SOIL	Description of Nutrient Test Methods	Turnaround (working days)	Amount of sample (kg or Litres)
*Aluminium Extractable	Based on Rayment & Lyons; 15G1 using ICP-07; extracted with 1:3 soil/1M potassium chloride solution for one hour. Extractable aluminium closely follows the pH of the soil and becomes a problem when the pH (water) is less than 5.5 (in soils which contain significant aluminium).	5	0.1
*Boron Extractable	Based on Rayment & Lyons; 12C2 extracted with 1:2 soil/0.01M calcium chloride solution, refluxed for 10 minutes. Measured on ICP by ICP-05. Rayment & Lyons; 12C1 extracted with 1:2 soil/0.01M calcium chloride solution, refluxed for 10 minutes. Measured manually on UV Vis PMS-14.	5	0.1
Calcium Carbonate %	Based on Rayment & Lyons 19A1	5	0.1
*Carbon Organic	Rayment & Lyons; 6B3; based on loss-on-ignition/combustion method. The carbon present in the soil is oxidised to carbon dioxide (CO2) by heating the soil to at least 900 °C in a flow of oxygen-containing gas that is free from carbon dioxide.	5	0.1
*Carbon Organic	Rayment & Lyons; 6A1 based on Walkley-Black Organic carbon is measured by digestion in strong acid/dichromate solution and the colour development assessed against standard sucrose.	5	0.1
*Carbon Total	Rayment & Lyons; 6B2b based on loss-on-ignition/combustion method. Carbon is the organic material in soil which improves moisture holding capacity, increases soil structural stability and protects soil from erosion.	5	0.1
Carbon/Nitrogen Ratio	Carbon to nitrogen Ratio, Carbon:nitrogen ratio is used when making compost from organic material.	5	0.2
*Cations Exchangeable (K, Ca, Mg, Na) & ECEC	Based on Rayment & Lyons; 15A1 and ICP-06. Of particular importance are the exchangeable cations (calcium, magnesium, sodium, potassium and aluminium) and the cation exchange capacity. 1M NH4Cl at pH 7.0 - Used for neutral soils pH (H2O) between 6.5 and 8. Here, cations Ca, Mg, Na and K are measured by ICP-OES	5	0.1
*Cations Soluble (Ca, Mg, Na) & SAR	Based on in house method ICP-11. Sodium absorption ratio (SAR) also can be used as indication of soil sodicity; it shows the relation between soluble sodium and soluble divalent cations which can be used to predict the exchangeable sodium fraction of soil equilibrated with a given solution.	5	0.1
*CEC Cation Exchange Capacity inc. ex Cations	Based on ECEC Rayment & Lyons; 15J1 (Extraction 15A1) using in house PMS-15A. ECEC the effective cation exchange capacity is a measure of the soils ability to hold cations. The sum of exchangeable bases plus total soil acidity at a specified pH value (usually 7 or 8). The unit is centimoles of charge per kilogram of exchanger (cmolc/kg). In surface soils the cation exchange capacity is a sociated with clay content, organic matter and type and retention of cations. The CEC is calculated by adding the 5 cations and as such is the EFFECTIVE CEC.	5	0.1
*CEC Cation Exchange Capacity with soluble salts, gypsum and lime wash inc. ex cations	Based on Rayment & Lyons; 15J1 (Rayment & Lyons extraction 15A2). Soluble salts must be removed from soils with EC 1:5 > 30 dS/m by washing with glycol-ethanol.	5	0.1
*Chloride soluble	Based on Rayment & Lyons; 5A1 using PMS-05. Extracted with 1:5 soil/water for one hour. Measured with ISE Probe.	5	0.1
*Chloride soluble via DA	Based on Rayment & Lyons; 5A1 using DAP-06. Extracted with 1:5 soil/water for one hour. Measured with Discrete Analyser	5	0.1
*Conductivity EC	Based on Rayment & Lyons; 3A1 using PMS-03. The electricity conductivity (EC) of the 1:5 soil/water suspension is measured and the results are expressed in decisiemens/metre (dS/m).	5	0.1
*Conductivity ECe inc. texture	By calculation using in house method PMS-32. The value for EC (1:5 soil/water) is converted to an estimated electrical conductivity of a saturation paste extract (ECe) by multiplying by a texture factor.	5	0.1
