



Specification C1 : Passive Amenity Turf

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120

Mailing Address: PO Box 357
Pennant Hills NSW 1715

Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 39116	Sample N°: 2	Date Received: 25/5/16	Report Status: <input type="radio"/> Draft <input checked="" type="radio"/> Final
Client Name: Macka's Sand & Soil Pty Ltd	Project Name: Macka's Soil Blend		
Client Contact: Robert Mackenzie	SESL Quote N°:		
Client Job N°:	Sample Name: 70/30 Top Dressing		
Client Order N°:	Description: Soil		
Address: 2684 Nelson Bay Rd Salt Ash NSW 2318	Test Type: SLD_Spec_C1_Acid		

Physical Properties	Unit	Target Range	Results:	Comments
2.0 mm (fine gravel)	% retained by mass	< 10	-	Acceptable
1.0 mm (very coarse sand)	% retained by mass	< 10	0.75	Acceptable
0.5 mm (coarse sand)	% retained by mass	10 - 30	1.55	Low
0.25 mm (medium sand)	% retained by mass	20 - 40	72.77	High
0.1 mm (fine sand)	% retained by mass	10 - 30	20.97	Acceptable
0.05 mm (very fine sand)	% retained by mass	5 - 15 (max 25% combined of vfs, si +cl)	0.46 5.3	Low
0.002 mm (silt)	% retained by mass	5 - 10 (max 12% combined of si +cl)	1.58 4.84	Low
<0.002 mm (clay)	% retained by mass	3 - 8	3.26	Acceptable
Large particles	% by mass	2 - 20mm = < 10%	1.48	Acceptable
		> 20mm = 0%	-	Acceptable
Organic matter content	% w/w	2 to 8	2.9	Acceptable
Permeability	mm/h	> 30 (@ 16 Drops)	492	High
Wettability (AS4419)	mm/h	> 5	21	Acceptable
Dispersibility in water	Category	1 or 2 (AS4419)	2	Acceptable
Chemical Properties	Unit	Target Range	Results:	Comments
pH in water (1:5)	pH units	5.4 - 8.0	7.97	Acceptable
pH in CaCl ₂ (1:5)	pH units	5.2 - 7.5	6.69	Acceptable
Electrical conductivity (1:5)	dS/m	< 0.5	0.19	Acceptable
Exchangeable Na percentage	% of ECEC	< 7	6.6	Acceptable
Exchangeable Ca:Mg ratio	ratio	3 - 9	2.9	Acceptable
Available phosphorus	mgP/kg	50 - 150 20 - 50	127.3 -	Acceptable
Available nitrogen (NO ₃)	mgN/kg	20 - 60	4.08	Low

Ref:

Soils for landscape development:
selection, specification and validation.
Simon Leake and Elke Haege 2014

RECOMMENDATIONS

Sample 70/30 top Dressing was assessed against Specification C1: Passive Amenity Turf. The medium sand fraction is high and the silt/clay fraction low which explains the rapid permeability of 492mm/hr. Phosphorus levels are good for turf areas however nitrogen will need boosting with urea at 300g/m³. This material is suitable for passive amenity turf however it will need to be irrigated during dry periods. Due to the physical properties of this mix it would also be suitable for use in an Active turf landscape.

