ScapeSpec®

TP120

NORTH ISLAND

A treepit mix engineered for urban environments

Prepared September 2021
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TP120

NORTH ISLAND

A treepit mix engineered for urban environments

TP120 is an engineered soil that supports tree maturity in urban environments. It has been developed alongside industry experts to provide optimal moisture retention, nutrient preservation, and a particle structure that enables root growth and plant stabilisation in tree-pits. TP120 is blended from quality sands, premium Waikato topsoil and rich compost. It is designed to work alongside strata cell products and is a free-moving mix that has excellent workability.

Our Performance

TP120 is developed to be effective in high density urban environments. In-situ performance and laboratory testing validate the quality and beneficial soil traits of this specific blend in Tree-Pits. Project testimonials and test results are soon to be available on request.

All our engineered soils are prepared using quality control policies that drive consistency and accuracy.

Mulching

A layer of mulch is recommended for best tree establishment. Mulches such as pebbles, stone chip or recycled woodchip will reduce weed growth and help preserve soil moisture. ScapeSpec have a range of suitable products available for mulching tree-pits.

How to Use

For optimum installation please refer to specification details provided by the Landscape Architect or Engineer. Alternatively, visit Auckland Council – Tree-pits construction guide.

Important

To avoid saturation please cover onsite stock piles in wet weather prior to installation.

Product Specification

Saturated Hydraulic Conductivity (Ks)[1]	**< 300 mm/hr**
pH	**5.5 – 7.0**
Particle < 10 mm	**95 %**
Air Filled-Porosity[2]	**> 20 %**
Water Holding Capacity[2]	**> 50 %**
Dry Bulk Density[2]	**0.65 – 0.85 g/cm³**
Moisture Content	**30 – 50 %**
CEC	**8 me/100g**
Potassium[3]	**1.12 me/100g**
Calcium[3]	**5.2 me/100g**
Magnesium[3]	**1.21 me/100g**
Sodium[3]	**0.37 me/100g**
K/Mg Ratio	**0.9**
Potentially Available Nitrogen (15cm Depth)	**57 kg/ha**

Testing Standards

[1]ASTM F1815

[2]AS3743-2003

[3]To µg/mL:

For Potassium: K (me100g) x 391 x VW = K (µg/mL)

For Calcium: Ca (me/100g) x 200 x VW = Ca (µg/mL)

For Magnesium: Mg (me/100g) x 122 x VW = Mg (µg/mL)

For Sodium: Na (me/100g) x 230 x VW = Na (µg/mL)

Micrograms per millilitre (µg/mL) is the same as milligrams per litre (mg/L), or parts per million on a volume basis.

Optional add-on

TP120B

A custom tree-pit mix boost

This fertiliser can be incorporated into the mix prior to planting. It is designed to slowly release Nitrogen, provide Magnesium (which keeps leaves green), offer as much growth Potassium as required, control Sulphate Sulphur as the soil temperatures warm up and give a good dose of Phosphorus to help tree root establishment.

Installation Guidelines

Specific TP120 installation guidelines are based on laboratory and field testing for optimum media performance in line with international guidelines[1]. These guidelines demonstrate proven best practice.

TP120
(Bio Retention Media)

Please feel free to contact us around site specific installation, or with any further queries.

- Bio retention layer should be a minimum of 500 mm once compacted.
- 20% compaction to achieve the required Hydraulic Conductivity rate of > 20 mm/hr.
- Over compaction may result in a hydraulic conductivity value less than highest quality standards.
- Install in 300-400mm layers and wet to aid compaction.
- Volume compaction ratio 5:4 (i.e. 400mm loose compacts to 320mm)
- To protect the product against the effects of weather, saturation and contamination, onsite stockpiles should be limited. If heavy rain is expected, stockpiles shall be covered. Stockpiles need to be kept moist on the surface.
- Following installation sediment controls should be installed to avoid media contamination whilst still in construction.
- Ensure media layers are compatible and in line with architectural guidelines.
- To ensure there is not preferential flow, ensure edges are properly compacted using a hand tamper or other relative tool.

[1] SESL Australia Environment and Soil Sciences. Soil Specification – Backfill soil for tree .pit cell.

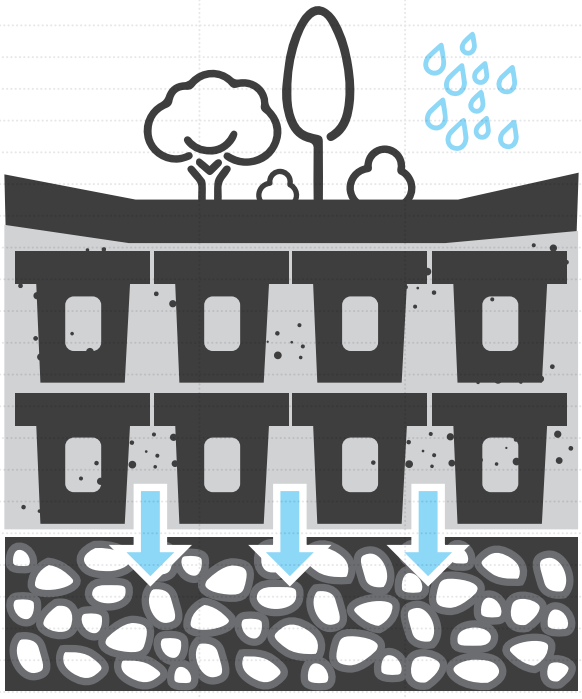
Media Layers:

Mulch
A larger particle size that ensures rapid permeability of water and air into the underlying soil. It protects the media surface from clogging during plant establishment and prevents weeds.

Strata Cell/Strata Vault
An ultra-high strength soil cell that can support maximum pedestrian and sidewalk traffic loads whist still allowing extensive tree-root systems.

TP120 (Bio Retention Media)
Engineered soil media with specific particle size distribution to manage the effects of stormwater run-off. The soil structure promotes tree growth, tree stability and has longevity for both open and enclosed tree-pits.

Drainage Layer
Aggregate layer connecting to the stormwater network or ground table, this layer allows the tree-pit to free drain and prevents media migrating



Product Related Projects

Project: Quay Street

Location: Auckland

Solution: TP120, RG240

Project Overview

Quay Street, in prime position on the edge of the Waitematā Harbour, has capitalised on its location creating an iconic spot that will define Auckland as much as the skyscrapers. A revitalised waterfront space, with wider footpaths, easier navigation, new street furniture, more trees, and greater opportunity for business and events. This transformation had people in mind, invigorating a city set to enjoy more parks, small green spaces, and outdoor areas in the coming years.

We needed to ensure we had selected not only the right product, but also the right team. The ScapeSpec team was critical in assisting us to deliver, no matter how demanding the timeframe.
RYAN MUIR , JFC

In 6 afternoons, we craned 260 one tonne bags of TP120 to fill podiums over Auckland's Waterfront. This engineered tree pit media was selected to support transplantation of large mature trees, a focal point of the project.

