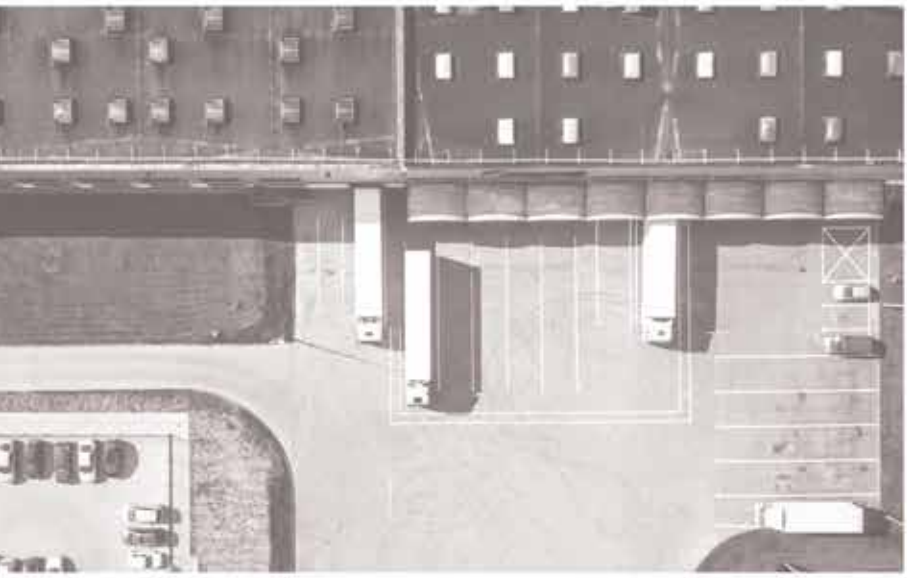
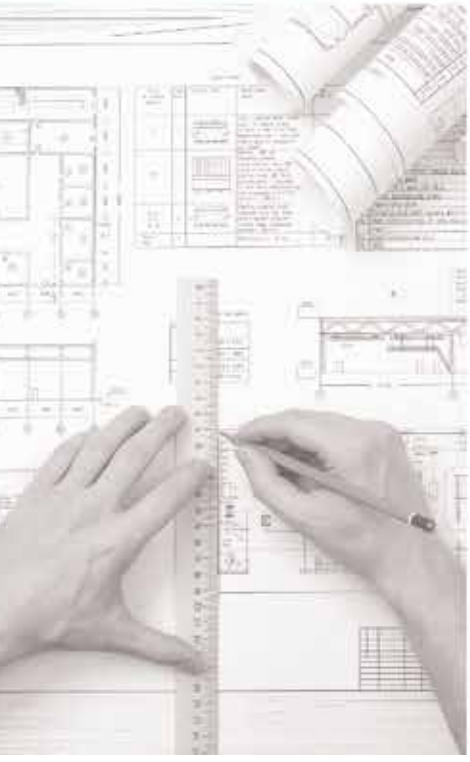
Appendix K

Acid sulfate soil study





Epic Environmental Pty Ltd
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24 September 2024

Ref: SCL240076.01

Ernest Dupere
Director
Benedict Group of Companies
11a Narabang Way,
Belrose NSW 2085
Ernest@benedict.com.au

Dear Ernest

Subject: Acid Sulfate Soil Study - 146 Newbridge Road, Moorebank NSW

1 INTRODUCTION

Epic Environmental (Epic) was engaged by Benedict Group of Companies (Benedict) to provide acid sulfate soils (ASS) study in support of the development at 146 Newbridge Road, Moorebank NSW (the site). The specific area for development is the northern portion of the site which is zoned as E3 Productivity Support (formerly B6 Enterprise Corridor) ('E3 land'). Epic understand that the site is proposed to be developed into a mixed commercial / industrial building with five floors in total, with a development footprint of 1.07 Ha across a total site area of approximately 1.722 Ha. The remaining area is planned to be a public collector road (construction almost complete) and rain garden water treatment structure (construction complete). It is understood that the site has been excavated to approximately the correct levels with potential for changes +/- 100mm. It is assumed that no further major excavation is required for the works, except for during installation of pier foundations. The design drawings for the proposed development have been included in **Attachment A**.

The site is close to the George's River which has ASS classed land nearby ranging from between Class 1 – Class 5. The attached **Figure F1** shows the site location and **Figure F2** provides sampling locations.

1.1 Objectives

The objective of the study is to assess the potential for actual ASS (AASS) and potential ASS (PASS) risk at the site that may be encountered during the proposed development and potential management strategies.

1.2 Scope of Work

To achieve the objectives outlined above the following scope of works was undertaken:

- Desktop review of:
  - ASS risk maps including the Liverpool City Council Local Environmental Plan (LEP) 2008
  - Environmental setting databases including soil mapping, geology and hydrology
  - Proposed construction plans for the site including maximum depth of excavation and construction methods
- Advancement of four hand auger boreholes to 1.0 metres below ground level (mbgl) and collection of representative soil samples from the natural stratigraphy.
- Laboratory analysis for the chromium reducible sulfur (CRS) suite.
- Preparation of a letter to report findings and potential management strategies (this letter report)

1.3 Guidelines and Standards

The assessment has been undertaken in accordance with the following guidance:

- Sullivan, L, Ward, N, Toppler, N and Lancaster, G (2018), National Acid Sulfate Soils Guidance: National acid sulfate soils sampling and identification methods manual, Department of Agriculture and Water Resources, Canberra ACT
- Queensland Government (2024) Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines (version 5.1)
- Acid Sulfate Soil Management Advisory Committee (ASSMAC, 1998), Acid Sulfate Soil Manual, August 1998
- NSW Environment Protection Authority (EPA) (2014a), Waste Classification Guidelines, Part 1: Classifying Waste
- NSW Environment Protection Authority (EPA) (2014b), Waste Classification Guidelines, Part 4: Acid Sulfate Soils.

2 SITE IDENTIFICATION

The site consists of formerly undeveloped land, warehouse and commercial uses, public environmental infrastructure and local public roads. The northern boundary is formed by Newbridge Road, the western boundary is formed by vegetation before low-density residential housing, the southern boundary is formed by residential developments, the eastern boundary is formed by a commercial premise. The Georges River is approximately 300 m to the southeast of the site. Site details are summarised in **Table 1** with the site location shown in **Figure F1**.

