
Email to: 3d@watergrove.co.uk

For the attention of: M. Atkinson

Dear Mike,

Soakaway Investigation at land off Ramsden Farm Road, Middleton, Manchester.

1. Introduction

At the request of Watergrove CGI, on behalf of TEC Services NW Ltd, Abbeydale Geoscience Limited carried out a ground investigation and in-situ soakaway testing for the proposed construction of three new detached residential houses on the south-east side of Ramsden Farm Road in Middleton, which lies to the north-east of Manchester.

The site is situated on the south-east side of Middleton, centred on National Grid Reference 387707, 405385, with a site area of around 0.30 ha. See Figure 1.

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The comments and recommendations included in this letter-report are based on a review of available information and the ground conditions encountered during the intrusive Ground Investigation works undertaken, including associated in-situ soakaway testing. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have therefore not been taken in to account by this report. Responsibility cannot be accepted for conditions not revealed by this investigation.

When writing this report the proposed development was for the construction of three detached residential houses. If there are changes to these proposals then some

modification to the comments and recommendations given may be required. The proposed site layout is shown on the site plan in Appendix A.

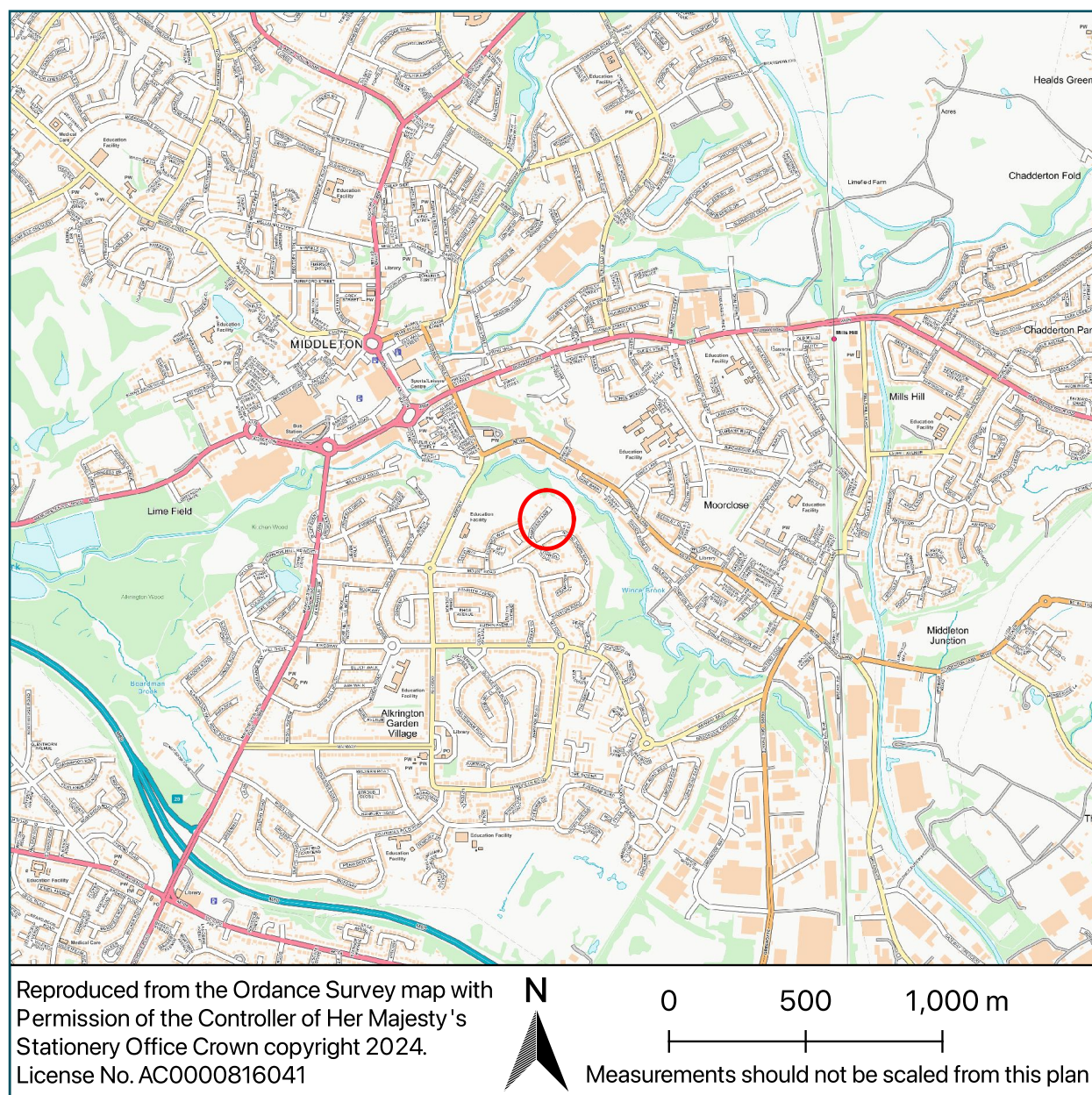


FIGURE 1 - SITE LOCATION PLAN

2. Objective

This letter-report has been prepared to evaluate the potential for utilising soakaway drainage for surface waters from the proposed development of the site. As part of this evaluation intrusive Ground Investigation was undertaken to determine the ground conditions in the vicinity of the proposed new site entrance and carry out in-situ soakaway testing to determine whether soakaways are likely to be suitable and provide

