M	tubestock	2594
jus	Juncus ustulatus	Common Rush	1.2M	tubestock	2594
PLANTING MIX TYPE 2 (PM2)					
SEDGES / GROUNDCOVERS					
cap	Carex appressa	Tall Sedge	1M	tubestock	2761
icy	Imperata cylindrica	Blady Grass	1.2M	tubestock	3682
jus	Juncus ustulatus	Common Rush	1.2M	tubestock	2761
PLANTING MIX TYPE 3 (PM3)					
TREES					
ASU	Angophora subvelutina	Broad Leaved Apple	12M	45L	8
EAM	Eucalyptus amplifolia	Cabbage Gum	24M	45L	8
ETE	Eucalyptus tereticornis	Forest Red Gum	24M	45L	12
GRASSES / GROUNDCOVERS					
ccy	Commelina cyanea	Commelina	0.3M	tubestock	4850
dmi	Dichelachne micrantha	Shorthair Plume Grass	0.6M	tubestock	5543
dri	Dichondra repens	Kidney Weed	0.1M	tubestock	1386
eev	Echinopogon ovatus	Forest Hedgehog Grass	0.5M	tubestock	2079
eha	Einadia hastata	Berry Saltbush	0.3M	tubestock	2772
hvi	Hardenbergia violacea	Purple Coral Pea	0.4M	tubestock	5543
mst	Microlaena stipoides	Weeping Grass	0.3M	tubestock	4157
wga	Wahlenbergia gracilis	Bluebell	0.1M	tubestock	1386
PLANTING MIX TYPE 4 (PM4)					
GRASSES / GROUNDCOVERS					
ccy	Commelina cyanea	Commelina	0.3M	tubestock	1105
dlo	Dianella longifolia	Flax Lily	1.2M	tubestock	3315
eha	Einadia hastata	Berry Saltbush	0.3M	tubestock	1658
hvi	Hardenbergia violacea	Purple Coral Pea	0.4M	tubestock	1658
ilo	Lomandra longifolia	Spiny Headed Mat Rush	1.4M	tubestock	5525
mst	Microlaena stipoides	Weeping Grass	0.3M	tubestock	3315
tau	Themeda australis	Kangaroo Grass	1.4M	tubestock	5525
PLANTING MIX TYPE 5 (PM5)					
SHRUBS					
Bsp	Bursaria spinosa	Boxthorn	3M	200mm	85
Iau	Indigofera australis	Austral Indigo	5M	200mm	85
Pmi	Pultenaea microphylla	Bush Pea	2M	200mm	125
GRASSES					
dmi	Dichelachne micrantha	Shorthair Plume Grass	0.6M	tubestock	4469
dlo	Dianella longifolia	Flax Lily	1.2M	tubestock	3725
icy	Imperata cylindrica	Blady Grass	1.2M	tubestock	5214
ilo	Lomandra longifolia	Spiny Headed Mat Rush	1.4M	tubestock	10428
tau	Themeda australis	Kangaroo Grass	1.4M	tubestock	5999
PLANTING MIX TYPE 6 (PM6)					
MACROPHYTES / SEDGES					
bru	Baumea rubiginosa	Soft Twig Rush	1.4M	tubestock	306
jus	Juncus ustulatus	Common Rush	1.2M	tubestock	204
PLANTING MIX TYPE 7 (PM7)					
SEDGES					
cap	Carex appressa	Tall Sedge	1M	tubestock	240
ino	Isolepis nodosa	Knobby Club Rush	1.4M	tubestock	240

PLANTING SCHEDULE

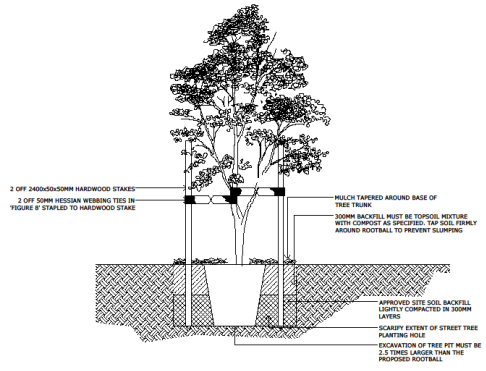
REV	DATE	ISSUE / AMENDMENT	DRAWN	CHECKED	LANDSCAPE ARCHITECT	CONSULTANTS	CLIENT	PROJECT	DRAWING TITLE
A	01.10.18	FOR CONSTRUCTION	SC	SC		ENGINEER MOTT McDONALD	GREGORY HILLS DEVELOPMENT COMPANY PTY LTD	GREGORY HILLS CORPORATE PARK SOUTH CREEK RIPARIAN RESERVE	PLANT SCHEDULE & TYPICAL DETAILS
B	08.06.19	ADDITIONAL REVEGETATION TO BRIDGE	SC	SC					
								SCALE AS SHOWN	PROJECT NO 1809
									DRAWING NO CC-LA-09