The media selection for the Quay St project was critical for the success of 50 new gardens and over 200 new native trees providing shade and shelter, reducing the urban head island effect. In addition, 19 rain gardens were installed in the project, using ScapeSpec RG240 media.
The rain gardens will naturally drain and filter pollutants from surface water during heavy rainfall, reducing pressure on storm drains and improving water quality.

Project: Silo Park - Wynyard Quarter

Location: Auckland

Solution: Organic-Lock, TP120

Project Overview

Silo Park has undergone recent revitalisation from old industrial land into an energetic public space in the heart of Auckland's waterfront. Incorporating old and new together, Silo Park maintains traces of it's cement depot history while integrating sitewide stormwater treatment and permeable natural zones throughout.

One of the key factors to the transformation of the area was the introduction of natural ground and splashes of native green. Organic-Lock blended Hoggin was installed in multiple areas throughout Silo Park. Creating a natural aesthetic, Organic-Lock provides pleasant contrast to the concrete whilst still being a firm and low maintenance solution that is going to last. Native trees throughout this project not only inject life into silo park but also aid in conservation efforts. TP120 is MetroGreen's preferred soil for their strata cell, this soil and system combination will support the large mature trees against exposure to the elements from standing alone in an urban environment.

The team was invested in the overall success for the project – they were able to provide us with practical product solutions, along with supporting documentation promptly.
RYAN GOOD, ASSET CONSTRUCTION

The inclusion of Organic-Lock and Tree-pits create new permeable spaces, with stormwater treatment throughout the project.

Project: City Rail Link

Location: Auckland

Solution: TP120

Project Overview

This site is a gateway for millions of passengers and tens of thousands of visitors every year. With this came an opportunity to create a cultural and civic heart, a grand and impressive arrival space for a public transport network.

This central CBD site demanded planned and effective product delivery. As the project developed, we needed to be flexible and reactive to get product to site to ensure the construction programme would not be held up. TP120 and strata cell was installed in carefully engineered tree pits. This system will support massive, transplanted trees that provide blankets of green and help with the typical storm water requirements of this low-lying site.

They are knowledgeable, helpful and supportive...any tricky or out of the box jobs they are happy to come onsite and help us nut out a solution.

CALUM TWIST, EVERGREEN LANDCARE

The City Rail Link (CRL) is New Zealand's largest transport infrastructure project ever and a game-changer for Auckland. This area that was once dominated by cars and buses has been transformed into a unique, high-quality space for pedestrian traffic, outdoor dining, breakout space for office workers and city dwellers and even hosting events.

Project: Karangahape Road
Location: Auckland

Solution: TP120, RG240

Project Overview

Karangahape Road (K Road) enhancement aims to preserve the road's unique character and create a street environment that supports the local community and meets the needs of a growing population. A popular thoroughfare for thousands of people, the daily foot, cycle, scooter, skate, car and bus traffic is set to grow with more and more people calling Auckland home.

Our role in this project was to aid in the enhancement of the environment with rain gardens, landscaping, vegetation and trees. There is high demand on these rain gardens to filter contaminants from road run off on one of the busiest roads in the region. To perform at optimal levels, the media needed to have ideal hydraulic conductivity and particle size distribution. The media for planting also needed to be exceptional. As a focal points of the project,11 large existing Nīkau palms were removed and replanted. The media that supports these specimens is specific for this species. ScapeSpec engineered a technical adaptation of our tree-pit mix that would lift PH levels and support soil requirements.

It was critical to be aware of all site variables, such as plant requirements through in-depth consultation with stakeholders. From here we could easily adapt our media blend to support the ideal plant palette for this project

DEAN RISSETTO, SCAPESPEC

Water Sensitive Urban Design

Water-sensitive urban design (WSUD) is an approach which integrates the water cycle into urban design to minimise environmental degradation. Promoting a more resourceful use of water to address both water quantity and water quality issues.

The Need for WSUD

In natural & undeveloped environments, rainwater mostly evaporates, gets absorbed by plants or soaks into the ground. Urban development dramatically changes these processes, clearing land of vegetation and covering it with 'hard' or impervious surfaces that cannot let water through. As a result, rainwater runs off these surfaces, through stormwater drains and straight into our waterways as polluted stormwater in a very short time.

Investing in the development of bio-retention-media that contributes to better environmental and ecosystem outcomes for New Zealand.

Importance of Bio-retention Media

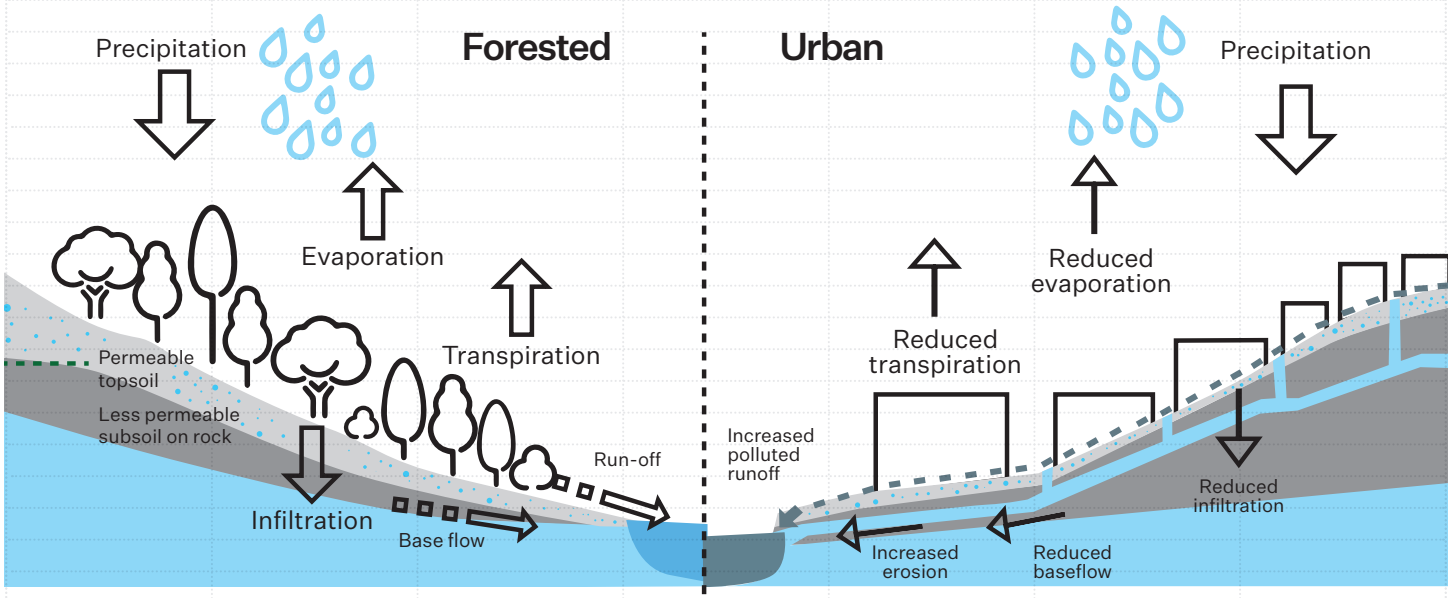
Bio-retention Media helps remove pollutants and slow down stormwater flows to recharge freshwater bodies. The surface runoff from impervious structures flow into specialised gardens or tree pits, filter through the surface vegetation and then through a speciality bio-retention media where fine particles are removed, soluble nutrients are taken up by roots of the plants and soil microbes. The cleansed water is now at a manageable infiltration rate to enter the surrounding ground, pipes, drains and streams and eventually the sea.