Table 1. Site Identification

Category	Details
Site address	146 Newbridge Road, Moorebank NSW 2170
Lot description	Lot 1 DP1246745
Material co-ordinates (approx.)	GDA2020 MGA56 Easting -802081.355 Northing 6155600.812
Current owner	Benedict
Current occupier	Vacant
Local Government Authority	City of Liverpool
Current zoning	E3 - Productivity Support

3 ENVIRONMENTAL SETTING

The environmental setting details are summarised in **Table 2.**

Table 2. Environmental Setting

Geology and soils	QH_hf: Anthropogenic deposits - fill on Quaternary deposits. Land surface raised >1m above natural level by placement of fill on undifferentiated Quaternary deposits over an extensive area.
Topography	The surface elevation of the site is between approximately 3m and 6m.
Acid Sulfate soil	The site is characterised as having the following: • The eastern portion of site has Class 2 ASS risk whereby ASS are likely present below the natural ground surface. • The western portion of site has Class 4 ASS risk whereby ASS are likely present 2 m below the natural ground surface.
Salinity	The site and surrounding areas do not have a salinity rating.
Climate	Moorebank, NSW, experiences a temperate climate with warm summers and mild winters. The average summer temperatures range from 18°C to 29°C, while winter temperatures typically range between 6°C and 17°C.
Hydrology and Hydrogeology	The site is situated approximately 300 m northwest of the Georges River. The Georges River catchment provides surface water flow, with several tributaries and creeks, such as Williams Creek, contributing to local drainage. Moorebank is prone to periodic flooding, particularly during heavy rainfall events, as the river's flow volume increases, impacting the floodplain areas around Moorebank.

	Groundwater in the area is also influenced by the river system, with local aquifers providing some subsurface water flow and storage. Groundwater at the site is inferred to flow towards the Georges River in the south east.

4 PREVIOUS ENVIRONMENTAL REPORTS

The following reports were provided to Epic for review:

- Ian Swane & Associates Pty Ltd (2022), Interim Audit Advice for Statutory Site Audit 264 – Status of Site Audit for B6 Land at 146 Newbridge Road, Moorebank, dated 21 October 2022
- Douglas Partners (2023), Proposed Commercial Development – B6 Land Georges Cove 146 Newbridge Road, Moorebank, dated 10 August 2023.

A summary of information in these reports surrounding potential environmental risk is as follows:

- Where minor data gaps were outlined by the auditor in fill material an environmental scientist can collect additional samples once site offices etc are re located
- The design proposes concrete sealed areas which can act as a physical barrier / cap to underlying fill material. An EMP would need to be prepared to document this and approved by the auditor and Liverpool City Council
- There is potential risk of natural soils in the B6 land (now E3 land) being potential acid sulfate soils (PASS) which may have to be managed during the construction.

5 METHODOLOGY

5.1 Sampling Methodology

The ASSMAC (1998) recommends a minimum of four boreholes for a site up to one hectare in size. Epic advanced four boreholes to a maximum depth of 1.0 m collected a total of 12 samples, complying with the recommended density.

Samples were collected with a hand auger from a minimum of 0.2 meters below ground level (mbgl), description of the soils was recorded, with logging of the samples conducted in general accordance with the Unified Soil Classification System and AS 1726-1993. New nitrile gloves were used for the collection of each sample and samples were collected from the centre of the excavator bucket to ensure there was no cross contamination between samples. The soil samples were collected in 500 ml zip lock bags, were labelled and immediately stored on ice in an esky for transport to the laboratory.

5.2 Sample Analysis

A summary of the sample analysis is included in **Table 3.**

Table 3. Sample Analysis

Samples Analysed	• MB_BH01_0.2-0.3 • MB_BH01_0.5-0.6 • MB_BH01_0.6-0.7 • MB_BH02_0.2-0.3 • MB_BH02_0.5.0.6 • MB_BH02_0.9-1.0 • MB_BH03_0.2-0.3 • MB_BH03_0.5-0.6 • MB_BH03_0.9-1.0 • MB_BH04_0.2-0.3 • MB_BH04_0.5-0.6 • MB_BH04_0.7-0.8 • QC01
Analytical suite	Chromium Reducible Sulfur suite

Sampling date	23 August 2024
Sampled by	Harry Dawson, Graduate Environmental Scientist
Analysis completed by	Envirolab, Chatswood NSW (NATA accreditation number 2901)
Material description	0.0 - 0.2: Crushed sandstone, mottled light brown, coarse grain, moist, no odour/ staining. Vegetation, rootlets, rubbish (<1%). 0.2 – 1.0: Sandy clay, mottled brown and grey, medium to high plasticity, moist to wet, no odours/ staining. Trace crushed sandstone and rootlets (<1%) Photo plates have been provided in **Attachment B** and borelogs in **Attachment C.**

6 ASSESSMENT CRITERIA

Laboratory results were compared to action criteria in presented in National and State guidelines which define the sulfidic acidity levels beyond which ASS requires management, in conjunction with the volumes of disturbance involved (**Table 4**). As clay content tends to influence a soil's natural buffering capacity, the action criteria for smaller disturbances (≤ 1000 tonnes) are grouped into three broad texture categories − coarse, medium and fine. The action criteria for projects disturbing more than 1,000 tonnes of soil are set at the lowest value, irrespective of texture.

Action criteria are based on the sum of existing plus potential acidity. This is usually calculated in units of percent-sulfur equivalents (e.g. s-TAA + s-SNAS + SCR in % S units) or equivalent acidity (e.g. TAA + a-SRAS + a-SPOS in mol H+/tonne units).

The highest laboratory result(s) should have been used to decide if the relevant action criterion level has been met or exceeded where ASS is present.

Table 4. ASS Assessment Criteria

Type of material		**Net acidity**			
		<1,000 tonnes of material disturbed		**>1,000 tonnes of material disturbed**	
Texture range	**Approximate clay content (%)**	**Equivalent sulfur (%S)**	**Equivalent acidity (mol H^+/t)**	**Equivalent sulfur (%S)**	**Equivalent acidity (mol H^+/t)**
Coarse and peats *Sands to loamy sands*	<5	≥0.03	≥18	≥0.03	≥18
Medium *Clayey sand to light clays*	5 to 40	≥0.06	≥36	≥0.03	≥18
Fine *Light medium to heavy clays and silty clays*	≥40	≥0.1	≥62	≥0.03	≥18

Source: National Acid Sulfate Soil Guidelines (Sullivan et al. 2018a)

7 RESULTS SUMMARY

Assessment of the sampling results was undertaken with reference to National Acid Sulfate Soils Guidance (Sullivan, 2018) criteria for fine textured soils.

