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Our Ref: 11745G/TPB/SCS/001/A

26th February 2025

Dear Sir,

11745G The Stand Golf Club, Bury – Infiltration Testing

WML Consulting has been commissioned by Westshield Ltd to undertake in situ soakaway testing within the proposed two development sites located within The Stand Golf Club in Bury.

At this stage development plans have not been made available however it is understood that the project comprises the development of the existing club house and small section of golf course (Site A in the north-east) for residential housing, with private gardens and hardstanding for access and parking.

A new clubhouse, with car park will be constructed in the south-west, within the Site B area, as outlined on the red-line drawing in Appendix 01.

Intrusive Works

In order to carry out in situ soakaway testing 4no machine excavated trial pits were formed by SI Ground Investigation Ltd on 19th and 20th February 2025.

The Exploratory Hole Location drawing is presented in Appendix 01. Adverse ground conditions were encountered on Site B, with a heavily waterlogged surface requiring that the proposed soakaway positions were moved a short distance into more accessible areas.

The subsequent ground conditions encountered, together with other pertinent observations were recorded during the intrusive works, these are presented on the exploratory hole logs in Appendix 02.

Ground Conditions

Within Site A the ground conditions generally comprised a surface horizon of topsoil underlain by dark to light brown, fine to medium sand (SA01) or light brown, very silty sand underlain by grey, slightly clayey, laminated silt (SA02) to a maximum proven depth of 2.00mbgl.

Within Site B the ground conditions comprised a surface horizon of topsoil underlain by light brownish grey, very clayey, gravelly sand to 1.20mbgl (SA03) or generally cohesive made ground to 1.40mbgl (SA04). Both locations were in turn underlain by firm to stiff, variably silty and sandy clay to a maximum proven depth of 2.00mbgl.

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WML Consulting Limited
Registered in England No. 3176267

Visual/Olfactory Evidence of Contamination

No visual and/or olfactory evidence of significant ground contamination has been identified within the exploratory hole during the investigation.

Groundwater

Groundwater seepages were recorded during the formation of SA03 at 1.20mbgl and SA04 and 1.00mbgl in Site B. SA04 filled to a depth of 0.90mbgl after 20 minutes due to surface water run off and inflow of perched groundwater.

Groundwater was not encountered during the formation of SA01 or SA02 within Site A.

In Situ Soakaway Testing

In-situ soakaway testing was carried out in the machine excavated trial pits on 19th and 20th February 2025.

Within SA01 in Site A, a degree of infiltration was observed within the upper horizons of granular strata, however this plateaued at around 1.35mbgl and the water level did not drop below 25% of the initial head during the test duration. Therefore, as a result a representative coefficient of permeability could not be calculated and the strata is considered to be unsuitable for soakaways. However, a degree of permeability in the upper 900mm around the area of SA01 would allow for the potential use of permeable asphalt to roads and parking areas. It would need to be determined how laterally persistent this sandy band is.

However, within SA02 (Site A) and SA03 (Site B) the water within the level did not drop below 75% of the initial head during the test duration, as a result infiltration is considered negligible and a coefficient of permeability could not be calculated.

Within SA04, due to the high standing groundwater (after 20 minutes) and surface water inflow (due to the preceding extreme rainfall across the area) a soakaway could not be undertaken.

The results of the insitu test results are presented in Appendix 03.

We trust this provides you the information required at this time. However, please do not hesitate to contact us if you have any queries.

