

Wormald Burrows Partnership Limited Civil Engineering Consultants

HAVERHILL NORTH – PHASES 5a & 5c SUFFOLK

DRAINAGE STRATEGY

July 2024

E4246-Haverhill-Drainage Strategy-5a&5c-Rev1



12a – 18a Hitchin Street Biggleswade, SG18 8AX Web: http://www.wormburp.com

Tel: (01767) 317 244 Fax: (01767) 325 434

Email: engineer@wormburp.com

HAVERHILL NORTH – PHASES 5a & 5c SUFFOLK

DRAINAGE STRATEGY

Client: PERSIMMON HOMES (SUFFOLK) LIMITED

Engineer: Wormald, Burrows Partnership Limited

12a - 18a Hitchin Street

Biggleswade

Bedfordshire SG18 8AX

Tel: (01767) 317 244 Fax (01767) 315 434

Date: July 2024

Luneuellulistik

Original Ref: E4246-Haverhill-Drainage Strategy-5a&5c-Rev0

Written By: Checked By: Approved By:

Laurence Meiklereid Nick Kohli Nick Kohli

Senior Engineer Managing Director Managing Director

Status: Final

COPYRIGHT

© Wormald Burrows Partnership Limited. All rights reserved. The contents of this document must not be copied or reproduced in whole or in part without the written consent of Wormald Burrows Partnership Limited and PERSIMMON HOMES (SUFFOLK) LIMITED.

DISCLAIMER

Wormald Burrows Partnership Limited has attempted to produce this document in accordance with all known and relevant legislation, policies, standards and methodologies at the time of publication. We cannot, however, be held responsible for the effect any changes in these will have on the document. We therefore recommend that the information contained within be checked for relevance before it is used.





REGISTRATION OF AMENDMENTS

Revision	Date	Amendment Details	Prepared by	Checked by
Rev 0	05.07.24	First issue	Laurence Meiklereid	Nick Kohli
Rev 1	17.07.24	Catchments plans updated within Appendix B. Phase 5a & c drainage now highlighted within Appendix E	Laurence Meiklereid	Nick Kohli

CONTENTS

1	INTRODUCTION	5
2	SITE DESCRIPTION	6
3	SURFACE WATER DRAINAGE STRATEGY	7
4	FOUL WATER DRAINAGE STRATEGY	9
5	CONCLUSIONS	10

APPENDICES

Appendix A - Drawing E4246/100 - Site Location Plan

Appendix B - Drawings E3838/510 & E4246/505 - Catchment Areas Plans

Appendix C - Greenfield Runoff Calculations

Appendix D - Drawings E4246/501 - Drainage Strategy Plan

Appendix E - Microdrainage Simulation Calculations

Appendix F - Soil Investigation Report Extracts

Appendix G - Drainage Maintenance Schedules

1 INTRODUCTION

- 1.1 Wormald Burrows Partnership Limited (WBPL) has been appointed by Persimmon Homes (Suffolk) Limited to prepare a foul and surface water Drainage Strategy for Phases 5a & 5c of the residential development to the north of Haverhill.
- 1.2 The strategy follows the principles set out in the approved Drainage Strategy prepared by Wormald Burrows Partnership Ltd, original reference E3838-Haverhill-Drainage Strategy-Rev0, which formed part of the wider planning application.
- 1.3 The drainage strategy provided in this report sets out how the proposals will not increase off-site flood risk and has been designed in accordance with both the Suffolk County Council Surface Water Drainage (SUDS) Guidance Document, as well as the approved Drainage Strategy referred to above.

2 SITE DESCRIPTION

2.1 Site Context

- 2.1.1 The site is located to the north west of Haverhill, approximately 1.2 kilometres north of Haverhill Town Centre and occupies an area of approximately 2.02 Hectares.
- 2.1.2 The wider Haverhill development is predominately greenfield and has a number of watercourses running north to south towards Stour Brook, which ultimately discharges into the River Stour to the south east of Haverhill.
- 2.1.3 Phase 5a is bound to the east by a proposed school & community facilities, to the west by proposed public open space and to the south by part of the Haverhill infrastructure highway. Phase 5c is bound to the north and east by part of the Haverhill infrastructure highway, to the west by proposed public open space & an attenuation pond and to the south by existing residential development.
- 2.1.4 A Location Plan is provided in **Appendix A**.

2.2 Topography

2.2.1 The topographical survey for the wider site was undertaken by Survey Solutions in November 2017. This indicates several steep valleys across the development, each with watercourses running within them. Phase 5a generally falls from east to west with a high point of approximately 94.50m AOD and a low point of approximately 84.32m AOD. Phase 5c generally falls from east to west with a high point of approximately 89.40m AOD and a low point of approximately 82.55m AOD

2.3 Geology

- 2.3.1 Inspection of the Site Investigation Report prepared by Geosphere Environmental Limited dated December 2014, confirms that the site is generally underlain by the Lowestoft Formation, which is underlain by the Undifferentiated Lewes nodular and Seaford Chalk formations.
- 2.3.2 Percolation testing was carried out at various locations across the site, and confirms that infiltration techniques for surface water disposal are not feasible.
- 2.3.3 Extracts from the report are enclosed in **Appendix F** and these include the executive summary, borehole logs and percolation test results.

2.4 Site Proposals

2.4.1 The proposals consist of up to 115 residential dwellings, with associated highways and drainage infrastructure. The main access will be taken from Howes Road.

3 SURFACE WATER DRAINAGE STRATEGY

- 3.1.1 The proposed development will lead to an increase in impermeable area and as such will increase the volume of surface water run-off from the site, unless properly managed.
- 3.1.2 The Sustainable Drainage Systems (SuDS) hierarchy requires that surface water run-off be controlled and preferably re-used wherever possible. Where it is not practicable to reuse, the following methods of disposal shall be considered (in order of preference)
 - Via Infiltration
 - To a local watercourse
 - To existing public sewers
- 3.1.3 Following a review of the existing geology (see Section 2.3), it is unlikely that any part of the site is suitable for the use of infiltration drainage techniques and therefore this option has been discounted. There are however several existing watercourses which pass through the wider site from the north and it is proposed that these are utilised as the main point of discharge.
- 3.1.4 Levels, development proposals and phasing has led to the wider Haverhill North site being split into five separate catchments, all with their own outfalls, flow controls and associated attenuation features. Phase 5a & 5c fall under what is referenced as Catchment 5 within the wider approval drainage strategy. This catchment has an approved surface water outfall rate of 23.5l/s.
- 3.1.5 The SCC SuDS Guidance document provides options for the discharge of surface water from the site:
 - Option 1 simple control, use QBar for discharge of surface water runoff.
 - Complex use greenfield rates and long term storage for the discharge of surface water runoff.
- 3.1.6 The proposed surface water strategy is based on Option 1, simple control. The



greenfield runoff rates were calculated using the ICP SuDS method within Microdrainage. Details of the QBar rates and catchment areas are included in **Appendix B and C**.

- 3.1.7 Catchment 5 has its own flow control and attenuation facility, in this case, an above ground dry pond.
- 3.1.8 The Suffolk SuDS Guidance outlines that drainage systems be designed to incorporate a number of surface water treatment stages based on the level of pollution entering the system. The Guide states that a minimum of one treatment stage is required for runoff from roofs and two stages for runoff from roads and parking areas.
- 3.1.9 Deep trapped gullies will provide an initial stage of treatment to highways and large parking areas, especially during the more polluting low intensity storms. All flows will then pass through existing balancing ponds, prior to discharge into existing watercourses.
- 3.1.10 There may also be options to explore additional treatment stages within the residential parcels such as filter strips, filter trenches and permeable paving.
- 3.1.11 The surface water drainage strategy indicating the proposed piped network and receiving attenuation facilities is depicted on drawing E4246/501 in **Appendix D**.
- 3.1.12 Catchment 5 has been modelled using Microdrainage drainage design software for a I in 100 year rainfall event with a 40% allowance for climate change. Results from the modelling simulations area included in **Appendix E**. All drainage within the phase 5a and 5c boundary is highted in yellow.
- 3.1.13 Due to the undulating nature of the site, careful consideration should be given to proposed site levels in accordance with normal good practice to ensure that there is no likelihood of flooding caused by overland flows and that any overland flows are directed around buildings in the event of a failure to the piped drainage system, or an event that exceeds currently accepted design parameters.
- 3.1.14 It is essential that drainage features are properly maintained to remain effective operation over the lifespan of the development. A maintenance schedule is included within **Appendix G**, which sets out the type of maintenance required and its frequency.