a design soil infiltration rate and, where soakaways are thought to be feasible, a recommended soil infiltration rate based on the soakaway testing data.

3. The Site

The site is an irregular-shape parcel of undeveloped land located to the south-east of Ramsden Farm Road, accessible from Ramsden Farm Road. The site is bounded by residential houses to the north, south and west.

Wince Brook is located approximately 50m north-east of the site and runs in a roughly south-east to north-west direction. The topography of the area slopes down to the east, towards Wince Brook.

4. Geology

The available geological maps of the area, 1:50,000 scale BGS sheet 85 (Manchester) and Lancashire County Series map 96NE have been examined, along with the geological memoirs of the area.

The site is shown to be underlain by undifferentiated strata (mudstone and siltstone with subordinate bands of sandstone) of the Pennine Lower Coal Measures (LM); dipping to the north from an assessment of outcrop patterns and dip indicators on the geological maps of the area.

A geological fault is conjectured around 215m east of the site trending roughly north-north-west to south-south-east.

Glaciofluvial superficial soils are shown to overlie the bedrock geology, likely in the form of clay and silt.

The geological maps do not highlight any recorded made ground across the site or within the immediate vicinity, however some made ground would be anticipated to the superficial depths.

5. Fieldwork

To confirm the ground conditions and facilitate in-situ soakaway testing for drainage design purposes, three trial pits (TP01-TP03) was excavated near the proposed houses on 16 December 2024, using a JCB C-1 Sitemaster mechanical excavator with a 600mm toothed bucket. The trial pits were excavated to 2.10m below ground level (bgl), which was the maximum reach of the excavator used. Exploratory hole logs for the trial pits

are enclosed as Appendix B. The approximate locations of TP01 to TP03 are shown on Figure 2.

