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environmental water management

ANNUAL MONITORING REPORT

FOR 2020

WOOLFOX QUARRY LANDFILL

Report Reference: 3088/MON-2020
Version F1
January 2021

Report prepared for:

Bullimore Sand and Gravel Ltd
South Witham
GRANTHAM
Lincolnshire
NG33 5QE

Barkers Chambers • Barker Street • Shrewsbury • United Kingdom • SY1 1SB
T: 01743 355770 • *F*: 01743 357771 • *E*: info@hafrenwater.com

GENERAL NOTES

Title of report: Annual Monitoring Report

Site: Woolfox Quarry Landfill

Report ref: 3088/MON-2020

Date: January 2021

Version	Date	Issued to
Version D1	27th January 2021	Nick Bulllimore
Version F1	28th January 2021	Nick Bulllimore

Author: Dylan Ingman MESci MSc

Reviewer: Lawrence Brown BSc MSc FGS CGeol

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1 BACKGROUND

1.1 Introduction

EPR Permit No LP3638LH was issued by the Environment Agency to Bullimore Sand and Gravel Ltd, the operator, for Woolfox Quarry Landfill, on 23rd January 2009.

Hafren Water has been commissioned to undertake the annual monitoring report for Woolfox Quarry Landfill in accordance with the Permit. Data collected during 2020 are assessed in this report and results are compared with historical data in order to identify any developing trends.

1.2 Location and setting

Woolfox Quarry is an active inert landfill site located some 10 km northwest of the town of Stamford, Rutland. The site is centred at National Grid Reference (NGR) SK 950 135, and lies approximately 2 km southeast of the village of Greetham.

The site comprises three areas, as shown on *Drawing 3088/MON-2020/01*: in the north, landfilling is actively taking place; the centre of the site has previously been landfilled and is now restored; and the southern area mineral extraction is taking place. *Drawing 3088/MON-2020/01* has been amended to correctly identify the southern extension area which had previously been identified as completed and closed former inert landfill.

1.3 Operational activities

Between January and December 2020 47,585 tonnes of inert waste was imported to the site. Infilling is currently taking place in Phase 6 of the northern area, as shown in *Appendix 3088/MON-20/A1*.

During 2020 mineral extraction was undertaken in the southwestern corner of the southern extension shown on *Drawing 3088/MON-2020/01*.

2 MONITORING SCHEME AND INFRASTRUCTURE

2.1 Infrastructure

Five monitoring boreholes are located around the perimeter of the site (as shown on *Drawing 3088/MON-2020/01*). Boreholes BHD and BHE are located up-gradient of the permitted area and BHA and BHB are down-gradient. BHE was installed as an alternative to BHD as an up-gradient borehole. BHG is located down-gradient of the closed landfill area to the south.

The permit requires that monitoring is undertaken at BHA, BHB and BHE.

2.2 Groundwater

Monitoring is carried out at BHA, BHB, BHD and BHE, as per the requirements of the permit. Additional monitoring is also undertaken at BHG. Groundwater levels have been monitored at these boreholes on a quarterly basis since January 2009. Monitoring was undertaken in March, May, August and November in 2020.

Groundwater quality is assessed as per requirements detailed in Table S4.2 of the Permit, and reproduced in *Table 3088/MON-2020/T1*.

3088/MON-2020/T1: Groundwater quality monitoring		
Boreholes	**Frequency**	**Parameters**
BHB, BHA and BHE (BHD)	Quarterly	Dissolved Oxygen, pH, Electrical Conductivity, Ammoniacal Nitrogen (NH_4-N), Total Oxidised Nitrogen (TON), Total Organic Carbon (TOC), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Calcium, Magnesium, Sodium, Potassium, Alkalinity, Sulphate, Chloride, Iron, Manganese, Cadmium, Chromium, Copper, Tin, Nickel, Lead and Zinc

2.3 Surface water

Surface water monitoring is not undertaken at Woolfox Quarry Landfill due to the absence of watercourses and waterbodies within, and adjacent to, the site. No water was required to be pumped off-site during 2020.

2.4 Gas monitoring

Gas monitoring has been undertaken at Woolfox Quarry in all boreholes as required in Table S4.4 of the Permit.

Monitoring is undertaken on a quarterly basis and concentrations of oxygen, carbon dioxide, and methane are recorded as percentage by volume (% v/v). Monitoring was undertaken in March, May, August, and November in 2020.

2.5 Compliance limits

Compliance limits for groundwater quality and landfill gas are shown in full in Schedule 4 of the Permit (Tables S4.1, S4.2 and S4.3 in the permit) and are summarised in *Table 3088/MON-2020/T2*.

3088/MON-2020/T2: Compliance levels			
Monitoring point	**Parameter**	**Limit**	**Monitoring frequency**
Groundwater			
BHA, BHB and BHE* (BHD)	Ammoniacal nitrogen	0.39 mg/l	Monthly for first 12 months, quarterly thereafter
	Cadmium	0.1 µg/l	
	Chloride	250 mg/l	
	Nickel	20 µg/l	
	Potassium	12 mg/l	
	Sulphate	250 mg/l	
Gas			
BHA, BHB and BHE* (BHD)	Methane	1% v/v	Monthly for first 6 months, quarterly thereafter
	Carbon dioxide	1.5% v/v	
	Oxygen	No limit	
	Atmospheric pressure	No limit	
	Meteorological data	No limit	
* BHE was installed as an alternative to BHD			

3 MONITORING RESULTS

3.1 Groundwater levels

Groundwater level monitoring data are provided in *Appendix 3088/MON-2020/A2* and hydrographs are presented on *Drawing 3088/MON-2020/02*.

In November 2019 and March 2020 groundwater levels exhibited a seasonal rise which was larger than normal in boreholes A, D, E and G. In BHA and BHG a similar magnitude of increase was last observed in the winters of 2013/14 and 2014/15.

No long-term trends in groundwater level are apparent in any of the boreholes.

3.2 Groundwater quality

Groundwater quality graphs for parameters with compliance limits are shown on *Drawings 3088/MON-2020/03 to 05*, analysis and interpretation is summarised below. The analytical certificates for 2020 are provided in *Appendix 3088/MON-2020/A3*. Since monitoring started at the site, a number of laboratories have been used for water quality analysis. This alternation between laboratories and sub-contractors frequently results in different limits of detection between quarterly monitoring periods which, in addition to different laboratory methodology, has resulted in large apparent changes in water quality. For 2020 Socotec has been used for all samples. Borehole A was not sampled in August 2020 as it could not be located due to vegetation cover. Borehole D was not sampled in August due to insufficient water within the borehole.

Ammoniacal nitrogen (*Drawing 3088/MON-2020/03 (a)*) Ammoniacal nitrogen concentrations were considerably lower in 2020 compared to those measured at the end of 2019. Concentrations did peak in May 2020 in BHB, BHE and BHG, however these are similar to peaks in 2015 and 2017 and this is likely to be a normal variation in concentrations. The concentration in borehole D increased over the year to reach a maximum of 0.20 mg/l in November 2020. All concentrations were below the compliance limit of 0.39 mg/l.

Over the monitoring period the highest concentrations appear to be within the down-gradient boreholes, however up-gradient boreholes also show a peak in concentration at the same time suggesting an external source.

Chloride (*Drawing 3088/MON-2020/03 (a)*): Concentrations in down-gradient boreholes (BHA, BHB and BHG) remained below 50 mg/l throughout the monitoring period. No long-term rising or falling trends are apparent.

Concentrations in up-gradient boreholes BHD and BHE fell throughout 2020 while remaining within their historical range. Concentrations remained higher than the down-gradient boreholes, suggesting a source of chloride up-gradient of the landfill, possibly run-off from salt spreading on the adjacent A1 dual carriageway. No long-term rising or falling trends are apparent.

Down-gradient concentrations remained lower than those recorded in up-gradient boreholes.

Chloride concentrations remained below the compliance of 250 mg/l limit in all boreholes throughout 2020.

pH: The pH values for all borehole samples remained consistently between 6.9 and 7.5 throughout the 2020 monitoring period.

Alkalinity (measured as $CaCO_3$ mg/l): Alkalinity ranged between 260 mg/l and 313 mg/l at the up-gradient monitoring points (BHD and BHE) and 221 mg/l to 294 mg/l down-gradient (BHA, BHB and BHG).

Sulphate (*Drawing 3088/MON-2020/04 (a)*): During 2020 the majority of boreholes had sulphate concentrations between 60 mg/l and 70 mg/l. In BHD concentrations increased during the year to a maximum of 239 mg/l in November. There appears to have been a long-term rising trend in this borehole since 2009. As BHD is up-gradient this is unlikely to be the result of site operations. The compliance limit was not exceeded in any borehole during 2020.

Metals:

Cadmium (compliance limit metal) (*Drawing 3088/MON-2020/04 (b)*): During 2020 the laboratory detection limit was 0.02 µg/l and only one sample, BHB at 0.06 µg/l (March) exceeded this limit. This was still well below the compliance limit. It is not possible to comment on trends in the data, as for most of the period since monitoring started concentrations have been below the laboratory detection limits.

Nickel (compliance limit metal) (*Drawing 3088/MON-2020/05 (a)*): The compliance limit of 0.02 mg/l was not exceeded in any boreholes during the 2020 monitoring period. There is little apparent difference between up-gradient and down-gradient boreholes.

Concentrations for all boreholes were between the limit of detection (0.001 mg/l) and 0.005 mg/l, which is consistent with the long-term trend.

Lead: Lead was not detected above the limit of detection (0.001 mg/l) throughout 2020.

Chromium: Concentrations were at or below the limit of detection (0.001 mg/l) throughout the monitoring period.

Zinc: Zinc was present in boreholes A, B and D, at concentrations between 0.002 mg/l and 0.004 mg/l, with the exception of the sample from BHD in May which had a concentration of 0.01 mg/l. Concentrations in the other boreholes were at or below the limit of detection.

Manganese: In Boreholes D, E and G concentrations of manganese were below or close to the limit of detection (0.002 mg/l). In boreholes A and B the concentrations were higher than the limit of detection, with maximum values recorded in May of 6 mg/l and 8 mg/l. Borehole B returned to the limit of detection in the subsequent monitoring visit, whilst Borehole A returned to historic concentrations within that borehole.

Iron: During 2020, iron concentrations remained at or below the limit of detection of 0.01 mg/l. This is lower than previous years however it appears consistent with the overall trend.

Potassium (compliance limit metal) (*Drawing 3088/MON-2020/05 (b)*): The potassium concentrations during 2020 were between 2 mg/l and 5 mg/l for all boreholes. These concentrations are within the historical range recorded for the site.

All recorded concentrations were well below the compliance limit of 12 mg/l.

3.3 Gas results

Gas monitoring data is provided in *Appendix 3088/MON-2020/A4,* analysis and interpretation are summarised below.

