

Attachment 3 - SESL Soils Report



Our Ref: C0150.Q3275.B26338FE.docx

21st June 2013 Adam Hunter Environmental Partnership (NSW) Pty Ltd 2 River Street

Birchgrove NSW 2041

Dear Adam,

Re: Soil Conditions, Analysis and Recommendations: Dame Eadith Walker Estate

Introduction

SESL Australia has been commissioned by Environmental Partnership (the Client) to examine the soil conditions of the paddocks, regeneration area and driveway dual tree lines at Dame Eadith Walker Estate (the Site). The proposed works are to upgrade the pastures as the present soil condition of the agistment facility is poor. The grounds require substantial work to rectify the long-term effects of overgrazing, overdue maintenance and weed control.

The Client has advised in their scope of works that the areas of particular concern are the high level of Fireweed (*Senecio linearifolius and S. lautus*) which is poisonous to horses, the soil nutritional levels and the uneven surface in Paddock 2 due to the trench and backfill works along the north to south direction of the paddock. The backfilling is expected to be mixed subsoil with topsoil that may present a risk to stock injury.

The work will involve characterising and analysing the soil conditions throughout the area highlighted by Environmental Partnership. The three key areas that SESL has focused on for Site amelioration are:

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- Regeneration area: This area is located north east of the Site and encompasses a fenced off area of 2.475ha². The ground material is comprised of bedrock and crushed shale fill. The area has an existing fenced revegetation area and a well-defined former trotting track.
- Paddock maintenance: The Site contains 2 primary paddocks that are divided into separate allotments. The conditions of the 2 paddocks vary and are heavily grazed and require further management. Paddock 1 covers an area of 7.34ha² and Paddock 2 an area of 6.78ha².
- 3. Driveway: A dual tree line runs parallel to the private driveway through the premises. The soil is heavily compacted and eroded from pedestrian, horse and vehicular traffic. The area covers 1.45ha².

Dame Eadith Walker Estate is located off Nullawarra Avenue in Concord, NSW. Chapman and Murphy (1989) describe the natural soil landscape as being at the intersection of Blacktown and some disturbed soil landscape profiles. The disturbed landscape is primarily around the Regeneration Area. Blacktown landscape is a residual soil landscape formed on Wianamatta Shales. Fundamentally The Blacktown soils are shallow Red Podsolics in the crest and midslope positions with deeper Yellow Podsolics in lower slope positions grading into deep Yellow Solodics (sodic Yellow Podsolics) and uniform structured clays. Podsolic soils show a strong contrast between the more loamy A horizon (topsoil) and a clear to abrupt boundary to a heavy clay B horizon (subsoil). Functionally the shallow Red Podsolics are usually well drained but will show perched water tables during intense wet periods and consequently form iron/manganese pellets at the A/B boundary. Waterlogging of transplant specimens, particularly those with larger rootballs, can be a problem in wet periods. The deep subsoils will be sodic and occasionally saline in low-lying locations. Subsoils can be very hostile to plant growth containing few nutrients, variously strong acidity and heavy clay content.

The purpose of the analysis and the report is to conduct a formal soil survey to define the site soil resources, ascertain the suitability for the upgrade and landscaping and to provide a discussion with recommendations for the amelioration options. This report presents the results of a visual inspection and intrusive soil assessment by SESL horticultural and environmental scientists.

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Site assessment

A walk over inspection with soil sampling was conducted on Thursday 16th May 2013 by Chantal Hooper and Luke Jacovides of SESL Australia whereby examining the soil profile and obtaining samples for analysis.

Soil sampling was conducted via hand auger to obtain samples judgmentally selected from across the Site at appropriate depths representative of the A and B horizons in seventeen (17) areas illustrated on the map (Appendix B). The locations were chosen to provide the broadest representation of the soil landscape variability to be encountered, however the sampling density is not sufficient to provide a detailed soil map nor to locate all areas of disturbed soil, fill and other anomalies that may occur. Twenty eight (28) soil samples were collected from seventeen (17) bore holes in total; seventeen (17) topsoils (A Horizon) and eleven (11) sub soil (B-Horizon) were examined. All profiles were described for the basic properties of horizon depth, colour, structure, and texture sufficient to allow recognition of the horizon discussed in the report. All field samples were submitted to the NATA accredited (approval No 15633) SESL Environmental Laboratory for analysis.

Laboratory analysis was conducted on twenty eight (28) soil samples for the following:

- Full soil chemistry (Topsoil only) pH Levels: pH in H₂O, pH in CaCl2, Nutrients: NO₃, PO₄, K, SO₄, Ca and Mg, Fe, Mn, Zn, Cu and B, EC and cation ratios.
- Total Organic Carbon (Topsoil only)
- Subsoil characterisation (Subsoil only)- pH Levels: pH in H₂O, pH in CaCl2, Nutrients:
 K, Ca and Mg, EC and cation ratios.

Results of the analysis are presented in Appendix A and are discussed in detail in the results section.

Soil Profiles

The surface topsoil (A-Horizon) profiles in both paddocks are typically a medium to dark brown organic clay loam layer. In the driveway the soil contained less organic matter therefore was a lighter brown colour. The soil was also very compacted, eroded and difficult to auger. The subsoil (B-Horizon) is a orange/reddish light clay podzolic typical of the Blacktown soil profile landscape.

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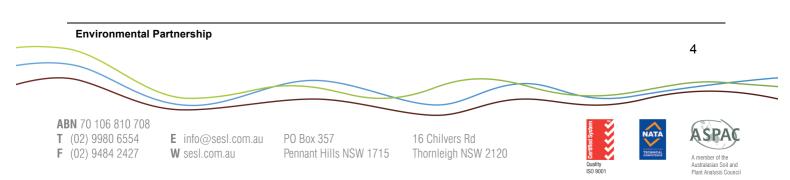






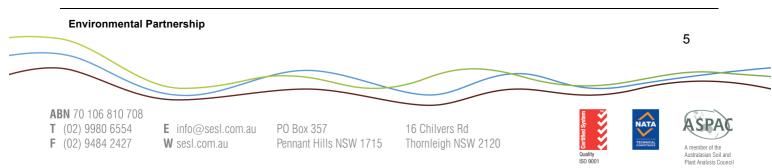
Table 1: Soil profiles from Dame Eadith Estate, Concord.

			BH1 – Paddock 1		
Sample #	Horizon	Depth	Description		
1	A	0-280mm	Medium/dark brown loam.		
			Very organic		
2	A2	280mm+	Light clay		
			Orange and red clay mottling present		
			Possible red ironstone		
	1 1		BH2 – Paddock 1		
Sample #	Horizon	Depth	Description		
3	A	0-200mm	Medium brown loam		
			Orange clay mottling present		
4	В	200mm+	Light clay but topsoil is present, possibly tyned		
			Orange and red mottling present		
BH3 – Paddock 1					
Sample #	Horizon	Depth	Description		
5	A	0-350mm	Medium brown loam		
			Orange clay mottling present		
6	В	350mm	Light clay but topsoil is present, possibly tyned		
			Orange and red mottling present		
			BH4 – Paddock 1		
Sample #	Horizon	Depth	Description		
7	A	0-350mm	Medium/dark brown loam.		
			Very organic		
8	В	350mm+	Medium brown light clay		
			Gradual increase of clay		
			Orange and red clay mottling present		



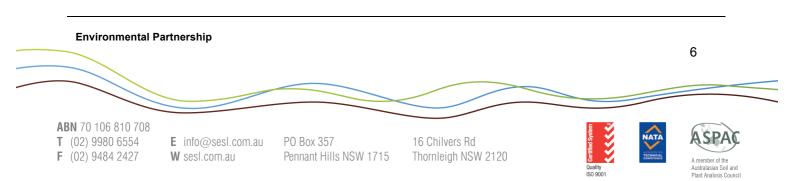


			BH5 – Paddock 1
Sample #	Horizon	Depth	Description
9	А	0-300mm	Medium/dark brown loam.
			Very organic
10	В	300mm+	Medium brown light clay
			Shale present, gravelly
			Orange and red clay mottling present
			BH6 - Driveway
Sample #	Horizon	Depth	Description
11	А	0-200mm	Light brown loam
			Very compacted, difficult to penetrate
			Soil friable and loose
			Aggregates (15mm)
			Ironstone pellets present on surface, indicative of erosion
			BH7 - Driveway
Sample #	Horizon	Depth	Description
12	A1	0-50mm	Medium dark brown loam. Organic layer build up, most likely from
			the trees.
			Ironstone pellets present on surface, indicative of erosion
12	A2	50-350mm	Light brown loam
			Very compacted, difficult to penetrate
			Soil friable and loose
13	В	350mm+	Reddish brown light clay podzolic
			BH8
Sample #	Horizon	Depth	Description
14	A1	0-50mm	Medium greyish brown loam
			Not as organic
14	A2	50-350mm	Medium brown loam
			Moderately compacted
			Orange shale present
15	В	350mm+	Orange/red light clay



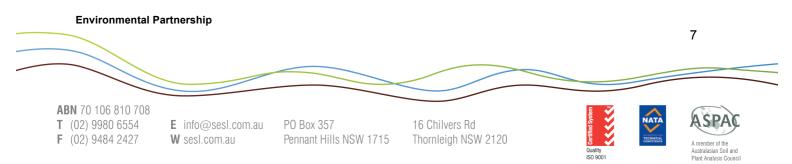


			BH9
Sample #	Horizon	Depth	Description
16	A	0-150mm	Medium brown organic layer = top 50mm
			Dry, friable and heavily compacted
			Below 50mm is medium brown clay loam
			BH10 – Regeneration Area
Sample #	Horizon	Depth	Description
17	A	Surface	Medium brown loam
		sample	
			BH11 – Regeneration Area
Sample #	Horizon	Depth	Description
18	A	Surface	Medium brown loam
		sample	
			BH12 – Regeneration Area
Sample #	Horizon	Depth	Description
19	A	Surface	Medium to dark brown loam
		sample	More organic
			BH13 – Paddock 2
Sample #	Horizon	Depth	Description
20	A	0-200mm	Medium to dark brown loam
			Slightly reddish
			Organic
21	В	200mm+	Brown/orange light clay
			BH14 – Paddock 2
Sample #	Horizon	Depth	Description
22	A	0-250mm	Organic medium to dark brown/ red loam
			Orange shale present
23	В	250mm+	Brown light clay
			Orange, red clay mottling
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			BH15 – Paddock 2
Sample #	Horizon	Depth	Description
24	А	0-250mm	Organic medium to dark brown/ red loam
			Orange shale present
25	В	250mm+	Brown light clay
			Orange, red clay mottling
	I I		BH16 – Paddock 2
Sample #	Horizon	Depth	Description
26	А	0-250mm	Organic medium to dark brown/ red loam
			Orange shale present
27	В	250mm+	Brown light clay
			Orange, red clay mottling
	II		BH17 – Paddock 2
Sample #	Horizon	Depth	Description
28	А	0-100mm	Organic medium to dark brown/ red loam
			Orange shale present
29	В	100mm+	Brown light clay
			Orange, red clay mottling





Results

Complete sets of the original results are found in Appendix A. Results are summarized in Table 2.

	1	2	3	4	5	6	7	8	9	10
			-		-	_		-	-	
	BH1 0- 280mm	BH1 280mm+	BH2 0- 200mm	BH2 200mm+	BH3 0- 350mm	BH3 350mm+	BH4 0- 350mm	BH4 350mm+	BH5 0- 300mm	BH5 300mm+
	Paddock	Paddock								
	1	1	1	1	1	1	1	1	1	1
pH in H₂O	5.7	5.7	5.8	5.6	5.6	5.2	5.4	5.3	6	5.4
pH in CaCl₂	4.7	4.7	4.9	4.6	4.7	4.3	4.6	4.4	5.2	4.3
EC dSm	0.03	0.03	0.06	0.05	0.04	0.04	0.06	0.04	0.08	0.03
Na % CEC	2.9	2.8	1.7	3.1	1.1	2.1	1.3	1.2	1.1	1.7
K % CEC	1.4	1.4	5.2	2.6	6.1	2.8	8.3	6.3	12.1	3.9
Ca % CEC	24.3	14.4	33.8	19.6	22.9	5.6	25.3	15.8	31.6	14.8
Mg % CEC	12.2	16.5	15	16.3	15.2	23.7	13	14	24.5	21.7
H % CEC	54.8	59.2	43	53.4	52.3	50.3	49.3	49.5	30.3	44.9
AI % CEC	3.6	5.8	1.1	4.8	2.5	15.4	2.9	12.9	0.1	13
CEC meq/100g	13.8	11.8	16.1	13.4	15.7	15.2	15.9	13.9	20.3	15.2
NO₃ mg/kg	0.05	N.T	0.8	N.T	0.6	N.T	5.8	N.T	2	N.T
PO₄ mg/kg	4.7	N.T	11.5	N.T	5.6	N.T	5.2	N.T	64.9	N.T
K mg/kg	78.7	61.4	325	137	373	170	517	343	963	229
SO₄ mg/kg	7.2	N.T	21	N.T	14	N.T	18	N.T	17	N.T
Ca mg/kg	672	340	1087	525	719	169	805	440	1284	449
Mg mg/kg	205	236	292	264	289	436	250	236	602	399
Fe mg/kg	80	N.T	196.2	N.T	204.3	N.T	251.7	N.T	220.2	N.T
Mn mg/kg	14	N.T	36	N.T	37	N.T	33	N.T	22	N.T
Zn mg/kg	0.7	N.T	5.9	N.T	2.7	N.T	4.7	N.T	6.9	N.T
Cu mg/kg	1.3	N.T	2.2	N.T	2.3	N.T	1.9	N.T	2	N.T
B mg/kg	1.3	N.T	1.3	N.T	1.1	N.T	1.1	N.T	1.3	N.T

Table 2. Soil chemistry analysis for Paddock 1

N.T = No Tested

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Table 3. Soil chemistry analysis for Driveway

	11	12	13	14	15	16
	BH6 0- 200mm Driveway	BH7 0- 350mm Driveway	BH7 350mm+ Driveway	BH8 0- 350mm Driveway	BH8 350mm+ Driveway	BH9 0- 150mm Driveway
pH in H ₂ O	4.6	6	5.6	5.9	5.5	6
pH in CaCl₂	4.2	5.3	4.6	5.1	4.5	5.3
EC dSm	0.19	0.07	0.04	0.05	0.02	0.08
Na % CEC	6.5	2.6	1.9	1.1	1.6	3
K % CEC	1.9	8	5.9	5.3	3.7	5
Ca % CEC	2.4	63.8	10.2	40.6	11	66.3
Mg % CEC	6.7	25.8	12.1	17.8	13.6	25.7
H % CEC	65.5	0	62.2	34.8	58.8	0
AI % CEC	16.5	0.2	7.4	0.2	11.5	0
CEC meq/100g	13	17.1	13	20.3	12.8	18.7
NO₃ mg/kg	0.5	1.1	N.T	3.8	N.T	4.4
PO₄ mg/kg	6.5	12.6	N.T	7.4	N.T	11.9
K mg/kg	96.2	532	303	421	184	362
SO₄ mg/kg	84	23	0	8.3	0	20
Ca mg/kg	62.8	2181	265	1648	282	2478
Mg mg/kg	105	535	190	437	211	582
Fe mg/kg	166.2	132.3	N.T	156.9	N.T	262.1
Mn mg/kg	10	20	N.T	19	N.T	29
Zn mg/kg	2	8.9	N.T	7.6	N.T	12
Cu mg/kg	1.4	2	N.T	1.5	N.T	3.3
B mg/kg	1	1.8	N.T	1.3	N.T	2.2

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Table 4. Soil chemistry analysis for Regeneration Area

	17	18	19
	BH10 regen surface sample	BH11 regen surface sample	BH12 regen surface sample
pH in H₂O	5.7	5.6	5.8
pH in CaCl₂	4.9	4.9	5
EC dSm	0.1	0.07	0.09
Na % CEC	3.4	1.2	2.4
K % CEC	6.3	5.6	7.9
Ca % CEC	20.6	32.4	25.2
Mg % CEC	18.4	21.5	23.4
H % CEC	49.5	38.7	40.1
AI % CEC	1.8	0.5	0.6
CEC meq/100g	15.8	22.6	19.8
NO₃ mg/kg	0.3	2.4	9.9
PO₄ mg/kg	6.4	15	14.1
K mg/kg	387	493	610
SO₄ mg/kg	22	17	8.6
Ca mg/kg	651	1465	996
Mg mg/kg	351	589	561
Fe mg/kg	340.8	263.3	305
Mn mg/kg	11	9.1	15
Zn mg/kg	3.9	12	8.4
Cu mg/kg	1.2	1.6	1.8
B mg/kg	1.3	1.2	1.2
	1	1	

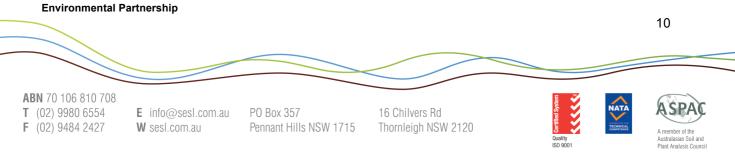




Table 5. Soil chemistry analysis for Paddock 2

		1			1	1			1	
	20	21	22	23	24	25	26	27	28	29
	BH 13 0- 200mm Paddock 2	BH13 200mm+ Paddock 2	BH14 0- 250mm Paddock 2	BH 14 250mm+ Paddock 2	BH15 0- 250mm+ Paddock 2	BH15 250mm+ Paddock 2	BH16 0- 250mm Paddock 2	BH16 250mm+ Paddock 2	BH17 0- 100mm+ Paddock 2	BH17 100mm+ Paddock 2
pH in H₂O	5.7	5.6	5.7	5.6	5.6	5.5	5.8	5.8	5.9	5.7
pH in CaCl₂	4.8	4.6	4.8	4.7	4.9	4.6	5.1	5	5.2	4.8
EC dSm	0.06	0.04	0.07	0.04	0.05	0.03	0.07	0.03	0.08	0.04
Na % CEC	1.8	2.7	2	2.4	1.3	1.4	1.1	1.5	1	0.9
K % CEC	6.7	3.9	7.6	6.9	6.3	5.3	7.7	5.4	10.7	9
Ca % CEC	24.6	8.6	27.1	12.2	22.1	14.4	33.2	16.7	32.5	18.3
Mg % CEC	16.9	12.2	14	10.7	16.2	12.1	20.8	14.8	21.5	13.8
H % CEC	48.1	64	47.8	61.4	52.4	60.9	37.1	59.1	33.9	53.9
AI % CEC	1.9	8.8	1.4	7.1	1.7	6	0.1	2.8	0.1	3.6
CEC meq/100g	18	13.2	16	11.3	15.7	12.6	20.6	12.8	20.7	14
NO₃ mg/kg	1.2	N.T	1.6	N.T	1.7	N.T	6.3	N.T	4.1	N.T
PO₄ mg/kg	6.4	N.T	5.1	N.T	7.9	N.T	16.7	N.T	10.7	N.T
K mg/kg	475	204	476	305	388	261	619	270	865	492
SO₄ mg/kg	15	N.T	18	N.T	12	N.T	13	N.T	20	N.T
Ca mg/kg	883	225	865	276	693	362	1368	428	1343	512
Mg mg/kg	368	195	271	147	308	184	519	230	540	233
Fe mg/kg	263.8	N.T	312.1	N.T	239	N.T	254.1	N.T	330.5	N.T
Mn mg/kg	16	N.T	30	N.T	32	N.T	19	N.T	42	N.T
Zn mg/kg	4	N.T	4.8	N.T	3.7	N.T	8.4	N.T	7.9	N.T
Cu mg/kg	1.4	N.T	1.7	N.T	1.6	N.T	2.6	N.T	2.1	N.T
B mg/kg	1.2	N.T	1.2	N.T	1.1	N.T	1.3	N.T	1.4	N.T
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Generally the results show largely unimproved pasture soils with moderate to strong acidity, calcium deficiency and low phosphorus levels. Only topsoil at BH 5 showed pH, calcium and phosphorus levels indicative of a degree of pasture improvement. These soils typically need liming and applications of phosphorus, sulphur and molybdenum for pasture improvement purposes.

Discussion

Paddock 1 Soil Conditions

The topsoil at Paddock 1 has a primarily medium acidity aside from BH4, which has a strong acidity with, desirably low salinity levels. The effective cation exchange capacity (eCEC) is dominated by high levels of hydrogen and aluminium, resulting from the acidity levels. The acidity has lead to increased availability of aluminium, which will be highly toxic to plants. The eCEC is also very low in calcium. Overall nutrient levels require improvement in all areas. Organic matter levels are high.

The subsoil at Paddock 1 has a primarily strong acidity and very low salinity. Similar to the topsoil the eCEC is dominated by hydrogen and aluminium and is very low in calcium.

Paddock 2 Soil Conditions

The chemical and physical properties at Paddock 2 are very similar to those at Paddock 1. The topsoil has a medium acidity with desirably low salinity levels. The effective cation exchange capacity (eCEC) is dominated by high levels of hydrogen and aluminium as a result of the acidity levels. The acidity has lead to increased availability of aluminium, which is toxic to plants, particularly pasture legumes. The eCEC is also very low in calcium. Overall nutrient levels require improvement in all areas. Organic matter levels are high.

The subsoil at Paddock 1 has a primarily strong acidity and very low salinity. Similar to the topsoil the eCEC is dominant in hydrogen and aluminium and very low in calcium.

Driveway soil conditions

The soil conditions of the driveway are more compacted, eroded and less structured than the paddocks. The soil shows medium to very strong acidity and low salinity. The effective cation

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exchange capacity (eCEC) is dominated by high levels of hydrogen and aluminium, as a result of the acidity levels. The conditions at BH7 are slightly different whereby the eCEC is dominated by magnesium and therefore less acidic.

Regeneration areas

The regeneration areas are very similar to the paddocks with medium acidity, low salinity. The eCEC is dominated by high aluminium and hydrogen and low in calcium. Nutritional levels require boosting. The compacted shale fill in the former trotting track region was not analysed in this assessment. The compacted shale nature of the trotting track suggest limited nutrient retention and therefore the material un-amended is not suitable to support surface cover. Further, the material poses a physical limitation to any proposed future use. Recommendations on potential remedial actions are provided further in this report.

Current Carrying Capacity

The pasture is dominated by summer active perennial grasses, Couch (*Cynodon dactylon*) and Paspalum (*Paspalum dilatatum*). There is very little clover or legume component and significant weed content including the following species:

Dandelion species	Taraxicum officionale
Fireweed	Senecio lautus
Lambs tongue	Plantago lanceolata
Thistle	Cirsium vulgare
Fleabane	Conyza spp
Greater plantain	Plantago major
Bindii	Soliva pterosperma
Pennywort	Centella spp
Paddys lucerne	Sida rhomobifolia
Fireweed (groundsel)	Senecio linearifolius
Paspalum	Paspalum dilatatum
Couch	Cynodon dactylon
Scarlet Pimpernel	Anagalis arvensis

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While perennial grass is a good basis for pasture the lack of soil improvement, lack of legume component and lack of appropriate maintenance reduces carrying capacity. The predominance of couch in many places is likely a result of the fact that it is most resistant to the close grazing that horses prefer, it becoming dominant in situations of over-grazing. The current carrying capacity of the paddocks can be estimated at 0.5 horses/ha given the above conditions. With soil and pasture improvement, as well as appropriate maintenance this can potentially be increased to 1 horse/ha (NSW DPI 2007). If holding yards of around 50m2 can be incorporated into the design where horses are fed additional supplementary feeds and kept off pasture on a rotational basis, carrying capacities can be increased further. Just what the carrying capacity can be increased to depends on the degree of supplementary feeding and the issues of soil compaction and wear with increased numbers.

Holding yards can also be used to keep horses off pasture during excessively wet periods or periods of drought where growth is reduced. They are considered a highly desirable part of pasture management.

Horses graze in a manner that results in areas of short grass, dominated by species tolerant of close grazing (eg Couch) and areas of "rough" in toilet areas. Horses will not graze in these areas (likely a natural parasitic worm prevention response) hence the grass becomes long and often weedy in these areas as a response to the additional manure fertilizer and reduced grazing.. This will often leave areas that are overgrazed and other areas of long grasses where weeds inevitably dominate. Horses will not regularly eat weeds and horse pastures inevitably become weedy all over without regular maintenance.

The process of conditioning of renovating horse pastures is essentially one of disrupting this balance. It also helps to "cell graze" where large numbers of horses (say 20 horses) graze a paddock for very short periods eg 10 days and are then removed for pasture renovation and recovery. This may involve a rotation of say 10 days grazing and 30 days recovery. Pastures are less prone to weediness and degradation under such a grazing system than say a single horse for 200 days (same total grazing hours).

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 If Chilvers Rd<



Overall the main issues influencing soil conditions for landscape and pasture uses are:

- 1. The soil is very acidic and has high levels of hydrogen, and available aluminium. The chief consequence will be poor establishment and growth of legumes.
- 2. Topsoil nutrition levels require improvement in particular nitrogen, phosphorous and sulphate levels. Although not measured it is a reasonable assumption for the spoil type that molybdenum will also be deficient.
- 3. Low calcium levels which can be problematic for pregnant or lactacting horses especially where warm season perennial grasses containing oxalates are present.
- 4. Compacted and uneven soil surface in Paddock 2, which can be detrimental to horses hooves.
- 5. Eroded, compacted and massive (lacking structure) soil on the tree line parallel to the driveway and surrounding the horse troughs from human and pedestrian traffic.
- 6. High levels of weeds meaning significant proportion of the paddock is not supporting suitable vegetation for horses.
- 7. Presence of fireweed which is toxic to horses.
- 8. Overgrazed areas in the paddocks.

Recommendations

Maximising Carrying Capacity

There are four essential parts to maximizing pasture productivity in these horse pastures: improving soil fertility, improving winter feed production, improving protein levels in the pasture and defining a regular annual maintenance cycle that includes spelling, fertilizing, harrowing and slashing weeds.

Improving the soil fertility.

The soil conditions overall are too low to support improved pasture and should be increased as outlined below. The main requirements are for increased pH, phosphorus, and sulphur levels to allow the inclusion of some winter active legumes and grasses.