4 FOUL WATER DRAINAGE STRATEGY

- 4.1.1 A pre-development enquiry report has been obtained from Anglian Water, which provides details on proposed connection points and capacity within the existing public sewer network.
- 4.1.2 The findings of this report confirm that the Haverhill Water Recycling Centre has sufficient capacity to treat the proposed flows generated from the site, but a direct connection to the existing public sewer network may have a detrimental effect and the need for hydraulic modelling is required.
- 4.1.3 The results of the hydraulic modelling are awaited however, Anglian Water has a duty under Section 106 of the Water Industry Act 1991 to provide a connection to the proposed development,
- 4.1.4 The onsite foul water network will be directed to a new pumping station located along the southern boundary. The final discharge point has been allocated in the Anglian Water Pre-Planning Assessment Report (29/06/2021) as being existing foul manhole 9501 in Withersfield Road at National Grid Reference (NGR) TL 65955 46594. As a temporary measure, Anglian Water have confirmed that discharge can be directed to Manhole 7602 in Howe Road at NGR TL 66791 46641, where flows from up to a maximum of 170 dwellings can be directed from the new pumping station at a maximum rate of 5.0l/s.

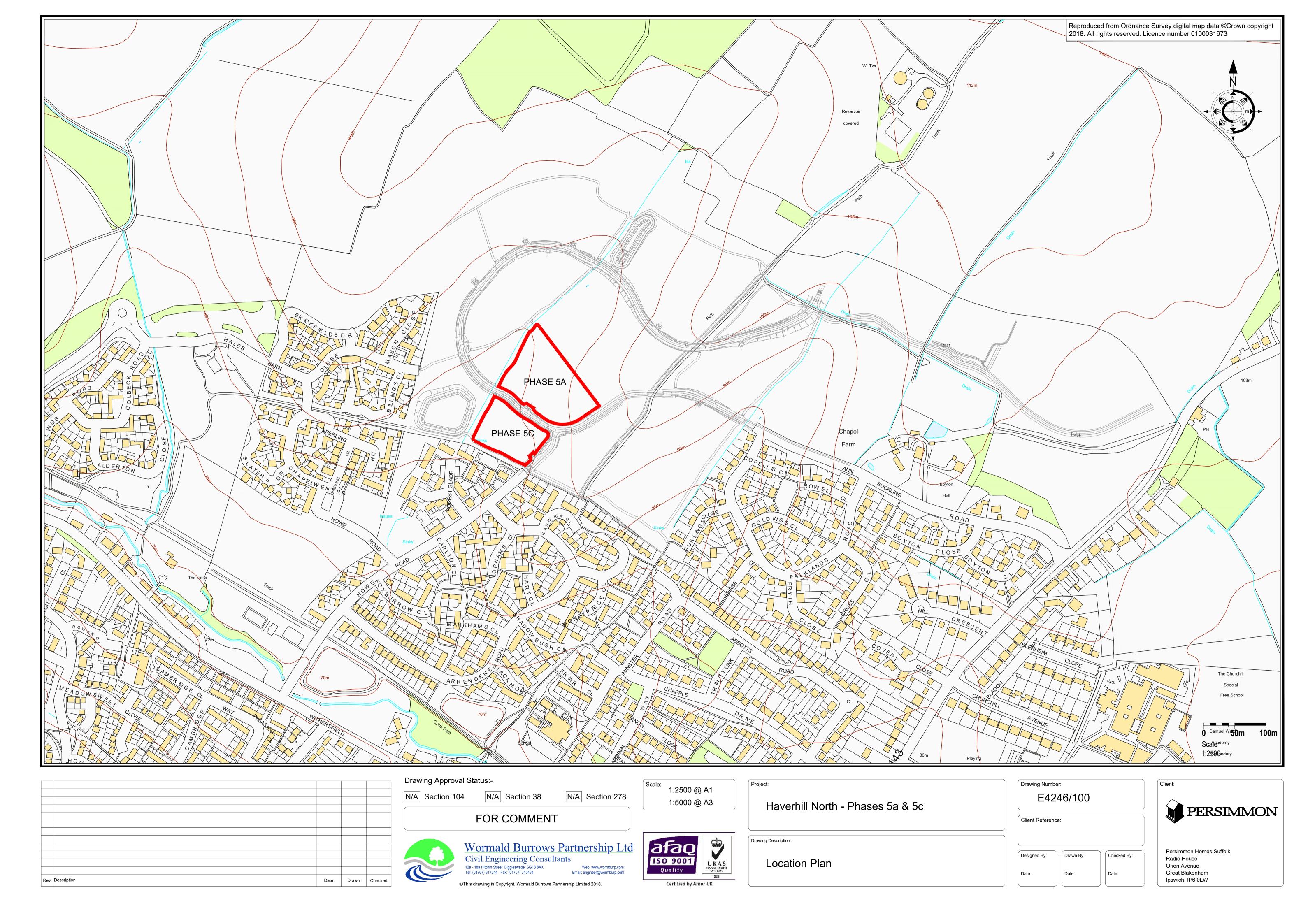
5 CONCLUSIONS

- 5.1 Surface water from phases 5a & 5c will have a free discharge into the sewers that from part of Catchment 5. Surface water from the whole of Catchment 5 will be attenuated onsite and disposed of via a proprietary flow control device to an existing watercourse at existing greenfield rate of 23.5l/s.
- 5.2 Percolation testing has confirmed that the use of infiltration techniques for the disposal of surface water in not feasible.
- 5.3 Discharge rates will be limited to the Qbar values in accordance with SCC guidance.
- 5.4 Careful consideration should be given to proposed site levels to ensure that there is no likelihood of flooding caused by overland flows.
- 5.5 Further opportunities should be explored to incorporate additional SuDS measures into the development parcels, where practicable.