- pH KCL was reported at concentrations <4 pH units at sample locations:
  - MB_BH02_0.2-0.3 (pH = 3.8)
  - MB_BH02_0.5-0.6 (pH = 3.6)
  - MB_BH02_0.9-1.0 (pH = 3.6)
- pH <4 is indicative of actual acid sulfate soils (AASS), material which has undergone oxidation of inorganic sulfur and is highly acidic
- Chromium Reducible Sulfur (SCR) was reported between 0.006 – 0.03% S indicating the potential presence of sulfidic acidity

The majority of samples were below the assessment criteria (action criteria = 0.1 % sulfur (S)) with the exception of the following:

- MB_BH02_0.2-0.3 (0.11 % S)
- MB_BH02_0.5-0.6 (0.12 % S).

Results summary tables have been provided in **Attachment D** with complete laboratory certificates included in **Attachment E.**

8 RECOMMENDATIONS AND MANAGEMENT STRATEGY

It is understood that no further excavation of natural soils is required to facilitate construction and that crushed sandstone (~100-300 mm) has been placed overlying final levels. An exception to this is through minor excavation of soil for the installation of pier foundations. The sandstone is considered a base layer prior to the addition of a hardstand slab. As the development is at the levels required for construction and the water table has not been intersected, it is expected that no dewatering will be required.

AASS was identified in the northeastern portion of site at BH02. If minor excavation or installation of structural footings within natural soils in this area is required, then further investigation and/or management is recommended. Although no PASS was identified in the intrusive investigation Epic has provided management strategies to cover both AASS /PASS as follows:

- Prior to ground disturbance, further testing can be carried out to determine the presence of AASS/PASS. Testing must be directed by a suitably qualified person with a degree in environmental science or similar and will apply the following general methodology:
  - Advance boreholes or test pits 1 m below the extent of proposed excavation, collecting samples and conducting ASS field screening tests on material from each location at regular and representative depths throughout the soil profile (including samples from fill material). Submit samples to a National Association of Testing Authorities (NATA) accredited laboratory for CRS analysis.
- Minimise Disturbance: The most effective strategy is to avoid disturbing areas with AASS/PASS. This can be achieved by identifying changes to construction and planning activities prior to any ground disturbance.
- Water Table Management: Incase of PASS, maintaining the water table at a high level is crucial to prevent the exposure of sulfides to oxygen, which triggers the acidification process. This can involve strategies like controlled drainage/dewatering, pumping water into the soil, or using bunds to retain water in areas with PASS.
- Liming: If soils must be disturbed, applying agricultural lime (calcium carbonate) can neutralise acidity. The amount of lime required depends on the volume and acidity/ potential acidity of the soil. Should soils need to be disposed, this will need to be completed in accordance with the Waste Classifcation Guidelines – Part 4 Acid Sulfate Soils (EPA NSW 2014).

9 CONCLUSION

Currently no management of ASS risk is required for the site. If construction plans are updated and major excavation and/or dewatering is required an acid sulfate soils management plan (ASSMP) and potentially further investigation is recommended to be prepared.

Note that this report does not provide advice on the geotechnical or potential structural impacts of AASS/PASS.

Limitations regarding the use of this report are provided at the end of the report.

Kind regards

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Natalie Eldridge
Senior Environmental Scientist

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LIMITATIONS AND DISCLAIMER

Epic Environmental Pty Ltd (Epic) has prepared the following report for the exclusive benefit of Benedict (Client) and for the singular purpose of preliminary ASS investigation at 146 Newbridge Road, Moorebank NSW. All interpretations, finding or recommendations outlined in this report should be read and relied upon only in the context of the report as a whole.

The following report cannot be relied upon for any other purpose, at any other location or for the benefit of any other person, without the prior written consent of Epic. Except with Epic's prior written consent, this report may not be:

a. released to any other person, whether in whole or in part;
b. used or relied upon by any other party; or
c. filed with any Governmental agency or other person or quoted or referred to in any public document.

This report has been prepared based on information provided by the Client and other parties. In preparing this report Epic:

a. presumed the accuracy of the information provided by the Client (including its representatives);
b. has not undertaken any verification to the accuracy or reliability included in this information (with the exception where such verification formed part of the scope of works);
c. has not undertaken any independent investigations or enquiries outside the scope of works with respect to information provided for this report; and
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b. for any use or reliance upon this report by any person other than the Client;
c. where another person has a different interpretation of the same information contained in the report;
d. for any consequential or indirect losses, or for loss of profit or goodwill or any loss or corruption of any data, database or software.