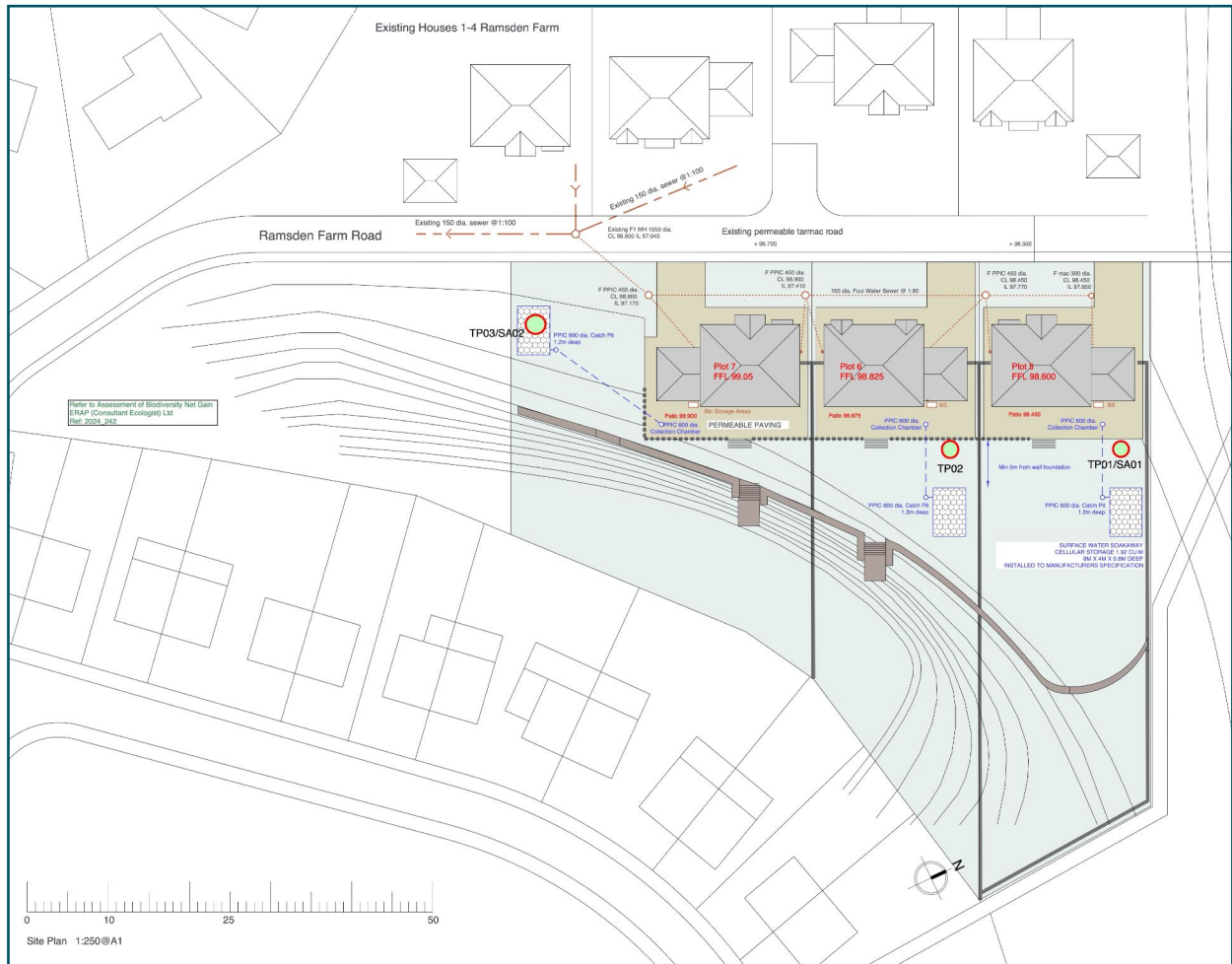


FIGURE 2 - SITE PLAN

Prior to completion of the trial pits an in-situ soakaway test was performed in general accordance with BRE Special Digest 365. Once the soakaway tests had been completed the pits were backfilled with arisings to leave in a safe state.

6. Ground Conditions

The ground conditions encountered in the trial pits are recorded in detail on the exploratory hole logs in Appendix B, summarised below for ease of reference.

In TP01 and TP03 topsoil were recored from the surface to a maximum depth of 0.60m bgl. beneath which natural coarse grained (granular) soils were encountered, in the form of slightly gravelly sand, which extended beyond the base depths of the trial pits.