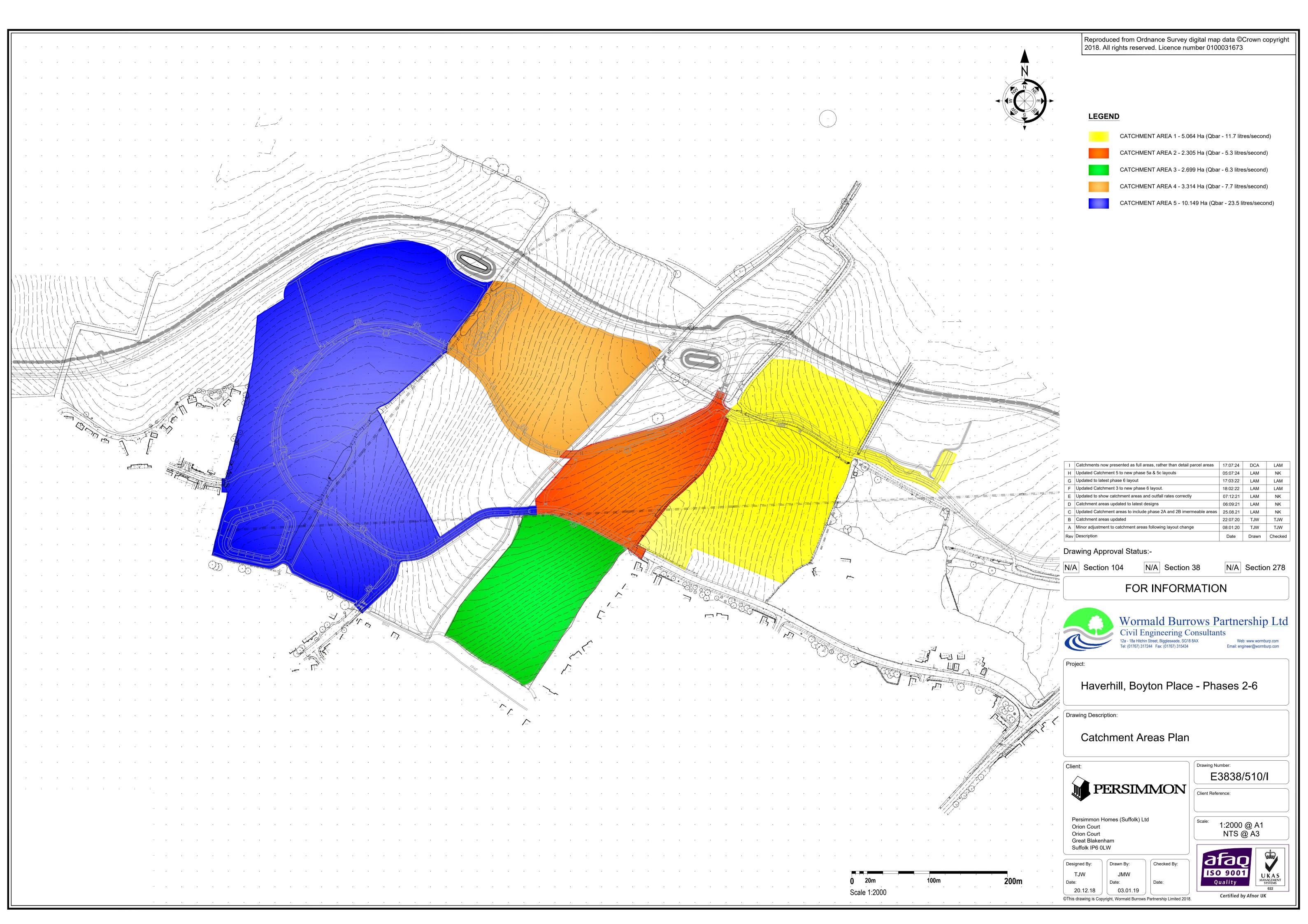
APPENDICES

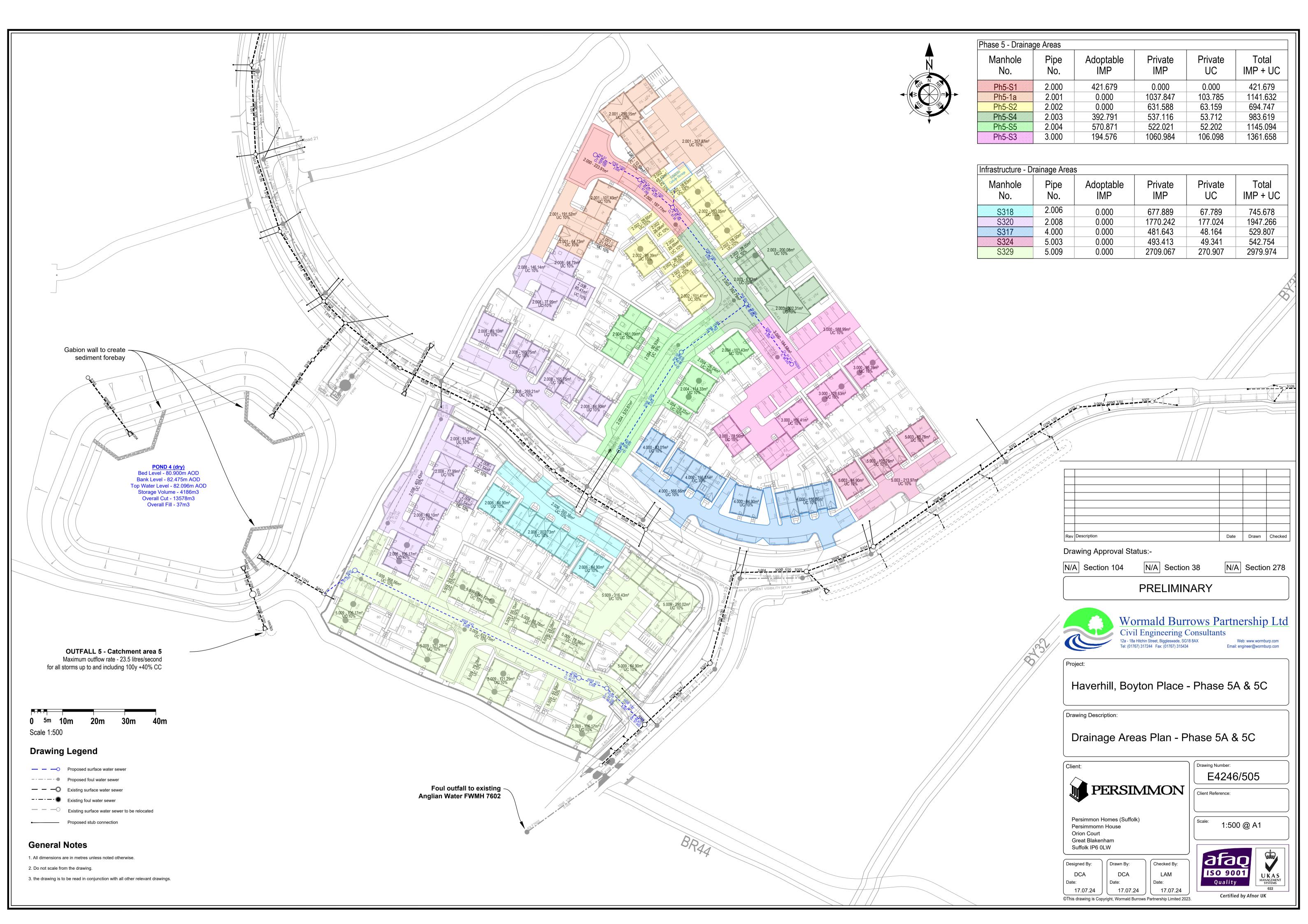


APPENDIX A



APPENDIX B





APPENDIX C

WBP Limited		Page 1
12a -18a Hitchin Street	Haverhill North	
Biggleswade	Catchment 5	
SG18 8AX		Micco
Date 03/11/2020 11:15	Designed by Tom Wilson	Designation
File	Checked by Nick Kohli	Diali lade
Innovyze	Source Control 2019.1	

ICP SUDS Mean Annual Flood

Input

Return Period (years) 100 Soil 0.370
Area (ha) 10.149 Urban 0.000
SAAR (mm) 583 Region Number Region 5

