

Our Ref: BEK/22080/220708/BG

08th July 2022

BROOKHOUSE GROUP

168-170 Washway Rd
Sale
M33 6RH

BRE 365 Infiltration Test – Land at Leighton Avenue, Middleton

BEK Enviro (BEK) has been commissioned by Brookhouse Group to provide soil infiltration rates at the above site using the BRE 365 methodology (2016) to assess the viability of disposal of surface water from the site via infiltration.

Infiltration testing was undertaken in accordance with the requirements set out in BRE 365 (2016). Two test pits were excavated at the site with infiltration testing undertaken in each pit. The test was undertaken on 24th June 2022 in dry conditions.

In accordance with BRE 365 (2016) 'the trial pit should be 0.3 to 1 m wide and 1 to 3 m long. It should have vertical sides trimmed square and, if necessary for stability, should be filled with granular material. The pit is filled with water and allowed to drain three times to near empty; each time recording the water level and time filling. The calculations for the soil infiltration rate is taken from the time taken for the water level to fall from 75% to 25% effective storage depth in the pit, using the lowest f value of the three test results for design.'

The trial pits were excavated using a JCB 3cx excavator to a maximum depth of 1.50 m with the sides trimmed square. Water was discharged into pit using an ICB water container. Photographs of the test pits and infiltration tests are included within Annex A.

The test pit dimensions are as follows:

Trial Pit No.	Length (m)	Width (m)	Depth (m)	Volume (m ³)
TP2	2.00	0.70	1.50	2.10
TP7	1.70	0.70	1.50	1.79

Table 1. Test Pit Dimensions

The ground conditions at the site were generally comprised of topsoil over clay.

Water was discharged into the pit via IBCs containers and the time taken for the water to infiltrate into the soil was recorded as shown within the table below:

Infiltration Test Results

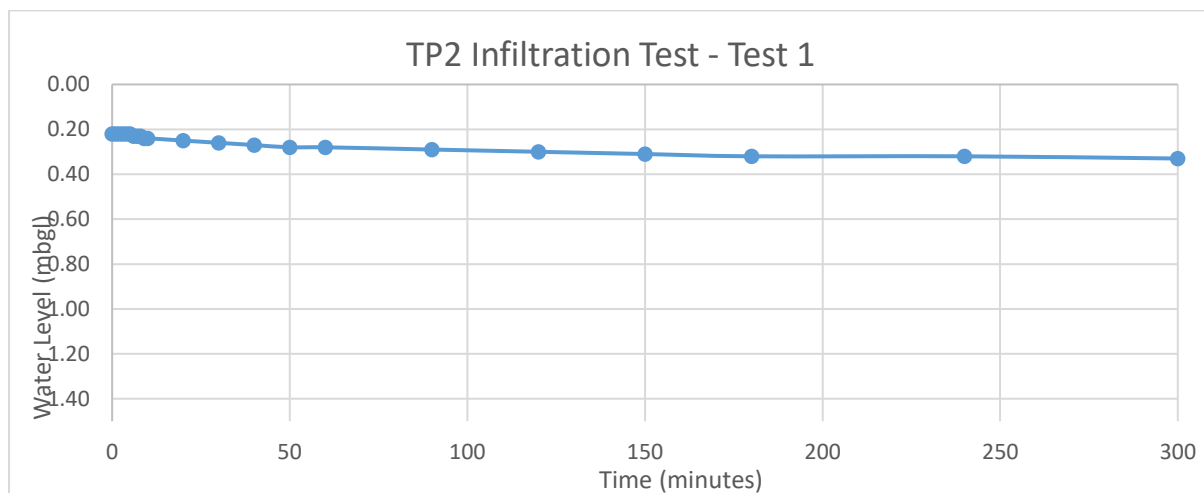
Soakaway Test 1 – TP2

Depth of water below ground level at start of test: 0.22 m

A summary of the percolation test is shown within the table below:

Time (minutes)	Depth of Water (mbgl)	Notes
0	0.22	Start of Test
5	0.22	
10	0.24	
30	0.26	
60	0.28	
120	0.30	
180	0.32	
240	0.32	
300	0.33	End of test

Table 2: TP2 (Test 1) Infiltration Test



It can be seen from the above table that the water level failed to reach 75% effective depth after approximately 5 hours of the test therefore the infiltration rate was unable to be determined and considered to have failed.

