Site:	Eastmere Stables, Eastergate Lane, Eastergate, West Sussex
Prepared by:	VBH
Approved by:	JM
Date:	7th October 2024

motion
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Guildford
GU1 4AU
[redacted]
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1.0 Introduction

1.1 This Lidsey Drainage Impact Assessment has been undertaken by Motion on behalf of NJS Partnerships Ltd in support of development at Eastmere Stables, Eastergate Lane, Eastergate, West Sussex. The development proposals are for up to nine residential units with associated roads and parking. The nearest grid reference is 495217 N 106198 and postcode PO20 3SJ. The site plan can be found in full in Appendix A.

1.2 In 2022 a planning application for the site (BN/25/23/OUT) and appeal ref APP/C3810/W/22/3312864 received outline approval.

1.3 In 2024, Motion undertook a Flood Risk Assessment (FRA) and Drainage strategy, and this report should be read in conjunction with the 2024 FRA and Drainage Strategy.

1.4 The site is within the Lidsey Wastewater Treatment Works Catchment Area and therefore a Lidsey Drainage Impact Assessment is required. The aim of this assessment is to detail what measures will be implemented to reduce the impact of foul and surface water drainage in the catchment area. This assessment aims to demonstrate that water quality will not be impacted by proposals that may directly or indirectly affect water bodies.

2.0 Surface Water

Existing Surface Water Drainage Regime

2.1 The site is existing agricultural land site made up of open fields. Therefore, the existing site can be described as greenfield.

2.2 In 2014 Atkins undertook a Surface water Management Plan (SFRA) for the Lidsey Catchment. The Lidsey SFRA developed Local Flood Risk Zones (LFRZ) which are areas of the Lidsey catchment that warranted further scrutiny and assessment in terms of flood risk. The development site is not located in an LFRZ but to the west of the LFRZ known as *'LFRZ_026 - Eastergate Lane, Eastergate'.*

2.3 As detailed in the 2024 Motion FRA and drainage strategy the Jeremy Benn Associates (JBA) Pluvial Flood Risk Mapping (undefended) and the EA's Risk of Flooding from Surface Water (RoFSW) map show that the whole site is in an area of low risk of surface water flooding.

2.4 Asset location plans were obtained from Southern Water (see Appendix B), and these indicate there are no surface water sewers which currently serve the site.

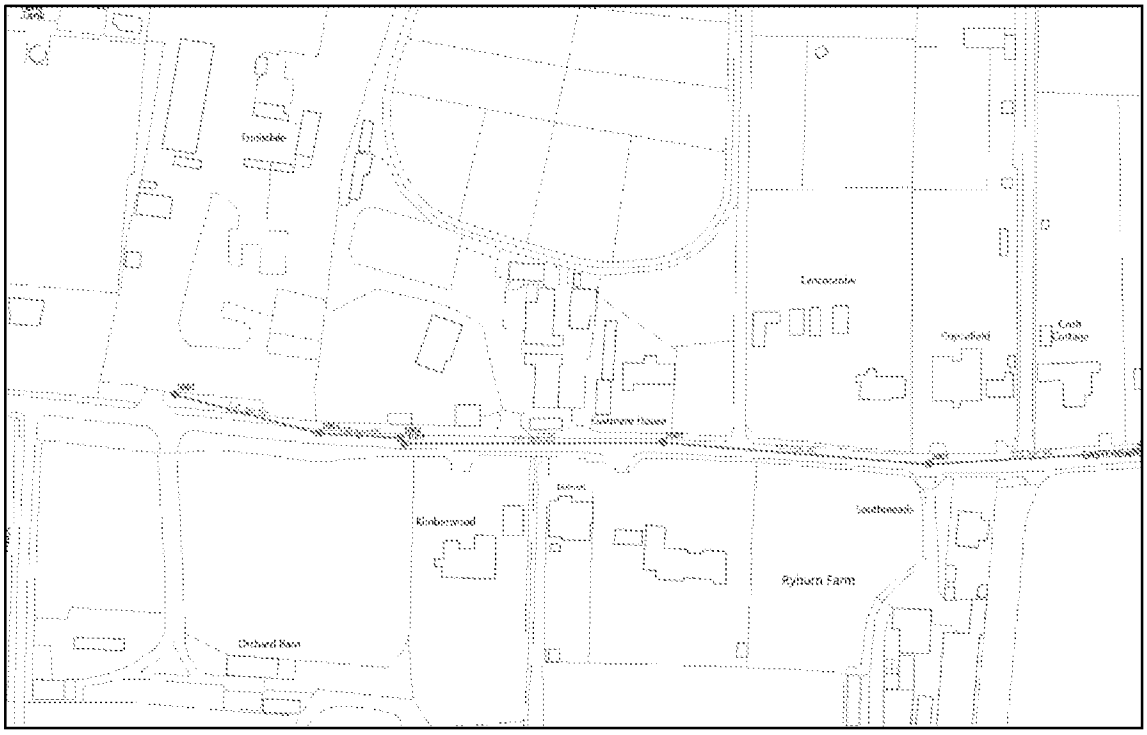

Figure 2.1 Asset location Plan

2.5 As part of this application BRE365 infiltration testing of the site has been undertaken by Mate Geotechnic Services in February 2022. The results are summarised in Table 2.1 and can be found in full in Appendix C. The infiltration results demonstrate that infiltration varies across the site from 1.329 x 10^{-3} m/s to 6.797 x 10^{-5} m/s. This means that infiltration techniques are a viable means of managing surface runoff on site. To comply with building regulations, point-source infiltration systems (conventional ring or trench soakaways) are required to be constructed a minimum of 5.0m away from proposed or existing buildings. The groundwater monitoring can also be found in Appendix C which details that the maximum ground water level on site is 1.7 meters below ground level (mbgl). In line with WSCC guidance the recommended distance of from below ground SuDS features and maximum ground water level is 1m.

Table 2.1 – Infiltration Testing Results

Trial Pit	Infiltration rate no. 1 (m/s)	Infiltration rate no. 2 (m/s)	Infiltration rate no. 3 (m/s)
TP1	6.797E-05	3.540E-05	3.709E-05
TP2	5.168E-03	-	-
TP3	2.158E-05	1.839E-05	1.028E-05
TP4	1.329E-03	5.587E-04	3.069E-04

Proposed Surface Water Drainage Strategy

2.6 Ordinarily the proposed impermeable areas should be used to define the greenfield runoff rate for a development, which then sets the allowable discharge rate from these parts of a site. However, in the case of the Eastmere Stables development, this is not necessary as it will be entirely possible to discharge surface water emanating from impermeable areas on site via infiltration, thus the site will be managing its surface water runoff at a rate below the greenfield runoff rate.

2.7 In order to attenuate the surface water, it is proposed to have the access road as a 'System A' (Total Infiltration) permeable paviour to drain the residential units and access road. The subbase would provide an opportunity for surface water attenuation and pollution mitigation without the use of proprietary devices or interceptors.

2.8 The access road covers an area of approximately 720m^2 (0.072 ha) and the following permeable paviour design will be specified (from surface to base):

- 30mm Asphalt surface + 90mm Asphalt base + 280mm Coarse Graded Aggregate Type 4 sub-base
- Separating Geotextile
- 300mm permavoid crated system or similar with 95% voids

2.9 This paviour makeup has a total depth of 600mm. As detailed in Appendix C the maximum ground water level is 1.7 mbgl and therefore the recommended distance of 1m from the permeable paviours and maximum ground water level is achieved.

2.10 The infiltration rate used in the MicroDrainage model was based on the BRE365 infiltration testing and the worst-case rate (1.028E-05 m/s) was used.

2.11 As the permeable paviours will discharge surface water directly to the subgrade, the site will have zero site runoff, thus better than greenfield. Therefore, the surface water in the catchment will not be impacted as a result of the development.

Surface Water Runoff Quality

2.12 As detailed in the 2024 Motion FRA and drainage strategy the CIRIA SuDS Manual provides guidance on the treatment of surface water runoff. The CIRIA SuDS Manual provides pollution hazard indices for different land use classifications. Table 7.2 of the CIRIA SuDS Manual rates the pollution hazard from on-residential car parking with infrequent change as 'low'. To mitigate a 'low' pollution hazard, the CIRIA SuDS Manual recommends using a simple index approach in line with Section 26.7.1.

2.13 The land use classification that requires consideration for the site is in Table 2.2.

Table 2.3 – Excerpt from Table 26.2 of CIRIA SuDS Manual

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydro-Carbons
Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4

2.14 To deliver adequate pollution treatment and mitigation, the CIRIA SuDS Manual recommends using a SuDS component that has a total pollution mitigation index (for each contaminant type) that equals or exceeds the pollution hazard index (for each contaminant type).

2.15 Table 26.3 of the CIRIA SuDS Manual provides indicative SuDS mitigation indices for each SuDS type. Table 2.3, below, which is an excerpt from Table 26.3, shows the mitigation index for permeable paving.

Table 2.3 – Excerpt from Table 26.3 of CIRIA SuDS Manual

Type of SuDS Component	Total Suspended Solids (TSS)	Metals	Hydro-Carbons
Permeable Paving	0.7	0.6	0.7

2.16 The mitigation indices for the Permeable paving exceed those of the pollution hazard index figures from Table 6.1. and the pollution mitigation indices offered by the permeable paving easily exceeds the pollution hazard indices for all contaminant types.

2.17 Therefore, the water quality in the catchment will not be impacted as a result of the development.

3.0 Foul Water Drainage

3.1 Sewer records were requested from Southern Water (see Appendix B), to determine the existing surface and foul sewer network in vicinity of the site. The plans shows that there are no surface water assets close to the vicinity but there is a foul sewer running along Eastergate Lane along the site's southern boundary. The nearest Manhole is 2001 with a cover level of 14.94 mAOD and an invert level of 12.84 mAOD.

3.2 The peak foul flow rate from the proposed development has been calculated based on Southern Water's foul sewerage modelling criteria. The calculation is based on the foul flow element, plus an allowance for misconnected surface water. While this is unlikely on a new development, it provides a precautionary approach.

3.3 Based on Southern Water's foul sewerage modelling criteria, the calculated design foul flows from the proposed residential development are 0.07 l/s.

3.4 Southern Water was consulted regarding if there is sufficient capacity in the existing network and at the time of writing we were awaiting a response from Southern Water.

3.5 It is worth highlighting that the Lidsey SFRA stated that foul flooding is low risk along Eastergate Lane.

4.0 Conclusions and Recommendations

4.1 This Lidsey Drainage Impact Assessment has been undertaken by Motion on behalf of NJS Partnerships Ltd in support of development at Eastmere Stables, Eastergate Lane, Eastergate, West Sussex. The development proposals are for up to nine residential units with associated roads and parking.

4.2 The site is within the Lidsey Wastewater Treatment Works Catchment Area and therefore a Lidsey Drainage Impact Assessment is required. The aim of this assessment is to detail what measures will be implemented to reduce the impact of foul and surface water drainage in the catchment area.

4.3 The Jeremy Benn Associates (JBA) Pluvial Flood Risk Mapping (undefended) and the EA's Risk of Flooding from Surface Water (RoFSW) map show that the whole site is in an area of low risk of surface water flooding.

4.4 The drainage strategy for the Eastmere Stables development is to discharge surface water emanating from impermeable areas on site via infiltration, thus the site will be managing its surface water runoff at a rate below the greenfield runoff rate. Therefore, the surface water in the catchment will not be impacted as a result of the development.

4.5 The CIRIA SuDS Manual recommends using a simple index approach in relation to water quality and this method demonstrated that the proposed permeable paving on site easily exceeds the pollution hazard indices for all contaminant types. Therefore, the water quality in the catchment will not be impacted as a result of the development.

4.6 Southern Water was consulted regarding if there is sufficient capacity in the existing network and at the time of writing we were awaiting a response from Southern Water.