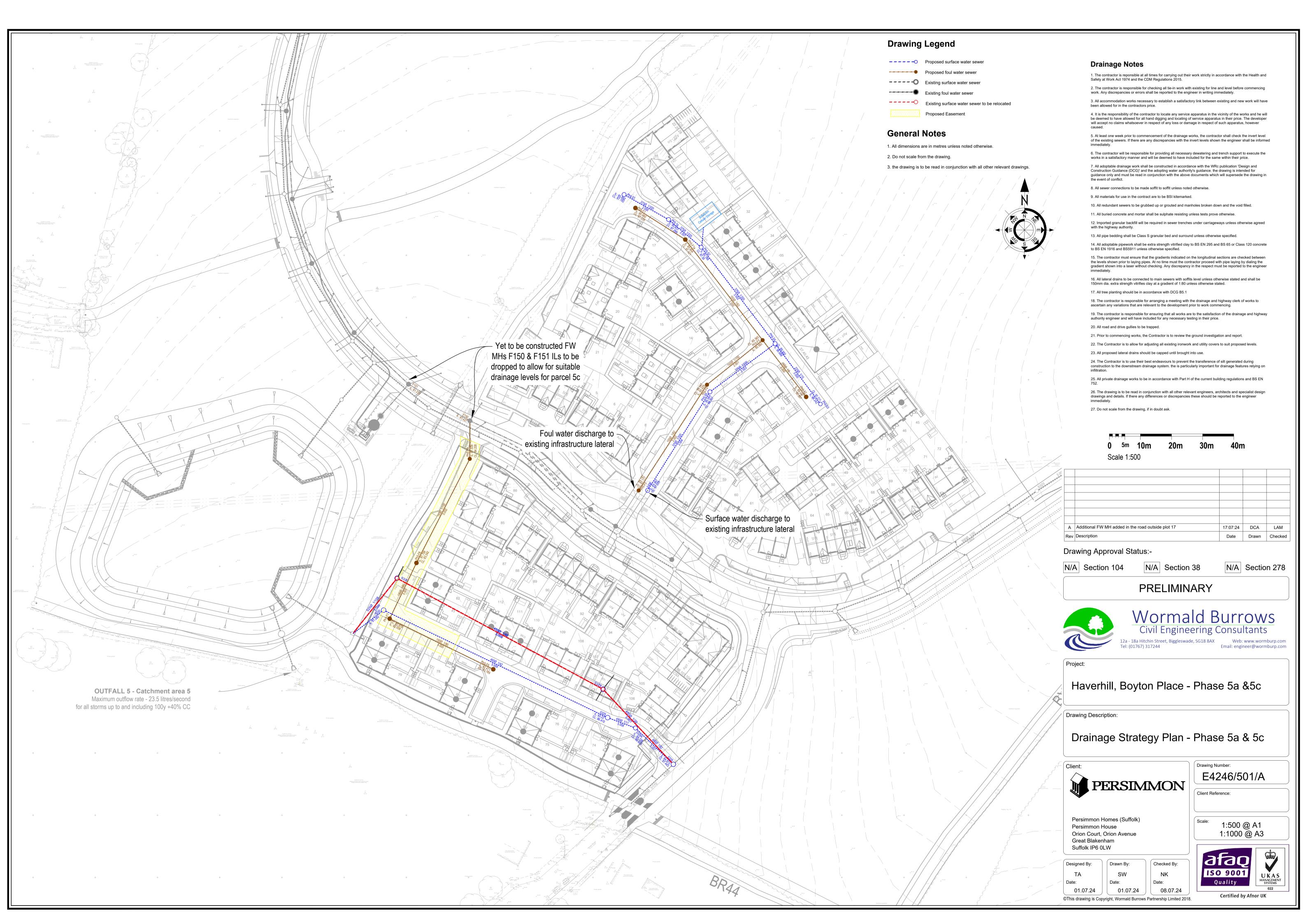
Results 1/s

QBAR Rural 23.5 QBAR Urban 23.5

Q100 years 83.8

Q1 year 20.5 Q30 years 56.6 Q100 years 83.8

APPENDIX D



APPENDIX E

WBP Limited		Page 0
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilade
Innovyze	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 5

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years) 100 PIMP (%) 100

M5-60 (mm) 21.000 Add Flow / Climate Change (%) 0

Ratio R 0.422 Minimum Backdrop Height (m) 0.200

Maximum Rainfall (mm/hr) 50 Maximum Backdrop Height (m) 1.500

Maximum Time of Concentration (mins) 30 Min Design Depth for Optimisation (m) 1.200

Foul Sewage (1/s/ha) 0.000 Min Vel for Auto Design only (m/s) 1.00

Volumetric Runoff Coeff. 0.750 Min Slope for Optimisation (1:X) 500

Designed with Level Soffits

Network Design Table for Surface Network 5

PN	Length	Fall	Slope	I.Area	T.E.	Ba	ase	k	n	HYD	DIA	Section Type	Auto
	(m)	(m)	(1:X)	(ha)	(mins)	Flow	(1/s)	(mm)		SECT	(mm)		Design
1.000	28.797	0.192	150.0	0.105	5.00		0.0	0.600		0	600	Pipe/Conduit	
1.001	15.611	0.031	500.0	0.469	0.00		0.0	0.600		0	600	Pipe/Conduit	ā
1.002	26.383	0.176	150.1	0.067	0.00		0.0	0.600		0	600	Pipe/Conduit	Ä
1.003	30.451	0.203	150.0	0.089	0.00		0.0	0.600		0	600	Pipe/Conduit	Ä
1.004	19.680	0.131	150.0	0.660	0.00		0.0	0.600		0	675	Pipe/Conduit	Ă
1.005	30.069	0.201	150.0	0.148	0.00		0.0	0.600		0	675	Pipe/Conduit	ă
1.006	20.333	0.136	149.9	0.024	0.00		0.0	0.600		0	675	Pipe/Conduit	ă
1.007	29.597	0.197	150.0	0.161	0.00		0.0	0.600		0	675	Pipe/Conduit	ă
1.008	25.457	0.727	35.0	0.604	0.00		0.0	0.600		0	675	Pipe/Conduit	ă
1.009	21.829	0.624	35.0	0.131	0.00		0.0	0.600		0	750	Pipe/Conduit	ĕ

Network Results Table

PN	Rain	T.C.	US/IL	Σ I.Area	Σ Base	Foul	Add Flow	Vel	Cap	Flow
	(mm/hr)	(mins)	(m)	(ha)	Flow (1/s)	(1/s)	(1/s)	(m/s)	(1/s)	(1/s)
1 000	F0 00	F 0.4	00 000	0 105	0.0	0 0	0 0	1 00	F.C1 .C	140
1.000	50.00	5.24	88.200	0.105	0.0	0.0	0.0	1.99	561.6	14.2
1.001	50.00	5.48	87.935	0.574	0.0	0.0	0.0	1.08	306.0	77.7
1.002	50.00	5.70	87.904	0.641	0.0	0.0	0.0	1.99	561.4	86.8
1.003	50.00	5.96	87.728	0.730	0.0	0.0	0.0	1.99	561.6	98.9
1.004	50.00	6.11	87.450	1.390	0.0	0.0	0.0	2.14	765.0	188.2
1.005	50.00	6.35	87.319	1.538	0.0	0.0	0.0	2.14	765.1	208.3
1.006	50.00	6.51	87.118	1.562	0.0	0.0	0.0	2.14	765.1	211.5
1.007	50.00	6.74	86.983	1.723	0.0	0.0	0.0	2.14	765.0	233.3
1.008	50.00	6.83	86.786	2.327	0.0	0.0	0.0	4.44	1588.6	315.1
1.009	50.00	6.91	85.983	2.458	0.0	0.0	0.0	4.74	2094.0	332.8

WBP Limited		Page 1
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Designation
File HAVERHILL PHASE 5A AND	Checked by	Diamage
Innovyze	Network 2019.1	

Network Design Table for Surface Network 5

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	ase (1/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.010	28.164	0.805	35.0	0.149	0.00	0.0	0.600		0	750	Pipe/Conduit	A
1.011	28.731	0.821	35.0	0.121	0.00	0.0	0.600		0	750	Pipe/Conduit	ă
1.012	26.028	0.744	35.0	0.898	0.00	0.0	0.600		0	825	Pipe/Conduit	ă
1.013	26.493	0.757	35.0	0.149	0.00	0.0	0.600		0	825	Pipe/Conduit	ě
1.014	9.900	0.633	15.6	0.024	0.00	0.0	0.600		0	825	Pipe/Conduit	ě
2.000		0.051	321.6	0.042	5.00				0	375	Pipe/Conduit	@
2.001	13.751	0.043	319.8	0.109	0.00		0.600		0	375	Pipe/Conduit	@
2.002	39.062	0.122	320.0	0.066	0.00	0.0	0.600		0	375	Pipe/Conduit	0
												_
3.000	24.263	2.426	10.0	0.130	5.00	0.0	0.600		0	225	Pipe/Conduit	0
2.003	26.060	0.081	320.0	0.096	0.00	0 0	0.600			275	Dies /Canduit	
2.003		0.001	320.0	0.096	0.00		0.600		0	375	Pipe/Conduit	0
2.004		0.054	320.0	0.000	0.00		0.600		0	375	Pipe/Conduit Pipe/Conduit	0
2.005	17.303	0.034	320.0	0.000	0.00	0.0	0.000		O	3/3	Pipe/Conduit	0
4.000	21.123	1.056	20.0	0.158	5.00	0.0	0.600		0	300	Pipe/Conduit	•
2.006	14.054	0.703	20.0	0.075	0.00	0.0	0.600		0	375	Pipe/Conduit	@
2.007	27.245	1.435	19.0	0.064	0.00	0.0	0.600		0	450	Pipe/Conduit	ă
2.008	32.772	1.064	30.8	0.258	0.00	0.0	0.600		0	450	Pipe/Conduit	ě
2.009	22.785	0.236	96.5	0.000	0.00	0.0	0.600		0	450	Pipe/Conduit	ě