Soakaway Test 1 – TP7

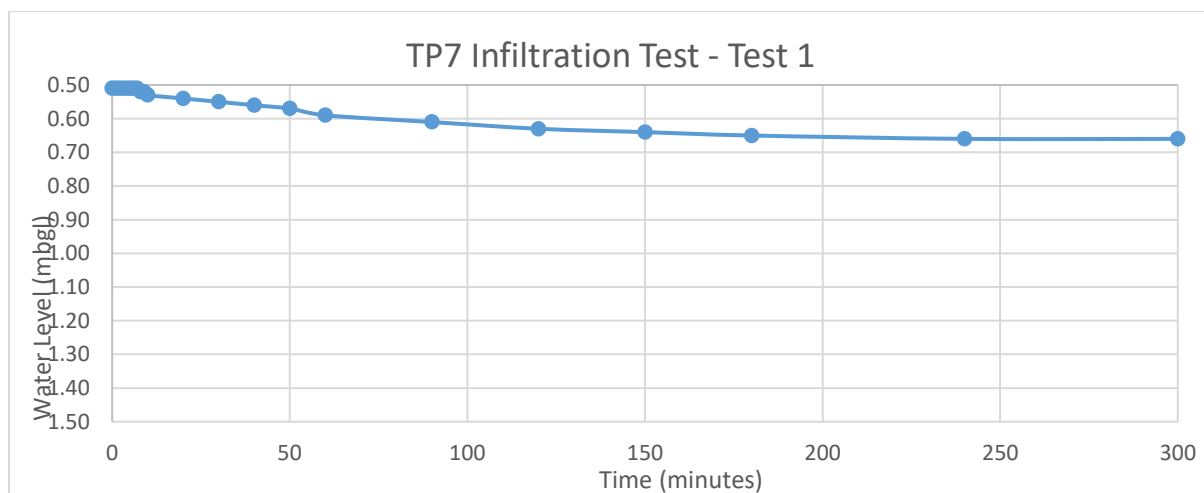
Depth of water below ground level at start of test: 0.51 m

A summary of the percolation test is shown within the table below:



Time (minutes)	Depth of Water (mbgl)	Notes
0	0.51	Start of Test
5	0.51	
10	0.53	
30	0.55	
60	0.59	
120	0.63	
180	0.65	
240	0.66	
300	0.66	End of test

Table 2: TP7 (Test 1) Infiltration Test



It can be seen from the above table that the water level failed to reach 75% effective depth after approximately 5 hours of the test therefore the infiltration rate was unable to be determined and considered to have failed.

Conclusion

Two infiltration test pits were excavated at Leighton Avenue, Middleton with infiltration testing undertaken. The tests failed to reach 75% effective depth after 5 hours of testing and therefore an infiltration rate was unable to be determined and therefore is considered to have failed. As such infiltration methods for surface water disposal are not considered to be viable.

I trust the above is satisfactory. Should you require anything further please do not hesitate to contact the undersigned.

Yours sincerely

Michael Buckley
BSc (Hons) MSc MEnvSci



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ANNEX A

Photographs



P1: TP2

P2: TP7



Comments:

Photographs 1 to 2

This appendix is for illustrative purposes only and is for use only in conjunction with associated reports relating to the project details adjacent. BEK accepts no liability for the misinterpretation or use of this illustration by any other parties.

Site:
Leighton Avenue, Middleton

Title:
Appendix A - Photographs

Project No:
22080

Created By:
DE

Date:
08/07/22

Client: Brookhouse Group



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ANNEX B

Infiltration Test Results

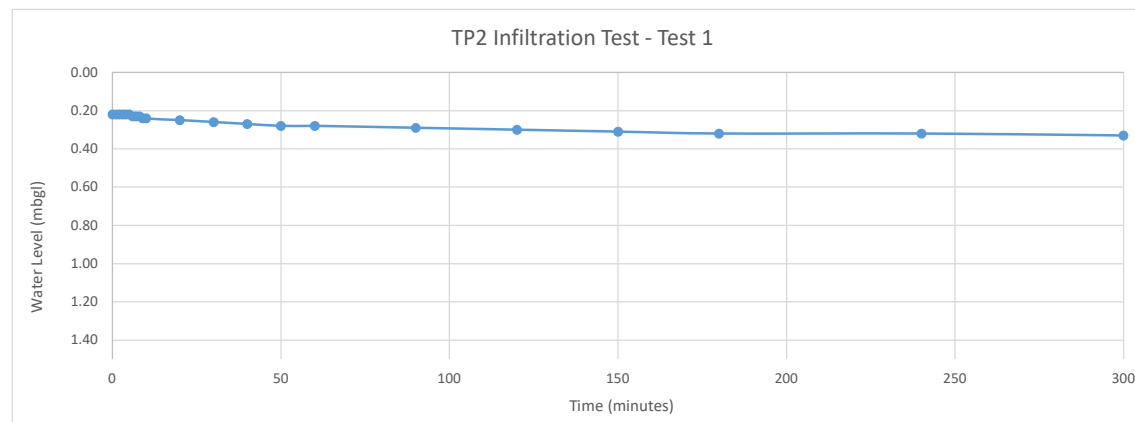
Leighton Avenue - Infiltration TP2 - Test 1