1. The pH in all areas will need to be raised. This will improve nutrient availability and lessen

the availability of toxic aluminium. This should be done through incorporating **lime at 4t/ha**. Environmental Partnership

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- 2. Improve phosphorus and molybdenum levels using an application of **molybdenised Super phosphate (Moly super) at 500kg/ha**.
- 3. Nitrogen will eventially be improved by the incorporation of legumes in the pasture but initially, to improve grass growth and protein content apply **urea at 30g/m2**.
- 4. To improve calcium levels further apply gypsum at 200g/m2 (2t/ha)

These fertilizer applications should coincide with a renovation or maintenance treatment and a seasonally appropriate over-sowing treatment as was described below.

Maintenance

To ensure effective pasture management it's important to rotate the horses to allow the pasture respite. Therefore allow the horses to graze in a paddock until over 20% of the paddock has been grazed down to an average height of 5cm. At this point rotate the horses to a new paddock. This may require around four rotations a year but the actual number will depend on growth rates. Twice a year should be considered the absolute minimum. The purpose is not just to spell the grass but to perform conditioning practices aims at eliminating the roughs or toilet areas and the weeds. In the spelled paddock (and as part of the initial increased fertility treatment above) perform the following:

- 1. Slash the paddock to control weeds.
- 2. Either use the initial fertilizer treatment as above on new paddocks or, twice a year as part of maintenance spread "After Graze" fertiliser (NPK 22: 2: 7.5) at 250kg/ha.
- 3. Harrow to break up manure accumulations.
- 4. Add a seasonally appropriate oversowing treatment:
 - a. Autumn and early winter*: subterranean clover (Var Leura) at 6 kg/ha, which is a winter active components. This can be added from May-June but no later than July.
 - b. Spring and early summer: White clover (Var Bounty) at 4 kg/ha.
- 5. Wait until the pasture is 10cm in height before allowing horse to graze (approximately 6 weeks).

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*Annual Rye was originally recommended at a low rate of 0.5kg/hat to prevent the potential adverse properties of Ryegrass (laminitis and staggers and providing excess energy resulting in undesirable weight gain), however following consultation with the client and equine specialists (Equiculture) this has been removed in preference to other winter active grasses or even forage (eg grazing oats), used to enhance winter feed. The lower winter production rate will likely require a supplementary feeding program, particularly in the coldest months.

Productivity of the pasture will improve with rotating the horses and allowing the pasture to recover from overgrazing. Overgrazing can weaken the grass roots from reduced photosynthesis due to the reduced photosynthetic surface. This can lead to loss of grass cover. Fireweed is indicative of overgrazing, high acidity and low fertility pastures. Fireweed is also fatal to horses but thankfully its unpalatable flavour is a deterrent for most horses, however this may not be a deterrent for a hungry horse. The above program itself should be sufficient to eliminate the majority of this weed.

Selecting grass species

Paspalum, Kikuyu and Couch are summer active perennials that contain calcium oxalate. Calcium oxalate is insoluble and is effectively unavailable to the horse. Calcium deficiency in horses can lead to problems with lactating and pregnant horses such as broken bones, stressed limbs and in extreme cases a disease called Big Head whereby foals are born with a large porous skull. Both paspalum and couch are good pasture species for high rainfall areas but do contain oxalates. The above fertiliser and over-sowing program is designed to improve calcium intake but individual owners are well advised to include significant calcium supplements such as licks and dietary supplements. It is not recommended to increase the spread of Kikuyu.

Reducing Compaction and Erosion – Grass Maintenance

The two main areas of compaction and erosion are along the driveway tree lines and surrounding the horse troughs. Rotating the horses will allow some respite for the soil as loss of grass is indicate of where the ratio of rate of wear and rate of recovery is unbalanced. Mulching will also assist,

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over time, with decreasing the density and compaction from pedestrian traffic in the driveway and by the horse troughs to encourage the growth of soil organisms and improving water infiltration. This should be combined with a fertiliser regime to improve the vigor and wear resistance of the grass areas. Ideally horse troughs should have hard surface around them as were rates are so high it is not usually possible to maintain grass cover.

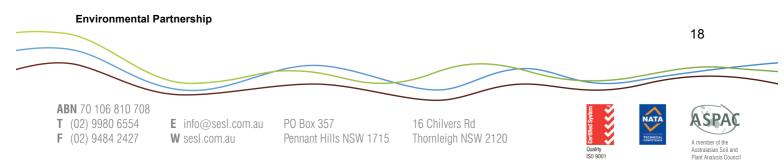
It is also recommended to put up signage to stop vehicular traffic from driving and parking along the driveway tree line.

Compaction and the uneven surface at Paddock 2 can be improved through and the harrowing program which will, over time, level the surface.

Former Trotting Track

Due to the distinct difference in surface condition, the recommendations for the former trotting track have been provided separately. The disturbed nature of the area, being an imported crushed shale base leads to unique difficulties in revegetation. SESL has been advised that a dog-off-leash area is being suggested as a possible use of the region and therefore some degree of surface cover is preferable. To reach this end, SESL propose the following recommendations.

To promote the establishment of a soil profile adequate to sustain surface grass cover, the compacted shale material will require deep ripping and applications of lime at 550g/sqm (to 150mm depth) to increase the hydraulic conductive, prevent re-compaction issues from occurring, increase the acidic pH and correct the cation balance to improve the fertility. The ripped surface will require a further addition of leguminous compost at 20% by volume to further promote the establishment of soil structure, nutrient and moisture retention. This ameliorated surface material would benefit from the sowing of a cover crop to aid in the improvement of organic matter and structure to the surface. Cover crops should be seasonably suitable as recommended in the oversowing treatment discussed above.





Prior to major ground work being undertaken, the surface of the shale fill will require surveying to ensure no waterlogging conditions are created during the amelioration.

Revegetation Area

The soil chemistry in the revegetation area is not limiting to the re-establishment of plant species within the fenced off region. Any amelioration of soil resources in this area will severely effect the existing vegetation and is therefore not recommended. The recommended management for promoting further revegetation is passive management by invasive species removal only. No additions to soils are considered necessary.

Conclusions

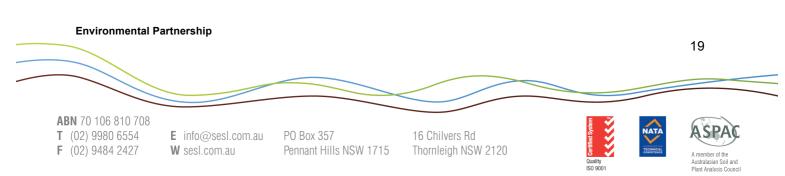
It's our view that the soil conditions and carrying capacity of Dame Eadith Walker Estate can be improved for agistment by the use of corrective management such as soil pH correction agents, gypsum, lime, organic matter applications, fertilizers and regular maintenance. Planting of Clover species both winter and summer varieties and a winter active grass will aid greatly in the carrying capacity of the paddocks.

SESL is pleased to present this report and recommendations. We will be pleased to answer any further questions during the progress of the development therefore please do not hesitate to contact us with any questions or clarifications.

SYDNEY ENVIRONMENTAL & SOIL LABORATORY PTY LTD

Chantal Hooper Horticultural Consultant e: chantal@sesl.com.au

Simon Leake Principal Soil Consultant e:simon@sesl.com.au





Acknowledgement: The input of Jane and Stuart Myres of Equiculture in the areas of horse grazing and rotational methods is gratefully acknowledged.

Appendices

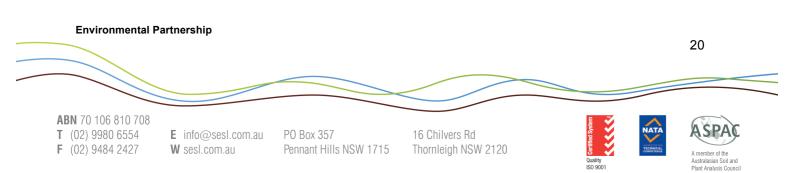
Appendix A: SESL Laboratory Analysis

Appendix B: Site Map

References

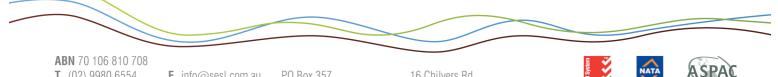
Chapman G.A and Murphy C.L (1989) Soil Landscapes of the Sydney 1:100 000 Sheet. Soil Conservation Service of NSW, Sydney.

NSW DPI (2007) Primefacts, Primefact 525 (replaces Agfact P2.4.3). www.dpi.nsw.gov.au/primefacts





APPENDIX A Laboratory Analysis



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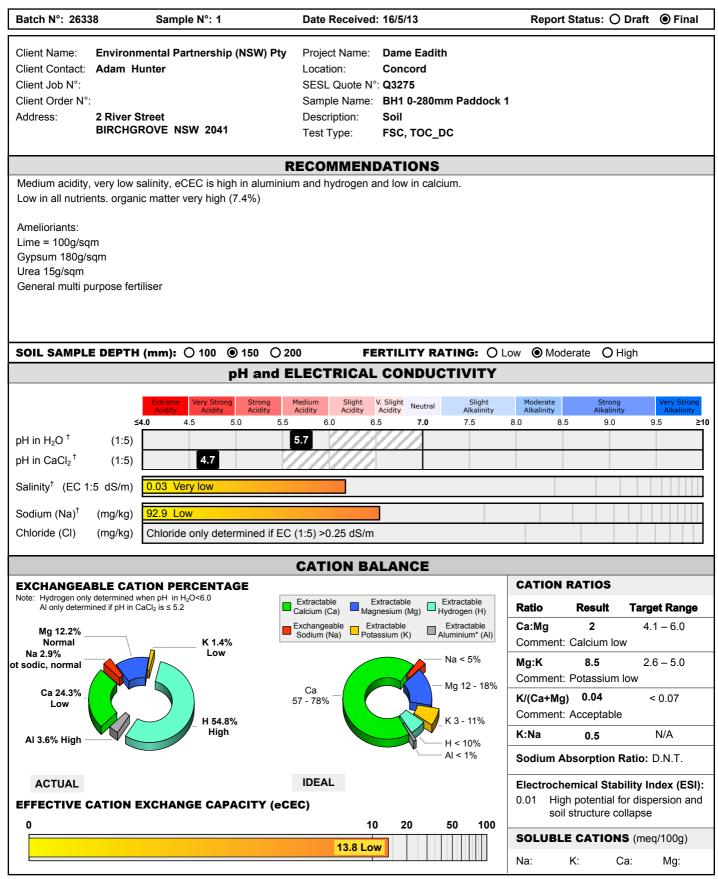


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Soil Chemistry Profile

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Sample N°: 1

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Report Status: O Draft Final

		PLANT A	VAILABLE I	UIKIENT		1	1	1
Major Nutrients	Result (mg/kg)	Very Low	/ Marginal	💹 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	<0.05					<0.3	4.2	3.9
Phosphate-P (PO ₄)	4.7					0.9	12.6	11.7
Potassium (K) [†]	78.7					15.7	52.3	36.6
Sulphate-S (SO ₄)	7.2					1.4	13.6	12.2
Calcium (Ca) [†]	672					134.1	372.1	238
Magnesium (Mg) [†]	205					40.9	38.7	Drawdowr
Iron (Fe)	80					16	110.1	94.1
Manganese (Mn) [†]	14					2.8	8.8	6
Zinc (Zn) [†]	0.7					0.1	1	0.9
Copper (Cu)	1.3					0.3	1.3	1
Boron (B) [†]	1.3					0.3	0.5	0.2
Explanation of graph	n ranges:					NOTES: Adjust	ment recommendatio	n calculates the
Very Low	Low	Marginal	💋 Adequate	High			ation to shift the soil f and, which maximise	
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	response to nutrient addition is 60 to 90%.	build-up is still recommended. Potential response to nutrient addition is 30 to 60%.	maintenance application rates are recommende Potential response to nutrient addition is 5 to 30%.		ace waters. ommended. se to nutrient	Adequate. • g/sqm measure 1.33 tonne/m ³ ar	ertiliser when soil tes ements are based on Id selected soil deptr	soil bulk density of
Phosphorus Satur	ration Index	Exchangeable	Acidity		Physica	al Descript	ion	
		Adams-Evans Buf	fer pH (BpH):	6.7	Texture:		Did not t	est
0.15		Sum of Base Catio		5.7	Typical c	lay content:	Did not t	est
High		Eff. Cation Exch. (Capacity (eCEC):	13.8	Size:			
0.06 E	xcessive	Base Saturation (9	,	41.3	Gravel co		Did not t	est
Adequate		-	dity (meq/100g ⁻¹):			e strength:	Did not t	
0 mmol/k	≥0.4	Exchangeable Aci	dity (%):	54.78	Structura		Did not t	
THIN OF A	.9	Lime Application	Rate				te: Very Slo	
0		 to achieve pH 6. 	0 (g/sqm):	490		ility (mm/hr):		est
Low. Plant response to	applied P is likely.	– to neutralise Al (ˈɡ/sqm):	72		ed EC _{SE} (dS/r res EC and	n): - Soil Texture	result.
		Gypsum Applica	tion Rate		•		%) [†] : 4.4 – Ve r	
		- to achieve 67.5%): 181	-	Matter (OM%		
				-	-			
		The CGAR is corr	ected for a soil		Additiona	al comments:		
		The CGAR is corr depth of 150mm a			Additiona	al comments:		

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26338 Sample N°: 2 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH1 280mm+ Paddock 1 Address: 2 River Street Soil Description: **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Medium acidity, very low salinity, eCEC is high in aluminium and hydrogen and low in calcium. Low nutrients Amelioriants: Lime = 300g/sqm Gypsum 260g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 5.0 55 60 65 7.0 75 95 <4.0 >10 pH in H₂O[†] (1:5) 5.7 pH in CaCl₂[†] 4.7 (1:5)0.03 Very low Salinity[†] (EC 1:5 dS/m) Sodium (Na)[†] (mg/kg) 76.5 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio Result **Target Range** Magnesium (Mg) Calcium (Ca) Extractable Extractable Aluminium* (Al) 0.9 4.1 - 6.0Exchangeable Ca:Mg Potassium (K) Sodium (Na) K 1.4% Comment: Potential Calcium deficiency Mg 16.5% Low Normal Na < 5% Mg:K 12.2 2.6 - 5.0Na 2.8% ot sodic, normal Comment: Potential Potassium deficiency Mg 12 - 18% Са Ca 14.4% 0.04 K/(Ca+Mq) < 0.07 57 - 78% Low Comment: Acceptable K 3 - 11% H 59.2% AI 5.8% High K:Na N/A High 0.5 H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** High potential for dispersion and 0.01 **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 11.8 Very Low Na: K: Ca: Mg:



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Sample N°: 2

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

			PLANT	AVAILABLE	NUTR		5			
Major Nutrients	Result (mg/kg)	Very	/ Low Lo	w Marginal	💋 Ade	equate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-							-	4.2	Did not te:
Phosphate-P (PO ₄)	0							-	12.6	Did not tes
Potassium (K) [†]	61.4							12.2	52.3	40.1
Sulphate-S (SO ₄)	-							-	13.6	13.6
Calcium (Ca) [†]	340							67.8	372.1	304.3
Magnesium (Mg) [†]	236							47.1	38.7	Drawdow
Iron (Fe)	-							-	110.1	Did not te
Manganese (Mn) [†]	-							-	8.8	Did not tes
Zinc (Zn) [†]	-							-	1	Did not tes
Copper (Cu)	-								1.3	Did not te
Boron (B) [†]	-								0.5	Did not te
Very Low Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	Low Potential "hidder hunger", or sub- deficiency. Poter response to nutr addition is 60 to	clinical is b ntial the rient bui 90%. rec Pot nut to 6	Marginal pply of this nutrient parely adequate for plant, and ld-up is still commended. tential response to rient addition is 30 50%.	Adequate Supply of this nutrient adequate for the plant and and only maintenance applicati rates are recommende Potential response to nutrient addition is 5 to 30%.	, may grow on may ed. grou Drav o Pote	nd and surfa /down is rec	tal to plant otoxic) and o pollution of ace waters. ommended. se to nutrient	elemental applicatiu the Adequate banc economic efficiency environment. Drawdown: The ot utilise residual soil reason to apply fert Adequate. • g/sqm measurem 1.33 tonne/m ³ and :	I, which maximises , and minimises in jective nutrient ma nutrients. There is illser when soil tes ents are based on selected soil depth	s growth/yield, and npact on the anagement is to no agronomic t levels exceed soil bulk density of
Phosphorus Satur	ation Index	C Ex	xchangeable	Acidity			Physica	al Descriptio	on	
0.15 0.06 Adequate 0 mmol/kg	ccessive ∋	Su Ef Ba Ex 0.4 Ex Li	f. Cation Exch. ase Saturation (ions (meq/100g ⁻¹): Capacity (eCEC): %): sidity (meq/100g ⁻¹): sidity (%): n Rate	34.75		Size: Gravel co Aggregat Structura Potential Permeab	e strength:	2.5 - 5 m	10mm) elly

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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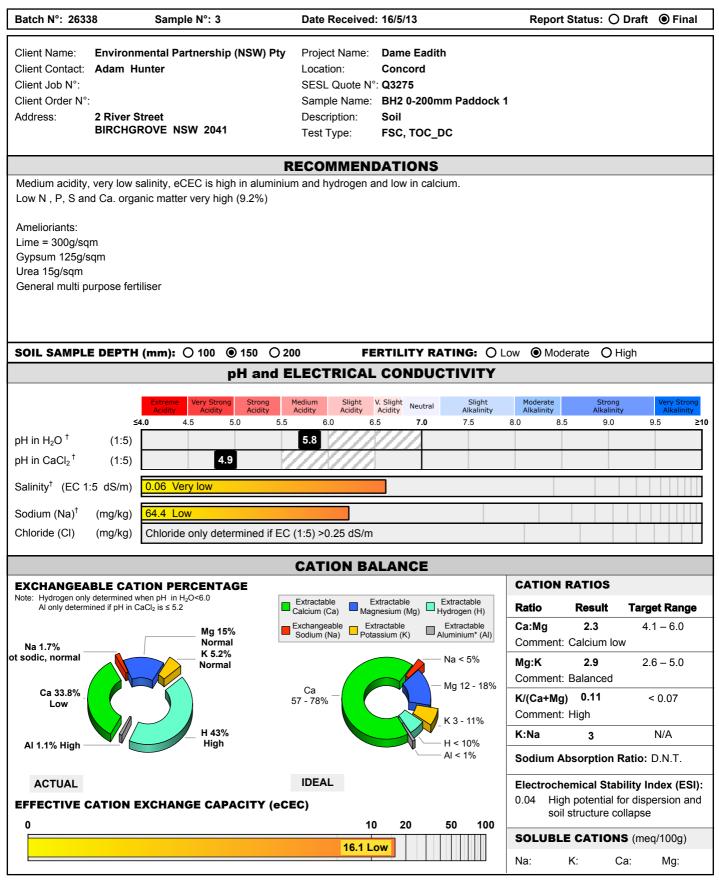
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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		PLANT A	VAILABLE	NUTRIENT	S			
Major Nutrients	Result (mg/kg)	Very Low 📃 Low	Marginal	🔀 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	0.8					0.2	4.2	4
Phosphate-P (PO ₄)	11.5					2.3	12.6	10.3
Potassium (K) [†]	325					64.8	60.6	Drawdowr
Sulphate-S (SO ₄)	21					4.2	13.6	9.4
Calcium (Ca) [†]	1087					216.9	431.7	214.8
Magnesium (Mg) [†]	292					58.3	44.9	Drawdowi
Iron (Fe)	196.2					39.1	110.1	71
Manganese (Mn) [†]	36		~~~~~~~			7.2	8.8	1.6
Zinc (Zn) [†]	5.9					1.2	1	Drawdowr
Copper (Cu)	2.2					0.4	1.3	0.9
Boron (B) [†]	1.3					0.3	0.5	0.2
Explanation of graph	ranges:					NOTES: Adjustm	ent recommendation	calculates the
severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.		the plant, and build-up is stilland and only maintenance application rates are recommended.growth (i.e. phytotoxic) and may contribute to pollution ground and surface waters Drawdown is recommended.Potential response to nutrient addition is 30 to 60%.Potential response to nutrient addition is 5 to 30%.growth (i.e. phytotoxic) and may contribute to pollution ground and surface waters Drawdown is recommended.			o pollution of ace waters. commended.	Adequate. • g/sqm measurements are based on soil bulk density		
Phosphorus Satur	ration Index	Exchangeable	Acidity		Physica	al Descripti	on	
0.15 0.06 Adequate 0 0.01 0.01 0.01 Low. Plant response to a	-	Adams-Evans Buff Sum of Base Catic Eff. Cation Exch. C Base Saturation (% Exchangeable Acie Exchangeable Acie Exchangeable Acie Exchangeable Acie Cation Application – to achieve pH 6. – to neutralise AI (Gypsum Applicat – to achieve 67.5% The CGAR is correct depth of 150mm a addition to achieve	ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm): g/sqm): tion Rate 6 exch. Ca (g/sqm ected for a soil nd any Lime	16.1 55.9 6.93 43.04 470 26	Size: Gravel cc Aggregat Structura Potential Permeab Calculate Requi Organic (Organic (e strength:	Did not to n): - Soil Texture n) [†] : 5.4 – Ver	est est est w est result.

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26338 Sample N°: 4 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH2 200mm+ Paddock 1 Address: 2 River Street Soil Description: **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Medium acidity, very low salinity, eCEC is high in aluminium and hydrogen and low in calcium. Low nutrients Amelioriants: Lime = 300g/sqm Gypsum 190g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 50 55 60 65 7.0 75 95 <4.0 >10 pH in H₂O[†] 5.6 (1:5)pH in CaCl₂[†] 4.6 (1:5)0.05 Very low Salinity[†] (EC 1:5 dS/m) Sodium (Na)[†] (mg/kg) 95.3 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio Result **Target Range** Magnesium (Mg) Calcium (Ca) Extractable Extractable Aluminium* (Al) 1.2 4.1 – 6.0 Exchangeable Ca:Mg Potassium (K) Sodium (Na) Mg 16.3% Comment: Calcium low K 2.6% Normal Low Na 3.1% Na < 5% Mg:K 6.2 2.6 - 5.0ot sodic. normal Comment: Potassium low Mg 12 - 18% Са Ca 19.6% 0.07 K/(Ca+Mg) < 0.07 57 - 78% Low Comment: High K 3 - 11% H 53.4% K:Na N/A AI 4.8% High 0.9 High H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.02 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 13.4 Low Na: K: Ca: Mg:



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Sample N°: 4

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

	Result -	PLANI A	VAILABLE	NUIKIENI	3		<u> </u>	
Major Nutrients	(mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-					-	4.2	Did not te
Phosphate-P (PO ₄)	0					-	12.6	Did not te
Potassium (K) [†]	137					27.3	52.3	25
Sulphate-S (SO ₄)	-					-	13.6	13.6
Calcium (Ca) [†]	525					104.7	372.1	267.4
Magnesium (Mg) [†]	264					52.7	38.7	Drawdow
Iron (Fe)	-					-	110.1	Did not te
Manganese (Mn) [†]	-	//				-	8.8	Did not te
Zinc (Zn) [†]	-					-	1	Did not te
Copper (Cu)	-						1.3	Did not tes
Boron (B) [†]	-						0.5	Did not te
Explanation of graph	ranges:					NOTES: Adjustm	ent recommendation	calculates the
Very Low	Low	Marginal	💋 Adequate	High		elemental applica	tion to shift the soil t nd, which maximises	est level to within
for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	addition is 60 to 90%.	recommended. Potential response to nutrient addition is 30 to 60%.	ed. ground and surface waters. Drawdown is recommended. Potential response to nutrient addition is <2%.		g/sqm measurements are based on soil bu 1.33 tonne/m ³ and selected soil depth.			
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physica	al Descripti	on	
		Adams-Evans Buff	er pH (BpH):	6.8	Texture:		Light Cla	У
0.15		Sum of Base Catio		5.6	Typical c	lay content:	35 - 40%	
High		Eff. Cation Exch. C	•••		Size:		Fine (1 -	
0.06 Ex	cessive	Base Saturation (%		41.79	Gravel co		Not grav	elly
				•		-		
Adequate		•	dity (meq/100g ⁻¹):			e strength:		
O	≥0.4	Exchangeable Acid	• • • • •	7.16 53.43	Structura	l unit:	Crumb	
Low	≥0.4	•	dity (%):		Structura Potential	l unit: infiltration rat	Crumb e: Slow	m/br
O	≥0.4	Exchangeable Acid	dity (%): Rate		Structura Potential Permeab	l unit: infiltration rat ility (mm/hr):	Crumb e: Slow 2.5 - 5 m	m/hr
0 mmol/kg	g	Exchangeable Acio	lity (%): Rate D (g/sqm):	53.43	Structura Potential Permeab Calculate	l unit: infiltration rat ility (mm/hr): d EC _{SE} (dS/m	Crumb e: Slow 2.5 - 5 m n): 0.43	
0 mmol/kg	g	Exchangeable Acion Lime Application – to achieve pH 6.0 – to neutralise Al (g	dity (%): Rate) (g/sqm): g/sqm):	53.43 532	Structura Potential Permeab Calculate – Non	l unit: infiltration rat ility (mm/hr):	Crumb e: Slow 2.5 - 5 m n): 0.43 nity effects of	
0 mmol/kg	g	Exchangeable Acion Lime Application – to achieve pH 6.0 – to neutralise Al (g Gypsum Applicat	dity (%): Rate D (g/sqm): g/sqm): ion Rate	53.43 532 93	Structura Potential Permeab Calculate – Non are m	l unit: infiltration rat ility (mm/hr): d EC _{SE} (dS/m -saline. Salir	Crumb e: Slow 2.5 - 5 m n): 0.43 nity effects o ble.	on plants
0 mmol/kg	g	Exchangeable Acion Lime Application – to achieve pH 6.0 – to neutralise Al (g	dity (%): Rate D (g/sqm): g/sqm): ion Rate D exch. Ca (g/sqm	53.43 532 93	Structura Potential Permeab Calculate – Non are mo Organic (l unit: infiltration rat ility (mm/hr): d EC _{SE} (dS/n -saline. Salir ostly negligil	Crumb e: Slow 2.5 - 5 m h): 0.43 hity effects of ble. b) [†] : Did not t	on plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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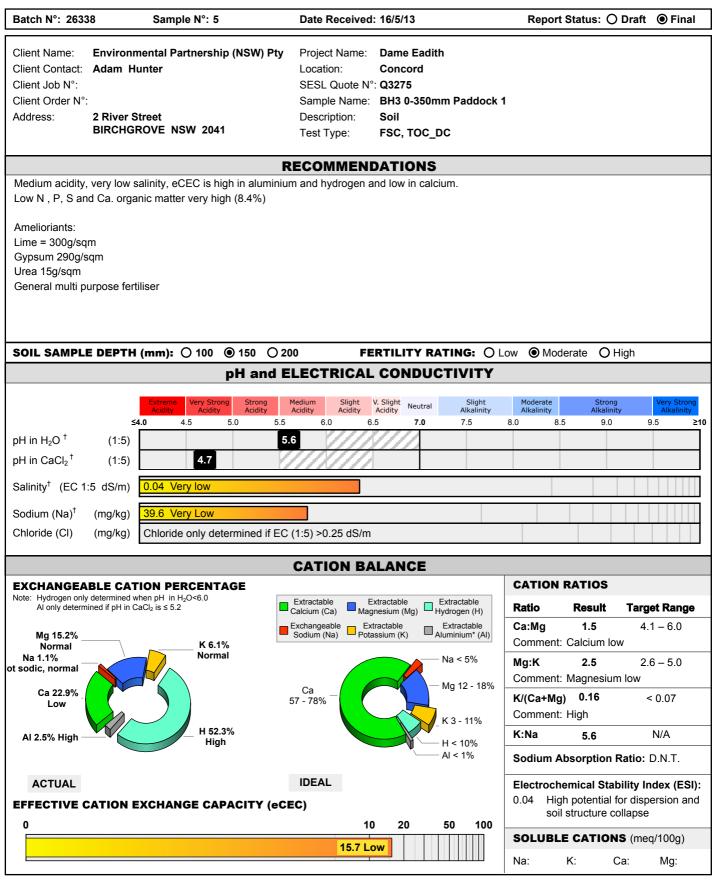
Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