Yours sincerely



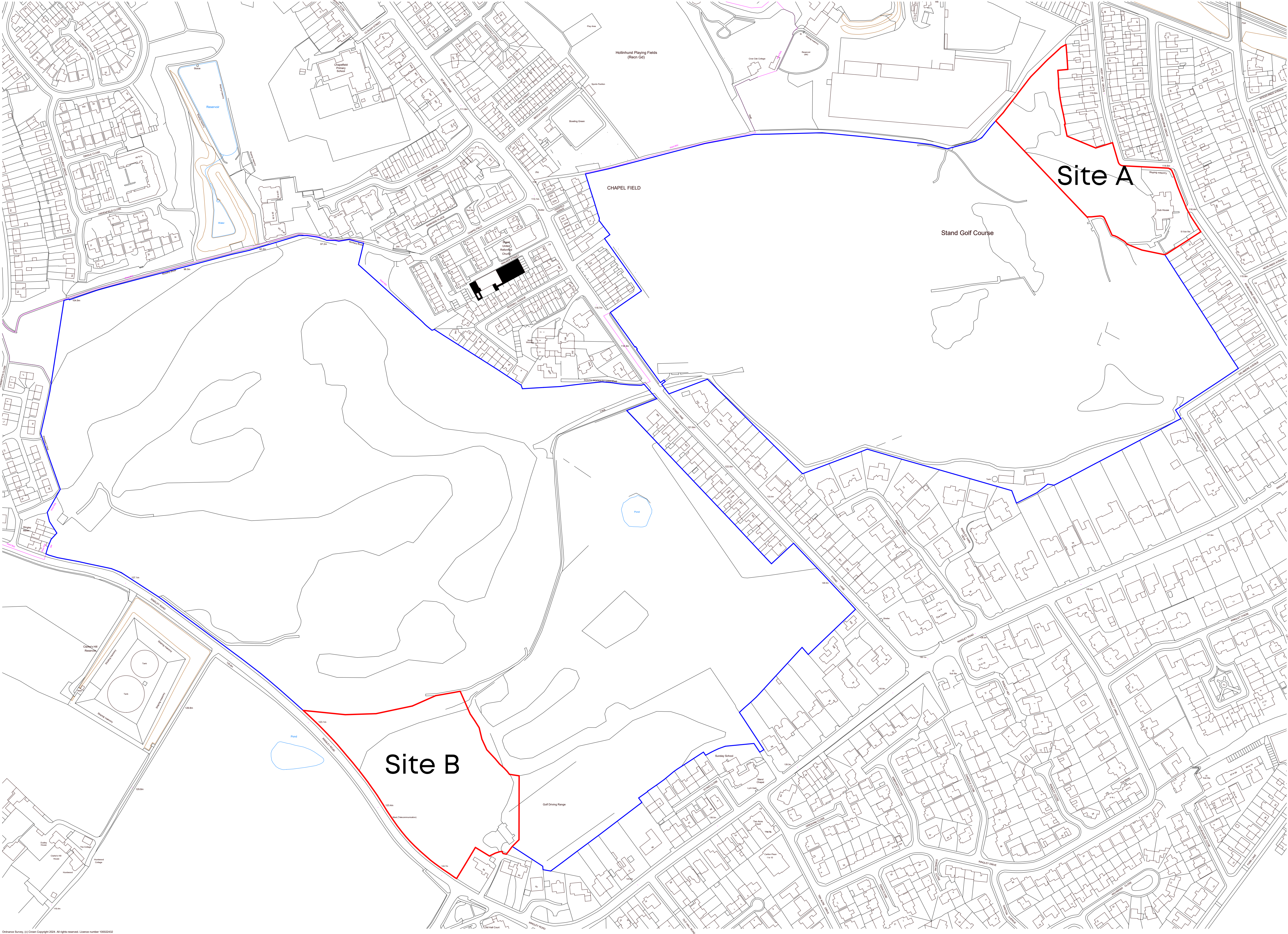
T P Booth



S C Seddon

For WML CONSULTING

**APPENDIX 01
DRAWINGS**



Overall Site	
Name	Area
Site A- Residential	15,964 m²
Site B- Club House	23,138 m²

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CLIENT:
Westshield

PROJECT:
The Stand Golf Club
Bury, M45 7NL

DRAWING NUMBER:
23036-PJA-00-ZZ-DR-A-1000

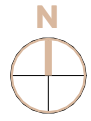
DRAWING TITLE:
Overall Site- LocationPlan

STATUS:
PRELIMINARY

SCALE: 1: 2000@A1 DATE: 06/18/24 BY: EG CHECKED: SH

PADDOCK
JOHNSON

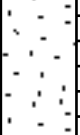
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**APPENDIX 02
EXPLORATORY HOLE RECORDS**

WML CONSULTING	Project Title: The Stand Golf Club		SA01
	Project Number: 11745G	Client: Westshield Ltd	
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 19/02/2025	Method: JCB 3X	Logged By: SE	Scale: 1:30



Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
					0.30	Turf over brown, sandy TOPSOIL.	
					0.90	Dark orange brown, fine to medium SAND.	
					1.00	Light brown, fine to medium SAND.	
					2.00	End Of Trial Pit At 2.00 m	
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa						REMARKS No Groundwater Encountered	

