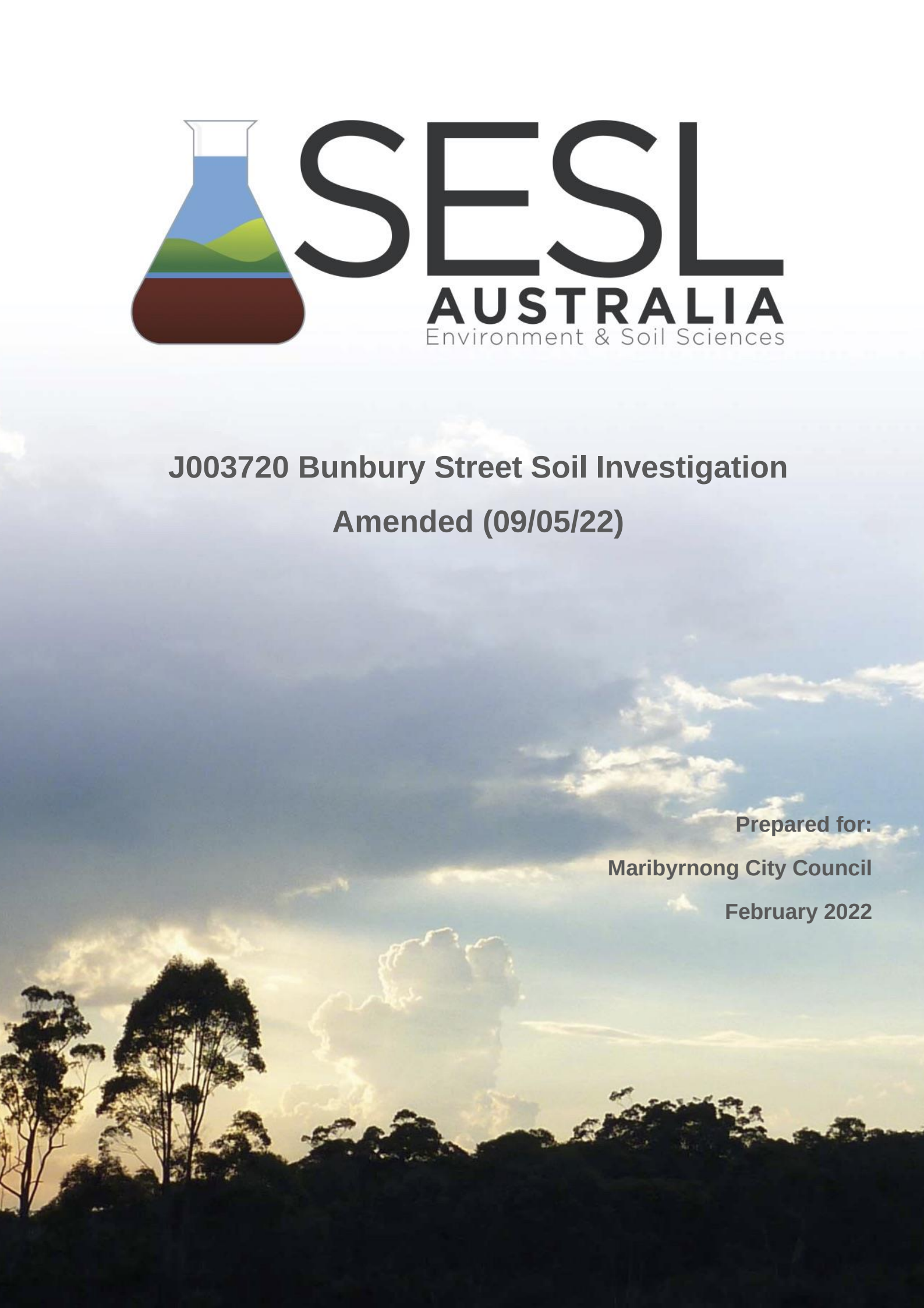

J003720 Bunbury Street Soil Investigation

Amended (09/05/22)

Prepared for:

Maribyrnong City Council

February 2022

15 February 2022

Attention: Ms Chelsea Scanes
Maribyrnong City Council
PO Box 58
West Footscray VIC 3012

Dear Chelsea,

Re: Bunbury Street Soil Investigation

1 Introduction

SESL Australia Pty Ltd (SESL) was engaged by the Maribyrnong City Council to undertake an assessment of the soils along Bunbury Street, Footscray. Bunbury Street is an elm tree lined street that runs eastward from the Footscray train station down to the Maribyrnong River. There is an arched train tunnel that runs the length of the street not far under the asphalt of the street itself. There are wide nature strips that run down either side of the road. There has been some die back in some of the older elm trees and some older elms have recently been removed.

The Maribyrnong City Council requires a detailed soil investigation to help plan for future development of the street. The investigation is not necessarily for immediate soil remediation works but rather to help with decisions during the development of the site over the coming years and to gain an understanding of the soil conditions around the train tunnel and help to identify any other potential soil issues in the redevelopment of the streetscape/

The purpose of the assessment was to determine the physical, chemical and biological characteristics of the top and subsoils along the street between Cowper Street and Whitehall Street, and whether soil is suitable to sustain large and healthy tree growth. Specifically, the client required a soil chemistry report, a nutrient profile, a microbiological profile, soil physical characteristics and the soil contamination status and a letter report detailing our investigation of the soil that supports large healthy tree growth. This report details the findings of the field investigation, the results of laboratory analysis and provide soil management strategies and amelioration advice to improve the soil condition of the site, based on the level of contaminants, and the physical, chemical, and nutritional properties of the material.

2 Site Investigation

SESL's qualified Senior Soil Scientist attended the site on Monday, 20 December 2021 and again on Monday, 21 January 2022 to undertake this investigation and to collect top and subsoil samples for further laboratory analysis. Several sites were identified along a transect across Bunbury Street and at two sites on intersecting streets by the client (Figure 1). A hand auger and stainless-steel spade were

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used for the purpose of collecting soil samples, a stainless-steel ring was used to collect bulk density samples and a double-ring infiltrometer was utilized to collect hydraulic conductivity measurements (Table 1). After clearance from a services locator four 1 m deep auger holes were drilled by hand into the turfed areas in a transect across Bunbury Street (test sites 2, 3, 4 and 5). All sample points were backfilled, and disturbed turf (where relevant) was replaced after sampling to minimise disturbance and trip hazards. All samples were transported to SESL's accredited laboratory (NATA #15633) for analysis.

Historic photos of the site, tunnel excavation and re-construction were provided by the Council to help in the analysis of the soil near the site.

Figure 1 Sample test sites along Bunbury Street Footscray

Table 1 Tests undertaken at each test site along Bunbury Street Footscray

Test site	SESL code	Investigations
Test site 1 Cowper Street median strip	S-01 A BH-01 SS	• Topsoil and subsoil chemistry • Hydraulic conductivity • Bulk density • Microbiology assessment
Test site 2 Bunbury Street transect	S-02 A BH-02 SS	• Soil profile down to 900 mm rejection • Topsoil and subsoil chemistry • Hydraulic conductivity • Bulk density
Test site 3 Bunbury Street transect	S-05 A	• Soil profile down to 900 mm rejection • Topsoil chemistry • Hydraulic conductivity

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		• Microbiology assessment
Test site 4 Bunbury Street transect	S-03 A BH-03 SS	• Soil profile down to 1 m • Topsoil chemistry • Hydraulic conductivity • Bulk density
Test site 5 Bunbury Street transect	S-04 A	• Soil profile down to 800 mm rejection • Topsoil and subsoil chemistry • Hydraulic conductivity • Bulk density • Microbiology assessment
Test site 6 Whitehall Street median strip	S-06 A BH-04 SS	• Topsoil and subsoil chemistry • Hydraulic conductivity • Bulk density • Microbiology assessment
Test site 7 Tunnel silt	S-07	• Topsoil chemistry

3 Data collection

3.1 Bulk density

Bulk density samples were collected by first clearing away the top 50 mm of soil and turf. The bulk density sample was then collected by punching a stainless-steel ring into the soil. The soil sample was then retrieved as an intact soil core. The sample core was dried and weighed. The soil bulk density was calculated by dividing the soil mass by the internal volume of the stainless-steel ring.

3.2 Hydraulic conductivity

Hydraulic conductivity was measured using a double-ring infiltrometer. The infiltrometer was inserted into the soil until the lip of the device was flush with the surface of the soil. The device was filled with water twice and allowed to drain or until a steady state level of water infiltration was reached. The device was filled and the speed at which the water drained from the device was recorded.

3.3 Soil profile

A hand auger was used to investigate the soil profile. The auger was twisted into the soil in approximately 10 cm increments. After each increment the auger was lifted out of the hole and the soil contents placed on a white plastic sheet for examination. The hole was drilled down to 1 m or until rejection.

3.4 Soil samples

Topsoil samples were collected from between 50 to 100 mm depth in the soil. Subsoil samples were collected from below 300 mm depth. Samples for contamination testing were collected with a stainless-

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steel spade, placed in suitable sampling jars and then stored and transported in an esky with ice.

A single sample of silty soil collected from the tunnel was provided by the Maribrynong City Council for a chemical analysis.

4 Laboratory Analysis

Topsoil samples were submitted to SESL's NATA accredited laboratory (#15633) for assessment of the following physical and chemical characteristics:

- pH
- Electrical conductivity
- Effective cation exchange capacity
- Total organic carbon/organic matter
- Plant available/exchangeable nutrients (nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), sulfur (S), magnesium (Mg), iron (Fe), zinc (Zn), copper (Cu), boron (B), manganese (Mn))
- Texture, structure, permeability, wettability, large particles, and visible contaminants

Subsoil samples were assessed for the following physical and chemical characteristics:

- pH
- Electrical conductivity
- Exchangeable cations
- Chloride and sodium
- Subsoil texture and structure

Selected samples also underwent an analysis for soil contaminants to EPA VIC 1828.2 Waste disposal categories – characteristics and thresholds (Table 3):

- Heavy metals: arsenic, cadmium, chromium VI, copper, lead, mercury, molybdenum, nickel, tin, selenium, silver, and zinc
- Anions: cyanide and fluoride
- Organic species: (phenols, monocyclic aromatic hydrocarbons, benzene, polycyclic aromatic hydrocarbons, benzo(a) pyrene, C6 -C9 and C10 – C36 petroleum hydrocarbons, polychlorinated biphenyls, and chlorinated biphenyls
- Pesticides: OCP, aldrin + dieldrin, DDT + DDD + DDE, chlordane, Heptachlor, and other organochlorine pesticides.

Selected samples were also analysed for microbial abundance and composition.

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5 Results and discussion

5.1 PROFILE DESCRIPTIONS

Four auger holes to 1 m deep (or rejection) were dug in a transect across Bunbury Street (TS-2, TS-3, TS-4 and TS-5). Two holes were dug on each side of the street, on the southside a hole was dug on either side of the drainage channel.

The soil profiles were similar in each hole (Figure 2). There was approximately 120 to 150 mm of a dark grey loamy material on top. This horizon appeared to be high in organic matter (where is a dense turf layer at each location) and was friable and reasonably easy to dig into. Directly under this topsoil was dense and hard packed material with significant gravel, rubble and debris. This would be consistent with imported fill material placed in position post tunnel construction or after some other construction activity. This layer was approximately 200 to 300 mm deep.

Directly under this layer the soil changed to a more natural looking yellow to brown clay. The soil became much denser and wetter, even in the middle of summer (it was/is an unusually wet summer). This is the clay soil that has been analysed in the subsoil investigation. The soil in this layer was moldable, plastic and smooth. It was mottled in places, indicative of intermittent waterlogging.

Figure 2 Soil profiles of 4 samples from a transect across Bunbury Street. TS-2 is most northern location, and TS-5 is most southern location.

5.2 TOPSOIL PHYSICAL CHARACTERISTICS

Most physical and chemical characteristics of the topsoil tested all similar. The topsoil at each testing spot had a testing point had a similar texture with an approximate clay content of 20 – 30%. It is likely that the top 10 – 20 cm of the topsoil at each testing site is an imported soil as the texture is not one that would be expected in that part of Melbourne. The subsoils are more typical of the area's natural soils.

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Hydraulic conductivity measurements ranged from slow at 4.3 mm/hr up to moderately slow at 14.2 mm/hr (Table 2). At these rates of infiltration, the soils would accept approximately slight to moderate rainfall events without overland run-off or excessive pooling of water. These rates of infiltration are within the range of what might be expected of urban soils with the texture and use of these soils.

The bulk density measurements are within the 1.3 to 1.6 g/cm^3 range (Table 2). Bulk density measurements over 1.2 g/m^3 have been shown to start restricting root growth of susceptible plants, particularly in clay soils. However, the literature shows that a bulk density of 1.4 g/cm^3 can be considered a critical point where root penetration of plants growing in the affected loam and clay soils soil may be severely affected. A reduction of the soil bulk density would improve the hydraulic conductivity of the soil as a reduction in bulk density increases the total porosity of the soil which in turn allows for increased water and air movement into and through the soil. Unfortunately, most methods of reducing soil bulk density involve mechanical lifting and dumping of soil and this would be detrimental to the tree root systems.

Table 2 Topsoil physical and chemical properties

Characteristic	TS-1	TS-2	TS-3	TS-4	TS-5	TS-6	TS-7
Hydraulic infiltration (mm/hr)	7.3 Moderately slow	12.0 Moderately slow	13.7 Moderately slow	4.4 slow	4.3 slow	14.2 Moderately slow	N/A
Bulk density (g/cm^3)	1.4	1.5	1.4	1.4	1.6	1.3	N/A
Texture	Fine sandy clay loam	Sandy clay loam	Fine sandy clay loam	Light sandy clay loam	Light sandy clay loam	Light sandy clay loam	Fine sandy clay loam
Organic matter	Very high	Very high	Very high	moderate	moderate	high	very low
pH ($CaCl_2$)	6.33	6.15	6.81	7.14	6.03	7.03	8.05
EC (dS/m)	0.13	0.09	0.12	0.29	0.05	0.1	0.08
eCEC	24.2	21.2	23.5	19.8	7.6	16.8	13.7
Exchangeable cation %	magnesic	balanced	balanced	balanced	balanced	magnesic	magnesic

5.3 TOPSOIL CHEMICAL CHARACTERISTICS

The pH ($CaCl_2$) of the topsoil at the testing sites are all within 6.03 to 7.14 (Table 2). An ideal range of pH for a garden bed is 5.2 to 6.5, therefore, the soil is within or close to an ideal range for garden beds and would not require manipulation. Salinity, sodicity and chloride levels at each test site are mostly very low to low with some mild sodium levels in the two samples closest to, and on either side of, Bunbury Street. These slightly elevated measurements are not of great concern.

The cation exchange capacity of the samples is generally in the moderate range. This indicates that the topsoil has a good ability to store plant available nutrients. The cation exchange complex of each sample is also generally balanced with the percentages of exchangeable cations in good ratios. Samples TS-1 and TS-6 have elevated magnesium levels, but these are not excessively high and only marginally outside

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the recommended range.