*ESP Exchangeable Sodium Percentage	Exchangeable Sodium Percentage (ESP) ESP is used to indicate if soils have sodic properties ie: the cation exchange complex is saturated with too much sodium. Sodic soils are often dispersive with poor structural characteristics.	5	0.1
Free Lime or Fizz Index	This method tests for the presence of carbonates in soil materials and is also may be known as the "fizz" test. The method is based on the reaction of HCl with soil carbonates and visual observation of gaseous loss of CO2 from the sample. Soils may be categorised as slightly reactive, moderately reactive or highly reactive. The method detection limit is approximately 0.2% CaCO3 equivalent (on a dry soil basis).	5	0.1
Heavy Metals	Total or dissolved arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium and zinc.	5	0.1

SOIL	Description of Nutrient Test Methods	Turnaround (working days)	Amount of sample (kg or Litres)
Lime Index – Available Lime	AS4489.6.1-1997 The available lime index of quicklime and hydrated lime designates those constituents that enter into the reaction under the conditions of this specified test method, otherwise known as the "rapid sugar test method".	5	0.1
*Moisture	Using classical techniques AS1289.2.1.1 and in house PMS-17. Calculation and reporting of results of is done on basis of "oven-dry" soil.	5	0.1
Nitrogen Drawdown Index,	Is a method for determining the Nitrogen Drawdown index (NDI) from the rate at which a potting mix or landscaping soil uses (draws down) soluble nitrogen according to Australian Standards 3743, 4419 and 4454.	5	0.5
*Nitrogen Total	Based on Rayment & Lyons; 7A1 total nitrogen is measured by Kjeldahl digestion of soil (copper sulphate-potassium sulphate catalyst). Provides a good estimate of total soil N in soils with little NO3: otherwise slightly lower apparent total soil N concentrations are likely.	5	0.1
*Nitrogen Total	Based on Rayment & Lyons; 7A5. LECO/dumas. The nitrogen content is determined by heating to 900 °C in the presence of oxygen gas. Mineral and organic nitrogen compounds are oxidised and/or volatilised. The combustion products are oxides of nitrogen (NOx) and molecular nitrogen (N2). After transforming all nitrogen forms into N2, the content of total N is measured using thermal conductivity.	5	0.1
*Nitrogen-Ammonium Extractable	Based on and in-house method PMS-22; using 1:10 ratio 2MKCL extraction.	5	0.1
*Nitrogen-Nitrate Extractable	Based on UV-Vis using in house method PMS-08. This method uses the same 1:5 soil/water suspension described for method 3A1. The filtered or centrifuged aliquot is subjected to automated colorimetric analysis.	5	0.1
*Nitrogen-Nitrate	Based on Rayment & Lyons method 3A1. Extracted with 1:5 soil/water for 1 hour. Measured with Discrete Analyser (DA)	5	0.1
*pH (CaCl2) 1:5	Based on Rayment & Lyons; 4B2 and PMS-0402; pH (calcium chloride) is measured in a 1:5 soil/0.01M calcium chloride suspension. pH (calcium chloride) is normally 0.5 - 1.2 units lower than pH (water)	5	0.1
*pH (H2O) 1:5	Based on Rayment & Lyons; 4A1 and PMS-0401; pH(water) is measured on a solution of 1 part soil to 5 parts water. Soil pH is a measure of soil acidity. Most crops grow best if the soil pH is between 6.0 and 7.5.	5	0.1
*Phosphorus Bray No.1	Based on Rayment & Lyons; 9E1 Bray No.1 Extractable Phosphorus using in house method PMS-11. The Bray test tends to be more suitable for the North Coast's acid soils.	5	0.1
Phosphorus BSES	Based on Rayment & Lyons; 9G1 Acid Extractable Phosphorus. The Bureau of Sugar Experiment Stations (BSES) phosphorous (P) tests have been increasingly adopted in the broad acre cropping section, and used in conjunction with Colwell P and Phosphate Buffering Index (PBI), to describe soil P status across the region.	5	0.1