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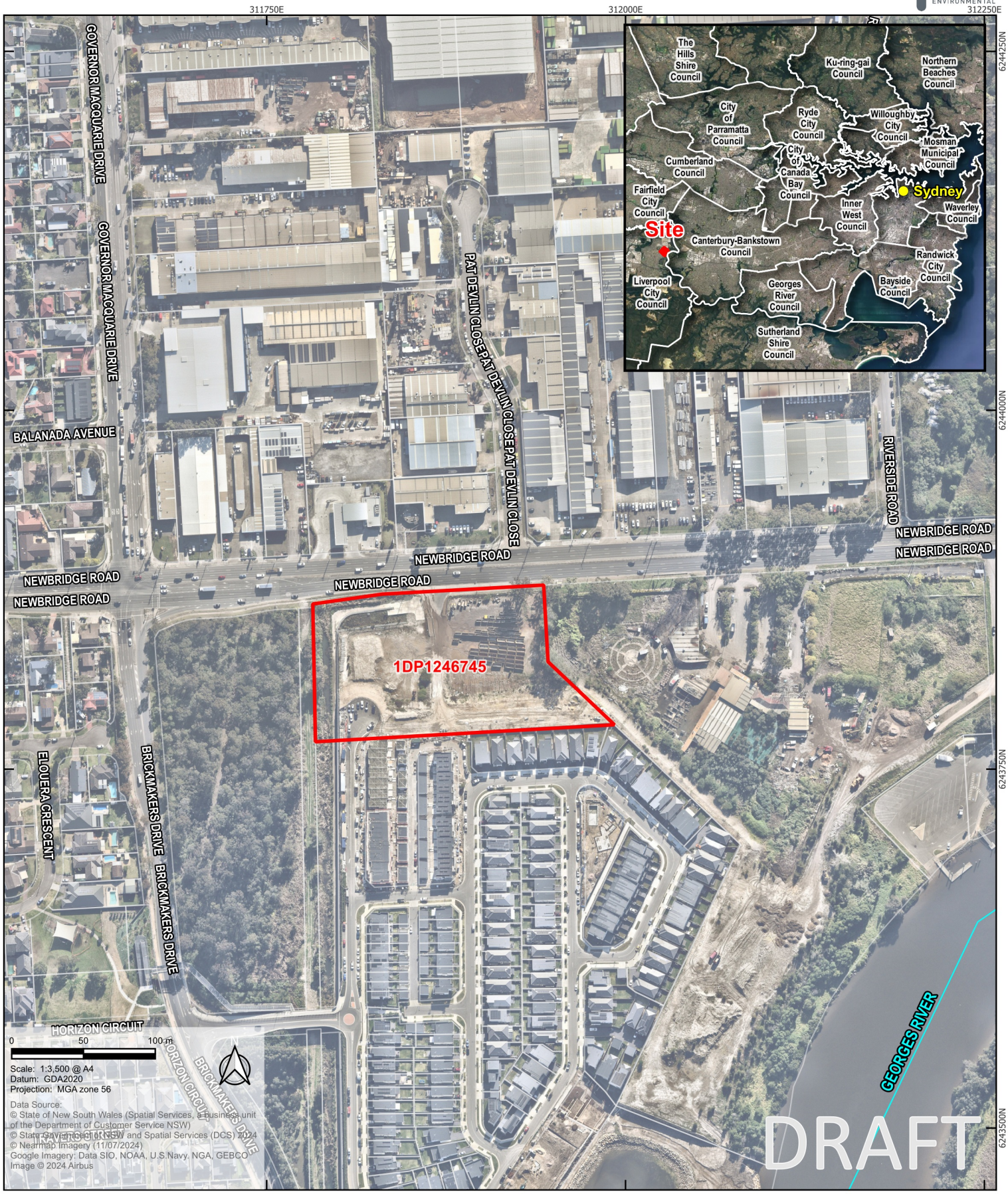
FIGURES



Filepath: ~SCL\SCL240076.01 Benedict Moorebank ASS Advice\Workspaces\1 Acid Sulfate Soil Study\Rev A\Figure F1 Site location.qgz

Legend

- Site boundary
- Lot boundary
- Watercourses

Benedict
146 Newbridge Road, Moorebank NSW
Acid Sulfate Soil Study

Figure F1
Site location

Filepath: ~SCL\SCL240076.01 Benedict Moorebank ASS Advice\Workspaces\1 Acid Sulfate Soil Study\Rev A\Figure F2 Sample location.qgz

Legend

- Site boundary
- Lot boundary
- Soil borehole

Benedict
146 Newbridge Road, Moorebank NSW
Acid Sulfate Soil Study

Figure F2
Sample location

ATTACHMENT A: DESIGN DRAWINGS

ATTACHMENT B: PLATES

Plate P1. Ponding from recent rain on ground surface, clay soil exposed, skip bins stored to left of image.

Plate P2. Wet brown/grey clay located within BH02.

Plate P3. Representative sandy clay material located at BH04.

ATTACHMENT C: BORELOGS

BOREHOLE LOG MB_BH01

PROJECT NUMBER: SCL240076.01
PROJECT NAME: Benedict_Moorebank_ASS
CLIENT: Benedict
ADDRESS: 146 Newbridge Road, Moorebank
DRILLED BY: EPIC

DRILLING DATE: 22 August 2024
TOTAL DEPTH: 0.7
DIAMETER: 100
LOGGED BY: Harry Dawson
CHECKED BY: NE

LATITUDE:
LONGITUDE:
SURFACE ELEVATION:

Drilling Method	Sample	PID	Graphic Log	Depth (m)	Material Description	Moisture	Consistency Density	Additional Observations	Depth (m)
HA				0.1	FILL - Brown, fine CLAY with inclusions of crushed SANDSTONE and trace rootlets and brick pieces.	M		No visual and/or olfactory signs of contamination or PASS.	0.1
	MB_BH01_0.2-0.3			0.2					0.2
				0.3					0.3
				0.4					0.4
	MB_BH01_0.5-0.6			0.5	NATURAL - Brown medium grained SAND with sandstone gravels.	M		No visual and/or olfactory signs of contamination or PASS.	0.5
	MB_BH01_0.6-0.7			0.6					0.6
				0.7	EOH @ 0.7mbgl (refusal).				0.7
				0.8					0.8
				0.9					0.9
				1					1
				1.1					1.1
				1.2					1.2
				1.3					1.3
				1.4					1.4

Drilling Method
HA - Hand Auger
SFA - Solid Flight Auger
HFA - Hollow Flight Auger
PT - Pushtube
AH - Air Hammer
NDD - Non Destructive Drilling
WB - Washbore

Moisture
D: Dry M: Moist W: Wet

Consistency Index
VS: Very Soft St:Stiff S:Soft VSt: Very Stiff
F: Firm H: Hard Fr: Friable

Density Index
VL: Very Loose D: Dense
L: Loose VD:Very Dense MD: Medium Dense

Descriptions based on Unified Soil Classification system.
Photo Ionisation Detector (PID)
Parts per million (ppm)

Encountered Groundwater
Stabilised Groundwater

produced by ESlog.ESdat.net on 19 Sep 2024

BOREHOLE LOG MB_BH02

PROJECT NUMBER: SCL240076.01
PROJECT NAME: Benedict_Moorebank_ASS
CLIENT: Benedict
ADDRESS: 146 Newbridge Road, Moorebank
DRILLED BY: EPIC

DRILLING DATE: 22 August 2024
TOTAL DEPTH: 1.0
DIAMETER: 100
LOGGED BY: Harry Dawson
CHECKED BY: NE

LATITUDE:
LONGITUDE:
SURFACE ELEVATION:

Drilling Method	Sample	PID	Graphic Log	Depth (m)	Material Description	Moisture	Consistency Density	Additional Observations	Depth (m)
HA				0.1	FILL - Brown, coarse grained SANDSTONE.	M		No visual and/or olfactory signs of contamination or PASS.	0.1
	MB_BH02_0.2-0.3			0.2	NATURAL - Brown-grey high plasticity CLAY.	W		No visual and/or olfactory signs of contamination or PASS.	0.2
				0.3					0.3
				0.4					0.4
	MB_BH02_0.5-0.6			0.5	NATURAL - Mottled brown-grey-red high plasticity CLAY.	M		No visual and/or olfactory signs of contamination or PASS.	0.5
				0.6					0.6
				0.7					0.7
				0.8					0.8
	MB_BH02_0.9-1.0			0.9					0.9
				1	EOH @ 1.0 mbgl (target depth reached).				1
				1.1					1.1
				1.2					1.2
				1.3					1.3
				1.4					1.4