At the location of TP02 an area of deepened Made Ground was found from surface, extending beyond the base of trial pit. The made ground was generally encountered as a single layer of brown grey gravelly sand, with gravel consisting oddly of brick, glass, wood and sandstone.

No groundwater or seepages were encountered during excavation of the trial pits for the short time that they were open.

7. Soakaway Feasibility

The potential for soakaway drainage relies on the permeability of the strata, and within superficial soils it can also be dependent on the level of the natural groundwater table, where encountered. Permeable strata was identified from 0.6m to 2.10m bgl in TP01 and TP03, within the superficial sand strata.

In-situ soakaway test was undertaken in these trial pits in general accordance with BRE Special Digest 365:2016, to assess the potential suitability for soakaway drainage. The pits were filled to depths of 1.22m bgl & 1.34m bgl for TP01 and TP03 respectively, using an IBC cubic metre water container, and the water level measured at regular intervals thereafter. Soakaway results sheets are included behind the relevant logs for TP01 and TP03.

Although initial decreases in water level were noted to be higher for the first five minutes of each soakaway test, this is likely due to wetting up of the strata. Water level in the pits were then noted to steadily decrease over the 60 minute duration of the tests, as shown on the soakaway test record sheets in Appendix B.

Due to collapse of the sand below the water level in both trial pits, the soakaway tests were drained until the pits were dry to the depth at which they had collapsed to. It was not possible to undertake full depth soakaway tests in either of the trial pits, and repeat tests were not conducted due to the potential for further collapse if wetted again.

Using the data obtained, the 75% and 25% water level depths, and time to reach each of the relevant water levels have been measured or extrapolated. Using this information soil infiltration rates for the drop in water level from 75% to 25% water levels have been calculated for each of the soakaway tests undertaken.

	SA01	SA02
Base of trial pit (m)	2.10	2.00
Start WL / 100% full (m)	1.22	1.34
75% full WL depth (m)	1.44	1.51

	SA01	SA02
25% full WL depth (m)	1.88	1.835
50% full WL depth (m)	0.44	0.33
WL @ end of test (m)	1.63	1.82
WL drop during test (m)	0.41	0.48
Time elapsed (min)	60	60
75% WL reached @ (min)	15	15
Was 25% WL depth reached in soakaway test?	NO	NO
Additional depth needed to reach 25% WL (m)	0.25	0.02
Time needed to drain to 25% WL (mins)	94	63
Time needed to drain from 75% WL to 25% WL (mins)	79	48
Soil infiltration rate from 75% to 25% WL (m/sec)	3.00×10^{-5}	4.77×10^{-5}

8. Conclusions

Any drainage measures will need to be designed in accordance with the Local Authority's Sustainable Drainage Systems (SuDS) requirements, and agreement with the Statutory Undertaker will be needed to determine their requirements for discharge rates if draining into the existing sewer network.

For soakaway design purposes we would recommend using the more conservative calculated soil infiltration rate of 3.00×10^{-5} m/sec when assessing the size and storage volume required for any soakaways to drain the proposed impermeable area(s) for each soakaway(s).

If there is insufficient space available for soakaways to feasible then either off-site discharge into the adjacent watercourse will need to be considered, or attenuation and controlled discharge into the existing drainage network if the secondary option is not feasible.

When carrying out any unsupported excavations if installing soakaways, consideration will need to be given to the potential for instability of the superficial sand strata. The potential for running sand conditions should also be considered, particularly if any seepages through the soils or if groundwater was encountered.

To conform with BRE 365:2016 any soakaways should be designed so that groundwater does not reach the base of the installed soakaway. If any groundwater or seepages were encountered during installation of any soakaways then considered would need to be given to the potential implications on the proposed design.

We trust that the above is in order but please don't hesitate to contact the office on 01924 376622 If you have any queries regarding the above or want to discuss anything with us.