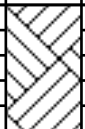
WML CONSULTING	Project Title: The Stand Golf Club		SA02
	Project Number: 11745G	Client: Westshield Ltd	
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 19/02/2025	Method: JCB 3X	Logged By: SE	Scale: 1:30



Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
					0.40	Turf over brown, sandy TOPSOIL.	
					1.00	Light brown, very silty, fine SAND.	
					1.20	Grey, slightly clayey, laminated, fine sandy SILT.	
					2.00	1.80 - 2.00 With orange sand lenses.	
						End Of Trial Pit At 2.00 m	
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa						REMARKS No Groundwater Encountered	

WML CONSULTING	Project Title: The Stand Golf Club		SA03
	Project Number: 11745G	Client: Westshield Ltd	
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 19/02/2025	Method: JCB 3X	Logged By: SE	Scale: 1:30



Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
					0.50	Brown, clayey TOPSOIL.	
					1.00	Light brownish grey, very clayey, gravelly, medium SAND.	
					1.20		
					2.00	Firm to stiff, greyish brown, very sandy CLAY with large subrounded gravels.	▼
						End Of Trial Pit At 2.00 m	
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa						REMARKS	
 - Groundwater Strike  - Groundwater Level 							

WML CONSULTING	Project Title: The Stand Golf Club		SA04
	Project Number: 11745G	Client: Westshield Ltd	
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 19/02/2025	Method: JCB 3X	Logged By: SE	Scale: 1:30



Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
					1.00	Turf over MADE GROUND of brown, clayey, gravelly sand. Gravel of brick and concrete.	
					1.40		
					2.00	Stiff, greyish brown, silty, sandy CLAY.	
						End Of Trial Pit At 2.00 m	
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa						REMARKS	
 - Groundwater Strike  - Groundwater Level							

**APPENDIX 03
IN SITU TESTING RESULTS**

IN SITU PERMEABILTY TEST																																																																																																						
Project Number 11745G Project Name The Stand Golf Club Engineer SE	Date 19-Feb-25 Test Pit Number SA01 Test Number 1																																																																																																					
FIELD MEASUREMENTS		TRIAL PIT INFORMATION																																																																																																				
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="text-align: left;">Time Elapsed (t) mins</th> <th style="text-align: left;">Depth at Time, t(m below datum)</th> <th style="text-align: left;">head of water (m)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.40</td><td>1.60</td></tr> <tr><td>1.00</td><td>0.44</td><td>1.56</td></tr> <tr><td>2.00</td><td>0.47</td><td>1.53</td></tr> <tr><td>3.00</td><td>0.49</td><td>1.51</td></tr> <tr><td>4.00</td><td>0.52</td><td>1.48</td></tr> <tr><td>5.00</td><td>0.56</td><td>1.44</td></tr> <tr><td>10.00</td><td>0.68</td><td>1.32</td></tr> <tr><td>20.00</td><td>0.84</td><td>1.16</td></tr> <tr><td>30.00</td><td>1.00</td><td>1.00</td></tr> <tr><td>40.00</td><td>1.08</td><td>0.92</td></tr> <tr><td>50.00</td><td>1.10</td><td>0.90</td></tr> <tr><td>60.00</td><td>1.16</td><td>0.84</td></tr> <tr><td>90.00</td><td>1.21</td><td>0.79</td></tr> <tr><td>120.00</td><td>1.30</td><td>0.70</td></tr> <tr><td>150.00</td><td>1.35</td><td>0.65</td></tr> <tr><td>180.00</td><td>1.36</td><td>0.64</td></tr> <tr><td>240.00</td><td>1.37</td><td>0.63</td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	Time Elapsed (t) mins	Depth at Time, t(m below datum)	head of water (m)	0.00	0.40	1.60	1.00	0.44	1.56	2.00	0.47	1.53	3.00	0.49	1.51	4.00	0.52	1.48	5.00	0.56	1.44	10.00	0.68	1.32	20.00	0.84	1.16	30.00	1.00	1.00	40.00	1.08	0.92	50.00	1.10	0.90	60.00	1.16	0.84	90.00	1.21	0.79	120.00	1.30	0.70	150.00	1.35	0.65	180.00	1.36	0.64	240.00	1.37	0.63																															Pit Length Pit Width Pit Depth Groundwater Level Datum 1.50 m 0.40 m 2.00 m 2.00 m Infilled with gravel? 40-75mm diameter stone: assumed porosity 30% test duration NO 240.00 mins Depth to water at To Depth to water at Tf 0.40 m 1.37 m <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Water status</th> <th style="width: 30%;">Head of water (m BD)</th> <th style="width: 30%;">time (mins)</th> </tr> </thead> <tbody> <tr> <td>100% full</td> <td>1.60</td> <td>0</td> </tr> <tr> <td>75% full</td> <td>1.20</td> <td>18</td> </tr> <tr> <td>50% full</td> <td>0.80</td> <td>84</td> </tr> <tr> <td>25% full</td> <td>0.40</td> <td>-</td> </tr> </tbody> </table>			Water status	Head of water (m BD)	time (mins)	100% full	1.60	0	75% full	1.20	18	50% full	0.80	84	25% full	0.40	-
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IN SITU PERMEABILTY TEST	
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Date 19-Feb-25