Drilling Method
HA - Hand Auger
SFA - Solid Flight Auger
HFA - Hollow Flight Auger
PT - Pushtube
AH - Air Hammer
NDD - Non Destructive Drilling
WB - Washbore

Moisture
D: Dry M: Moist W: Wet

Consistency Index
VS: Very Soft St:Stiff S:Soft VSt: Very Stiff
F: Firm H: Hard Fr: Friable

Density Index
VL: Very Loose D: Dense
L: Loose VD:Very Dense MD: Medium Dense

Descriptions based on Unified Soil Classification system.
Photo Ionisation Detector (PID)
Parts per million (ppm)

▽ Encountered Groundwater
▼ Stabilised Groundwater

produced by ESlog.ESdat.net on 19 Sep 2024

BOREHOLE LOG MB_BH03

PROJECT NUMBER: SCL240076.01
PROJECT NAME: Benedict_Moorebank_ASS
CLIENT: Benedict
ADDRESS: 146 Newbridge Road, Moorebank
DRILLED BY: EPIC

DRILLING DATE: 22 August 2024
TOTAL DEPTH: 1.0
DIAMETER: 100
LOGGED BY: Harry Dawson
CHECKED BY: NE

LATITUDE:
LONGITUDE:
SURFACE ELEVATION:

Drilling Method	Sample	PID	Graphic Log	Depth (m)	Material Description	Moisture	Consistency Density	Additional Observations	Depth (m)
HA				0.1	FILL - Brown, coarse crushed SANDSTONE with trace rootlets.	M		No visual and/or olfactory signs of contamination or PASS.	0.1
	MB_BH03_0.2-0.3			0.2	NATURAL - Mottled brown-grey, high plasticity sandy CLAY with trace crushed sandstone.	M		No visual and/or olfactory signs of contamination or PASS.	0.2
				0.3					0.3
				0.4					0.4
	MB_BH03_0.5-0.6			0.5					0.5
				0.6					0.6
				0.7					0.7
				0.8					0.8
	MB_BH03_0.9-1.0			0.9					0.9
				1	Termination @ 1.0 mbgl (target depth reached).				1
				1.1					1.1
				1.2					1.2
				1.3					1.3
				1.4					1.4

Drilling Method
HA - Hand Auger
SFA - Solid Flight Auger
HFA - Hollow Flight Auger
PT - Pushtube
AH - Air Hammer
NDD - Non Destructive Drilling
WB - Washbore

Moisture
D: Dry M: Moist W: Wet

Consistency Index
VS: Very Soft St:Stiff S:Soft VSt: Very Stiff
F: Firm H: Hard Fr: Friable

Density Index
VL: Very Loose D: Dense
L: Loose VD:Very Dense MD: Medium Dense

Descriptions based on Unified Soil Classification system.
Photo Ionisation Detector (PID)
Parts per million (ppm)

▽ Encountered Groundwater
▼ Stabilised Groundwater

produced by ESlog.ESdat.net on 19 Sep 2024

BOREHOLE LOG MB_BH04

PROJECT NUMBER: SCL240076.01
PROJECT NAME: Benedict_Moorebank_ASS
CLIENT: Benedict
ADDRESS: 146 Newbridge Road, Moorebank
DRILLED BY: EPIC

DRILLING DATE: 22 August 2024
TOTAL DEPTH: 0.7
DIAMETER: 100
LOGGED BY: Harry Dawson
CHECKED BY: NE

LATITUDE:
LONGITUDE:
SURFACE ELEVATION:

Drilling Method	Sample	PID	Graphic Log	Depth (m)	Material Description	Moisture	Consistency Density	Additional Observations	Depth (m)
HA				0.1	FILL - Brown, coarse grained crushed SANDSTONE with trace rootlets.	M		No visual and/or olfactory signs of contamination or PASS.	0.1
	MB_BH04_0.2-0.3			0.2	NATURAL - Mottled brown-grey sandy CLAY with medium to high plasticity and trace crushed sandstone	M		No visual and/or olfactory signs of contamination or PASS.	0.2
				0.3					0.3
				0.4					0.4
	MB_BH04_0.5-0.6			0.5					0.5
				0.6					0.6
	MB_BH04_0.7-0.8			0.7					0.7
				0.8	Termination @ 0.8mbgl (refusal).				0.8
				0.9					0.9
				1					1
				1.1					1.1
				1.2					1.2
				1.3					1.3
				1.4					1.4

Drilling Method
HA - Hand Auger
SFA - Solid Flight Auger
HFA - Hollow Flight Auger
PT - Pushtube
AH - Air Hammer
NDD - Non Destructive Drilling
WB - Washbore

Moisture
D: Dry M: Moist W: Wet

Consistency Index
VS: Very Soft St:Stiff S:Soft VSt: Very Stiff
F: Firm H: Hard Fr: Friable

Density Index
VL: Very Loose D: Dense
L: Loose VD:Very Dense MD: Medium Dense

Descriptions based on Unified Soil Classification system.
Photo Ionisation Detector (PID)
Parts per million (ppm)