Network Results Table

PN	Rain (mm/hr)	T.C.	US/IL (m)	Σ	I.Area (ha)		Base (1/s)	Foul (1/s)	Add Flow (1/s)	Vel (m/s)	Cap (1/s)	Flow (1/s)
	(,	,,	\ ,		(/		(-, -,	\- /-/	(-, -,	(, - ,	(-, -,	(-, -,
1.010	50.00	7.01	85.360		2.607		0.0	0.0	0.0	4.74	2093.9	353.0
1.011	50.00	7.11	84.555		2.728		0.0	0.0	0.0	4.74	2093.8	369.4
1.012	50.00	7.19	83.659		3.626		0.0	0.0	0.0	5.03	2687.8	491.0
1.013	50.00	7.28	82.915		3.775		0.0	0.0	0.0	5.03	2688.4	511.2
1.014	50.00	7.30	82.158		3.799		0.0	0.0	0.0	7.53	4024.2	514.4
2.000	50.00	5.27	85.882		0.042		0.0	0.0	0.0	1.00	111.0	5.7
2.001	50.00	5.50	85.831		0.151		0.0	0.0	0.0	1.01	111.3	20.4
2.002	50.00	6.15	85.788		0.216		0.0	0.0	0.0	1.01	111.3	29.3
3.000	50.00	5.10	88.242		0.130		0.0	0.0	0.0	4.16	165.5	17.6
2.003	50.00	6.58	85.666		0.443		0.0	0.0	0.0	1.01	111.3	60.0
2.004	50.00	7.20	85.584		0.555		0.0	0.0	0.0	1.01	111.3	75.2
2.005	50.00	7.48	85.467		0.555		0.0	0.0	0.0	1.01	111.3	75.2
4.000	50.00	5.10	86.544		0.158		0.0	0.0	0.0	3.53	249.6	21.3
2.006	50.00	7.54	85.413		0.787		0.0	0.0	0.0	4.07	449.2	106.6
2.007	50.00	7.64	84.635		0.851		0.0	0.0	0.0	4.68	744.8	115.2
2.008	50.00	7.79	83.200		1.109		0.0	0.0	0.0	3.67	584.3	150.1
2.009	50.00	7.97	82.136		1.109		0.0	0.0	0.0	2.07	329.2	150.1
				(1982-	2019	Innov	yze				

WBP Limited		Page 2
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilade
Innovyze	Network 2019.1	1

Network Design Table for Surface Network 5

PN	Length	Fall	Slope	I.Area	T.E.	Ва	ase	k	n	HYD	DIA	Section Type	Auto
	(m)	(m)	(1:X)	(ha)	(mins)	Flow	(l/s)	(mm)		SECT	(mm)		Design
1 015	15.832	0 119	132 8	0.048	0.00		0 0	0.600		0	900	Pipe/Conduit	
	21.434		56.3	0.000	0.00			0.600		0		Pipe/Conduit	X
	6.000#			0.000	0.00		0.0	0.000	0.045		500	1:3 Swale	.
1.017	0.0001	0.000	120.0	0.000	0.00		0.0		0.010	5 ()	300	1.5 Sware	•
5.000	23.933	0.476	50.2	0.046	5.00		0.0	0.600		0	225	Pipe/Conduit	<u>.</u>
5.001	26.561	1.328	20.0	0.025	0.00		0.0	0.600		0	225	Pipe/Conduit	X.
5.002	53.083	2.654	20.0	0.056	0.00		0.0	0.600		0	300	Pipe/Conduit	Ă
5.003	22.988	1.149	20.0	0.052	0.00		0.0	0.600		0	300	Pipe/Conduit	Ă
5.004	23.091	1.155	20.0	0.129	0.00		0.0	0.600		0	300	Pipe/Conduit	Ă
5.005	30.223	1.511	20.0	0.094	0.00		0.0	0.600		0	375	Pipe/Conduit	Ă
5.006	28.822	1.945	14.8	0.045	0.00		0.0	0.600		0	375	Pipe/Conduit	Ă
													Ĭ
6.000	12.528	0.074	170.0	0.043	5.00		0.0	0.600		0	225	Pipe/Conduit	a
													Ţ
5.007	16.857	0.767	22.0	0.013	0.00		0.0	0.600		0	450	Pipe/Conduit	•
5.008	9.576	0.886	10.8	0.000	0.00		0.0	0.600		0	450	Pipe/Conduit	ā
5.009	79.858	1.885	42.4	0.298	0.00		0.0	0.600		0	450	Pipe/Conduit	•
5.010	12.484	0.210	59.3	0.260	0.00		0.0	0.600		0	525	Pipe/Conduit	•
5.011	24.368	0.100	243.7	0.000	0.00		0.0	0.600		0	525	Pipe/Conduit	•
5.012	5.971	0.075	79.6	0.000	0.00		0.0		0.045	3 \=/	500	1:3 Swale	ā

Network Results Table

Flow	Cap	Vel	Add Flow	Foul	Σ Base	Σ I.Area	US/IL	T.C.	Rain	PN
(1/s)	(1/s)	(m/s)	(1/s)	(1/s)	Flow (1/s)	(ha)	(m)	(mins)	(mm/hr)	
8 671.1	1728.8	2.72	0.0	0.0	0.0	4.956	81.450	8.07	50.00	1.015
	2659.9	4.18	0.0	0.0	0.0	4.956	81.331		50.00	1.016
« 671.1		0.43	0.0	0.0	0.0	4.956	80.950		50.00	1.017
× 0/1.1	01.0%	0.45	0.0	0.0	0.0	4.550	00.550	0.50	30.00	1.01/
5 6.2	73.5	1.85	0.0	0.0	0.0	0.046	95.316	5.22	50.00	5.000
9.6	116.9	2.94	0.0	0.0	0.0	0.071	94.840	5.37	50.00	5.001
6 17.2	249.6	3.53	0.0	0.0	0.0	0.127	93.437	5.62	50.00	5.002
6 24.3	249.6	3.53	0.0	0.0	0.0	0.179	90.783	5.73	50.00	5.003
6 41.8	249.6	3.53	0.0	0.0	0.0	0.308	89.633	5.83	50.00	5.004
2 54.5	449.2	4.07	0.0	0.0	0.0	0.402	88.404	5.96	50.00	5.005
1 60.6	522.1	4.73	0.0	0.0	0.0	0.447	86.893	6.06	50.00	5.006
5.8	39.8	1.00	0.0	0.0	0.0	0.043	85.136	5.21	50.00	6.000
2 68.2	692.2	4.35	0.0	0.0	0.0	0.503	84.873	6.12	50.00	5.007
6 68.2	987.6	6.21	0.0	0.0	0.0	0.503	84.106	6.15	50.00	5.008
8 108.5	497.8	3.13	0.0	0.0	0.0	0.801	83.220	6.58	50.00	5.009
4 143.7	630.4	2.91	0.0	0.0	0.0	1.061	81.260	6.65	50.00	5.010
7 143.7	309.7	1.43	0.0	0.0	0.0	1.061	81.050	6.93	50.00	5.011
« 143.7	75.6«	0.53	0.0	0.0	0.0	1.061	80.975	7.12	50.00	5.012
9 9 9 6 17 6 24 6 41 2 54 1 60 8 5 6 68 8 108 4 143 7 143	116.9 249.6 249.6 249.6 449.2 522.1 39.8 692.2 987.6 497.8 630.4 309.7	2.94 3.53 3.53 3.53 4.07 4.73 1.00 4.35 6.21 3.13 2.91 1.43	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.071 0.127 0.179 0.308 0.402 0.447 0.043 0.503 0.503 0.801 1.061	94.840 93.437 90.783 89.633 88.404 86.893 85.136 84.873 84.106 83.220 81.260 81.050	5.37 5.62 5.73 5.83 5.96 6.06 5.21 6.12 6.15 6.58 6.65 6.93	50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00	5.001 5.002 5.003 5.004 5.005 5.006 6.000 5.007 5.008 5.009 5.010 5.011

WBP Limited	Page 3	
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Desipago
File HAVERHILL PHASE 5A AND	Checked by	Dialilads
Innovyze	Network 2019.1	

Network Design Table for Surface Network 5

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	ase (1/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
	22.081 6.000#			0.236	5.00	0.0	0.600				Pipe/Conduit 1:3 Swale	•
1.018 1.019	9.350 14.200				0.00		0.600				Pipe/Conduit Pipe/Conduit	-

Network Results Table

PN	Rain	T.C.	US/IL	Σ I.Area	Σ Base	Foul	Add Flow	Vel	Cap	Flow
	(mm/hr)	(mins)	(m)	(ha)	Flow (1/s)	(1/s)	(1/s)	(m/s)	(1/s)	(1/s)
7.000	50.00	5.10	81.452	0.236	0.0	0.0	0.0	3.68	1040.6	32.0
7.001	50.00	5.33	80.950	0.236	0.0	0.0	0.0	0.43	61.6	32.0
1.018	50.00	8.48	80.900	6.253	0.0	0.0	0.0	1.69	478.2«	846.8
1.019	50.00	8.70	80.855	6.253	0.0	0.0	0.0	1.07	42.4«	846.8