 Sample Drop Off:
 16 Chilvers Road Thornleigh NSW 2120
 Tel:
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Sample N°: 5

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		PLANT A	VAILABLE	NUTRIENT	5			1
Major Nutrients	Result (mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	0.6					0.1	4.2	4.1
Phosphate-P (PO ₄)	5.6					1.1	12.6	11.5
Potassium (K) [†]	373					74.4	60.6	Drawdowr
Sulphate-S (SO ₄)	14					2.8	13.6	10.8
Calcium (Ca) [†]	719					143.4	431.7	288.3
Magnesium (Mg) [†]	289					57.7	44.9	Drawdow
Iron (Fe)	204.3					40.8	110.1	69.3
Manganese (Mn) [†]	37					7.4	8.8	1.4
Zinc (Zn) [†]	2.7					0.5	1	0.5
Copper (Cu)	2.3					0.5	1.3	0.8
Boron (B) [†]	1.1					0.2	0.5	0.3
Explanation of graph	ranges:					NOTES: Adjustme	ent recommendatio	n calculates the
oresent. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	response to nutrient addition is 60 to 90%.	build-up is still recommended. Potential response to nutrient addition is 30 to 60%.	recommended. rates are recommended. ground and surface potential response to nutrient addition is 30 nutrient addition is 5 to Potential response to nutrient addition is 5 to			face waters. Adequate. acommended. • g/sqm measurements are bass nse to nutrient 1.33 tonne/m³ and selected soil		
Phosphorus Satur	ration Index	Exchangeable	Acidity		Physica	al Description	on	
0.15 0.06 Adequate 0 mmol/k	ccessive g applied P is likely.	Adams-Evans Buff Sum of Base Catio Eff. Cation Exch. C Base Saturation (% Exchangeable Acid Exchangeable Acid Lime Application – to achieve pH 6. – to neutralise Al (nns (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm):	15.7 45.22	Size: Gravel co Aggregat Structura Potential Permeab Calculate	e strength:	Did not t	est est est w est

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

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Sample Drop Off:16 Chilvers Road
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Batch N°: 26338 Sample N°: 6 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH3 350mm+ Paddock 1 Address: 2 River Street Soil Description: **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Strong acidity, very low salinity, eCEC is high in aluminium and hydrogen and very low in calcium. Low nutrients Amelioriants: Lime = 500g/sqm Gypsum 450g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Medium Acidity Slight Slight Alkalinity Moderate Alkalinity Strong Alkalinit Neutral Acidity 5.0 8.0 85 90 4.5 60 65 7.0 75 95 <4.0 55 >10 pH in H₂O[†] (1:5) 5.2 pH in CaCl₂[†] (1:5) 4.3 Salinity[†] (EC 1:5 dS/m) 0.04 Very low Sodium (Na)[†] (mg/kg) 72.5 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio Result **Target Range** Magnesium (Mg) Calcium (Ca) Extractable Extractable Aluminium* (Al) 0.2 4.1 - 6.0Exchangeable Ca:Mg Potassium (K) Sodium (Na) Comment: Potential Calcium deficiency K 2.8% Mg 23.7% Low High, magnesic Na < 5% Mg:K 8.4 2.6 - 5.0Na 2.1% Comment: Potassium low ot sodic, normal Mg 12 - 18% Са Ca 5.6% 0.1 K/(Ca+Mq) < 0.07 57 - 78% Low Comment: High K 3 - 11% H 50.3% AI 15.4% High High K:Na N/A 1.3 H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** High potential for dispersion and 0.02 **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 15.2 Low Na: K: Ca: Mg:



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Mehlich 3 - Multi-nutrient Extractant

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Batch N°: 26338

Sample N°: 6

Date Received: 16/5/13

Report Status: O Draft Final

Major Nutrients	Result (mg/kg)	Very Low	Low	Marginal		Adequate	High	Result	Desirable	Adjustmer
Nitrate-N (NO ₃)	(119/109)		_					(g/sqm)	(g/sqm) 4.2	(g/sqm) Did not tes
Phosphate-P (PO ₄)	0				///			-	12.6	Did not tes
	-				////			-	-	
Potassium (K) [†]	170							33.9	60.6	26.7
Sulphate-S (SO ₄)	-				////			-	13.6	13.6
Calcium (Ca) [†]	169							33.7	431.7	398
Magnesium (Mg) [†]	436							87	44.9	Drawdow
Iron (Fe)	-							-	110.1	Did not te
Manganese (Mn) [†]	-							-	8.8	Did not te
Zinc (Zn) [†]	-							-	1	Did not te
Copper (Cu)	-								1.3	Did not te
Boron (B) [†]	-								0.5	Did not te
Explanation of graph ranges: Very Low Low Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.		Supply of this nut is barely adequat tial the plant, and build-up is still 0%. recommended. Potential respons	build-up is still maintenance application recommended. rates are recommendeed Potential response to nutrient addition is 30 nutrient addition is 5 to			, may be detrimental to plant growth (i.e. phytotoxic) and on may contribute to pollution of ground and surface waters. Drawdown is recommended.		elemental application to shift the soil test level to within the Adequate band, which maximises growth/yield, ar economic efficiency, and minimises impact on the environment. Drawdown: The objective nutrient management is to utilise residual soil nutrients. There is no agronomic reason to apply fertiliser when soil test levels exceed Adequate. • g/sqm measurements are based on soil bulk density 1.33 tonne/m ³ and selected soil depth.		
Phosphorus Satu	ration Index	Exchange	able Ac	idity			Physica	l Descripti	on	
0.15 0.06 Adequate 0 mmol/k 0 Low. Plant response to		Eff. Cation E Base Satura Exchangeab Exchangeab Lime Applic – to achieve - to neutralis Gypsum Ap	e Cations xch. Cap tion (%): le Acidity le Acidity ation Ra pH 6.0 (se Al (g/s plication 67.5% es s correct	(meq/100g ⁻¹): pacity (eCEC): ((meq/100g ⁻¹): (%): ate g/sqm): qm): n Rate xch. Ca (g/sqn ed for a soil	15 34 7.6 50 68 34	2 .2 .21 54 .26 0	Size: Gravel co Aggregati Structural Potential Permeabi Calculate – Non- are mo Organic C Organic N	e strength:	2.5 - 5 m n): 0.34 nity effects o ole. n) [†] : Did not t	10mm) elly m/hr on plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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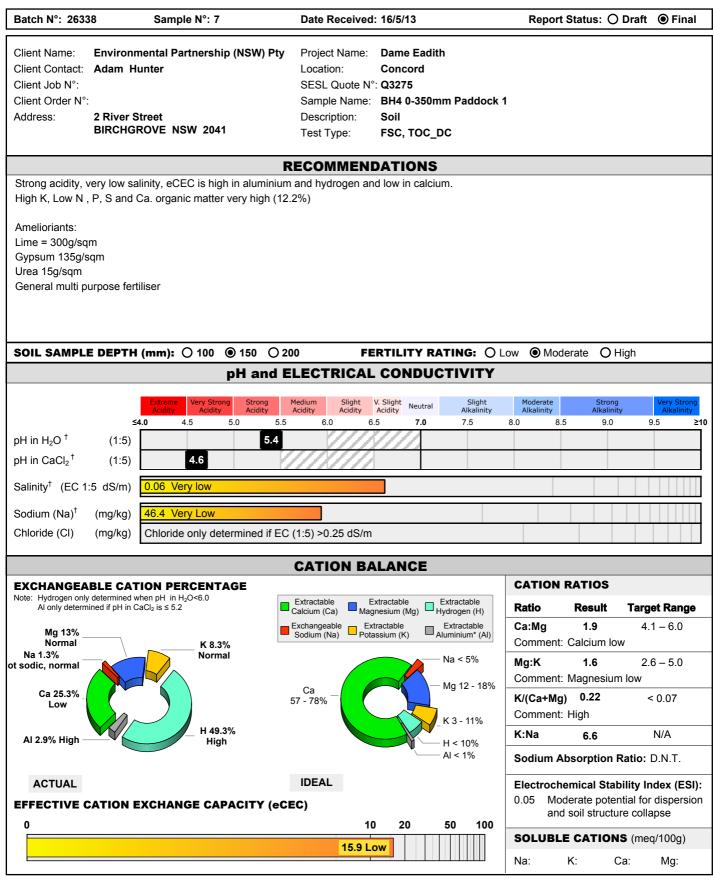


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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Sample N°: 7

Soil Chemistry Profile Mehlich 3 - Multi-nutrient Extractant

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

Major Nutrients (mg/kg) Very Low Low Marginal Adequate High (g/sqm)			PLANT A	VAILABLE	NUTRIEN	15	1	T	1
Phosphate-P (PO ₄) 5.2 1 12.6 11.6 Potassium (K) ⁺ 517 103.1 60.6 Drawdow Sulphate-S (SO ₄) 18 3.6 13.6 10 Calcium (Ca) ⁺ 805 160.6 431.7 271.1 Magnesium (Mg) ⁺ 250.2 110.1 59.8 Manganese (Mn) ⁺ 33 6.6 8.8 2.2 Zinc (2n) ⁺ 4.7 0.9 1 0.1 Cooper (Cu) 1.9 0.4 1.3 0.9 Boron (B) ⁺ 1.1 0.4 0.4 1.3 0.9 Cooper (Cu) 1.9 0.4 0.4 0.9 1 0.1 Supply of this nutlent is momental end only mathemater commended be for site of sole 10.4 0.9 1 0.1 Cooper (Cu) 1.9 0.4 0.9 1 0.1 Cooper (Cu) 1.9 0.4 0.9 1 0.1 Cooper (Cu) 1.9 0.4 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.9	Major Nutrients		Very Low 📃 Low	Marginal	💋 Adequate	High			Adjustmer (g/sqm)
Potassium (K) ¹ 517 Sulphate-S (SO ₄) 18 Sulphate-S (SO ₄) 18 Calcium (Ca) ¹ 805 Calcium (Ca) ¹ 805 Calc	Nitrate-N (NO ₃)	5.8					1.2	4.2	3
Sulphate-S (SO,) 18 3.6 13.6 10 Calcium (Ca) ⁷ 805 160.6 431.7 271.1 Magnesium (Mg) ¹ 250 100.1 59.9 Marganese (Mn) ¹ 33 6.6 8.8 2.2 Zinc (Zn) ¹ 4.7 0.9 1 0.1 Copper (Cu) 1.9 0.4 1.3 0.9 Borron (B) ¹ 1.1 50.2 0.3 0.2 0.5 0.3 Explanation of graph ranges: Cow Drew 1 of the nutlerit is and on one point in the point, and and one point is a bare to a management and the point, and and one point is a bare to a management and the point, and and one point is a bare to a management and the point, and and one point is a bare to a management and the point, and and one point is a bare to a management and the point, and and one point is a bare to a management and the point, and and one point and and the point, and and one point and and the point, and and one point and the point, and and one point and and the point, and and one point and and the point, and and the point and the point, and and the point	Phosphate-P (PO ₄)	5.2					1	12.6	11.6
Calcium (Ca) ¹ 805 805 805 805 805 805 805 805 805 805	Potassium (K) [†]	517					103.1	60.6	Drawdowi
Magnesium (Mg) 1 250 49.9 44.9 Drawdow Iron (Fe) 251.7 50.2 110.1 59.9 Manganesse (Mn) 1 33 6.6 8.8 2.2 Zinc (Zn) 1 4.7 0.9 1 0.1 Copper (Cu) 1.9 0.4 1.3 0.9 Boron (B) 1 1.1 0.2 0.5 0.3 Explanation of graph ranges: Very Low Coverent is likely to be disclosed on the part of the par	Sulphate-S (SO ₄)	18					3.6	13.6	10
Iron (Fe) 251.7 50.2 110.1 59.9 Manganese (Mn) [†] 33 6.6 8.8 2.2 Zinc (Zn) [†] 4.7 0.9 1 0.1 Copper (Cu) 1.9 0.4 1.3 0.9 Boron (B) [†] 1.1 0.4 1.3 0.9 Copper (Cu) 1.9 0.4 1.3 0.9 Boron (B) [†] 1.1 Supply of this nutrient is adminise in the old set line constraints the paint, and only maintenance application is constraints the paint, and only maintenance application is so the flow of second provide the float on the sol test level second provide the float on the sol test level second the float on test test and only maintenance application is sol test develse.	Calcium (Ca) [†]	805					160.6	431.7	271.1
Manganese (Mn) [†] 33 6.6 8.8 2.2 Zinc (Zn) [†] 4.7 0.9 1 0.1 Copper (Cu) 1.9 0.4 1.3 0.9 Borno (B) [†] 1.1 0.2 0.5 0.3 Explanation of graph ranges: Low Name Nam Name Name	Magnesium (Mg) [†]	250					49.9	44.9	Drawdow
Marginalization (min) Image of the second secon	Iron (Fe)	251.7					50.2	110.1	59.9
Zinc (Zn) † 4.7 Copper (Cu) 1.9 Boron (B) † 1.1 Explanation of graph ranges: 0.2 0.5 0.3 Very Low Detrilat Thidden manages (response to number of seal building parposes to number addition is 50 to 90%, on the software area and and only the software area sorthware and	Manganese (Mn) [†]	33					6.6	8.8	2.2
Copper (Cu) 1.9 0.4 1.3 0.9 Boron (B) [†] 1.1 0.2 0.5 0.3 Explanation of graph ranges: Very Low 0.2 0.5 0.3 Growth Is likely to be severely depresed and deficiency symptoms present. Large applications for soil building purpose result using partices to multient addition is 60 to 90%. Marginal supply of this nutrient is ball due to partice application to 60%. Marginal Supply of this nutrient is addition is 60 to 90%. NOTES: Adjustment recommendation calculates the elemental application of the mountain ray contribute opollution on the adequate for the part, and addition is 60 to 90%. NOTES: Adjustment recommendation calculates the elemental application is readvected the part application ray contribute opollution on the adequate for the part, and may be definerent to part to elemental producting response to nutrient addition is 5 to 10 60%. Phosphorus Saturation Index Exchangeable Acidity mon/kg Adems-Evans Buffer pH (BpH): 50%. 6.7 Cow, Plant response to applied P is likely. Cation Exch. Capacity (eCEC): 15.9 17.8 Gravel content: Did not test Exchangeable Acidity (%): 9.3 Did not test Structural unit: Did not test Structural unit: Did not test Structural unit: Did not test Calculate Ecgr (dS/m): - Requires EC and Soil Texture result. Own, Plant response to applied P is likely. CAR is corrected for a soil depth of 150mm and any Lime 134 Aggregate strength: Did not test Structural unit: Did not test Calc		4.7		·····			0.9	1	0.1
Boron (B) † 1.1 0.2 0.5 0.3 Explanation of graph ranges: Very Low Adequate High The level is excessive and graph ranges and generation or sub-linear deficiency. Proteinal response to nutrient addition is 80 to 90%. Marginal Adequate High The level is excessive and graph ranges and and and only may be detimental to plant and and only may be detimened application or sub-linear deficiency. Proteinal response to nutrient addition is 80 to 90%. Marginal Marginal <t< td=""><td></td><td>1.9</td><td></td><td></td><td></td><td></td><td>0.4</td><td>1.3</td><td>0.9</td></t<>		1.9					0.4	1.3	0.9
Explanation of graph ranges: Normalian Normalian ✓ Very Low Low Potential "hidden severely depressed and deficiency. Potential "sponse to nutrient addition is 50 to 90%. Marginal Supply of this nutrient is barely adequate for the plant, and puidoup is still response to nutrient addition is 50 to 90%. The level is excessive and may be definiential to plant and addition is 50 to 90%. The level is excessive and may be definiential to plant and addition is 50 to 90%. The level is excessive and may be definiential to plant and addition is 50 to 90%. Potential response to nutrient addition is 50 to 90%. Exchangeable Acidity The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%. The level is excessive and may be definiential response to nutrient addition is 50 to 90%.		1.1					0.2	0.5	0.3
Very Low Low Marginal Supply of this nutrient is adquate for the pant, and pant addition is 50 to 90%. Marginal Supply of this nutrient is barely adquate for the pant, and pant only maintenance application: addition is 50 to 90%. High The level is excessive and may be detrimental to plant, and addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Marginal Supply of this nutrient is barely adquate for the pant, and addition is 50 to 90%. High The level is excessive and may be detrimental to plant, and addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Marginal Supply of this nutrient is barely adquate for the pant, and addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition is 50 to 90%. Detential response to nutrient addition i	. ,	n ranges:					NOTES: Adjustr	ment recommendation	n calculates the
Growth is likely to be severely depressed and differency symptoms present. Large applications are usually recommended. Potential response to nutrient addition is 60 to 90%. Supply of this nutrient is barely adequate for the plant, and diduot up is still response to nutrient addition is 60 to 90%. The level is excessive and may be detrimental to plant, and and only maintenance applications rates are recommended. Potential response to nutrient addition is 50 to 90%. The level is excessive and may be detrimental to plant, and and only maintenance applications to solve (i.e. phytoticule to pollution of rates are recommended. Potential response to nutrient addition is 50 to 90%. The level is excessive and may be detrimental to plant, and and only maintenance applications to apply fertilier when soil test levels exceed Adequate. Determinents. The issue available. Phosphorus Saturation Index Exchangeable Acidity Physical Description Adams-Evans Buffer pH (BpH): 0 6.7 Texture: Did not test Sum of Base Cations (meq/100g ⁻¹): 0 7.6 Typical clay content: Did not test Sum of Base Cations (meq/100g ⁻¹): 0 7.84 Aggregate strength: Did not test Exchangeable Acidity (%): 49.31 Structural unit: Did not test Caluated ECssc (ds/m): - to achieve 67.5% exch. Ca (g/sqm): 592 The carl (g/sqm): 67 Caluated ECssc (ds/m): - to achieve 67.5% exch. Ca (g/sqm): The CGAR is corrected for a solid depth of 150mm and any Lime 134		_	Marginal	💋 Adequate	High		elemental applica	ation to shift the soil	est level to within
Adams-Evans Buffer pH (BpH):6.7Texture:Did not test0.15Sum of Base Cations (meq/100g ⁻¹):7.6Typical clay content:Did not test0.06AdequateEff. Cation Exch. Capacity (eCEC):15.9Size:Size:0Base Saturation (%):47.8Gravel content:Did not test0Exchangeable Acidity (meq/100g ⁻¹):7.84Aggregate strength:Did not test0Exchangeable Acidity (%):49.31Structural unit:Did not test1Lime Application Rate- to achieve pH 6.0 (g/sqm):592- to neutralise AI (g/sqm):670Cypsum Application Rate- to achieve 67.5% exch. Ca (g/sqm):134Organic Carbon (OC%) [†] : 7.2 - Very high0Organic Matter (OM%):12.2Additional comments:	are usually recommended. Potential response to	addition is 60 to 90%.	Potential response to nutrient addition is 30	Potential response to nutrient addition is 5 to	Drawdown is r o Potential resp	recommended. onse to nutrient %.	• g/sqm measure 1.33 tonne/m ³ an	nd selected soil depth	
$ \begin{array}{c} 0.15 \\ 0.06 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$	Phosphorus Satu	ration Index	Exchangeable	Acidity		Physica	al Descript	ion	
$\int_{0}^{0} \int_{0}^{1} \int_{0$,				Did not t	est
High $A dequate0Eff. Cation Exch. Capacity (eCEC):15.9Size:Base Saturation (%):47.8Gravel content:Did not testA dequate0Exchangeable Acidity (meq/100g^{-1}):7.84Aggregate strength:Did not test0Lime Application Rate- to achieve pH 6.0 (g/sqm):49.31Structural unit:Did not test0- to neutralise AI (g/sqm):59267Calculated EC_{SE} (dS/m): Calculated EC_{SE} (dS/m): Corrected for a soildepth of 150mm and any LimeCarbon (OC\%)^{\dagger}: 7.2 - Very highOrganic Carbon (OC\%)^{\dagger}: 7.2 - Very high$							lay content:	Did not t	est
$ \begin{array}{c} & & & & & & & & & & & & & & & & & & &$	High			•••				-	
$ \begin{array}{c} & & & & & & & \\ & & & & & & \\ & & & & $		xcessive							
Immol/kg Lime Application Rate Potential infiltration rate: Very Slow 0 - to achieve pH 6.0 (g/sqm): 592 Potential infiltration rate: Very Slow Low. Plant response to applied P is likely. - to neutralise Al (g/sqm): 67 Potential infiltration rate: Very Slow Gypsum Application Rate - to achieve 67.5% exch. Ca (g/sqm): 134 Organic Carbon (OC%) [†] : 7.2 – Very high - to achieve 67.5% exch. Ca (g/sqm): 134 Organic Matter (OM%): 12.2 Additional comments:	Low		-				-		
0 - to achieve pH 6.0 (g/sqm): 592 - to achieve pH 6.0 (g/sqm): 592 - to neutralise AI (g/sqm): 67 Requires EC and Soil Texture result. Organic Carbon (OC%) [†] : 7.2 – Very high - to achieve 67.5% exch. Ca (g/sqm): 134 The CGAR is corrected for a soil Organic Matter (OM%): depth of 150mm and any Lime Additional comments:		ig	-						
Low. Plant response to applied P is likely. - to neutralise Al (g/sqm): 67 Requires EC and Soil Texture result. Gypsum Application Rate Organic Carbon (OC%) [†] : 7.2 – Very high - to achieve 67.5% exch. Ca (g/sqm): 134 The CGAR is corrected for a soil Organic Matter (OM%): depth of 150mm and any Lime Additional comments:								-	
Community: Community: Requires EC and Soil Texture result. Gypsum Application Rate Organic Carbon (OC%) [†] : 7.2 – Very high – to achieve 67.5% exch. Ca (g/sqm): 134 The CGAR is corrected for a soil Additional comments: depth of 150mm and any Lime Additional comments:					Calculate		ed EC _{SE} (dS/m): -		
- to achieve 67.5% exch. Ca (g/sqm):134Organic Matter (OM%):12.2The CGAR is corrected for a soilAdditional comments:depth of 150mm and any LimeAdditional comments:	Low. Plant response to	applied P is likely.	,	,	07	•			
The CGAR is corrected for a soilAdditional comments:depth of 150mm and any Lime			•• ••			-			y high
depth of 150mm and any Line					ı): 134	-			
						Additiona	a comments:		
			aspar or roomin a						
			addition to achieve	e pH 6.0.					

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



A member of the Australasian Soil and Plant Analysis Council † This laboratory has been awarded a Certificate of Proficiency for specific soil and plant tissue analyses by the Australasian Soil and Plant Analysis Council (ASPAC). Tests for which proficiency has been demonstrated are highlighted in this report.