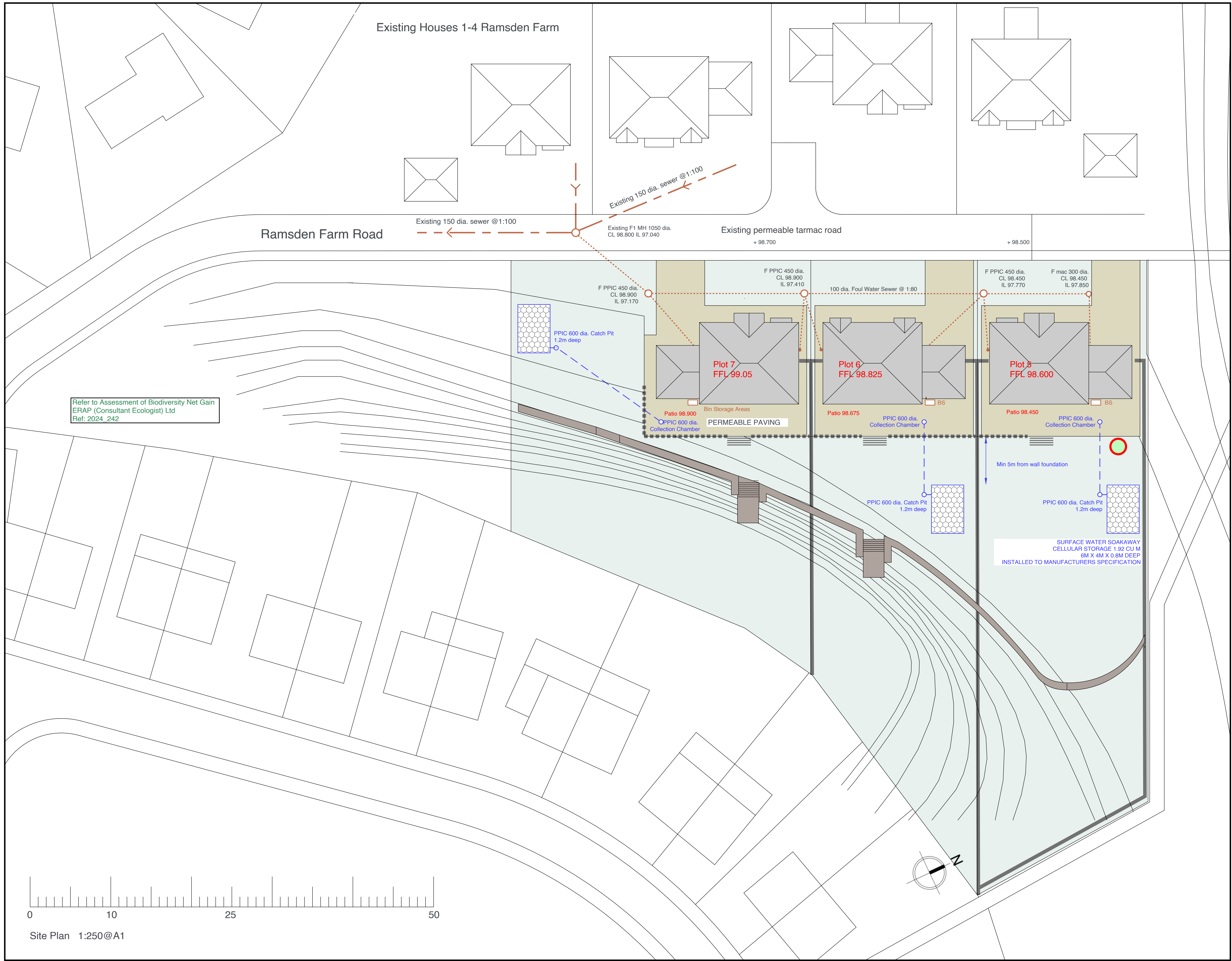
Yours Sincerely

A handwritten signature in black ink that reads "R. Saville". The signature is written in a cursive style with a large, stylized 'R'.

Richard Saville

BSc CGeol FGS

APPENDIX A - PROPOSED LAYOUT PLAN



1M high gabion basket retaining walls



Patio and garden walls in facing bricks with stone copings to match the houses.