Integrating water management in our cities, will increase our resilience to climate change and protect the existence of our natural resources.

Our commitment to WSUD

As WSUD becomes increasingly important in today's urban environment we have a commitment to ensure consistent quality and fit for purpose products. We are continually investing in product development with industry experts, government departments, iwi, and council to refine our processes and to assure our bio-filtration media is contributing to positive water cycles and improving water quality for healthy resilient communities.

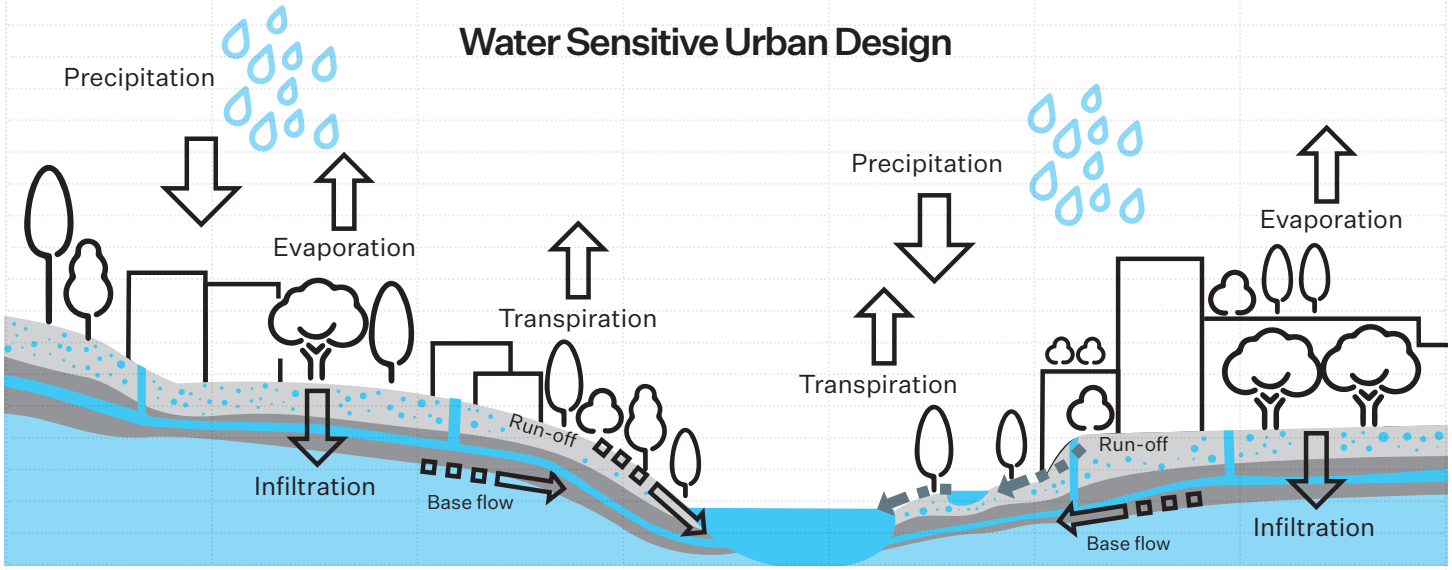
Integrated Water Management – how it works



Natural cycles cause rainwater to evaporate, absorbed by plants or soaks into the ground.

Waterflows cannot infiltrate the ground or evaporate bypassing natural systems and processes.

Water Sensitive Urban Design



Protects natural systems, allowing for evaporation and directing runoff to designated areas that helps remove pollutants and slow down water flow for greater infiltration.

We are developing relationships with key stake holders through our shared alignment of WSUD and Kaitiakitanga commitment:

"If you do not sustain the waterways, the mahinga kai sourced from them, and sites of significance in the wider environment, then you cannot sustain yourself, honour your ancestors, or provide for the children of your children into the future." Tipa & Teirney, 2003

Product Analysis

NEW ZEALAND Turf Management Solutions

Hill Laboratories
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Hamilton 3240 New Zealand
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Certificate of Analysis

Client:	New Zealand Turf Management Solutions Limited	**Lab No:**	2244059	svgpv1
Address:	Cnr Heights Road & Paerata Road Pukekohe 2676	**Date Received:**	19-Sep-2019	
		Date Reported:	10-Oct-2019	
		Quote No:		
		Order No:	#25	
		Client Reference:		
		Submitted By:	W Bowden	

Soil Analysis Results

Sample Name:		TP120					
Lab Number:		2244059.1					
Sample Type:		TURF General					
Sample Type Code:		S8					
pH	pH Units	6.3	-	-	-	-	-
Olsen Phosphorus	mg/L	19	-	-	-	-	-
Potassium	me/100g	1.12	-	-	-	-	-
Potassium	%BS	8.7	-	-	-	-	-
Potassium	MAF units	19	-	-	-	-	-
Calcium	me/100g	5.2	-	-	-	-	-
Calcium	%BS	40	-	-	-	-	-
Calcium	MAF units	5	-	-	-	-	-
Magnesium	me/100g	1.21	-	-	-	-	-
Magnesium	%BS	9.4	-	-	-	-	-
Magnesium	MAF units	23	-	-	-	-	-
Sodium	me/100g	0.37	-	-	-	-	-
Sodium	%BS	2.9	-	-	-	-	-
Sodium	MAF units	14	-	-	-	-	-
CEC	me/100g	13	-	-	-	-	-
Total Base Saturation	%	61	-	-	-	-	-
Volume Weight	g/mL	0.83	-	-	-	-	-
Potentially Available Nitrogen (15cm Depth)*	kg/ha	57	-	-	-	-	-
Anaerobically Mineralisable N*	µg/g	46	-	-	-	-	-
K/Mg Ratio		0.9	-	-	-	-	-

Hill Laboratories
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		Submitted By:	W Bowden

Analyst's Comments

Sample 1 Comment:
Cation results for turf soil samples are expressed as % base saturation levels of the C.E.C. Alternative units (either me/100g and MAF units) are given at the bottom of the graph.