Soil Chemistry Profile

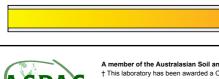
Mehlich 3 - Multi-nutrient Extractant Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26338 Sample N°: 8 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH4 350mm+ Paddock 1 Address: 2 River Street Soil Description: **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Strong acidity, very low salinity, eCEC is high in aluminium and hydrogen and very low in calcium. Low nutrients Amelioriants: Lime = 500g/sqm Gypsum 110g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Medium Acidity Slight Slight Alkalinity Moderate Alkalinity Strong Alkalinit Neutral Acidity 5.0 8.0 85 90 4.5 60 65 7.0 75 95 <4.0 55 >10 pH in H₂O[†] (1:5) 5.3 pH in CaCl₂[†] (1:5) 4.4 Salinity[†] (EC 1:5 dS/m) 0.04 Very low Sodium (Na)[†] (mg/kg) 36 Verv Low Chloride only determined if EC (1:5) >0.25 dS/m Chloride (CI) (mg/kg) **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Ratio Hydrogen (H) Result **Target Range** Magnesium (Mg) Calcium (Ca) Extractable Extractable Aluminium* (Al) 1.1 4.1 – 6.0 Exchangeable Ca:Mg Potassium (K) Sodium (Na) K 6.3% Comment: Calcium low Mg 14% Normal Normal Na < 5% Mg:K 2.2 2.6 - 5.0Na 1.2% ot sodic, normal Comment: Magnesium low Mg 12 - 18% Са Ca 15.8% 0.21 K/(Ca+Mg) < 0.07 57 - 78% Low Comment: High H 49 5% K 3 - 11% High K:Na N/A 5.5 Al 12.9% High H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.03 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse

10

13.9 Low

20

50



0

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Disclaimer: Tests are performed under a quality system complying with ISO 9001: 2008. Results are based on the analysis of the sample taken or received by SESL. Due to the variability of sampling procedures, environmental conditions and managerial factors, SESL does not accept any liability for a lack of performance based on its interpretation and recommendations. This document must not be reproduced except in full

Na:

100

Mg:

SOLUBLE CATIONS (meq/100g)

Ca:

K:



Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

Mailing Address:

Thornleigh NSW 2120 PO Box 357

Pennant Hills NSW 1715

02 9980 6554 Tel: Fax: 02 9484 2427 info@sesl.com.au Em: Web: www.sesl.com.au

Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

Major Nutrients	Result (mg/kg)	Very Low	Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-						-	5.6	Did not tes
Phosphate-P (PO ₄)	0						-	16.8	Did not tes
Potassium (K) [†]	343						91.2	69.7	Drawdowr
Sulphate-S (SO ₄)	-						-	18.1	18.1
Calcium (Ca) [†]	440						117	496.1	379.1
Magnesium (Mg) [†]	236						62.8	51.6	Drawdow
Iron (Fe)	-						-	146.8	Did not tes
Manganese (Mn) [†]	-						-	11.7	Did not tes
Zinc (Zn) [†]	-						-	1.3	Did not tes
Copper (Cu)	-							1.7	Did not tes
Boron (B) [†]	-							0.7	Did not tes
severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	hunger", or sub-cli deficiency. Potent response to nutrie addition is 60 to 9	ial the plant, and nt build-up is st	d ill ed. ponse to tion is 30	adequate for the plant and and only maintenance applicati rates are recommende Potential response to nutrient addition is 5 to 30%.	growth (i.e. pl may contribut ed. ground and s Drawdown is	nental to plant hytotoxic) and te to pollution of urface waters. recommended. oonse to nutrient %.	Drawdown: The ot utilise residual soil reason to apply fert Adequate. • g/sqm measurem 1.33 tonne/m ³ and	nutrients. There is illiser when soil tes ents are based on	no agronomic t levels exceed soil bulk density of
Phosphorus Satur	ation Index	Exchan	geable A	cidity		Physica	al Descriptio	on	
0.15 0.06 Adequate 0 mmol/kg 0 Low. Plant response to a	-	Sum of B Eff. Catio Base Sat Exchange Exchange Lime Ap – to achie of to neutr Gypsum – to achie The CGA	ase Catior in Exch. Ca uration (% eable Acid eable Acid plication F eve pH 6.0 ralise Al (g Application eve 67.5%	ity (meq/100g ⁻¹): ity (%): Rate (g/sqm): /sqm):	49.5 894 348	Size: Gravel cc Aggregat Structura Potential Permeab Calculate – Non are mo Organic (Organic (e strength:	2.5 - 5 m): 0.34 ity effects o le. [†] : Did not t	10mm) elly m/hr on plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

 Sample Drop Off:
 16 Chilvers Road Thornleigh NSW 2120
 Tel:
 02 9980 6554

 Mailing Address:
 PO Box 357 Pennant Hills NSW 1715
 Em:
 info@sesl.com.au

 Web:
 www.sesl.com.au

Batch N°: 26338 Sample N°: 9 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Sample Name: BH5 0-300mm Paddock 1 Client Order N°: Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: FSC, TOC_DC RECOMMENDATIONS Medium acidity, very low salinity, eCEC is high in potassium, magnesium and hydrogen and low in calcium. Low N, S and Ca. organic matter very high (8.4%) Amelioriants: Lime = 300g/sqm Gypsum 600g/sqm Urea 15g/sqm General multi purpose fertiliser O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 5.0 55 60 65 7.0 75 95 <4 0 >10 pH in H₂O[†] (1:5) 6 pH in CaCl₂[†] 5.2 (1:5) Salinity[†] (EC 1:5 dS/m) 0.08 Very low Sodium (Na)[†] (mg/kg) 50.8 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio Result **Target Range** Magnesium (Mg) Calcium (Ca) Extractable Extractable Aluminium* (Al) Exchangeable Sodium (Na) 4.1 – 6.0 Ca:Mg 1.3 Potassium (K) Comment: Calcium low Na 1.1% Mg 24.5% ot sodic, normal Na < 5% High, magnesic Mg:K 2 2.6 - 5.0Comment: Magnesium low K 12.1% Mg 12 - 18% Са Ca 31.6% High 0.22 K/(Ca+Ma) < 0.07 57 - 78% Low Comment: High K 3 - 11% K:Na N/A 11.2 H < 10% H 30.3% AI < 1% Sodium Absorption Ratio: D.N.T. High IDEAL ACTUAL **Electrochemical Stability Index (ESI):** Moderate potential for dispersion 0.07 **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** and soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 20.3 Moderate Na: K: Ca: Mg:



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Thornleigh NSW 2120 PO Box 357 Mailing Address:

Pennant Hills NSW 1715

02 9980 6554 Tel: 02 9484 2427 Fax: info@sesl.com.au Em: Web: www.sesl.com.au

Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

Major Nutrients (mg/kg) Very Low Low Marginal Adequate High (g/sqm)	Major Nutrients(mg/kg)Nitrate-N (NO3)2Phosphate-P (PO4) 64.9 Potassium (K) † 963 Sulphate-S (SO4) 17 Calcium (Ca) † 1284 Magnesium (Mg) † 602 Iron (Fe) 220.2		Very Low Low	Marginal		Adequate	High	(g/sqm) 0.4 12.9	(g/sqm) 4.2	
Phosphate-P(PO,) 64.9 12.9 12.6 Drawdo Potassium (K) [†] 963 192.1 69 Drawdo Sulphate-S (SO ₄) 17 3.4 13.6 10.2 Calcium (Ca) ¹ 12.9 12.9 12.6 Drawdo Sulphate-S (SO ₄) 17 6.9 Drawdo 13.2 Drawdo Magnesium (Mg) [†] 602 120.1 51.3 Drawdo Magnesium (Mg) [†] 602 44.4 8.8 4.4 Zinc (Zn) [†] 6.9 0.4 1.3 0.9 Boron (B) [†] 1.3 Drawdo 0.4 1.4 1 Drawdo Copper (Cu) 2 4.4 8.8 4.4 1.4 1 Drawdo Copper (Cu) 2 0.4 1.3 0.9 0.3 0.5 0.2 Explanation of graph ranges: Marginal Supply of this nutrient is and draw ball with with a the plant, and the plan	Phosphate-P (PO ₄) 64.9 Potassium (K) [†] 963 Sulphate-S (SO ₄) 17 Calcium (Ca) [†] 1284 Magnesium (Mg) [†] 602 Iron (Fe) 220.2							12.9		
Potasium (K) [†] Potasium (K) [†] Sulphate-S (SO ₄) Calcium (Ca) [†] 1284 Magnesium (Mg) [†] 602 Calcium (Ca) [†] 1284 Magnesium (Mg) [†] 602 Calcium (Ca) [†] 1284 Magnesium (Mg) [†] 602 Calcium (Ca) [†] 120.1 51.3 Calcium (Ca) [†] 120.1 Calcium (Ca) [†] 120.1 Calcium (Ca) [†] 120.1 Calcium (Ca) [†] 120.1 Calcium (Ca) [†] 120.5 Calcium (Calcium (Cal	Potassium (K) † 963 Sulphate-S (SO ₄) 17 Calcium (Ca) † 1284 Magnesium (Mg) † 602 Iron (Fe) 220.2							-	12.6	Droudour
Sulphate-S (SO ₄) 17 3.4 13.6 10.2 Calcium (Ca) [†] 1284 256.2 491.6 235.4 Magnesium (Mg) [†] 602 43.9 110.1 66.2 Magnesium (Mg) [†] 6.9 44.4 8.8 4.4 Zinc (Zn) [†] 6.9 44.4 8.8 4.4 Zinc (Zn) [†] 6.9 0.4 1.4 1 Drawdo Opport (Cu) 2 0.3 0.5 0.2 Explanation of graph ranges: Cowper (Cu) 2 Adequate Marginal Suppy of this nutrient of the part, and the part and the p	Sulphate-S (SO ₄) 17 Calcium (Ca) [†] 1284 Magnesium (Mg) [†] 602 Iron (Fe) 220.2							100.1		Diawuowi
Calcium (Ca) 1 1284 256.2 491.6 235.4 Magnesium (Mg) 1 602 120.1 51.3 Drawdo Item (Fe) 220.2 43.9 110.1 66.2 Magnesium (Mg) 1 6.9 44.4 8.8 4.4 Zinc (Zn) 1 6.9 1.4 1 Drawdo Copper (Cu) 2 0.4 1.3 0.9 Boron (B) 1 1.3 0.3 0.5 0.3 0.0 0.3 0.0	Calcium (Ca) † 1284 Magnesium (Mg) † 602 Iron (Fe) 220.2							192.1	69	Drawdowr
Magnessium (Mg) 1 602 120.1 51.3 Drawdo Iron (Fe) 220.2 43.9 110.1 66.2 Magnesse (Mn) 1 22 4.4 8.8 4.4 Zinc (Zn) 1 6.9 1.4 1 Drawdo Copper (Cu) 2 0.4 1.3 0.9 Boron (B) 1 1.3 0.3 0.5 0.2 Explanation of graph ranges: Low Supply of this nutrient sequence in the plant, and response to nutrient addition is 50 Magnesium (Mg) 1 0.4 1.3 0.9 Orwin is likely to be severally depressed and deficiency symptomes are based on solubid graphone to alther level bow in the plant, and response to nutrient addition is 50 Magnesium (Mg) 1 0.4 1.3 0.9 Postphorus Saturation Index Exchangeable Acidity Magnesium (Mg) 1 14.1 Taylor of the seconse and addition is 50 14.1 130me ² addition (Mg) 1 14.1 130me ² additio (Mg) 1 14.1 14.1	Magnesium (Mg) † 602 Iron (Fe) 220.2							3.4	13.6	10.2
Iron (Fe) 220.2 43.9 110.1 66.2 Manganese (Mn) [†] 22 4.4.4 8.8 4.4 Zinc (Zn) [†] 6.9 1.4 1 Drawdo Copper (Cu) 2 0.4 1.3 0.9 Boron (B) [†] 1.3 0.3 0.5 0.2 Explanation of graph ranges: Copy Low 0.4 1.4 1 Drawdo Coron (B) [†] 1.3 Supply of this nutrient is addition is 0.0 (in phytotopian present. Large application is minimal readition is 50 Marginal Supply of this nutrient is addition is 60 to 90%. Note: Statustion is 50 Note: Statustion is 50%. Note: Statustis is statustion is 50%. Note	Iron (Fe) 220.2							256.2	491.6	235.4
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Marginal Addition (a) Addition (b) Addition (c) Add	Manganasa (Mn) [†] 22							43.9	110.1	66.2
Zinc (Zn) † 6.9 1.4 1 Drawdo Copper (Cu) 2 0.4 1.3 0.9 Boron (B) † 1.3 0.3 0.5 0.2 Explanation of graph ranges: Very Low 0.3 0.5 0.2 Growth is likely to be severely depresed and deficiency. Potential "bioardia deplacators are based and deficiency. Potential response to utrinet addition is 60 to 90%. Marginal is barly addition is 20 to 10%. High The level is excessive and may be definemental to plant or far are based on soil build up proposare to utrinet addition is 50 to 90%. NOTES: Adjustment recommendation of the soil text level to with a definite response to utrinet addition is 50 to 90%. NOTES: Adjustment recommendation of the soil text level to with a definite response to utrinet. Notes: Adjustment recommendation of the soil text level to with a definite response to utrinet. Notes: Adjustment recommendation of the soil text level to with a definite response to utrinet. Notes: Adjustment recommendation of the soil text level to with a definite response to utrinet. Notes: Adjustment recommendation of the soil text level to with a definite response to utrinet. Notes: Adjustment recommendation of the soil text level to with a definite response to utrinet. Notes: Adjustment recommendation of the soil text level to with a definite response to utrinet. Notes: Adjustment recommendation of the soil text level to with a definite response to utrinet. Potential response to anytinet addition is 60 to 90%. 0.5<								4.4	8.8	4.4
Copper (Cu) 2 0.4 1.3 0.9 Boron (B) ¹ 1.3 0.3 0.5 0.2 Explanation of graph ranges: Very Low 0.3 0.5 0.2 Growth is likely to be sorvery depresent area generation of deficiency. Potential Tridden response to nutrierin addition is 50 to 50%. Marginal Supply of this nutrient is barely adequate for the plant, and during the response to nutrierin addition is 50 to 50%. Notes: Adjustment recommended. Potential response to nutrient addition is 5 to 50%. Phosphorus Saturation Index Exchangeable Acidity Addams-Evans Buffer pH (BpH): 7 Texture: Did not test 0.05 Low. Plant response to applied P is likely. So achieve pH 6.0 (g/sqm): 376 14.1 Structural unit: Did not test 0.05 Low. Plant response to applied P is likely. Coshieve 67.5% exch. Ca (g/sqm): 4 376 Gravel content: Did not test 0.05 Coshieve 67.5% exch. Ca (g/sqm): 7 Requires EC and Soil Texture result. Organic Carbon (OC%): 4.9 - Very high Organic Carbon (OC%): 4.9 - Very high 0.05 Coshieve 67.5% exch. Ca (g/sqm): 7 Gravel content: Did not test Structural unit: Did not test 0.05 Coshieve 67.5% exch. Ca (g/sqm): 376 - to achieve 67.5% exch. Ca (*****	""			1.4	1	Drawdown
Boron (B) [↑] 1.3 0.3 0.5 0.2 Explanation of graph ranges: Very Low Low Notes: Adjustment recommendation catualists the adequate for the plant, and therefore, Potential Tridden purposes to nutifient addition is 0 to 90%. Marginal Supply of this nutient is barely adequate for the plant, and addition is 0 to 90%. Notes: Adjustment recommendation catualists the adequate for the plant, and addition is 0 to 90%. Notes: Adjustment recommendation catualists the adequate for the plant, and there are sponse to nutifient addition is 0 to 90%. Notes: Adjustment recommendation catualists the adequate for the plant, and there are sponse to nutifient addition is 0 to 90%. Notes: Adjustment recommendation plant response to nutifient addition is 0 to 90%. Notes: Adjustment recommendation plant response to nutifient addition is 0 to 90%. Phosphorus Saturation Index Exchangeable Actidity Adams-Evans Buffer pH (BpH): 7 Texture: Did not test 0.05 So.6 So.6 So.6 Cation Exch. Capacity (eCEC): 2.0.3 Size: 0.05 Low. Plant response to applied P is likely. So cations ch. Capacity (eggram): 3.04 Structural unit: Did not test 0.05 Cox. Plant response to applied P is likely. Catione cch. Capacity (eggram): 3.04 Structural unit: Did not test 0.05 Cox. Plant response to applied P i								0.4	1.3	0.9
Explanation of graph ranges: Very Low Low Marginal Adequate High Growth is likely to be serverly depressed and deficiency. Potential "hidden nueger, or sub-clinical deficiency. Potential "resonase to nutrient addition is 6 to 95%. Marginal Supply of this nutrient is barely adequate for the plant, and build-up is still resonase to nutrient addition is 6 to 95%. Marginal Supply of this nutrient is barely adequate for the plant, and build-up is still resonase to nutrient addition is 5 to 95%. The level is excessive and may be detrimentate to plant on for soluble operation of the server soluble to pollution of soluble operation is 6 to 95%. The level is excessive and may be detrimentate to plant on the server soluble to pollution of soluble operation is 6 to 95%. Phoesphorus Saturation Index Exchangeable Acidity Marginal Supply of this nutrient addition is 5 to 95%. The level is excessive and may be detrimentate to pollution of soluble operation is 6 to 95%. The level is excessive and may be detrimentate to pollution of soluble operation is 6 to 95%. Phosphorus Saturation Index Exchangeable Acidity Margs-Exans Buffer pH (BpH): 7 Texture: Did not test 0.05 0.05 Sum of Base Cations (meq/100g ⁻¹): 14.1 Typical clay content: Did not test 0.05 0.05 Lime Application Rate Structural unit: Did not test Calculated ECsgc (dS/m): - Requires EC and Soil Tex								0.3	0.5	0.2
Very Low Low Marginal Adequate High Growth is likely to be severely depressed and deficiency. Potential "bidden trajectioner, or sub-clinical deficiency. Potential "bidden prosent. Large application is 6 to 30%. Potential "hidden trajecticner. Potential "biddu-up is still esponse to nutrient addition is 5 to 50%. Marginal Supply of this nutrient is barely adequate for the solutication is 6 to 30%. Image: Commended Potential response to nutrient addition is 5 to 50%. The level is excessive and mate commended. Potential response to nutrient addition is 5 to 50%. High Image: Commended Potential response to nutrient addition is 5 to 50%. The level is excessive and mate commended. Potential response to nutrient addition is 5 to 50%. High The level is excessive and may contribute to pollution of may contribute to pollution of the resource application. Bigh Phosphorus Saturation Index Exchangeable Acidity Physical Description: Som of Base Cations (meq/100g ⁻¹): 14.1 The lovel is excessive and may contribute to pollution of the commended. Potential response to nutrient addition is 2%. Bigh 0.05 Exchangeable Acidity (%): 0.05 Som of Base Cations (meq/100g ⁻¹): 14.1 Typical clay content: Did not test Did not test 0.05 Lime Application Rate - to achieve PH 6.0 (g/sqm): The CoSAR is corrected for a soil depth of 150mm and any Lime 376 - to neutralise Al (g/sqm): 16.05 Sof Sof Sof Sof Sof Sof Sof Sof Sof Sof Sof Sof Sof Sof Potent								NOTES: Adjust	ent recommendation	calculates the
Growth is likely to be severely depressed and breasent. Large applications are usually recommended. Potential response to nutrient addition is >90%. Potential Thidden hunger, or sub-clinical deprinted in spant in barley depressed and and only maintenance application is 5 to subplived this nutrient is barely adequate for build-up is still response to nutrient addition is >00 to 90%. The level is excessive and may be detrimental to plant and and only maintenance application facts prevention. The level is excessive and may be detrimental to plant and and only maintenance application facts prevention. The level is excessive and may be detrimental to plant and and only maintenance application facts prevention is solution. The level is excessive and may be detrimental to plant and and only maintenance application facts prevention. The level is excessive and may be detrimental to plant and and only maintenance application facts prevention. The level is excessive and may be detrimental to plant. Phosphorus Saturation Index Exchangeable Acidity Supply of this nutrient addition is <2%.			Marginal	💋 Adequate		High		elemental applica	ation to shift the soil t	est level to within
Adams-Evans Buffer pH (BpH):7Texture:Did not test0.15Sum of Base Cations (meq/100g ⁻¹):14.1Typical clay content:Did not test0.06Excessive20.3Base Saturation (%):69.46Gravel content:Did not test0.05Exchangeable Acidity (meq/100g ⁻¹):6.18Aggregate strength:Did not test0.05Lime Application Rate- to achieve pH 6.0 (g/sqm):376- to neutralise AI (g/sqm):4Gypsum Application Rate- to achieve 67.5% exch. Ca (g/sqm):605Calculated ECsE (dS/m):-0.05The CGAR is corrected for a soilGot for a soilOrganic Carbon (OC%) [†] : 4.9 – Very highOrganic Matter (OM%):8.4Additional comments:Hof 150mm and any LimeAditional comments:Aditional comments:	Potential response to nutrient addition is >90%.		Potential response to nutrient addition is 30 to 60%.	nutrient addition is 5 to 30%.)	Drawdown is reco Potential respons	ommended. e to nutrient	1.33 tonne/m ³ an	d selected soil depth	
$\begin{array}{c} 0.15 \\ 0.06 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$	Phosphorus Saturation Ind	ex	-	-			-	l Descript		
$\begin{array}{c} \begin{array}{c} 0.11 \\ \hline \text{High} \\ \text{Excessive} \\ 0 \\ \hline \text{mol/kg} \\ \hline \text{o} \hline \hline \text{o} \\ \hline \text{o} \\ \hline \text{o} \hline \\ \hline \text{o} \hline \ \text{o} \\ \hline \text{o} \hline \\ \hline \text{o} \hline \\ \hline \text{o} \hline \hline \text{o} \\ \hline \text{o} \hline \hline o$	A / F			• • • •						
$\begin{array}{c} 0.06 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$								ay content:	Did not t	est
$ \begin{array}{c} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $								ntont:	Did not t	t
0 Low Exchangeable Acidity (%): 30.44 Structural unit: Did not test 0.05 Lime Application Rate - to achieve pH 6.0 (g/sqm): 376 Permeability (mm/hr): Did not test 0.05 - to achieve pH 6.0 (g/sqm): 4 Calculated EC _{SE} (dS/m): - Requires EC and Soil Texture result. 0 Gypsum Application Rate - to achieve 67.5% exch. Ca (g/sqm): 605 Organic Carbon (OC%) [†] : 4.9 – Very high - to achieve 67.5% exch. Ca (g/sqm): 605 Organic Matter (OM%): 8.4 Additional comments: depth of 150mm and any Lime Additional comments:			•	,						
Immol/kg Lime Application Rate Potential infiltration rate: Very Slow 0.05 - to achieve pH 6.0 (g/sqm): 376 Low. Plant response to applied P is likely. - to neutralise Al (g/sqm): 4 Gypsum Application Rate - to achieve 67.5% exch. Ca (g/sqm): 605 - to achieve 67.5% exch. Ca (g/sqm): 605 Organic Carbon (OC%) [†] : 4.9 – Very high Organic Matter (OM%): 8.4 Additional comments: Additional comments:	Low	20.4	•	• • • • •				•		
0.05 - to achieve pH 6.0 (g/sqm): 376 Low. Plant response to applied P is likely. - to neutralise Al (g/sqm): 4 Gypsum Application Rate - to achieve 67.5% exch. Ca (g/sqm): 605 - to achieve 67.5% exch. Ca (g/sqm): 605 Organic Carbon (OC%) [†] : 4.9 – Very high - to achieve 67.5% exch. Ca (g/sqm): 605 Organic Matter (OM%): 8.4 Additional comments: depth of 150mm and any Lime Additional comments: Additional comments:		20.4	-				Potential i	infiltration rat	te: Very Slov	N
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- to achieve 67.5% exch. Ca (g/sqm):605Organic Matter (OM%):8.4The CGAR is corrected for a soilAdditional comments:depth of 150mm and any LimeAdditional comments:		litery	Gynsum Applicat	ion Pato			•			
The CGAR is corrected for a soil Additional comments: depth of 150mm and any Lime).	605				y nign
							-). •	
addition to achieve pH 6.0.										
			addition to achieve	e pH 6.0.						

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26338 Sample N°: 10 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH5 300mm+ Paddock 1 Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Strong acidity, very low salinity, eCEC is high in aluminium and hydrogen and very low in calcium. Low nutrients Amelioriants: Lime = 500g/sqm Gypsum 450g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 O 150 **()** 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Medium Acidity Slight Slight Alkalinity Moderate Alkalinity Strong Alkalinit Neutral Acidity 5.0 8.0 85 90 4.5 60 65 7.0 75 95 <4.0 55 >10 pH in H₂O[†] (1:5) 5.4 pH in CaCl₂[†] (1:5) 4.3 Salinity[†] (EC 1:5 dS/m) 0.03 Very low Sodium (Na)[†] (mg/kg) 60.4 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio **Target Range** Magnesium (Mg) Result Calcium (Ca) Extractable Extractable Aluminium* (Al) 0.7 4.1 - 6.0Exchangeable Ca:Mg Potassium (K) Sodium (Na) Comment: Potential Calcium deficiency Mg 21.7% K 3.9% High, magnesic Normal Na < 5% Mg:K 5.6 2.6 - 5.0Na 1.7% Comment: Potassium low ot sodic, normal Mg 12 - 18% Са Ca 14.8% 0.11 K/(Ca+Mg) < 0.07 57 - 78% Low Comment: High K 3 - 11% H 44.9% High K:Na N/A 2.3 AI 13% High H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.02 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 15.2 Low Na: K: Ca: Mg:



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

Major Nutrients	Result (mg/kg)	Very Lo	ow Low	Marginal	2	Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-							-	5.6	Did not tes
Phosphate-P (PO ₄)	0							-	16.8	Did not tes
Potassium (K) [†]	229							60.9	80.9	20
Sulphate-S (SO ₄)	-							-	18.1	18.1
Calcium (Ca) [†]	449							119.4	575.6	456.2
Magnesium (Mg) [†]	399							106.1	59.9	Drawdow
Iron (Fe)	-							-	146.8	Did not tes
Manganese (Mn) [†]	-		//					-	11.7	Did not te
Zinc (Zn) [†]	-							-	1.3	Did not tes
Copper (Cu)	-								1.7	Did not tes
Boron (B) [†]	-								0.7	Did not tes
Explanation of graph	n ranges:							NOTES: Adjustme	ent recommendatio	
Very Low Growth is likely to be severely depressed and deficiency symptoms oresent. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	Low Potential "hidden hunger", or sub- deficiency. Poter response to nutri addition is 60 to to	Supply Sinical is barel tital the plan ent build-up 90%. recomm Potenti	o is still nended. al response to t addition is 30	Adequate Supply of this nutrieni adequate for the plan and and only maintenance applicat rates are recommend Potential response to nutrient addition is 5 t 30%.	t, ion led.	High The level is exce may be detrimen growth (i.e. phyte ground and surfa Drawdown is rec Potential respons addition is <2%.	tal to plant otoxic) and o pollution of ace waters. commended.	economic efficience environment. Drawdown: The c utilise residual soil reason to apply fer Adequate. • g/sqm measurem	d, which maximises y, and minimises ir bjective nutrient manutrients. There is tilliser when soil test tents are based on selected soil depth	npact on the anagement is to no agronomic it levels exceed soil bulk density of
Phosphorus Satu	ration Index	Excl	hangeable	Acidity			Physica	al Descripti	on	
0.15 0.06 Adequate mmol/k 0 Low. Plant response to	-	Sum Eff. C Base Exch .4 Exch - to a y to r Gyps - to a The C	of Base Catic Cation Exch. C Saturation (% angeable Acid angeable Acid angeable Acid Application achieve pH 6. neutralise Al (sum Applicat achieve 67.5% CGAR is corre	dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm): g/sqm):	15 42 6.8 44 80 38	4 .2 .11 .93 1	Size: Gravel cc Aggregat Structura Potential Permeab Calculate – Non are me Organic C Organic N	e strength:	2.5 - 5 m): 0.26 ity effects o ble.) [†] : Did not t	10mm) elly m/hr on plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off:16 Chilvers Road
Thornleigh NSW 2120Tel:02 9980 6554Mailing Address:PO Box 357
Pennant Hills NSW 1715Em:info@sesl.com.auWeb:www.sesl.com.au

Batch N°: 26338 Sample N°: 11 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH6 0-200mm Driveway Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: FSC, TOC DC RECOMMENDATIONS Very strong acidity, low salinity, eCEC is high in aluminium and hydrogen wiht moderate sodicity and low in calcium. Low nutrients aside from S. Organic matter very high (6.5%) Amelioriants: Lime = 70g/sqm Urea 15g/sqm General multi purpose fertiliser O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 5.0 60 65 7.0 75 95 <4 0 55 >10 pH in H₂O[†] (1:5) 4.6 pH in CaCl₂[†] (1:5) 4.2 Salinity[†] (EC 1:5 dS/m) 0.19 Low Sodium (Na)[†] (mg/kg) 193 Medium Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio Result **Target Range** Magnesium (Mg) Calcium (Ca) Extractable K 1.9% Extractable Aluminium* (AI) 0.4 4.1 – 6.0 Exchangeable Ca:Mg Potassium (K) Sodium (Na) Low Comment: Potential Calcium deficiency Mg 6.7% Low Na < 5% Mg:K 3.5 2.6 - 5.0Na 6.5% Comment: Balanced oderate sodicity Mg 12 - 18% H 65.5% Са Ca 2.4% 0.21 K/(Ca+Mq) < 0.07 57 - 78% Hiah Low Comment: High K 3 - 11% AI 16.5% High K:Na N/A 0.3 H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.03 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 13 Very Low



A member of the Australasian Soil and Plant Analysis Council † This laboratory has been awarded a Certificate of Proficiency for specific soil and plant tissue analyses by the Australasian Soil and Plant Analysis Council (ASPAC). Tests for which proficiency has been demonstrated are highlighted in this report. Disclaimer: Tests are performed under a quality system complying with ISO 9001: 2008. Results are based on the analysis of the sample taken or received by SESL. Due to the variability of sampling procedures, environmental conditions and managerial factors, SESL does not accept any liability for a lack of performance based on its interpretation and recommendations. This document must not be reproduced except in full.