*Phosphorus Buffer Index	Based on Rayment & Lyons; 9I2A Phosphorus Buffer Index by UV-Vis using PMS-12. This test is a measure of the soil's ability to tie up phosphorus. PBI can assist in determining fertiliser requirements.	5	0.1
*Phosphorus Colwell	Based on Rayment & Lyons; 9B1 Colwell Extractable phosphorus using PMS-10. A 1:100 soil/0.5M sodium bicarbonate extract is shaken for 16 hours and the phosphorus concentration determined by colourimetry.	5	0.1
*Phosphorus Sorption Capacity	Based on Rayment & Lyons; 9I2A Phosphorus Sorption Capacity. Measures soil's ability to tie up phos and determine fertiliser requirements.	5	0.1
*Phosphorus Total	Based on Isaac and Johnson Digest, measured on ICP-OES using in-house method ICP-03.	5	0.1
Potassium Colwell Available	Based on Rayment & Lyons 18A1; A 1:100 soil/0.5M sodium bicarbonate extract is shaken 16 hours & potassium is measured by ICP-OES.	7	0.1
*Sulphur extractable KCI-40	Based on Rayment & Lyons 10D1 and in-house method ICP-04 or in-house UV-Vis PMS-13. Soil sulphur is extracted with 0.25M potassium chloride heated at 40oC for 3 hours. The concentration is determined using an ICP spectrometer.	7	0.2
Trace (Cu, Fe, Mn and Zn) EDTA	Extracted with 1:5 soil/0.02M EDTA (pH 4.9) one hour. Analytes are determined by ICP. Measures plant-available forms of these elements.	7	0.2
*Trace (Cu, Fe, Mn and Zn) DPTA	Based on Rayment & Lyons 12A1 using ICP-08. Extracted using a 0.005 M DTPA, 0.01 M CaCl2 and 0.10 M triethanolamine solution. The analytes are determined by ICP.	7	0.2



SOIL	Description of Physical Test Methods	Turnaround (working days)	Amount of sample (kg or Litres)
Angle of Repose	Assess the ability of a material to be retained on a slope. The size of the sample required depends on the average aggregate size of the material. Maximum size is 200mm aggregates.	5	1-40
Coefficient of Uniformity	Calculation to assess particle uniformity from PSA.	5	0.5
Colour Munsell	Identifies soil colour on the Munsell charts	5	0.1
Density Bulk Re-compacted	USGA Re-compaction method used. The mass of dry soil per unit volume of soil with units of g/cm3, mg/m3 or t/m3. The bulk volume is determined before drying to constant weight at 105°C. ASTMF 1815-97	7	1.0
Density Bulk Fixed Volume	Fixed volume method used. The mass of dry soil per unit volume of soil with units of g/cm3, mg/m3 or t/m3. The bulk volume is determined before drying to constant weight at 105°C.Intact core method 503.01	7	1.0
Density Bulk Clod	Clod Method used. The mass of dry soil per unit volume of soil with units of g/cm3, mg/m3 or t/m3. The bulk volume is determined before drying to constant weight at 105°C.	7	Clods
Density Particle	A\$1289.3.5.1	5	0.5
Dispersion index	This test observes the dispersion potential of soils on wetting and remoulding – NSW soil pack.	5	0.1
Dispersion Percentage	This test measures the percentage at which a soil will disperse. Craze &Hamilton AS1289.c8.2	7	0.5
*EAT	Emerson Aggregate Test is a measure of the stability of a soil aggregate through assessing its slaking and dispersion potential. AS1289.3.8.1	5	0.1
EAT Adjusted SAR 5	Emerson Aggregate Test with dispersion conducted in SAR 5 to assess the soils slaking and dispersion properties when exposed to effluent waters. AS1289.3.8.1	5	0.1
*Linear Shrinkage	AS 1289.3.4.1 Determination of the linear shrinkage of a disturbed sample.	7	0.5
Porosity	Total, air-filled & capillary porosity. ASTMF 1815-97 at 30cm tension.	7	0.5
PSA Particle Size Analysis Hydrometer	Australian Standard for Agricultural Soils. Determinations of the distribution of particles in soil i.e. gravel, sands, silts and clay.	4	60g clay 130g sand