Methane has not been detected during the 2020 monitoring period.

The compliance limit for carbon dioxide (CO_2) of 1.5% v/v was exceeded 3 times during 2020. In March 3.8% v/v CO_2 was recorded in BHA, in May and August concentrations of 1.8% v/v and 2.4% v/v were recorded in BHD. All other results were below 0.4% v/v.

The exceedances appear to be spikes in the data which have also occurred in the past and do not indicate any long-term trend.

3.4 Comparison with compliance limits

The chemical results of the groundwater identified no exceedances of the compliance limits during 2020. There does not appear to be a long-term trend of increasing concentrations.

The carbon dioxide compliance limit (1.5%) was exceeded three times at boreholes BHA and BHD.

4 SUMMARY AND CONCLUSIONS

Monitoring in 2020 was conducted in March, May, August and November.

Groundwater levels continue to show seasonal variations although the rise in the winter of 2019/20 was particularly large in some boreholes with a magnitude that has not been experienced since 2014. The overall groundwater flow remains towards the south.

There does not appear to be any long-term degradation in groundwater quality, with none of the monitoring visits in 2020 identifying exceeded compliance limits.

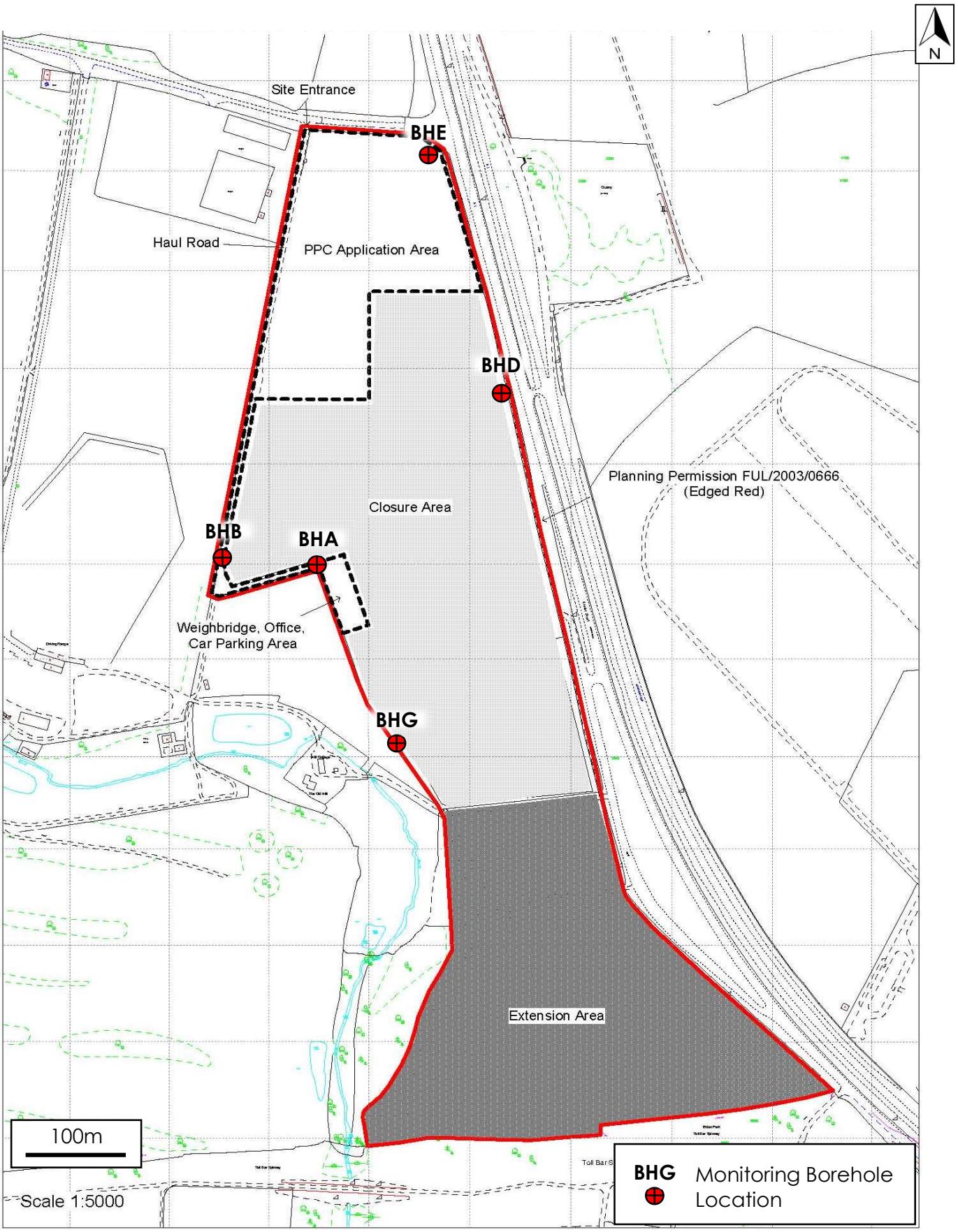
The compliance limit for methane was not exceeded during 2020, however the compliance limit of carbon dioxide (1.5%) was exceeded three times at BHA and BHD. Carbon dioxide concentrations should continue to be closely monitored to see if there is any trend present.

Under the current and historical groundwater flow conditions, boreholes D and E are representative of conditions up-gradient of the permitted area and current landfilling activities. It is therefore recommended that the compliance limits at up-gradient boreholes D and E are removed.

The quarterly groundwater quality monitoring requirements at Woolfox appear excessive in comparison to other similar sites. In light of the absence of any particular issues with groundwater quality, Hafren Water suggests that the monitoring requirements should be revised as per *Table 3088/MON-20/T3*.

3088/MON-20/T3: Proposal for revised monitoring requirements		
BHB, BHA, and BHE (BHD)	Quarterly	Water level pH, Electrical Conductivity, Ammoniacal Nitrogen (NH_4-N), Cadmium, Chloride, Nickel, Potassium and Sulphate.
BHB, BHA, and BHE (BHD) until decommissioned	Annually	Water level Dissolved Oxygen, pH, Electrical Conductivity, Ammoniacal Nitrogen (NH_4-N), Total Oxidised Nitrogen (TON), Total Organic Carbon (TOC), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Calcium, Magnesium, Sodium, Potassium, Alkalinity, Sulphate, Chloride, Iron, Manganese, Cadmium, Chromium, Copper, Tin, Nickel, Lead and Zinc.

DRAWINGS



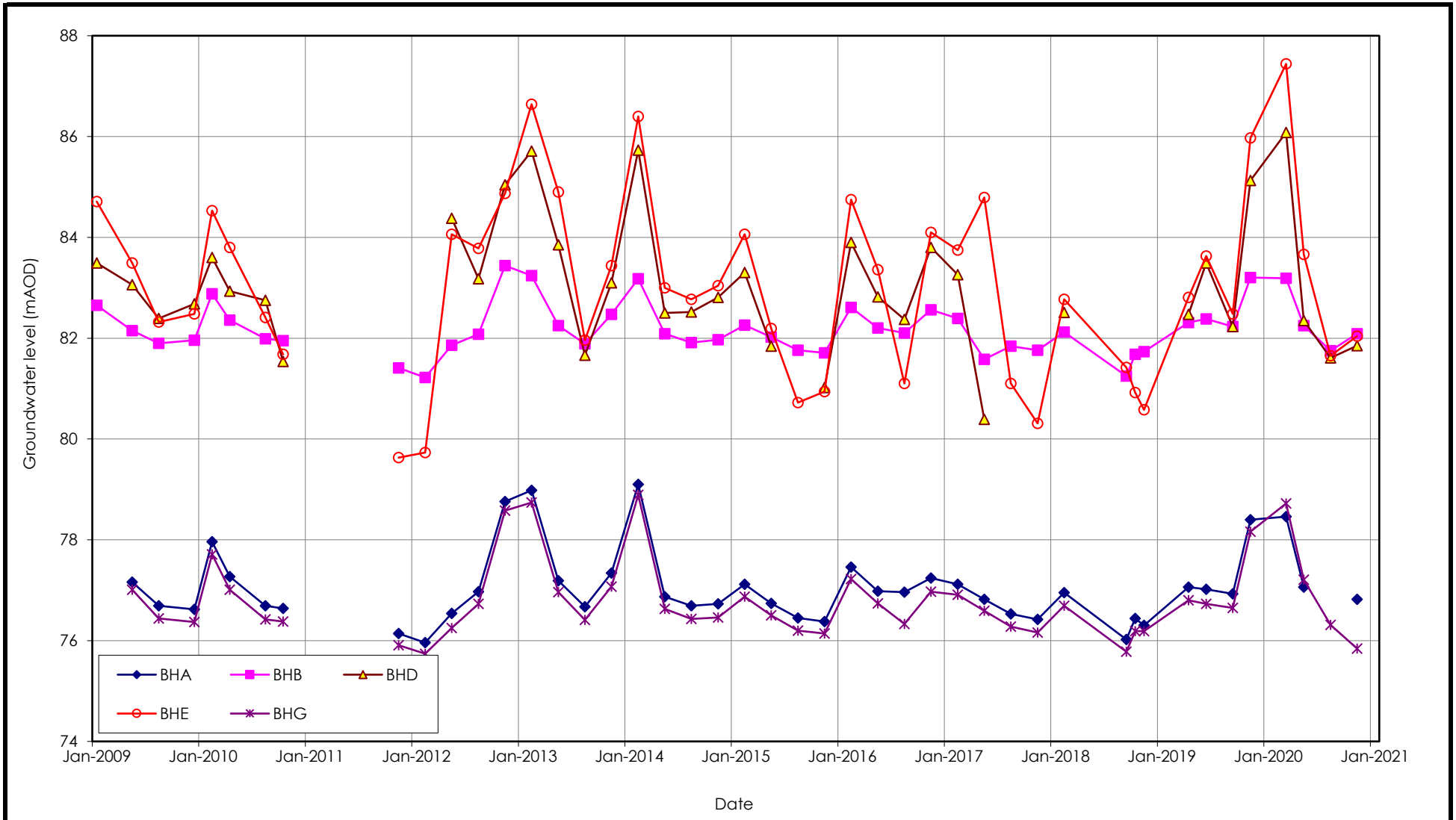
hafrenwater
environmental water management

Barkers Chambers • Barker Street • Shrewsbury •
United Kingdom • SY1 1SB
E: info@hafrenwater.com • *T*: 01743 355 770

Client

Bullimore Sand and Gravel
South Witham
GRANTHAM
Lincolnshire, NG33 5QE

Title	Borehole locations		
Project	Woolfox landfill		
Drawing	3088/MON-2020/01	Version	1
Date	Jan-21	Scale	as shown