Nutrient levels are variable. With the notable exception of sample TS-4, nitrogen levels are very low, phosphorus levels vary from low to high and potassium levels similarly range from low to high. There doesn't seem to be an apparent pattern to the distribution of plant nutrients, which can be typical of urban soils.

The tunnel silt sample has a high pH, perhaps because of water migration through concrete or mortar, otherwise it has similar characteristics to the other soil samples. Major nutrients are very low, salinity is very low and the organic carbon levels are very low.

5.4 Subsoil characteristics

The subsoils are more typical of what could be expected in subsoils to the west of Melbourne, even though these subsoils would have been disturbed during the historic rail tunnel construction (Table 3).

The soil texture is noticeably heavier than the topsoil with the subsoils either light clay or sandy clay. Soils with these textures have a clay content of 35 – 45 %. When soils of this clay content are also impacted by elevated sodium levels there can be a significant issue of soil compaction and reduced air and water movement. These issues can lead to erosion, perched water tables or waterlogged soils in winter and subsoils that bake hard in summer and become impermeable to root, water and air movement.

The pH ($CaCl_2$) of the subsoil is higher than the topsoil, but not excessively so. Typically, the subsoils show some element of sodicity, low calcium levels and high magnesium levels. These figures would be expected in undisturbed subsoil in this area. The Ca:Mg ratio of each sample shows a deficiency of calcium.

Table 3 Subsoil physical and chemical properties

Characteristic	BH-01 SS	BH-02 SS	BH-03 SS	BH-04 SS
Texture	Light clay	Sandy clay	Sandy clay	Light clay
pH ($CaCl_2$)	7.39	7.43	7.46	7.13
EC (dS/m)	0.63	0.26	0.36	0.27
Sodium mg/kg)	1140	495	512	336
Chloride (mg/kg)	456	114	155	128
Exchangeable cation %	magnesic	magnesic	Moderate sodicity	magnesic

5.5 Microbial Analysis

Samples from the test sites underwent a microbial analysis. The analysis examined the composition and diversity of microbes within the soil and the abundance of the various microbial types. The topsoil only was examined.

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It is not unexpected that given the similarity of the soils between the test sites that the microbial analysis of the soil at those sites shows a similar pattern. Most soil indicators are good, including the total mass of microorganisms and total fungi within the soil. Total bacteria levels were fair. Microbial diversity was fair, fungi: bacteria levels are fair, and the bacteria stress indicator is good.

Protozoa levels are good. They play an important role in the transfer of nutrients into a form suitable for plant uptake. Protozoa can be sensitive to agrochemicals, particularly herbicides. True anaerobes are elevated which is an indication of recent waterlogging. This is consistent with the wet period prior to sampling but also indicative of soils that do not drain freely.

Management activities should focus on building the microbial diversity of the soil.

Table 4 Results of microbial analysis of field samples from Bunbury Street Footscray

Analyte	Guide	TS-1	TS-2	TS-3	TS-4	TS-5	TS-6
Total microorganisms	50.0	52.4	73.1	46.0	40.3	64.2	65.7
Total bacteria	15.0	12.4	15.5	8.5	6.8	15.0	11.2
Total fungi	33.8	37.8	53.0	35.7	30.8	45.8	51.2
Microbial diversity	80.0	37.1	33.4	35.6	33.9	41.1	32.2
Fungi: bacteria	2.3	3.0	3.4	4.2	4.5	3.1	4.6
Bacterial stress	< 0.5	0.5	0.5	0.4	0.3	0.4	0.2

5.6 CONTAMINATION ASSESSMENT

Samples from the Bunbury Street transect were analysed for soil chemical contaminants. The results of the contamination analysis were compared against two sets of regulations or guidelines:

1. Vic EPA 1828.2: Waste disposal categories – characteristics and thresholds
2. National Environmental Protection (Assessment of Site Contamination) Amended Measure 2013 (NO.1), NEPM.

5.6.1 *Vic EPA 1828.2*

The Victorian EPA 1828.2 regulations provide a method of categorising waste materials, such as excavated soils, that are moved off site. Waste material is categorised in a gradient from Fill Material (low levels of contaminants) up to Category B (increasing levels of contamination). If soil that is not moved off site would not require an EPA 1828.2 categorisation.

TS-2: This sample has detections of zinc, polycyclic aromatic hydrocarbons (PAHs) and Benzo(a) pyrene above the upper limit for Fill Material. The zinc and Benzo(a) pyrene would need further leachate testing to be conducted to be formally categorised.

TS-3: This sample has no chemical contaminant detections above the upper limit for Fill Material.

TS-4: This sample has no chemical contaminant detections above the upper limit for Fill Material.

TS-5: This sample has a detection of zinc above the upper limit for Fill Material. The zinc would need further leachate testing to be conducted to be formally categorised.

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5.6.2 *NEPM (2013)*

NEPM provides a framework for the use of investigation and screening levels for the protection of human health, ecosystems, groundwater resources and aesthetics. Investigation levels and screening levels are applicable to the site assessment. The adopted investigation and screening levels for the site are outlined below:

- Health Investigation Levels (HILs);
- Health Screening Levels (HSLs):
- Ecological Investigation Levels (EILs); and
- Ecological Screening Levels (ESLs).

Considering the assessment area is part of a streetscape, SESL considers that the most appropriate approach is to consider the site as Residential C. This level of assessment is used for parks, playgrounds, secondary schools and footpaths.

All tested samples have met all criteria for HIL C, and as such, will not require special management if the soil remains on site.

6 Conclusion

The soil within the investigation site was examined for its physical, chemical, biological and contamination characteristics. Generally, the soils are of a reasonable quality without being excellent. The bulk density and infiltration measurements, profile observations, augering issues and soil texture classes indicate that there are some clear issues around soil porosity which may be hampering the performance of the trees along the street by restricting root soil exploitation and water infiltration.

The top and subsoil investigated from the testing sites along Bunbury Street and in the median strips of Cowper and Whitehall strip display consistent physical, chemical and biological characteristics. This could be helpful during redevelopment of the streetscape as it will minimise the need to be overly individually targeted in soil remediation efforts.

Historic photos of the site show the large-scale soil disturbance that took place during the tunnel construction. Of particular interest is the proximity of what appear to be young tree to the excavation itself. Given the long-time gap between the tunnel construction and the present time, it appears that the trees were able to cope with the disturbance and adapt to the new soil conditions. Also shown in the photos is the large space along the eastern side of Bunbury Road where no excavation was conducted (approximately near the middle drain swale). We could expect that the soil in this region is as undisturbed as a normal urban soil.

It is probably wise not to draw too many inferences from the tunnel silt sample. The origin of the material is unknown as is the hydrologic water movement. In any event the texture and some of the chemical characteristics of the material are similar to those tested along the Bunbury Street transect.

Nutrient levels in the soils are mixed. The greatest concern is the low the nitrogen levels of the soil in most samples. An application of Urea at 8 g/m^2 will help to improve this measurement (except for TS-4). SESL Australia would also recommend a leaf nutrient analysis to further confirm the nutritional status of the trees.

The biggest barrier to more successful tree growth appears to be soil compaction. This results in decreased soil porosity which in turn increases soil bulk density and decreases water infiltration and air movement into and out of the soil. These are typically remediated by mechanical loosening of the soil, often with the addition of ameliorants such as gypsum, organic matter (compost) and plant nutrients.

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Mechanical loosening of soil is difficult and probably not recommended near large established trees due to the risk of damage to the root architecture. Possible methods of improving soil porosity (and therefore bulk density and infiltration) include radial trenching, particularly with an air-spade, and soil fracturing with high pressure gas injections. Unfortunately, neither method has been conclusively proven. Soil bulk density can improve organically over time if compacting influences are minimised. Human and vehicular traffic are two major drivers of soil compaction. Replacing sections of the turf on the wide nature strips of the street with a suitable mulch layer can improve the function of the soil, discourage foot traffic, improve the biological diversity of the soil and further improve key physical and chemical properties. The mulch layer will also decrease the competition for soil resources for the trees.

Areas where soil nutrients are low could be targeted with selected fertilisers.

SESL AUSTRALIA PTY LIMITED

Peter Somerville
Senior Soil Scientist
M Urban Hort, PhD

Simon Leake
Principal Soil Scientist
B Sc (Ag) Hons, ASSSI, CPSS

Attachments:

1. Site photographs
2. NATA/ISO certificates

Limitations of This Report:

SESL has performed an investigation and consulting services for this project, as outlined in our discussions and in accordance with current professional and industry standards for environmental site assessment. The findings of this report are the result of discrete/specific methodologies used in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of this site and do not represent the actual state of the site at all points. Should materials or conditions be encountered other than those which have been described, these will require additional assessment.

The SESL assessment is based on the result of limited site investigation. SESL cannot provide unqualified warranties nor assume any liability for site conditions not observed, accessible during the time of the investigations. Despite all reasonable care and diligence, the ground conditions encountered, and the concentrations of contaminants measured, may not be representative of conditions between the

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locations samples and investigated. In addition, site characteristics may change as a result of soil heterogeneity, chemical reactions and other events. These changes may occur subsequent to SESL investigation and assessment.

This report, associated documentation and the information herein, have been prepared solely for the use of the named Client and any relevant authority. Any reliance assumed by third parties on this report shall be at such parties' own risk. Any ensuring liability resulting from use of the report by a third party cannot be transferred to SESL.

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Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
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Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

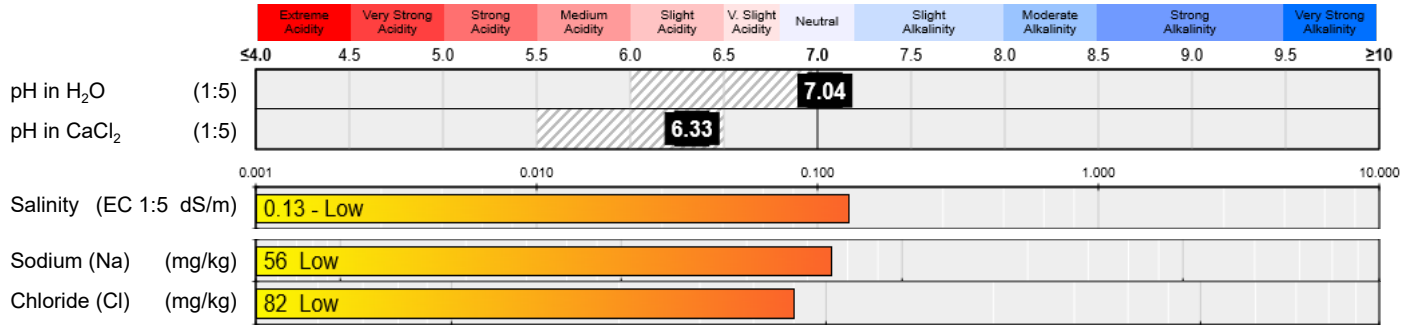
Batch N°: 61964 | **Sample N°: 1** | **Date Received: 22/12/21** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury Street Soil Assesment**
		SESL Quote N°:	**Q 12757**
Client Contact:	**Peter Somerville**	Sample Name:	**S-01 A**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**FSC_Plus, MWSS**

RECOMMENDATIONS

Please see report for full result, interpretations and recommendations

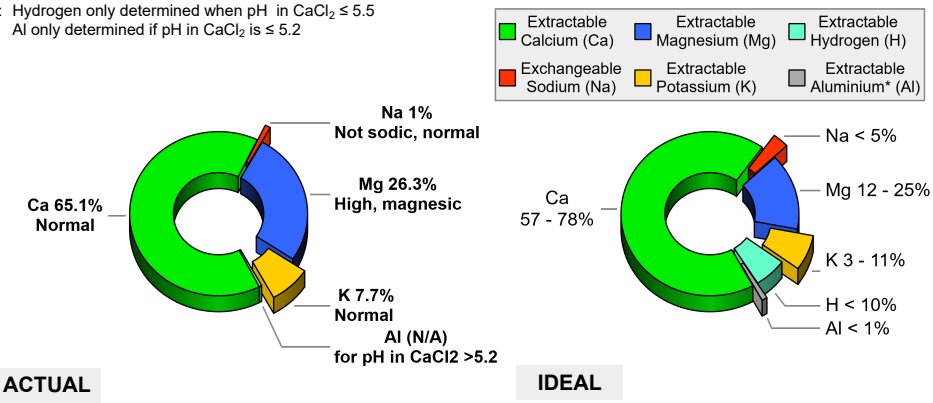
pH and ELECTRICAL CONDUCTIVITY



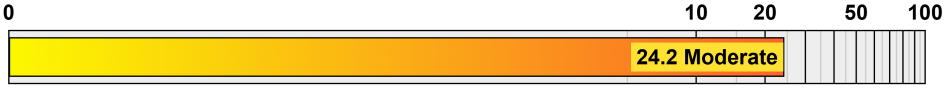
CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2$ ≤ 5.5
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)



CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**2.5**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**3.4**	2.6 – 5.0
Comment: Balanced		
K/(Ca+Mg)	**0.08**	< 0.07
Comment: High		
K:Na	**7.8**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
0.24	1.86	15.75	6.37	-	-

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Batch N°: 61964 | **Sample N°: 1** | **Date Received: 22/12/21** | **Report Status: Draft**

PLANT AVAILABLE NUTRIENTS

EFFECTIVE AMELIORATION DEPTH (mm): ○ 100 ○ 150 ○ 20 **DESIRED FERTILITY CLASS:** ○ Low ○ Moderate ○ Hig

Major Nutrients	Unit	Result	Very Low / Low / Marginal / Adequate / High	Result (g/sqm)	Desirable (g/sqm)	Adjustment (g/sqm)
Nitrate-N (NO_3)	mg N/kg	2.5		0.5	-	Maintenance
Phosphorus (P)	mg P/kg	110		21.9	12.6	Drawdown
Potassium (K)	mg/kg	728		145.2	69	Drawdown
Sulfur (S)	mg S/kg	20		4	13.6	9.6
Calcium (Ca)	mg/kg	3160		630.4	491.6	Drawdown
Magnesium (Mg)	mg/kg	774		154.4	51.3	Drawdown
Iron (Fe)	mg/kg	138		27.5	110.1	82.6
Manganese (Mn)	mg/kg	16		3.2	8.8	5.6
Zinc (Zn)	mg/kg	145		28.9	1	Drawdown
Copper (Cu)	mg/kg	20		4	1.3	Drawdown
Boron (B)	mg/kg	4		0.8	0.5	Drawdown

Explanation of graph ranges:

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 %.

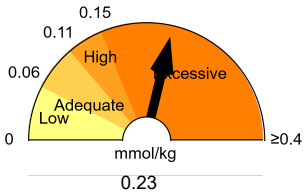
Marginal
Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60 %.

Adequate
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 %.

High
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 addition is <2 %.