1.8m high close boarded timber fence to match the existing boundary fences to Plots 1-4

Shown here with Marshall's Tegula Paving

DRAINAGE: FOUL WATER SYSTEM TO DISCHARGE INTO THE EXISTING SEWER IN RAMSDEN FARM ROAD
SURFACE WATER TO DISCHARGE TO NEW SOAKAWAYS.

ALL INVERTS AND DIMENSIONS MUST BE CHECKED ON SITE

ALL DRAINAGE INSTALLED IN ACCORDANCE WITH REGULATIONS AND TO MATCH THE EXISTING PHASE 1 DRAINAGE TO PLOTS 1-4

- SOFT LANDSCAPING TO LANDSCAPE ARCHITECTS PLAN
- GABION BASKET RETAINING WALLS
- PERMEABLE PAVING: MARSHALLS TEGULA PRIORA

Refer to Landscape Design
Trevor Bridge Associates Ltd
Ref: 7515.01/02A

Refer to Arboricultural Impact Assessment
Bowland Tree Consultancy Ltd
Ref: BTC3007

Refer to Assessment of Biodiversity Net Gain
ERAP (Consultant Ecologist) Ltd
Ref: 2024_242

APPENDIX B - EXPLORATORY HOLE LOGS



Project Ramsden Farm Road, Middleton, Manchester, Lancashire				TRIAL PIT No TP01
Job No 744045	Date 16-12-24	Ground level (m)	Co-Ordinates ()	
Method/Plant Used JCB C-1				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.40	J					(0.60) 0.60	TOPSOIL: Dark brown gravelly sand. Gravel is medium to coarse angular to sub-angular of sandstone.		
1.00	J					(1.50) 2.10	Brown slightly gravelly SAND. Gravel is fine angular to sub-angular of sandstone.		
2.00	J					2.10	End of trial pit at 2.10m bgl.		

Shoring/Support: Stability: Collapsing below water level during soakaway test. 		GENERAL REMARKS	
		CAT used to check for services before digging. Backfilled with arisings on completion. Collapsing below water level during soakaway test.	
All dimensions in metres Scale 1:25	Client Watergrove CGI	Contractor Watergrove CGI	Logged By NA



SOAKAWAY TEST

TP No

TP01

Client :

Watergrove CGI

Location No.

744045

Test No.

SA01

Equipment & Method :