▽ Encountered Groundwater
▼ Stabilised Groundwater

produced by ESlog.ESdat.net on 19 Sep 2024

ATTACHMENT D: RESULTS SUMMARY TABLES

T1. Laboratory Results Summary

				CRS											
				a-Net Acidity without ANCE	Liming rate without ANCE	pH kcl	s-Net Acidity without ANCE	Acid Neutralising Capacity	Chromium Reducible Sulfur	Chromium Reducible Sulphur	KCl Extractable Sulfur	Liming Rate	Net Acidity (acidity units)	Net Acidity (sulfur units)	HCl Extractable Sulfur	sulfidic - Titratable Actual Acidity	sulfidic-Acid Neutral
				moles H+/t	kg CaCO3/t	-	% S	%CaCO3	%w/w	mole H+/t	%	kg CaCO3/t	mole H+/t	%S	%S	%S	%S
EQL				5	0.75		0.005	0.05	0.005	3	0.005	0.75	5	0.005	0.005	0.01	0.05
National Acid Sulfate Soils Guidance <1,000 tonnes [Fine Texture]				62			0.1										
Sample Code	**Field ID**	**Date**	**Matrix**														
359842-1	**MB_BH01_0.2-0.3**	**22 Aug 2024**	**Soil**	12	0.92	8.7	0.020	1.5	0.02	12	0.016	<0.75	<5	<0.005	0.019	<0.01	0.48
359842-2	**MB_BH01_0.5-0.6**	**22 Aug 2024**	**Soil**	21	1.6	8.9	0.034	2.4	0.03	21	0.026	<0.75	<5	<0.005	0.033	<0.01	0.78
359842-3	**MB_BH01_0.6-0.7**	**22 Aug 2024**	**Soil**	14	1.0	9.0	0.022	2.3	0.02	14	0.027	<0.75	<5	<0.005	0.033	<0.01	0.74
359842-4	**MB_BH02_0.2-0.3**	**22 Aug 2024**	**Soil**	71	5.3	3.8	0.11	-	0.005	3	0.080	5	71	0.12	0.087	0.1	-
359842-5	**MB_BH02_0.5-0.6**	**22 Aug 2024**	**Soil**	77	5.8	3.6	0.12	-	0.006	4	0.074	6	77	0.13	0.087	0.1	-
359842-6	**MB_BH02_0.9-1.0**	**22 Aug 2024**	**Soil**	59	4.4	3.6	0.094	-	<0.005	<3	0.061	4	59	0.099	0.071	0.08	-
359842-7	**MB_BH03_0.2-0.3**	**22 Aug 2024**	**Soil**	9.5	<0.75	7.5	0.015	0.75	0.02	10	0.10	<0.75	<5	<0.005	0.10	<0.01	0.24
359842-8	**MB_BH03_0.5-0.6**	**22 Aug 2024**	**Soil**	9.0	<0.75	7.6	0.014	1.0	0.01	9	0.050	<0.75	<5	<0.005	0.045	<0.01	0.32
359842-9	**MB_BH03_0.9-1.0**	**22 Aug 2024**	**Soil**	5.2	<0.75	7.9	0.0080	1.2	0.008	5	0.042	<0.75	<5	<0.005	0.042	<0.01	0.37
359842-10	**MB_BH04_0.2-0.3**	**22 Aug 2024**	**Soil**	5.8	<0.75	9.3	0.0090	1.4	0.009	6	0.007	<0.75	<5	<0.005	0.008	<0.01	0.45
359842-11	**MB_BH04_0.5-0.6**	**22 Aug 2024**	**Soil**	9.5	<0.75	9.2	0.015	1.6	0.02	10	0.008	<0.75	<5	<0.005	0.009	<0.01	0.50
359842-12	**MB_BH04_0.7-0.8**	**22 Aug 2024**	**Soil**	<5	<0.75	9.2	0.0060	1.0	0.006	4	0.011	<0.75	<5	<0.005	0.010	<0.01	0.32
359842-13	**QC01**	**22 Aug 2024**	**Soil**	9.0	<0.75	8.6	0.014	1.5	0.01	9	0.015	<0.75	<5	<0.005	0.016	<0.01	0.48
Statistics																	
Number of Results				**13**	**13**	**13**	**13**	**10**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**10**
Number of Detects				**12**	**6**	**13**	**13**	**10**	**12**	**12**	**13**	**3**	**3**	**3**	**13**	**3**	**10**
Minimum Concentration				**<5**	**<0.75**	**3.6**	**0.006**	**0.75**	**0.005**	**3**	**0.007**	**<0.75**	**<5**	**<0.005**	**0.008**	**<0.01**	**0.24**
Minimum Detect				**5.2**	**0.92**	**3.6**	**0.006**	**0.75**	**0.005**	**3**	**0.007**	**4**	**59**	**0.099**	**0.008**	**0.08**	**0.24**
Maximum Concentration				**77**	**5.8**	**9.3**	**0.12**	**2.4**	**0.03**	**21**	**0.1**	**6**	**77**	**0.13**	**0.1**	**0.1**	**0.78**
Maximum Detect				**77**	**5.8**	**9.3**	**0.12**	**2.4**	**0.03**	**21**	**0.1**	**6**	**77**	**0.13**	**0.1**	**0.1**	**0.78**
Average Concentration *				**23**	**1.7**	**7.5**	**0.037**	**1.5**	**0.013**	**8.3**	**0.04**	**1.4**	**18**	**0.029**	**0.043**	**0.025**	**0.47**
Median Concentration *				**9.5**	**0.375**	**8.6**	**0.015**	**1.45**	**0.01**	**9**	**0.027**	**0.375**	**2.5**	**0.0025**	**0.033**	**0.005**	**0.465**
Standard Deviation *				**27**	**2.1**	**2.2**	**0.041**	**0.54**	**0.0082**	**5.3**	**0.031**	**2.1**	**29**	**0.05**	**0.033**	**0.039**	**0.18**
95% UCL (Student's-t) *				**36.59**	**2.678**	**8.56**	**0.0575**	**1.777**	**0.0169**	**10.98**	**0.055**	**2.465**	**32.38**	**0.0537**	**0.0593**	**0.0447**	**0.57**
% of Detects				**92**	**46**	**100**	**100**	**100**	**92**	**92**	**100**	**23**	**23**	**23**	**100**	**23**	**100**
% of Non-Detects				**8**	**54**	**0**	**0**	**0**	**8**	**8**	**0**	**77**	**77**	**77**	**0**	**77**	**0**

* A Non Detect Multiplier of 0.5 has been applied.

	a-Net Acidity without ANCE	Net Acid Soluble Sulfur	Titratable Actual Acidity
	moles H+/t	%S	mole H+/t
EQL	5	0.005	5
National Acid Sulfate Soils Guidance <1,000 tonnes [Fine Texture]	62		