4.7 Therefore, this technical note demonstrates that surface water and water quality will not be impacted by the development proposals that may directly or indirectly affect the surrounding water bodies.

Appendix A

Proposed Site Plan

Site Area = 0.71 Hectares / 1.75 Acres

EASTMERE PADDOCKS LTD.

0 10 20 30 40 50 60m

Location Plan
1:1250

Serial number: 292977

Rev	Date	By	Description
P01	29/08/2024	MR	Submission Issue

www.symmetryarchitecture.co.uk
office@symmetryarch.co.uk
3A Station Approach Broadstone Dorset BH18 8AX
01202 973379

ARUN DISTRICT COUNCIL BN/128/24/RES

Eastmere Stables ∧ Location Plan ∧ 1:1250@A3 ∧ **1844**-XX-ZZ-DR-A-**0302 P01**

SYMMETRY architecture

Site Area = 0.71 Hectares / 1.75 Acres

EASTMERE
PADDOCKS LTD.

0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25m

Block Plan
1:500

Serial number: 292977

N

Rev	Date	By	Description
P01	29/08/2024	MR	Submission Issue

www.symmetryarchitecture.co.uk
office@symmetryarch.co.uk
3A Station Approach Broadstone Dorset BH18 8AX
01202 973379

Eastmere Stables ∧ Block Plan ∧ 1:500@A3 ∧ **1844**-XX-ZZ-DR-A-**0303 P01**

SYMMETRY
architecture

ARUN DISTRICT COUNCIL BN/128/24/RES

Safety, Health & Environmental

In addition to the hazards / risk normally associated with the type of works detailed on this drawing, please note the following information.

Notes

- Proposed replacement tree location. Species/size to Arboriculturalist details
- Existing tree, to be removed/replaced
- Historic site feature (from topographic survey)
- 1.8m high, close boarded fence
- 1.2m high, close boarded fence
- Tarmacadam - shared surface
- Grey block paving - shared surface parking
- Block Paving
- Patio Paving
- Soft landscaping - grassed/planted areas
- Existing building footprints (from topographic survey)
- Proposed building footprints (at GF level)
- Tactile Paving (at crossing points)
- 'Rumble Strip' speed control

Site Key Plan

N

S

Ennisdale

Existing Close Boarded Fence

16,250

6
FFL 16.300
Double Garage
FFL 16.150
Double Garage

FFL 16.000
Double Garage

15,885

5
FFL 15.850

Sub-Stn Location (if req'd)

15,680

Existing Fence Location

16,060

17,765

15,500

4
FFL 15.550
FFL 15.400
Double Garage

Double Garage
FFL 16.000
FFL 16.000
7

FFL 15.850
8

FFL 15.700
Double Garage

FFL 15.550
Car Port

15,915

15,500

FFL 15.400
9

Existing tree removed

15,500

15,300

FFL 15.550
3

Existing Close Boarded Fence

FFL 15.400
Single Garage

Single Garage
FFL 15.400

FFL 15.550
2

15,400

Existing Close Boarded Fence

Existing Close Boarded Fence

FFL 15.550
1

15,405

15,345

The Oaks

Car Port
FFL 15.400

Entrance relocated

15.2m

Existing hedge removed
Existing tree removed
Replacement Tree

Eastmere House

2.400

Existing bldg demolished

Additional section of pavement, if required to main road.

Eastergate Lane

0 2.5 5 7.5 10 12.5m

Proposed Site Plan
1:250

EASTMERE PADDOCKS LTD.

Rev	Date	By	Description
P02	29/08/2024	MR	Submission Issue
P01	29/08/2024	MR	Scale reduced to fit A1 paper size. First Issue for comment

SYMMETRY
architecture

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Client
Eastmere Paddocks Ltd

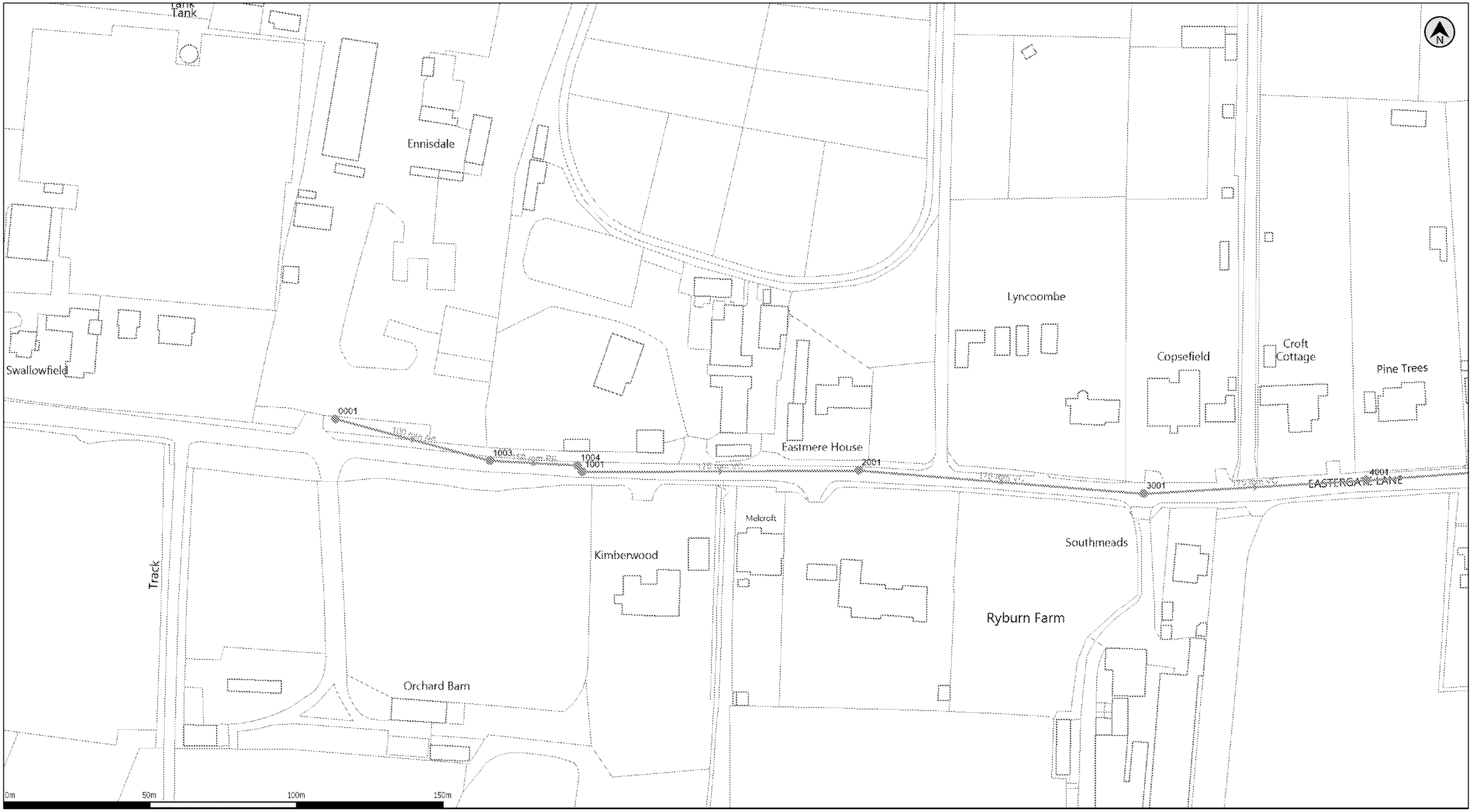
Project
Eastmere Stables
Eastergate Lane
Eastergate, PO20 3SJ

Title
Site Plan

Scale: 1:250 @ A1
Drawn / Checked: MR / JF
Status / Purpose: **S3 / For Comment**
Date: 24/05/2024
Drawing Number: **1844** - SYM - XX - ZZ - DR - A - **0300**
Revision: **P02**
(project - originator - zone - level - type - role - number)

Appendix B

Southern Water Asset Location Plan

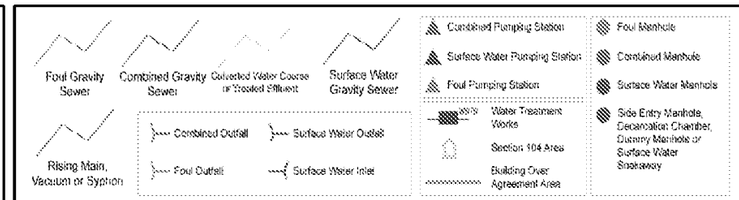


(c) Crown copyright and database rights 2022 Ordnance Survey 100031673 | Date: 23/05/22 | Scale: 1:1250 | Map Centre: 495216,106068 | Data updated: 27/04/22 | Our Ref: 862012 - 1 | Wastewater Plan A3

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2022 Ordnance Survey 100031673 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



vholdo@motion.co.uk

eastmere

Water for Life — Southern Water

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0001	F	0.00	0.00	
1001	F	15.19	13.38	
1003	F	0.00	0.00	
1004	F	0.00	0.00	
2001	F	14.94	12.84	
3001	F	14.12	12.35	
4001	F	13.73	11.93	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Appendix C

Infiltration Testing

Mate GeoTechnic Services

Wednesday 2nd February 2022

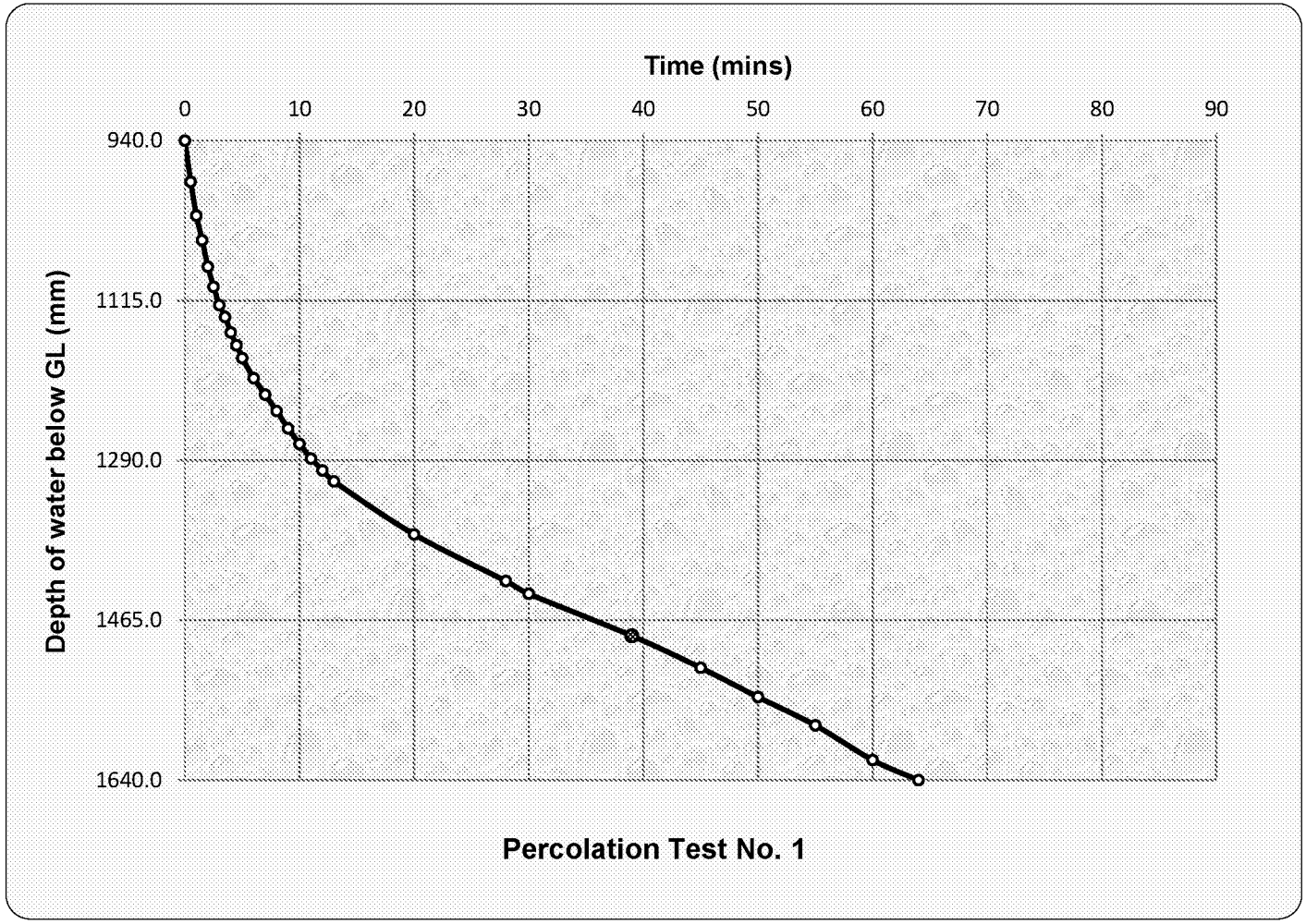
Time (mins)	Depth to Water Surface
0.0	940
0.5	985
1.0	1022
1.5	1049
2.0	1078
2.5	1100
3.0	1120
3.5	1133
4.0	1150
4.5	1164
5.0	1178
6	1200
7	1218
8	1236
9	1255
10	1272
11	1288
12	1301
13	1313
20	1371
28	1422
30	1436
39	1482
45	1517
50	1549
55	1580
60	1618
64	1640