Excavator & bowser

Location

Ramsden Farm, Middleton, Manchester

Date

16-Dec-24

Logged by

NA

TRIAL PIT DETAILS

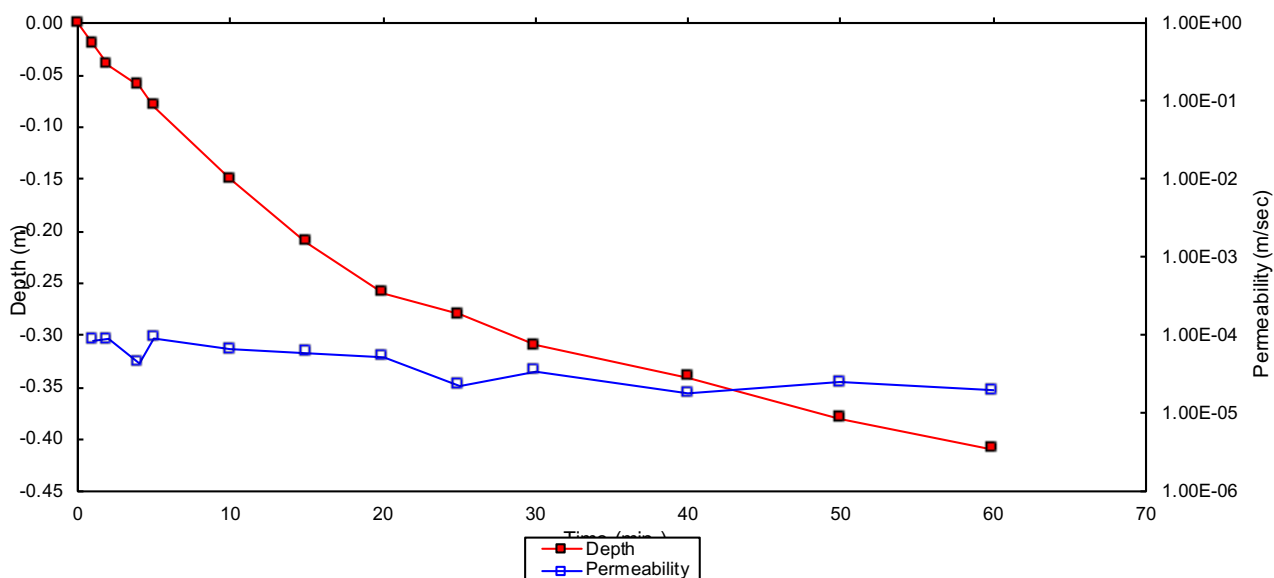
				Datum above Ground Level	100.00 m
	Width(m)	Length(m)	Depth (m) bD.		
at start	0.90	1.90	0.00	Volume of water discharged	1.35 m³
at base	0.90	1.50	1.65	Perm strata height	2.10 m
				Time discharged	60.00 Min.
				Perm Base used	Yes

For detail of strata encountered see trial pit log

DEPTH OF WATER DURING SOAKAWAY TEST

Time (min.)	Depth (m)	Permeability (m/Sec)	Time (min.)	Depth (m)	Permeability (m/Sec)
0	1.22	0			
1	1.24	8.57E-05			
2	1.26	8.74E-05			
4	1.28	4.45E-05			
5	1.30	9.09E-05			
10	1.37	6.49E-05			
15	1.43	5.99E-05			
20	1.48	5.33E-05			
25	1.50	2.26E-05			
30	1.53	3.47E-05			
40	1.56	1.80E-05			
50	1.60	2.50E-05			
60	1.63	1.98E-05			

SOAKAWAY RATE



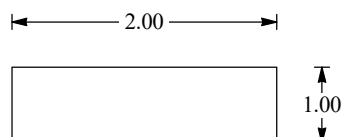
NOTE:

Soakaway testing carried out in general accordance with BRE Digest 365 (2016) for England and Wales



Project Ramsden Farm Road, Middleton, Manchester, Lancashire				TRIAL PIT No TP02
Job No 744045	Date 16-12-24	Ground level (m)	Co-Ordinates ()	
Method/Plant Used JCB C-1				Sheet 1 of 1

[illegible]

Shoring/Support: Stability: Stable 	GENERAL REMARKS CAT used to check for services before digging. Backfilled with arisings on completion. Stable	
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All dimensions in metres Scale 1:25	Client Watergrove CGI	Contractor Watergrove CGI	Logged By NA
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ABEC TRIAL PIT 744045.GPJ ABEC TEMPLATE.GDT 17/12/24



Project Ramsden Farm Road, Middleton, Manchester, Lancashire				TRIAL PIT No TP03
Job No 744045	Date 16-12-24	Ground level (m)	Co-Ordinates ()	
Method/Plant Used JCB C-1				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.40	J					(0.60) 0.60	TOPSOIL: Dark brown gravelly sand. Gravel is medium to coarse angular to sub-angular of sandstone.		
1.00	D					(1.40) 1.40	Brown slightly gravelly SAND. Gravel is fine angular to sub-angular of sandstone.		
2.00	D					2.00	End of trial pit at 2.00m bgl.		

Shoring/Support: Stability: Collapsing below water level during soakaway test. 		GENERAL REMARKS	
		CAT used to check for services before digging. Backfilled with arisings on completion. Collapsing below water level during soakaway test.	
All dimensions in metres Scale 1:25	Client Watergrove CGI	Contractor Watergrove CGI	Logged By NA



SOAKAWAY TEST

TP No

TP03

Client :

Watergrove CGI

Location No.