PLANTING MIX TYPE 3 (PM3) TREE SETOUT



PLANTING MIX TYPE 5 (PM5) SHRUB SETOUT



TREE PLANTING DETAIL

Appendix E Recommended supplementary revegetation species (ELA 2017)

Form	Species	Common Name
Grasses & Groundcovers	<i>Arthropodium milleflorum</i>	Pale Vanilla-lily
	<i>Atriplex semibaccata</i>	
	<i>Austrostipa ramosissima</i>	Spear Grass
	<i>Baumea rubiginosa</i>	Soft Twig Rush
	<i>Brunoniella australis</i>	Blue Trumpet
	<i>Carex appressa</i>	Tall Sedge
	<i>Chrysocephalum apiculatum</i>	Everlasting Daisy
	<i>Cyperus trinervis</i>	
	<i>Dichelachne micrantha</i>	Shorthair Plumegrass
	<i>Entolasia stricta</i>	Wiry Panic
	<i>Eremophila debilis</i>	Winter Apple
	<i>Ficinia nodosa</i>	Knobby Club Rush
	<i>Glycine clandestina</i>	Twining Glycine
	<i>Glycine tabacina</i>	Variable Glycine
	<i>Imperata cylindrica</i>	Blady Grass
	<i>Linum marginale</i>	Native Flax
	<i>Persicaria subsessilis</i>	Knotweed
	<i>Pratia purpurascens</i>	White Root
	<i>Wahlenbergia gracilis</i>	Bluebell

20 May 2019

Our Ref: 13211

Gregory Hills Corporate Park Pty Ltd
Suite 8, 410 Church Street, Parramatta, NSW, 2150
PO Box 119 Oatlands, NSW, 2117

Attention: Salwat Calais

Dear Salwat,

**Re: Compliance Inspection, Bushfire Asset Protection Zone
Gregory Hills Corporate Park -Lot 47 DP 1250327**

Eco Logical Australia Pty Ltd (ELA) has been engaged to provide a certificate of compliance for the bushfire Asset Protection Zone (APZ) for Gregory Hills Corporate Park -Lot 47 DP 1250327 (herein referred to as 'subject land') as shown in **Figure 1**.

This assessment has been prepared by the ELA Bushfire Consultant, Letara Judd, with quality assurance review by Bushfire Consultant, Dominic Adshead. Dominic is accredited through Fire Protection Association of Australia's Bushfire Planning and Design Accreditation Scheme in bushfire assessment (FPAA BPAD Level 2 Certified Practitioner No., BPAD42097).

The subject land was inspected on 16 May 2019 to confirm management of the riparian corridor as an APZ to certify compliance.

The Bush Fire Safety Authority (BFSA) issued for 1a & 1b the Hermitage Way, Gledswood Hills dated 2 August 2018 (ref D18/6263 DA18070613886SD) required:

1. Prior to the issue of construction certificate, an easement and positive covenant shall be created and registered under section 88B of the 'Conveyancing Act 1919' over the adjoining riparian corridor (for a minimum distance of 100 m from the proposed building) for the ongoing management of the area to an inner protection zone (IPA) standards as outlined in 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zone'.

The owner/occupier of the land who has benefitted from the easement (i.e the hospital site owner/occupier) shall be responsible for the maintaining the subject area.

The name authority empowered to release, vary or modify the instrument shall be Camden Council.

The instrument may be removed only when the subject area has been dedicated (transferred) to Council, and Council has confirmed in writing that the subject area is being maintained in the perpetuity

to an inner protection area as outlined in 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zone'.

The site assessment identified that revegetation has occurred across the riparian corridor to the standard of an inner protection area as identified below in **Figure 1** (NOTE: this is Figure 2 from the approved Vegetation Management Plan [ELA 2017] as referenced in Condition 1 above). Furthermore, photographic evidence is included below in Photo's 1 to 6.

Photo 1 to Photo 6 show the APZ revegetated to Inner Protection Area (IPA) standards.

In the author's professional opinion, the APZ requirements of Condition 1 above contained within the NSW Rural Fire Service General Terms of Approval D18/6263 has been satisfactorily fulfilled.

Please note that ongoing maintenance of the APZ is required to ensure that vegetation regrowth is periodically managed before it compromises the APZ performance and to ensure ongoing APZ compliance.