Date: 24/06/2022
Weather: Warm, overcast

Time (minutes)	Depth (mbgl)
0	0.22
1	0.22
2	0.22
3	0.22
4	0.22
5	0.22
6	0.23
7	0.23
8	0.23
9	0.24
10	0.24
20	0.25
30	0.26
40	0.27
50	0.28
60	0.28
90	0.29
120	0.30
150	0.31
180	0.32
240	0.32
300	0.33

	Length (m)	Width (m)	Depth (m)	Area (m ³)
Pit Dimensions:	2.00	0.70	1.50	2.10

Start water level (mbgl) = 0.22
Total Depth of test = 1.28
50% Effective Depth = 0.448
75% Effective Depth (mbgl) = 0.54
25% Effective Depth (mbgl) = 1.18



Soil Infiltration Rate (f) = $\frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

V_{p75-25} = effective storage volume of water in the trial pit between 75% and 25% effective depth
= 0.90 m³

a_{p50} = internal surface area of the trial pit up to 50% effective depth and including base area
= 3.8192 m²

t_{p75-25} = time for water to fall from 75% to 25% effective depth
= - mins
= #VALUE! seconds

Soil Infiltration Rate (f) =
= #VALUE!
= #VALUE! m/s
= #VALUE! m/hour

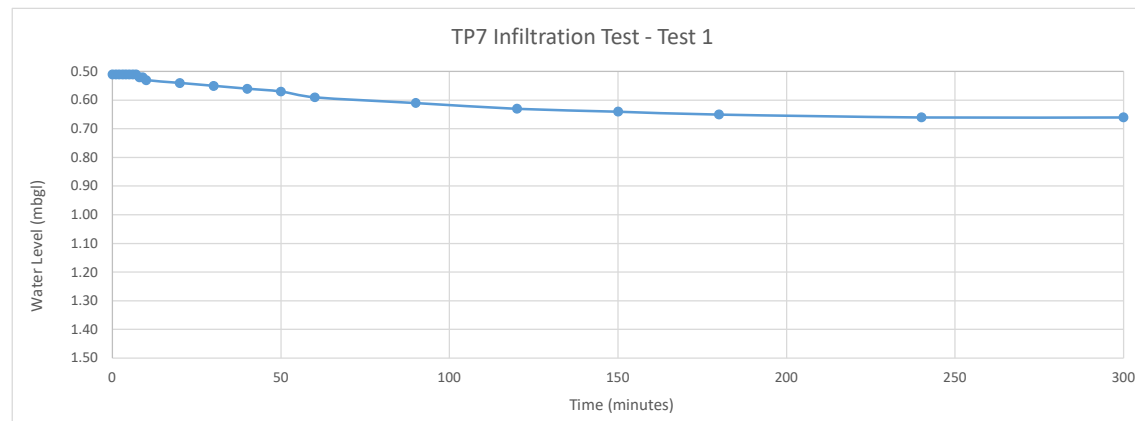
Leighton Avenue - Infiltration TP7 - Test 1

Date: 24/06/2022
Weather: Warm ,overcast

Time (minutes)	Depth (mbgl)
0	0.51
1	0.51
2	0.51
3	0.51
4	0.51
5	0.51
6	0.51
7	0.51
8	0.52
9	0.52
10	0.53
20	0.54
30	0.55
40	0.56
50	0.57
60	0.59
90	0.61
120	0.63
150	0.64
180	0.65
240	0.66
300	0.66

	Length (m)	Width (m)	Depth (m)	Area (m ³)
Pit Dimensions:	1.70	0.70	1.50	1.79

Start water level (mbgl) = 0.51
Total Depth of test = 0.99
50% Effective Depth = 0.495
75% Effective Depth (mbgl) = 0.76
25% Effective Depth (mbgl) = 1.25



Soil Infiltration Rate (f) = $\frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

V_{p75-25} = effective storage volume of water in the trial pit between 75% and 25% effective depth
= 0.59 m³

a_{p50} = internal surface area of the trial pit up to 50% effective depth and including base area
= 3.566 m²

t_{p75-25} = time for water to fall from 75% to 25% effective depth
= - mins
= #VALUE! seconds