Na:

K:

Ca:

Mg:



Soil Chemistry Profile Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

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Thornleigh NSW 2120 PO Box 357 Pennant Hills NSW 1715

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		PLANT A	VAILABLE	NU	TRIENTS	5			
Major Nutrients	Result (mg/kg)	Very Low 📃 Low	Marginal	2	Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	0.5						0.1	4.2	4.1
Phosphate-P (PO ₄)	6.5						1.3	12.6	11.3
Potassium (K) [†]	96.2						19.2	52.3	33.1
Sulphate-S (SO ₄)	84						16.8	13.6	Drawdowr
Calcium (Ca) [†]	62.8						12.5	372.1	359.6
Magnesium (Mg) [†]	105						20.9	38.7	17.8
Iron (Fe)	166.2						33.2	110.1	76.9
Manganese (Mn) [†]	10						2	8.8	6.8
Zinc (Zn) [†]	2						0.4	1	0.6
Copper (Cu)	1.4						0.3	1.3	1
Boron (B) [†]	1						0.2	0.5	0.3
Explanation of graph	n ranges:						NOTES: Adjustm	ent recommendation	calculates the
Very Low	Low	Marginal	💋 Adequate		High		elemental applicat	tion to shift the soil t nd, which maximises	est level to within
for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	addition is 60 to 90%.	recommended. Potential response to nutrient addition is 30 to 60%.	rates are recommende Potential response to nutrient addition is 5 to 30%.		ground and surfa Drawdown is rec Potential respons addition is <2%.	ommended. se to nutrient	1.33 tonne/m ³ and	nents are based on I selected soil depth	
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	cessive	Base Saturation (%	·	17. ° E		Gravel co		Did not t Did not t	
Adequate		Exchangeable Acie	• • • • •	65.		Structura	e strength:	Did not t	
0	≥0.4	Exchangeable Act	anty (70).	00.		Olluciula			
mmol/k	g					Potential	infiltration rat		
mmol/k	g	Lime Application					infiltration rat ility (mm/hr):	Did not t	
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mmol/k	g		0 (g/sqm):	11: 314		Permeab Calculate Requi	ility (mm/hr): ed EC _{SE} (dS/m res EC and S	Did not t n): - Soil Texture	est result.
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mmol/k 0	g	 to achieve pH 6. to neutralise Al (Gypsum Applicat to achieve 67.5% 	0 (g/sqm): g/sqm): ion Rate ₀ exch. Ca (g/sqm	314	4	Permeab Calculate Requi Organic (Organic (ility (mm/hr): ed EC _{SE} (dS/m res EC and S Carbon (OC% Matter (OM%)	Did not to n): - Soil Texture n) [†] : 3.8 – Ver	est result.
mmol/k 0	g	 to achieve pH 6. to neutralise Al (Gypsum Applicat to achieve 67.5% The CGAR is correct 	0 (g/sqm): g/sqm): i on Rate 6 exch. Ca (g/sqm ected for a soil	314	4	Permeab Calculate Requi Organic (Organic (ility (mm/hr): ed EC _{SE} (dS/m res EC and S Carbon (OC%	Did not to n): - Soil Texture n) [†] : 3.8 – Ver	est result.
mmol/k 0	g	 to achieve pH 6. to neutralise Al (Gypsum Applicat to achieve 67.5% The CGAR is corrected of the corrected of	0 (g/sqm): g/sqm): ion Rate & exch. Ca (g/sqm ected for a soil nd any Lime	314	4	Permeab Calculate Requi Organic (Organic (ility (mm/hr): ed EC _{SE} (dS/m res EC and S Carbon (OC% Matter (OM%)	Did not to n): - Soil Texture n) [†] : 3.8 – Ver	est result.
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Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



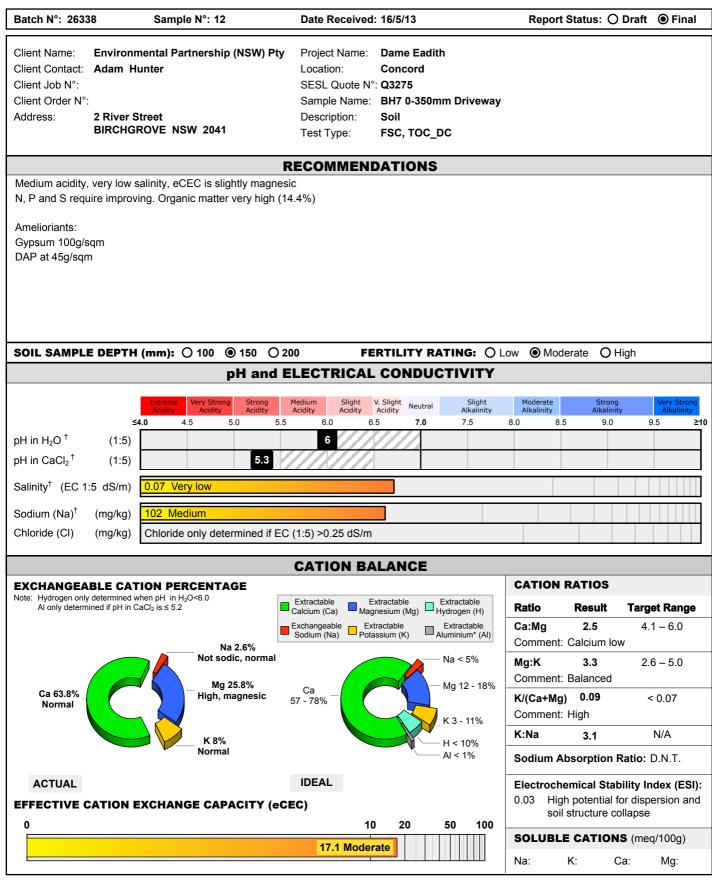
A member of the Australasian Soil and Plant Analysis Council † This laboratory has been awarded a Certificate of Proficiency for specific soil and plant tissue analyses by the Australasian Soil and Plant Analysis Council (ASPAC). Tests for which proficiency has been demonstrated are highlighted in this report.



Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off:16 Chilvers Road
Thornleigh NSW 2120Tel:02 9980 6554Mailing Address:PO Box 357
Pennant Hills NSW 1715Em:info@sesl.com.auWeb:www.sesl.com.au





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Soil Chemistry Profile Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

Thornleigh NSW 2120 PO Box 357 Pennant Hills NSW 1715

02 9980 6554 Tel: 02 9484 2427 Fax: info@sesl.com.au Em: Web: www.sesl.com.au

Batch N°: 26338

Mailing Address:

Date Received: 16/5/13

Report Status: O Draft Final

Wajor Nutrients (mg/kg) Very Low Low Marginal Adequate High (g/sqm) (g/sqm) (g/sqm) Nitrate-N (NO ₃) 1.1 0.2 4.2 4 4 4 4 4 4 4 10.1 1			PLANT A	VAILABLE	NU	JTRIENT	S			
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Sulphate-S (SO,) 23 4.6 13.6 9 Calcium (Ca) [†] 2181 435.1 431.7 Drawdow Magnesium (Mg) [†] 535 106.7 44.9 Drawdow Iron (Fe) 132.3 26.4 110.1 83.7 Manganese (Mn) [†] 20 4 8.8 4.8 Zinc (Zn) [†] 8.9 1.8 1 Drawdow Copper (Cu) 2 0.4 0.4 0.5 0.1 Explanation of graph ranges: Cow <	Phosphate-P (PO ₄)	12.6						2.5	12.6	10.1
Calcium (Ca) [†] 2181 435.1 431.7 Drawdow Magnesium (Mg) [†] 535 106.7 44.9 Drawdow Iron (Fe) 132.3 28.4 110.1 83.7 Manganese (Mn) [†] 20 44 8.8 4.8 Zinc (Zn) [†] 8.9 1.8 1.8 1 Drawdow Copper (Cu) 2 0.4 1.3 0.9 Boron (B) [†] 1.8 1 Drawdow 0.4 0.3 0.9 Coubing Propertication of graph ranges: Image and the source calculates at the maximum calculates at the source calculates at	Potassium (K) [†]	532						106.1	60.6	Drawdowr
Construction Construction <thconstruction< th=""> Construction <thc< td=""><td>Sulphate-S (SO₄)</td><td>23</td><td></td><td></td><td></td><td></td><td></td><td>4.6</td><td>13.6</td><td>9</td></thc<></thconstruction<>	Sulphate-S (SO ₄)	23						4.6	13.6	9
Iron (Fe) 132.3 26.4 110.1 83.7 Manganese (Mn) [†] 20 4 8.8 4.8 Zinc (Zn) [†] 8.9 1.8 1 Drawdow Copper (Cu) 2 0.4 1.3 0.9 Boron (B) [†] 1.8 1 Drawdow Explanation of graph ranges: Very Low 0.4 0.5 0.1 Corowh is likely to be serverely depressed and definency. Potential response to nutrient addition is 50 to 90%. Marginal serve addition is 60 to 90%. Marginal serecommended perice	Calcium (Ca) [†]	2181						435.1	431.7	Drawdowr
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0.15 Juil not test 0.11 High Excessive 0.06 Adams-Evans Buffer pH (BpH): 6.8 0.07 Sum of Base Cations (meq/100g ⁻¹): 17.1 Eff. Cation Exch. Capacity (eCEC): 17.1 Size: Base Saturation (%): 100 Gravel content: Did not test Exchangeable Acidity (meq/100g ⁻¹): - Aggregate strength: Did not test Exchangeable Acidity (%): - Structural unit: Did not test Exchangeable Acidity (%): - Structural unit: Did not test O.01 Content: Did not test Potential infiltration rate: Very Slow Permeability (mm/hr): Did not test Calculated EC _{SE} (dS/m): - Requires EC and Soil Texture result. Organic Carbon (OC%) [†] : 8.5 – Very high Organic Matter (OM%): 14.4 Additional comments: High not test	are usually recommended. Potential response to nutrient addition is >90%.		Potential response to nutrient addition is 30 to 60%.	Potential response to nutrient addition is 5 t 30%.		Drawdown is rec Potential respon	commended. se to nutrient	g/sqm measuren 1.33 tonne/m ³ and	I selected soil depth	
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addition to achieve pH 6.0.				-						
			addition to achieve	е рН 6.0.						

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26338 Sample N°: 13 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH7 350mm+ Driveway Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Medium acidity, very low salinity, eCEC is high in aluminium and hydrogen and low in calcium. Amelioriants: Lime = 300g/sqm Gypsum = 350g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 45 50 55 60 65 7.0 75 95 <4.0 >10 pH in H₂O[†] 5.6 (1:5)pH in CaCl₂[†] 4.6 (1:5)0.04 Very low Salinity[†] (EC 1:5 dS/m) Sodium (Na)[†] (mg/kg) 57 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio **Target Range** Magnesium (Mg) Result Calcium (Ca) K 5.9% Extractable Extractable Aluminium* (Al) 0.8 4.1 - 6.0Exchangeable Ca:Mg Potassium (K) Sodium (Na) Normal Comment: Potential Calcium deficiency Mg 12.1% Normal Na < 5% Mg:K 2 2.6 - 5.0 Na 1.9% Comment: Magnesium low ot sodic, normal Mg 12 - 18% Са Ca 10.2% 0.27 K/(Ca+Mq) < 0.07 57 - 78% Low Comment: High H 62.2% K 3 - 11% Al 7.4% High High K:Na N/A 3.1 H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.02 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 13 Very Low Na: K: Ca: Mg:



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Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

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Pennant Hills NSW 1715

02 9980 6554 Tel: Fax: 02 9484 2427 info@sesl.com.au Em: Web: www.sesl.com.au

Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

Major Nutrients	Result (mg/kg)	Ve	ery Low	Low	Marginal	Z	Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-								-	4.2	Did not tes
Phosphate-P (PO ₄)	0								-	12.6	Did not tes
Potassium (K) [†]	303								60.4	52.3	Drawdow
Sulphate-S (SO ₄)	-								-	13.6	13.6
Calcium (Ca) [†]	265								52.9	372.1	319.2
Magnesium (Mg) [†]	190								37.9	38.7	0.8
Iron (Fe)	-					///			-	110.1	Did not te
Manganese (Mn) [†]	-								-	8.8	Did not te
Zinc (Zn) [†]	-								-	1	Did not te
Copper (Cu)	-									1.3	Did not te
Boron (B) [†]	-									0.5	Did not te
Explanation of graph	n ranges:								NOTES: Adjustme	int recommendatio	calculates the
Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	Potential "hidden hunger", or sub-c deficiency. Poten response to nutri addition is 60 to 9	clinical is ntial t ient b 90%. r F r	Marg Supply of this s barely ade the plant, and build-up is sti recommende Potential resp nutrient addit to 60%.	s nutrient quate for d ill ed. ponse to	Supply of this nutrient adequate for the plant and and only maintenance applicati rates are recommend Potential response to nutrient addition is 5 to 30%.	t, ion ed.	High The level is exce may be detrimen growth (i.e. phyti may contribute to ground and surfa Drawdown is rec Potential respon- addition is <2%.	tal to plant otoxic) and o pollution of ace waters. commended.	the Adequate ban economic efficienc environment. Drawdown: The o utilise residual soil reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and	y, and minimises ir bjective nutrient ma nutrients. There is tiliser when soil tes ents are based on	npact on the anagement is to no agronomic t levels exceed soil bulk density o
Phosphorus Satu	ration Index	: I	Exchan	geable	Acidity			Physica	al Descripti	on	
0.15 0.06 Adequate 0 mmol/k 0 Low. Plant response to	-	y	Sum of B Eff. Catio Base Sati Exchange Exchange Lime App – to achie – to neutr Gypsum – to achie The CGA	ase Catic n Exch. C uration (% eable Acid eable Acid eable Acid plication eve pH 6.1 ralise Al (9 Applicat eve 67.5% R is corre	dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm):	62 53 14	9 3 0 9 2.23 36	Size: Gravel cc Aggregat Structura Potential Permeab Calculate – Non are mo Organic (e strength:	5 - 20 mr): 0.34 ity effects o le.) [†] : Did not t	10mm) elly e n/hr on plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



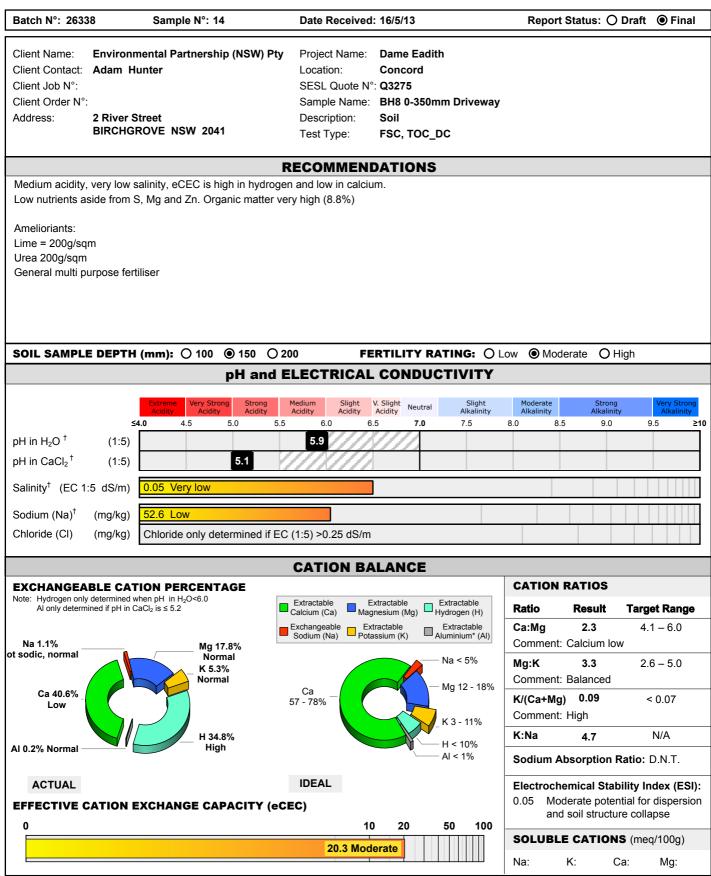
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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off:16 Chilvers Road
Thornleigh NSW 2120Tel:02 9980 6554
Fax:02 9484 2427Mailing Address:PO Box 357
Pennant Hills NSW 1715Em:info@sesl.com.au
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	T T	PLANT A	VAILABLE	NUTRIENTS		<u>г</u>		
Major Nutrients	Result (mg/kg)	Very Low 📃 Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	3.8					0.8	4.2	3.4
Phosphate-P (PO ₄)	7.4					1.5	12.6	11.1
Potassium (K) [†]	421					84	69	Drawdowr
Sulphate-S (SO ₄)	8.3					1.7	13.6	11.9
Calcium (Ca) [†]	1648					328.8	491.6	162.8
Magnesium (Mg) [†]	437			1111		87.2	51.3	Drawdowr
Iron (Fe)	156.9					31.3	110.1	78.8
Manganese (Mn) [†]	19					3.8	8.8	5
Zinc (Zn) [†]	7.6					1.5	1	Drawdowr
Copper (Cu)	1.5					0.3	1.3	1
Boron (B) [†]	1.3					0.3	0.5	0.2
Explanation of graph	ranges:					NOTES: Adjustme	nt recommendatio	n calculates the
Very Low	Low	Marginal	💋 Adequate	High		elemental application	on to shift the soil t	est level to within
for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	response to nutrient addition is 60 to 90%.	recommended. Potential response to nutrient addition is 30 to 60%.	maintenance application rates are recommended Potential response to nutrient addition is 5 to 30%.	ed. ground and surfa Drawdown is rec	ace waters. commended.	Adequate. • g/sqm measurem 1.33 tonne/m ³ and		
Phosphorus Satur	ration Index	Exchangeable	Acidity		Physica	al Description	on	
		Adams-Evans Buff	fer pH (BpH):	6.9	Texture:		Did not t	est
0.15		Sum of Base Catio	ons (meq/100g ⁻¹):	13.2	Typical c	lay content:	Did not t	est
High		Eff. Cation Exch. C		20.3	Size:			
0.06 E	cessive	Base Saturation (%		65.02	Gravel co		Did not t	
Adequate		Exchangeable Acid	• • • • •			e strength:	Did not t	
0 mmol/k	g≥0.4	Exchangeable Acid	uity (%).	34.83	Structura Potential	infiltration rate	Did not t	
	-	Lime Application	Rate			ility (mm/hr):	Did not t	
0.01		 to achieve pH 6.0 		427		ed EC _{SE} (dS/m		
Low. Plant response to a	applied P is likely.	– to neutralise Al (g/sqm):	6		res EC and S		result.
		Gypsum Applicat	ion Rate		Organic (Carbon (OC%)) [†] : 5.2 – Ver	y high
		– to achieve 67.5%): 205	Organic I	Matter (OM%):	8.8	
		The CGAR is corre	ected for a soil		Additiona	al comments:		
		depth of 150mm an addition to achieve						

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

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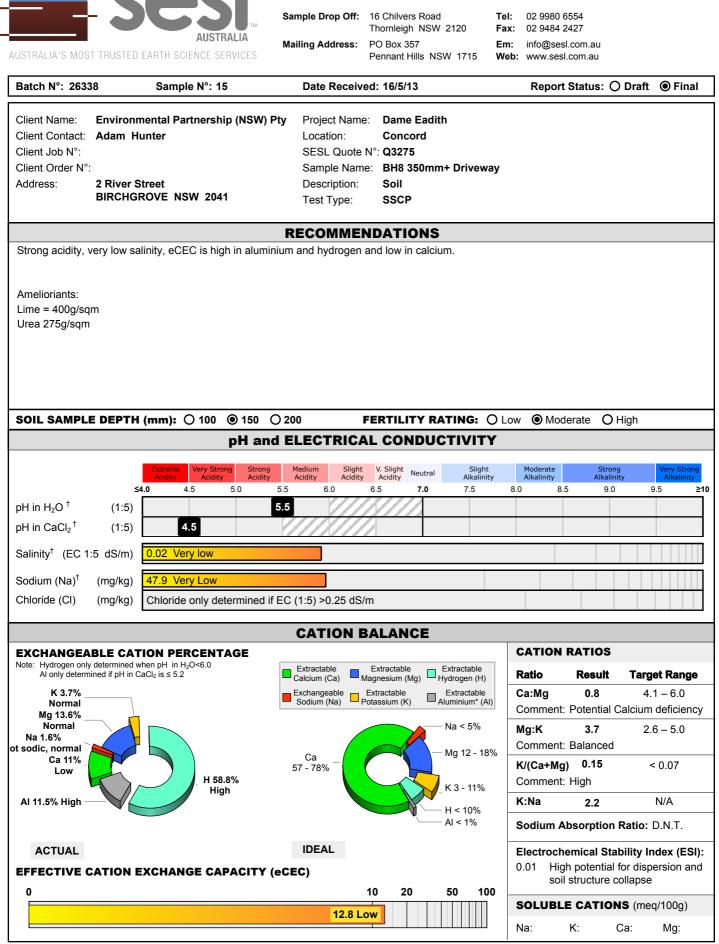


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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant





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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		PLANT /	AVAILABLE N	UTRIENTS		1		
Major Nutrients	Result (mg/kg)	Very Low	v Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-					-	4.2	Did not tes
Phosphate-P (PO ₄)	0					-	12.6	Did not tes
Potassium (K) [†]	184					36.7	52.3	15.6
Sulphate-S (SO ₄)	-					-	13.6	13.6
Calcium (Ca) [†]	282					56.3	372.1	315.8
Magnesium (Mg) [†]	211					42.1	38.7	Drawdowr
Iron (Fe)	-					-	110.1	Did not tes
Manganese (Mn) [†]	-					-	8.8	Did not tes
Zinc (Zn) [†]	-					-	1	Did not tes
Copper (Cu)	-						1.3	Did not tes
Boron (B) [†]	-						0.5	Did not tes
Explanation of graph Very Low Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	ranges: Low Potential "hidden hunger", or sub-clinical deficiency. Potential response to nutrient addition is 60 to 90%.	Marginal Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60%.	Supply of this nutrient is adequate for the plant, and and only maintenance application rates are recommended Potential response to nutrient addition is 5 to 30%.		tal to plant otoxic) and o pollution of ce waters. commended.	NOTES: Adjustmer elemental applicatio the Adequate band economic efficiency environment. Drawdown: The ob utilise residual soil r reason to apply ferti Adequate. • g/sqm measureme 1.33 tonne/m ³ and s	on to shift the soil f , which maximises , and minimises in jective nutrient ma nutrients. There is liser when soil tes ents are based on	est level to within s growth/yield, and npact on the anagement is to no agronomic t levels exceed soil bulk density of
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physica	al Descriptio	on	
		Adams-Evans But	ffer pH (BpH):	6.6	Texture:		Light Cla	ıy
0.15		Sum of Base Cati	ons (meq/100g ⁻¹):	3.8	Typical c	lay content:	35 - 40%	
High		Eff. Cation Exch.		12.8	Size:		Fine (1 -	10mm)
0.06 Ex	cessive	Base Saturation (,	29.69	Gravel co	ontent:	Not grav	elly
Adequate		-	idity (meq/100g ⁻¹):			e strength:	Weak	
0 mmol/kg	≥0.4	Exchangeable Ac	idity (%):	58.75	Structura		Crumb	
THE OFFICE	3	Lime Application	Rate			infiltration rate		
		 – to achieve pH 6. 	.0 (g/sqm):	564		ility (mm/hr):	2.5 - 5 m	m/nr
0		– to neutralise Al	(a/sam):	215		ed EC _{SE} (dS/m) -saline. Salini		n nlanta
0 Low. Plant response to a	applied P is likely.				- NON	-saime. Saimi		
	applied P is likely.				are m	ostlv nealiaib	•	n planto
	applied P is likely.	Gypsum Applica	tion Rate	273		ostly negligib Carbon (OC%)	le.	•
	applied P is likely.	Gypsum Applica – to achieve 67.59	tion Rate % exch. Ca (g/sqm):	273	Organic (ostly negligib Carbon (OC%) Matter (OM%):	le. †: Did not t	•
	applied P is likely.	Gypsum Applica	tion Rate % exch. Ca (g/sqm): ected for a soil	273	Organic (Organic I	Carbon (OC%)	le. †: Did not t	•

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



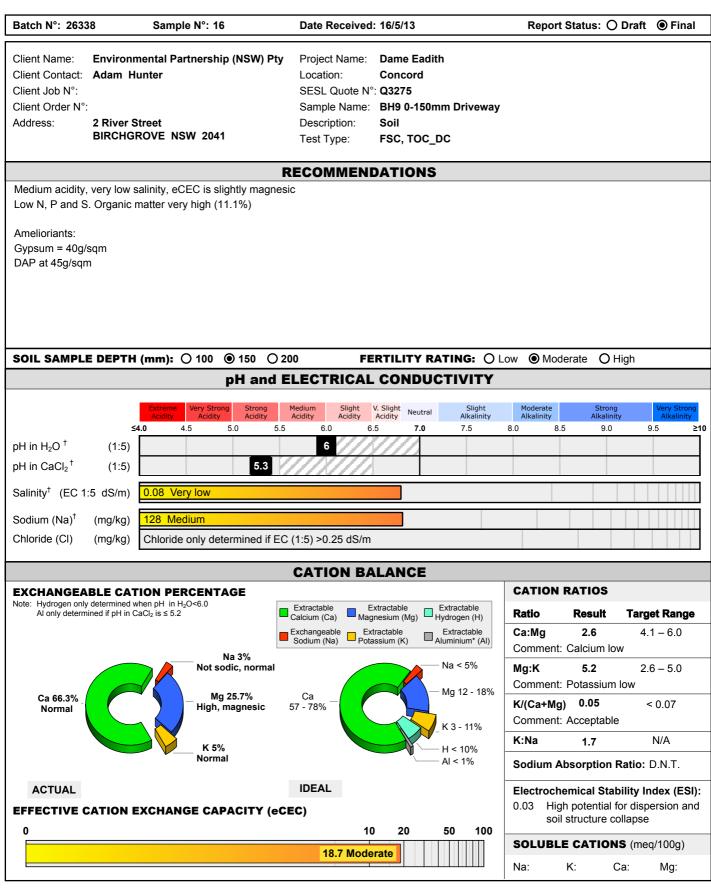
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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		PLANT A	VAILABLE	NUTRIENT	S			
Major Nutrients	Result (mg/kg)	Very Low 📃 Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	4.4					0.9	4.2	3.3
Phosphate-P (PO ₄)	11.9					2.4	12.6	10.2
Potassium (K) [†]	362					72.2	60.6	Drawdowr
Sulphate-S (SO ₄)	20					4	13.6	9.6
Calcium (Ca) [†]	2478					494.4	431.7	Drawdowr
Magnesium (Mg) [†]	582					116.1	44.9	Drawdowr
Iron (Fe)	262.1					52.3	110.1	57.8
Manganese (Mn) [†]	29					5.8	8.8	3
Zinc (Zn) [†]	12					2.4	1	Drawdowr
Copper (Cu)	3.3					0.7	1.3	0.6
Boron (B) [†]	2.2					0.4	0.5	0.1
Very Low Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur	Low Potential "hidden hunger", or sub-clinical deficiency. Potential response to nutrient addition is 60 to 90%.	Marginal Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60%. Exchangeable A Adams-Evans Buff Sum of Base Catio Eff. Cation Exch. C Base Saturation (% Exchangeable Acie Exchangeable Acie	fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): 6): dity (meq/100g ⁻¹):	t, may be detrime growth (i.e. phy may contribute ed. ground and sur Drawdown is re o Potential respo addition is <2% 6.9 18.7 18.7 100	ental to plant (totoxic) and to pollution of face waters. commended. nse to nutrient Physica Texture: Typical c Size: Gravel co	the Adequate bar economic efficien- environment. Drawdown: The tu utilise residual soi reason to apply fe Adequate. • g/sqm measurer 1.33 tonne/m³ and al Descripti elay content: te strength:	tion to shift the soil in hd, which maximises cy, and minimises in objective nutrient m il nutrients. There is irtiliser when soil tes ments are based on d selected soil depth ion Did not t Did not t Did not t Did not t Did not t	s growth/yield, and mpact on the anagement is to no agronomic it levels exceed soil bulk density of h. est est est
0 mmol/kg 0.01 Low. Plant response to a	-	Lime Application – to achieve pH 6. – to neutralise Al (Gypsum Applicat – to achieve 67.5% The CGAR is corre depth of 150mm a addition to achieve	0 (g/sqm): g/sqm): ion Rate & exch. Ca (g/sqn ected for a soil nd any Lime	0 - n): 40	Permeab Calculate Requi Organic (Organic I	infiltration rat bility (mm/hr): ed EC _{SE} (dS/m ires EC and S Carbon (OC% Matter (OM%) al comments:	Did not t n): - Soil Texture n) [†] : 6.5 – Ver	est result.