PSA Particle Size Analysis Hydrometer	USGA Method ASTMD422-63 Determination of the distribution of particles in soil i.e. gravel, sands, silts and clay.	4	60g clay 130g sand
*PSA Particle Size Analysis Sieves only	Australian Standard 1141-12 Determination of the distribution of particles in soil i.e. gravel, sands, silts and clay.	3	130g sand only
Particle Size Distribution Hydrometer	Australian Standard AS1289.3.6.2 Determination of the distribution of particles in soil i.e. gravel, sands, silts and clay.	5	55g clay
Saturated Hydraulic Conductivity	ASTM F 1815-97 Rate in mm/hr at 30cm tension that water passes through the saturated soil sample.	2	0.4
Soil Moisture Curve	Five point soil moisture retention curve necessary for providing input data to numerical modelling required in any assessment of the suitability of soils for phytocapping landfills. ASTM Designation: D 5084 – 00e1.	15	2-4
*Texture	Soil texture is not readily subject to change, so it is considered a basic property of a soil. Soil texture refers to the size (diameter) of individual soil particles. McDonald et al.	5	0.1
Total Water Holding Capacity	Determination of total water holding capacity under conditions resembling a home or nursery growing environment according to Australian Standard 3743.	5	1.0
Toxicity	Determines whether the potting mix, landscaping soil or soil conditioner is sufficiently toxic to inhibit the growth of roots according to Australian Standards 3743, 4419 and 4454.	10	1.0
Wettability	Determination of the wettability of potting mix, soil or soil conditioners according to AS 3743, 4419 and 4454.	5	1.0
Water retention	Measures the capacity for a soil to store the maximum amount of water. ASTMF 1815-97	7	0.2



SOIL	Description of Testing Suites	Turnaround (working days)	Amount of sample (kg or Litres)
AS4419 Soil Landscaping	pH(H <sub>2</sub> O), EC, NH4, Bulk Density, Organic Matter, Soluble PO4, texture, CEC, Fe, Cl, Wettability, NDI, Toxicity, Dispersibility, Permeability, Large particles, Heavy Metals(As, Cd, Cr, Cu, Ni, Hg, Pb, Se, Zn) and Residues (organo-chlorines & PCB), TRH, BTEX and total phenol.	10	6
AS3743 Potting Mixes	Air filled porosity, total water holding capacity, Wettability, pH, EC, Cl, ammonium-N, ammonium+nitrate-N, Nitrogen drawdown index, toxicity, soluble P, K, Ca, Mg, Na, K/Mg ratio, Ca/Mg ratio, S, Fe, Cu, Zn, Mn & B. Heavy Metals(As, Cd, Cr, Cu, Ni, Hg, Pb, Se, Zn) and Residues (organo-chlorines & PCB)	10	6
AS4454 Composts Mulches and Soil Conditioners	pH(H <sub>2</sub> O), EC, NH <sub>4</sub> , NO <sub>3</sub> , Total N, Bulk Density, Organic Matter/Carbon, C/N ratio, Soluble PO <sub>4</sub> , Total P, B, Na %, Na, Ca, Mg, K CEC, DTPA Trace Cu, Zn, Mn, Fe & B, Wettability, Toxicity, NDI, Permeability, Particle Size Grading, Moisture Content, Visual Contaminants, Heavy Metals(As, Cd, Cr, Cu, Ni, Hg, Pb, Se, Zn) and Residues (organo-chlorines & PCB)	10	6
Carbon Monitoring Suite	Total Carbon, Organic Carbon, Bulk Density, Texture, Moisture.	10	2
A2	Chloride, pH (H <sub>2</sub> O & CaCl <sub>2</sub> ), EC, Total N and Nitrate-N, Colwell P and K, Phosphorous Buffer Index (PBI), KCI-40 Available S, Ex Cations {K, Ca, Mg, Na & Al} ECEC, ESP, Ca/Mg, K/Mg, Organic Carbon	10	1
A3.2	pH (H2O & CaCl2), Conductivity, Available Phosphorus, Total Nitrogen, Organic Carbon, Ex Cations {K, Ca, Mg, Na & Al}, ECEC, ESP, Total Cations {K, Ca, Mg, Na}	10	0.5
A3.9	pH (H2O & CaCl2), Conductivity, Total and available phosphorous, Total Nitrogen, NH4, NH3, NO2, & NO3, 9 Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, SE, Zn), Organo-chlorines & PCB's	10	1
Soil Test Sports Field	pH(H <sub>2</sub> O), EC, PSA Hydrometer, Porosity, Water Retention, Bulk Density USGA, Permeability (SHC), Particle Size Grading and Moisture Content,	7	1