NOTES: Adjustment recommendation calculates the elemental application to shift the soil test level to within the **Adequate** band, which maximises growth/yield, and 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 of 1.33 tonne/m^3 and effective amelioration depth.

Phosphorus Saturation Index



Excessive. Exceeds environmental threshold. Implement improved P management to reduce potential for nonpoint P pollution.

Exchangeable Acidity

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**24.2**
Eff. Cation Exch. Capacity (eCEC):	**24.2**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

Lime Application Rate (g/sqm)

– to achieve pH 6.0: **0**
– to neutralise Al: **-**

Calculated Gypsum Application Rate (CGAR)

(g/sqm) to achieve 67.5 % exch. Ca: **0**

The CGAR is corrected for the selected effective amelioration depth (mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Fine Sandy Clay Loam**	Munsell Colour:	-	Organic Carbon (OC %):	**Very High - 5**
Estimated clay content:	**20 - 30%**	Structure Size:	**Medium (11 - 25mm)**	Organic Matter (OM %):	**8.5**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Field Capacity (% water):	**28**
Tactually organic:	**Not Organic**	Structural Unit:	**Crumb**	Est. Permanent Wilting Point (% water):	**15**
Calculated EC_{SE} (dS/m):	**1.1**	Potential infiltration rate:	**Moderate**	Est. Plant Available Water (% water):	**13**
– Non-saline. Salinity effects on plants are mostly negligible.		Est. Permeability Class (mm/hr):	**20 - 60**	Est. Plant Available Water (mm/m):	**130**
		Additional comments:			

Date Report Generated 16/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Chloride - Rayment & Lyons 5A2a-2011
Nitrate - Rayment & Lyons 7B1a-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu, B - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

A member of the Australian Soil and Plant Analysis Council (ASPAC)
This laboratory participates in, and is awarded certification based on results of the scores returned in, ASPAC inter-laboratory proficiency rounds. For detailed current certification status and for more information on the ASPAC inter-laboratory proficiency testing programs, see the ASPAC website: http://www.aspac-australasia.com

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

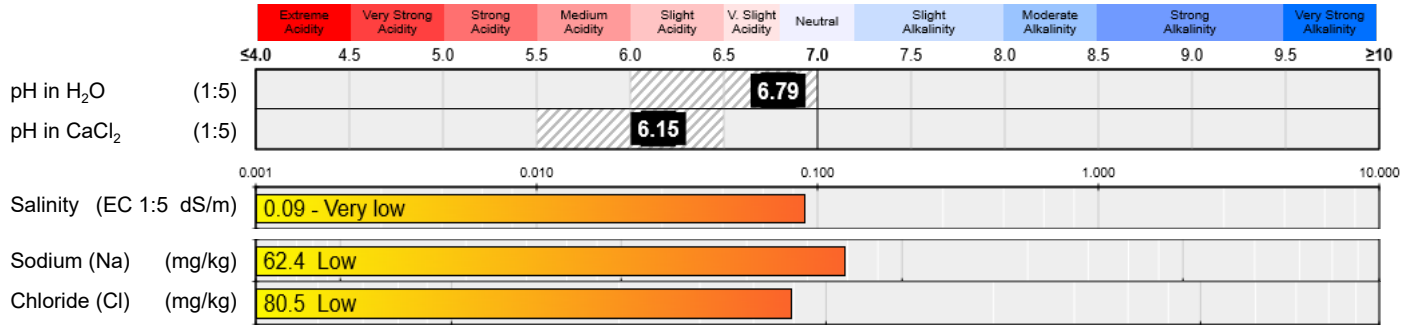
Batch N°: 61964 | **Sample N°: 3** | **Date Received: 22/12/21** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury Street Soil Assesment**
		SESL Quote N°:	**Q 12757**
Client Contact:	**Peter Somerville**	Sample Name:	**S-02 A**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**FSC_Plus, MWSS, VIC_IWRG621-Std**

RECOMMENDATIONS

Please see report for full result, interpretations and recommendations

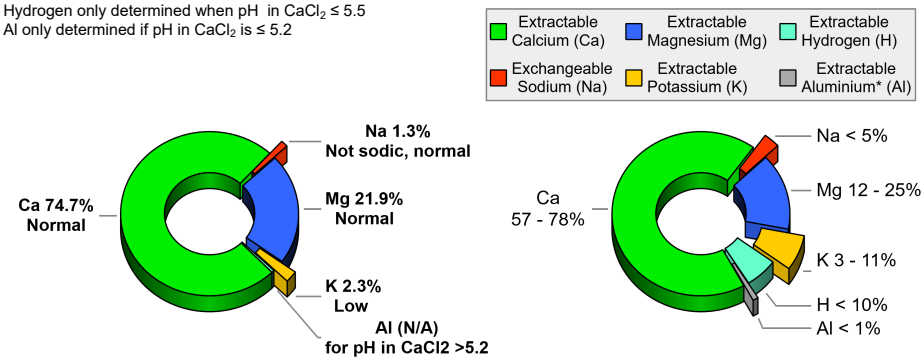
pH and ELECTRICAL CONDUCTIVITY



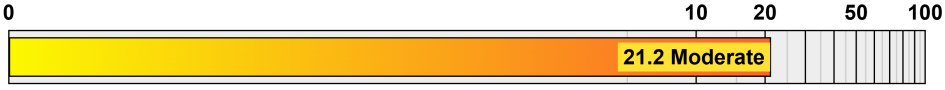
CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2 \leq 5.5$
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)



CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**3.4**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**9.5**	2.6 – 5.0
Comment: Potassium low		
K/(Ca+Mg)	**0.02**	< 0.07
Comment: Acceptable		
K:Na	**1.8**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
0.27	0.49	15.83	4.63	-	-

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

SESL AUSTRALIA
Environment & Soil Sciences

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 61964 | **Sample N°: 3** | **Date Received: 22/12/21** | **Report Status: Draft**

PLANT AVAILABLE NUTRIENTS

EFFECTIVE AMELIORATION DEPTH (mm): ○ 100 ○ 150 ○ 20 **DESIRED FERTILITY CLASS:** ○ Low ○ Moderate ○ Hig

Major Nutrients	Unit	Result	Very Low / Low / Marginal / Adequate / High	Result (g/sqm)	Desirable (g/sqm)	Adjustment (g/sqm)
Nitrate-N (NO_3)	mg N/kg	2.4		0.5	-	Maintenance
Phosphorus (P)	mg P/kg	38		7.6	12.6	5
Potassium (K)	mg/kg	192		38.3	69	30.7
Sulfur (S)	mg S/kg	13		2.6	13.6	11
Calcium (Ca)	mg/kg	3170		632.4	491.6	Drawdown
Magnesium (Mg)	mg/kg	563		112.3	51.3	Drawdown
Iron (Fe)	mg/kg	153		30.5	110.1	79.6
Manganese (Mn)	mg/kg	17		3.4	8.8	5.4
Zinc (Zn)	mg/kg	73		14.6	1	Drawdown
Copper (Cu)	mg/kg	19		3.8	1.3	Drawdown
Boron (B)	mg/kg	2.3		0.5	0.5	0

Explanation of graph ranges:

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 %.

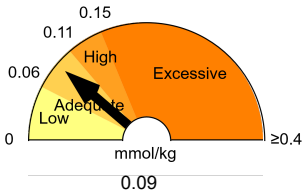
Marginal — Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60 %.

Adequate — 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 %.

High — 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 addition is <2 %.

NOTES: Adjustment recommendation calculates the elemental application to shift the soil test level to within the **Adequate** band, which maximises growth/yield, and 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 of 1.33 tonne/m^3 and effective amelioration depth.

Phosphorus Saturation Index



Adequate. Economic response to P unlikely. P application recommended maintaining current P level.

Exchangeable Acidity

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**21.2**
Eff. Cation Exch. Capacity (eCEC):	**21.2**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

Lime Application Rate (g/sqm)

– to achieve pH 6.0: **0**
– to neutralise Al: **-**

Calculated Gypsum Application Rate (CGAR)

(g/sqm) to achieve 67.5 % exch. Ca: **0**

The CGAR is corrected for the selected effective amelioration depth (mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Sandy Clay Loam**	Munsell Colour:	-	Organic Carbon (OC %):	**Very High - 4.5**
Estimated clay content:	**20 - 30%**	Structure Size:	**Medium (11 - 25mm)**	Organic Matter (OM %):	**7.7**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Field Capacity (% water):	**26**
Tactually organic:	**Not Organic**	Structural Unit:	**Crumb**	Est. Permanent Wilting Point (% water):	**15**
Calculated EC_{SE} (dS/m):	**0.9**	Potential infiltration rate:	**Moderate**	Est. Plant Available Water (% water):	**11**
– Non-saline. Salinity effects on plants are mostly negligible.		Est. Permeability Class (mm/hr):	**20 - 60**	Est. Plant Available Water (mm/m):	**110**
		Additional comments:			

Date Report Generated 16/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Chloride - Rayment & Lyons 5A2a-2011
Nitrate - Rayment & Lyons 7B1a-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu, B - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

SESL AUSTRALIA
Environment & Soil Sciences

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Mailing Address: PO Box 357
Pennant Hills NSW 1715
Em: info@sesl.com.au
Web: www.sesl.com.au

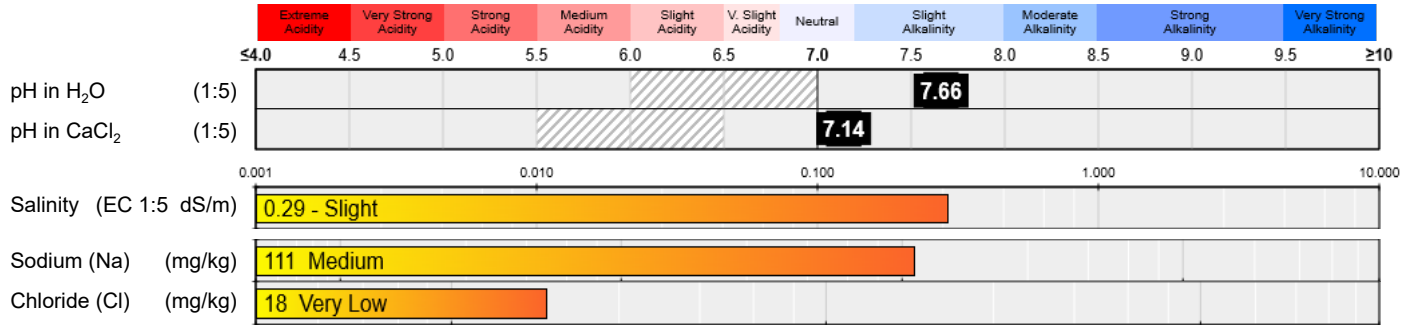
Batch N°: 61964 | **Sample N°: 5** | **Date Received: 22/12/21** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury Street Soil Assesment**
		SESL Quote N°:	**Q 12757**
Client Contact:	**Peter Somerville**	Sample Name:	**S-03 A**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road** **Thornleigh NSW 2120**	Test Type:	**FSC_Plus, MWSS, VIC_IWRG621-Std**

RECOMMENDATIONS

Please see report for full result, interpretations and recommendations

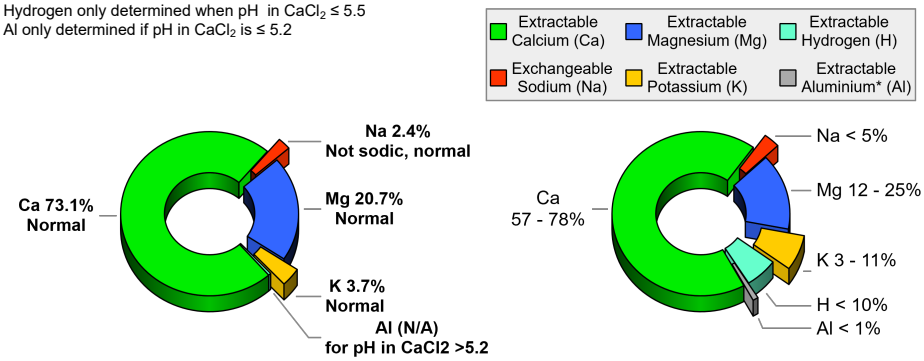
pH and ELECTRICAL CONDUCTIVITY



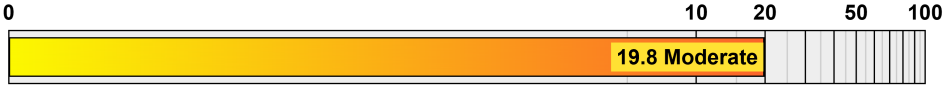
CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2 \leq 5.5$
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)



CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**3.5**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**5.5**	2.6 – 5.0
Comment: Potassium low		
K/(Ca+Mg)	**0.04**	< 0.07
Comment: Acceptable		
K:Na	**1.5**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
0.48	0.74	14.47	4.1	-	-

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 61964 | **Sample N°: 5** | **Date Received: 22/12/21** | **Report Status: Draft**

PLANT AVAILABLE NUTRIENTS

EFFECTIVE AMELIORATION DEPTH (mm): ○ 100 ○ 150 ○ 20 **DESIRED FERTILITY CLASS:** ○ Low ○ Moderate ○ Hig

Major Nutrients	Unit	Result	Very Low / Low / Marginal / Adequate / High	Result (g/sqm)	Desirable (g/sqm)	Adjustment (g/sqm)
Nitrate-N (NO_3)	mg N/kg	110		21.9	-	Maintenance
Phosphorus (P)	mg P/kg	32		6.4	12.6	6.2
Potassium (K)	mg/kg	290		57.9	60.6	2.7
Sulfur (S)	mg S/kg	18		3.6	13.6	10
Calcium (Ca)	mg/kg	2900		578.6	431.7	Drawdown
Magnesium (Mg)	mg/kg	498		99.4	44.9	Drawdown
Iron (Fe)	mg/kg	165		32.9	110.1	77.2
Manganese (Mn)	mg/kg	34		6.8	8.8	2
Zinc (Zn)	mg/kg	22		4.4	1	Drawdown
Copper (Cu)	mg/kg	4.5		0.9	1.3	0.4
Boron (B)	mg/kg	2.1		0.4	0.5	0.1

Explanation of graph ranges:

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 %.

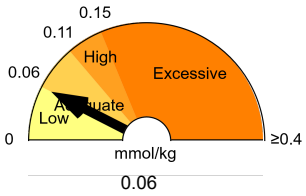
Marginal
Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60 %.

Adequate
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 %.

High
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 addition is <2 %.

NOTES: Adjustment recommendation calculates the elemental application to shift the soil test level to within the **Adequate** band, which maximises growth/yield, and 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 of 1.33 tonne/m^3 and effective amelioration depth.

Phosphorus Saturation Index



Adequate. Economic response to P unlikely. P application recommended maintaining current P level.