Sample 1 Comment:
The Potentially Available Nitrogen (kg/ha) test above assumes the sample is taken to a 15 cm depth. If the depth is 7.5 cm, then the result reported above should be divided by two.
To calculate Potentially Available Nitrogen (as kgN/ha) for other sample depths use the reported Anaerobic Mineralisable Nitrogen (AMN) result in the following equation:
AN (kg/ha) = AMN (µg/g) x VW (g/ml) x sample depth (cm) x 0.1
Note that the AN and AMN results reported include the readily available Mineral N (NH4-N and NO3-N) fraction, which is typically quite low.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Sample Registration*	Samples were registered according to instructions received.	-	1
Soil Prep (Dry & Grind)*	Air dried at 35 - 40°C overnight (residual moisture typically 4%) and crushed to pass through a 2mm screen.	-	1
pH	1:2 (v/v) soil:water slurry followed by potentiometric determination of pH. In-house.	0.1 pH Units	1
Olsen Phosphorus	Olsen extraction followed by Molybdenum Blue colorimetry. In-house method.	1 mg/L	1
Potassium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	1 MAF units	1
Calcium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	1 MAF units	1
Magnesium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	1 MAF units	1
Sodium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	2 MAF units	1
Potentially Available Nitrogen*	Determined by NIR, calibration based on Available N by Anaerobic incubation followed by extraction using 2M KCl followed by Berthelot colorimetry. (Calculation based on 15cm depth sample). Note that any Mineral N present is included in the AN/AMN result reported.	1 mg/L	1
Anaerobically Mineralisable N*	As for Potentially Available Nitrogen but reported as µg/g.	5 µg/g	1
Potassium	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	0.01 me/100g	1
Calcium	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	0.5 me/100g	1
Magnesium	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	0.04 me/100g	1
Sodium	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	0.05 me/100g	1
Potassium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	0.1 %BS	1
Calcium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	1 %BS	1

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		Quote No:	
		Order No:	#25
		Client Reference:	
		Submitted By:	W Bowden

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Magnesium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	0.2 %BS	1
Sodium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES. In-house.	0.1 %BS	1
CEC	Summation of extractable cations (K, Ca, Mg, Na) and extractable acidity. May be overestimated if soil contains high levels of soluble salts or carbonates. In-house.	2 me/100g	1
Total Base Saturation	Calculated from Extractable Cations and Cation Exchange Capacity.	5 %	1
Volume Weight	The weight/volume ratio of dried, ground soil. In-house.	0.01 g/mL	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Andrew Whitmore BSc (Tech)
Client Services Manager - Agriculture

Soil Physics Laboratory
Analytical Report

Manaaki Whenua
Landcare Research

Private Bag 11052
Palmerston North 4442

phone: +64 6 353 4911
fax: +64 6 353 4801

Job Number: PJ19008

Customer: Dean Rissetto

Date Received: 04/10/2019

Date Reported: 08/10/2019

Sample name	ID number	Remarks	Dry bulk density (g/cm^3)	AFP (%)	WHC (%)
TP120	PP19-0530		0.76 (0.01)	28 (3)	61 (1)

Notes:
Sample received on 04/10/2019.
Air–filled porosity (AFP), Water holding capacity (WHC) analysed on 07/10/2019.
Mean of 3 replicate samples (standard deviations).
Water content of mix as received 39 (%w/w).

References:
Australian Standards, Potting Mixes, AS 3743–2003, Sydney, Australia, Standards Australia International Ltd.
Appendix H (AFP, WHC)
ASTM F1815 – 11 Standard Test Methods for Water Retention, Porosity, and Bulk Density of Athletic Field Rootzones.

John Dando
Laboratory manager

Material Nutrient & Water Retention Analysis Report

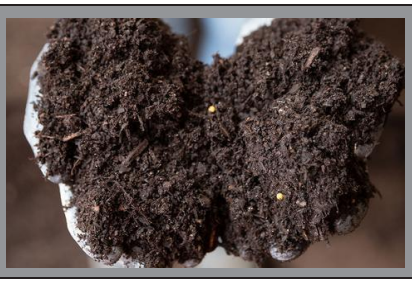
NZTMS Analytical

Material: TP120

M: 027 285 5029
E: will@nztms.co.nz

1.0 Scope of Analysis

This independent report provides the results an dbrief interpretation on the analysis of material: TP120. A reprsentative sample of this material was supplied to NZTMS Laboratory for the following analysis:
1) Soil nutrient,
2) Water retention



2.0 Material Soil Nutrient Analysis

Potassium

Phosphorus

Calcium

Sodium

pH

CEC

Dial Interpretation:

	Below ' Optimum' range		*Within 'Optimum' range*		*Above 'Optimum' range (not a concern unless Sodium)*

3.0 Material Water Retention Analysis

Representative samples of 250 grams (3 replicates) were placed through a wetting and drying cycle within the NZTMS Turf Laboratory. This involved wetting 3 identical columns of material to 20% soil moisture content, weighing these columns, placing them in a water bath for 30 mins and then re-weighing each column. These samples were then dried for 8 hours at 120 Degrees Celsius and re-wetted to 20% soil moisture to repeat the cycle.

This cycle of uniformly wetting and drying enables the average water up-take (retention) capability of the material to be calculated.

Results:

The water uptake of TP120 following wetting and drying cycle No.1 = 6%

The water uptake of TP120 following re-wetting and re-drying cycle No.2 = 17%

2. The wetting and re-wetting analysis did not indicate any areas of concern regarding the potential hydrophobicity risk of this material. Following repeated wetting/drying and re-wetting the material nearly achieved the initial 20% soil moisture content measurement. Based upon the analysis carried out on TP120 no requirement for additional or supplementary wetting agent products has been recommended.

Analysis Certified by:
Date: 18/10/19
Will Bowden
Manager
New Zealand Turf Management Solutions

Internal QA/QC Analysis Report

Test Method	**Saturated Hydraulic Conductivity**	**Sample Name**	**TP120**
Job Number	38	Tested By	AM
Sampling Date	01/06/2021	Analysis Date	01/06/2021

Sample Name	**Saturated Hydraulic Conductivity (Ks)[1]**
TP120	**20 mm/hr**

[1] Normalised Ks Value at 10 °C

Additional Information:	
Device Make/ Model	KSAT, METER Environment, Germany
Ks Value at 15.7 °C	24 mm/hr

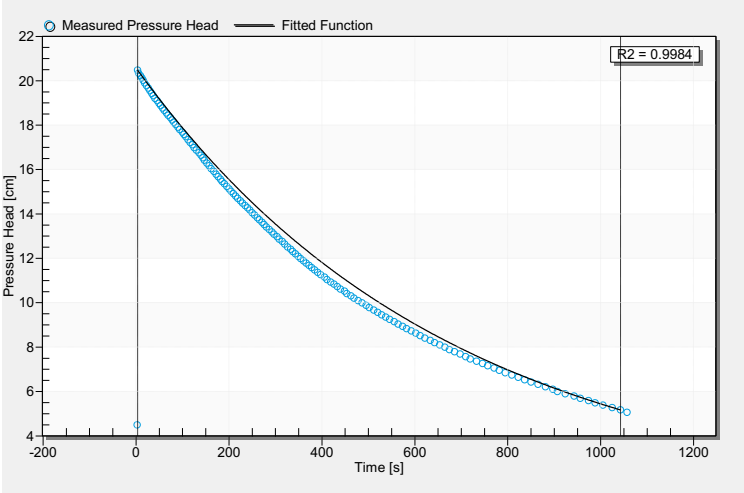


Figure 1: Time series of pressure head (cm), export from KSAT METER software

Interpretation:

Saturated hydraulic conductivity (Ks) is a quantitative measure of a saturated soil's ability to transmit water when subjected to a hydraulic gradient. Based upon the results carried out on the TP120 sampled on 01/06/2021, the normalised Ks was measured as being 20 mm/hr at 10 °C, which complies with Soil Specification – Backfill soil for CityGreen Soil Cell Treepits (SESL, Australia Environment and Soil Science). SESL target minimum hydraulic conductivity is 20 mm/hr.