S1	Full Test- E.C., pH(CaCl <sub>2</sub> ), NO <sub>3</sub> -N, P, PBI, S, O, Carbon, Cu, Zn Mn, Fe, {K, Ca, Mg & Na} in ppm, Meq/100g & %, C. E. C. & Ca/Mg ratio.	7	0.2
S2	NPS Macro- E. C., pH(CaCl <sub>2</sub> ), NO <sub>3</sub> -N, P, S {K, Ca, Mg & Na} in ppm, Meq/100g & %, C.E.C & Ca/Mg ratio.	7	0.2
S3	NPS Trace- E.C., pH(CaCl <sub>2</sub> ), NO <sub>3</sub> -N, P, S, Cu, Zn, Mn & Fe.	7	0.2
S4	NPSK- E.C., pH(CaCl <sub>2</sub> ), NO <sub>3</sub> -N, P, S & K.	7	0.2
S5	Basic Test- E.g.: E.C., pH(CaCl <sub>2</sub> ), & NO <sub>3</sub> -N	7	0.2
VENM/ENM	VENM/ENM validation. Complete analysis and report certificate.	10	6
Wastewater Application	Modified wastewater: soil analysis for a single lot.	10	2
Wastewater Application	Modified wastewater: soil analysis for a subdivision.	10	3
Wastewater Application	Report for engineers on modified wastewater: soil analysis for a single lot or subdivision.	10	-
Heavy Metals	Total or dissolved arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium and zinc.	5	0.1

GEOTECHNICAL	Description of Engineering Test Methods
*Sampling	Soil, Aggregates & Concrete AS 1141.3.1 Methods for sampling and testing aggregates - Sampling – Aggregates; RMS (NSW) Method T100 Sampling from a truck, stockpile. AS 1289.1.2.1 Methods of testing soils for engineering purposes - Sampling and preparation of soils - Disturbed samples - Standard method; RMS (NSW) Method T100 Disturbed sampling from a stockpile. AS 1012.1 Methods of testing concrete - Sampling of concrete. RMS (NSW) Method T300 Fresh Concrete.
*Bulk Density Aggregate	Uncompacted and compacted bulk density AS 1141.4 Methods for sampling and testing aggregates - Bulk density of aggregate.
*Sieving Aggregate (PSD)	Particle Size Distribution AS 1141.11.1 Methods for sampling and testing aggregates - Particle size distribution - Sieving method. RMS (NSW) T201.
*Sieving Aggregate(<75μm)	Material <75µm. AS 1141.12 Methods for sampling and testing aggregates - Materials finer than 75 um in aggregates (by washing). RMS (NSW) T203.
*Average Least Dimension Aggregate	AS 1141.20.1 Methods for sampling and testing aggregates - Average least dimension - Direct measurement (nominal size 10 mm and greater). Methods for sampling and testing aggregates - Average least dimension - Direct measurement (nominal sizes 5 mm and 7 mm). RMS (NSW) Methods T235, T275 average least dimension; crushed faces.
*Wet/Dry Strength Variation Aggregate	AS 1141.22 Methods for sampling and testing aggregates - Wet/dry strength variation. RMS (NSW) Method T215 Aggregate crushing value; wet/dry strength variation.
*Weak Particles Aggregate	AS 1141.32 Methods for sampling and testing aggregates – Weak particles (including clay lumps, soft and friable particles) in coarse aggregates.
Organic Impurities Aggregate	AS 1141.34Methods for sampling and testing aggregates – Organic impurities other than sugar
*Maximum Dry Compressive	RMS (NSW) T114.
Strength Aggregate	
*Fractured Faces Aggregate	RMS (NSW) Methods T239; crushed faces.
*Particle Shape Aggregate	AS 1141.14 Methods for sampling and testing aggregates - Particle shape, by proportional calliper. RMS (NSW) Methods T213. Proportional calliper.
*Foreign Materials Content Aggregate	Recycled Aggregates RMS (NSW) Method T276 Foreign material in Crushed Concrete.
*Particle Density and Water Adsorption Aggregate	Fine Materials AS 1141.5 Methods for sampling and testing aggregates - Particle density and water absorption of fine aggregate. Coarse Materials AS1141.6.1
Point Load Aggregate	RMS (NSW) Methods T223
*Aggregate Crushing Value Aggregate	AS 1141.21 Methods for sampling and testing aggregates - Aggregate crushing value. RMS (NSW) Method T215 Aggregate crushing value.