Consultant:
Chantal Milner

Authorised Signatory:
Alisa Bryce

Date Report Generated
8/06/2016



FAWB Bioretention

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120

Tel: 1300 30 40 80

Fax: 1300 64 46 89

Mailing Address: PO Box 357
Pennant Hills NSW 1715

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Tests are performed under a quality system certified as complying with ISO 9001:2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 39116	Sample N°: 3	Date Instructions Received: 25/5/16	Report Status: <input type="radio"/> Draft <input checked="" type="radio"/> Final
Client Name: Macka's Sand & Soil Pty Ltd	Project Name: Macka's Soil Blend		
Client Contact: Robert Mackenzie			
Client Job N°:	SESL Quote N°:		
Client Order N°:	Sample Name: Retention Sand 80/20 5% Organic		
Address: 2684 Nelson Bay Rd Salt Ash NSW 2318	Description: Soil		
	Test Type: FAWB, SLD_Spec_F2		
Sieve Size (mm)	Description	% Retained by mass	Target Range*
>3.35	Gravel	1.06	-
2.0 - 3.35	Fine Gravel	0.28	< 3.0%
1.0 - 2.0	Very Coarse Sand	0.42	7 - 10%
0.25 - 1.0	Medium to Coarse Sand	63.69	40 - 60%
0.15 - 0.25	Fine Sand	21.43	10 - 30%
0.053 - 0.15	Fine to Very Fine Sand	6.8	5 - 30 %
<0.053	Clay + Silt	6.32	< 3.0%
Physical Performance		Unit	Result
Hydraulic Conductivity			
Actual to ASTM F 1815-06	mm/hr	196.0	> 100 mm/hr
Soil Properties**			
Organic Matter	% dry weight	1.8	>3.0%
pH in H ₂ O (1:5)	pH unit	7.1	5.5 - 7.5
Electrical Conductivity (1:5)	dS/m	0.07	< 1.2 dS/m
Orthophosphate	mg/kg	<5	< 80 mg/kg
Total Nitrogen	mg/kg	300	< 1000 mg/kg
<p>This sample, collected by SESL from the supplier, was tested to determine its suitability as a bioretention mix.</p> <p>The particle size ranges are close to meeting the specification and are considered within the error of the test. Aside from the organic matter all other properties meet the FAWB standard. Boost organic matter levels with 10% by volume green waste compost, then re-check to confirm permeability still meets the standard.</p>			
<p>Methods *In accordance with The Guidelines for Soil Filter Media in Bioretention Systems (Version 3.01) June 2009. <0.002mm by hydrometer sedimentation (Reference Black et al (1965) Method 43-5) <0.053>0.002mm by wet sieve analysis >0.053mm by dry sieve analysis. (Reference ASTM F1632-03 modified) Hydraulic conductivity to ASTM F 1815-0. **Soil Properties assessed in accordance with AS4419 - 2003 (Soils for Landscaping and Garden Use) where applicable.</p>			

Consultant: Chantal Milner

Authorised Signatory: Alisa Bryce

Method References:

Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committee, Wollongbar, NSW, Australia

Date Report Generated

8/06/2016



Specification F2: Raingardens and stormwater filtration soils

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Thornleigh NSW 2120

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Batch N°: 39116	Sample N°: 3	Date Received: 25/5/16	Report Status: <input type="radio"/> Draft <input checked="" type="radio"/> Final
Client Name: Macka's Sand & Soil Pty Ltd	Project Name: Macka's Soil Blend		
Client Contact: Robert Mackenzie	SESL Quote N°:		
Client Job N°:	Sample Name: Retention Sand 80/20 5% Organic		
Client Order N°:	Description: Soil		
Address: 2684 Nelson Bay Rd Salt Ash NSW 2318	Test Type: FAWB, SLD_Spec_F2		

Physical Properties	Unit	Target Range	Results:	Comments
Texture	-	Loamy sand	Loamy Sand	Acceptable
Permeability	mm/hr	100 - 300	196	Acceptable
Particle Size Distribution				
≥2.0 mm Fine Gravel	% w/w	< 3	1.34	
1.0 - 2.0 mm Coarse Sand	% w/w	4 - 10	0.42	Low
0.25 - 1.0 mm Sand	% w/w	40 - 60	63.7	High
0.1 - 0.25 mm Fine Sand	% w/w	10 - 30	25.17	Acceptable
0.05 - 0.1 mm Very Fine Sand	% w/w	5 - 30	3.06	Low
<0.05 mm Silt & Clay	% w/w	< 3	10.49	High

Chemical Properties	Unit	Target Range	Results:	Comments
pH in water (1:1:5)	pH Units	5.5 - 7.5	7.11	Acceptable
Electrical Conductivity	dS/m	< 1.2	0.07	Acceptable
Phosphorus (Olsen)	mg/kg	< 80	<5	Acceptable
Total Nitrogen	mg/kg	< 1000	300	Acceptable
Organic Matter	% w/w	2 - 5	1.78	Low

Ref:

Soils for landscape development:
selection, specification and validation.
Simon Leake and Elke Haege 2014

RECOMMENDATIONS

This sample, collected by SESL from the supplier, was tested to determine its suitability as a raingarden mix.

The particle size ranges and organic matter are close to meeting the specification and are considered within the error of the test.

All other properties meet the FAWB standard.

Consultant:
Chantal Milner

Authorised Signatory:
Alisa Bryce

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