Exchangeable Acidity

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**19.8**
Eff. Cation Exch. Capacity (eCEC):	**19.8**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

Lime Application Rate (g/sqm)

– to achieve pH 6.0:	**0**
– to neutralise Al:	-

Calculated Gypsum Application Rate (CGAR)
(g/sqm) to achieve 67.5 % exch. Ca: **0**

The CGAR is corrected for the selected effective amelioration depth (mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Light Sandy Clay Loam**
Estimated clay content:	**25%**
Tactually gravelly:	**Gravelly**
Tactually organic:	**Not Organic**
Calculated EC_{SE} (dS/m):	**2.8**
– Slightly saline. Growth on sensitive plant species is affected.	

Munsell Colour:	-
Structure Size:	**Medium (11 - 25mm)**
Structural Organisation:	**Pedal - Moderate**
Structural Unit:	**Crumb**
Potential infiltration rate:	**Rapid**
Est. Permeability Class (mm/hr):	**>120**
Additional comments:	

Organic Carbon (OC %):	**Moderate - 1.8**
Organic Matter (OM %):	**3.1**
Est. Field Capacity (% water):	**26**
Est. Permanent Wilting Point (% water):	**12**
Est. Plant Available Water (% water):	**14**
Est. Plant Available Water (mm/m):	**140**

Date Report Generated 16/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Chloride - Rayment & Lyons 5A2a-2011
Nitrate - Rayment & Lyons 7B1a-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu, B - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Em: info@sesl.com.au
Web: www.sesl.com.au

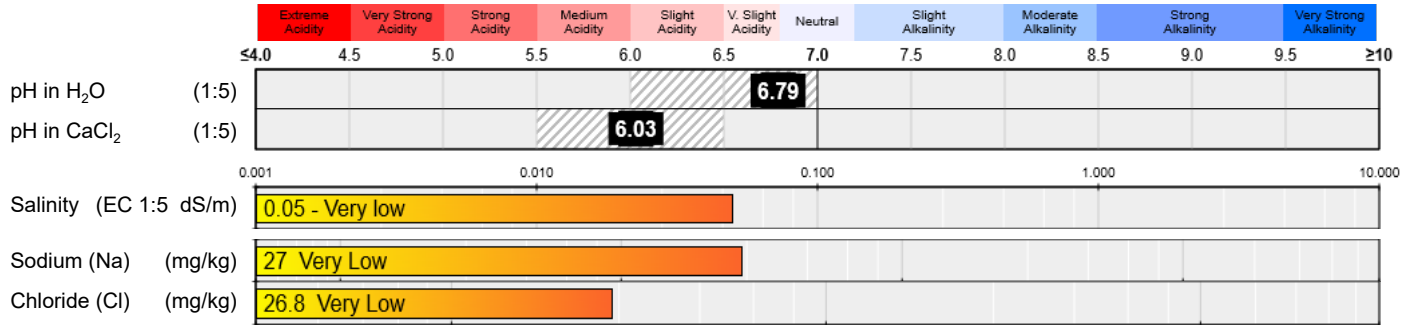
Batch N°: 61964 | **Sample N°: 6** | **Date Received: 22/12/21** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury Street Soil Assesment**
		SESL Quote N°:	**Q 12757**
Client Contact:	**Peter Somerville**	Sample Name:	**S-04 A**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**FSC_Plus, MWSS, VIC_IWRG621-Std**

RECOMMENDATIONS

Please see report for full result, interpretations and recommendations

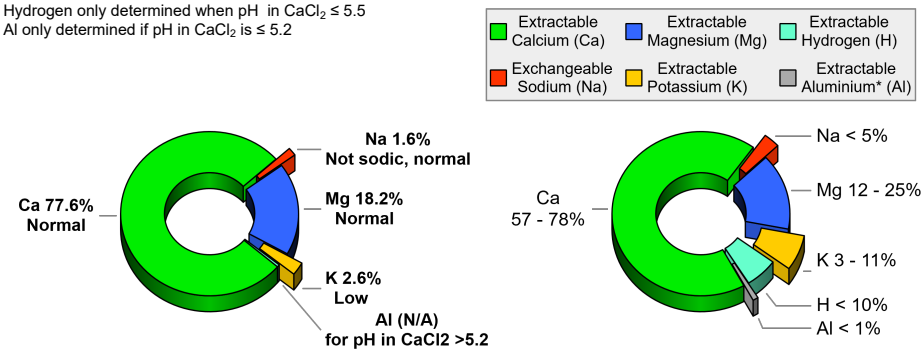
pH and ELECTRICAL CONDUCTIVITY



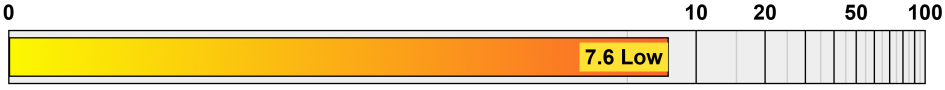
CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2$ ≤ 5.5
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)



CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**4.3**	4.1 – 6.0
Comment: Balanced		
Mg:K	**6.9**	2.6 – 5.0
Comment: Potassium low		
K/(Ca+Mg)	**0.03**	< 0.07
Comment: Acceptable		
K:Na	**1.7**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
0.12	0.2	5.9	1.38	-	-

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

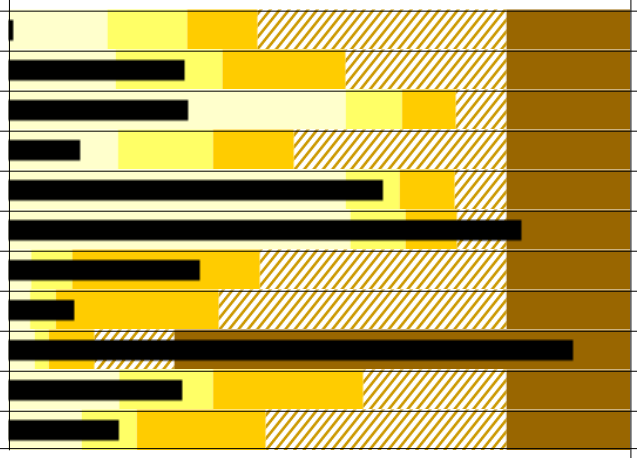
Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 61964 | **Sample N°: 6** | **Date Received: 22/12/21** | **Report Status: Draft**

PLANT AVAILABLE NUTRIENTS

EFFECTIVE AMELIORATION DEPTH (mm): ○ 100 ○ 150 ○ 20 **DESIRED FERTILITY CLASS:** ○ Low ○ Moderate ○ Hig

Major Nutrients	Unit	Result	Very Low / Low / Marginal / Adequate / High	Result (g/sqm)	Desirable (g/sqm)	Adjustment (g/sqm)
Nitrate-N (NO_3)	mg N/kg	0.48		0.1	-	Maintenance
Phosphorus (P)	mg P/kg	23		4.6	12.6	8
Potassium (K)	mg/kg	79.8		15.9	43.9	28
Sulfur (S)	mg S/kg	9.8		2	13.6	11.6
Calcium (Ca)	mg/kg	1180		235.4	312.4	77
Magnesium (Mg)	mg/kg	168		33.5	32.5	Drawdown
Iron (Fe)	mg/kg	213		42.5	110.1	67.6
Manganese (Mn)	mg/kg	5.9		1.2	8.8	7.6
Zinc (Zn)	mg/kg	17		3.4	1	Drawdown
Copper (Cu)	mg/kg	2.2		0.4	1.3	0.9
Boron (B)	mg/kg	0.6		0.1	0.5	0.4



Explanation of graph ranges:

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 %.

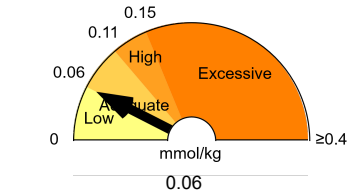
Marginal — Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60 %.

Adequate — 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 %.

High — 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 addition is <2 %.

NOTES: Adjustment recommendation calculates the elemental application to shift the soil test level to within the **Adequate** band, which maximises growth/yield, and 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 of 1.33 tonne/m^3 and effective amelioration depth.

Phosphorus Saturation Index



Adequate. Economic response to P unlikely. P application recommended maintaining current P level.

Exchangeable Acidity

Adams-Evans Buffer pH (BpH):	**-**
Sum of Base Cations (cmol(+)/kg):	**7.6**
Eff. Cation Exch. Capacity (eCEC):	**7.6**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	**-**
Exchangeable Acidity (%):	**-**

Lime Application Rate (g/sqm)

– to achieve pH 6.0:	**0**
– to neutralise Al:	**-**

Calculated Gypsum Application Rate (CGAR)
(g/sqm) to achieve 67.5 % exch. Ca: **0**

The CGAR is corrected for the selected effective amelioration depth (mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Light Sandy Clay Loam**
Estimated clay content:	**25%**
Tactually gravelly:	**Not gravelly**
Tactually organic:	**Not Organic**
Calculated EC_{SE} (dS/m):	**0.5**

– Non-saline. Salinity effects on plants are mostly negligible.

Munsell Colour:	**-**
Structure Size:	**Medium (11 - 25mm)**
Structural Organisation:	**Pedal - Moderate**
Structural Unit:	**Crumb**
Potential infiltration rate:	**Rapid**
Est. Permeability Class (mm/hr):	**>120**
Additional comments:	

Organic Carbon (OC %):	**Moderate - 1.7**
Organic Matter (OM %):	**2.9**
Est. Field Capacity (% water):	**26**
Est. Permanent Wilting Point (% water):	**12**
Est. Plant Available Water (% water):	**14**
Est. Plant Available Water (mm/m):	**140**

Date Report Generated 16/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Chloride - Rayment & Lyons 5A2a-2011
Nitrate - Rayment & Lyons 7B1a-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu, B - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

A member of the Australian Soil and Plant Analysis Council (ASPAC)
This laboratory participates in, and is awarded certification based on results of the scores returned in, ASPAC inter-laboratory proficiency rounds. For detailed current certification status and for more information on the ASPAC inter-laboratory proficiency testing programs, see the ASPAC website: http://www.aspac-australasia.com

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

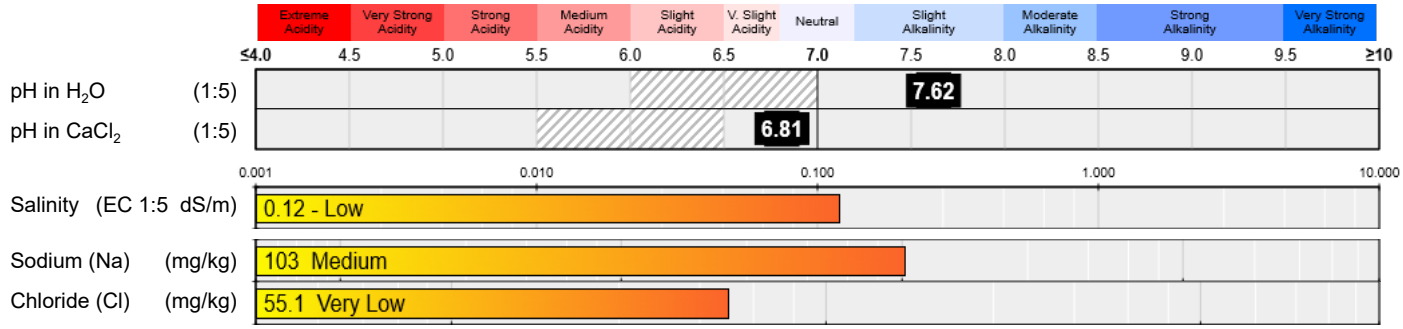
Batch N°: 61964 | **Sample N°: 7** | **Date Received: 22/12/21** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury Street Soil Assesment**
		SESL Quote N°:	**Q 12757**
Client Contact:	**Peter Somerville**	Sample Name:	**S-05 A**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**FSC_Plus, MWSS, VIC_IWRG621-Std**

RECOMMENDATIONS

Please see report for full result, interpretations and recommendations

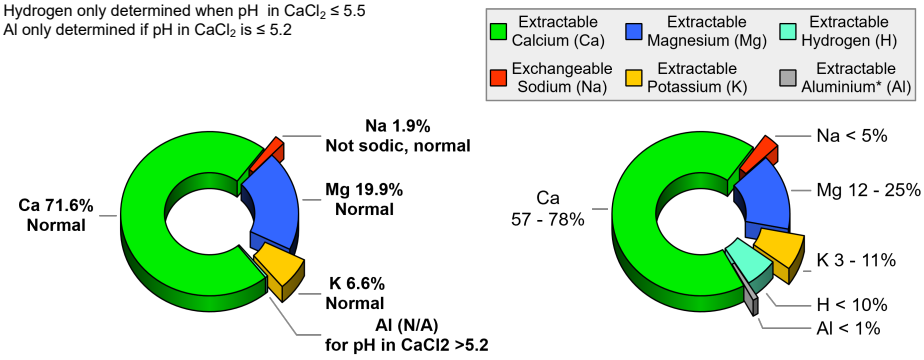
pH and ELECTRICAL CONDUCTIVITY



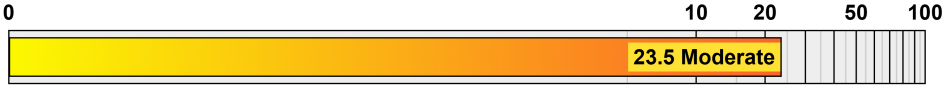
CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2 \leq 5.5$
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)



CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**3.6**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**3**	2.6 – 5.0
Comment: Balanced		
K/(Ca+Mg)	**0.07**	< 0.07
Comment: High		
K:Na	**3.4**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
0.45	1.54	16.83	4.69	-	-

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

SESL AUSTRALIA
Environment & Soil Sciences

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 61964 | **Sample N°: 7** | **Date Received: 22/12/21** | **Report Status: Draft**

PLANT AVAILABLE NUTRIENTS

EFFECTIVE AMELIORATION DEPTH (mm): ○ 100 ○ 150 ○ 20 **DESIRED FERTILITY CLASS:** ○ Low ○ Moderate ○ Hig

Major Nutrients	Unit	Result	Very Low / Low / Marginal / Adequate / High	Result (g/sqm)	Desirable (g/sqm)	Adjustment (g/sqm)
Nitrate-N (NO_3)	mg N/kg	3.5		0.7	-	Maintenance
Phosphorus (P)	mg P/kg	74		14.8	12.6	Drawdown
Potassium (K)	mg/kg	601		119.9	69	Drawdown
Sulfur (S)	mg S/kg	13		2.6	13.6	11
Calcium (Ca)	mg/kg	3370		672.3	491.6	Drawdown
Magnesium (Mg)	mg/kg	570		113.7	51.3	Drawdown
Iron (Fe)	mg/kg	131		26.1	110.1	84
Manganese (Mn)	mg/kg	54		10.8	8.8	Drawdown
Zinc (Zn)	mg/kg	55		11	1	Drawdown
Copper (Cu)	mg/kg	10		2	1.3	Drawdown
Boron (B)	mg/kg	2.4		0.5	0.5	0

Explanation of graph ranges:

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 %.