Sample Code	Field ID	Date	Matrix			
359842-1	MB_BH01_0.2-0.3	22 Aug 2024	Soil	12	0.008	<5
359842-2	MB_BH01_0.5-0.6	22 Aug 2024	Soil	21	0.015	<5
359842-3	MB_BH01_0.6-0.7	22 Aug 2024	Soil	14	0.012	<5
359842-4	MB_BH02_0.2-0.3	22 Aug 2024	Soil	71	0.014	61
359842-5	MB_BH02_0.5-0.6	22 Aug 2024	Soil	77	0.026	61
359842-6	MB_BH02_0.9-1.0	22 Aug 2024	Soil	59	0.021	49
359842-7	MB_BH03_0.2-0.3	22 Aug 2024	Soil	9.5	<0.005	<5
359842-8	MB_BH03_0.5-0.6	22 Aug 2024	Soil	9.0	<0.005	<5
359842-9	MB_BH03_0.9-1.0	22 Aug 2024	Soil	5.2	<0.005	<5
359842-10	MB_BH04_0.2-0.3	22 Aug 2024	Soil	5.8	<0.005	<5
359842-11	MB_BH04_0.5-0.6	22 Aug 2024	Soil	9.5	<0.005	<5
359842-12	MB_BH04_0.7-0.8	22 Aug 2024	Soil	<5	<0.005	<5
359842-13	QC01	22 Aug 2024	Soil	9.0	<0.005	<5

Statistics

Number of Results	13	13	13
Number of Detects	12	6	3
Minimum Concentration	<5	<0.005	<5
Minimum Detect	5.2	0.008	49
Maximum Concentration	77	0.026	61
Maximum Detect	77	0.026	61
Average Concentration *	23	0.0087	15
Median Concentration *	9.5	0.0025	2.5
Standard Deviation *	27	0.0082	24
95% UCL (Student's-t) *	36.59	0.0128	26.97
% of Detects	92	46	23
% of Non-Detects	8	54	77

* A Non Detect Multiplier of 0.5 has been applied.

ATTACHMENT E: LABORATORY CERTIFICATES

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Harry Dawson

Sample Login Details

Your reference	SCL240076.01 146 Newbridge Rd, Moorebank
Envirolab Reference	359842
Date Sample Received	22/08/2024
Date Instructions Received	22/08/2024
Date Results Expected to be Reported	29/08/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	13 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	4
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Chromium Suite
MB_BH01_0.2-0.3-0.2-0.3	✓
MB_BH01_0.5-0.6-0.5-0.6	✓
MB_BH01_0.6-0.7-0.6-0.7	✓
MB_BH02_0.2-0.3-0.2-0.3	✓
MB_BH02_0.5-0.6-0.5-0.6	✓
MB_BH02_0.9-1.0-0.9-1.0	✓
MB_BH03_0.2-0.3-0.2-0.3	✓
MB_BH03_0.5-0.6-0.5-0.6	✓
MB_BH03_0.9-1.0-0.9-1.0	✓
MB_BH04_0.2-0.3-0.2-0.3	✓
MB_BH04_0.5-0.6-0.5-0.6	✓
MB_BH04_0.7-0.8-0.7-0.8	✓
QC01	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 359842

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Harry Dawson
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SCL240076.01 146 Newbridge Rd, Moorebank**
Number of Samples	13 Soil
Date samples received	22/08/2024
Date completed instructions received	22/08/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	29/08/2024
Date of Issue	29/08/2024

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jenny He, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

Chromium Suite						
Our Reference		359842-1	359842-2	359842-3	359842-4	359842-5
Your Reference	UNITS	MB_BH01_0.2-0.3	MB_BH01_0.5-0.6	MB_BH01_0.6-0.7	MB_BH02_0.2-0.3	MB_BH02_0.5-0.6
Date Sampled		22/08/2024	22/08/2024	22/08/2024	22/08/2024	22/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/08/2024	22/08/2024	22/08/2024	22/08/2024	22/08/2024
Date analysed	-	23/08/2024	23/08/2024	23/08/2024	23/08/2024	23/08/2024
pH $_{kcl}$	pH units	8.7	8.9	9.0	3.8	3.6
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01	0.1	0.1
TAA pH 6.5	moles H^+ /t	<5	<5	<5	61	61
Chromium Reducible Sulfur	%w/w	0.02	0.03	0.02	0.005	0.006
a-Chromium Reducible Sulfur	moles H^+ /t	12	21	14	3	4
S_{HCl}	%w/w S	0.019	0.033	0.033	0.087	0.087
S_{KCl}	%w/w S	0.016	0.026	0.027	0.080	0.074
S_{NAS}	%w/w S	0.008	0.015	0.012	0.014	0.026
ANC_{BT}	% $CaCO_3$	1.5	2.4	2.3	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.48	0.78	0.74	[NT]	[NT]
s-Net Acidity	%w/w S	<0.005	<0.005	<0.005	0.12	0.13
a-Net Acidity	moles H^+ /t	<5	<5	<5	71	77
Liming rate	kg $CaCO_3$ /t	<0.75	<0.75	<0.75	5	6
a-Net Acidity without ANCE	moles H^+ /t	12	21	14	71	77
Liming rate without ANCE	kg $CaCO_3$ /t	0.92	1.6	1.0	5.3	5.8
s-Net Acidity without ANCE	%w/w S	0.020	0.034	0.022	0.11	0.12

Chromium Suite						
Our Reference		359842-6	359842-7	359842-8	359842-9	359842-10
Your Reference	UNITS	MB_BH02_0.9-1.0	MB_BH03_0.2-0.3	MB_BH03_0.5-0.6	MB_BH03_0.9-1.0	MB_BH04_0.2-0.3
Date Sampled		22/08/2024	22/08/2024	22/08/2024	22/08/2024	22/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/08/2024	22/08/2024	22/08/2024	22/08/2024	22/08/2024
Date analysed	-	23/08/2024	23/08/2024	23/08/2024	23/08/2024	23/08/2024
pH $_{kcl}$	pH units	3.6	7.5	7.6	7.9	9.3
s-TAA pH 6.5	%w/w S	0.08	<0.01	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	49	<5	<5	<5	<5
Chromium Reducible Sulfur	%w/w	<0.005	0.02	0.01	0.008	0.009
a-Chromium Reducible Sulfur	moles H^+ /t	<3	10	9	5	6
S_{HCl}	%w/w S	0.071	0.10	0.045	0.042	0.008
S_{KCl}	%w/w S	0.061	0.10	0.050	0.042	0.007
S_{NAS}	%w/w S	0.021	<0.005	<0.005	<0.005	<0.005
ANC_{BT}	% $CaCO_3$	[NT]	0.75	1.0	1.2	1.4
s-ANC_{BT}	%w/w S	[NT]	0.24	0.32	0.37	0.45
s-Net Acidity	%w/w S	0.099	<0.005	<0.005	<0.005	<0.005
a-Net Acidity	moles H^+ /t	59	<5	<5	<5	<5
Liming rate	kg $CaCO_3$ /t	4	<0.75	<0.75	<0.75	<0.75
a-Net Acidity without ANCE	moles H^+ /t	59	9.5	9.0	5.2	5.8
Liming rate without ANCE	kg $CaCO_3$ /t	4.4	<0.75	<0.75	<0.75	<0.75
s-Net Acidity without ANCE	%w/w S	0.094	0.015	0.014	0.0080	0.0090