Test Pit Number	SA02
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Test Number	1
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FIELD MEASUREMENTS

TRIAL PIT INFORMATION	
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[illegible]

Pit Length	1.50 m
Pit Width	0.40 m
Pit Depth	2.00 m
Groundwater Level	2.00 m
Datum	

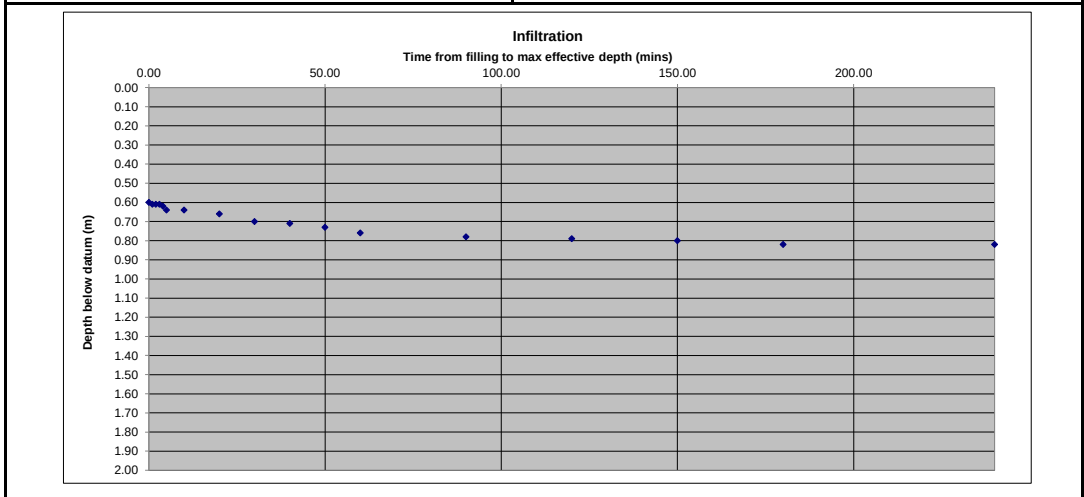
Infilled with gravel?	NO
40-75mm diameter stone: assumed porosity	30%
test duration	240.00 mins

40-75mm diameter stone: assumed porosity 30%	
test duration	240.00 mins

Depth to water at To	0.60 m
Depth to water at Tf	0.82 m

Water status	Head of water (m BD)	time (mins)
100% full	1.40	0

100% full	1.40	0
75% full	1.05	-
50% full	0.70	-
25% full	0.35	-



INFILTRATION RATE

Vp75-25 =	0.42 m3
ap50 =	3.26 m2

tp75-25 =	-	mins
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Infiltration rate = - m/sec

Remarks:	Water level did not drop below 25% full during test duration, indicating negligible infiltration. Therefore infiltration rate could not be calculated.
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IN SITU PERMEABILTY TEST	
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Date 20-Feb-25

Test Pit Number	SA03
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Test Number	1
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FIELD MEASUREMENTS

TRIAL PIT INFORMATION	
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[illegible]

Pit Length	1.50 m
Pit Width	0.40 m
Pit Depth	2.00 m
Groundwater Level	1.20 m

Datum	
-------	--

Infilled with gravel? **NO**

40-75mm diameter stone: assumed porosity 30%	
test duration	240.00 mins

Depth to water at To	3.53 m
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Depth to water at To	0.52 m
Depth to water at Tf	0.56 m