Free Flowing Outfall Details for Surface Network 5

Outfall	Outfall	c.	Level	I.	Level		Min D,I		W
Pipe Number	Name		(m)		(m) I. Le		Level	(mm)	(mm)
						(m)			

1.019 HW303 81.346 80.760 0.000 900 675

<u>Simulation Criteria for Surface Network 5</u>

Volumetric Runoff Coeff 0.750 Additional Flow - % of Total Flow 0.000
Areal Reduction Factor 1.000 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Inlet Coefficient 0.800
Hot Start Level (mm) 0 Flow per Person per Day (1/per/day) 0.000
Manhole Headloss Coeff (Global) 0.500 Run Time (mins) 60
Foul Sewage per hectare (1/s) 0.000 Output Interval (mins) 1

Number of Input Hydrographs 0 Number of Storage Structures 2 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type Summer
Return Period (years)	100	Cv (Summer) 0.750
Region England	and Wales	Cv (Winter) 0.840
M5-60 (mm)	21.000 Storm	Duration (mins) 30
Ratio R	0.422	

WBP Limited		Page 4
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Diali lade
Innovyze	Network 2019.1	

Online Controls for Surface Network 5

Hydro-Brake® Optimum Manhole: S332, DS/PN: 1.019, Volume (m³): 7.8

Unit Reference MD-SHE-0209-2350-1300-2350 1.300 Design Head (m) Design Flow (1/s) 23.5 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Diameter (mm) 209 Invert Level (m) 80.855 Minimum Outlet Pipe Diameter (mm) 225 1500 Suggested Manhole Diameter (mm)

Control Points Head (m) Flow (1/s) Design Point (Calculated) 1.300 23.5 Flush-Flo™ 0.407 23.5 Kick-Flo® 0.892 19.6 Mean Flow over Head Range 20.1

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m) H	Flow (1/s)	Depth (m) I	Flow (1/s)	Depth (m) Fl	ow (1/s)	Depth (m)	Flow (1/s)
0.100	7.1	1.200	22.6	3.000	35.1	7.000	52.8
0.200	20.2	1.400	24.3	3.500	37.8	7.500	54.6
0.300	23.1	1.600	25.9	4.000	40.3	8.000	56.4
0.400	23.5	1.800	27.5	4.500	42.7	8.500	58.1
0.500	23.3	2.000	28.9	5.000	44.9	9.000	59.7
0.600	22.9	2.200	30.2	5.500	47.0	9.500	61.3
0.800	21.5	2.400	31.5	6.000	49.0		
1.000	20.7	2.600	32.7	6.500	51.0		

WBP Limited		Page 5
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Diali larje
Innovyze	Network 2019.1	

Storage Structures for Surface Network 5

Cellular Storage Manhole: Ph5-la, DS/PN: 2.001

Invert Level (m) 85.831 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000

Depth	(m)	Area	(m²)	Inf.	Area	(m²)	Depth	(m)	Area	(m²)	Inf.	Area	(m²)
0.	000		45.0			45.0	0	.801		0.0			67.4
0.	800		45.0			67.4							

Tank or Pond Manhole: HW302, DS/PN: 1.018

Invert Level (m) 80.900

Depth (m)	Area	(m²)	Depth	(m)	Area	(m²)	Depth	(m)	Area	(m²)	Depth	(m)	Area	(m²)
0.000) 2	825.9	0.	600	32	25.9	0.	601	36	556.8	1.	575	45	83.2

WBP Limited		Page 6
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilade
Innovyze	Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * $10m^3$ /ha Storage 2.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per hectare (1/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 2 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.422
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status

ON

DVD Status

ON

Inertia Status

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440, 2160, 2880, 4320, 5760,
7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

	US/MH		Return	Climate	First (X)	First (Y)	First (Z) Overflow
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow Act.
1.000		15 Winter			100/15 Summer		
1.001	S301	15 Winter	1	+0%	100/15 Summer		
1.002	S302	15 Winter	1	+0%	100/15 Summer		
1.003	S303	15 Winter	1	+0%	100/15 Summer		
1.004	S304	15 Winter	1	+0%	100/15 Summer		
1.005	S305	15 Winter	1	+0%	100/15 Summer		
1.006	S306	15 Winter	1	+0%	100/15 Summer		
1.007	S307	15 Winter	1	+0%	100/15 Summer		
1.008	S308	15 Winter	1	+0%	100/15 Summer		
1.009	S309	15 Winter	1	+0%	100/15 Summer		
1.010	S310	15 Winter	1	+0%	100/15 Summer		
1.011	S311	15 Winter	1	+0%	100/15 Summer		
1.012	S312	15 Winter	1	+0%	100/15 Summer		
1.013	S313	15 Winter	1	+0%	100/15 Summer		
1.014	S314	15 Winter	1	+0%	100/15 Summer		
2.000	Ph5-S1	15 Winter	1	+0%	100/15 Summer	100/15 Winter	
2.001	Ph5-1a	15 Winter	1	+0%	30/15 Winter		
				@1.000	2010 T	_	

WBP Limited		Page 7
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilade
Innovyze	Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

		Water	Surcharged	Flooded			Pipe		
	US/MH	Level	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
1.000	S300	88.279	-0.521	0.000	0.03		15.3	OK	
1.001	S301	88.210	-0.326	0.000	0.43		73.5	OK	
1.002	S302	88.083	-0.421	0.000	0.19		80.8	OK	
1.003	S303	87.912	-0.417	0.000	0.20		91.7	OK	
1.004	S304	87.730	-0.395	0.000	0.36		168.4	OK	
1.005	S305	87.584	-0.410	0.000	0.32		183.7	OK	
1.006	S306	87.415	-0.379	0.000	0.40		187.0	OK	
1.007	S307	87.262	-0.396	0.000	0.36		202.1	OK	
1.008	S308	87.014	-0.447	0.000	0.25		269.6	OK	
1.009	S309	86.226	-0.508	0.000	0.23		281.7	OK	
1.010	S310	85.593	-0.517	0.000	0.21		295.4	OK	
1.011	S311	84.791	-0.514	0.000	0.22		306.1	OK	
1.012	S312	83.938	-0.546	0.000	0.25		406.6	OK	
1.013	S313	83.198	-0.542	0.000	0.25		420.0	OK	
1.014	S314	82.456	-0.527	0.000	0.28		421.7	OK	
2.000	Ph5-S1	85.958	-0.299	0.000	0.07		6.0	OK	1
2.001	Ph5-1a	85.940	-0.266	0.000	0.16		13.6	OK	

WBP Limited		Page 8
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Diamage
Innovyze	Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