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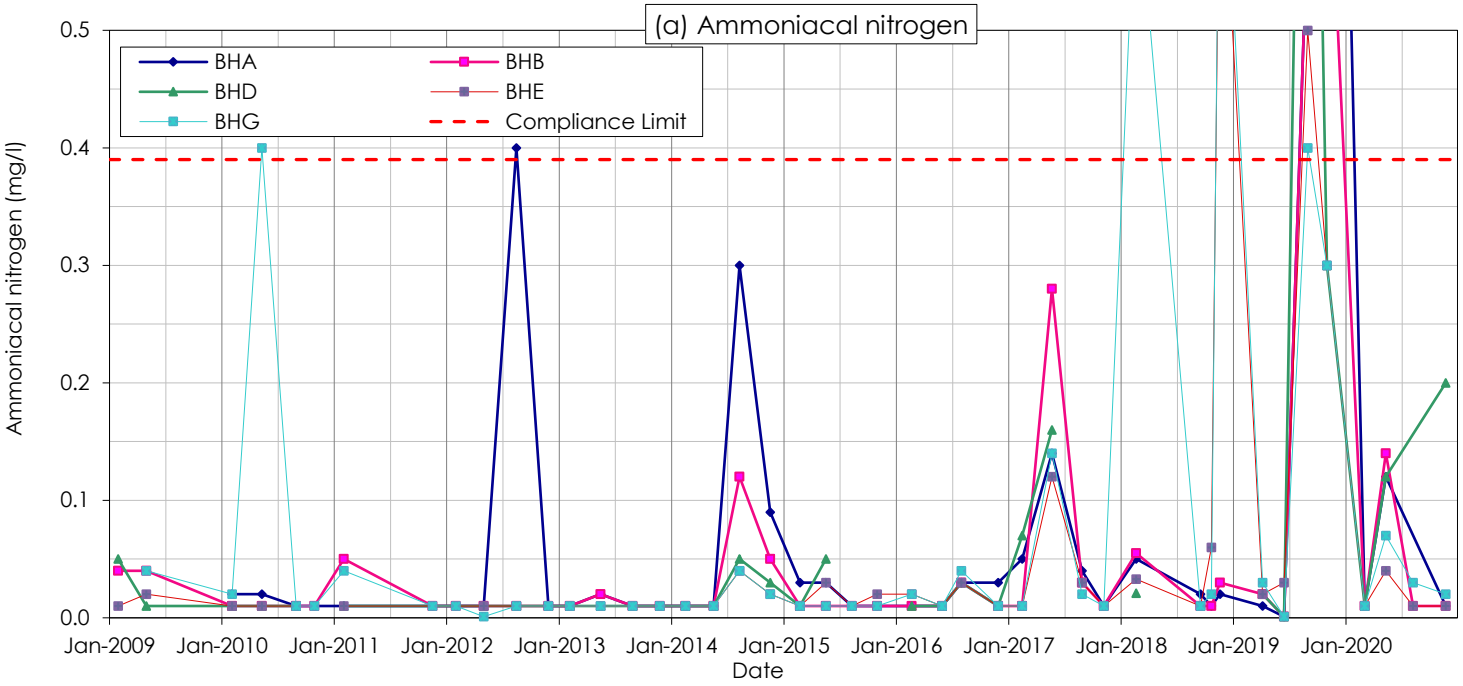
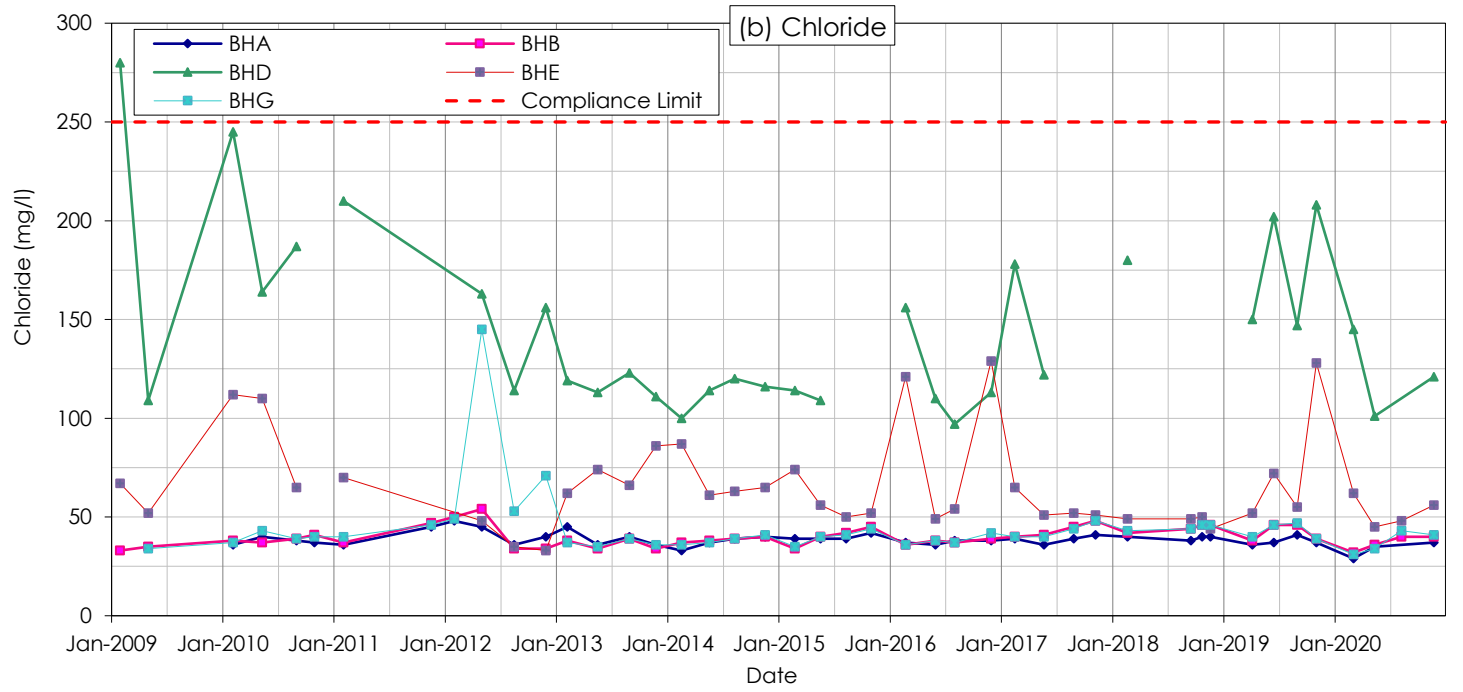
environmental water management
Barkers Chambers • Barker Street •
Shrewsbury • United Kingdom • SY1 1SB
E: info@hafrenwater.com • T: 01743 355

Client **Bullimores Sand & Gravel**
South Witham,
GRANTHAM
Lincolnshire, NG33 5QE

Title	Groundwater level hydrographs		
Project	Woolfox Landfill		
Drawing	3088/MON-2020/02	Version	1
Date	Jan-21	Scale	NA





Client	**Bullimores Sand & Gravel** South Witham, GRANTHAM Lincolnshire, NG33 5QE
Title	Groundwater quality: ammoniacal nitrogen & chloride
Project	Woolfox Landfill
Drawing	3088/MON-2020/03
Version	1
Date	Jan-21
Scale	NA

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environmental water management
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• Shropshire • SY1 1SB
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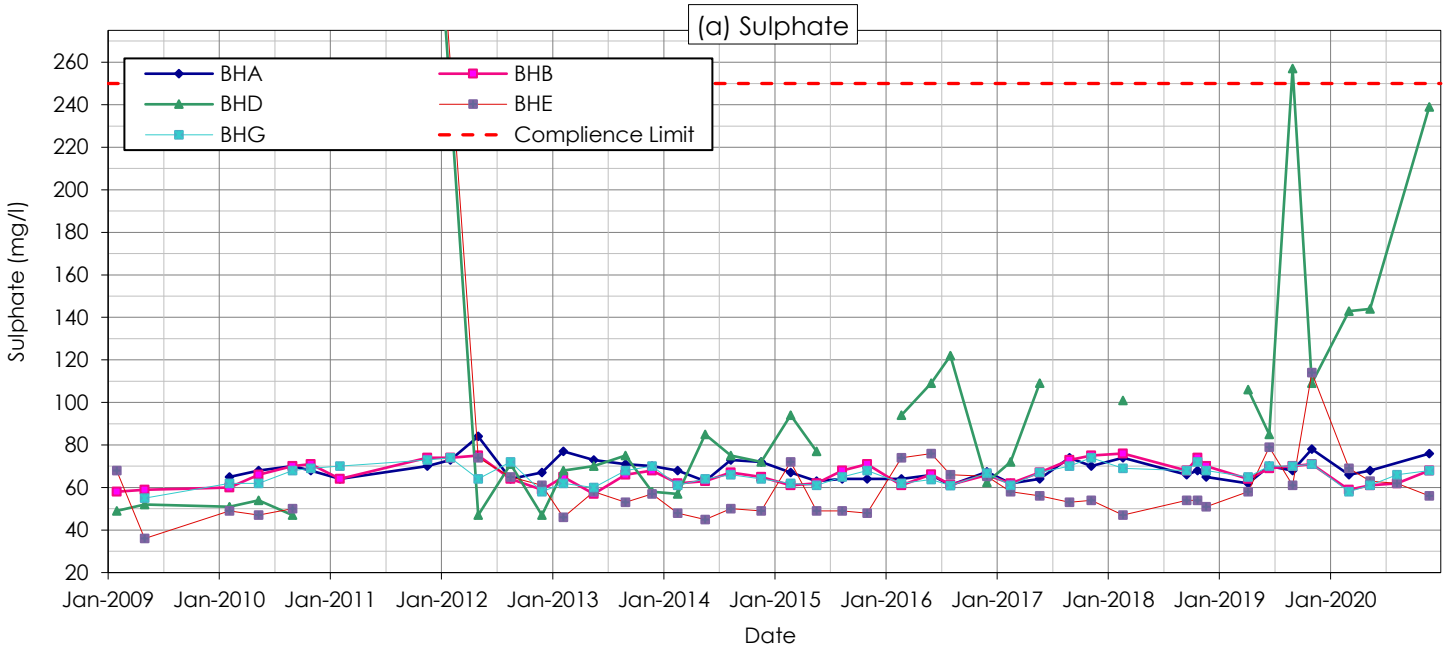