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#1

North Paddock Area Percolation Test#1

1700mm Length x 500mm Width x 1840mm Depth



Non Reading Smoothing Points in BLUE

Soil infiltration rate: $f = \frac{0.383}{2.830 \times 33.1 \times 60} = 6.797E\text{-}05$ m/s

Soil Infiltration Rate is 6.797E-05 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

Wednesday 2nd February 2022

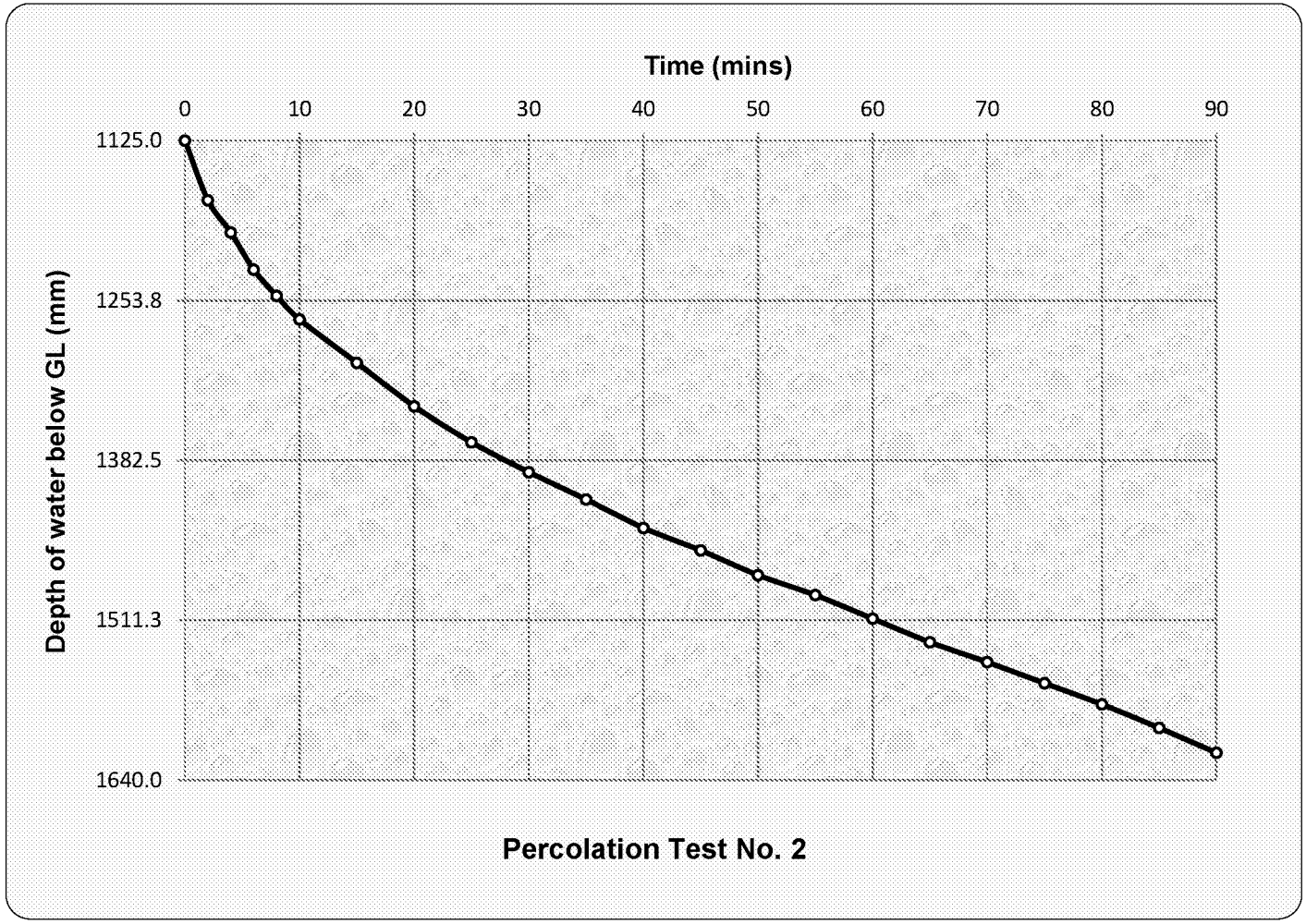
Time (mins)	Depth to Water Surface
0	1125
2	1173
4	1199
6	1229
8	1250
10	1269
15	1304
20	1339
25	1368
30	1392
35	1414
40	1437
45	1455
50	1475
55	1491
60	1510
65	1529
70	1545
75	1562
80	1579
85	1598
90	1618

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#1

North Paddock Area Percolation Test#2

1700mm Length x 500mm Width x 1840mm Depth



Soil infiltration rate: $f = \frac{0.219}{1.983 \times 52.0 \times 60} = 3.540E\text{-}05$ m/s

Soil Infiltration Rate is 3.540E-05 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

Thursday 3rd February 2022

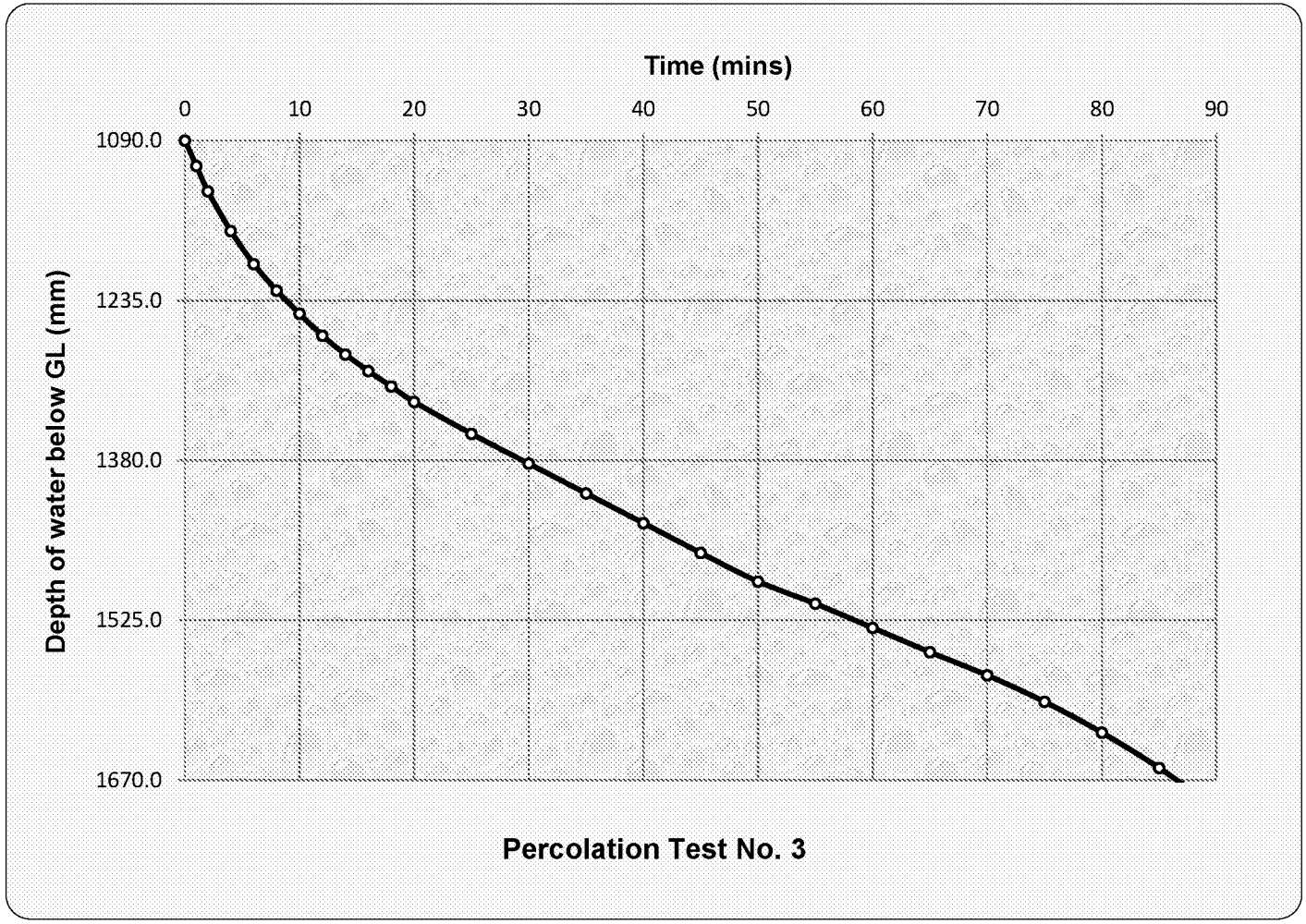
Time (mins)	Depth to Water Surface
0	1090
1	1113
2	1136
4	1172
6	1202
8	1226
10	1247
12	1267
14	1284
16	1299
18	1313
20	1327
25	1356
30	1383
35	1410
40	1437
45	1464
50	1490
55	1510
60	1532
65	1554
70	1575
75	1599
80	1627
85	1659
90	1696

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#1

North Paddock Area Percolation Test#3

1700mm Length x 500mm Width x 1840mm Depth



Soil infiltration rate: $f = \frac{0.219}{1.983 \times 49.6 \times 60} = 3.709E\text{-}05$ m/s

Soil Infiltration Rate is 3.709E-05 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