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



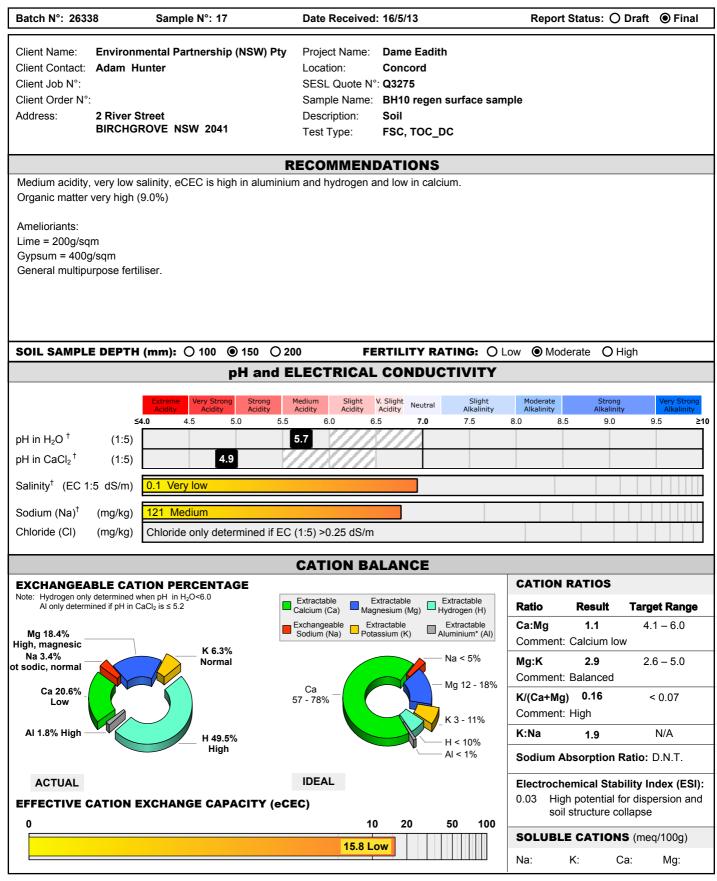
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Major Nutrients	Result (mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmen (g/sqm)
Nitrate-N (NO ₃)	0.3					0.1	4.2	4.1
Phosphate-P (PO ₄)	6.4					1.3	12.6	11.3
Potassium (K) [†]	387					77.2	60.6	Drawdown
Sulphate-S (SO ₄)	22					4.4	13.6	9.2
Calcium (Ca) [†]	651					129.9	431.7	301.8
Magnesium (Mg) [†]	351					70	44.9	Drawdowr
Iron (Fe)	340.8					68	110.1	42.1
Manganese (Mn) [†]	11					2.2	8.8	6.6
Zinc (Zn) [†]	3.9		·····			0.8	1	0.2
Copper (Cu)	1.2					0.2	1.3	1.1
Boron (B) [†]	1.3					0.3	0.5	0.2
Explanation of graph						NOTES: Adjustme		
Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	Potential "hidden hunger", or sub-clinical deficiency. Potential response to nutrient addition is 60 to 90%.	Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60%.	Supply of this nutrient i adequate for the plant, and and only maintenance applicatio rates are recommende Potential response to nutrient addition is 5 to 30%.	may be detrimen growth (i.e. phyto n may contribute to	ital to plant otoxic) and o pollution of ace waters. commended.	environment. Drawdown: The ot utilise residual soil reason to apply ferl Adequate. • g/sqm measurem 1.33 tonne/m ³ and	nutrients. There is illiser when soil tes ents are based on	no agronomic t levels exceed soil bulk density of
Phosphorus Satu	ration Index	Exchangeable	Acidity		Physica	al Descriptio	on	
0.15 0.06 Adequate 0 mmol/k 0 Low. Plant response to	-	Base Saturation (Exchangeable Ac Exchangeable Ac Lime Application – to achieve pH 6 – to neutralise Al Gypsum Applica	ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): a Rate .0 (g/sqm): (g/sqm): tion Rate % exch. Ca (g/sqm) ected for a soil und any Lime	49.49 494 42	Size: Gravel co Aggregat Structura Potential Permeab Calculate Requi Organic O Organic I	e strength:	Did not t): - oil Texture [†] : 5.3 – Ver	est est est w est result.

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

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METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



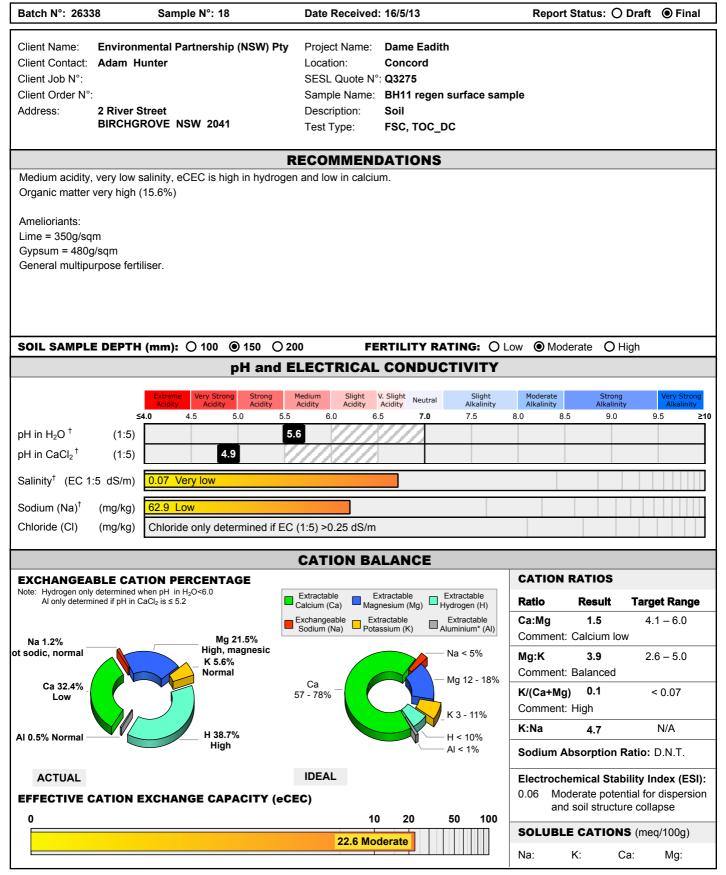
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		PLANT A		NUTRIENT	S	1		
Major Nutrients	Result (mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	2.4	1				0.5	4.2	3.7
Phosphate-P (PO ₄)	15					3	12.6	9.6
Potassium (K) [†]	493					98.4	69	Drawdow
Sulphate-S (SO ₄)	17					3.4	13.6	10.2
Calcium (Ca) [†]	1465					292.3	491.6	199.3
Magnesium (Mg) [†]	589					117.5	51.3	Drawdow
Iron (Fe)	263.3					52.5	110.1	57.6
Manganese (Mn) [†]	9.1					1.8	8.8	7
Zinc (Zn) [†]	12					2.4	1	Drawdowi
Copper (Cu)	1.6					0.3	1.3	1
Boron (B) [†]	1.2					0.2	0.5	0.3
Explanation of graph	ranges:					NOTES: Adjustm	nent recommendation	n calculates the
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	response to nutrient addition is 60 to 90%.	build-up is still recommended. Potential response to nutrient addition is 30 to 60%.	maintenance application rates are recommended Potential response to nutrient addition is 5 to 30%.	d. ground and surf Drawdown is re	ace waters. commended. ise to nutrient	Adequate. • g/sqm measurer 1.33 tonne/m ³ and	ertiliser when soil tes ments are based on d selected soil depth	soil bulk density of
Phosphorus Satur	ration Index	Exchangeable	Acidity			I Decerint		
		Adams-Evans Buff		6.6	Physica Texture:	ai Descripti	ion Did not t	ost

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

 Sample Drop Off:
 16 Chilvers Road Thornleigh NSW 2120
 Tel:
 02 9980 6554

 Mailing Address:
 PO Box 357 Pennant Hills NSW 1715
 Em:
 info@sesl.com.au

 Web:
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Batch N°: 26338 Sample N°: 19 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH12 regen surface sample Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: FSC, TOC_DC RECOMMENDATIONS Medium acidity, very low salinity, eCEC is high in aluminium and hydrogen and low in calcium. Organic matter very high (12.0%) Amelioriants: Lime = 400g/sqm Gypsum = 645g/sqm General multipurpose fertiliser. O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 5.0 55 60 65 7.0 75 95 <4 0 >10 pH in H₂O[†] (1:5) 5.8 pH in CaCl₂[†] 5 (1:5) Salinity[†] (EC 1:5 dS/m) 0.09 Very low Sodium (Na)[†] (mg/kg) 109 Medium Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio **Target Range** Magnesium (Mg) Result Calcium (Ca) Extractable Extractable Aluminium* (Al) Exchangeable Sodium (Na) 4.1 – 6.0 Ca:Mg 1.1 Potassium (K) Comment: Calcium low Mg 23.4% Na 2.4% High, magnesic Na < 5% Mg:K 3 2.6 - 5.0ot sodic, normal K 7.9% Comment: Balanced Normal Mg 12 - 18% Са Ca 25.2% 0.16 K/(Ca+Mq) < 0.07 57 - 78% Low Comment: High K 3 - 11% K:Na N/A 3.3 Al 0.6% Normal H < 10% H 40.1% AI < 1% High Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.04 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 19.8 Low Na: K: Ca: Mg:



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Batch N°: 26338

Date Received: 16/5/13

Pennant Hills NSW 1715

Report Status: O Draft Final

		PLANT	AVAILABLE I	NUTRIENTS	5			
Major Nutrients	Result (mg/kg)	Very Low Lov	w Marginal	🔀 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	9.9					2	4.2	2.2
Phosphate-P (PO ₄)	14.1					2.8	12.6	9.8
Potassium (K) [†]	610					121.7	60.6	Drawdowr
Sulphate-S (SO ₄)	8.6					1.7	13.6	11.9
Calcium (Ca) [†]	996					198.7	431.7	233
Magnesium (Mg) [†]	561					111.9	44.9	Drawdow
Iron (Fe)	305					60.8	110.1	49.3
Manganese (Mn) [†]	15					3	8.8	5.8
Zinc (Zn) [†]	8.4					1.7	1	Drawdowr
Copper (Cu)	1.8					0.4	1.3	0.9
Boron (B) [†]	1.2					0.2	0.5	0.3
Explanation of graph	ranges:					NOTES: Adjustme	nt recommendatio	calculates the
Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	Potential "hidden hunger", or sub-clinical deficiency. Potential response to nutrient addition is 60 to 90%.	Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60%.	Supply of this nutrient adequate for the plant, and and only maintenance applicatic rates are recommende Potential response to nutrient addition is 5 to 30%.	may be detrimen growth (i.e. phyto may contribute to d. ground and surfa Drawdown is rec	atal to plant otoxic) and o pollution of ace waters. commended.	environment. Drawdown: The ol utilise residual soil reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and	nutrients. There is illiser when soil tes ents are based on	no agronomic t levels exceed soil bulk density of
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physica	al Description	on	
		Adams-Evans Bu	ffer pH (BpH):	6.7	Texture:		Did not t	est
0.15 0.06 Adequate 0 mmol/kg 0.01 Low. Plant response to a	-	Eff. Cation Exch. Base Saturation (Exchangeable Ac Exchangeable Ac Lime Application – to achieve pH 6 – to neutralise Al Gypsum Applica	idity (meq/100g ⁻¹): idity (%): n Rate .0 (g/sqm): (g/sqm): ntion Rate % exch. Ca (g/sqm rected for a soil	59.09 7.94 40.1 463 16	Size: Gravel cc Aggregat Structura Potential Permeab Calculate Requi Organic C Organic I	e strength:	Did not t): - oil Texture [†] : 7.1 – Ver	est est est w est result.

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Pennant Hills NSW 1715Em:info@sesl.com.au
Web:www.sesl.com.au

Batch N°: 26338 Sample N°: 20 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH 13 0-200mm Paddock 2 Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: FSC, TOC_DC RECOMMENDATIONS Medium acidity, very low salinity, eCEC is high in aluminium and hydrogen and low in calcium. Organic matter very high (12.4%) Amelioriants: Lime = 300g/sqm Gypsum = 400g/sqm General multipurpose fertiliser. O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 5.0 55 60 65 7.0 75 95 <4.0 >10 pH in H₂O[†] (1:5) 5.7 pH in CaCl₂[†] 4.8 (1:5) Salinity[†] (EC 1:5 dS/m) 0.06 Very low Sodium (Na)[†] (mg/kg) 74.2 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio Result **Target Range** Magnesium (Mg) Calcium (Ca) Extractable Extractable Aluminium* (Al) 1.5 4.1 – 6.0 Exchangeable Ca:Mg Potassium (K) Mg 16.9% Sodium (Na) Comment: Calcium low Normal K 6.7% Na 1.8% Na < 5% Normal Mg:K 2.5 2.6 - 5.0ot sodic, normal Comment: Magnesium low Mg 12 - 18% Са Ca 24.6% 0.16 K/(Ca+Ma) < 0.07 57 - 78% Low Comment: High K 3 - 11% K:Na N/A H 48.1% 3.8 AI 1.9% High H < 10% High AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.03 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) **18 Low** Na: K: Ca: Mg:



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Mehlich 3 - Multi-nutrient Extractant

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

Major Nutrients	Result (mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmen (g/sqm)
Nitrate-N (NO ₃)	1.2					0.2	4.2	4
Phosphate-P (PO ₄)	6.4					1.3	12.6	11.3
Potassium (K) [†]	475					94.8	60.6	Drawdown
Sulphate-S (SO ₄)	15					3	13.6	10.6
Calcium (Ca) [†]	883					176.2	431.7	255.5
Magnesium (Mg) [†]	368					73.4	44.9	Drawdowr
Iron (Fe)	263.8					52.6	110.1	57.5
Manganese (Mn) [†]	16					3.2	8.8	5.6
Zinc (Zn) [†]	4					0.8	1	0.2
Copper (Cu)	1.4					0.3	1.3	1
Boron (B) [†]	1.2					0.2	0.5	0.3
Very Low Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	Low Potential "hidden hunger", or sub-clinical deficiency. Potential response to nutrient addition is 60 to 90%.	"hidden Supply of this nutrient or sub-clinical is barely adequate for /. Potential the plant, and to nutrient build-up is still s 60 to 90%. recommended. Potential response to		may be detrimen growth (i.e. phyto may contribute to ground and surfa Drawdown is rec	The level is excessive and may be detrimental to plant growth (i.e. phytotoxic) and may contribute to pollution of ground and surface waters. Drawdown is recommended. Potential response to nutrient		the Adequate band, which maximises growth/yiel economic efficiency, and minimises impact on the environment. Drawdown: The objective nutrient management is utilise residual soil nutrients. There is no agronom reason to apply fertiliser when soil test levels exce Adequate. • g/sqm measurements are based on soil bulk der 1.33 tonne/m ³ and selected soil depth.	
Phosphorus Satur	ration Index	Exchangeable	Acidity		Physica	l Descript	ion	
0.15 0.06 Adequate mmol/k 0 Low. Plant response to	-	Adams-Evans Buff Sum of Base Catio Eff. Cation Exch. C Base Saturation (% Exchangeable Acio Exchangeable Acio Exchangeab	ns (meq/100g ⁻¹): capacity (eCEC): b): dity (meq/100g ⁻¹): dity (%): Rate D (g/sqm): g/sqm): ion Rate b exch. Ca (g/sqm) ected for a soil nd any Lime	48.06 505 50	Size: Gravel cc Aggregat Structura Potential Permeab Calculate Requi Organic C Organic N	e strength: unit: infiltration ra ility (mm/hr): d EC _{SE} (dS/r res EC and S	Soil Texture 6) [†] : 7.3 – Ver	est est est w est result.

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



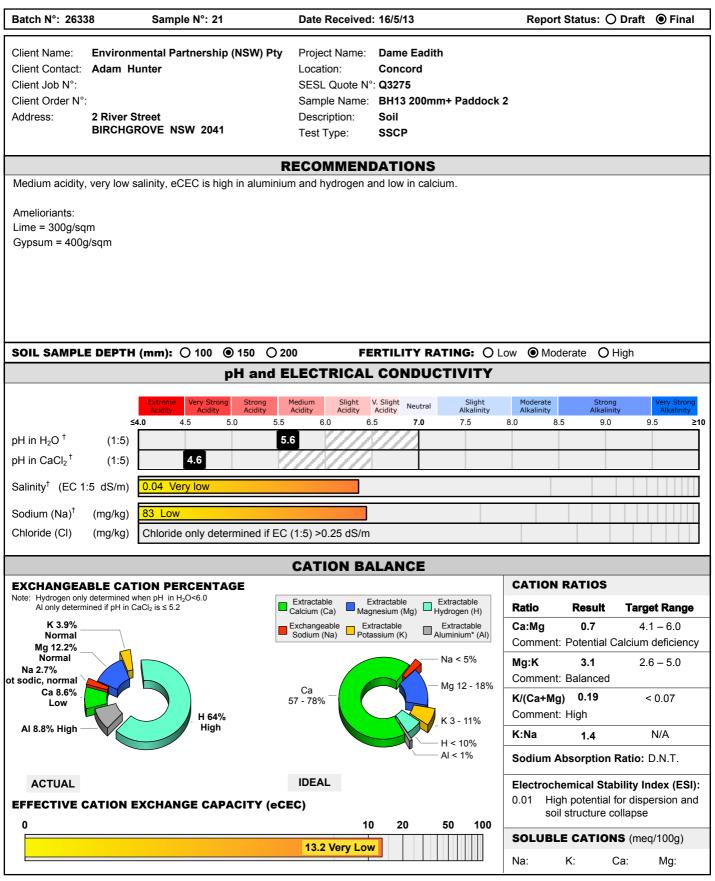
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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road

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02 9980 6554 Tel: 02 9484 2427 Fax: info@sesl.com.au Em: Web: www.sesl.com.au

Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		1	PL	.ANT A	VAILABLE	NU	IRIENT	5	1		
Major Nutrients	Result (mg/kg)		Very Low	Low	Marginal	2	Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-								-	4.2	Did not tes
Phosphate-P (PO ₄)	0								-	12.6	Did not tes
Potassium (K) [†]	204								40.7	52.3	11.6
Sulphate-S (SO ₄)	-								-	13.6	13.6
Calcium (Ca) [†]	225								44.9	372.1	327.2
Magnesium (Mg) [†]	195								38.9	38.7	Drawdow
Iron (Fe)	-								-	110.1	Did not tes
Manganese (Mn) [†]	-			//					-	8.8	Did not tes
Zinc (Zn) [†]	-								-	1	Did not tes
Copper (Cu)	-									1.3	Did not tes
Boron (B) [†]	-									0.5	Did not tes
Explanation of graph	n ranges:								NOTES: Adjustme	nt recommendatio	calculates the
Very Low	Low		Marg	ginal	💋 Adequate		High		elemental applicati the Adequate ban	on to shift the soil t	est level to within
present. Large applications	deficiency. Pote response to nu		the plant, ar build-up is s		and and only maintenance applicati	on	growth (i.e. phyt may contribute t		utilise residual soil reason to apply fer		
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	response to nu addition is 60 to	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%.	till ed. sponse to ition is 30	maintenance applicati rates are recommende Potential response to nutrient addition is 5 to 30%.	ed.		o pollution of ace waters. commended. se to nutrient	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and	iliser when soil tes ents are based on selected soil depth	t levels exceed soil bulk density of
present. Large applications for soil building purposes are usually recommended. Potential response to	response to nu addition is 60 to	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%.	till ed. sponse to	maintenance applicati rates are recommende Potential response to nutrient addition is 5 to 30%.	ed.	may contribute t ground and surf Drawdown is red Potential respon	o pollution of ace waters. commended. se to nutrient	reason to apply fer Adequate. • g/sqm measurem	iliser when soil tes ents are based on selected soil depth	t levels exceed soil bulk density of
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	response to nu addition is 60 to	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%.	itill led. sponse to lition is 30	maintenance applicati rates are recommende Potential response to nutrient addition is 5 to 30%.	ed.	may contribute t ground and surf Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and	iliser when soil tes ents are based on selected soil depth	t levels exceed soil bulk density of
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.15	response to nu addition is 60 to	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%. Exchar Adams-E Sum of E	itill ed. sponse to ition is 30 ingeable Evans Buff Base Catic	maintenance applicati rates are recommende Potential response to nutrient addition is 5 to 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹):	ed. D	may contribute t ground and surf Drawdown is rec Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture:	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and	illiser when soil tes ents are based on selected soil depth on Light Cla 35 - 40%	t levels exceed soil bulk density of Y
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.15 0.11 High	response to nu addition is 60 to	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%. Exchan Adams-E Sum of E Eff. Catio	itill sponse to lition is 30 Igeable A Evans Buff Base Catic on Exch. C	maintenance applicati rates are recommende Potential response to nutrient addition is 5 to 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC):	ed. 5 6.5 3.6 13.	may contribute t ground and surf Drawdown is rea Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture: Typical c Size:	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and al Descriptional lay content:	tiliser when soil tes ents are based on selected soil depth Dn Light Cla 35 - 40% Fine (1 -	t levels exceed soil bulk density of
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.15 0.11 High	response to nu addition is 60 to	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa	till sponse to lition is 30 geable Evans Buff Base Catic on Exch. C turation (%	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %):	6.5 3.6 13. 27.	may contribute t ground and suff Drawdown is rea Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture: Typical c Size: Gravel co	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and al Description lay content:	Light Cla 35 - 40% Fine (1 - Not grave	t levels exceed soil bulk density of
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.15 0.11 High	response to nu addition is 60 to	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang	till sponse to lition is 30 geable Evans Buff Base Catic on Exch. C turation (% eable Acid	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): 6): dity (meq/100g ⁻¹):	ed. 6.5 3.6 13. 27. 8.4	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture: Typical c Size: Gravel co Aggregat	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and al Description lay content: pontent: e strength:	illiser when soil tes ents are based on selected soil depth Dn Light Cla 35 - 40% Fine (1 - Not grave Weak	t levels exceed soil bulk density of Y 10mm)
0.15 0.11 High Adequate	response to nu addition is 60 to ration Inde	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang	till sponse to lition is 30 geable Evans Buff Base Catic on Exch. C turation (%	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): 6): dity (meq/100g ⁻¹):	6.5 3.6 13. 27.	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. sommended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura	reason to apply fer Adequate. g/sqm measurem 1.33 tonne/m ³ and al Description lay content: pontent: e strength: I unit:	illiser when soil tes ents are based on selected soil depth Dn Light Cla 35 - 40% Fine (1 - Not grave Weak Crumb	t levels exceed soil bulk density of Y 10mm)
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.15 0.11 High 0.06 Adequate	response to nu addition is 60 to ration Inde	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang Exchang	till sponse to lition is 30 geable Evans Buff Base Catic on Exch. C turation (% eable Acid	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%):	ed. 6.5 3.6 13. 27. 8.4	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. sommended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura Potential	reason to apply fer Adequate. - g/sqm measurem 1.33 tonne/m ³ and al Description lay content: - pontent: - e strength: - l unit: - infiltration rate	Light Cla 35 - 40% Fine (1 - Not gravy Weak Crumb E: Slow	t levels exceed soil bulk density of Y 10mm) elly
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.15 0.11 High 0.06 Adequate	response to nu addition is 60 to ration Inde	trient o 90%.	build-up is s recommend Potential res nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang Exchang Lime Ap	till sponse to sponse to stition is 30 ageable A Evans Buff Base Catic Don Exch. C turation (% eable Acid pelication	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%):	ed. 6.5 3.6 13. 27. 8.4	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. sommended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura Potential Permeab	reason to apply fer Adequate. - g/sqm measurem 1.33 tonne/m ³ and al Description lay content: e strength: I unit: infiltration rate ility (mm/hr):	Light Cla 35 - 40% Fine (1 - Not gravy Weak Crumb 2.5 - 5 mil	t levels exceed soil bulk density of y 10mm) elly
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.15 0.06 Adequate 0 mmol/k	response to nu addition is 60 to ration Inde: xcessive g	trient o 90%. X	build-up is s recommend Potential re- nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang Exchang Exchang - to achi	till sponse to sponse to stition is 30 ageable A Evans Buff Base Catic Don Exch. C turation (% eable Acid pelication	maintenance applicati rates are recommende Potential response to sow. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm):	6.5 3.6 13. 27. 8.4 64.	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura Potential Permeab Calculate	reason to apply fer Adequate. - g/sqm measurem 1.33 tonne/m ³ and al Description lay content: - pontent: - e strength: - l unit: - infiltration rate	Light Cla 35 - 40% Fine (1 - Not grave Weak Crumb 2.5 - 5 mi): 0.34	t levels exceed soil bulk density of y 10mm) elly m/hr
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.06 Adequate 0 mmol/k	response to nu addition is 60 to ration Inde: xcessive g	trient o 90%. X	build-up is s recommend Potential res nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang Exchang Exchang Lime Ap – to achi – to neut	till sponse to lition is 30 geable A Evans Buff Base Catic Don Exch. C turation (% eable Acid pelication eve pH 6.1 tralise Al (9	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm): g/sqm):	6.5 3.6 13. 27. 8.4 64.	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura Potential Permeab Calculate – Non	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and al Description lay content: te strength: I unit: infiltration rate ility (mm/hr): ed EC _{SE} (dS/m	Light Cla 35 - 40% Fine (1 - Not grave Weak Crumb 2.5 - 5 mi): 0.34	t levels exceed soil bulk density of y 10mm) elly m/hr
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.06 Adequate 0 mmol/k	response to nu addition is 60 to ration Inde: xcessive g	trient o 90%. X	build-up is s recommend Potential re- nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang Exchang Lime Ap – to achi – to neut Gypsum	till ed. sponse to ition is 30 Evans Buff Base Catic on Exch. C turation (% peable Acid peable Acid pe	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm): g/sqm):	6.5 3.6 13. 27. 8.4 64. 544	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura Potential Permeab Calculate – Non are m Organic (reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and al Description lay content: bottent: tonte	Light Cla 35 - 40% Fine (1 - Not grave Weak Crumb Sight Slow 2.5 - 5 mi): 0.34 ty effects cle.	t levels exceed soil bulk density of y 10mm) elly m/hr pn plants
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.06 Adequate 0 mmol/k	response to nu addition is 60 to ration Inde: xcessive g	trient o 90%. X	build-up is s recommend Potential re- nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang Exchang Lime Ap – to achi – to neut Gypsum – to achi	till ed. sponse to ition is 30 Evans Buff Base Catic on Exch. C turation (% peable Acid eable Acid polication eve pH 6.1 tralise Al (% a Applicat	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm): g/sqm): tion Rate	6.5 3.6 13. 27. 8.4 64. 544	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. commended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura Potential Permeab Calculate – Non are m Organic (reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and al Description lay content: tonte	Light Cla 35 - 40% Fine (1 - Not grave Weak Crumb Sight Slow 2.5 - 5 mi): 0.34 ty effects cle.	t levels exceed soil bulk density of y 10mm) elly m/hr pn plants
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%. Phosphorus Satur 0.06 Adequate 0 mmol/k	response to nu addition is 60 to ration Inde: xcessive g	trient o 90%. X	build-up is s recommend Potential re- nutrient add to 60%. Exchar Adams-E Sum of E Eff. Catio Base Sa Exchang Exchang Exchang Lime Ap – to achi – to neut Gypsum – to achi The CGA	till ed. sponse to ition is 30 Evans Buff Base Catic on Exch. C turation (% peable Acid eable Acid pelication eve pH 6.1 tralise Al (9 a Applicat eve 67.5% AR is corres	maintenance applicati rates are recommende Potential response to nutrient addition is 5 tr 30%. Acidity fer pH (BpH): ons (meq/100g ⁻¹): Capacity (eCEC): %): dity (meq/100g ⁻¹): dity (%): Rate 0 (g/sqm): g/sqm): tion Rate 6 exch. Ca (g/sqm	6.5 3.6 13. 27. 8.4 64. 544	may contribute t ground and surf. Drawdown is ree Potential respon addition is <2%.	o pollution of ace waters. sommended. se to nutrient Physica Texture: Typical c Size: Gravel cc Aggregat Structura Potential Permeab Calculate – Non are m Organic C	reason to apply fer Adequate. • g/sqm measurem 1.33 tonne/m ³ and al Description lay content: bottent: tonte	Light Cla 35 - 40% Fine (1 - Not grave Weak Crumb Sight Slow 2.5 - 5 mi): 0.34 ty effects cle.	t levels exceed soil bulk density of y 10mm) elly m/hr pn plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



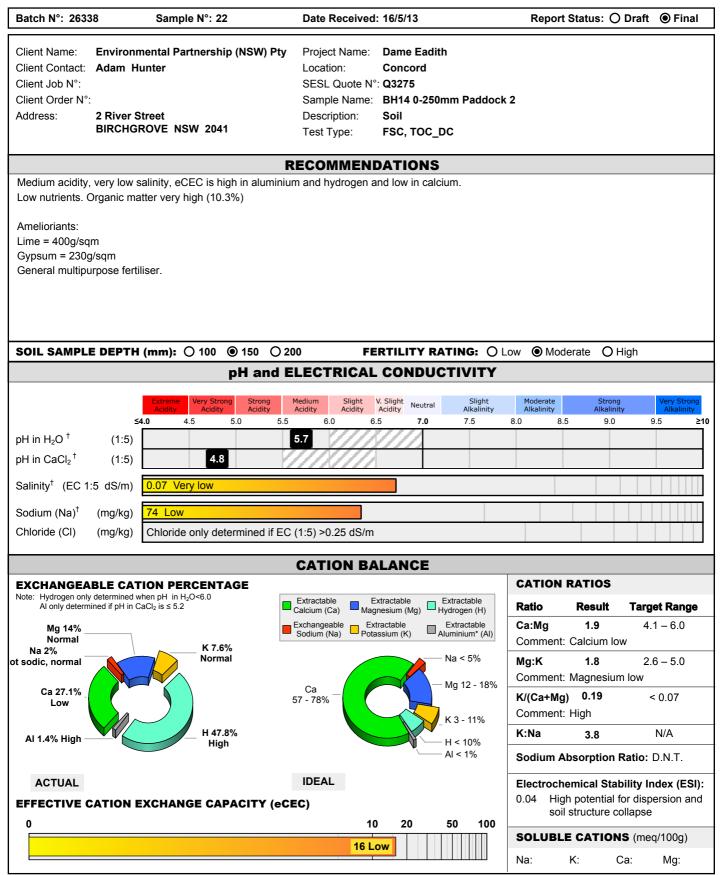
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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off:16 Chilvers Road
Thornleigh NSW 2120Tel:02 9980 6554Mailing Address:PO Box 357
Pennant Hills NSW 1715Em:info@sesl.com.auWeb:www.sesl.com.au





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Pennant Hills NSW 1715

Tel: 02 9980 6554 Fax: 02 9484 2427 Em: info@sesl.com.au Web: www.sesl.com.au

Batch N°: 26338

Date Received: 16/5/13

	Result –	FLANT	VAILABLE		13	Besult	Desirable	Adjuster
Major Nutrients	(mg/kg)	Very Low	Marginal	💋 Adequa	ate 🗾 High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	1.6					0.3	4.2	3.9
Phosphate-P (PO ₄)	5.1					1	12.6	11.6
Potassium (K) [†]	476					95	60.6	Drawdowr
Sulphate-S (SO ₄)	18					3.6	13.6	10
Calcium (Ca) [†]	865				//	172.6	431.7	259.1
Magnesium (Mg) [†]	271					54.1	44.9	Drawdowi
Iron (Fe)	312.1					62.3	110.1	47.8
Manganese (Mn) [†]	30					6	8.8	2.8
Zinc (Zn) [†]	4.8				/	1	1	0
Copper (Cu)	1.7		/			0.3	1.3	1
Boron (B) [†]	1.2					0.2	0.5	0.3
Explanation of graph	ranges:				2	NOTES: Adjust	ment recommendatio	n calculates the
Very Low Low Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.		MarginalAdequateHighSupply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60%.Supply of this nutrient is adequate for the plant, and and only maintenance application rates are recommended. Potential response to nutrient addition is 5 to 30%.The level is excessi may be detrimental growth (i.e. phytoto: may contribute to pi ground and surface Drawdown is recom Potential response to addition is 5 to 30%.			etrimental to plant e. phytotoxic) and ibute to pollution of d surface waters. n is recommended. esponse to nutrient	al to plant toxic) and pollution of ce waters. pommended. parawdown: The objective nutrient management utilise residual soil nutrients. There is no agrono reason to apply fertiliser when soil test levels ex Adequate. • g/sqm measurements are based on soil bulk de		
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physica	al Descript	ion	
		Adams-Evans Buf	fer pH (BpH):	6.7	Texture:		Did not t	est
0.15		Sum of Base Catio				lay content:	Did not t	est
High	cessive	Eff. Cation Exch. (Base Saturation (• • •	16 50.63	Size: Gravel co	ontont:	Did not t	oct
Adequate	ICessive	Exchangeable Aci	,			e strength:	Did not t	
Low	≥0.4	Exchangeable Aci	47.75			0		
mmol/kg	g	Lime Application	Rate		Potential	infiltration ra	te: Very Slo	w
0		– to achieve pH 6.		509		ility (mm/hr):		est
Low. Plant response to applied P is likely.		– to neutralise AI ((g/sqm):	32	Requi		Soil Texture	
		Gypsum Application Rate – to achieve 67.5% exch. Ca (g/sqm): 237 The CGAR is corrected for a soil depth of 150mm and any Lime addition to achieve pH 6.0.			Organic I	Organic Carbon (OC%) [†] : 6.1 – Very high Organic Matter (OM%): 10.3 Additional comments:		

inthe

METHOD REFERENCES: pH (15 Hc0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 582, Nitrate - Rayment & Higginson (1992) 781 Alumnium - SESL in-house, PO-K, S.S. C. Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams Evans (1972) Textura/Sindure/Colour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour- "Munself" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26338 Sample N°: 23 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH 14 250mm+ Paddock 2 Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Medium acidity, very low salinity, eCEC is high in aluminium and hydrogen and low in calcium. Amelioriants: Lime = 350g/sqm Gypsum = 185g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 50 55 60 65 7.0 75 95 <4.0 >10 pH in H₂O[†] 5.6 (1:5)pH in CaCl₂[†] 4.7 (1:5)0.04 Very low Salinity[†] (EC 1:5 dS/m) Sodium (Na)[†] (mg/kg) 60.9 Low Chloride (CI) (mg/kg) Chloride only determined if EC (1:5) >0.25 dS/m **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio **Target Range** Magnesium (Mg) Result Calcium (Ca) Extractable Extractable Aluminium* (Al) K 6.9% 4.1 – 6.0 Exchangeable Ca:Mg 1.1 Potassium (K) Sodium (Na) Normal Comment: Calcium low Mg 10.7% Low Na < 5% Mg:K 1.6 2.6 - 5.0Na 2.4% Comment: Magnesium low ot sodic, normal Mg 12 - 18% Са Ca 12.2% 0.3 K/(Ca+Mq) < 0.07 57 - 78% Low Comment: High H 61.4% K 3 - 11% AI 7.1% High Hiah K:Na N/A 2.9 H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.02 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 11.3 Very Low Na: K: Ca: Mg:



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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

			PL	ANIA	VAILABLE	NU	TRIENTS				I
Major Nutrients	Result (mg/kg)	<u> </u>	Very Low	Low	Marginal	2	Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-								-	4.2	Did not tes
Phosphate-P (PO ₄)	0								-	12.6	Did not tes
Potassium (K) [†]	305								60.8	52.3	Drawdowr
Sulphate-S (SO ₄)	-								-	13.6	13.6
Calcium (Ca) [†]	276								55.1	372.1	317
Magnesium (Mg) [†]	147								29.3	38.7	9.4
Iron (Fe)	-					///			-	110.1	Did not tes
Manganese (Mn) [†]	-			/					-	8.8	Did not tes
Zinc (Zn) [†]	-								-	1	Did not tes
Copper (Cu)	-									1.3	Did not tes
Boron (B) [†]	-									0.5	Did not tes
Explanation of graph	n ranges:								NOTES: Adjustme	ent recommendation	
Very Low	Low		Marg	vinal	💋 Adequate		High		elemental applicat	ion to shift the soil t d, which maximises	est level to within
are usually recommended. Potential response to nutrient addition is >90%.			recommended. rates are recommended Potential response to nutrient addition is 30 to 60%. 30%.			 Potential response to nutrien addition is <2%. 		se to nutrient			
Phosphorus Satur	ration Index	x	Exchan	geable	Acidity			Physica	al Descripti	on	
			Adams-E	vans Buff	fer pH (BpH):	6.	8	Texture:		Light Cla	у
0.15					ons (meq/100g ⁻¹):	3.			ay content:	35 - 40%	
High					Capacity (eCEC):			Size:		Fine (1 -	,
0.06 E	kcessive		Base Saturation (%): Exchangeable Acidity (meq/100g ⁻¹):						te strength: Weak		avelly
Adequate											
0 ≥0.4 mmol/kg		0.4	Exchangeable Acidity (%):			61	.42	Structural unit:		Crumb	
		Lime Application Rate						l infiltration rate: Slow		m/hr	
			 to achieve pH 6.0 (g/sqm): 			51	517		neability (mm/hr): 2.5 - 5 mm/hr ulated EC _{SE} (dS/m): 0.34		11/11/
Low. Plant response to	applied P is like	ely.	– to neutralise AI (g/sqm):		11	7	– Non	Ion-saline. Salinity effects on plants			
				Applicat					ostly negligible. Carbon (OC%) [†] : Did not test		
					6 exch. Ca (g/sqm	ı):	185	-	Matter (OC%)		est
					ected for a soil nd any Lime			-	l comments:		
				to achieve	-			,			
					-						

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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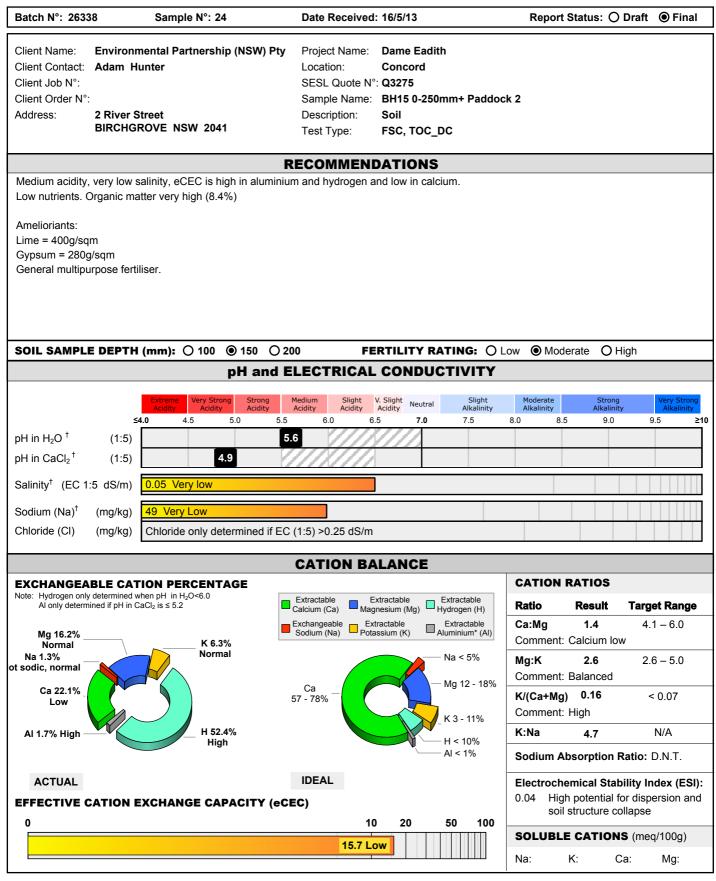
Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Date Received: 16/5/13

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	Desult	PLANI A	VAILABLE	NUIKIENI	3				
Major Nutrients	Result (mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)	
Nitrate-N (NO ₃)	1.7					0.3	4.2	3.9	
Phosphate-P (PO ₄)	7.9					1.6	12.6	11	
Potassium (K) [†]	388					77.4	60.6	Drawdowi	
Sulphate-S (SO ₄)	12					2.4	13.6	11.2	
Calcium (Ca) [†]	693					138.3	431.7	293.4	
Magnesium (Mg) [†]	308			777		61.4	44.9	Drawdowi	
Iron (Fe)	239					47.7	110.1	62.4	
Manganese (Mn) [†]	32					6.4	8.8	2.4	
Zinc (Zn) [†]	3.7					0.7	1	0.3	
Copper (Cu)	1.6					0.3	1.3	1	
Boron (B) [†]	1.1					0.2	0.5	0.3	
Explanation of graph	ranges:					NOTES: Adjustm	ent recommendatio	n calculates the	
Very Low	Low	Marginal	💋 Adequate	High		elemental applicat	ion to shift the soil t d, which maximises	est level to within	
are usually recommended. Potential response to nutrient addition is >90%.	addition is 60 to 90%.	recommended. Potential response to nutrient addition is 30 to 60%.	rates are recommended Potential response to nutrient addition is 5 to 30%.	Drawdown is re	ecommended. nse to nutrient	1.33 tonne/m ³ and	nents are based on selected soil depth		
Phosphorus Satur	ration Index	Exchangeable	-		Physic	al Descripti	on		
		Adams-Evans Buf		6.6	Texture:		Did not t		
0.15		Sum of Base Catio		7.2		lay content:	Did not t	est	
High		Eff. Cation Exch. (•••		Size:				
	cessive	Base Saturation (%		45.86 Gravel co				Did not test	
0 Adequate 0 ≥0.4		Exchangeable Aci				te strength:	Did not t Did not t		
		Exchangeable Aci	uity (76).	52.36		in unit. infiltration rate			
		Lime Application	Rate			ility (mm/hr):	Did not t		
0.01		 to achieve pH 6. 		548		ed EC _{SE} (dS/m			
Low. Plant response to applied P is likely.		– to neutralise Al (g/sqm):	39		equires EC and Soil Texture result.			
		Gypsum Applicat	ion Rate		Organic	Carbon (OC%) [†] : 4.9 – Ver	y high	
		- to achieve 67.5%	6 exch. Ca (g/sqm): 283	Organic	Matter (OM%)	: 8.4		
			noted for a soil		Addition	al comments:			
		The CGAR is corre			Auditiona	a commenta.			
		depth of 150mm a addition to achieve	nd any Lime		Additiona	a comments.			

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26338 Sample N°: 25 Date Received: 16/5/13 Report Status: O Draft Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Dame Eadith Client Contact: Adam Hunter Location: Concord Client Job N°: SESL Quote N°: Q3275 Client Order N°: Sample Name: BH15 250mm+ Paddock 2 Address: 2 River Street Soil Description: **BIRCHGROVE NSW 2041** Test Type: SSCP RECOMMENDATIONS Strong acidity, very low salinity, eCEC is high in aluminium and hydrogen and low in calcium. Amelioriants: Lime = 400g/sqm Gypsum = 190g/sqm O High SOIL SAMPLE DEPTH (mm): 0 100 ● 150 ○ 200 FERTILITY RATING: O Low Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 50 60 65 7.0 75 95 <4.0 55 >10 pH in H₂O[†] (1:5) 5.5 pH in CaCl₂[†] (1:5) 4.6 0.03 Very low Salinity[†] (EC 1:5 dS/m) Sodium (Na)[†] (mg/kg) 41.9 Very Low Chloride only determined if EC (1:5) >0.25 dS/m Chloride (CI) (mg/kg) **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H₂O<6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Hydrogen (H) Ratio Result **Target Range** Magnesium (Mg) Calcium (Ca) K 5.3% Extractable Extractable Aluminium* (Al) 1.2 4.1 – 6.0 Exchangeable Ca:Mg Potassium (K) Normal Sodium (Na) Comment: Calcium low Mg 12.1% Normal Na < 5% Mg:K 2.3 2.6 - 5.0Na 1 4% Comment: Magnesium low ot sodic. normal Mg 12 - 18% Са Ca 14.4% 0.2 K/(Ca+Mq) < 0.07 57 - 78% Low Comment: High H 60.9% K 3 - 11% Al 6% High High K:Na N/A 3.7 H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.02 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 12.6 Very Low Na: K: Ca: Mg:



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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		PLANT		NUTRIENT				1
Major Nutrients	Result (mg/kg)	Very Low	v 📃 Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-					-	4.2	Did not tes
Phosphate-P (PO ₄)	0					-	12.6	Did not tes
Potassium (K) [†]	261					52.1	52.3	0.2
Sulphate-S (SO ₄)	-					-	13.6	13.6
Calcium (Ca) [†]	362					72.2	372.1	299.9
Magnesium (Mg) [†]	184					36.7	38.7	2
Iron (Fe)	-					-	110.1	Did not te
Manganese (Mn) [†]	-					-	8.8	Did not tes
Zinc (Zn) [†]	-					-	1	Did not tes
Copper (Cu)	-						1.3	Did not tes
Boron (B) [†]	-						0.5	Did not tes
Explanation of graph	ranges:					NOTES: Adjustme	ent recommendatio	
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	r soil building purposes addition is 60 to 90%. e usually recommended. otential response to		the plant, and and and only grownside build-up is still maintenance application maintenance recommended. rates are recommended. grownside Potential response to Potential response to Dra nutrient addition is 30 nutrient addition is 5 to Pot to 60%. 30%. add			Drawdown: The objective nutrient management is to utilise residual soil nutrients. There is no agronomic reason to apply fertiliser when soil test levels exceed Adequate. • g/sqm measurements are based on soil bulk density 1.33 tonne/m ³ and selected soil depth.		
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physica	al Descripti	on	
0.15 0.06 Adequate 0 mmol/kg 0 Low. Plant response to a	-	Eff. Cation Exch. Base Saturation (ons (meq/100g ⁻¹): Capacity (eCEC): %): idity (meq/100g ⁻¹): idity (%): n Rate .0 (g/sqm): (g/sqm):	6.7 4.2 12.6 33.33 7.67 60.87 560 110	Size: Gravel co Aggregat Structura Potential Permeab Calculate – Non are m	e strength:	2.5 - 5 m): 0.26 ity effects o ble.	10mm) elly m/hr on plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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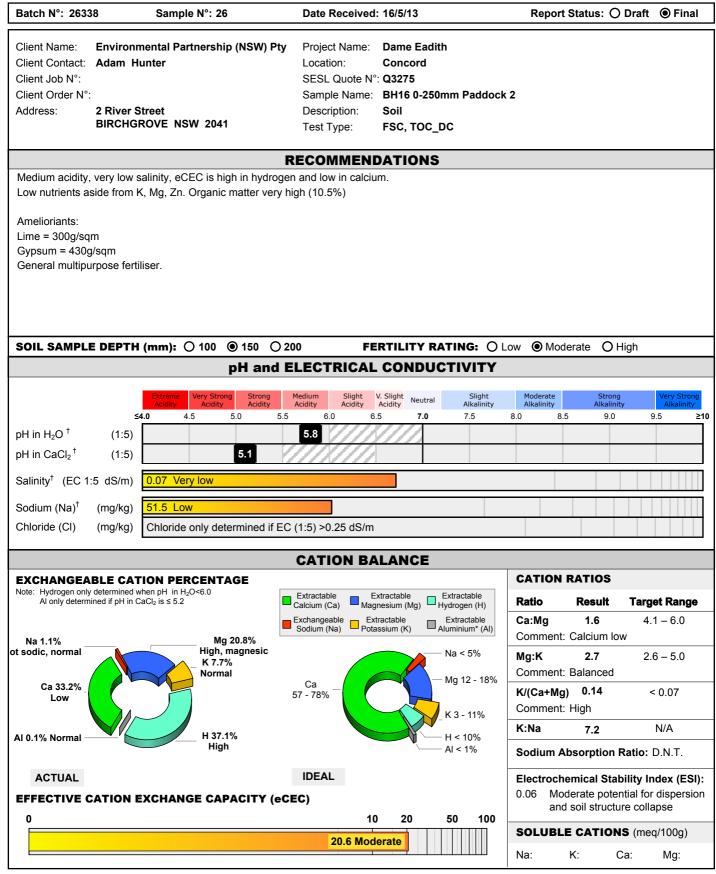