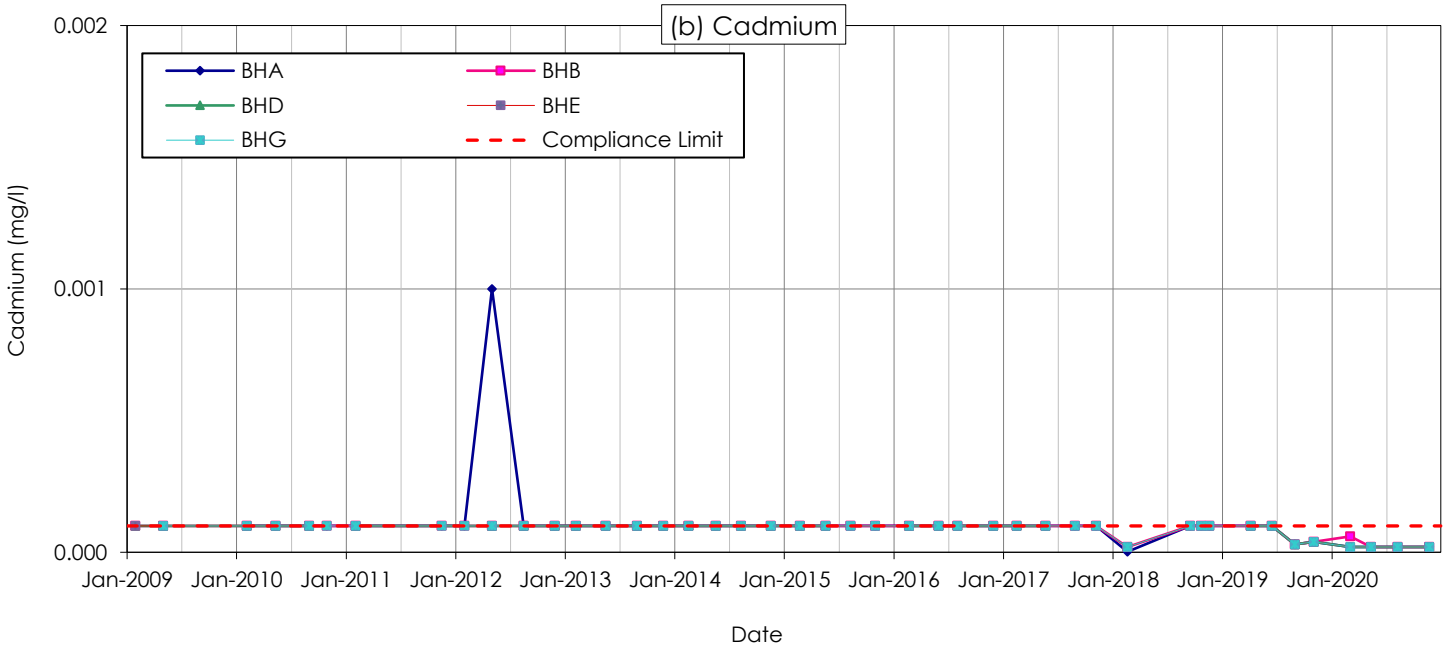

Client	**Bullimores Sand & Gravel** South Witham, GRANTHAM Lincolnshire, NG33 5QE
Title	Groundwater quality: sulphate and cadmium
Project	Woolfox Landfill
Drawing	3088/MON-2020/04
Version	1
Date	Jan-21
Scale	NA

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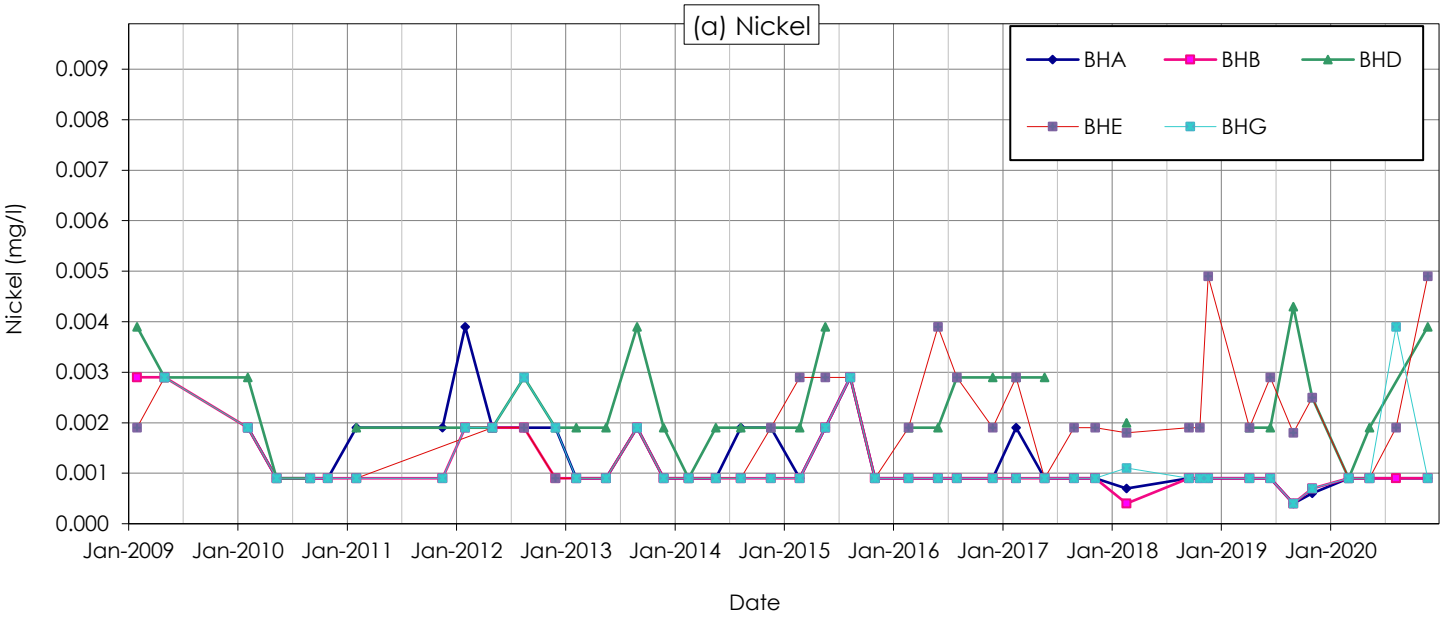

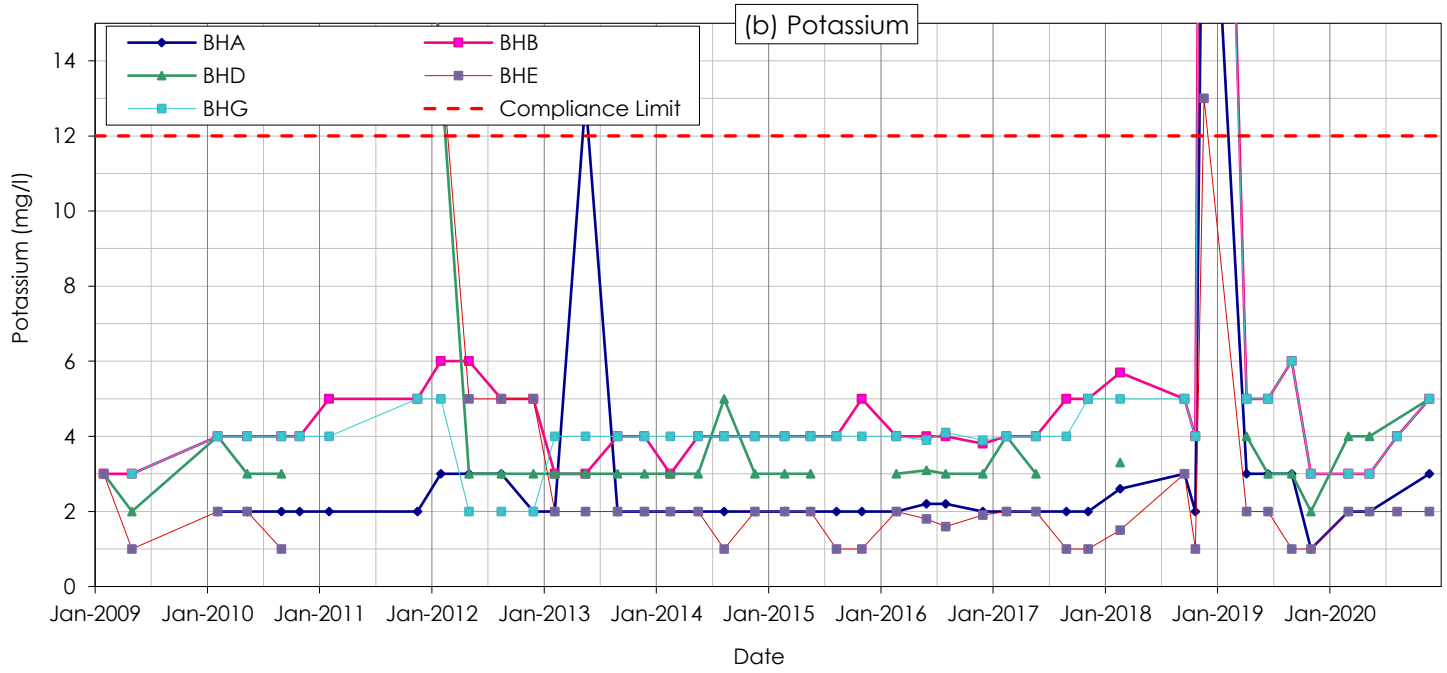

Client	**Bullimores Sand & Gravel** South Witham, GRANTHAM Lincolnshire, NG33 5QE
Title	Groundwater quality: nickel and potassium
Project	Woolfox Landfill
Drawing	3088/MON-2020/05
Version	1
Date	Jan-21
Scale	NA