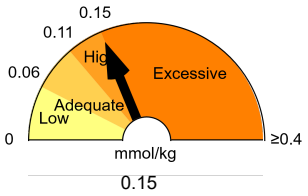
Marginal — Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60 %.

Adequate — 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 %.

High — 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 addition is <2 %.

NOTES: Adjustment recommendation calculates the elemental application to shift the soil test level to within the **Adequate** band, which maximises growth/yield, and 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 of 1.33 tonne/m^3 and effective amelioration depth.

Phosphorus Saturation Index



Excessive. Exceeds environmental threshold. Implement improved P management to reduce potential for nonpoint P pollution.

Exchangeable Acidity

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**23.5**
Eff. Cation Exch. Capacity (eCEC):	**23.5**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

Lime Application Rate (g/sqm)

– to achieve pH 6.0: **0**
– to neutralise Al: **-**

Calculated Gypsum Application Rate (CGAR)

(g/sqm) to achieve 67.5 % exch. Ca: **0**

The CGAR is corrected for the selected effective amelioration depth (mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Fine Sandy Clay Loam**	Munsell Colour:	-	Organic Carbon (OC %):	**Very High - 3.1**
Estimated clay content:	**20 - 30%**	Structure Size:	**Medium (11 - 25mm)**	Organic Matter (OM %):	**5.3**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Field Capacity (% water):	**28**
Tactually organic:	**Not Organic**	Structural Unit:	**Crumb**	Est. Permanent Wilting Point (% water):	**15**
Calculated EC_{SE} (dS/m):	**1**	Potential infiltration rate:	**Moderate**	Est. Plant Available Water (% water):	**13**
– Non-saline. Salinity effects on plants are mostly negligible.		Est. Permeability Class (mm/hr):	**20 - 60**	Est. Plant Available Water (mm/m):	**130**
		Additional comments:			

Date Report Generated 16/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Chloride - Rayment & Lyons 5A2a-2011
Nitrate - Rayment & Lyons 7B1a-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu, B - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

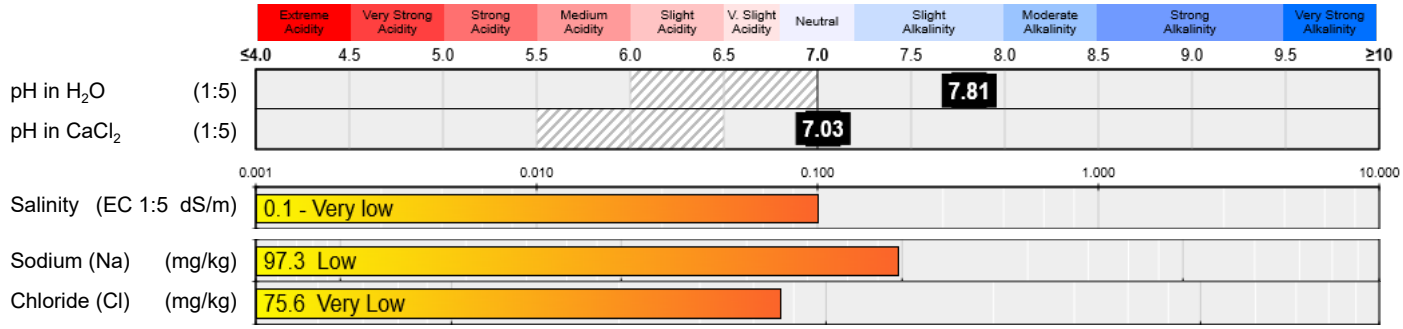
Batch N°: 61964 | **Sample N°: 8** | **Date Received: 22/12/21** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury Street Soil Assesment**
		SESL Quote N°:	**Q 12757**
Client Contact:	**Peter Somerville**	Sample Name:	**S-06 A**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road** **Thornleigh NSW 2120**	Test Type:	**FSC_Plus, MWSS**

RECOMMENDATIONS

Please see report for full result, interpretations and recommendations

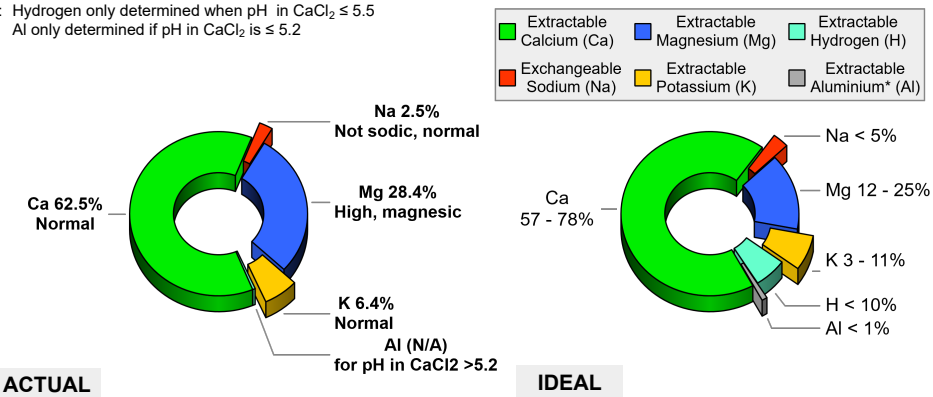
pH and ELECTRICAL CONDUCTIVITY



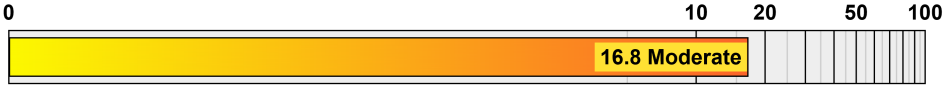
CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2 \leq 5.5$
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)



CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**2.2**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**4.5**	2.6 – 5.0
Comment: Balanced		
K/(Ca+Mg)	**0.07**	< 0.07
Comment: High		
K:Na	**2.5**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
0.42	1.07	10.5	4.78	-	-

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

SESL AUSTRALIA
Environment & Soil Sciences

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 61964 | **Sample N°: 8** | **Date Received: 22/12/21** | **Report Status: Draft**

PLANT AVAILABLE NUTRIENTS

EFFECTIVE AMELIORATION DEPTH (mm): ○ 100 ○ 150 ○ 20 **DESIRED FERTILITY CLASS:** ○ Low ○ Moderate ○ Hig

Major Nutrients	Unit	Result	Very Low / Low / Marginal / Adequate / High	Result (g/sqm)	Desirable (g/sqm)	Adjustment (g/sqm)
Nitrate-N (NO_3)	mg N/kg	1.8		0.4	-	Maintenance
Phosphorus (P)	mg P/kg	46		9.2	12.6	3.4
Potassium (K)	mg/kg	418		83.4	60.6	Drawdown
Sulfur (S)	mg S/kg	8.6		1.7	13.6	11.9
Calcium (Ca)	mg/kg	2100		419	431.7	12.7
Magnesium (Mg)	mg/kg	580		115.7	44.9	Drawdown
Iron (Fe)	mg/kg	183		36.5	110.1	73.6
Manganese (Mn)	mg/kg	45		9	8.8	Drawdown
Zinc (Zn)	mg/kg	53		10.6	1	Drawdown
Copper (Cu)	mg/kg	13		2.6	1.3	Drawdown
Boron (B)	mg/kg	1.8		0.4	0.5	0.1

Explanation of graph ranges:

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 %.

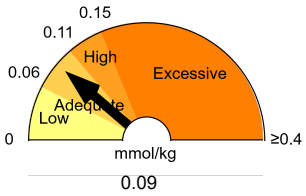
Marginal — Supply of this nutrient is barely adequate for the plant, and build-up is still recommended. Potential response to nutrient addition is 30 to 60 %.

Adequate — 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 %.

High — 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 addition is <2 %.

NOTES: Adjustment recommendation calculates the elemental application to shift the soil test level to within the **Adequate** band, which maximises growth/yield, and 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 of 1.33 tonne/m^3 and effective amelioration depth.

Phosphorus Saturation Index



Adequate. Economic response to P unlikely. P application recommended maintaining current P level.

Exchangeable Acidity

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	16.8
Eff. Cation Exch. Capacity (eCEC):	16.8
Base Saturation (%):	100
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

Lime Application Rate (g/sqm)

– to achieve pH 6.0:	0
– to neutralise Al:	-

Calculated Gypsum Application Rate (CGAR)
(g/sqm) to achieve 67.5 % exch. Ca: **0**

The CGAR is corrected for the selected effective amelioration depth (mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Light Sandy Clay Loam**
Estimated clay content:	**25%**
Tactually gravelly:	**Gravelly**
Tactually organic:	**Not Organic**
Calculated EC_{SE} (dS/m):	**1**
– Non-saline. Salinity effects on plants are mostly negligible.	

Munsell Colour:	-
Structure Size:	**Medium (11 - 25mm)**
Structural Organisation:	**Pedal - Moderate**
Structural Unit:	**Crumb**
Potential infiltration rate:	**Rapid**
Est. Permeability Class (mm/hr):	**>120**
Additional comments:	

Organic Carbon (OC %):	**High - 2.1**
Organic Matter (OM %):	**3.6**
Est. Field Capacity (% water):	**26**
Est. Permanent Wilting Point (% water):	**12**
Est. Plant Available Water (% water):	**14**
Est. Plant Available Water (mm/m):	**140**

Date Report Generated 16/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Chloride - Rayment & Lyons 5A2a-2011
Nitrate - Rayment & Lyons 7B1a-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu, B - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

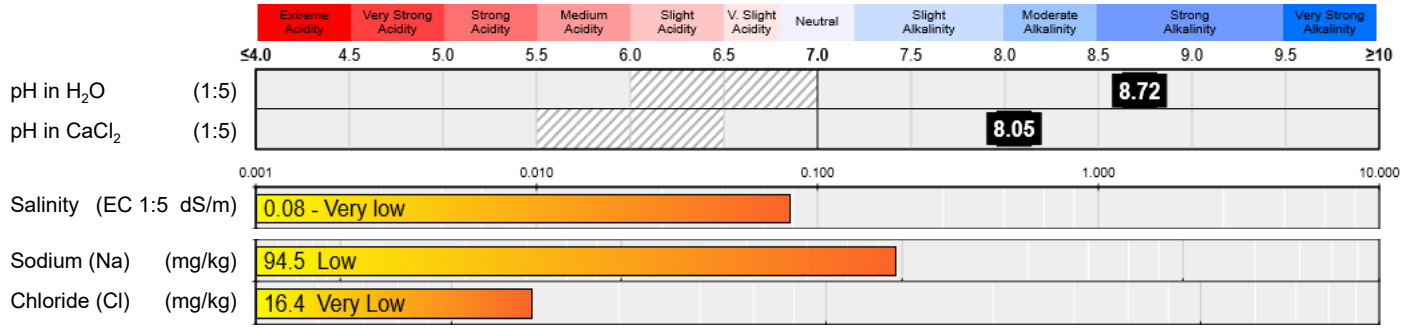
Batch N°: 62625 | **Sample N°: 1** | **Date Received: 21/4/22** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Maribyrnong City Council, Bunbury St Silt Test**
		SESL Quote N°:	
Client Contact:	**Peter Somerville**	Sample Name:	**Tunnel Silt**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**FSC_Plus**

RECOMMENDATIONS

See report for interpretations and recommendations

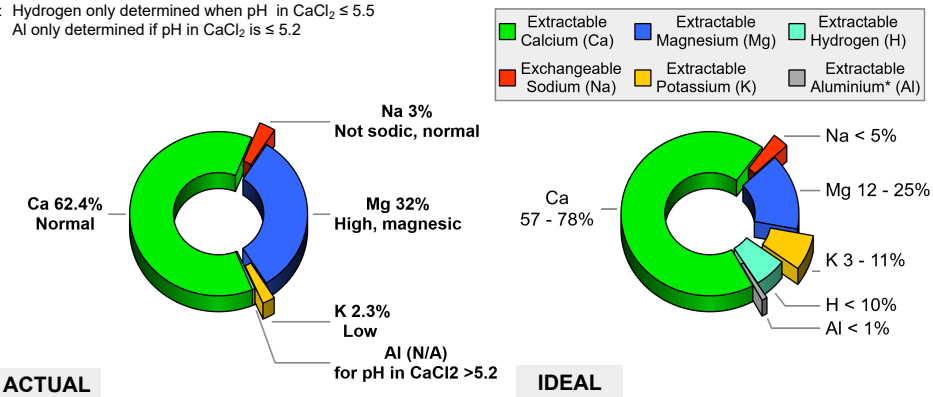
pH and ELECTRICAL CONDUCTIVITY



CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2 \leq 5.5$
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)

CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**2**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**14.1**	2.6 – 5.0
Comment: Potential Potassium deficiency		
K/(Ca+Mg)	**0.02**	< 0.07
Comment: Acceptable		
K:Na	**0.8**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
0.41	0.31	8.55	4.38	-	-

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 62625 | **Sample N°: 1** | **Date Received: 21/4/22** | **Report Status: Draft**

PLANT AVAILABLE NUTRIENTS

EFFECTIVE AMELIORATION DEPTH (mm): ◉ ? ○ ? ○ ? **DESIRED FERTILITY CLASS:** ○ Lo ◉ Moderat ○ High

Major Nutrients	Unit	Result	Very Low / Low / Marginal / Adequate / High	Result (g/sqm)	Desirable (g/sqm)	Adjustment (g/sqm)
Nitrate-N (NO_3)	mg N/kg	1.2		0.2	4	3.8
Phosphorus (P)	mg P/kg	6.6		0.9	8.4	7.5
Potassium (K)	mg/kg	123		16.4	34.8	18.4
Sulfur (S)	mg S/kg	5.5		0.7	9	8.3
Calcium (Ca)	mg/kg	1710		227.4	248	20.6
Magnesium (Mg)	mg/kg	532		70.8	25.8	Drawdown
Iron (Fe)	mg/kg	38.8		5.2	73.4	68.2
Manganese (Mn)	mg/kg	12		1.6	5.9	4.3
Zinc (Zn)	mg/kg	34		4.5	0.7	Drawdown
Copper (Cu)	mg/kg	0.9		0.1	0.8	0.7
Boron (B)	mg/kg	0.7		0.1	0.4	0.3

Explanation of graph ranges:

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 %.

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 %.

Adequate — 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 %.

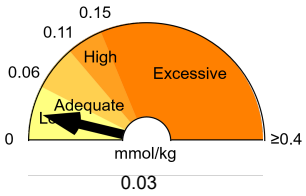
High — The level is excessive and may be detrimental to plant growth (i.e. phytotoxic) and may contribute to pollution of ground and surface waters. Drawdown is recommended. Potential response to nutrient addition is <2 %.

NOTES: Adjustment recommendation calculates the elemental application to shift the soil test level to within the **Adequate** band, which maximises growth/yield, and 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 of 1.33 tonne/m^3 and effective amelioration depth.