External tests Aggregate	LA Value, Flakiness, Triaxial, Acid Sulphate, Electrical Resistance, Sodium Sulphate & Resistance to Wear by Wet Attrition
*Soil Moisture Content	Oven Dry AS 1289.2.1.1 Methods of testing soils for engineering purposes - Soil moisture content tests - Determination of the moisture content of a soil - Oven drying method (standard method). RMS (NSW) T120.
*Plasticity Index (1 point)	AS 1289.3.2.1 Methods of testing soils for engineering purposes - Soil classification tests - Determination of the plastic limit of a soil - Standard method. AS 1289.3.3.1 Methods of testing soils for engineering purposes - Soil classification tests - Calculation of the plasticity index of a soil. AS 1289.3.1.2 Methods of testing soils for engineering purposes - Soil classification tests - Calculation of the plasticity index of a soil. AS 1289.3.1.2 Methods of testing soils for engineering purposes - Soil classification tests - Calculation of the plasticity index of a soil. AS 1289.3.1.2 Methods of testing soils for engineering purposes - Soil classification tests - Determination of the liquid limit of a soil - One point Casagrande method (subsidiary method)
*Plasticity Index (4 point)	AS 1289.3.2.1 Methods of testing soils for engineering purposes - Soil classification tests - Determination of the plastic limit of a soil - Standard method. AS 1289.3.3.1 Methods of testing soils for engineering purposes - Soil classification tests - Calculation of the plasticity index of a soil. AS 1289.3.1.1 Methods of testing soils for engineering purposes - Determination of the liquid limit of a soil - Four point Casagrande method. RMS (NSW) T108, T109.
*Linear Shrinkage Soil	AS 1289.3.4.1 Methods of testing soils for engineering purposes - Soil classification tests - Determination of the linear shrinkage of a soil - Standard method. RMS (NSW) T113.
*Emerson Class Soil	AS 1289.3.8.1 Methods of testing soils for engineering purposes - Soil classification tests - Dispersion - Determination of Emerson class number of a soil.

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GEOTECHNICAL	Description of Engineering Test Methods
PH of a soil	RMS (NSW) Methods T123
*Shrink Swell Soil	AS 1289.7.1.1 Methods of testing soils for engineering purposes - Soil reactivity tests - Determination of the shrinkage index of a soil - Shrink-swell index.
*Standard Compaction - (Only)	AS 1289.5.1.1 Methods of testing soils for engineering purposes - Soil compaction and density tests - Determination of the dry density/moisture content
Soil	relation of a soil using standard compactive effort. RMS (NSW) Methods T111, T130 Standard compaction.
*Modified Compaction –	AS 1289.5.2.1 Methods of testing soils for engineering purposes – Soil compaction and density tests – Determination of the dry density/moisture content
(Only) Soil	relation of a soil using modified compactive effort. RMS (NSW) T112.
Max/Min Only	AS 1289.5.5.1 Methods of testing soils for engineering purposes – Soil compaction and density tests – Determination of the minimum and maximum dry
	density of a cohesionless material – Standard method
*California Bearing Ratio Soil	AS 1289.6.1.1 Methods of testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the California Bearing Ratio of a
	soil - Standard laboratory method for a remoulded specimen. RMS (NSW) Methods T117, T132 Bearing ratio (remoulded specimens).
*Dynamic Cone Penetrometer	AS 1289.6.3.2 Methods of testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil
(Aust Std)	- 9kg dynamic cone penetrometer test. RMS (NSW) 1161.
Composition Soil	RMS (NSW) 1102.