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	Desult	FLANT A	VAILABLE	JUIRI	ENIS					
Major Nutrients	Result (mg/kg)	Very Low Low	Marginal	💋 Adeo	quate 🗾 High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)		
Nitrate-N (NO ₃)	6.3					1.3	4.2	2.9		
Phosphate-P (PO ₄)	16.7					3.3	12.6	9.3		
Potassium (K) [†]	619					123.5	69	Drawdowr		
Sulphate-S (SO ₄)	13		<i>````</i>			2.6	13.6	11		
Calcium (Ca) [†]	1368					272.9	491.6	218.7		
Magnesium (Mg) [†]	519					103.5	51.3	Drawdow		
Iron (Fe)	254.1		<i>Ü</i>			50.7	110.1	59.4		
Manganese (Mn) [†]	19					3.8	8.8	5		
Zinc (Zn) [†]	8.4					1.7	1	Drawdow		
Copper (Cu)	2.6					0.5	1.3	0.8		
Boron (B) [†]	1.3					0.3	0.5	0.2		
Explanation of graph	ranges:			///////////////////////////////////////	////	NOTES: Adjust	ment recommendatio			
Very Low	Low	Marginal	💋 Adequate		High	elemental applic	ation to shift the soil t and, which maximises	test level to within		
for soil building purposes addition is 60 to 90%. are usually recommended. Potential response to nutrient addition is >90%.		recommended. Potential response to nutrient addition is 30 to 60%.	rates are recommende Potential response to nutrient addition is 5 to 30%.	Drawd Potent	I and surface waters. own is recommended. ial response to nutrient n is <2%.	1.33 tonne/m ³ ar	ements are based on nd selected soil depth			
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physic	al Descript	ion			
		Adams-Evans Buf	fer pH (BpH):	6.8	Texture		Did not t	est		
0.15		Sum of Base Catio	ons (meq/100g ⁻¹):	12.9	Typical	clay content:	Did not t	est		
High		Eff. Cation Exch. (,	20.6	Size:					
0.06 Ex	cessive	Base Saturation (%):		62.62 Gravel co			Did not t			
Adequate		Exchangeable Acidity (meq/100g ⁻¹):				te strength: Did not				
0 mmol/kg	≥0.4	Exchangeable Aci	dity (%):	37.14	Structur	ai unit: I infiltration ra	Did not t			
		Lime Application	Rate			bility (mm/hr):	-			
0.01		 to achieve pH 6.0 (g/sqm): 		451		ed EC _{SE} (dS/i		001		
Low. Plant response to a	applied P is likely.	– to neutralise AI (g/sqm):		4		ires EC and		result.		
		Gypsum Application Rate			•		Carbon (OC%) [†] : 6.2 – Very high			
			– to achieve 67.5% exch. Ca (g/sqm)		Organic	Matter (OM%	o): 10.5			
		The CGAR is corrected for a soil		•						
					Addition	al comments:				
		The CGAR is correct depth of 150mm a addition to achieve	nd any Lime		Addition	al comments:				

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))

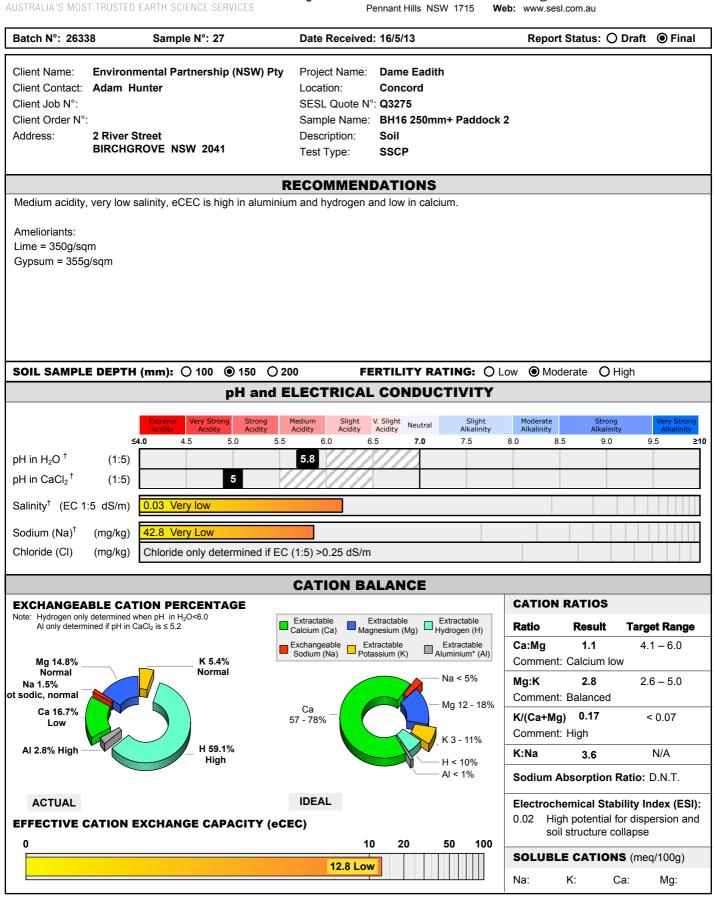


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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		F	'LANT A	VAILABLE	NUTRIEN	rs 🛛			1
Major Nutrients	Result (mg/kg)	Very Lov	v Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-						-	4.2	Did not tes
Phosphate-P (PO ₄)	0						-	12.6	Did not tes
Potassium (K) [†]	270						53.9	52.3	Drawdow
Sulphate-S (SO ₄)	-						-	13.6	13.6
Calcium (Ca) [†]	428						85.4	372.1	286.7
Magnesium (Mg) [†]	230						45.9	38.7	Drawdow
Iron (Fe)	-						-	110.1	Did not te
Manganese (Mn) [†]	-						-	8.8	Did not tes
Zinc (Zn) [†]	-						-	1	Did not tes
Copper (Cu)	-							1.3	Did not tes
Boron (B) [†]	-							0.5	Did not te
Explanation of graph	ranges:						NOTES: Adjustr	nent recommendatio	n calculates the
Very Low Growth is likely to be severely depressed and deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.	Low Potential "hidder hunger", or sub- deficiency. Poter response to nutr addition is 60 to	n Supply of clinical is barely a ntial the plant, ient build-up i 90%. recomme Potential	adequate for and s still inded. response to iddition is 30	Adequate Supply of this nutrien adequate for the plan and and only maintenance applicat rates are recommend Potential response to nutrient addition is 5 t 30%.	t, may be detrim growth (i.e. ph ion may contribute ed. ground and su Drawdown is i	nental to plant nytotoxic) and e to pollution of urface waters. recommended. onse to nutrient	economic efficien environment. Drawdown: The utilise residual so reason to apply fe Adequate. • g/sqm measure	nd, which maximises icy, and minimises ir objective nutrient m il nutrients. There is artiliser when soil test ments are based on d selected soil depth	npact on the anagement is to no agronomic it levels exceed soil bulk density of
Phosphorus Satur	ration Index	Excha	angeable A	cidity		Physica	al Descript	ion	
0.15 0.06 Adequate 0 mmol/kg 0 Low. Plant response to a	-	Sum o Eff. Ca Base S Exchar Lime A – to ac ly. – to ne Gypsu – to ac The CO	tion Exch. Ca Saturation (% Ingeable Acid Ingeable Acid Application F Inteve pH 6.0 Eutralise AI (g In Application In Application SAR is correct	ns (meq/100g ⁻¹): apacity (eCEC):): ity (meq/100g ⁻¹): ity (%): Rate (g/sqm): /sqm):	59.06 443 53	Size: Gravel co Aggregat Structura Potential Permeab Calculate – Non are m Organic (Organic I	e strength:	2.5 - 5 m n): 0.26 nity effects o ble. b) [†] : Did not t	10mm) elly m/hr on plants

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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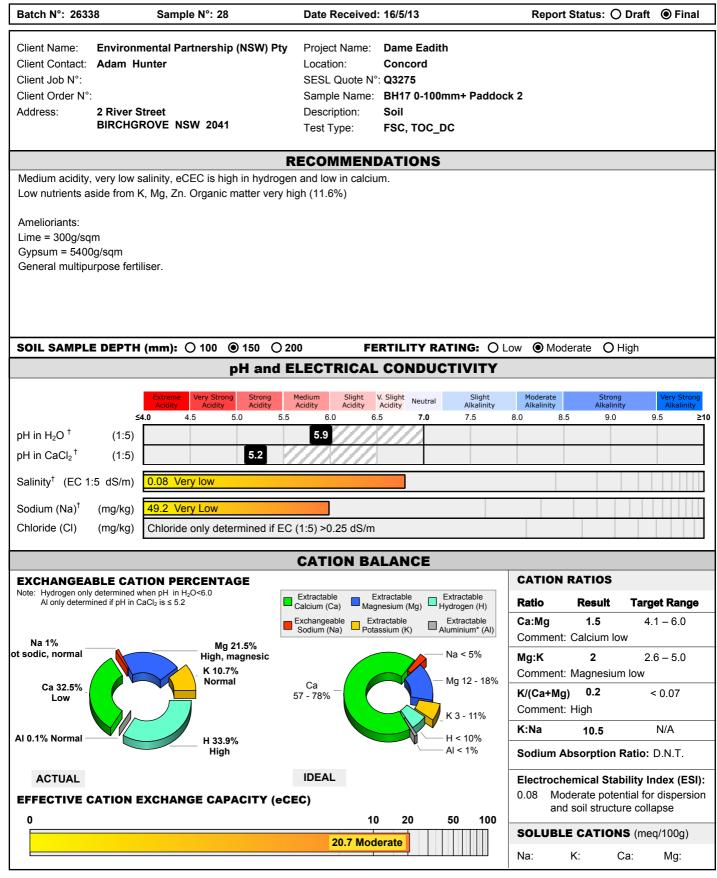


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Soil Chemistry Profile

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Batch N°: 26338

Date Received: 16/5/13

Report Status: O Draft Final

		PLANT A		UTRIENTS	5			
Major Nutrients	Result (mg/kg)	Very Low 📃 Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	4.1					0.8	4.2	3.4
Phosphate-P (PO ₄)	10.7					2.1	12.6	10.5
Potassium (K) [†]	865					172.6	69	Drawdow
Sulphate-S (SO ₄)	20					4	13.6	9.6
Calcium (Ca) [†]	1343					267.9	491.6	223.7
Magnesium (Mg) [†]	540					107.7	51.3	Drawdow
Iron (Fe)	330.5					65.9	110.1	44.2
Manganese (Mn) [†]	42					8.4	8.8	0.4
Zinc (Zn) [†]	7.9					1.6	1	Drawdow
Copper (Cu)	2.1		///			0.4	1.3	0.9
Boron (B) [†]	1.4					0.3	0.5	0.2
Explanation of graph	ranges:					NOTES: Adjustme	ent recommendation	calculates the
present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.		build-up is still recommended.maintenance application rates are recommended.may contribute to pollution of ground and surface waters.Potential response to nutrient addition is 30 to 60%.Potential response to 30%.Drawdown is recommended.Potential response to addition is 20 to 60%.Potential response to 30%.Drawdown is recommended.				reason to apply fertiliser when soil test levels exce Adequate. • g/sqm measurements are based on soil bulk den 1.33 tonne/m ³ and selected soil depth.		
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physica	al Descriptio	on	
0.15 0.06 Adequate 0.01 0.01 Low. Plant response to applied P is likely.		Adams-Evans Buff Sum of Base Catic Eff. Cation Exch. C		410 Permea 4 Calcula 4 Req		av contont:	bil Texture result. ^I : 6.8 – Very high	

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Sample N°: 29

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	Beeult		PL/		VAILABLE	141						
Major Nutrients	Result (mg/kg)	۱	/ery Low	Low	Marginal	2	Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmen (g/sqm)	
Nitrate-N (NO ₃)	-								-	13.3	Did not tes	
Phosphate-P (PO ₄)	0								-	16.8	Did not tes	
Potassium (K) [†]	492								130.9	69.7	Drawdowr	
Sulphate-S (SO ₄)	-								-	18.1	18.1	
Calcium (Ca) [†]	512								136.2	496.1	359.9	
Magnesium (Mg) [†]	233								62	51.6	Drawdowi	
Iron (Fe)	-					///			-	146.8	Did not tes	
Manganese (Mn) [†]	-			1					-	11.7	Did not tes	
Zinc (Zn) †	-								-	1.3	Did not tes	
Copper (Cu)	-					#		<u></u>		1.7	Did not tes	
Boron (B) [†]	-									0.7	Did not tes	
Explanation of graph	ranges:											
Very Low	Low		Margi	nal	💋 Adequate		High		elemental applicat	ent recommendation ion to shift the soil t d, which maximises	est level to within	
are usually recommended. Potential response to nutrient addition is >90%.			Potential response to nutrient addition is 30 to 60%. Potential response to nutrient addition is 5 to 30%.				Drawdown is rec Potential respons addition is <2%.	se to nutrient	1.33 tonne/m ³ and	nents are based on selected soil depth		
Phosphorus Satur	ation Index	2	Exchang		-			-	al Descripti			
					fer pH (BpH):	6.		Texture:		Light Cla	У	
0.15					ons (meq/100g ⁻¹):	5.			lay content:	35 - 40%		
High			Eff. Cation Exch. Capacity (eCEC):					Size:			10mm)	
0.06 Ex	cessive		Base Saturation (%):				2.14	Gravel content:		Not gravelly		
Adequate			Exchangeable Acidity (meq/100g ⁻¹):					Aggregate strength:		Weak		
0 mmol/kg	2≤).4	Exchangeable Acidity (%):			53	3.93		Structural unit: Potential infiltration rate:		Crumb	
0			Lime Application Rate								m/hr	
			- to achieve pH 6.0 (g/sqm):			63	638		vility (mm/hr): 2.5 - 5 mm/hr			
Low. Plant response to a	applied P is likel	у.	– to neutralise Al (g/sqm):		97	7	– Non	ted EC _{SE} (dS/m): 0.34 n-saline. Salinity effects on plants				
			Gypsum Application Rate						ostly negligible. Carbon (OC%) [†] : Did not test			
			 – to achieve 67.5% exch. Ca (g/sqm) The CGAR is corrected for a soil depth of 200mm and any Lime 			1):	483	-			51	
							-		Matter (OM%): -			
			depth of 2	00mm a	nd anv Lime			Additiona	l comments			
			depth of 2 addition to		,			Additiona	I comments:			

Consultant: Chantal Hooper



Authorised Signatory: Simon Leake

Date of Report: 24 May 2013

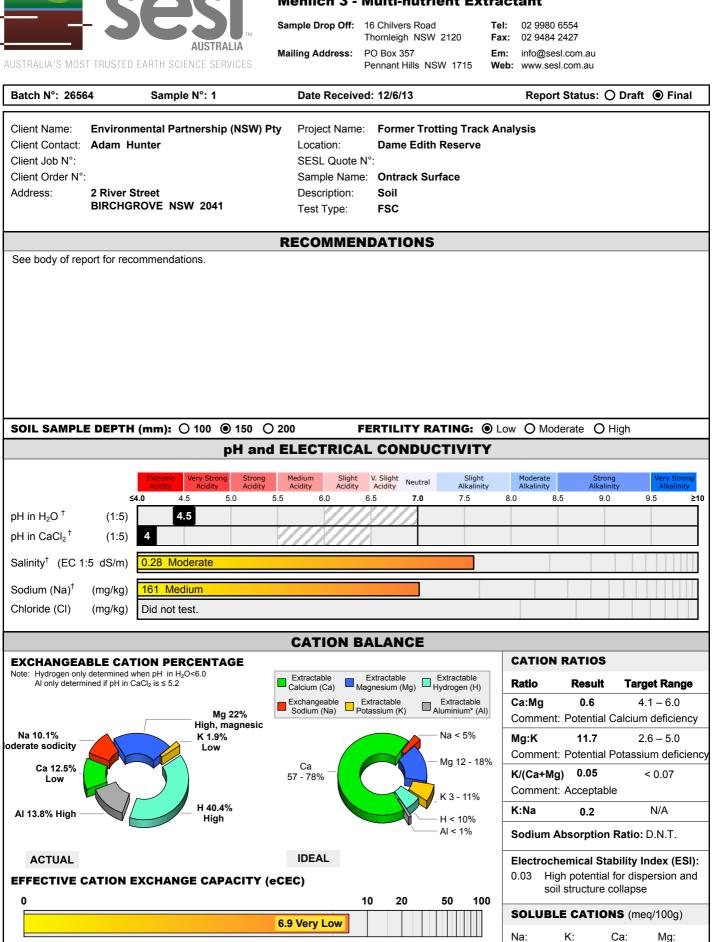
METHOD REFERENCES: pH (15 Hz0) - Rayment & Higginson (1992) 481, pH (15 GaCiz) - Rayment & Higginson (1992) 481, C (15) - Rayment & Higginson (1992) 584, Nitrate - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SOL CA, Mg, Na, Fe, Mn, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) TextureSitructerColour - PM0003 (Texture "Northcote" (1992), Structure - "Murphy" (1991), Colour - "Munseli" (2000))



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Mehlich 3 - Multi-nutrient Extractant





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Mehlich 3 - Multi-nutrient Extractant

Pennant Hills NSW 1715

Sample Drop Off: 16 Chilvers Road

Thornleigh NSW 2120 PO Box 357 Mailing Address:

02 9980 6554 Tel: 02 9484 2427 Fax: info@sesl.com.au Em: Web: www.sesl.com.au

Batch N°: 26564

Sample N°: 1

Date Received: 12/6/13

Report Status: O Draft
 Final

		PLANT A	VAILABLE	NUTRIENT	S			
Major Nutrients	Result (mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmer (g/sqm)
Nitrate-N (NO ₃)	-					-	4.2	Did not tes
Phosphate-P (PO ₄)	0					-	12.6	Did not tes
Potassium (K) [†]	49.7					9.9	43.9	34
Sulphate-S (SO ₄)	-					-	13.6	13.6
Calcium (Ca) [†]	171					34.1	312.4	278.3
Magnesium (Mg) [†]	184					36.7	32.5	Drawdow
Iron (Fe)	72.2					14.4	110.1	95.7
Manganese (Mn) [†]	61					12.2	8.8	Drawdow
Zinc (Zn) [†]	4.2		******			0.8	1	0.2
Copper (Cu)	3.9					0.8	1.3	0.5
Boron (B) [†]	0					0	0.5	0.5
Explanation of graph	ranges:					NOTES: Adjustr	nent recommendation	n calculates the
deficiency symptoms present. Large applications for soil building purposes are usually recommended. Potential response to nutrient addition is >90%.		the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60%.	growth (i.e. phy may contribute f ground and surf Drawdown is re Potential respor addition is <2%.	to pollution of ace waters. commended. nse to nutrient	reason to apply for Adequate. • g/sqm measure	iil nutrients. There is ertiliser when soil tes ments are based on d selected soil depth	t levels exceed soil bulk density of	
Phosphorus Satur	ation Index	Exchangeable	Acidity		Physica	al Descript	ion	
0		Sum of Base Cations (meq/100g ⁻¹): Eff. Cation Exch. Capacity (eCEC): Base Saturation (%): Exchangeable Acidity (meq/100g ⁻¹):		46.38 2.79 40.43 638 139	Physical Descripti Texture: Typical clay content: Size: Gravel content: Aggregate strength: Structural unit: Potential infiltration rate Permeability (mm/hr): Calculated EC _{SE} (dS/m Requires EC and S Organic Carbon (OC% Organic Matter (OM%) Additional comments:		Did not test Did not test Did not test Did not test Did not test te: Did not test Did not test Did not test n): - Soil Texture result. $(b)^{\dagger}$: Did not test): -	

Consultant: Ryan Jacka

Authorised Signatory: Simon Leake

Date of Report: 21 Jun 2013

METHOD REFERENCES: pH (1:5 HzO) - Rayment & Higginson (1992) 481, pH (1:5 GaCiz) - Rayment & Higginson (1992) 481, C (1:5) - Rayment & Higginson (1992) 381, Chioride - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SQ, Ca, Mg, Na, Fe, Mm, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) Texture/StructerColour - PM0003 (Texture "Northcote" (1992), Structure-"Murphy" (1991), Colour- "Munsell" (2000))



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Soil Chemistry Profile Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road Tel: 02 9980 6554 Thornleigh NSW 2120 02 9484 2427 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au AUSTRALIA'S MOST TRUSTED EARTH SCIENCE SERVICES Pennant Hills NSW 1715 Web: www.sesl.com.au Batch N°: 26564 Sample N°: 2 Date Received: 12/6/13 Report Status: O Draft
 Final Client Name: **Environmental Partnership (NSW) Pty** Project Name: Former Trotting Track Analysis **Dame Edith Reserve** Client Contact: Adam Hunter Location: Client Job N°: SESL Quote N°: Client Order N°: Sample Name: Centre Surface Address: 2 River Street Description: Soil **BIRCHGROVE NSW 2041** Test Type: FSC RECOMMENDATIONS See body of report for recommendations. O High **SOIL SAMPLE DEPTH (mm):** 0 100 (150 0 200 FERTILITY RATING: O Low O Moderate pH and ELECTRICAL CONDUCTIVITY V. Slight Acidity Slight Slight Alkalinity Moderate Alkalinity Medium Acidity Strong Alkalinit Neutral Acidity 8.0 85 90 4.5 5.0 55 60 65 7.0 75 95 <4 0 >10 (1:5) 4.2 pH in H₂O[†] pH in CaCl₂[†] (1:5) 4 Salinity[†] (EC 1:5 dS/m) 0.46 Moderate Sodium (Na)[†] (mg/kg) 197 Medium (mg/kg) Chloride (CI) Did not test. **CATION BALANCE CATION RATIOS EXCHANGEABLE CATION PERCENTAGE** Note: Hydrogen only determined when pH in H_2O <6.0 Al only determined if pH in CaCl₂ is \leq 5.2 Extractable Extractable Extractable Calcium (Ca) Hydrogen (H) Ratio **Target Range** Magnesium (Mg) Result Extractable Extractable Aluminium* (Al) Exchangeable Sodium (Na) 0.6 4.1 - 6.0Ca:Mg Mg 18.3% Potassium (K) High, magnesic Comment: Potential Calcium deficiency K 1% Na 12.1% Na < 5% Mg:K 18.6 2.6 - 5.0Low oderate sodicity Comment: Potential Potassium deficiency Mg 12 - 18% Са Ca 11.4% 0.03 K/(Ca+Mq) < 0.07 57 - 78% Low Comment: Acceptable K 3 - 11% H 46.8% AI 11.3% High K:Na N/A 0.1 High H < 10% AI < 1% Sodium Absorption Ratio: D.N.T. IDEAL ACTUAL **Electrochemical Stability Index (ESI):** 0.04 High potential for dispersion and **EFFECTIVE CATION EXCHANGE CAPACITY (eCEC)** soil structure collapse 0 10 20 50 100 SOLUBLE CATIONS (meq/100g) 7.1 Very Low



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Disclaimer: Tests are performed under a quality system complying with ISO 9001: 2008. Results are based on the analysis of the sample taken or received by SESL. Due to the variability of sampling procedures, environmental conditions and managerial factors, SESL does not accept any liability for a lack of performance based on its interpretation and recommendations. This document must not be reproduced except in full

Na:

K:

Ca:

Mg:



Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Pennant Hills NSW 1715

Sample Drop Off: 16 Chilvers Road

Thornleigh NSW 2120 PO Box 357 Mailing Address:

02 9980 6554 Tel: 02 9484 2427 Fax: info@sesl.com.au Em: Web: www.sesl.com.au

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Major Nutrients	Result (mg/kg)	Very Low	Marginal	💋 Adequate	High	Result (g/sqm)	Desirable (g/sqm)	Adjustmen (g/sqm)	
Nitrate-N (NO ₃)	-					-	4.2	Did not test	
Phosphate-P (PO ₄)	0					-	12.6	Did not test	
Potassium (K) [†]	28.9					5.8	43.9	38.1	
Sulphate-S (SO ₄)	-					-	13.6	13.6	
Calcium (Ca) [†]	162					32.3	312.4	280.1	
Magnesium (Mg) [†]	157					31.3	32.5	1.2	
Iron (Fe)	79					15.8	110.1	94.3	
Manganese (Mn) [†]	27					5.4	8.8	3.4	
Zinc (Zn) [†]	5.9					1.2	1	Drawdown	
Copper (Cu)	1.1					0.2	1.3	1.1	
Boron (B) [†]	0					0	0.5	0.5	
Explanation of grap	h ranges:					NOTES: Adjustr	nent recommendation	n calculates the	
Very Low	Low	Marginal	Marginal 💋 Adequate 🛛 High				ation to shift the soil t nd, which maximises	est level to within	
for soil building purposes addition is 60 to 90%. are usually recommended. Potential response to nutrient addition is >90%.		recommended. Potential response to nutrient addition is 30 to 60%.	Potential response to nutrient addition is 5 to 30%.	ed. ground and surfa Drawdown is rec Potential respon addition is <2%.	commended. se to nutrient	1.33 tonne/m ³ an	ments are based on d selected soil depth		
Phosphorus Satu	ration Index	Exchangeable	-		-	al Descript			
		Adams-Evans Buf		7.3	Texture:		Did not t		
0.15		Sum of Base Catio		3		lay content:	Did not t	est	
High		Eff. Cation Exch. (, , ,		Size:		Distant	4	
	xcessive	Base Saturation (%):		42.25 3.32	Gravel content: Aggregate strength:		Did not to Did not to		
Adequate		Exchangeable Acidity (meq/100g ⁻¹): Exchangeable Acidity (%):		46.76	00 0 0			Did not test	
0 mmol/ł	g≥0.4	-				infiltration rat			
		Lime Application			Permeab	ility (mm/hr):	Did not t	est	
0		- to achieve pH 6.		515		ed EC _{SE} (dS/m): -			
Low. Plant response to	applied P is likely.	– to neutralise AI (to neutralise Al (g/sqm): 		Requi	uires EC and Soil Texture result.			
		Gypsum Applica	Gypsum Application Rate		Organic	Carbon (OC%	6) [†] : Did not t	est	
		- to achieve 67.5%		i): O	Organic I	Matter (OM%): -		
		The CGAR is corr	ected for a soil		Additiona	I comments:			
		denth of 150m	البرسيم امس						
		depth of 150mm a addition to achieve	-						

Consultant: Ryan Jacka

Authorised Signatory: Simon Leake

Date of Report: 21 Jun 2013

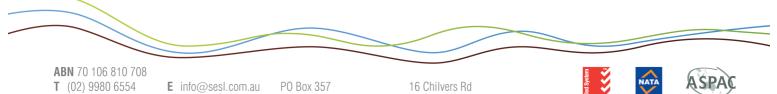
METHOD REFERENCES: pH (1:5 HzO) - Rayment & Higginson (1992) 481, pH (1:5 GaCiz) - Rayment & Higginson (1992) 481, C (1:5) - Rayment & Higginson (1992) 381, Chioride - Rayment & Higginson (1992) 781 Alumnitum - SESL in-house, POL K, SQ, Ca, Mg, Na, Fe, Mm, Zn, Cu, B - Mehlich 3 (1984), Buffer pH and Hydrogen - Adams-Evans (1972) Texture/StructerColour - PM0003 (Texture "Northcote" (1992), Structure-"Murphy" (1991), Colour- "Munsell" (2000))



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APPENDIX B Site Map



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