Chromium Suite				
Our Reference		359842-11	359842-12	359842-13
Your Reference	UNITS	MB_BH04_0.5-0.6	MB_BH04_0.7-0.8	QC01
Date Sampled		22/08/2024	22/08/2024	22/08/2024
Type of sample		Soil	Soil	Soil
Date prepared	-	22/08/2024	22/08/2024	22/08/2024
Date analysed	-	23/08/2024	23/08/2024	23/08/2024
pH $_{kcl}$	pH units	9.2	9.2	8.6
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	<5	<5
Chromium Reducible Sulfur	%w/w	0.02	0.006	0.01
a-Chromium Reducible Sulfur	moles H^+ /t	10	4	9
S_{HCl}	%w/w S	0.009	0.010	0.016
S_{KCl}	%w/w S	0.008	0.011	0.015
S_{NAS}	%w/w S	<0.005	<0.005	<0.005
ANC_{BT}	% $CaCO_3$	1.6	1.0	1.5
s-ANC_{BT}	%w/w S	0.50	0.32	0.48
s-Net Acidity	%w/w S	<0.005	<0.005	<0.005
a-Net Acidity	moles H^+ /t	<5	<5	<5
Liming rate	kg $CaCO_3$ /t	<0.75	<0.75	<0.75
a-Net Acidity without ANCE	moles H^+ /t	9.5	<5	9.0
Liming rate without ANCE	kg $CaCO_3$ /t	<0.75	<0.75	<0.75
s-Net Acidity without ANCE	%w/w S	0.015	0.0060	0.014

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Net acidity including ANC has a safety factor of 1.5 applied. Neutralising value (NV) of 100% is assumed for liming rate. The recommendation that the SHCL concentration be multiplied by a factor of 2 to ensure retained acidity is not underestimated, has not been applied in the SHCL result. However, it has been applied in the SNAS calculation: SNAS % = (SHCL-SKCL)x2

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			22/08/2024	1	22/08/2024	22/08/2024		22/08/2024	[NT]
Date analysed	-			23/08/2024	1	23/08/2024	23/08/2024		23/08/2024	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	1	8.7	8.7	0	98	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-068	<5	1	<5	<5	0	93	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	1	0.02	0.02	0	97	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	1	12	13	8	[NT]	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	1	0.019	0.019	0	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	1	0.016	0.015	6	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	1	0.008	0.008	0	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	1	1.5	1.5	0	100	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	1	0.48	0.48	0	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	<0.005	1	<0.005	<0.005	0	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-068	<5	1	<5	<5	0	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	1	<0.75	<0.75	0	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-068	<5	1	12	13	8	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	1	0.92	0.98	6	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	<0.005	1	0.020	0.021	5	[NT]	[NT]

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	22/08/2024	22/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	23/08/2024	23/08/2024		[NT]	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	11	9.2	9.2	0	[NT]	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-068	[NT]	11	<5	<5	0	[NT]	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	[NT]	11	0.02	0.02	0	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	[NT]	11	10	9	11	[NT]	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	[NT]	11	0.009	0.009	0	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	[NT]	11	0.008	0.008	0	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	[NT]	11	<0.005	<0.005	0	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	[NT]	11	1.6	1.6	0	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	[NT]	11	0.50	0.50	0	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	[NT]	11	<0.005	<0.005	0	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-068	[NT]	11	<5	<5	0	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-068	[NT]	11	<0.75	<0.75	0	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-068	[NT]	11	9.5	9.2	3	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-068	[NT]	11	<0.75	<0.75	0	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	[NT]	11	0.015	0.015	0	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

CoC: 22/08/24 1343

Chain of Custody Record

Project No:	SCL240076.01
Project/Site:	146 Newbridge Rd, Moorebank
Sampled By:	HD
Phone / Email:	neldridge@epicenvironmental.com.au
Results to:	hdawson@epicenvironmental.com.au
1 of 1	
Number of Eskies: 1	

Lab: Envirolab	**Envirolab**
Lab Quote No:	
Lab Batch No:	
Date Results Required:	**Standard**
Sample Disposal After:	60 Days

LAB ID	Sample ID	Depth (m)	Date/Time	Matrix	CONTAINER TYPE & PRESERVATIVE									CRS Suite
					Soil				water/liquid					
					Glass Jar	Plastic Bag	PFAS Jar	Asbestos Bag	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)	100-500ml Glass Bottle	
1	MB_BH01_0.2-0.3	0.2-0.3	22/08/2024	s		1								X
2	MB_BH01_0.5-0.6	0.5-0.6	22/08/2024	s		1								X
3	MB_BH01_0.6-0.7	0.6-0.7	22/08/2024	s		1								X
4	MB_BH02_0.2-0.3	0.2-0.3	22/08/2024	s		1								X
5	MB_BH02_0.5-0.6	0.5-0.6	22/08/2024	s		1								X
6	MB_BH02_0.9-1.0	0.9-1.0	22/08/2024	s		1								X
7	MB_BH03_0.2-0.3	0.2-0.3	22/08/2024	s		1								X
8	MB_BH03_0.5-0.6	0.5-0.6	22/08/2024	s		1								X
9	MB_BH03_0.9-1.0	0.9-1.0	22/08/2024	s		1								X
10	MB_BH04_0.2-0.3	0.2-0.3	22/08/2024	s		1								X
11	MB_BH04_0.5-0.6	0.5-0.6	22/08/2024	s		1								X
12	MB_BH04_0.7-0.8	0.7-0.8	22/08/2024	s		1								X
13	QC01		22/08/2024	s		1								X
			TOTALS			13								13

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 359842

Date Received: 22/8/24

Time Received: 1455

Received By: PM

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

Relinquished By:					Received By: Envirolab Services				
NAME	Harry Dawson	SIGNATURE	HD	DATE	22/08/2024	NAME Paul	SIGNATURE	DATE	22/8/24

Custody Seals Intact	(Y)	N
Samples Received Chilled	(Y)	N
Method of Shipment		

NOTES:


THE KEY
WHAT'S RIGHT
FOR YOU