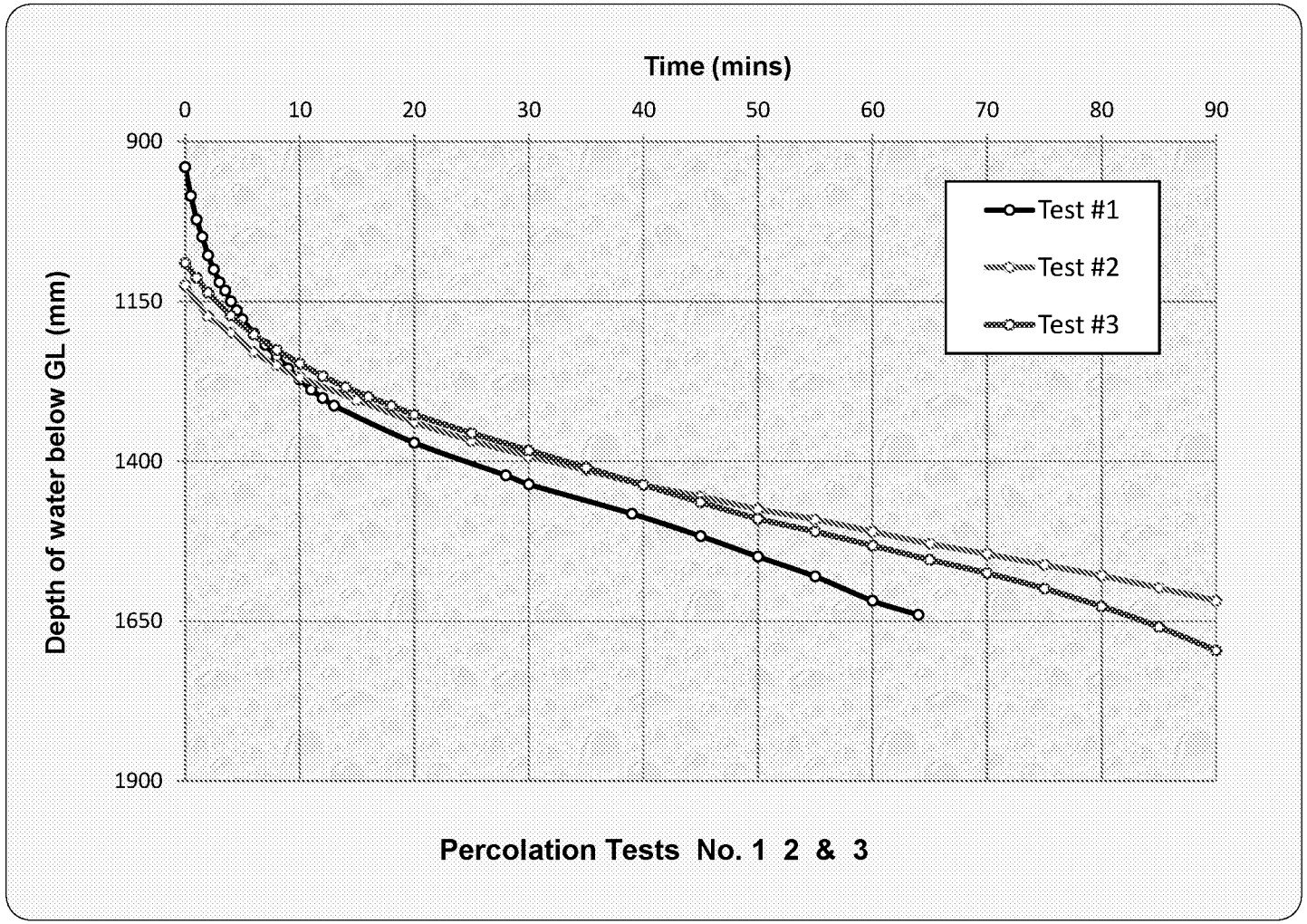
Wednesday 2nd and Thursday 3rd February 2022

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#1

North Paddock Area Percolation All 3 Tests

1700mm Length x 500mm Width x 1840mm Depth



Mate GeoTechnic Services

Monday 7th December 2015

Time (mins)	Depth to Water Surface
0	1230
1.3	1430

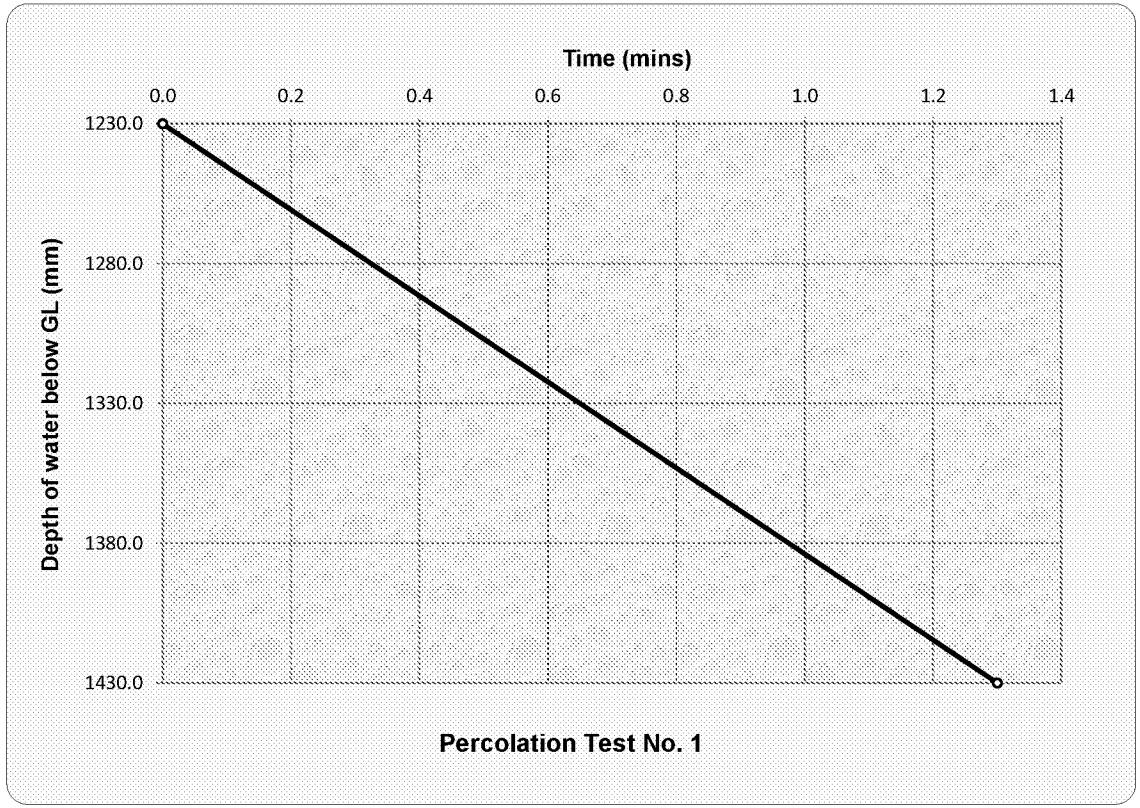
"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#2

N/E Area Adj GWP#2 -- Percolation Test#1

2000mm Length x 1200mm Width x 1430mm Depth

Ellipsoidal Tial Pit



Soil infiltration rate: $f = \frac{0.377143}{1.885714 \times 0.645 \times 60} = 5.168E\text{-}03$ m/s

Soil Infiltration Rate is 5.168E-03 metres/second

Area approximation if a >> c and b >> c

Volume of an Ellipsoid	4*PI*a*b*c	
Volume of lower half of an Ellipsoid	(4*(22/7)*a*b*c)/2	
Volume of water outflowing is	(4*(22/7)*a*b*c)/2/2	0.377143
Surface Area of an Ellipsoid	2*Pi*a*b	
Surface Area of lower half of an Ellipsoid	(2*Pi*a*b)/2	
Area of water outflow is	(2*Pi*a*b)/2	1.885714

Used 10 Containers each filled with 90 litres of water giving a total of 900 litres or 0.90 cu.metre >> effective volume outflowing of 0.450 cu.metre

Mate GeoTechnic Services

Tuesday 1st February 2022

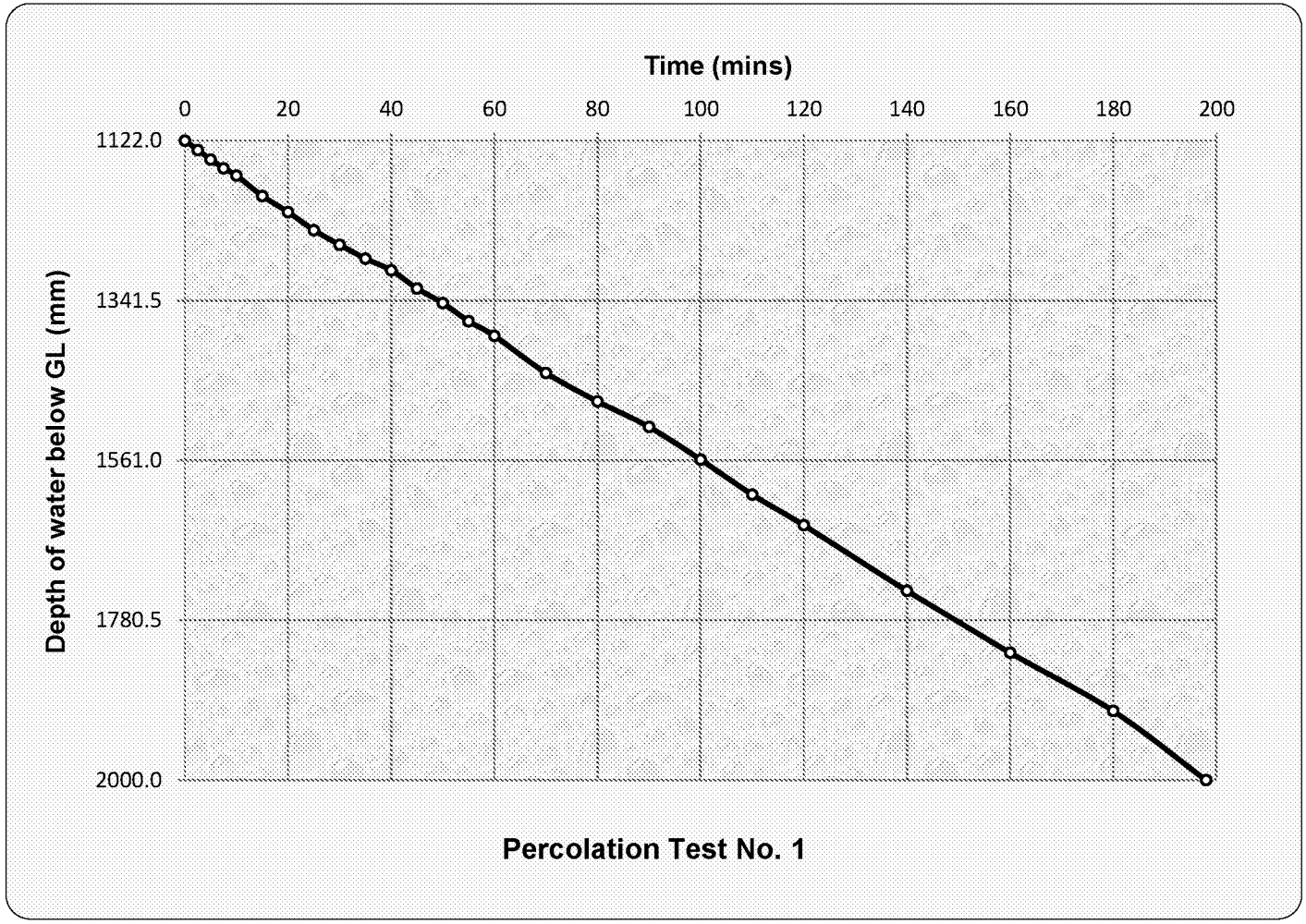
Time (mins)	Depth to Water Surface
0	1122
2.5	1135
5	1148
7.5	1160
10	1170
15	1198
20	1220
25	1245
30	1265
35	1284
40	1300
45	1325
50	1345
55	1370
60	1390
70	1441
80	1480
90	1515
100	1560
110	1608
120	1650
140	1740
160	1825
180	1905
198	2000

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#3

S/W Corner (Made-Up) Percolation Test#1

1400mm Length x 500mm Width x 2000mm Depth



Soil infiltration rate: $f = \frac{0.307}{2.368 \times 100.2 \times 60} = 2.158E\text{-}05$ m/s

Soil Infiltration Rate is 2.158E-05 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