Yours sincerely,



Letara Judd
Bushfire Consultant



Dominic Adshead
Bushfire Consultant
FPAA BPAD Certified Practitioner No. BPAD42097



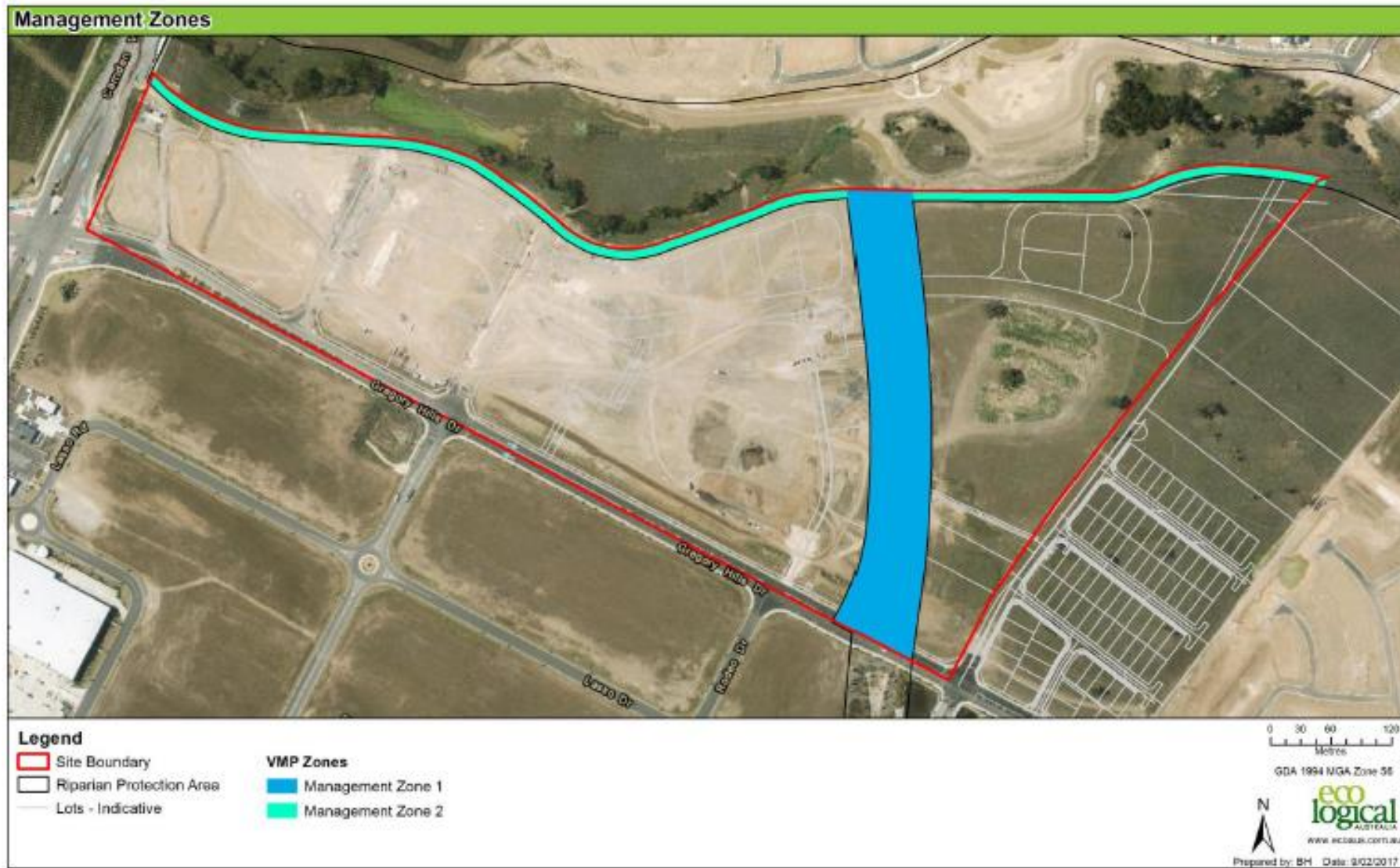


Figure 1: Asset Protection Zones – Riparian Corridor (Figure 2 Vegetation Management Plan)



Photo 1: Riparian Corridor- View of revegetated APZ looking North (Management Zone 1)



Photo 2: Riparian Corridor- View of revegetated APZ on North Bank (Management Zone 1)



Photo 3: Riparian Corridor- View of revegetated APZ on North Batter (Management Zone 1)



Photo 4: Riparian Corridor- View of revegetated APZ on South Bank (Management Zone 1)



Photo 5: Riparian Corridor- View of revegetated APZ on South Batter (Management Zone 1)



Photo 6: Riparian Corridor - View of revegetated APZ on South (Management Zone 1)