744045

Test No.

SA02

Equipment & Method :

Excavator & bowser

Location

Ramsden Farm, Middleton, Manchester

Date

16-Dec-24

Logged by

NA

TRIAL PIT DETAILS

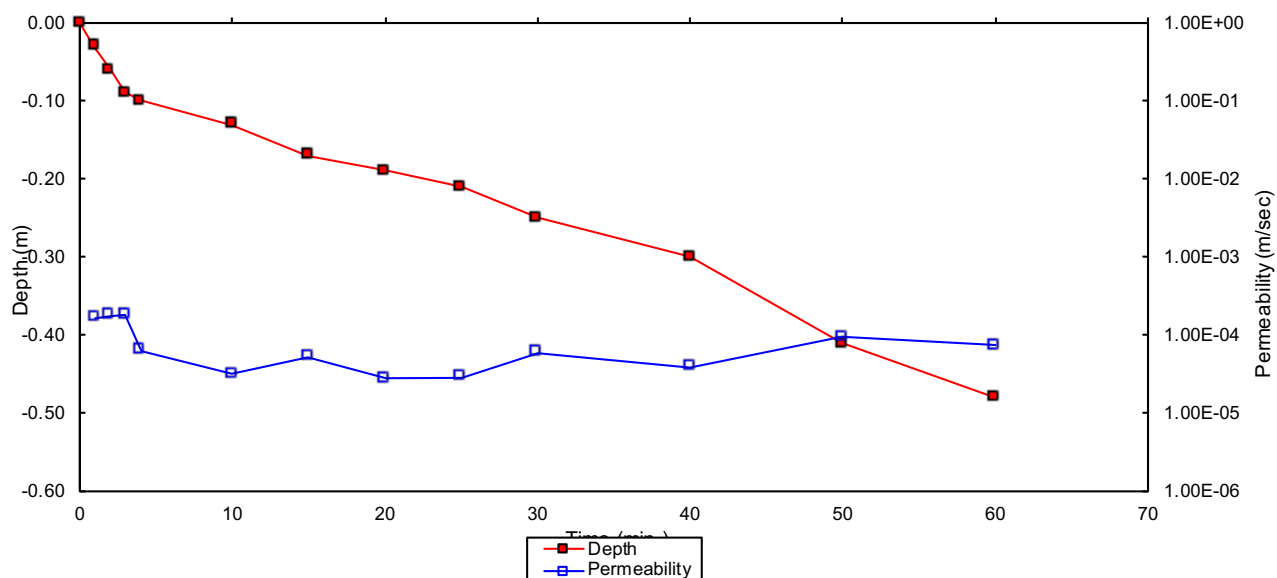
				Datum above Ground Level	100.00 m
	Width(m)	Length(m)	Depth (m) bD.		
at start	1.00	1.90	0.00	Volume of water discharged	1.07 m³
at base	0.90	1.50	1.65	Perm strata height	2.00 m
				Time discharged	60.00 Min.
				Perm Base used	Yes

For detail of strata encountered see trial pit log

DEPTH OF WATER DURING SOAKAWAY TEST

Time (min.)	Depth (m)	Permeability (m/Sec)	Time (min.)	Depth (m)	Permeability (m/Sec)
0	1.34	0			
1	1.37	1.70E-04			
2	1.40	1.76E-04			
3	1.43	1.83E-04			
4	1.44	6.32E-05			
10	1.47	3.20E-05			
15	1.51	5.33E-05			
20	1.53	2.82E-05			
25	1.55	2.90E-05			
30	1.59	5.96E-05			
40	1.64	3.96E-05			
50	1.75	9.44E-05			
60	1.82	7.33E-05			

SOAKAWAY RATE



NOTE:

Soakaway testing carried out in general accordance with BRE Digest 365 (2016) for England and Wales