Wednesday 2nd February 2022

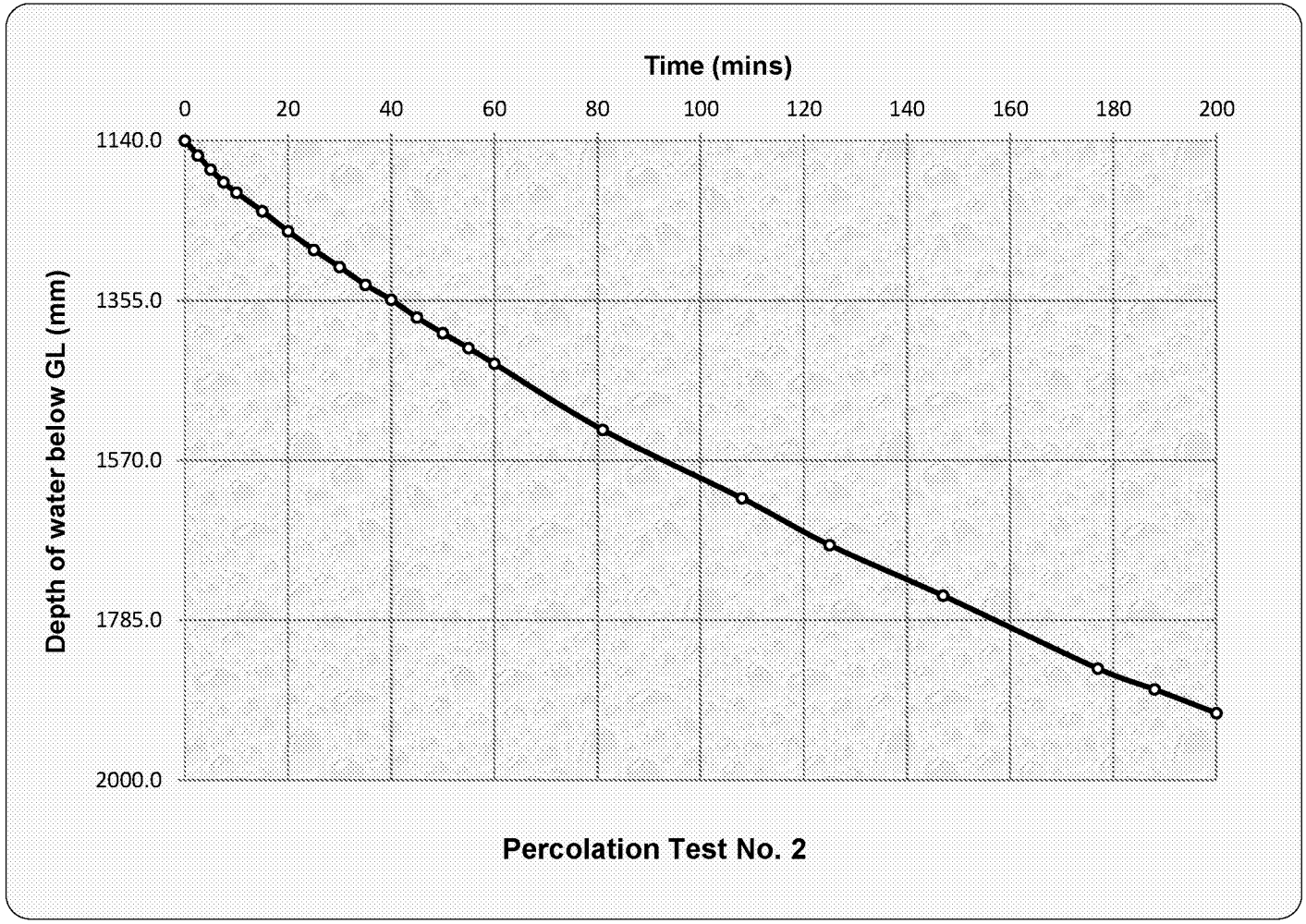
Time (mins)	Depth to Water Surface
0	1140
2.5	1160
5	1179
7.5	1196
10	1210
15	1235
20	1262
25	1287
30	1310
35	1334
40	1354
45	1378
50	1399
55	1419
60	1440
81	1529
108	1621
125	1684
147	1752
177	1850
188	1878
200	1910

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#3

S/W Corner (Made-Up) Percolation Test#2

1400mm Length x 500mm Width x 2000mm Depth



Soil infiltration rate: $f = \frac{0.301}{2.334 \times 116.9 \times 60} = 1.839E\text{-}05$ m/s

Soil Infiltration Rate is 1.839E-05 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

Thursday 3rd February 2022

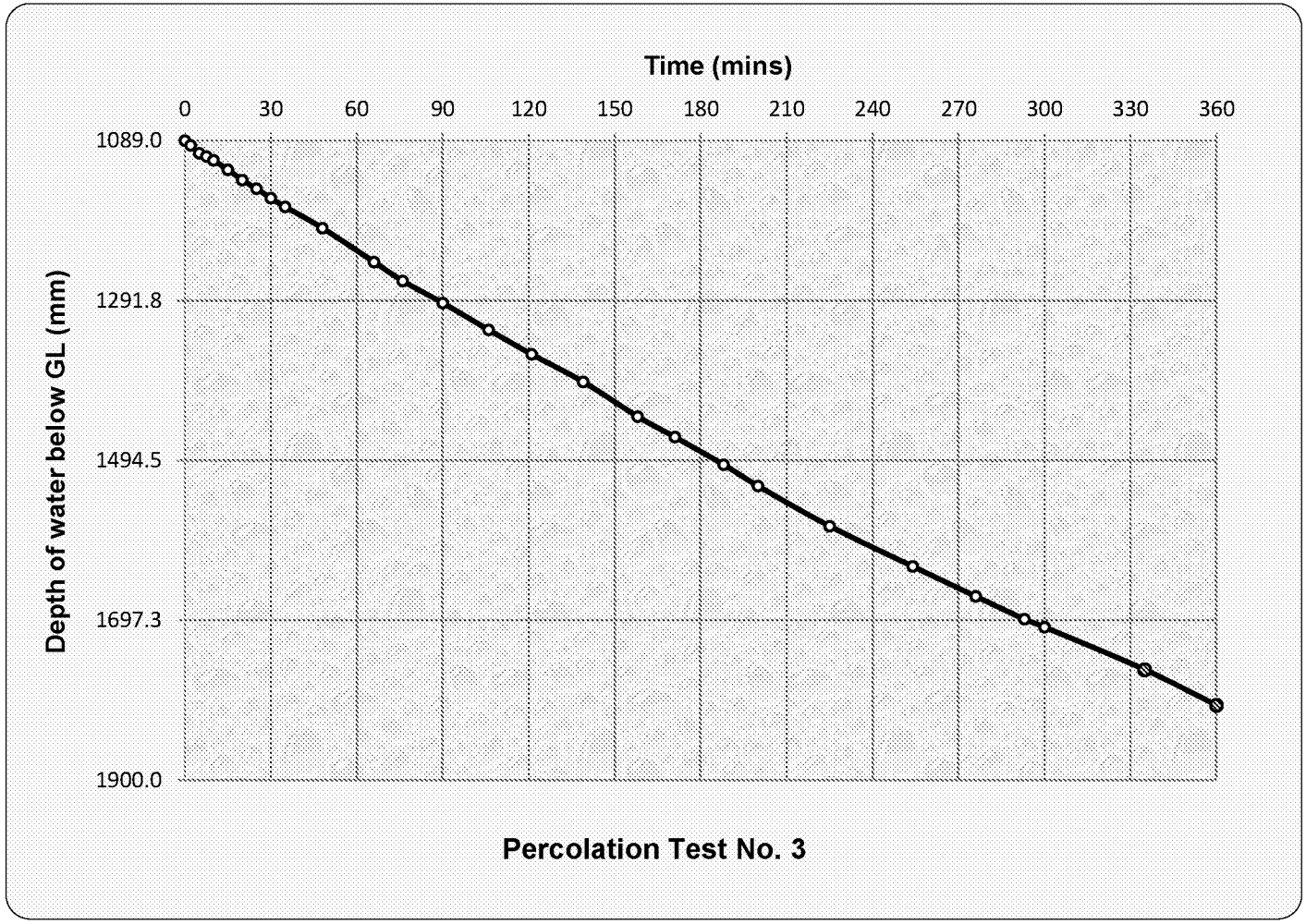
Time (mins)	Depth to Water Surface
0	1089
2	1095
5	1105
7.5	1109
10	1114
15	1126
20	1139
25	1150
30	1162
35	1173
48	1200
66	1243
76	1267
90	1295
106	1329
121	1360
139	1395
158	1439
171	1465
188	1500
200	1527
225	1578
254	1629
276	1667
293	1696
300	1706
335	1760
360	1805

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#3

S/W Corner (Made-Up) Percolation Test#3

1400mm Length x 500mm Width x 2000mm Depth



Non Reading Extrapolated Points in RED

Soil infiltration rate: $f = \frac{0.284}{2.241 \times 205.4 \times 60} = 1.028E\text{-}05$ m/s

Soil Infiltration Rate is 1.028E-05 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

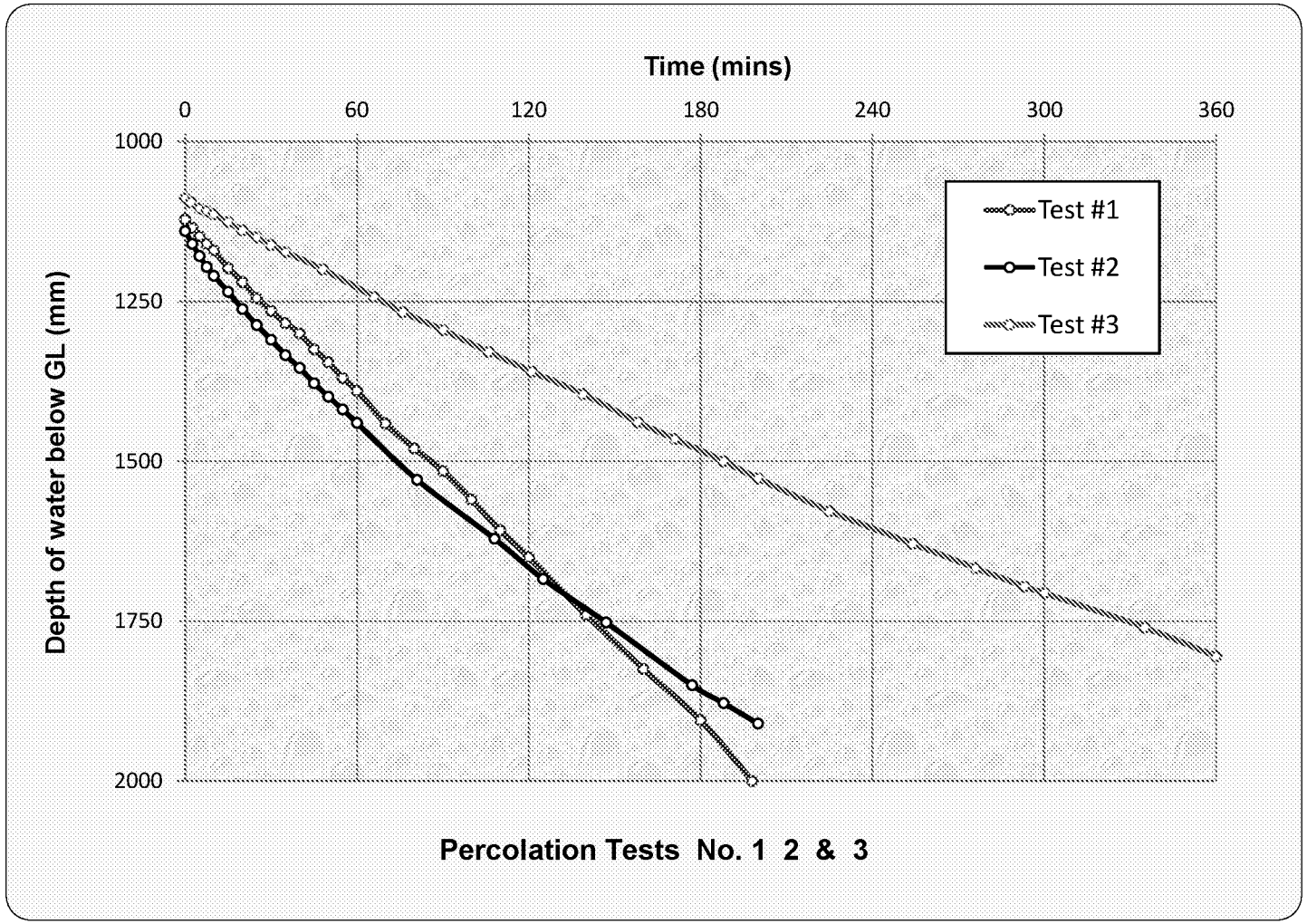
Tuesday 1st to Thursday 3rd February 2022