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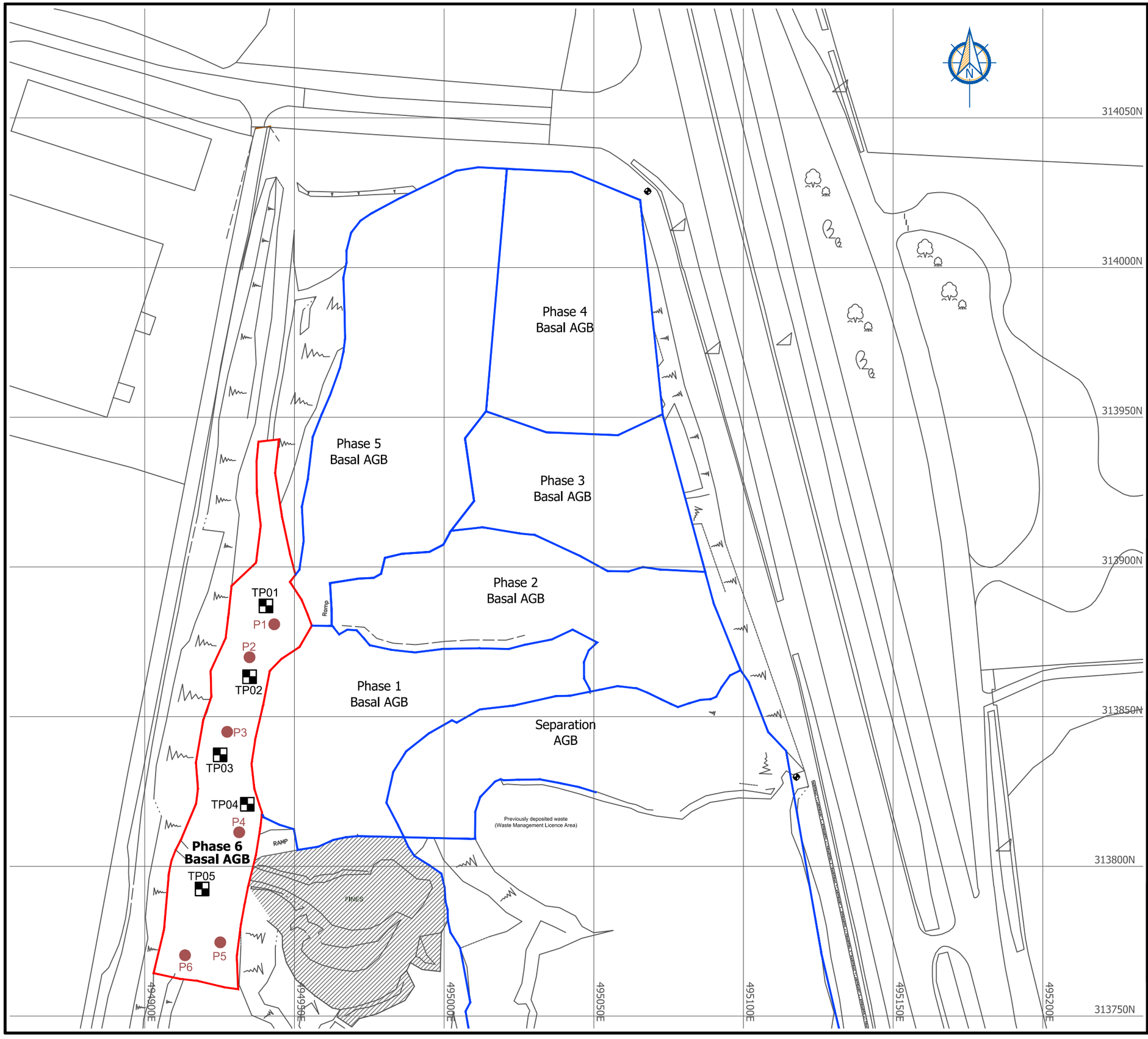
APPENDIX 3088/MON-2020/A1

Site phasing plan



LEGEND

- Phase 6 boundary
- Boundary of previously completed phases
- P2 — *In-situ* permeability test location
- TP01 — Trial pit location

Version	Revision and compilation notes	Date
A	Issued as Final with Report No. 180904	05.10.2018

Client
Bullimores Sand & Gravel Limited

Project
Woolfox Quarry Landfill

Phase 6 extent of basal artificial geological barrier

GWP consultants
earth & water resources
Upton House
Market Street, Charlbury
Oxfordshire OX7 3PJ
United Kingdom
tel +44 (0)1608 810374
fax +44 (0)1608 810093
e-mail info@gwp.uk.com
web www.gwp.uk.com
GWP Consultants LLP. Registered No. OC326183.
Registered Office: Upton House, Market Street, Charlbury, Oxfordshire OX7 3PJ, UK

Date	Drawn	Checked	Scale
05.10.2018	EB/EMB	*MP*	1:1250 at A3

Drawing Ref	Drawing No	Version
WOOLFOX1810	1	A

APPENDIX 3088/MON-2020/A2

Groundwater level data

Woolfox Landfill										
Groundwater levels										

New BH Ref:	BHA		BHB		BHD		BHE		BHG	
Old Ref	OB1		OB2		OB3		OB4		OB5	
Headworks (mAOD)	89.10		92.60		98.77		101.14		95.80	
Ground Level (mAOD)							75.23		80.19	
Inst. Depth (m)	12.02		15.11		17.80		22.32		20.74	
Piezo Diam.	50mm		50mm		50mm		50mm		50mm	
Date	mbd	mAOD	mbd	mAOD	mbd	mAOD	mbd	mAOD	mbd	mAOD
29-Jan-09			9.95	82.65	15.28	83.49	16.43	84.71		
01-May-09	11.94	77.16	10.45	82.15	15.71	83.06	17.65	83.49	18.79	77.01
12-Aug-09	12.41	76.69	10.70	81.90	16.38	82.39	18.82	82.32	19.36	76.44
16-Dec-09	12.48	76.62	10.64	81.96	16.09	82.68	18.66	82.48	19.43	76.37
01-Feb-10	11.14	77.96	9.72	82.88	15.17	83.60	16.61	84.53	18.09	77.71
28-Apr-10	11.83	77.27	10.24	82.36	15.84	82.93	17.34	83.80	18.79	77.01
31-Aug-10	12.41	76.69	10.61	81.99	16.02	82.75	18.73	82.41	19.38	76.42
29-Oct-10	12.46	76.64	10.65	81.95	17.23	81.54	19.46	81.68	19.42	76.38
17-Nov-11	12.96	76.14	11.19	81.41			21.51	79.63	19.89	75.91
01-Feb-12	13.14	75.96	11.38	81.22			21.41	79.73	20.06	75.74
02-May-12	12.56	76.54	10.74	81.86	14.39	84.38	17.08	84.06	19.55	76.25
16-Aug-12	12.13	76.97	10.52	82.08	15.59	83.18	17.36	83.78	19.07	76.73
28-Nov-12	10.34	78.76	9.16	83.44	13.73	85.04	16.27	84.87	17.22	78.58
06-Feb-13	10.12	78.98	9.36	83.24	13.06	85.71	14.50	86.64	17.06	78.74
17-May-13	11.91	77.19	10.35	82.25	14.92	83.85	16.24	84.90	18.84	76.96
29-Aug-13	12.43	76.67	10.71	81.89	17.11	81.66	19.18	81.96	19.39	76.41
25-Nov-13	11.76	77.34	10.13	82.47	15.67	83.10	17.70	83.44	18.73	77.07
17-Feb-14	10.00	79.10	9.42	83.18	13.04	85.73	14.74	86.40	16.91	78.89
19-May-14	12.23	76.87	10.51	82.09	16.27	82.50	18.14	83.00	19.17	76.63
11-Aug-14	12.41	76.69	10.69	81.91	16.25	82.52	18.37	82.77	19.37	76.43
19-Nov-14	12.37	76.73	10.63	81.97	15.96	82.81	18.10	83.04	19.34	76.46
24-Feb-15	11.98	77.12	10.34	82.26	15.47	83.30	17.08	84.06	18.93	76.87
20-May-15	12.36	76.74	10.58	82.02	16.93	81.84	18.95	82.19	19.30	76.50
12-Aug-15	12.65	76.45	10.84	81.76			20.42	80.72	19.60	76.20
02-Nov-15	*12.72*	76.38	*10.89*	81.71	*17.75*	81.02	*20.20*	80.94	*19.66*	76.14
23-Feb-16	11.64	77.46	9.99	82.61	14.87	83.90	16.39	84.75	18.58	77.22
31-May-16	12.12	76.98	10.40	82.20	15.95	82.82	17.78	83.36	19.06	76.74
02-Aug-16	12.14	76.96	10.50	82.10	16.40	82.37	20.04	81.10	19.47	76.33
30-Nov-16	11.86	77.24	10.04	82.56	14.97	83.80	17.04	84.10	18.83	76.97
16-Feb-17	11.98	77.12	10.21	82.39	15.51	83.26	17.39	83.75	18.89	76.91
23-May-17	12.28	76.82	11.02	81.58	18.38	80.39	16.35	84.79	19.21	76.59
26-Aug-17	12.57	76.53	10.76	81.84			20.04	81.10	19.52	76.28
08-Nov-17	12.68	76.42	10.84	81.76			20.83	80.31	19.64	76.16
21-Feb-18	12.15	76.95	10.48	82.12	16.26	82.51	18.37	82.77	19.11	76.69
18-Sep-18	13.08	76.02	11.35	81.25			19.72	81.42	20.02	75.78
24-Oct-18	12.66	76.44	10.92	81.68			20.22	80.92	19.61	76.19
21-Nov-18	12.80	76.30	10.87	81.73			20.56	80.58	19.61	76.19
08-Apr-19	12.04	77.06	10.29	82.31	16.30	82.47	18.33	82.81	19.00	76.80
17-Jun-19	12.08	77.02	10.22	82.38	15.28	83.49	17.51	83.63	19.07	76.73
02-Sep-19	12.17	76.93	10.37	82.23	16.54	82.23	18.66	82.48	19.15	76.65
18-Nov-19	10.70	78.40	9.40	83.20	13.64	85.13	15.17	85.97	17.64	78.16
05-Mar-20	10.64	78.46	9.41	83.19	12.69	86.08	13.70	87.44	17.08	78.72
13-May-20	12.04	77.06	10.35	82.25	16.42	82.35	17.48	83.66	18.59	77.21
10-Aug-20			10.85	81.75	17.16	81.61	19.49	81.65	19.49	76.31
24-Nov-20	12.28	76.82	10.51	82.09	16.92	81.85	19.10	82.04	19.96	75.84

APPENDIX 3088/MON-2020/A3

Groundwater quality data

Our Ref: EXR/301166 (Ver. 1)
Your Ref:

March 16, 2020

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Anne Morrison
Enitial
Enterprise Drive
Four Ashes
Wolverhampton
WV10 7DE

For the attention of Anne Morrison

Dear Anne Morrison

Sample Analysis - Woolfox Quarry

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

A Tave
Project Co-ordinator
01283 554463

TEST REPORT

1252

Report No. EXR/301166 (Ver. 1)

Enitial
Enterprise Drive
Four Ashes
Wolverhampton
WV10 7DE

Site: Woolfox Quarry

The 5 samples described in this report were registered for analysis by SOCOTEC UK Limited on 09-Mar-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 16-Mar-2020

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
SOCOTEC UK Lim
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 16-Mar-2020

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	KONENS	KONENS
Method Reporting Limits :			0.00002	0.001	0.001	0.001	0.002	0.001	0.001	0.002	1	0.01	1	1	1	3	0.01	1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Manganese as Mn (Dissolved)**	**Nickel as Ni (Dissolved)**	**Tin as Sn (Dissolved)**	**Zinc as Zn (Dissolved)**	**Calcium as Ca (Dissolved) a**	**Iron as Fe (Dissolved) a**	**Magnesium as Mg (Dissolved) a**	**Potassium as K (Dissolved) a**	**Sodium as Na (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**
2046788	BHA	05-Mar-20	<0.00002	<0.001	0.001	<0.001	0.026	<0.001	<0.001	0.004	141	0.01	7	2	15	66	<0.01	29
2046789	BHB	05-Mar-20	0.00006	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	0.003	145	<0.01	6	3	13	59	<0.01	32
2046791	BHD	05-Mar-20	<0.00002	<0.001	0.001	<0.001	<0.002	0.001	<0.001	0.003	198	<0.01	10	4	86	143	<0.01	145
2046792	BHE	05-Mar-20	<0.00002	<0.001	0.001	<0.001	<0.002	0.001	<0.001	<0.002	154	<0.01	6	2	28	69	<0.01	62
2046793	BHG	05-Mar-20	<0.00002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	142	<0.01	6	3	12	58	0.01	31