Phosphorus Saturation Index



Low. Plant response to applied P is likely.

Exchangeable Acidity

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**13.7**
Eff. Cation Exch. Capacity (eCEC):	**13.7**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

Lime Application Rate (g/sqm)

– to achieve pH 6.0: **0**

– to neutralise Al: **-**

Calculated Gypsum Application Rate (CGAR)

(g/sqm) to achieve 67.5 % exch. Ca: **80**

The CGAR is corrected for the selected effective amelioration depth (100 mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Fine Sandy Clay Loam**	Munsell Colour:	-	Organic Carbon (OC %):	**Very low - 0.1**
Estimated clay content:	**20 - 30%**	Structure Size:	**Coarse (>25mm)**	Organic Matter (OM %):	**0.2**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Field Capacity (% water):	**28**
Tactually organic:	**Not Organic**	Structural Unit:	**Crumb**	Est. Permanent Wilting Point (% water):	**15**
Calculated EC_{SE} (dS/m):	**0.7**	Potential infiltration rate:	**Moderate**	Est. Plant Available Water (% water):	**13**
– Non-saline. Salinity effects on plants are mostly negligible.		Est. Permeability Class (mm/hr):	**20 - 60**	Est. Plant Available Water (mm/m):	**130**
		Additional comments:			

Date Report Generated 9/05/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Chloride - Rayment & Lyons 5A2a-2011
Nitrate - Rayment & Lyons 7B1a-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu, B - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

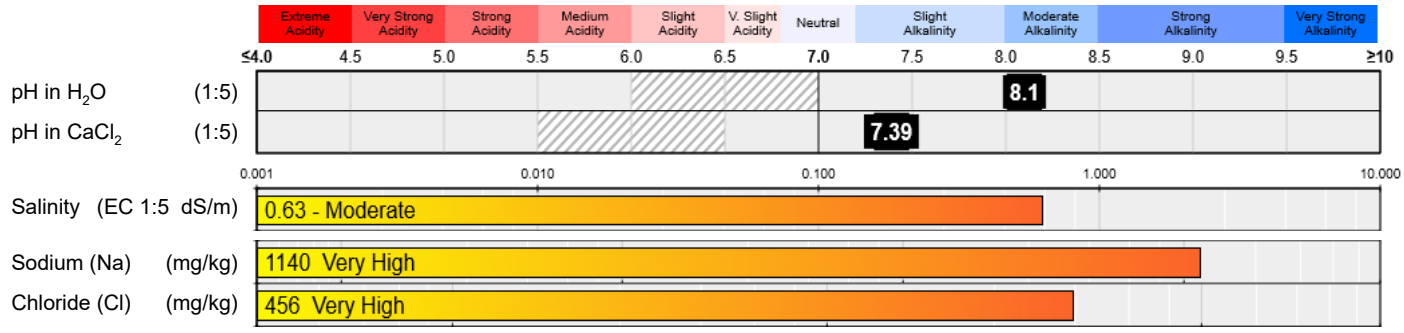
Batch N°: 62107 | **Sample N°: 1** | **Date Received: 1/2/22** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury St**
		SESL Quote N°:	
Client Contact:	**Peter Somerville**	Sample Name:	**BH-01 SS**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**SSCP**

RECOMMENDATIONS

see report for full interpretations and recommendations

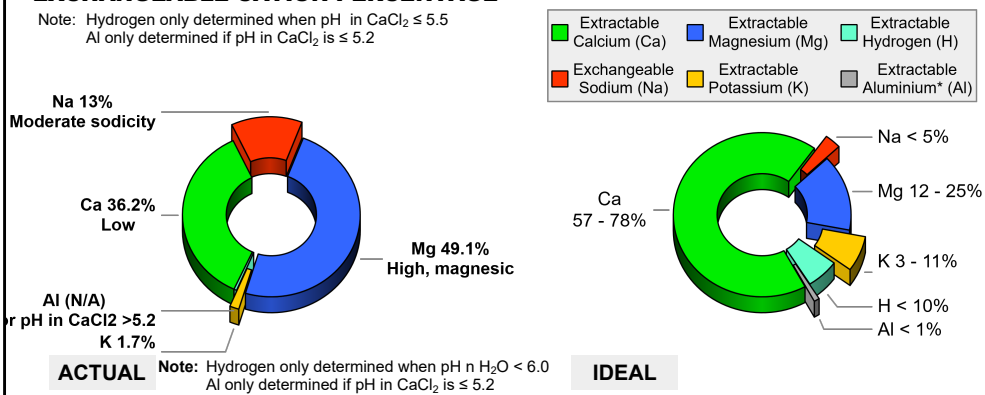
pH and ELECTRICAL CONDUCTIVITY



CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2$ ≤ 5.5
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)

CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**0.7**	4.1 – 6.0
Comment: Potential Calcium deficiency		
Mg:K	**29.2**	2.6 – 5.0
Comment:		
K/(Ca+Mg)	**0.02**	< 0.07
Comment: Acceptable		
K:Na	**0.1**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
4.96	0.64	13.81	18.71		

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

SESL AUSTRALIA
Environment & Soil Sciences

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Web: www.sesl.com.au

Batch N°: 62107 | **Sample N°: 1** | **Date Received: 1/2/22** | **Report Status: Draft**

EFFECTIVE AMELIORATION DEPTH (mm): ◉ ? ○ ? ○ ?

PLANT AVAILABLE NUTRIENTS

Major Nutrients	Result (mg/kg)	Result (g/sqm)
Potassium (K)	251	33.4
Calcium (Ca)	2770	368.4
Magnesium (Mg)	2273	302.3

Subsoil nutrients are only able to be effectively amended where the subsoil is exposed (through stripping of topsoil) or in stockpile form for profile reconstruction. For in-situ profiles analysis enables insight for management

Explanation of graph ranges:

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 %.

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 %.

Adequate
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 %.

High
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 addition is <2 %.

EXCHANGEABLE ACIDITY

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**38.1**
Eff. Cation Exch. Capacity (eCEC):	**38.1**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

LIME APPLICATION RATE

– to achieve pH 6.0 (g/sqm): **0**

– to neutralise Al (g/sqm): **-**

CALCULATED GYPSUM APPLICATION RATE

– to achieve 67.5% exchangeable Calcium (g/sqm): **1363**

The CGAR is corrected for the selected effective amelioration depth (100 mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Light Clay**	Munsell Colour:	-	Est. Field Capacity (% water):	**38**
Estimated clay content:	**35 - 40%**	Structure Size:	**Medium (11 - 25mm)**	Est. Permanent Wilting Point (% water):	**23**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Plant Available Water (% water):	**15**
Tactually organic:	**Not Organic**	Structural Unit:	**Polyhedral**	Est. Plant Available Water (mm/m):	**150**
Calculated EC_{SE} (dS/m):	**5.4**	Potential infiltration rate:	**Slow**		
– Moderate saline. Growth on many plant species is affected.		Est. Permeability Class (mm/hr):	**2.5 - 5**		
		Additional comments:			

Date Report Generated 9/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
K, Ca, Mg, Na - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

SESL AUSTRALIA
Environment & Soil Sciences

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Mailing Address: PO Box 357
Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

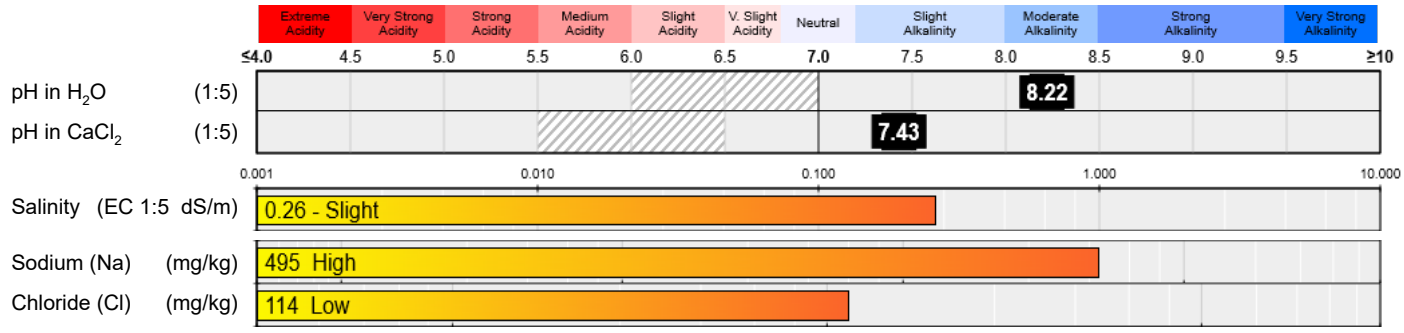
Batch N°: 62107	Sample N°: 2	Date Received: 1/2/22	Report Status: Draft

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury St**
		SESL Quote N°:	
Client Contact:	**Peter Somerville**	Sample Name:	**BH-02 SS**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road** **Thornleigh NSW 2120**	Test Type:	**SSCP**

RECOMMENDATIONS

see report for full interpretations and recommendations

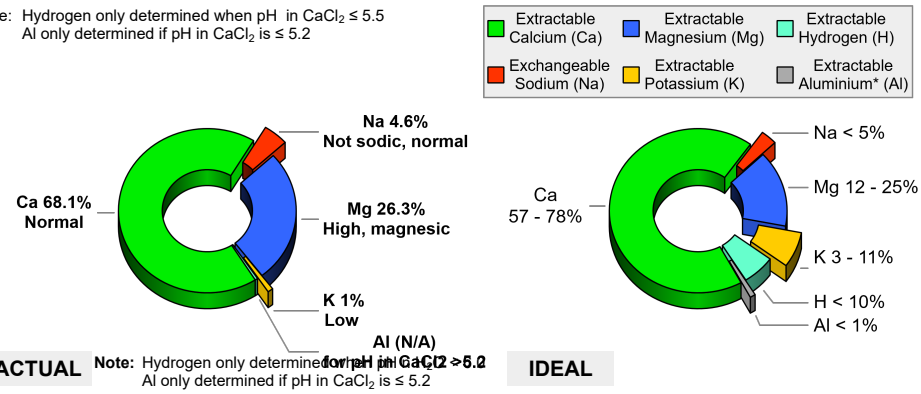
pH and ELECTRICAL CONDUCTIVITY



CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2$ ≤ 5.5
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)

CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**2.6**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**25.3**	2.6 – 5.0
Comment:		
K/(Ca+Mg)	**0.01**	< 0.07
Comment: Acceptable		
K:Na	**0.2**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
2.15	0.49	32.16	12.41		

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
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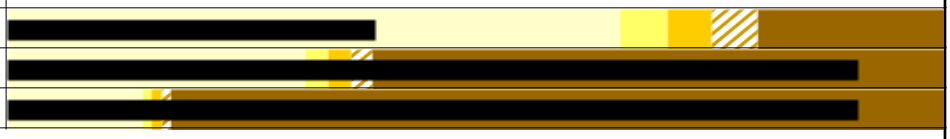
Web: www.sesl.com.au

Batch N°: 62107 | **Sample N°: 2** | **Date Received: 1/2/22** | **Report Status: Draft**

EFFECTIVE AMELIORATION DEPTH (mm): ◉ ? ○ ? ○ ?

PLANT AVAILABLE NUTRIENTS

Major Nutrients	Result (mg/kg)	Result (g/sqm)
Potassium (K)	191	25.4
Calcium (Ca)	6440	856.5
Magnesium (Mg)	1508	200.6



Subsoil nutrients are only able to be effectively amended where the subsoil is exposed (through stripping of topsoil) or in stockpile form for profile reconstruction. For in-situ profiles analysis enables insight for management

Explanation of graph ranges:

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 %.

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 %.

Adequate
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 %.

High
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 addition is <2 %.

EXCHANGEABLE ACIDITY

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**47.2**
Eff. Cation Exch. Capacity (eCEC):	**47.2**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

LIME APPLICATION RATE

– to achieve pH 6.0 (g/sqm): **0**

– to neutralise Al (g/sqm): **-**

CALCULATED GYPSUM APPLICATION RATE

– to achieve 67.5% exchangeable Calcium (g/sqm): **0**

The CGAR is corrected for the selected effective amelioration depth (100 mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Sandy Clay**	Munsell Colour:	-	Est. Field Capacity (% water):	**29**
Estimated clay content:	**35 - 45%**	Structure Size:	**Medium (11 - 25mm)**	Est. Permanent Wilting Point (% water):	**19**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Plant Available Water (% water):	**10**
Tactually organic:	**Not Organic**	Structural Unit:	**Polyhedral**	Est. Plant Available Water (mm/m):	**100**
Calculated EC_{SE} (dS/m):	**2.2**	Potential infiltration rate:	**Slow**		
– Slightly saline. Growth on sensitive plant species is affected.		Est. Permeability Class (mm/hr):	**2.5 - 5**		
		Additional comments:			

Date Report Generated 9/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
K, Ca, Mg, Na - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

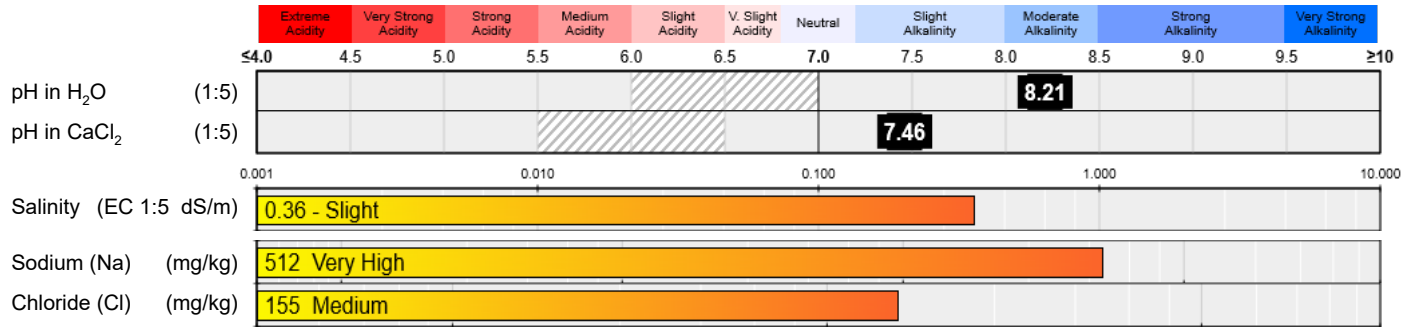
Batch N°: 62107 | **Sample N°: 3** | **Date Received: 1/2/22** | **Report Status: Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury St**
		SESL Quote N°:	
Client Contact:	**Peter Somerville**	Sample Name:	**BH-03 SS**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**SSCP**

RECOMMENDATIONS

see report for full interpretations and recommendations

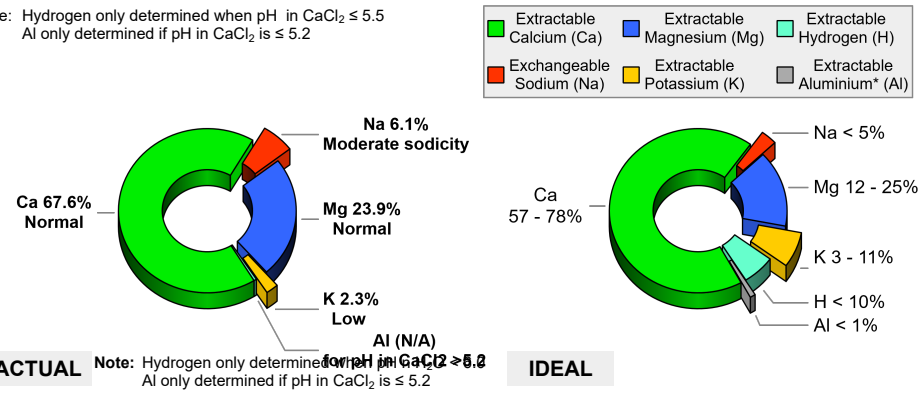
pH and ELECTRICAL CONDUCTIVITY



CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2$ ≤ 5.5
Al only determined if pH in $CaCl_2$ is ≤ 5.2



EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)

CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**2.8**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**10.2**	2.6 – 5.0
Comment:		
K/(Ca+Mg)	**0.03**	< 0.07
Comment: Acceptable		
K:Na	**0.4**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
2.23	0.86	24.88	8.80		

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
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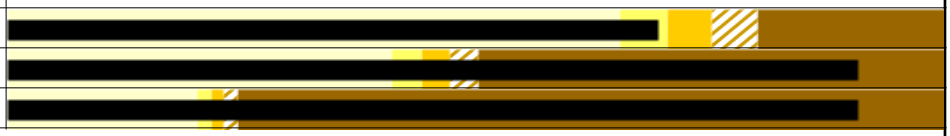
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 62107 | **Sample N°: 3** | **Date Received: 1/2/22** | **Report Status: Draft**

EFFECTIVE AMELIORATION DEPTH (mm): ◉ ? ○ ? ○ ?