*Field Density by Nuc Gauge	AS 1299 5.7.1 Matheds of tasting soils for angineering purposes. Soil compaction and density tasts. Compaction control tast. Hilf density ratio and Hilf
with Std HILE	AS 1269.5.7.1 Methods of testing soils for engineering purposes - soil compaction and density tests - Compaction control test - Hin density faile and Hin mainture variation (rapid method) AS1200.5.8.1. Methods of testing soils for engineering purposes. Soil compaction and density test - determination of field
	density and field moisture content of a soil using a nuclear surface moisture – density cauge – direct transmission mode. AS1289.5.4.1. Methods of testing
	soils for engineering purposes. Soil compaction and density test – Compaction control test- Dry density ratio, moisture variation and moisture ratio
*by Nuc Gauge with Max/Min	AS 1289.5.4.1 Methods of testing soils for engineering purposes - Soil compaction and density tests - Compaction control test - Dry density ratio, moisture
	variation and moisture ratio. AS 1289.5.6.1 Methods of testing soils for engineering purposes - Soil compaction and density tests - Compaction control test -
	Density index method for a cohesionless material. ). AS1289.5.8.1. Methods of testing soils for engineering purposes. Soil compaction and density test –
	determination of field density and field moisture content of a soil using a nuclear surface moisture – density gauge – direct transmission mode,
*Field Density - by Nuc Gauge	AS 1289.5.7.1 Methods of testing soils for engineering purposes - Soil compaction and density tests - Compaction control test - Hilf density ratio and Hilf
with Mod HILF	moisture variation (rapid method). AS1289.5.8.1, Methods of testing soils for engineering purposes, Soil compaction and density test – determination of field
	density and field moisture content of a soil using a nuclear surface moisture – density gauge – direct transmission mode, AS1289.5.4.1, Methods of testing
	soils for engineering purposes, Soil compaction and density test - Compaction control test- Dry density ratio, moisture variation and moisture ratio
*Unconfined Compressive	RMS (NSW) Methods T131 Relative compaction; dry density ratio,; density index; compaction control- Hilf method; field density using a nuclear gauge.
Strength - RTA - Lab	
*Unconfined Compressive	RMS (NSW) Methods T116. Compressive strength tests (maximum, dry and unconfined).
Strength - RTA - Site	
Remoulded Permeability	AS 1289.6.7.1 Methods of testing soils for engineering purposes - Soil strength and consolidation tests - Determination of permeability of a soil- Constant
	head method for a remoulded specimen, AS 1289.6.7.2 Methods of testing soils for engineering purposes - Soil strength and consolidation tests -
	Determination of permeability of a soil - Falling head method for a remoulded specimen AS 1289.6.7.3
	Methods of testing soils for engineering purposes - Soil strength and consolidation tests - Determination of permeability of soil - Constant head method
	using a flexible wall permeameter
*Particle Size Distribution Soil (>75µm)	AS 1289.3.6.1 Methods of testing soils for engineering purposes - Soil classification tests - Determination of the particle size distribution of a soil - Standard method of analysis by sieving. RMS (NSW) T106.



GEOTECHNICAL	Description of Engineering Test Methods
Particle Size Distribution Soil	RMS (NSW) T107. Fine particle size distribution of road construction materials
Decant (<2.36mm)	
*Particle Size Distribution Soil	AS 1289.3.6.3 Methods of testing soils for engineering purposes - Soil classification tests - Determination of the particle size distribution of a soil - Standard
(<4.75mm)	method of fine analysis using a hydrometer.
External Subcontract	Soil Permeability AS1289.6.7.
*Concrete Crush Only	AS 1012.9 Methods of testing concrete - Compressive strength tests - Concrete, mortar and grout specimens. RMS (NSW) Methods T305, T306 Compressive
	strength. AS1012.8, methods of test concrete – method for making and curing concrete – compression and indirect tensile test specimens
*Concrete Slump Only	AS 1012.3.1 Methods of testing concrete - Determination of properties related to the consistency of concrete - Slump test. RMS (NSW) Method T301 Slump
	Test.
*Cast Cure & Crush	AS 1012.8.1 Methods of testing concrete - Method for making and curing concrete - Compression and indirect tensile test specimens. RMS (NSW) Method
	T304, Making and curing compression specimens. AS 1012.12.1 Methods of testing concrete - Determination of mass per unit volume of hardened concrete -
	Rapid measuring method. RMS (NSW) Method T316 Measurement method.
External Subcontract	Concrete Shrinkage and/or Flex
Site Classifications	Residential & Industrial
Field logs	Soil profiling, test pits, core/bore holes and other field observations including texture and colour.
Benkelman Beam	This test procedure covers the determination of the rebound deflection of a pavement under a standard wheel load and tyre pressure, with or without
	temperature measurements, RMS (NSW) T160.