Ballance

MY FERTILISER PLAN

CENTRAL LANDSCAPE SUPPLIES

CUSTOMER NAME	PROPERTY NAME	DATE	NUTRIENT SPECIALIST	Customer Service
MyBallance Test Account CST (0003112267)	MyBallance Test Account – CST (0004094751)	30/09/2019 to 29/09/2020	Lauren Duthie (0)	0800 222 090
				www.ballance.co.nz

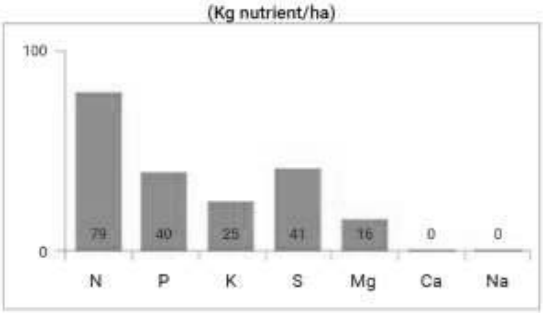
RECOMMENDATIONS

REC NAME Tree-Pit Fertiliser **BLOCK** 1 Hectare **AREA** 1.0 ha

Start Date: 30/09/2019 **Merchant:** **Carrier:**
Fert Rec ID: 8109680055 **Store:** Pukekohe Service Centre **Spreader:**

Product	Rate (Kg/ha)	% of Mix	Total Kg
Smartfert	100.000	21	100.0
DAP - Di Ammonium Phosp	200.000	42	200.0
Sulphurgain Pure	25.000	5	25.0
Kieserite Granular	100.000	21	100.0
Muriate Of Potash	50.000	11	50.0
Total Rate (Kg/ha):	**475.000**	**Total Tonnes:**	**0.5**

(Kg nutrient/ha)



DISCLAIMER

This is a fertiliser recommendation, not a quote. The prices shown are indicative only, and are exclusive of GST. On acceptance of a recommendation a sales order confirmation will be issued; this will show pricing on the day of issue. Fertiliser prices are subject to change; customers will be invoiced based on prices ruling on day of delivery.

Our technical advice is given in good faith but without warranty. The application and use of products is beyond our control and we therefore do not warrant pasture, plant or crop performance to any specific level. In making recommendations we rely on information provided to us by the customer and/or third parties such as commercial analytical services. As an animal health precaution, do not allow livestock to graze pasture until fertiliser has disappeared from foliage. Mixes containing nitrogen can become unstable and should be applied either separately or immediately upon delivery. Please refer to the Fertiliser Codes of Practice with respect to both third party and environmental risk effects.

Stock fluoride poisoning (fluorosis) can occur following application of phosphate (P) fertilisers.

To minimise the risk of fluorosis, Ballance recommends that:

- Following application of P-fertiliser, pastures should not be grazed until at least 25 mm of rainfall has occurred, or sufficient time has elapsed so that no fertiliser residues are evident on the leaves of the pasture.
- P-fertiliser application should be staggered so that there is feed available to stock at all times that is not contaminated with fertiliser residues.

Should you choose to disregard the above principles, the fertiliser application practice you undertake is done so at your own risk. Managing P-fertiliser applications based on the following principles will reduce the risk of fluorosis, however, Ballance does not recommend application outside of the conditions outlined above.

- Application of P-fertilisers containing lower levels of fluoride will reduce the risk of fluorosis. For example, RPR and Superphosphate have higher fluoride levels than DAP and Triple super.
- Well-granulated fertiliser products are less likely to adhere to plant leaves.
- Avoid applying P-fertilisers when the pasture is damp (e.g. on a morning dew)
- Low application rates (<200 kg/ha) will reduce the risk of fluorosis.
- Defer P-fertiliser applications away from early spring when stock have high feed demand and are under stress, and where pasture covers are low.

Raw Product Analysis

Hill Laboratories
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Certificate of Analysis

Client:	Envirowaste - Hampton Downs Landfill	**Lab No:**	2208243	CPv1
Contact:	Envirowaste - Hampton Downs Landfill	**Date Received:**	13-Jul-2019	
	Private Bag 92810	**Date Reported:**	19-Jul-2019	
	Penrose	**Quote No:**	72700	
	Auckland 1642	**Order No:**	345379	
		Client Reference:	Compost Analysis	
		Submitted By:	Kathy Grant	

Sample Type: COMPOST, General

Sample Name:		Batch 74	Batch 75	Guideline NZS 4454:2005*	BioGro Std 2009 Appendix A**
Lab Number:		2208243.1	2208243.2		
Water Extractable Results					
pH	pH Units	6.0	6.3	5.0 - 8.5	-
Electrical Conductivity (EC)	mS/cm	5.1	4.9	-	-
Nitrate-N	mg/L	8	< 1	-	-
Ammonium-N	mg/L	47	19	-	-
Phosphorus	mg/L	79	79	-	-
Potassium	mg/L	1,166	1,240	-	-
Sulphur	mg/L	102	145	-	-
Calcium	mg/L	127	81	-	-
Magnesium	mg/L	93	67	-	-
Sodium	mg/L	181	187	-	-
Total Analysis Results - Dry Weight Basis					
Organic Matter*	%	56.5	64.3	Greater than 25	-
Total Carbon*	%	32.8	37.3	-	-
Total Nitrogen*	%	2.08	2.42	Greater than 0.6 (if a contribution to plant nutrition is claimed)	-
C/N Ratio*		15.7	15.4	-	-
Dry Matter*	%	58.5	55.5	-	-
'Total' Phosphorus*	mg/kg	5,530	4,870	-	-
'Total' Phosphorus*	%	0.55	0.49	Greater than 0.1 (if a contribution to plant nutrition is claimed)	-
'Total' Sulphur*	mg/kg	2,770	2,890	-	-
'Total' Sulphur*	%	0.28	0.29	-	-
'Total' Potassium*	mg/kg	13,860	15,460	-	-
'Total' Potassium*	%	1.39	1.55	-	-
'Total' Calcium*	mg/kg	24,100	24,000	-	-
'Total' Calcium*	%	2.41	2.40	-	-
'Total' Magnesium*	mg/kg	5,000	4,070	-	-
'Total' Magnesium*	%	0.50	0.41	-	-
'Total' Sodium*	mg/kg	2,030	1,962	-	-
'Total' Sodium*	%	0.20	0.20	-	-
'Total' Iron*	mg/kg	13,400	6,400	-	-
'Total' Manganese*	mg/kg	410	310	-	-
'Total' Zinc*	mg/kg	164	155	Less than 600	Less than 300
'Total' Copper*	mg/kg	37	32	Less than 300	Less than 60

Sample Type: COMPOST, General					
	Sample Name:	Batch 74	Batch 75	**Guideline NZS 4454:2005***	**BioGro Std 2009 Appendix A****
	Lab Number:	2208243.1	2208243.2		
'Total' Boron*	mg/kg	29	30	Less than 200	-
'Total' Chromium*	mg/kg	17.8	14.2	Less than 600	Less than 150
'Total' Arsenic*	mg/kg	10.5	9.1	Less than 20	Less than 20
'Total' Lead*	mg/kg	25	20	Less than 250	Less than 250
'Total' Nickel*	mg/kg	10.9	7.6	Less than 60	Less than 60
'Total' Mercury*	mg/kg	< 0.12	< 0.11	Less than 2	Less than 1
'Total' Cadmium*	mg/kg	0.31	0.25	Less than 3	Less than 1

* New Zealand Standard Composts, Soil Conditioners and Mulches: NZS 4454:2005, Table 3.1. Test results apply to the sample(s) submitted for analysis and do not necessarily imply that the product meets all the requirements of the standard. Note that the laboratory methods used for these test results may differ slightly to those referred to in the standard.