										Water
	US/MH			Climate	First			First (Z)		Level
PN	Name	Storm	Period	Change	Surch	arge	Flood	Overflow	Act.	(m)
2.002	Ph5-S2	15 Winter	1	+0%	30/15	Summer				85.908
3.000	Ph5-S3	15 Winter	1	+0%						88.295
2.003	Ph5-S4	15 Winter	1	+0%	30/15	Summer				85.850
2.004	Ph5-S5	15 Winter	1	+0%	30/15	Summer				85.783
2.005	S436	15 Winter	1	+0%	30/15	Summer				85.676
4.000	S317	15 Winter	1	+0%						86.610
2.006	S318	15 Winter	1	+0%	100/15	Summer				85.537
2.007	S319	15 Winter	1	+0%	100/15	Summer				84.744
2.008	S320	15 Winter	1	+0%	100/15	Summer				83.344
2.009	S500	15 Winter	1	+0%	30/15	Summer				82.338
1.015	S315	15 Winter	1	+0%	30/15	Summer				81.933
1.016	S316	15 Winter	1	+0%	100/15	Summer				81.718
1.017	HW300	15 Winter	1	+0%						81.381
5.000	S321	15 Winter	1	+0%						95.364
5.001	S322	15 Winter	1	+0%						94.886
5.002	S323	15 Winter	1	+0%						93.490
5.003	S324	15 Winter	1	+0%						90.848
5.004	S325	15 Winter	1	+0%						89.720
5.005	S326	15 Winter	1	+0%						88.494
5.006	S327	15 Winter	1	+0%						86.981
6.000	S331	15 Winter	1	+0%	100/15	Summer				85.202
5.007	S328	15 Winter	1	+0%	100/15	Summer				84.982
5.008	S328A	15 Winter	1	+0%	100/15	Summer				84.210
5.009	S329	15 Winter	1	+0%	100/15	Summer				83.362
5.010	S330	15 Winter	1	+0%	30/15	Summer				81.485
5.011	S447	15 Winter	1	+0%	30/15	Summer				81.325
5.012	HW301	600 Winter	1	+0%						81.197
7.000	S333	15 Winter	1	+0%	100/360	Winter				81.538
7.001	HW304	600 Winter	1	+0%						81.197
1.018	HW302	600 Winter	1	+0%	30/120	Winter				81.197
1.019	s332	600 Winter	1	+0%	1/30	Winter				81.216
		Su	rcharged	Flooded	ļ		Pipe			
		US/MH	Depth	Volume	Flow /	Overflo	w Flow		Level	
	PN	Name	(m)	(m³)	Cap.	(l/s)	(1/s)	Status	Exceeded	
	0.000	DI- E	0.055	0 000	0 10		10.4	C**		
		Ph5-S2		0.000			19.4	OK		
		Ph5-S3		0.000			19.4	OK		
		Ph5-S4		0.000			43.1	OK		
	2.004	Ph5-S5	-0.176	0.000	0.54		54.8	OK		

©1982-2019 Innovyze

-0.166 0.000 0.59

-0.234 0.000 0.11

-0.251 0.000 0.23

-0.341 0.000 0.13 -0.306 0.000 0.22

-0.248 0.000 0.41

-0.417 0.000 0.56

OK

OK

OK

OK

OK

OK

OK

54.2

23.5

77.0

83.9

112.9

112.8

534.8

2.005 S436

4.000 S317

2.006 S318

2.007 S319 2.008 S320

2.009 S500

1.015 S315

WBP Limited		Page 9
12a -18a Hitchin Street		6
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Diamage
Innovyze	Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
1.016	S316	-0.513		0.39		535.9	OK	
1.017	HW300			0.06		537.0	OK	
5.000	S321	-0.177	0.000	0.10		6.8	OK	
5.001	S322	-0.179	0.000	0.09		9.9	OK	
5.002	S323	-0.247	0.000	0.07		17.0	OK	
5.003	S324	-0.234	0.000	0.11		23.6	OK	
5.004	S325	-0.214	0.000	0.18		39.9	OK	
5.005	S326	-0.285	0.000	0.13		51.7	OK	
5.006	S327	-0.287	0.000	0.13		57.5	OK	
6.000	S331	-0.159	0.000	0.19		6.4	OK	
5.007	S328	-0.341	0.000	0.13		65.5	OK	
5.008	S328A	-0.345	0.000	0.12		65.5	OK	
5.009	S329	-0.308	0.000	0.22		101.4	OK	
5.010	S330	-0.301	0.000	0.38		132.9	OK	
5.011	S447	-0.250	0.000	0.53		132.6	OK	
5.012	HW301	-1.278	0.000	0.00		15.8	OK	
7.000	S333	-0.514	0.000	0.05		35.0	OK	
7.001	HW304	-1.278	0.000	0.00		3.5	OK	
1.018	HW302	-0.303	0.000	0.15		45.2	OK	
1.019	S332	0.136	0.000	0.63		23.3	SURCHARGED	

WBP Limited		Page 10
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilade
Innovyze	Network 2019.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * $10m^3$ /ha Storage 2.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per hectare (1/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 2 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.422
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status

ON

DVD Status

ON

Inertia Status

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440, 2160, 2880, 4320, 5760,
7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

US/MH		Return	${\tt Climate}$	First (X)	First (Y)	First (Z)	Overflow	
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.
1.000	0200	15 Winter	30	100	100/15 0			
					100/15 Summe:			
1.001		15 Summer			100/15 Summe:			
1.002	S302	15 Winter	30	+0%	100/15 Summe:	r		
1.003	S303	15 Winter	30	+0%	100/15 Summe:	r		
1.004	S304	15 Winter	30	+0%	100/15 Summe:	r		
1.005	S305	15 Winter	30	+0%	100/15 Summe:	r		
1.006	S306	15 Winter	30	+0%	100/15 Summe:	r		
1.007	S307	15 Winter	30	+0%	100/15 Summe:	r		
1.008	S308	15 Winter	30	+0%	100/15 Summe:	r		
1.009	S309	15 Winter	30	+0%	100/15 Summe:	r		
1.010	S310	15 Winter	30	+0%	100/15 Summe:	r		
1.011	S311	15 Winter	30	+0%	100/15 Summe:	r		
1.012	S312	15 Winter	30	+0%	100/15 Summe:	r		
1.013	S313	15 Winter	30	+0%	100/15 Summe:	r		
1.014	S314	15 Winter	30	+0%	100/15 Summe:	r		
2.000	Ph5-S1	15 Winter	30	+0%	100/15 Summe:	r 100/15 Winter		
2.001	Ph5-1a	15 Winter	30	+0%	30/15 Winter	<mark>r</mark>		
				@1.000	2010 T			

WBP Limited		Page 11
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Designation
File HAVERHILL PHASE 5A AND	Checked by	Dialilads
Innovyze	Network 2019.1	

	US/MH	Water Level	Surcharged Depth		Flow /	Overflow	Pipe Flow		Level
PN	Name	(m)	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
1.000	S300	88.584	-0.216	0.000	0.09		37.4	OK	
1.001	S301	88.535	0.000	0.000	1.14		196.3	OK	
1.002	S302	88.227	-0.276	0.000	0.55		229.7	OK	
1.003	S303	88.067	-0.261	0.000	0.56		252.4	OK	
1.004	S304	87.981	-0.144	0.000	0.95		444.1	OK	
1.005	S305	87.883	-0.110	0.000	0.84		476.0	OK	
1.006	S306	87.752	-0.041	0.000	1.00		467.0	OK	
1.007	S307	87.492	-0.166	0.000	0.91		511.9	OK	
1.008	S308	87.181	-0.279	0.000	0.63		685.5	OK	
1.009	S309	86.401	-0.332	0.000	0.58		722.3	OK	
1.010	S310	85.759	-0.350	0.000	0.54		763.8	OK	
1.011	S311	84.961	-0.343	0.000	0.56		797.5	OK	
1.012	S312	84.147	-0.337	0.000	0.64		1051.0	OK	
1.013	S313	83.411	-0.329	0.000	0.66		1092.2	OK	
1.014	S314	82.905	-0.078	0.000	0.73		1096.2	OK	
2.000	Ph5-S1	86.229	-0.028	0.000	0.14		12.7	OK	1
2.001	Ph5-1a	86.209	0.003	0.000	0.50		42.0	SURCHARGED	

WBP Limited		Page 12
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilade
Innovyze	Network 2019.1	