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#3

S/W Corner (Made-Up) Percolation All Tests

1400mm Length x 500mm Width x 2000mm Depth



Mate GeoTechnic Services

Tuesday 1st February 2022

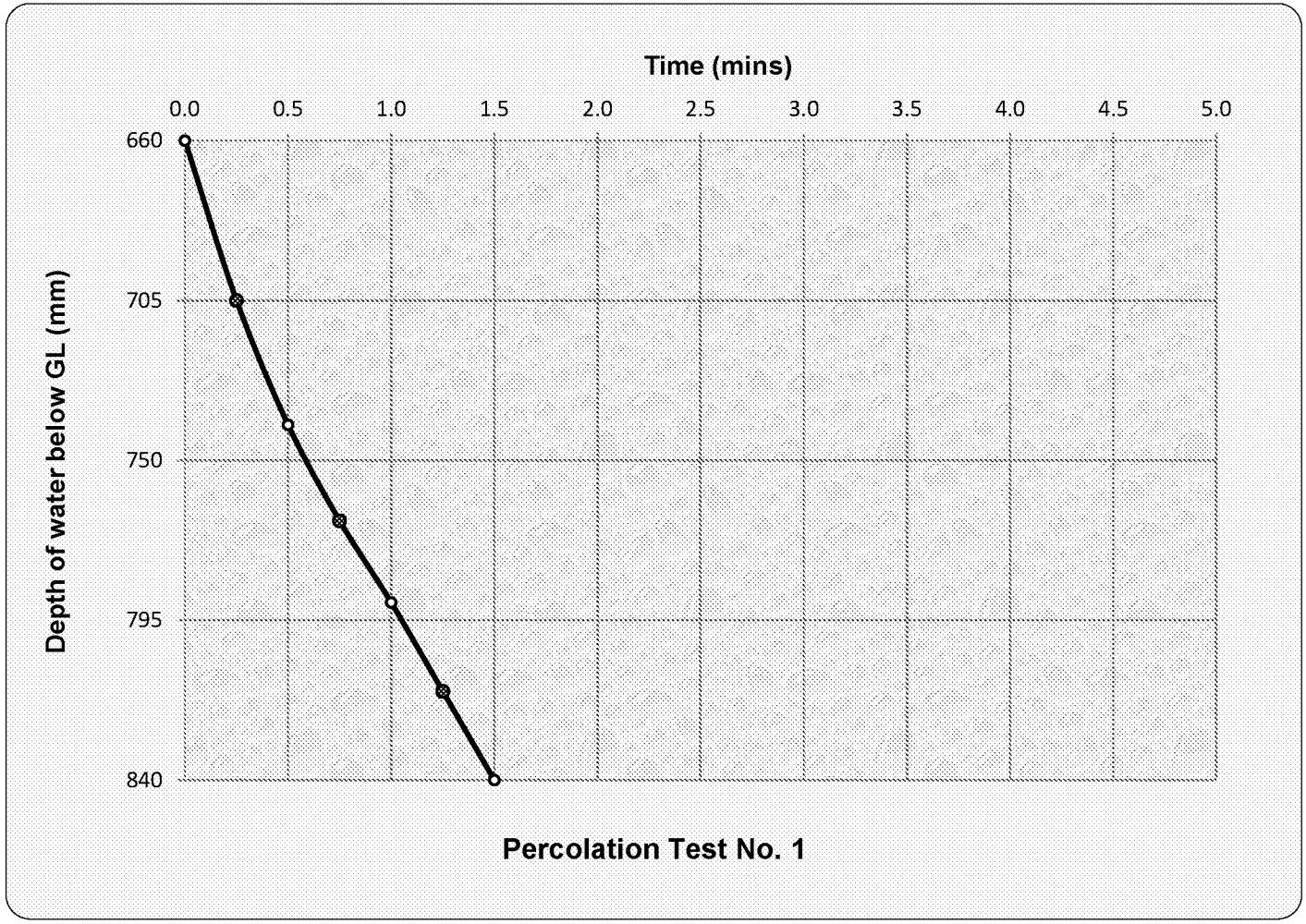
Time (mins)	Depth to Water Surface
0.00	660
0.25	705
0.50	740
0.75	767
1.00	790
1.25	815
1.50	840

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#4

Main Entrance Roadway Percolation Test#1

1800mm Length x 650mm Width x 840mm Depth



Non Reading Smoothing Points in BLUE

Soil infiltration rate: $f = \frac{0.105}{1.611 \times 0.8 \times 60} = 1.329E\text{-}03$ m/s

Soil Infiltration Rate is 1.329E-03 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

Tuesday 1st February 2022

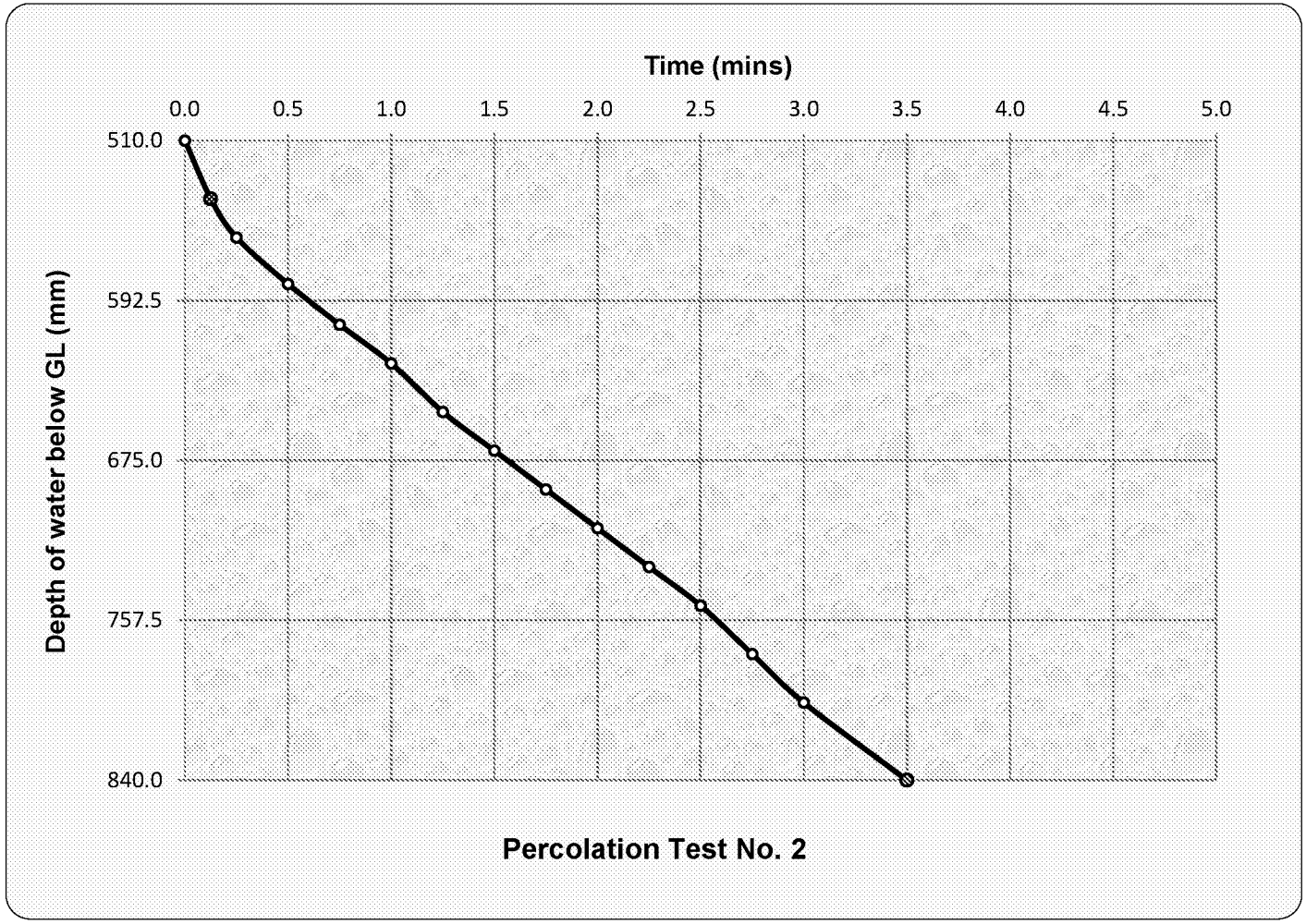
Time (mins)	Depth to Water Surface
0.00	510
0.125	540
0.25	560
0.50	584
0.75	605
1.00	625
1.25	650
1.50	670
1.75	690
2.00	710
2.25	730
2.50	750
2.75	775
3.00	800
3.50	840

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#4

Main Entrance Roadway Percolation Test#2

1800mm Length x 650mm Width x 840mm Depth



Non Reading Smoothing Points in BLUE

Non Reading Extrapolated Points in RED

Soil infiltration rate: $f = \frac{0.105}{1.611 \times 2.0 \times 60} = 5.587E\text{-}04$ m/s

Soil Infiltration Rate is
5.587E-04 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