** Bio-Gro NZ Organic Standards 2009, Appendix A, Table A3: Limits for Heavy Metals in Soils and Composts: BioGro Standard for compost - ingredients other than household waste. Other limits apply for compost with ingredients including household waste.

Analyst's Comments

Samples 1-2 Comment:
Note 1: Reporting Units.
% = g/100g = g analyte/100g compost (dry weight basis)
mg/kg = ppm = mg analyte/kg compost (dry weight basis)
Electrical Conductivity units mS/cm = dS/m

Note 2: % x 10 = kg/T

Note 3: To calculate results to a fresh weight basis:
Result (dry matter basis) x (Dry Matter % / 100) = Result (fresh weight basis)

Samples 1-2 Comment:
Organic Matter Note: The relationship between carbon and organic matter varies according to organic matter type and soil type if soil is present in the product. Commonly used conversion factors range from 1.65 to 2.2 (Ref: NZS 445:2005). A Loss on Ignition (LOI) test may be requested if a more accurate organic matter value is required.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: COMPOST, General			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
'Total' Sulphur*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	45 mg/kg	1-2
'Total' Sulphur*	Calculated from 'Total' Sulphur result for mg/kg (reported on a dry weight basis).	0.01 %	1-2
pH	1:1.5 (v/v) Water extraction followed by potentiometric pH determination.	0.1 pH Units	1-2
Electrical Conductivity	1:1.5 (v/v) Water extraction followed by potentiometric conductivity determination (25°C).	0.1 mS/cm	1-2
Nitrate-N	1:1.5 (v/v) Water extraction followed by Salicylate colorimetry.	1 mg/L	1-2
Ammonium-N	1:1.5 (v/v) Water extraction followed by Berthelot colorimetry.	1 mg/L	1-2
Phosphorus	1:1.5 (v/v) Water extraction followed by ICP-OES.	1 mg/L	1-2
Sulphur	1:1.5 (v/v) Water extraction followed by ICP-OES.	1 mg/L	1-2
Potassium	1:1.5 (v/v) Water extraction followed by ICP-OES.	1 mg/L	1-2
Calcium	1:1.5 (v/v) Water extraction followed by ICP-OES.	1 mg/L	1-2
Magnesium	1:1.5 (v/v) Water extraction followed by ICP-OES.	1 mg/L	1-2
Sodium	1:1.5 (v/v) Water extraction followed by ICP-OES.	1 mg/L	1-2
Total Carbon*	Sample dried and ground and analysed by Dumas combustion. Results expressed on a dry weight basis.	0.2 %	1-2
Total Nitrogen*	Sample dried and ground and analysed by Dumas combustion. Results expressed on a dry weight basis.	0.04 %	1-2

Sample Type: COMPOST, General			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Organic Matter*	Dumas combustion. Organic Matter is 1.72 x Total Carbon.	0.2 %	1-2
Dry Matter*	Weight loss on drying at 105°C for 24 hours.	0.5 %	1-2
'Total' Phosphorus*	Calculated from 'Total' Phosphorus result for mg/kg (reported on a dry weight basis).	0.01 %	1-2
'Total' Phosphorus*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	65 mg/kg	1-2
'Total' Potassium*	Calculated from 'Total' Potassium result for mg/kg (reported on a dry weight basis).	0.01 %	1-2
'Total' Potassium*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	70 mg/kg	1-2
'Total' Calcium*	Calculated from 'Total' Calcium result for mg/kg (reported on a dry weight basis).	0.01 %	1-2
'Total' Calcium*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	100 mg/kg	1-2
'Total' Magnesium*	Calculated from 'Total' Magnesium result for mg/kg (reported on a dry weight basis).	0.01 %	1-2
'Total' Magnesium*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	40 mg/kg	1-2
'Total' Sodium*	Calculated from 'Total' Sodium result for mg/kg (reported on a dry weight basis).	0.01 %	1-2
'Total' Sodium*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	20 mg/kg	1-2
'Total' Iron*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	40 mg/kg	1-2
'Total' Manganese*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	3 mg/kg	1-2
'Total' Zinc*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	4 mg/kg	1-2
'Total' Copper*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	4 mg/kg	1-2
'Total' Boron*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-OES. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	6 mg/kg	1-2

Sample Type: COMPOST, General			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
'Total' Chromium*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-MS. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	0.2 mg/kg	1-2
'Total' Arsenic*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-MS. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	0.2 mg/kg	1-2
'Total' Lead*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-MS. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	0.10 mg/kg	1-2
'Total' Nickel*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-MS. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	0.2 mg/kg	1-2
'Total' Mercury*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-MS. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	0.10 mg/kg	1-2
'Total' Cadmium*	Nitric/hydrochloric digestion (based on US EPA 200.2) followed by ICP-MS. (Total recoverable nutrients reported on a dry weight basis) The levels from this method are referred to as 'Totals' in quotation marks, as they will be a slight under-estimation of the true Totals for some elements.	0.02 mg/kg	1-2

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Wendy Homewood
Operations Support - Agriculture

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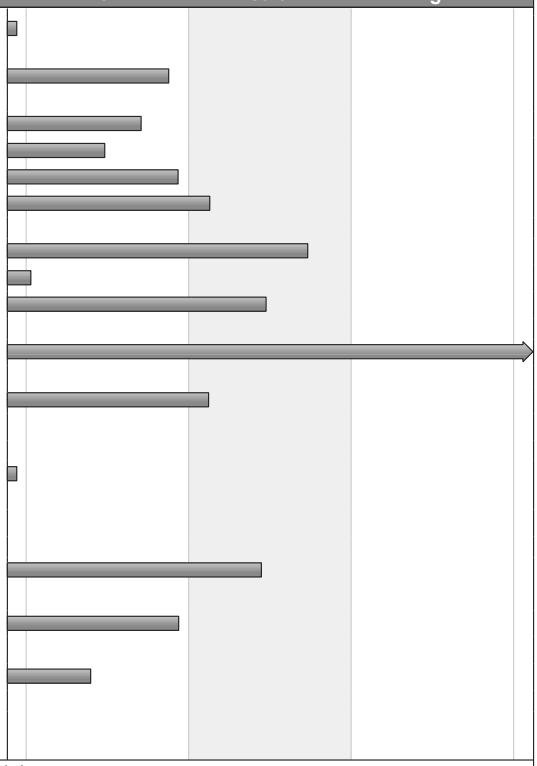
Certificate of Analysis