Soil Infiltration Rate (f) =
= #VALUE! m/s
= #VALUE! m/s
= #VALUE! m/hour





GEO-ENVIRONMENTAL CONSULTING ENGINEERS

bEk Enviro Ltd

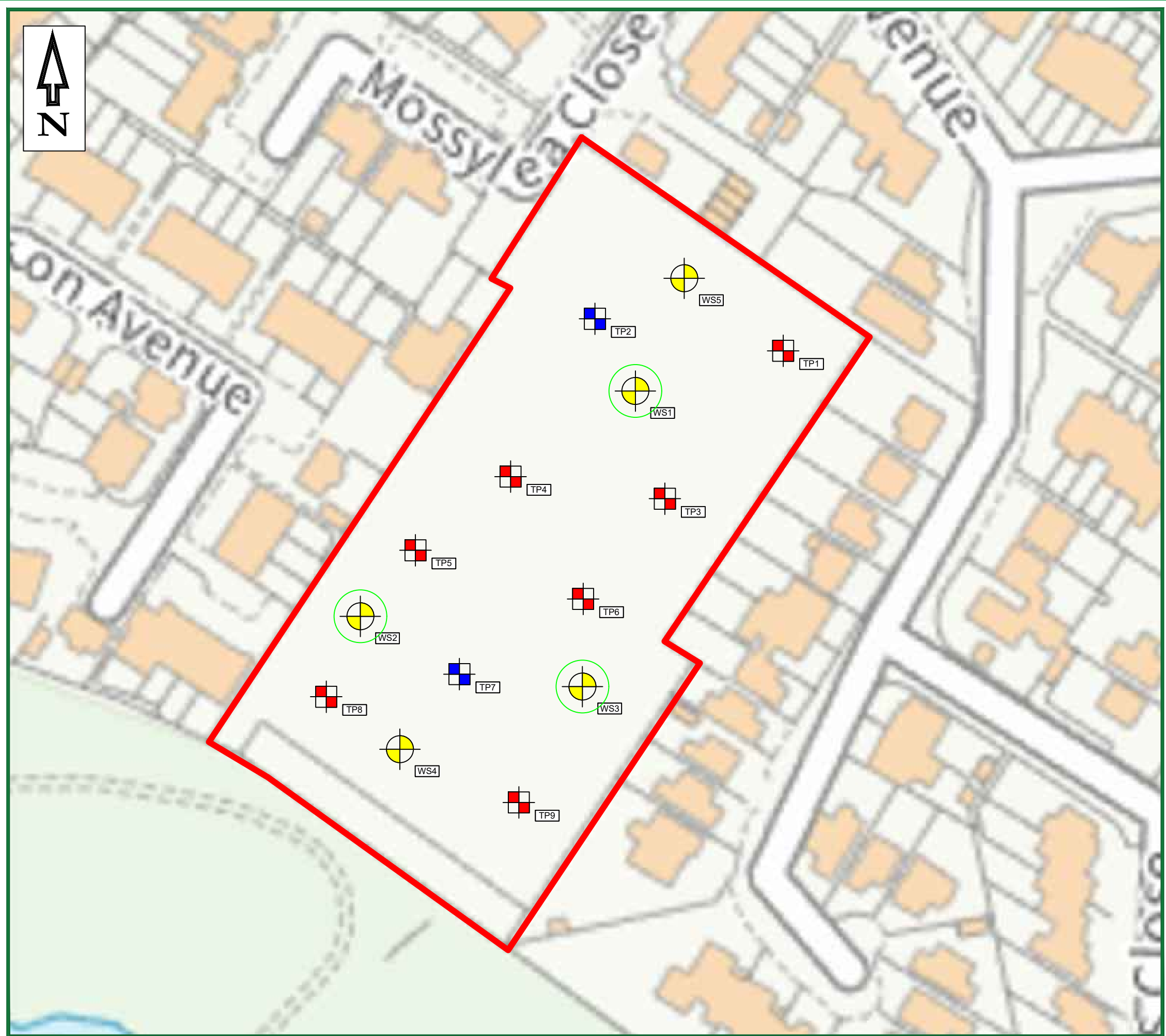
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ANNEX C

Site Investigation Location Plan



LEGEND

-  WINDOW SAMPLE BOREHOLE
-  WINDOW SAMPLE BOREHOLE (GAS/GROUNDWATER PROBE)
-  TRIAL PIT
-  TRIAL PIT (INFILTRATION TEST)

REV	DESCRIPTION	DATE	BY



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CLIENT.	BROOKHOUSE GROUP
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JOB TITLE.	LAND OFF LEIGHTON AVENUE, MIDDLETON
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DRAWING TITLE.	SITE INVESTIGATION PLAN
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SCALE © A3. N.T.S	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 29/06/22
DRAWING No. 22080-3	REV. -		