Tuesday 1st February 2022

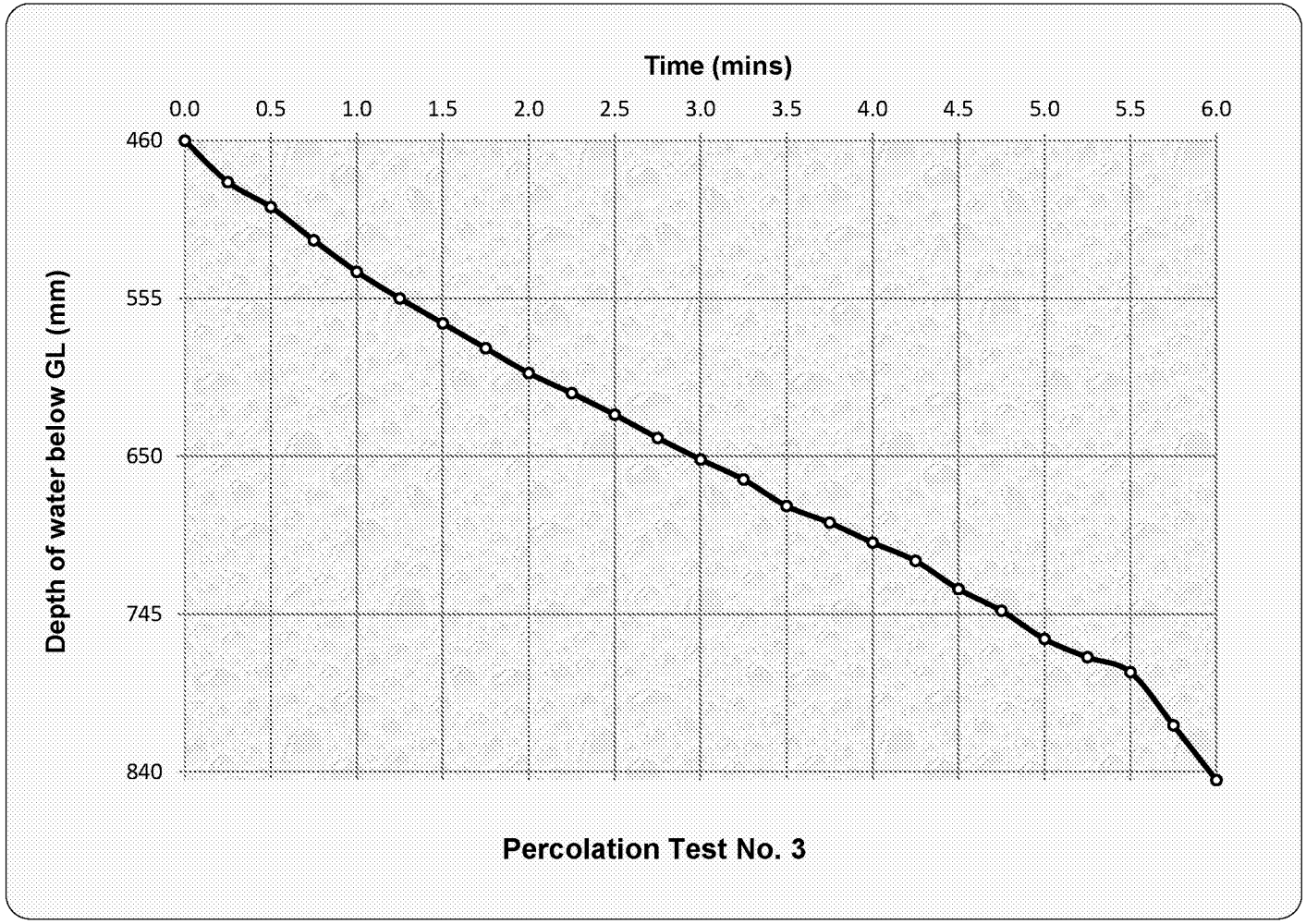
Time (mins)	Depth to Water Surface
0.00	460
0.25	485
0.50	500
0.75	520
1.00	539
1.25	555
1.50	570
1.75	585
2.00	600
2.25	612
2.50	625
2.75	639
3.00	652
3.25	664
3.50	680
3.75	690
4.00	702
4.25	713
4.50	730
4.75	743
5.00	760
5.25	771
5.50	780
5.75	812
6.00	845

"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#4

Main Entrance Roadway Percolation Test#3

1800mm Length x 650mm Width x 840mm Depth



Soil infiltration rate: $f = \frac{0.105}{1.611 \times 3.6 \times 60} = 3.069E\text{-}04$ m/s

Soil Infiltration Rate is 3.069E-04 metres/second

ARUN DISTRICT COUNCIL BN/128/24/RES

Mate GeoTechnic Services

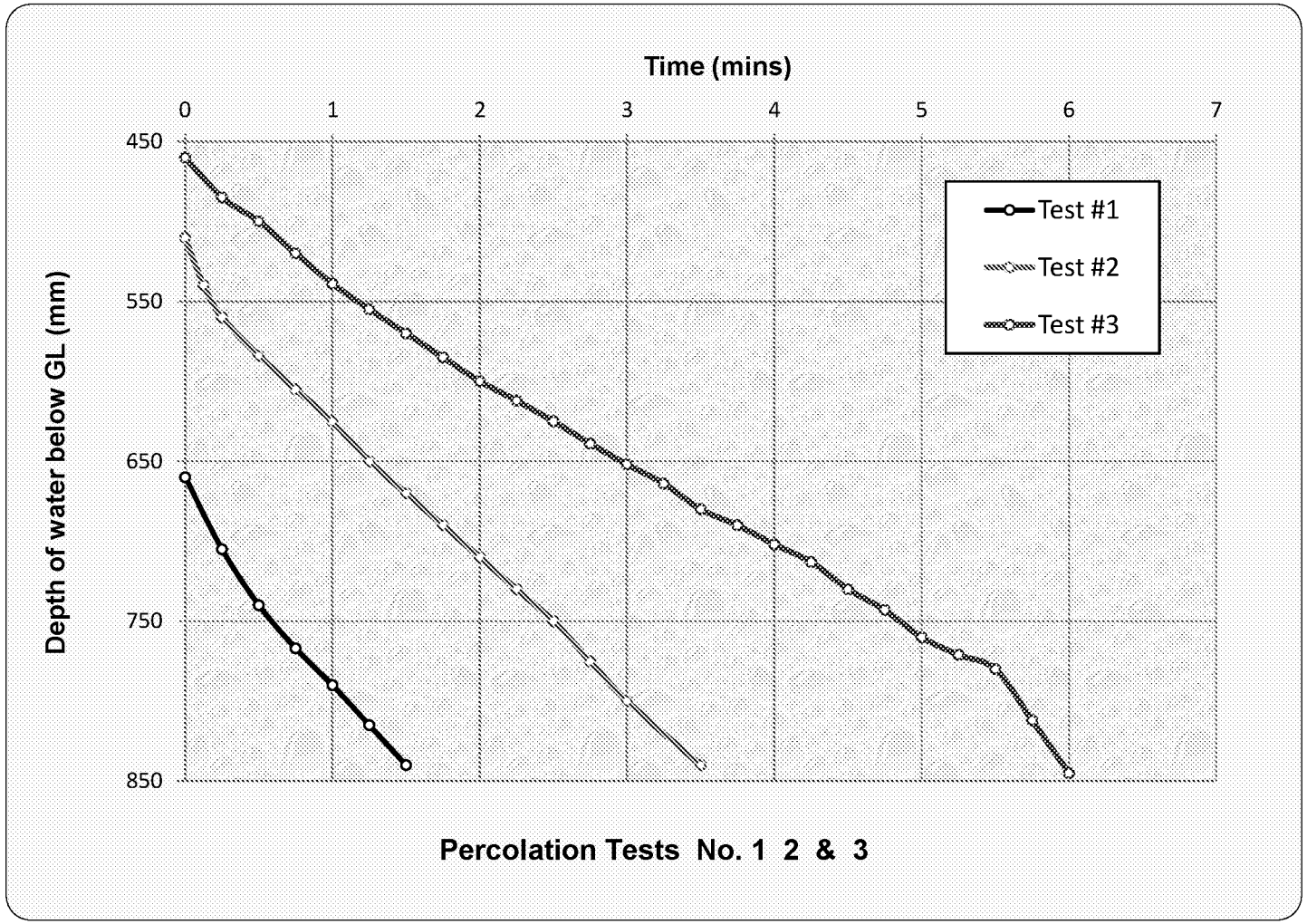
Tuesday 1st February 2022

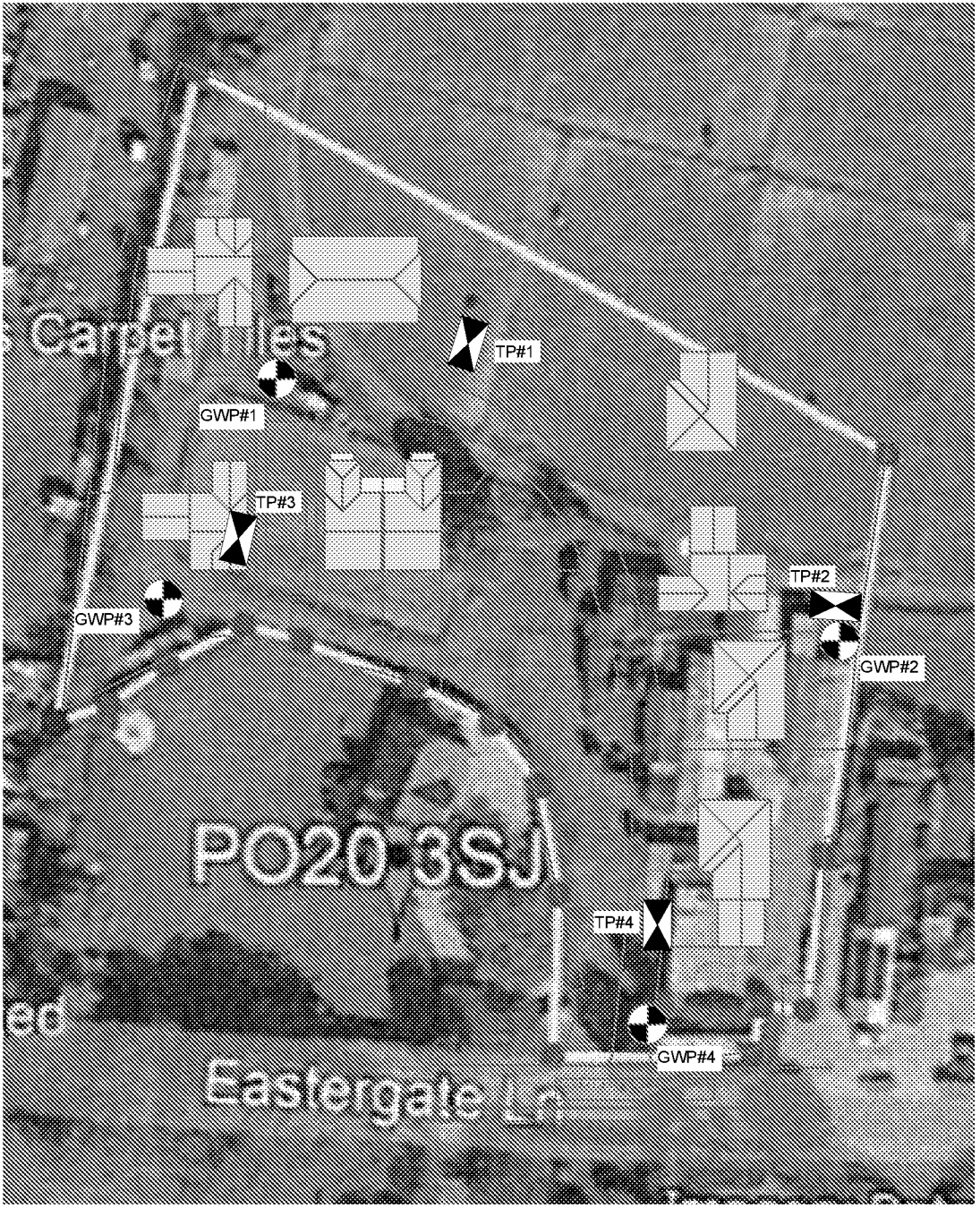
"Eastmere Stables", Eastergate Lane, Walberton

Percolation Trial Pit TP#4

Main Entrance Roadway Percolation 3 Tests

1800mm Length x 650mm Width x 840mm Depth




TP#1
GWP#1
TP#3
GWP#3
TP#2
GWP#2
PO20 3SJ
TP#4
GWP#4

[redacted]

From: Ray Cooper <[redacted]
Sent: 05 December 2023 14:48
To: [redacted]
Subject: Groundwater Monitoring Winter Period 2022-2023 "Eastmere Stables" Eastergate Lane, Walberton
Attachments: GroundWater Second Development Eastmere Stables Eastergate Lane.pdf

Good afternoon Mark.

Here are the results of the second Groundwater Monitoring exercise for the winter period 2022-2023 as you requested. It should be noted that the monitoring exercise was carried out within the original 4 monitoring points, which were installed in late september 2021 for the 2021-2022 winter monitoring period. These monitoring points were left in situ in the event of any future monitoring requirement.

The pdf attachment, detailing the locations of the Groundwater Monitoring Points and the Percolation Testing Trial Pits, overlaid on a Google Earth image, with your original proposal itself overlaid onto the Google Earth image, was part of the original email.