Client:	Mr Soil Limited	**Lab No:**	2158723 shpv1
Address:	PO Box 268 Greymouth 7840	**Date Received:**	10-Apr-2019
		Date Reported:	08-May-2019
		Quote No:	83649
		Order No:	
		Client Reference:	Jackson Ngare
		Submitted By:	Mr Soil Limited

Sample Name: Bulk Soil 1 **Lab Number:** 2158723.1
Sample Type: SOIL General, Outdoor (S10)

Analysis		Level Found	Medium Range
pH	pH Units	4.8	5.8 - 6.3
Olsen Phosphorus	mg/L	18	20 - 30
Potassium	me/100g	0.40	0.50 - 0.80
Calcium	me/100g	3.9	6.0 - 12.0
Magnesium	me/100g	0.95	1.00 - 3.00
Sodium	me/100g	0.24	0.20 - 0.50
CEC	me/100g	22	12 - 25
Total Base Saturation	%	26	50 - 85
Volume Weight	g/mL	0.79	0.60 - 1.00
Sulphate Sulphur	mg/kg	163	7 - 15
Soluble Salts (Field)	%	0.08	0.05 - 0.30
EC (in 1:5 Extract)	mS/cm	0.23	
Potentially Available Nitrogen (15cm Depth)*	kg/ha	43	100 - 150
Anaerobically Mineralisable N*	µg/g	36	
Organic Matter*	%	11.5	7.0 - 17.0
Total Carbon	%	6.7	
Total Nitrogen	%	0.29	0.30 - 0.60
C/N Ratio*		23.2	
Anaerobically Mineralisable N/Total N Ratio*	%	1.2	3.0 - 5.0
Soil Texture analysis*		See attached report	



Base Saturation %	K 1.8	Ca 18	Mg 4.4	Na 1.1			
MAF Units	K 6	Ca 4	Mg 17	Na 9			

The above nutrient graph compares the levels found with reference interpretation levels. NOTE: It is important that the correct sample type be assigned, and that the recommended sampling procedure has been followed. R J Hill Laboratories Limited does not accept any responsibility for the resulting use of this information.
IANZ Accreditation does not apply to comments and interpretations, i.e. the 'Range Levels' and subsequent graphs.

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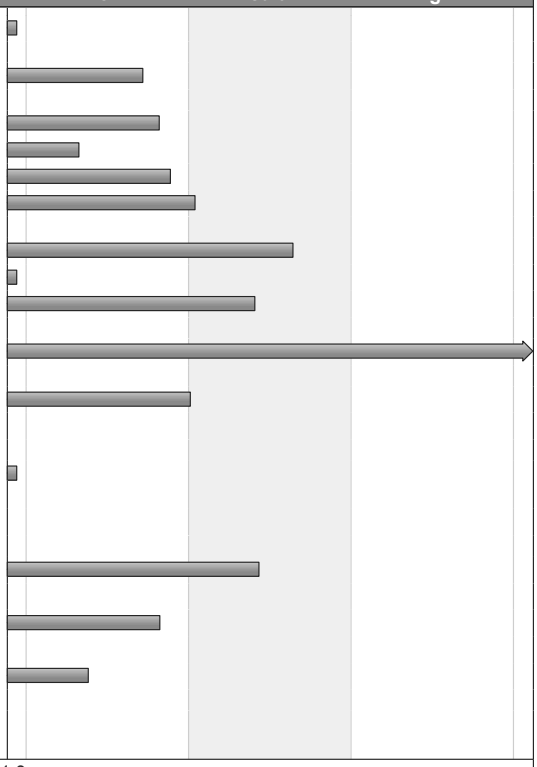
Address:	PO Box 268 Greymouth 7840	**Date Received:**	10-Apr-2019	
		Date Reported:	08-May-2019	
		Quote No:	83649	
		Order No:		
		Client Reference:	Jackson Ngare	
		Submitted By:	Mr Soil Limited	

Sample Name: Bulk Soil 2 **Lab Number:** 2158723.2
Sample Type: SOIL General, Outdoor (S10)

Analysis		Level Found	Medium Range
pH	pH Units	4.9	5.8 - 6.3
Olsen Phosphorus	mg/L	16	20 - 30
Potassium	me/100g	0.44	0.50 - 0.80
Calcium	me/100g	3.3	6.0 - 12.0
Magnesium	me/100g	0.92	1.00 - 3.00
Sodium	me/100g	0.21	0.20 - 0.50
CEC	me/100g	20	12 - 25
Total Base Saturation	%	24	50 - 85
Volume Weight	g/mL	0.76	0.60 - 1.00
Sulphate Sulphur	mg/kg	172	7 - 15
Soluble Salts (Field)	%	0.05	0.05 - 0.30
EC (in 1:5 Extract)	mS/cm	0.15	
Potentially Available Nitrogen (15cm Depth)*	kg/ha	36	100 - 150
Anaerobically Mineralisable N*	µg/g	32	
Organic Matter*	%	11.3	7.0 - 17.0
Total Carbon	%	6.6	
Total Nitrogen	%	0.26	0.30 - 0.60
C/N Ratio*		24.9	
Anaerobically Mineralisable N/Total N Ratio*	%	1.2	3.0 - 5.0
Soil Texture analysis*		See attached report	
Base Saturation %		K 2.1 Ca 16	Mg 4.5 Na 1.0
MAF Units		K 7 Ca 3	Mg 16 Na 7



The above nutrient graph compares the levels found with reference interpretation levels. NOTE: It is important that the correct sample type be assigned, and that the recommended sampling procedure has been followed. R J Hill Laboratories Limited does not accept any responsibility for the resulting use of this information. IANZ Accreditation does not apply to comments and interpretations, i.e. the 'Range Levels' and subsequent graphs.

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Certificate of Analysis

Client:	Mr Soil Limited	**Lab No:**	2158723	shpv1
Address:	PO Box 268 Greymouth 7840	**Date Received:**	10-Apr-2019	
		Date Reported:	08-May-2019	
		Quote No:	83649	
		Order No:		
		Client Reference:	Jackson Ngare	
		Submitted By:	Mr Soil Limited	

Analyst's Comments

Samples 1-2 Comment:
The medium or optimum range guidelines shown in the histogram report relate to sampling protocols as per Hill Laboratories' crop guides and are based on reference values where these are published. Results for samples collected to different depths than those described in the crop guide should be interpreted with caution.
For pastoral soils, the medium ranges are specific for a 75mm sample depth, but if a 150mm sampling depth is used the nutrient levels measured may appear low against these ranges, as nutrients are typically more concentrated in the top of the soil profile. These soil profile differences are altered upon cultivation or contouring.