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name

Contact

Enitial

Anne Morrison

Woolfox Quarry

Sample Analysis

Date Printed	**16-Mar-2020**
Report Number	**EXR/301166**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	mg/l	mV	pH units						
Method Codes :			KONENS	WSLM11	WSLM12	WSLM13	WSLM17	WSLM2	WSLM20	WSLM20.	WSLM25	WSLM3						
Method Reporting Limits :			0.2	5	2	0.2	2	100	1	0.1								
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes						
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Total Oxidised Nitrogen as N**	**Chemical Oxygen Demand (Settled)**	**Total Alkalinity as CaCO3 w**	**Total Organic Carbon w**	**Total Acidity as CaCO3 w**	**Conductivity uS/cm @ 25C w**	**Biochemical Oxygen Demand w**	**Dissolved Oxygen w**	**Redox Potential mV w**	**pH units w**						
2046788	BHA	05-Mar-20	10.1	8	291	0.57	Nil	741	<1.0	6.0	228.0	7.1						
2046789	BHB	05-Mar-20	15.0	<5	294	0.65	Nil	751	<1.0	7.2	188.7	7.1						
2046791	BHD	05-Mar-20	13.7	11	313	2.2	Nil	1340	<1.0	5.4	186.8	6.9						
2046792	BHE	05-Mar-20	5.9	6	303	0.95	Nil	851	<2.0	4.1	180.7	7						
2046793	BHG	05-Mar-20	14.2	<5	286	0.61	Nil	743	<1.0	6.5	187.4	7.2						

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Tel +44 (0) 1283 554400

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Client Name

Contact

Enitial

Anne Morrison

Woolfox Quarry

Sample Analysis

Date Printed	**16-Mar-2020**
Report Number	**EXR/301166**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Enitial**
Site **Woolfox Quarry**
Report No **W301166**

Consignment No W169306
Date Logged 09-Mar-2020
In-House Report Due 16-Mar-2020

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	Report A	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Manganese as Mn MS (Dissolved)	Tin as Sn MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Sodium as Na (Dissolved) VAR	Potassium as K (Dissolved) VAR	Iron as Fe (Dissolved) VAR	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Total Oxidised Nitrogen (Kone)
MethodID				CUSTSERV	ICPMSW								ICPWATVAR						KONENS		
					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/2046788	BHA	Groundwater	05/03/20																		
EX/2046789	BHB	Groundwater	05/03/20																		
EX/2046791	BHD	Groundwater	05/03/20																		
EX/2046792	BHE	Groundwater	05/03/20																		
EX/2046793	BHG	Groundwater	05/03/20																		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Enitial**
Site **Woolfox Quarry**
Report No **W301166**

Consignment No W169306
Date Logged 09-Mar-2020
In-House Report Due 16-Mar-2020

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	WSLM11 Chemical Oxygen Demand (Settled)	WSLM12 Total Alkalinity as CaCO3	WSLM13 Total Organic Carbon	WSLM17 Total Acidity as CaCO3	WSLM2 Conductivity uS/cm @ 25C	WSLM20 Biochemical Oxygen Demand	WSLM20. Dissolved Oxygen	WSLM25 Redox Potential mV	WSLM3 pH units
				✓	✓	✓	✓	✓	✓			✓
EX/2046788	BHA	Groundwater	05/03/20						E			
EX/2046789	BHB	Groundwater	05/03/20						E			
EX/2046791	BHD	Groundwater	05/03/20						E			
EX/2046792	BHE	Groundwater	05/03/20						E			
EX/2046793	BHG	Groundwater	05/03/20						E			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

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Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
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C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
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F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/301166

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
WSLM20	EX/2046792	Due to a limited sample available, a dilution was applied prior to testing. Unfortunately the result is below our lower range for this sample volume, therefore the detection limit has been raised.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	WSLM11	As Received	Acid Dichromate oxidation of the sample followed by colorimetric analysis.
Water	WSLM12	As Received	Titration with Sulphuric Acid to required pH
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM17	As Received	Titration with Sodium Hydroxide to required pH
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM20	As Received	Determination of Biological Oxygen Demand using 5 day incubation and dissolved oxygen probe
Water	WSLM20.	As Received	Determination of Dissolved Oxygen in waters using an oxygen detecting probe
Water	WSLM25	As Received	Direct determination using Redox Potential Probe
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Enitial
Site : Woolfox Quarry
Report Number : W30_1166

Lab ID Number	Client ID	Description
EX/2046788	BHA	Groundwater
EX/2046789	BHB	Groundwater
EX/2046791	BHD	Groundwater
EX/2046792	BHE	Groundwater
EX/2046793	BHG	Groundwater

Our Ref: EXR/303750 (Ver. 1)
Your Ref:

May 26, 2020

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Enitial
Enterprise Drive
Four Ashes
Wolverhampton
WV10 7DE

Dear Sirs

Sample Analysis - Woolfox Quarry

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

D Brassington
Project Co-ordinator
01283 554493

TEST REPORT

1252

Report No. EXR/303750 (Ver. 1)

Enitial
Enterprise Drive
Four Ashes
Wolverhampton
WV10 7DE

Site: Woolfox Quarry

The 5 samples described in this report were registered for analysis by SOCOTEC UK Limited on 15-May-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 26-May-2020

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

On behalf of
SOCOTEC UK Lim

Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 26-May-2020

Tests marked '^' have been subcontracted to another laboratory.

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Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	KONENS	KONENS
Method Reporting Limits :			0.00002	0.001	0.001	0.001	0.002	0.001	0.001	0.002	1	0.01	1	1	1	3	0.01	1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Manganese as Mn (Dissolved)**	**Nickel as Ni (Dissolved)**	**Tin as Sn (Dissolved)**	**Zinc as Zn (Dissolved)**	**Calcium as Ca (Dissolved) a**	**Iron as Fe (Dissolved) a**	**Magnesium as Mg (Dissolved) a**	**Potassium as K (Dissolved) a**	**Sodium as Na (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**
2059500	BHA	13-May-20	<0.00002	<0.001	<0.001	<0.001	0.006	<0.001	<0.001	<0.002	140	<0.01	8	2	21	68	0.12	35
2059501	BHB	13-May-20	<0.00002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	0.004	147	<0.01	6	3	14	61	0.14	36
2059502	BHD	13-May-20	<0.00002	<0.001	0.003	<0.001	0.004	0.002	<0.001	0.01	201	0.01	11	4	61	144	0.12	101
2059503	BHE	13-May-20	<0.00002	<0.001	<0.001	<0.001	<0.002	0.001	<0.001	<0.002	146	<0.01	6	2	24	63	0.04	45
2059504	BHG	13-May-20	<0.00002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	145	<0.01	6	3	14	61	0.07	34

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name

Contact

Enitial

Woolfox Quarry

Sample Analysis

Date Printed	**26-May-2020**
Report Number	**EXR/303750**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	mg/l	mV	pH units						
Method Codes :			KONENS	WSLM11	WSLM12	WSLM13	WSLM17	WSLM2	WSLM20	WSLM20.	WSLM25	WSLM3						
Method Reporting Limits :			0.2	5	2	0.2	2	100	1	0.1								
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes						
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Total Oxidised Nitrogen as N**	**Chemical Oxygen Demand (Settled)**	**Total Alkalinity as CaCO3 w**	**Total Organic Carbon w**	**Total Acidity as CaCO3 w**	**Conductivity uS/cm @ 25C w**	**Biochemical Oxygen Demand w**	**Dissolved Oxygen w**	**Redox Potential mV w**	**pH units w**						
2059500	BHA	13-May-20	9.0	6	243	0.68	Nil	723	<1.0	8.6	256.3	7.4						
2059501	BHB	13-May-20	14.5	<5	229	0.65	Nil	722	<1.0	9.2	223.9	7.4						
2059502	BHD	13-May-20	10.9	8	302	2.2	Nil	1200	<1.0	7.2	207.1	7.5						
2059503	BHE	13-May-20	5.6	<5	263	1.3	Nil	728	<1.0	7.6	229.9	7.4						
2059504	BHG	13-May-20	14.4	<5	229	0.65	Nil	717	<1.0	9.4	139.9	7.4						

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name

Contact

Enitial

Sample Analysis

Woolfox Quarry

Date Printed	**26-May-2020**
Report Number	**EXR/303750**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Enitial**
Site **Woolfox Quarry**
Report No **W303750**

Consignment No W171799
Date Logged 15-May-2020
In-House Report Due 22-May-2020

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	ICPMSW								IGPWATVAR							KONENS		
					Report A	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Manganese as Mn MS (Dissolved)	Tin as Sn MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Sodium as Na (Dissolved) VAR	Potassium as K (Dissolved) VAR	Iron as Fe (Dissolved) VAR	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Total Oxidised Nitrogen (Kone)
						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/2059500	BHA	Groundwater	13/05/20																				
EX/2059501	BHB	Groundwater	13/05/20																				
EX/2059502	BHD	Groundwater	13/05/20																				
EX/2059503	BHE	Groundwater	13/05/20																				
EX/2059504	BHG	Groundwater	13/05/20																				

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Enitial**
Site **Woolfox Quarry**
Report No **W303750**

Consignment No W171799
Date Logged 15-May-2020
In-House Report Due 22-May-2020

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	WSLM11	WSLM12	WSLM13	WSLM17	WSLM2	WSLM20	WSLM20.	WSLM25	WSLM3
					Chemical Oxygen Demand (Settled)	Total Alkalinity as CaCO3	Total Organic Carbon	Total Acidity as CaCO3	Conductivity uS/cm @ 25C	Biochemical Oxygen Demand	Dissolved Oxygen	Redox Potential mV	pH units
					✓	✓	✓	✓	✓	✓			✓
EX/2059500	BHA	Groundwater	13/05/20							E			
EX/2059501	BHB	Groundwater	13/05/20							E			
EX/2059502	BHD	Groundwater	13/05/20							E			
EX/2059503	BHE	Groundwater	13/05/20							E			
EX/2059504	BHG	Groundwater	13/05/20							E			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	WSLM11	As Received	Acid Dichromate oxidation of the sample followed by colorimetric analysis.
Water	WSLM12	As Received	Titration with Sulphuric Acid to required pH
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM17	As Received	Titration with Sodium Hydroxide to required pH
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM20	As Received	Determination of Biological Oxygen Demand using 5 day incubation and dissolved oxygen probe
Water	WSLM20.	As Received	Determination of Dissolved Oxygen in waters using an oxygen detecting probe
Water	WSLM25	As Received	Direct determination using Redox Potential Probe
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Enitial
Site : Woolfox Quarry
Report Number : W30_3750