Groundwater Monitoring

Over the monitoring period, groundwater was recorded in monitoring points GWP#1, GWP#2 & GWP#4, on only 2 occasions for a single reading each -- 21st January 2023 (highest) & 12th November 2022 (2nd highest) -- at the times of very heavy rainfall. This is consistent with groundwater monitoring exercises across other sites. These monitoring points were installed in undisturbed natural ground in late September 2021.
Only within GWP#3, which was installed in "made-up" ground consisting of brick pieces, general debris in a clay soil, was there any consistent water recorded and this is not considered, in the true sense, real groundwater levels, but rather 'run-off' from the adjacent area, pooling at the base of the installation pit and not quickly draining away at the base.
The highest recorded level in this monitoring point, GWP#3, was on 13th January 2023 & 2nd January 2023 (2nd highest), though this was not in general keeping with other peaks of groundwater levels recorded across other sites in the region.

Groundwater Monitoring Point Number	Depth of Highest Groundwater (mm BGL)	Date of Highest Groundwater Level	Groundwater Level (metres AOD)	Depth of 2nd Highest Groundwater (mm BGL)	Date of 2nd Highest Groundwater Level
	Below Ground Level	Above Ordnance Datum		Below Ground Level	Above Ordnance Datum
GWP#1	1711	21st January 2023	14.216	1748	12th November 2022
					14.179
GWP#2	1638	21st January 2023	13.730	1651	12th November 2022
					13.717
GWP#3	1429	13th January 2023	14.440	1450	2nd January 2023
					14.419
GWP#4	1765	21st January 2023	13.666	1773	12th November 2022
					13658

Percolation Testing

This is a copy of the Percolation Testing summary which was part of my original email, for your information.
The testing was carried out to BRE365 principles within Trial Pits, of sizes larger than the minimum specifications, at locations & depths pertinent to the proposed soakaway / infiltration installations.
Two trial pits were deep ~1800mm (for soakaways) and one shallow ~800mm (for permeable parking & access roads).
In each of the 3 trial pits, 3 tests were performed as per BRE365 principles, so as to obtain the minimum Soil Infiltration Rate to be used in calculations.

I have included the single test from 2015 from your previous planning application, at the location of GWP#2, as part of the overall soil investigations, as it is still relevant, since it too was carried out in a 'winter period' and nothing has changed there.

A pdf (13 pages) of the tabular and graphical Percolation Test results was attached with the original email. This includes a summary page for each Trial Pit, showing the 3 tests, for comparison.

It can be seen that the eastern side of the plot appears to have the fastest infiltrating soils, whereas the south western corner appears to be in "made-up" soils, though still giving an acceptable result, are of an indeterminate characteristic. It is considered, from investigations, that the bulk of the plot is of soils relevant to the infiltration rate obtained from Trial Pit TP#1 testing.

The results are as follows, with all results in metres / second :-

Trial Pit Number	Location	Test #1	Test#2	Test#2
TP#1	North Paddock	6.797 E-05	3.540 E-05	3.709 E-05
TP#2	N/W corner (2015)	2.040 E-03		
TP#3	S/W corner	2.158 E-05	1.839 E-05	1.028 E-05
TP#4	Entrance	1.329 E-03	5.587 E-04	3.069 E-04

I trust that this is satisfactory and, as normal, if you have any queries then please call me on my mobile.

Regards
Ray

Mats Geotechnical Services

Groundwater Monitoring at Second Development at "Eastmere Stables" Eastergate Lane Walberton

Using Monitoring Points Installed on Wednesday 29th September 2021 for a New 2022-2023 Winter Monitoring Period Commencing 8th October 2022

LOCATION: "Eastmere Stables" 2nd Development, Eastergate Lane WALBERTON, Wednesday 29th September 2021

Pipe I.D.	Pipe Depth	Pipe Height	A.O.D. Level at ToP
GWP #1 (north-west)	1931 / n/a / -1760	242	16.100
GWP #2 (north-east)	1947 / n/a / -1573	274	16.042
GWP #3 (south-west)	1970 / n/a / -1542	425	16.297
GWP #4 (south-east)	1976 / n/a / -1700	175	15.609

LOCATION	DATE Wednesday 29-Sep-21	DATE Saturday 08-Oct-22	DATE Saturday 15-Oct-22	DATE Sunday 23-Oct-22	DATE Saturday 29-Oct-22	DATE Saturday 05-Nov-22	DATE Saturday 12-Nov-22	DATE Sunday 20-Nov-22	DATE Saturday 26-Nov-22
GWP #1 Maximum Depth	1761	2003	2003	2003	2003	2003	1992	2003	2003
Measured Depth Below Ground Level	-1761	-1761	-1761	-1761	-1761	-1761	-1748	-1761	-1761
Level Above O.D.	14.100	14.100	14.105	14.166	14.100	14.100	14.179	14.166	14.160
Change from Previous		0	0	0	0	0	13	[illegible]	0
GWP #2 Maximum Depth	1664	1938	1938	1938	1938	1938	1925	1938	1938
Measured Depth Below Ground Level	-1664	-1664	-1664	-1664	-1664	-1664	-1651	-1664	-1664
Level Above O.D.	13.704	13.704	13.704	13.704	13.704	13.704	13.717	13.704	13.704
Change from Previous		0	0	0	0	0	13	[illegible]	0
GWP #3 Maximum Depth	1542	1970	1970	1970	1970	1949	1900	1931	1940
Measured Depth Below Ground Level	-1542	-1542	-1542	-1542	-1542	-1521	-1457	-1485	-1512
Level Above O.D.	14.337	14.327	14.327	14.327	14.327	14.348	14.402	14.386	14.357
Change from Previous		0	0	0	0	21	54	[illegible]	[illegible]
GWP #4 Maximum Depth	1795	1973	1973	1973	1975	1973	1951	1973	1974
Measured Depth Below Ground Level	-1795	-1795	-1795	-1795	-1795	-1795	-1773	-1795	-1795
Level Above O.D.	14.132	13.636	13.636	13.636	13.636	13.636	13.658	13.636	13.636
Change from Previous		0	0	0	0	0	22	-22	0

LOCATION	DATE Dry All Week Sunday 04-Dec-22	DATE No Rain Saturday 10-Dec-22	DATE Rained Sun-Mon Tuesday 20-Dec-22	DATE Rain in Week Saturday 24-Dec-22	DATE Rain in Week Monday 02-Jan-23	DATE Some Rain Saturday 07-Jan-23	DATE Rain in Week Friday 13-Jan-23	DATE Dry Cold Week Saturday 21-Jan-23	DATE Dry Cold Week Saturday 28-Jan-23
GWP #1 Maximum Depth	2003	2003	2003	2003	2003	2003	2003	1964	2003
Measured Depth Below Ground Level	-1761	-1761	-1761	-1761	-1761	-1761	-1761	-1711	-1761
Level Above O.D.	14.100	14.100	14.100	14.100	14.100	14.100	14.100	14.215	14.166
Change from Previous	0	[illegible]	0	0	0	0	0	50	-50
GWP #2 Maximum Depth	1938	1938	1938	1938	1938	1938	1938	1912	1938
Measured Depth Below Ground Level	-1664	-1664	-1664	-1664	-1664	-1664	-1664	-1638	-1664
Level Above O.D.	13.704	13.704	13.704	13.704	13.704	13.704	13.704	13.730	13.704
Change from Previous	0	0	0	0	0	0	0	26	-26
GWP #3 Maximum Depth	1970	1970	1933	1932	1876	1910	1857	1929	1970
Measured Depth Below Ground Level	-1542	-1542	-1505	-1474	-1460	-1482	-1429	-1487	-1542
Level Above O.D.	14.327	14.327	14.364	14.395	14.409	14.387	14.440	14.402	14.327
Change from Previous	[illegible]	0	37	31	[illegible]	[illegible]	53	[illegible]	[illegible]
GWP #4 Maximum Depth	1973	1973	1973	1973	1973	1973	1973	1943	1973
Measured Depth Below Ground Level	-1795	-1795	-1795	-1795	-1795	-1795	-1795	-1765	-1795
Level Above O.D.	13.636	13.636	13.636	13.636	13.636	13.636	13.636	13.666	13.636
Change from Previous	0	0	0	0	0	0	0	30	[illegible]

LOCATION	DATE Dry Cold Week Saturday 04-Feb-23	DATE Dry Cold Week Saturday 11-Feb-23	DATE Light Rain Thursday Saturday 18-Feb-23	DATE Light Rain in Week Saturday 25-Feb-23	DATE Dry Cold Week Friday 03-Mar-23	DATE Rain most of Week Saturday 11-Mar-23	DATE Some Rain in Week Saturday 18-Mar-23	DATE Some Rain in Week Saturday 25-Mar-23	DATE Some Rain in Week Monday 03-Apr-23
GWP #1 Maximum Depth	2003	2003	2003	2003	2003	2003	2003	2003	2003
Measured Depth Below Ground Level	-1761	-1761	-1761	-1761	-1761	-1761	-1761	-1761	-1761
Level Above O.D.	14.100	14.100	14.166	14.166	14.100	14.100	14.166	14.166	14.163
Change from Previous	0	0	0	0	0	0	0	0	0
GWP #2 Maximum Depth	1938	1938	1938	1938	1938	1938	1938	1938	1938
Measured Depth Below Ground Level	-1664	-1664	-1664	-1664	-1664	-1664	-1664	-1664	-1664
Level Above O.D.	13.704	13.704	13.704	13.704	13.704	13.704	13.704	13.704	13.704
Change from Previous	0	0	0	0	0	0	0	0	0
GWP #3 Maximum Depth	1970	1970	1970	1912	1970	1970	1970	1970	1970
Measured Depth Below Ground Level	-1542	-1542	-1542	-1484	-1542	-1542	-1542	-1542	-1542
Level Above O.D.	14.327	14.327	14.327	14.385	14.327	14.327	14.327	14.327	14.327
Change from Previous	0	0	0	58	[illegible]	0	0	0	0
GWP #4 Maximum Depth	1973	1973	1973	1973	1975	1973	1973	1973	1973
Measured Depth Below Ground Level	-1795	-1795	-1795	-1795	-1795	-1795	-1795	-1795	-1795
Level Above O.D.	13.636	13.636	13.636	13.655	13.626	13.630	13.636	13.636	13.636
Change from Previous	0	0	0	0	0	0	0	0	0

END OF MONITORING CYCLE

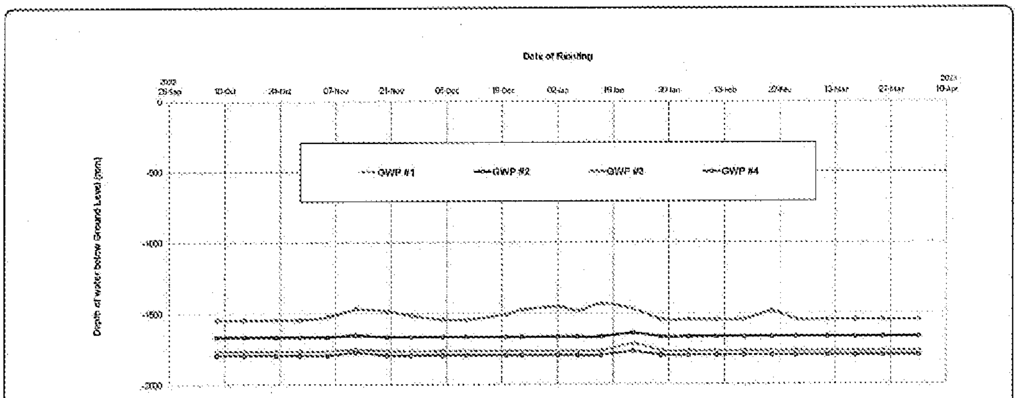
Base Level On Pipe Installation on 29-09-2021

Dry to Base (12-Nov-22 / 20-Nov-22)

Dry to Base (07-Jan-23 / 13-Jan-23)

Dry to Base (25-Feb-23)

Measured Depth is probe reading to internal tip of sensor



Groundwater Monitoring – In Groundwater Points GWP#1, GWP#2, GWP#3 & GWP#4