PLANT AVAILABLE NUTRIENTS

Major Nutrients	Result (mg/kg)	Result (g/sqm)
Potassium (K)	337	44.8
Calcium (Ca)	4990	663.7
Magnesium (Mg)	1070	142.3



Subsoil nutrients are only able to be effectively amended where the subsoil is exposed (through stripping of topsoil) or in stockpile form for profile reconstruction. For in-situ profiles analysis enables insight for management

Explanation of graph ranges:

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 %.

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 %.

Adequate
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 %.

High
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 addition is <2 %.

EXCHANGEABLE ACIDITY

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**36.8**
Eff. Cation Exch. Capacity (eCEC):	**36.8**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

LIME APPLICATION RATE

– to achieve pH 6.0 (g/sqm): **0**

– to neutralise Al (g/sqm): **-**

CALCULATED GYPSUM APPLICATION RATE

– to achieve 67.5% exchangeable Calcium (g/sqm): **0**

The CGAR is corrected for the selected effective amelioration depth (100 mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Sandy Clay**	Munsell Colour:	-	Est. Field Capacity (% water):	**29**
Estimated clay content:	**35 - 45%**	Structure Size:	**Medium (11 - 25mm)**	Est. Permanent Wilting Point (% water):	**19**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Plant Available Water (% water):	**10**
Tactually organic:	**Not Organic**	Structural Unit:	**Crumb**	Est. Plant Available Water (mm/m):	**100**
Calculated EC_{SE} (dS/m):	**3.1**	Potential infiltration rate:	**Slow**		
– Slightly saline. Growth on sensitive plant species is affected.		Est. Permeability Class (mm/hr):	**2.5 - 5**		
		Additional comments:			

Date Report Generated 9/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
K, Ca, Mg, Na - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

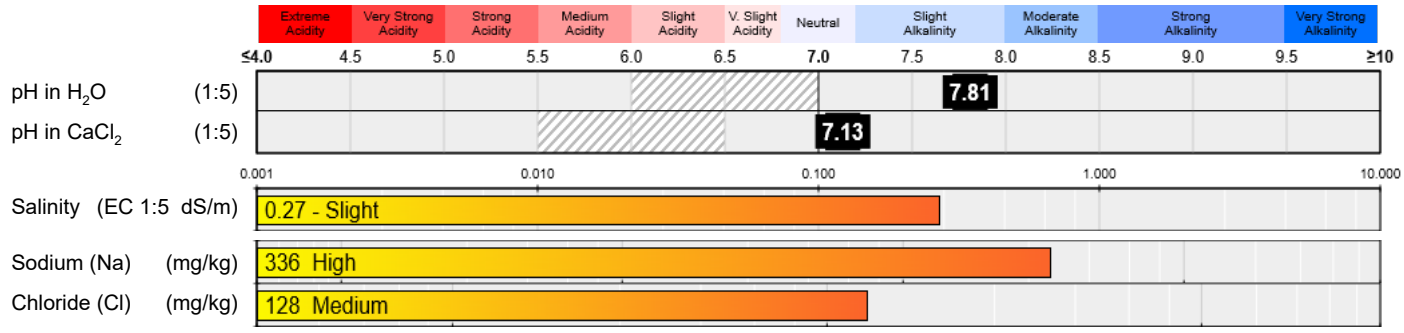
Batch N°: 62107	Sample N°: 4	Date Received: 1/2/22	Report Status: Draft

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury St**
		SESL Quote N°:	
Client Contact:	**Peter Somerville**	Sample Name:	**BH-04 SS**
Client Order N°:		Description:	**Soil**
Address:	**16 Chilvers Road Thornleigh NSW 2120**	Test Type:	**SSCP**

RECOMMENDATIONS

see report for full interpretations and recommendations

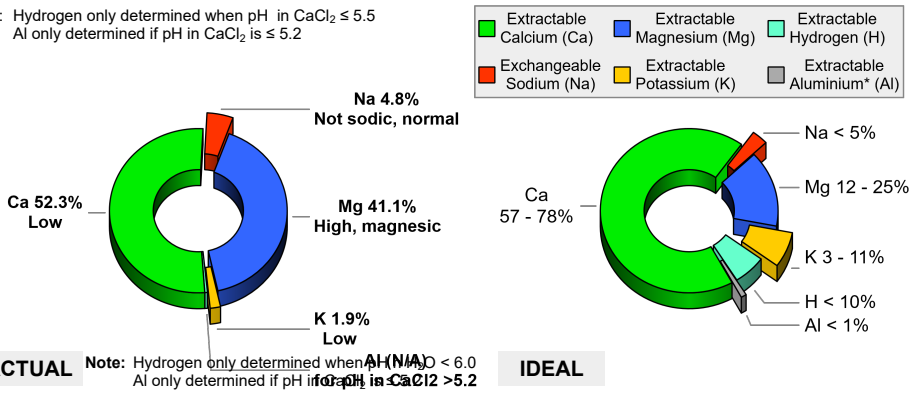
pH and ELECTRICAL CONDUCTIVITY



CATION BALANCE

EXCHANGEABLE CATION PERCENTAGE

Note: Hydrogen only determined when pH in $CaCl_2$ ≤ 5.5
Al only determined if pH in $CaCl_2$ is ≤ 5.2



ACTUAL

Note: Hydrogen only determined when pH (H2O) < 6.0
Al only determined if pH in CaCl2 <5.2

IDEAL

EFFECTIVE CATION EXCHANGE CAPACITY (eCEC) (cmol(+)/kg)

CATION RATIOS

Ratio	Result	Target Range
Ca:Mg	**1.3**	4.1 – 6.0
Comment: Calcium low		
Mg:K	**22**	2.6 – 5.0
Comment:		
K/(Ca+Mg)	**0.02**	< 0.07
Comment: Acceptable		
K:Na	**0.4**	N/A

EXCHANGEABLE CATIONS (cmol(+)/kg)

Na:	K:	Ca:	Mg:	H:	Al:
1.46	0.57	15.95	12.54		

eCEC does not include correction for soluble salts as standard. Where exchangeable calcium exceeds 80 % of eCEC and/or salinity exceeds 0.75 dS/m, alternative methods are recommended to determine true eCEC.

The units of eCEC *cmol(+)/kg* are the SI unit and are equivalent to *meq/100g*.

Soil Chemistry Profile

Mehlich 3 - Multi-nutrient Extractant

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Batch N°: 62107 | **Sample N°: 4** | **Date Received: 1/2/22** | **Report Status: Draft**

EFFECTIVE AMELIORATION DEPTH (mm): ◉ ? ○ ? ○ ?

PLANT AVAILABLE NUTRIENTS

Major Nutrients	Result (mg/kg)	Result (g/sqm)
Potassium (K)	223	29.7
Calcium (Ca)	3200	425.6
Magnesium (Mg)	1524	202.7

Subsoil nutrients are only able to be effectively amended where the subsoil is exposed (through stripping of topsoil) or in stockpile form for profile reconstruction. For in-situ profiles analysis enables insight for management

Explanation of graph ranges:

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 %.

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 %.

Adequate
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 %.

High
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 addition is <2 %.

EXCHANGEABLE ACIDITY

Adams-Evans Buffer pH (BpH):	-
Sum of Base Cations (cmol(+)/kg):	**30.5**
Eff. Cation Exch. Capacity (eCEC):	**30.5**
Base Saturation (%):	**100**
Exchangeable Acidity (cmol(+)/kg):	-
Exchangeable Acidity (%):	-

LIME APPLICATION RATE

– to achieve pH 6.0 (g/sqm): **0**

– to neutralise Al (g/sqm): **-**

CALCULATED GYPSUM APPLICATION RATE

– to achieve 67.5% exchangeable Calcium (g/sqm): **531**

The CGAR is corrected for the selected effective amelioration depth (100 mm) and any Lime addition to achieve pH 6.0.

PHYSICAL DESCRIPTION

Texture:	**Light Clay**	Munsell Colour:	-	Est. Field Capacity (% water):	**38**
Estimated clay content:	**35 - 40%**	Structure Size:	**Medium (11 - 25mm)**	Est. Permanent Wilting Point (% water):	**23**
Tactually gravelly:	**Not gravelly**	Structural Organisation:	**Pedal - Moderate**	Est. Plant Available Water (% water):	**15**
Tactually organic:	**Not Organic**	Structural Unit:	**Crumb**	Est. Plant Available Water (mm/m):	**150**
Calculated EC_{SE} (dS/m):	**2.3**	Potential infiltration rate:	**Slow**		
– Slightly saline. Growth on sensitive plant species is affected.		Est. Permeability Class (mm/hr):	**2.5 - 5**		
		Additional comments:			

Date Report Generated 9/02/2022

Consultant: Peter Somerville

Authorised Signatory: Simon Leake

METHOD REFERENCES:
pH (1:5 H_2O) - SESL CM0002; Rayment & Lyons 4A1-2011
pH (1:5 $CaCl_2$) - SESL CM0002; Rayment & Lyons 4B4-2011
EC (1:5) - SESL CM0001; Rayment & Lyons 3A1-2011
Aluminium - SESL CM0007; Rayment & Lyons 15A1-2011
K, Ca, Mg, Na - SESL CM0007; Rayment & Lyons 18F1-2011
Buffer pH and Hydrogen - SSSA Methods of Soil Analysis 2007, Pt 3, Ch 17; Adams-Evans (1962)
Texture/Structure/Colour - PM0003 (Texture- "Northcote" (1992), Structure* - "Murphy" (1991), Colour- "Munsell" (2000))

*Structure analysed in the laboratory is conducted on a disturbed sample, therefore is only a representation of the macro-structures that may be present in the field, which provide an indication of the soil physical characteristics and behaviours that may exist.

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89

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

Batch N°: 61964 **Sample N°: 1** **Date Instructions Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-01 A**
Description: **Soil**
Test Type: **FSC_Plus, MWSS**

Analysis	Unit	Guideline values	Results
Total Microorganisms	mg/kg	50	52.4
Total Bacteria	mg/kg	15	12.4
Total Fungi	mg/kg	33.8	37.8
Bacteria	-		
Pseudomonas	mg/kg	1	1.219
Actinomycetes	mg/kg	1	2.117
Gram positive	mg/kg	4	6.999
Gram negative	mg/kg	11	5.407
Methane oxidisers	mg/kg	0.5	0.000
Sulphur reducers	mg/kg	<0.005	0.000
True anaerobes	mg/kg	<0.005	1.257
Eukaryotes			
Protozoa	mg/kg	1.25	2.232
Mycorrhizal fungi	mg/kg	10	14.498
Microbial diversity	-	80	37.1
Fungi: bacteria ratio	-	2.3	3.0

Consultant:
Peter Somerville

Authorised Signatory:
Simon Leake

Date Report Generated
16/02/2022

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Environment & Soil Sciences

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
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Mailing Address: PO Box 357
Pennant Hills NSW 1715
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Web: www.sesl.com.au

Batch N°: 61964 **Sample N°: 3** **Date Instructions Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-02 A**
Description: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

Analysis	Unit	Guideline values	Results
Total Microorganisms	mg/kg	50	73.1
Total Bacteria	mg/kg	15	15.5
Total Fungi	mg/kg	33.8	53.0
Bacteria	-		
Pseudomonas	mg/kg	1	1.531
Actinomycetes	mg/kg	1	2.102
Gram positive	mg/kg	4	7.640
Gram negative	mg/kg	11	7.823
Methane oxidisers	mg/kg	0.5	0.000
Sulphur reducers	mg/kg	<0.005	0.000
True anaerobes	mg/kg	<0.005	2.016
Eukaryotes			
Protozoa	mg/kg	1.25	4.614
Mycorrhizal fungi	mg/kg	10	21.147
Microbial diversity	-	80	33.4
Fungi: bacteria ratio	-	2.3	3.4

Consultant:
Peter Somerville

Authorised Signatory:
Simon Leake

Date Report Generated
16/02/2022

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Environment & Soil Sciences

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
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Mailing Address: PO Box 357
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Batch N°: 61964 **Sample N°: 5** **Date Instructions Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-03 A**
Description: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

Analysis	Unit	Guideline values	Results
Total Microorganisms	mg/kg	50	46.0
Total Bacteria	mg/kg	15	8.5
Total Fungi	mg/kg	33.8	35.7
Bacteria	-		
Pseudomonas	mg/kg	1	1.117
Actinomycetes	mg/kg	1	1.080
Gram positive	mg/kg	4	4.504
Gram negative	mg/kg	11	4.026
Methane oxidisers	mg/kg	0.5	0.000
Sulphur reducers	mg/kg	<0.005	0.000
True anaerobes	mg/kg	<0.005	0.297
Eukaryotes			
Protozoa	mg/kg	1.25	1.759
Mycorrhizal fungi	mg/kg	10	9.040
Microbial diversity	-	80	35.6
Fungi: bacteria ratio	-	2.3	4.2