Lab ID Number	Client ID	Description
EX/2059500	BHA	Groundwater
EX/2059501	BHB	Groundwater
EX/2059502	BHD	Groundwater
EX/2059503	BHE	Groundwater
EX/2059504	BHG	Groundwater

Environmental Chemistry
SOCOTEC UK
Ashby Rd, Bretby,
Burton-on-Trent, UK
DE15 0YZ

Certificate of Analysis

Project No: 20080767

Client: Enitial

Quote Number: BEC20015786

Project Reference: Scheduled Samples 08-2020

Site Name: Woolfox

Contact: Ben Abbott

Address: Enterprise Drive
Four Ashes
Wolverhampton

Post Code: WV10 7DE

E-Mail: ben.abbott@enitial.co.uk

Phone No: tbc

Number of Samples Received: 3

Date Received: 14/08/2020

Analysis Date: 26/08/2020

Date Issued: 26/08/2020

Job Status: Complete

Report Type: Final Version 01

This report supersedes any versions previously issued by the laboratory

Account Manager

Laura Moore

Authorised by the Operations Manager
Becky Batham

Client: Enitial

Project Name: Woolfox

Project No: 20080767

Date Issued: 26/08/2020

Samples Analysed

Sample Reference	Text ID	Sample Date	Sample Type	Sample Description
BHB	20080767-001	10/08/2020 00:00:00	WATER	Ground Water
BHE	20080767-002	10/08/2020 00:00:00	WATER	Ground Water
BHG	20080767-003	10/08/2020 00:00:00	WATER	Ground Water

SOCOTEC

Client: Enitial

Project Name: Woolfox

Project No: 20080767

Date Issued: 26/08/2020

Analysis Results

Analysis	Method Code	MDL	Units	Accred	Project ID	20080767		
					Sample ID	001	002	003
					Customer ID	BHB	BHE	BHG
					Sample Type	WATER	WATER	WATER
					Sampling Date	10/08/2020	10/08/2020	10/08/2020
						ENITIAL_WOLVES Scheduled Samples 08-2020	ENITIAL_WOLVES Scheduled Samples 08-2020	ENITIAL_WOLVES Scheduled Samples 08-2020
Ammoniacal Nitrogen as N	KONENS	0.01	mg/l	U		<0.01	<0.01	0.03
Conductivity at 25°C	WSLM2 & 3	100	µS/cm	U		776	750	781
pH	WSLM2 & 3	1	pH units	U		7.4	7.3	7.4
Redox Potential	WSLM25		mV	N		194.2	159.8	134.9
Chloride as Cl	KONENS	1	mg/l	U		40	48	43
Total Oxidised Nitrogen	KONENS	0.2	mg/l	U		14.1	5.1	14.7
COD (Settled)	WSLM11	5	mg/l	U		<5	<5	<5
Acidity as CaCO3	WSLM17	2	mg/l	U		Nil	Nil	Nil
Total Alkalinity	WSLM12	2	mg/l	U		221	266	226
Dissolved Oxygen	WSLM20	0.1	mg O2/l	N		5.0	2.6	5.1
BOD (5 day)	WSLM20	1.4	mg O2/l	U		<1.4	<1.4	<1.4
Total Organic Carbon	WSLM13	0.2	mg/l	U		0.71	1.1	0.70
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U		<0.00002	<0.00002	<0.00002
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001	<0.001	<0.001
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001	<0.001	<0.001
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001	<0.001	<0.001
Manganese as Mn	ICPMSW (Dissolved)	0.002	mg/l	U		<0.002	<0.002	<0.002
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001	0.002	0.004
Tin as Sn	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001	<0.001	<0.001
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U		<0.002	<0.002	<0.002
Calcium as Ca	ICPWATVAR (Dissolved)	1	mg/l	U		143	142	149
Iron as Fe	ICPWATVAR (Dissolved)	0.01	mg/l	U		<0.01	<0.01	<0.01
Magnesium as Mg	ICPWATVAR (Dissolved)	1	mg/l	U		6	6	6
Potassium as K	ICPWATVAR (Dissolved)	1	mg/l	U		4	2	4
Total Sulphur as SO4	ICPWATVAR (Dissolved)	3	mg/l	U		62	62	66

UKAS TESTING
1252

SOCOTEC

Client: Enitial

Project Name: Woolfox

Project No: 20080767

Date Issued: 26/08/2020

Analysis Results

				Project ID	20080767		
				Sample ID	001	002	003
				Customer ID	BHB	BHE	BHG
				Sample Type	WATER	WATER	WATER
				Sampling Date	10/08/2020	10/08/2020	10/08/2020
Analysis	Method Code	MDL	Units	Accred	ENITIAL_WOLVES Scheduled Samples 08-2020	ENITIAL_WOLVES Scheduled Samples 08-2020	ENITIAL_WOLVES Scheduled Samples 08-2020
Sodium as Na	ICPWATVAR (Dissolved)	1	mg/l	U	19	25	20

UKAS TESTING 1252

Client: Enitial

Project Name: Woolfox

Project No: 20080767

Date Issued: 26/08/2020

Deviating Sample Report

Sample Reference	Text ID	Reported Name		Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time	Handling Time
BHB	20080767-001	**KONENS**	Chloride as Cl						✓	
BHB	20080767-001	**KONENS**	Total Oxidised Nitrogen						✓	
BHB	20080767-001	**WSLM20**	BOD (5 day)						✓	✓
BHB	20080767-001	**WSLM20**	Dissolved Oxygen						✓	✓
BHB	20080767-001	**WSLM2 & 3**							✓	
BHE	20080767-002	**KONENS**	Chloride as Cl						✓	
BHE	20080767-002	**KONENS**	Total Oxidised Nitrogen						✓	
BHE	20080767-002	**WSLM20**	BOD (5 day)						✓	✓
BHE	20080767-002	**WSLM20**	Dissolved Oxygen						✓	✓
BHE	20080767-002	**WSLM2 & 3**							✓	
BHG	20080767-003	**KONENS**	Chloride as Cl						✓	
BHG	20080767-003	**KONENS**	Total Oxidised Nitrogen						✓	
BHG	20080767-003	**WSLM20**	BOD (5 day)						✓	✓
BHG	20080767-003	**WSLM20**	Dissolved Oxygen						✓	✓
BHG	20080767-003	**WSLM2 & 3**							✓	

Analysis Method

Analysis	Analysis Type	Analysis Method
ICPMSW (Dissolved)	METALS	FILTERED
ICPWATVAR (Dissolved)	METALS	FILTERED
KONENS	INORGANIC	FILTERED
WSLM11	INORGANIC	UNFILTERED
WSLM12	INORGANIC	UNFILTERED
WSLM13	INORGANIC	UNFILTERED
WSLM2 & 3	INORGANIC	UNFILTERED
WSLM20	INORGANIC	UNFILTERED
WSLM25	INORGANIC	UNFILTERED

Client: Enitial

Project Name: Woolfox

Project No: 20080767

Date Issued: 26/08/2020

Additional Information

This report refers to samples as received, and SOCOTEC Uk Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

In the accreditation column of analysis report the codes are as follows:

U = UKAS accredited analysis
M = MCERT accredited analysis
N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 105° C

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° C.

This report shall not be reproduced except in full and with approval from the laboratory.

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Any samples marked with * are not covered by our scope of UKAS accreditation, if applicable further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

IS = Insufficient Sample to complete analysis
NA = Sample is not amenable for the required analysis
ND = Results cannot be determined

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the Subcontracted lab for information regarding any deviancies for this analysis.

End of Certificate of Analysis

Environmental Chemistry
SOCOTEC UK
Ashby Rd, Bretby,
Burton-on-Trent, UK
DE15 0YZ

Certificate of Analysis

Project No: 20111934

Client: Enitial

Quote Number: BEC20015786

Project Reference: Scheduled Samples 11-2020

Site Name: Woolfox

Contact: Ben Abbott

Address: Enterprise Drive
Four Ashes
Wolverhampton

Post Code: WV10 7DE

E-Mail: ben.abbott@enitial.co.uk

Phone No: tbc

Number of Samples Received: 5

Date Received: 26/11/2020

Analysis Date: 03/12/2020

Date Issued: 03/12/2020

Job Status: Complete

Report Type: Final Version 01

This report supersedes any versions previously issued by the laboratory

Account Manager

Laura Moore

Authorised by the Operations Manager
Becky Batham

Client: Enitial

Project Name: Woolfox

Project No: 20111934

Date Issued: 03/12/2020

Samples Analysed

Sample Reference	Text ID	Sample Date	Sample Type	Sample Description
BHA	20111934-001	24/11/2020 00:00:00	WATER	Ground Water
BHB	20111934-002	24/11/2020 00:00:00	WATER	Ground Water
BHD	20111934-003	24/11/2020 00:00:00	WATER	Ground Water
BHE	20111934-004	24/11/2020 00:00:00	WATER	Ground Water
BHG	20111934-005	24/11/2020 00:00:00	WATER	Ground Water

SOCOTEC

Client: Enitial

Project Name: Woolfox

Project No: 20111934

Date Issued: 03/12/2020

Analysis Results

				Project ID	20111934				
				Sample ID	001	002	003	004	005
				Customer ID	BHA	BHB	BHD	BHE	BHG
				Sample Type	WATER	WATER	WATER	WATER	WATER
				Sampling Date	24/11/2020	24/11/2020	24/11/2020	24/11/2020	24/11/2020
Analysis	Method Code	MDL	Units	Accred					
Ammoniacal Nitrogen as N	KONENS	0.01	mg/l	U	0.01	<0.01	0.20	<0.01	0.02
Conductivity at 25°C	WSLM2 & 3	100	µS/cm	U	762	768	1370	780	766
pH	WSLM2 & 3	1	pH units	U	7.4	7.3	7.3	7.4	7.5
Redox Potential	WSLM25		mV	N	27.6	43.5	39.4	52.8	49.8
Chloride as Cl	KONENS	1	mg/l	U	37	40	121	56	41
Total Oxidised Nitrogen	KONENS	0.2	mg/l	U	7.3	13.1	8.6	5.8	13.6
COD (Settled)	WSLM11	5	mg/l	U	<5	<5	7	<5	<5
Acidity as CaCO3	WSLM17	2	mg/l	U	Nil	Nil	Nil	Nil	Nil
Total Alkalinity	WSLM12	2	mg/l	U	250	229	312	260	226
Dissolved Oxygen	WSLM20	0.1	mg O2/l	N	6.8	8.3	8.1	7.7	8.6
BOD (5 day)	WSLM20	1	mg O2/l	U	10.9*		>11.2*		
				U		2.1		1.5	8.6
Total Organic Carbon	WSLM13	0.2	mg/l	U	0.48	0.48	2.3	0.76	0.66
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001	<0.001	<0.001	<0.001	<0.001
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001	<0.001	0.002	<0.001	<0.001
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese as Mn	ICPMSW (Dissolved)	0.002	mg/l	U	0.033	<0.002	<0.002	<0.002	<0.002
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001	<0.001	0.004	0.005	<0.001
Tin as Sn	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	<0.002	<0.002	0.003	<0.002	<0.002
Calcium as Ca	ICPWATVAR (Dissolved)	1	mg/l	U	147	155	244	143	144
Iron as Fe	ICPWATVAR (Dissolved)	0.01	mg/l	U	<0.01	<0.01	<0.01	<0.01	<0.01
Magnesium as Mg	ICPWATVAR (Dissolved)	1	mg/l	U	8	7	13	6	7