[illegible]

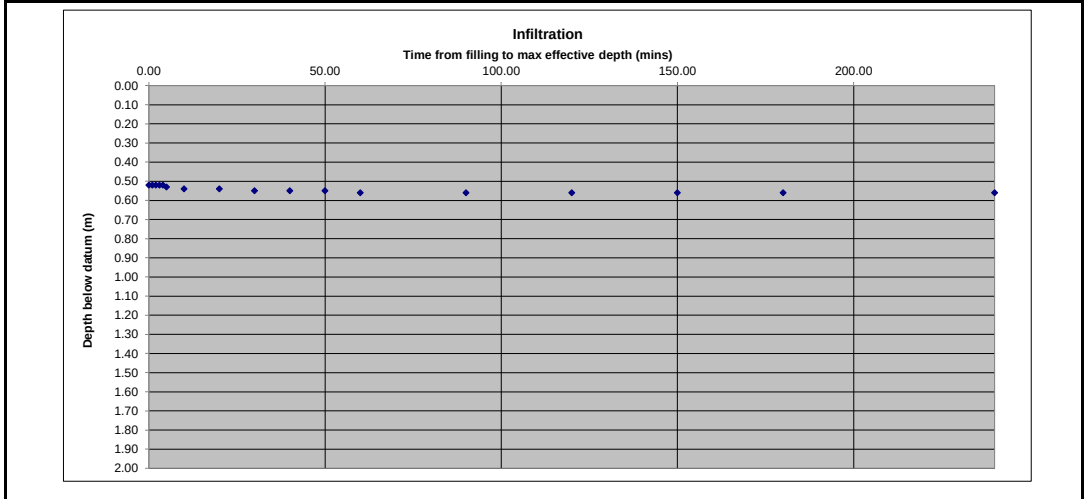
Water status	Head of water (m BD)	time (mins)
1	1.0	10
2	2.0	20
3	3.0	30
4	4.0	40
5	5.0	50
6	6.0	60
7	7.0	70
8	8.0	80
9	9.0	90
10	10.0	100
11	11.0	110
12	12.0	120
13	13.0	130
14	14.0	140
15	15.0	150
16	16.0	160
17	17.0	170
18	18.0	180
19	19.0	190
20	20.0	200
21	21.0	210
22	22.0	220
23	23.0	230
24	24.0	240
25	25.0	250
26	26.0	260
27	27.0	270
28	28.0	280
29	29.0	290
30	30.0	300
31	31.0	310
32	32.0	320
33	33.0	330
34	34.0	340
35	35.0	350
36	36.0	360
37	37.0	370
38	38.0	380
39	39.0	390
40	40.0	400
41	41.0	410
42	42.0	420
43	43.0	430
44	44.0	440
45	45.0	450
46	46.0	460
47	47.0	470
48	48.0	480
49	49.0	490
50	50.0	500
51	51.0	510
52	52.0	520
53	53.0	530
54	54.0	540
55	55.0	550
56	56.0	560
57	57.0	570
58	58.0	580
59	59.0	590
60	60.0	600
61	61.0	610
62	62.0	620
63	63.0	630
64	64.0	640
65	65.0	650
66	66.0	660
67	67.0	670
68	68.0	680
69	69.0	690
70	70.0	700
71	71.0	710
72	72.0	720
73	73.0	730
74	74.0	740
75	75.0	750
76	76.0	760
77	77.0	770
78	78.0	780
79	79.0	790
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83	83.0	830
84	84.0	840
85	85.0	850
86	86.0	860
87	87.0	870
88	88.0	880
89	89.0	890
90	90.0	900
91	91.0	910
92	92.0	920
93	93.0	930
94	94.0	940
95	95.0	950
96	96.0	960
97	97.0	970
98	98.0	980
99	99.0	990
100	100.0	1000

100% full	0.68	0
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75% full	0.51	-
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50% full	0.34	-
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25% full	0.17	-
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INFILTRATION RATE

Vp75-25 = 0.20 m3

ap50 = 1.892 m2

tp75-25 = - mins

Infiltration

rate = - m/sec

Remarks:	water level did not drop below 25% full during test duration, indicating negligible infiltration. Therefore infiltration rate could not be calculated.
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