Samples 1-2 Comment:
The Potentially Available Nitrogen (kg/ha) test above assumes the sample is taken to a 15 cm depth. If the depth is 7.5 cm, then the result reported above should be divided by two.
To calculate Potentially Available Nitrogen (as kgN/ha) for other sample depths use the reported Anaerobic Mineralisable Nitrogen (AMN) result in the following equation:
AN (kg/ha) = AMN (µg/g) x VW (g/ml) x sample depth (cm) x 0.1
Note that the AN and AMN results reported include the readily available Mineral N (NH4-N and NO3-N) fraction, which is typically quite low.

Appendix No.1 - Soil Texture Report

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Soil Texture analysis*	Analysis of % sand, silt, clay. Subcontracted to; Eurofins NZ Laboratory Services Ltd - Penrose, Auckland.	-	1-2
Sample Registration*	Samples were registered according to instructions received.	-	1-2
Soil Prep (Dry & Grind)*	Air dried at 35 - 40°C overnight (residual moisture typically 4%) and crushed to pass through a 2mm screen.	-	1-2
pH	1:2 (v/v) soil:water slurry followed by potentiometric determination of pH.	0.1 pH Units	1-2
Olsen Phosphorus	Olsen extraction followed by Molybdenum Blue colorimetry.	1 mg/L	1-2
Sulphate Sulphur	0.02M Potassium phosphate extraction followed by Ion Chromatography.	1 mg/kg	1-2
Potentially Available Nitrogen*	Determined by NIR, calibration based on Available N by Anaerobic incubation followed by extraction using 2M KCl followed by Berthelot colorimetry. (Calculation based on 15cm depth sample). Note that any Mineral N present is included in the AN/AMN result reported.	1 mg/L	1-2
Anaerobically Mineralisable N*	As for Potentially Available Nitrogen but reported as µg/g.	5 µg/g	1-2
Organic Matter*	Organic Matter is 1.72 x Total Carbon.	0.2 %	1-2
Total Carbon	Dumas combustion.	0.1 %	1-2
Total Nitrogen	Dumas combustion.	0.04 %	1-2
Soluble Salts (Field)	1:5 soil:water extraction followed by potentiometric determination of conductivity. Calculated by EC (mS/cm) x 0.35.	0.05 %	1-2
Electrical Conductivity (EC)	Electrical Conductivity measured in 1:5 Soil:Water extract.	0.01 mS/cm	1-2
Potassium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.01 me/100g	1-2
Calcium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.5 me/100g	1-2

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Address:	PO Box 268 Greymouth 7840	**Date Received:**	10-Apr-2019
		Date Reported:	08-May-2019
		Quote No:	83649
		Order No:	
		Client Reference:	Jackson Ngare
		Submitted By:	Mr Soil Limited

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Magnesium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.04 me/100g	1-2
Sodium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.05 me/100g	1-2
CEC	Summation of extractable cations (K, Ca, Mg, Na) and extractable acidity. May be overestimated if soil contains high levels of soluble salts or carbonates.	2 me/100g	1-2
Total Base Saturation	Calculated from Extractable Cations and Cation Exchange Capacity.	5 %	1-2
Volume Weight	The weight/volume ratio of dried, ground soil.	0.01 g/mL	1-2

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Andrew Whitmore BSc (Tech)
Client Services Manager - Agriculture

eurofins

AR-19-NU-036730-01 1 2

ANALYTICAL REPORT

REPORT CODE	**AR-19-NU-036730-01**	REPORT DATE	**08/05/2019**

For the attention of Hill Laboratories Ltd
Enviro Reports
28 Duke Street
Frankton
3204 Hamilton
NEW ZEALAND
Phone 6478582000
Email envjobenquiry@hill-labs.co.nz

Contact for your orders: Hanin Khan

Order code: EUNZAU-00171734
Purchase Order Number: 151684

SAMPLE CODE 816-2019-00100681

Client reference:
Sample described as: 2158723.1
Reception Date & Time: 15/04/2019 14:28
Analysis starting date: 15/04/2019
Analysis ending date: 02/05/2019

SOIL PHYSICAL MEASUREMENT	RESULTS		LOQ
◆ **NU092** Coarse Sand (0.6-2mm)			
Coarse Sand	7	%	1
◆ **NU199** Medium Sand (0.2-0.6mm)			
Medium Sand	10	%	1
◆ **NU134** Fine Sand (0.06-0.2mm)			
Fine Sand	30	%	1
◆ **NU318** Silt (0.002-0.06mm)			
Silt	34	%	1
◆ **NU091** Clay (<0.002mm)			
Clay	19	%	1

SAMPLE CODE 816-2019-00100682

Client reference:
Sample described as: 2158723.2
Reception Date & Time: 15/04/2019 14:28
Analysis starting date: 15/04/2019
Analysis ending date: 08/05/2019

SOIL PHYSICAL MEASUREMENT	RESULTS		LOQ
◆ **NU092** Coarse Sand (0.6-2mm)			
Coarse Sand	7	%	1
◆ **NU199** Medium Sand (0.2-0.6mm)			
Medium Sand	10	%	1
◆ **NU134** Fine Sand (0.06-0.2mm)			
Fine Sand	21	%	1
◆ **NU318** Silt (0.002-0.06mm)			
Silt	36	%	1
◆ **NU091** Clay (<0.002mm)			
Clay	26	%	1

REPORT INFORMATION

Texture results reported as % of inorganic fraction

LIST OF METHODS

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AR-19-NU-036730-01 2 2

NU091	**Clay (<0.002mm):** Sedimentation procedure by hydrometer. < 0.002mm	NU092	**Coarse Sand (0.6-2mm):** Sieve analysis. 0.6-2.0mm
NU134	**Fine Sand (0.06-0.2mm):** Sieve analysis. 0.06-0.2mm	NU199	**Medium Sand (0.2-0.6mm):** Sieve analysis. 0.2-0.6mm
NU318	**Silt (0.002-0.06mm):** Sedimentation procedure by hydrometer. 0.002-0.06mm		

Signature

Brent Miller Team Leader Agri Testing

EXPLANATORY NOTE

◆ test is not accredited
○ test is subcontracted within Eurofins group and is accredited
● test is subcontracted within Eurofins group and is not accredited
□ test is subcontracted outside Eurofins group and is accredited
■ test is subcontracted outside Eurofins group and is not accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)

Accreditation does not apply to comments or graphical representations.
Eurofins General Terms and Conditions apply.

This document can only be reproduced in full; it only concerns the submitted sample. Results have been obtained and reported in accordance with our general sales conditions available on request.
The tests are identified by a five-digit code, their description is available on request.

Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 35 O'Rorke Road, Penrose, Auckland, NEW ZEALAND.

END OF REPORT

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Additional Information

Additional Information

Health & Safety

Health Information

Ordinary garden soil and products like Compost and Potting Mixes may contain a variety of living micro-organisms. On rare occasions some of these micro-organisms can cause illness in humans. Serious infection is rare. However, for older people or those with reduced immunity, infection can be life threatening.

Safety

We recommend the following precautions:

- Bags: Avoid opening bags in enclosed areas and dampen the product before use
- Bulk: Avoid inhaling the mix
- Always wear gloves and wash hands after us
- See your doctor if you develop a high fever, chill breathlessness or cough

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