UKAS TESTING
1252

SOCOTEC

Client: Enitial

Project Name: Woolfox

Project No: 20111934

Date Issued: 03/12/2020

Analysis Results

				Project ID	20111934				
				Sample ID	001	002	003	004	005
				Customer ID	BHA	BHB	BHD	BHE	BHG
				Sample Type	WATER	WATER	WATER	WATER	WATER
				Sampling Date	24/11/2020	24/11/2020	24/11/2020	24/11/2020	24/11/2020
Analysis	Method Code	MDL	Units	Accred					
Potassium as K	ICPWATVAR (Dissolved)	1	mg/l	U	3	5	5	2	5
Total Sulphur as SO4	ICPWATVAR (Dissolved)	3	mg/l	U	76	68	239	56	68
Sodium as Na	ICPWATVAR (Dissolved)	1	mg/l	U	28	22	79	28	22

UKAS TESTING 1252

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
WSLM20	1, 3	Based on the sample history/appearance/smell, a dilution was applied prior to testing. Unfortunately the raw data falls outside of the capability of the instrumentation. The non-accredited value is given but should be used for guidance only.

LIMS-F002 - Report Notes

Client: Enitial

Project Name: Woolfox

Project No: 20111934

Date Issued: 03/12/2020

Deviating Sample Report

Sample Reference	Text ID	Reported Name		Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time	Handling Time
BHA	20111934-001	**WSLM20**	BOD (5 day)						✓	
BHA	20111934-001	**WSLM20**	Dissolved Oxygen						✓	
BHB	20111934-002	**WSLM20**	BOD (5 day)						✓	
BHB	20111934-002	**WSLM20**	Dissolved Oxygen						✓	
BHD	20111934-003	**WSLM20**	BOD (5 day)						✓	
BHD	20111934-003	**WSLM20**	Dissolved Oxygen						✓	
BHE	20111934-004	**WSLM20**	BOD (5 day)						✓	
BHE	20111934-004	**WSLM20**	Dissolved Oxygen						✓	
BHG	20111934-005	**WSLM20**	BOD (5 day)						✓	
BHG	20111934-005	**WSLM20**	Dissolved Oxygen						✓	

Analysis Method

Analysis	Analysis Type	Analysis Method
ICPMSW (Dissolved)	METALS	Unfiltered
ICPWATVAR (Dissolved)	METALS	Unfiltered
KONENS	INORGANIC	Filtered
WSLM11	INORGANIC	Unfiltered
WSLM12	INORGANIC	Unfiltered
WSLM13	INORGANIC	Unfiltered
WSLM17	INORGANIC	Unfiltered
WSLM2 & 3	INORGANIC	Unfiltered
WSLM20	INORGANIC	Unfiltered
WSLM25	INORGANIC	Unfiltered

Client: Enitial

Project Name: Woolfox

Project No: 20111934

Date Issued: 03/12/2020

Additional Information

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End of Certificate of Analysis

APPENDIX 3088/MON-2020/A4

Gas monitoring data

Gas monitoring data

WOOLFOX LANDFILL

GAS MONITORING

	Limit
CH_4 (%vol)	1
CO_2 (%vol)	1.5
O_2 (%vol)	None

Date	Atmos. Pres. (mb)	BHA			BHB			BHD			BHE			BHG		
		CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)
22-Oct-08		NI	NI	NI	0	0	21.3	0	0	21.3	0	0	21.3	NI	NI	NI
13-Jan-09		NI	NI	NI	0	0	21.3	0	0	21.3	0	0	21.3	NI	NI	NI
24-Apr-09		0.37	0	21.1	0	0	21.3	0	0	21.3	0	0	21.3	0.05	0	21.1
08-Jul-09		0	0	21.2	0.12	0	21.1	0.08	0	21.1	0	0	21.2	0.12	0	21.1
07-Oct-09		0.11	0	21.1	0.2	0	21.1	0	0	21.2	0	0	21.2	0	0	21.2
13-Jan-10		0.25	0	20.8	0	0	21.2	0	0	21.2	0	0	21.2	0	0	21.2
07-May-10		0.04	0	20.9	0	0	21.3	0	0	21.3	0	0	21.3	0.16	0	21.3
17-Nov-11	1008	0	0.1	20.6	0	0.4	20.2	0	0.3	17.6	0	0.3	20.6	0	0.3	20.4
01-Feb-12	1027	0.2	0	20.2	0.1	0	20.1	0.2	0	20.2	0.2	0	20.1	0.3	0	20.5
02-May-12	1013	0	0.2	20.2	0	0.1	20.6	0	3.4	3.2	0	0	20.7	0	0.3	20.2
16-Aug-12	1003	0	2.6	19.4	0	0.3	20	0	0.1	20.5	0	0.1	20.5	0	0	20.9
28-Nov-12	1006	0	1.3	17.7	0	0.1	20.6	0	0.2	20.1	0	0.2	19.9	0	0.6	20
06-Feb-13	997	0	0.8	19.5	0	0.1	20.2	0	0.2	20.3	0	0.3	18.4	0	0.3	20.2
17-May-13	996	0	0.2	21.1	0	0.1	20.9	0	0.1	20.5	0	0.4	21.1	0	0.2	20.8
29-Aug-13	1008	0	0.7	19.6	0	0.1	20.2	0	0.2	20.1	0	0.2	20.1	0	0.1	20.2
25-Nov-13	1033	0	0.1	20	0	0	20.3	0	0.4	19.3	0	0.2	20.2	0	0.1	20.2
17-Feb-14	998	0	0.4	19.7	0	0	20.2	0	0	20.3	0	0	20.1	0	0	20.3
19-May-14	994	0	0.9	19.5	0	0.3	19.9	0	0.9	17.7	0	0.2	20	0	0	20.2
11-Aug-14	997	0	1.7	19.7	0	0	20.9	0	0	21.3	0	0.4	20.8	0	0	21.1
19-Nov-14	1009	0	0.8	19.6	0	0.1	20.6	0	0.5	19.7	0	0.3	20.4	0	0.4	20.4
24-Feb-15	991	0	0.3	20	0	0	20.4	0	0.3	20	0	0.3	20.2	0	0	20.5

Gas monitoring data

WOOLFOX LANDFILL

GAS MONITORING

	Limit
CH_4 (%vol)	1
CO_2 (%vol)	1.5
O_2 (%vol)	None

Date	Atmos. Pres. (mb)	BHA			BHB			BHD			BHE			BHG		
		CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)	CH_4 (%vol)	CO_2 (%vol)	O_2 (%vol)
20-May-15	1012	0	0.2	20.1	0	0.1	19.9	0	0.1	19.8	0	0.3	20	0	0.1	20.7
12-Aug-15	1021	0	0.6	20.1	0	0.4	19.8	0	0.4	19.4	0	0	20.5	0	0.1	20
02-Nov-15	1020	0	0.2	21.4	0	0.8	20.8	0	0.5	20.9	0	0.7	20.7	0	0.4	20.7
23-Feb-16	1008	0	0.3	20.7	0	0	20.9	0	0.6	20.2	0	0.3	20.8	0	0	20.7
31-May-16	1009	0	0	21.1	0	0	21	0	1.1	19.4	0	0.2	20.8	0	0.3	20.9
02-Aug-16	1006	0	1.1	19.7	0	0.5	19.6	0	0.9	19.6	0	0.1	20.6	0	0.1	20.8
30-Nov-16	1029	0	0.8	19.7	0	0.1	20.3	0	0.2	19.7	0	1	18.7	0	0.3	19.5
16-Feb-17	1021	0	5.2	16.8	0	0.1	20.3	0	0.5	19.7	0	0.9	19.5	0	0.1	20.2
23-May-17	1018	0	0.5	18.8	0	0.1	20.2	0	2.5	16.8	0	0.1	20.4	0	0	20.3
29-Aug-17	1010	0	1.6	19.1	0	0	21.1	0	1	19.8	0	0.3	20.7	0	0	21
08-Nov-17	1020	0	0.1	20.2	0	0.1	20.4	0	0.2	19.9	0	0.2	20.1	0	0.3	19.8
21-Feb-18	1023	0	0.2	20.7	0	0.2	20.6	0	0.3	20.2	0	0.5	20	0	0.4	20.5
18-Sep-18	994	0	3.7	15.2	0	0.1	20.8	0	0.1	20.9	0	1.8	19.2	0	0.1	20.8
24-Oct-18	1023	0	4	18.2	0	0.1	21.3	0	0.2	20.8	0	0.6	20.6	0	0.1	20.9
21-Nov-18	1007	0	3.2	17.9	0	1	19.7	0	0.6	19.5	0	1.6	19.8	0	0.4	19.8
08-Apr-19	1008	0	0.1	20.8	0	0.3	20.4	0	1.2	18.2	0	0.3	20.4	0	0.3	20.4
17-Jun-19	1011	0	1	18.8	0	0.4	19.7	0	0.1	20.6	0	0.6	20.3	0	0	20.2
02-Sep-19	1013	0	1	19.8	0	0.1	20.4	0	0.3	20.8	0	0.3	20.5	0	0	20.5
18-Nov-19	973	0	3.9	12.6	0	0.2	20.8	0	0.5	21	0	0.4	20.5	0	0.2	21.5
05-Mar-20	991	0	3.8	12.6	0	0.3	20.5	0	0.7	20	0	0.3	19.7	0	0.1	20.9
13-May-20	1013	0	0	21.3	0	0	21.4	0	1.8	18.8	0	0.3	20.1	0	0.1	21.2
10-Aug-20	1011				0	0.4	19.2	0	2.4	17.9	0	0.2	19.6	0	0.1	19.8
24-Nov-12	1009	0	0.1	20.8	0	0.3	20.6	0	0.3	20.4	0	1	20.3	0	0.1	20.9