Consultant:
Peter Somerville

Authorised Signatory:
Simon Leake

Date Report Generated
16/02/2022

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
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Batch N°: 61964 **Sample N°: 6** **Date Instructions Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-04 A**
Description: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

Analysis	Unit	Guideline values	Results
Total Microorganisms	mg/kg	50	40.3
Total Bacteria	mg/kg	15	6.8
Total Fungi	mg/kg	33.8	30.8
Bacteria	-		
Pseudomonas	mg/kg	1	0.794
Actinomycetes	mg/kg	1	0.882
Gram positive	mg/kg	4	3.391
Gram negative	mg/kg	11	3.424
Methane oxidisers	mg/kg	0.5	0.000
Sulphur reducers	mg/kg	<0.005	0.000
True anaerobes	mg/kg	<0.005	0.171
Eukaryotes			
Protozoa	mg/kg	1.25	2.698
Mycorrhizal fungi	mg/kg	10	13.543
Microbial diversity	-	80	33.9
Fungi: bacteria ratio	-	2.3	4.5

Consultant:
Peter Somerville

Authorised Signatory:
Simon Leake

Date Report Generated
16/02/2022

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Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
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Web: www.sesl.com.au

Batch N°: 61964 **Sample N°: 7** **Date Instructions Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-05 A**
Description: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

Analysis	Unit	Guideline values	Results
Total Microorganisms	mg/kg	50	64.2
Total Bacteria	mg/kg	15	15.0
Total Fungi	mg/kg	33.8	45.8
Bacteria	-		
Pseudomonas	mg/kg	1	1.646
Actinomycetes	mg/kg	1	2.646
Gram positive	mg/kg	4	8.968
Gram negative	mg/kg	11	6.012
Methane oxidisers	mg/kg	0.5	0.000
Sulphur reducers	mg/kg	<0.005	0.000
True anaerobes	mg/kg	<0.005	0.480
Eukaryotes			
Protozoa	mg/kg	1.25	3.382
Mycorrhizal fungi	mg/kg	10	14.039
Microbial diversity	-	80	41.1
Fungi: bacteria ratio	-	2.3	3.1

Consultant:
Peter Somerville

Authorised Signatory:
Simon Leake

Date Report Generated
16/02/2022

SESL AUSTRALIA
Environment & Soil Sciences

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
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Batch N°: 61964 **Sample N°: 8** **Date Instructions Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-06 A**
Description: **Soil**
Test Type: **FSC_Plus, MWSS**

Analysis	Unit	Guideline values	Results
Total Microorganisms	mg/kg	50	65.7
Total Bacteria	mg/kg	15	11.2
Total Fungi	mg/kg	33.8	51.1
Bacteria	-		
Pseudomonas	mg/kg	1	1.874
Actinomycetes	mg/kg	1	1.343
Gram positive	mg/kg	4	5.569
Gram negative	mg/kg	11	5.614
Methane oxidisers	mg/kg	0.5	0.000
Sulphur reducers	mg/kg	<0.005	0.000
True anaerobes	mg/kg	<0.005	0.809
Eukaryotes			
Protozoa	mg/kg	1.25	3.468
Mycorrhizal fungi	mg/kg	10	17.154
Microbial diversity	-	80	32.2
Fungi: bacteria ratio	-	2.3	4.6

Consultant:
Peter Somerville

Authorised Signatory:
Simon Leake

Date Report Generated
16/02/2022

Soil Hazard Categerisation & Management 2021

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
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Mailing Address: PO Box 357
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Batch N°: 61964 **Sample N°: 3** **Date Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Job N°:
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-02 A**
Sample Type: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

REPORT SUMMARY

Material Type: ◉ **Soil** ○ **Other**

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a soil hazard categorisation for waste management, based on the Vic EPA 1828.2 Waste disposal categories - characteristics and thresholds (March 2021). Comparison of the laboratory analysis results with the criteria indicates the material is considered to be within the **Category D** classification and as a result of this process, it can be managed in accordance with the Environmental Protection 1828.2 Regulation 2013.

pH (in H_2O): 6.8

CONTAMINANT		TC: (mg/kg)	ASLP: (mg/L)	CATEGORY
INORGANIC SPECIES				
Arsenic	(As)	6	-	Fill Material
Cadmium	(Cd)	<1	-	Fill Material
Chromium VI	(CrVI)	<0.5	-	Fill Material
Copper	(Cu)	52	-	Fill Material
Lead	(Pb)	173	-	Fill Material
Mercury	(Hg)	<0.1	-	Fill Material
Molybdenum	(Mo)	<2	-	Fill Material
Nickel	(Ni)	46	-	Fill Material
Tin	(Sn)	<5	N/A	Fill Material
Selenium	(Se)	<5	-	Fill Material
Silver	(Ag)	<2	-	Fill Material
Zinc	(Zn)	223	-	Needs ASLP
ANIONS				
Cyanide	(CN)	1	-	Fill Material
Fluoride	(F)	220	-	Fill Material
ORGANIC SPECIES				
Phenols (halogenated)		<0.03	-	Fill Material
Phenols (non-halogenated)		<1	-	Fill Material
Monocyclic aromatic hydrocarbons		<0.2	N/A	Fill Material
Benzene		<0.2	-	Fill Material
Polycyclic aromatic hydrocarbons		30.2	N/A	Category D
Benzo(a)pyrene		3.3	-	Needs ASLP
C6 - C9 petroleum hydrocarbons		<10	N/A	Fill Material
C10 - C36 petroleum hydrocarbons		380	N/A	Fill Material
Polychlorinated biphenyls		<0.1	N/A	Fill Material
Chlorinated hydrocarbons		<0.5	N/A	Fill Material
PESTICIDES				
Organochlorine pesticides		<0.05	N/A	Fill Material

Soil Hazard Categerisation & Management

Sample Drop Off: 16 Chilvers Road
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Batch N°: 61964	**Sample N°: 3**	**Date Received: 22/12/21**	**Report Status:**	**Draft**

Client Name:	**SESL Consult - VIC**	Project Name:	**Bunbury Street Soil Assesment**
Client Contact:	**Peter Somerville**		
Client Job N°:		SESL Quote N°:	**Q 12757**
Client Order N°:		Sample Name:	**S-02 A**
Address:	**16 Chilvers Road** **Thornleigh NSW 2120**	Sample Type:	**Soil**
		Test Type:	**FSC_Plus, MWSS, VIC_IWRG621-Std**

DETAILED SUMMARY

Soil Hazard Categerisation and Management publication IWRG621 (VIC EPA June, 2009)

Abbreviations: ND - Not Determined (Analyte not tested)
TC - Total Concentration
ASLP - Australian Standard Leaching Procedure

Consultant:

Peter Somerville

Authorised Signatory:

Simon Leake

All analyses performed by a NATA accredited sub-contracting laboratory.

TEST_CALC 1

Soil Hazard Categerisation & Management 2021

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
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Batch N°: 61964 **Sample N°: 5** **Date Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Job N°:
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-03 A**
Sample Type: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

REPORT SUMMARY

Material Type: ◉ **Soil** ○ **Other**

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a soil hazard categorisation for waste management, based on the Vic EPA 1828.2 Waste disposal categories - characteristics and thresholds (March 2021). Comparison of the laboratory analysis results with the criteria indicates the material is considered to be within the **Fill Material** classification and as a result of this process, it can be managed in accordance with the Environmental Protection 1828.2 Regulation 2013.

pH (in H_2O): 7.7

CONTAMINANT		TC: (mg/kg)	ASLP: (mg/L)	CATEGORY
INORGANIC SPECIES				
Arsenic	(As)	9	-	Fill Material
Cadmium	(Cd)	<1	-	Fill Material
Chromium VI	(CrVI)	<0.5	-	Fill Material
Copper	(Cu)	17	-	Fill Material
Lead	(Pb)	31	-	Fill Material
Mercury	(Hg)	<0.1	-	Fill Material
Molybdenum	(Mo)	<2	-	Fill Material
Nickel	(Ni)	38	-	Fill Material
Tin	(Sn)	<5	N/A	Fill Material
Selenium	(Se)	<5	-	Fill Material
Silver	(Ag)	<2	-	Fill Material
Zinc	(Zn)	56	-	Fill Material
ANIONS				
Cyanide	(CN)	1	-	Fill Material
Fluoride	(F)	300	-	Fill Material
ORGANIC SPECIES				
Phenols (halogenated)		<0.03	-	Fill Material
Phenols (non-halogenated)		<1	-	Fill Material
Monocyclic aromatic hydrocarbons		<0.2	N/A	Fill Material
Benzene		<0.2	-	Fill Material
Polycyclic aromatic hydrocarbons		<1	N/A	Fill Material
Benzo(a)pyrene		<0.5	-	Fill Material
C6 - C9 petroleum hydrocarbons		<10	N/A	Fill Material
C10 - C36 petroleum hydrocarbons		<100	N/A	Fill Material
Polychlorinated biphenyls		<0.1	N/A	Fill Material
Chlorinated hydrocarbons		<0.5	N/A	Fill Material
PESTICIDES				
Organochlorine pesticides		<0.05	N/A	Fill Material

Soil Hazard Categerisation & Management

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Batch N°: 61964	**Sample N°: 5**	**Date Received: 22/12/21**	**Report Status:**	**Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Job N°:
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-03 A**
Sample Type: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

DETAILED SUMMARY

Soil Hazard Categerisation and Management publication IWRG621 (VIC EPA June, 2009)

Abbreviations: ND - Not Determined (Analyte not tested)
TC - Total Concentration
ASLP - Australian Standard Leaching Procedure

Consultant:

Peter Somerville

Authorised Signatory:

Simon Leake

All analyses performed by a NATA accredited sub-contracting laboratory.

TEST_CALC 1

Soil Hazard Categerisation & Management 2021

SESL AUSTRALIA
Environment & Soil Sciences

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
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Batch N°: 61964 **Sample N°: 6** **Date Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Job N°:
Client Order N°:
Address: **16 Chilvers Road**
Thornleigh NSW 2120

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-04 A**
Sample Type: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a soil hazard categorisation for waste management, based on the Vic EPA 1828.2 Waste disposal categories - characteristics and thresholds (March 2021). Comparison of the laboratory analysis results with the criteria indicates the material is considered to be within the **Fill Material** classification and as a result of this process, it can be managed in accordance with the Environmental Protection 1828.2 Regulation 2013.

pH (in H_2O): 6.8

CONTAMINANT		TC: (mg/kg)	ASLP: (mg/L)	CATEGORY
INORGANIC SPECIES				
Arsenic	(As)	<5	-	Fill Material
Cadmium	(Cd)	<1	-	Fill Material
Chromium VI	(CrVI)	<0.5	-	Fill Material
Copper	(Cu)	6	-	Fill Material
Lead	(Pb)	17	-	Fill Material
Mercury	(Hg)	<0.1	-	Fill Material
Molybdenum	(Mo)	<2	-	Fill Material
Nickel	(Ni)	6	-	Fill Material
Tin	(Sn)	<5	N/A	Fill Material
Selenium	(Se)	<5	-	Fill Material
Silver	(Ag)	<2	-	Fill Material
Zinc	(Zn)	39	-	Fill Material
ANIONS				
Cyanide	(CN)	1	-	Fill Material
Fluoride	(F)	160	-	Fill Material
ORGANIC SPECIES				
Phenols (halogenated)		<0.03	-	Fill Material
Phenols (non-halogenated)		<1	-	Fill Material
Monocyclic aromatic hydrocarbons		<0.2	N/A	Fill Material
Benzene		<0.2	-	Fill Material
Polycyclic aromatic hydrocarbons		<1	N/A	Fill Material
Benzo(a)pyrene		<0.5	-	Fill Material
C6 - C9 petroleum hydrocarbons		<10	N/A	Fill Material
C10 - C36 petroleum hydrocarbons		<100	N/A	Fill Material
Polychlorinated biphenyls		<0.1	N/A	Fill Material
Chlorinated hydrocarbons		<0.5	N/A	Fill Material
PESTICIDES				
Organochlorine pesticides		<0.05	N/A	Fill Material

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Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-04 A**
Sample Type: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

DETAILED SUMMARY

Soil Hazard Categerisation and Management publication IWRG621 (VIC EPA June, 2009)

Abbreviations: ND - Not Determined (Analyte not tested)
TC - Total Concentration
ASLP - Australian Standard Leaching Procedure

Consultant:

Peter Somerville

Authorised Signatory:

Simon Leake

All analyses performed by a NATA accredited sub-contracting laboratory.

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Batch N°: 61964 **Sample N°: 7** **Date Received: 22/12/21** **Report Status: Draft**

Client Name: **SESL Consult - VIC**
Client Contact: **Peter Somerville**
Client Job N°:
Client Order N°:
Address: **16 Chilvers Road Thornleigh NSW 2120**

Project Name: **Bunbury Street Soil Assesment**
SESL Quote N°: **Q 12757**
Sample Name: **S-05 A**
Sample Type: **Soil**
Test Type: **FSC_Plus, MWSS, VIC_IWRG621-Std**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a soil hazard categorisation for waste management, based on the Vic EPA 1828.2 Waste disposal categories - characteristics and thresholds (March 2021). Comparison of the laboratory analysis results with the criteria indicates the material is considered to be within the **Category D** classification and as a result of this process, it can be managed in accordance with the Environmental Protection 1828.2 Regulation 2013.

pH (in H_2O): 7.6

CONTAMINANT		TC: (mg/kg)	ASLP: (mg/L)	CATEGORY
INORGANIC SPECIES				
Arsenic	(As)	6	-	Fill Material
Cadmium	(Cd)	<1	-	Fill Material
Chromium VI	(CrVI)	<0.5	-	Fill Material
Copper	(Cu)	40	-	Fill Material
Lead	(Pb)	167	-	Fill Material
Mercury	(Hg)	<0.1	-	Fill Material
Molybdenum	(Mo)	<2	-	Fill Material
Nickel	(Ni)	47	-	Fill Material
Tin	(Sn)	15	N/A	Fill Material
Selenium	(Se)	<5	-	Fill Material
Silver	(Ag)	<2	-	Fill Material
Zinc	(Zn)	205	-	Needs ASLP
ANIONS				
Cyanide	(CN)	1	-	Fill Material
Fluoride	(F)	200	-	Fill Material
ORGANIC SPECIES				
Phenols (halogenated)		<0.03	-	Fill Material
Phenols (non-halogenated)		<1	-	Fill Material
Monocyclic aromatic hydrocarbons		<0.2	N/A	Fill Material
Benzene		<0.2	-	Fill Material
Polycyclic aromatic hydrocarbons		<1	N/A	Fill Material
Benzo(a)pyrene		<0.5	-	Fill Material
C6 - C9 petroleum hydrocarbons		<10	N/A	Fill Material
C10 - C36 petroleum hydrocarbons		<100	N/A	Fill Material
Polychlorinated biphenyls		<0.1	N/A	Fill Material
Chlorinated hydrocarbons		<0.5	N/A	Fill Material
PESTICIDES				
Organochlorine pesticides		<0.05	N/A	Fill Material

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