											***- b
	US/MH			Return	Climate	First	(X)	First (Y) First (Z)	Overflow	Water Level
PN	Name	St	torm	Period	Change	Surch	arge	Flood	Overflow	Act.	(m)
2.002	Ph5-S2	15	Winter	30	+0%	30/15	Summer				86.188
3.000	Ph5-S3	15	Winter	30	+0%						88.329
2.003	Ph5-S4	15	Winter	30	+0%	30/15	Summer				86.147
	Ph5-S5			30		30/15					86.062
	S436			30		30/15	Summer				85.874
4.000	S317		Winter	30	+0%						86.649
2.006	S318		Winter	30	+0%		Summer				85.628
2.007	S319		Winter	30	+0%		Summer				84.820
2.008	S320		Winter	30	+0%		Summer				83.453
2.009	S500		Winter	30	+0%		Summer				82.835
1.015	S315		Winter	30	+0%		Summer				82.568
1.016	S316		Winter	30	+0%	100/15	Summer				82.079
1.017	HW300		Winter	30	+0%						81.617
5.000	S321		Winter	30	+0%						95.393
5.001	S322		Winter	30	+0%						94.916
5.002	S323		Winter	30	+0%						93.529
5.003	S324 S325		Winter	30 30	+0%						90.898
5.004			Winter Winter		+0%						89.791
5.005	S326 S327		Winter	30 30	+0% +0%						88.567 87.052
6.000	S327 S331		Winter	30	+0%	100/15	Cimmor				85.244
5.007	S328		Winter	30	+0%		Summer				85.069
5.007			Winter	30	+0%		Summer				84.294
			Winter	30		100/15					83.489
	S330			30		30/15					81.984
5.011	S447		Winter	30	+0%		Summer				81.710
5.012			Winter	30	+0%						81.611
7.000			Winter	30		100/360	Winter				81.611
7.001	HW304		Winter	30	+0%	,					81.611
1.018			Winter	30	+0%	30/120	Winter				81.611
1.019	S332	600	Winter	30	+0%	1/30	Winter				81.615
			Sur	charged	Flooded			Pipe			
		US/	MH I	Depth	Volume	Flow /	Overflo	w Flow		Level	
	PN	Nan	ne	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded	
	2.002	Dh5-	-92	0 026	0.000	0 44		11 2	SURCHARGED		
	3.000				0.000			47.8			
	2.003				0.000				SURCHARGED		
	2.003				0.000				SURCHARGED		
	2.005				0.000				SURCHARGED		
	4.000		317	-0.195				57.8	OK		
	2.006		318	-0.160				194.4	OK		
	2.000		319	-0.265				212.7	OK		
	2.007		320	-0.197				293.9	OK		
	2.009		500	0.249					SURCHARGED		
	1.015		315	0.218					SURCHARGED		
				0.210				1032.0			

WBP Limited		Page 13
12a -18a Hitchin Street		0
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Designation
File HAVERHILL PHASE 5A AND	Checked by	Diamage
Innovyze	Network 2019.1	

		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
1.016	S316	-0.152	0.000	1.00		1389.2	OK	
1.017	HW300	-0.858	0.000	0.17		1390.8	OK	
5.000	S321	-0.149	0.000	0.25		16.8	OK	
5.001	S322	-0.149	0.000	0.24		26.4	OK	
5.002	S323	-0.208	0.000	0.20		48.3	OK	
5.003	S324	-0.185	0.000	0.31		68.5	OK	
5.004	S325	-0.143	0.000	0.54		119.0	OK	
5.005	S326	-0.212	0.000	0.39		155.4	OK	
5.006	S327	-0.216	0.000	0.38		172.3	OK	
6.000	S331	-0.117	0.000	0.46		15.7	OK	
5.007	S328	-0.254	0.000	0.39		191.9	OK	
5.008	S328A	-0.262	0.000	0.36		190.1	OK	
5.009	S329	-0.181	0.000	0.64		298.9	OK	
5.010	S330	0.199	0.000	1.12		393.3	SURCHARGED	
5.011	S447	0.135	0.000	1.57		389.5	SURCHARGED	
5.012	HW301	-0.864	0.000	0.00		33.2	OK	
7.000	S333	-0.442	0.000	0.01		7.6	OK	
7.001	HW304	-0.864	0.000	0.00		7.2	OK	
1.018	HW302	0.111	0.000	0.11			SURCHARGED	
1.019	s332	0.535	0.000	0.63		23.4	SURCHARGED	

WBP Limited	Page 14
12a -18a Hitchin Street	
Biggleswade	
SG18 8AX	Micco
Date 05/07/2024 14:50 Designed by 1	Drainage
File HAVERHILL PHASE 5A AND Checked by	Dialilacie
Innovyze Network 2019.	1

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * $10m^3$ /ha Storage 2.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per hectare (1/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 2 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.422
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status

ON

DVD Status

ON

Inertia Status

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440, 2160, 2880, 4320, 5760,
7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

	US/MH		Return	${\tt Climate}$	First (X)	First (Y)	First (Z) C	verflow
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.
1 000	~~~	15	100		100/15 0			
1.000		15 Winter			100/15 Summer			
1.001	S301	15 Winter	100	+40%	100/15 Summer			
1.002	S302	15 Winter	100	+40%	100/15 Summer			
1.003	S303	15 Winter	100	+40%	100/15 Summer			
1.004	S304	15 Winter	100	+40%	100/15 Summer			
1.005	S305	15 Winter	100	+40%	100/15 Summer			
1.006	S306	15 Winter	100	+40%	100/15 Summer			
1.007	S307	15 Winter	100	+40%	100/15 Summer			
1.008	S308	15 Winter	100	+40%	100/15 Summer			
1.009	S309	15 Winter	100	+40%	100/15 Summer			
1.010	S310	15 Winter	100	+40%	100/15 Summer			
1.011	S311	15 Winter	100	+40%	100/15 Summer			
1.012	S312	15 Winter	100	+40%	100/15 Summer			
1.013	S313	15 Winter	100	+40%	100/15 Summer			
1.014	S314	15 Winter	100	+40%	100/15 Summer			
2.000	Ph5-S1	15 Winter	100	+40%	100/15 Summer	100/15 Winter		
2.001	Ph5-1a	15 Winter	100	+40%	30/15 Winter			
				01.000	0010 T			

WBP Limited		Page 15
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilads
Innovyze	Network 2019.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

	US/MH	Water Level	Surcharged Depth		El /	Overflow	Pipe Flow		Level
PN	Name	(m)	(m)	(m ³)	Cap.	(1/s)	(1/s)	Status	Exceeded
1.000	s300	89.837	1.037	0.000	0.13		56.3	FLOOD RISK	
1.001	S301	89.769	1.234	0.000	1.89		324.6	FLOOD RISK	
1.002	S302	89.725	1.221	0.000	0.85		357.4	SURCHARGED	
1.003	S303	89.590	1.262	0.000	0.88		397.4	SURCHARGED	
1.004	S304	89.449	1.324	0.000	1.56		725.7	SURCHARGED	
1.005	S305	89.191	1.197	0.000	1.40		796.2	SURCHARGED	
1.006	S306	88.867	1.074	0.000	1.71		797.6	SURCHARGED	
1.007	s307	88.534	0.876	0.000	1.54		868.4	SURCHARGED	
1.008	S308	88.123	0.662	0.000	1.03		1111.9	SURCHARGED	
1.009	S309	87.392	0.659	0.000	0.91		1121.7	SURCHARGED	
1.010	S310	86.882	0.773	0.000	0.83		1165.6	SURCHARGED	
1.011	S311	86.333	1.028	0.000	0.85		1205.6	SURCHARGED	
1.012	S312	85.744	1.260	0.000	0.97		1586.7	SURCHARGED	
1.013	S313	85.031	1.290	0.000	0.99		1626.0	SURCHARGED	
1.014	S314	84.279	1.296	0.000	1.09		1637.1	SURCHARGED	
2.000	Ph5-S1	87.192	0.935	0.229	0.26		23.4	FLOOD	1
2.001	Ph5-1a	87.195	0.989	0.000	0.74		62.7	FLOOD RISK	

WBP Limited		Page 16
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Dialilade
Innovyze	Network 2019.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

										Water
	US/MH		Return	Climate	First	(X)	First (Y)	First (Z)	Overflow	
PN	Name	Storm		Change	Surch		Flood	Overflow	Act.	(m)
2.002	Ph5-S2	15 Winter	100	+40%	30/15	Summer				87.165
3.000	Ph5-S3	15 Winter	100	+40%						88.365
2.003	Ph5-S4	15 Winter	100	+40%	30/15	Summer				87.083
2.004	Ph5-S5	15 Winter	100	+40%	30/15	Summer				86.814
2.005	S436	15 Winter	100	+40%	30/15	Summer				86.346
4.000	S317	15 Winter		+40%						86.692
2.006	S318	15 Winter		+40%	100/15	Summer				86.134
2.007	S319	15 Winter	100	+40%	100/15	Summer				85.493
2.008	S320	15 Winter		+40%		Summer				85.083
2.009	S500	15 Winter		+40%		Summer				84.180
1.015	S315	15 Winter		+40%		Summer				83.524
1.016	S316	15 Winter		+40%	100/15	Summer				82.666
1.017	HW300			+40%						82.172
5.000	S321	15 Winter		+40%						95.423
5.001	S322	15 Winter		+40%						94.946
5.002	S323	15 Winter		+40%						93.564
5.003	S324	15 Winter		+40%						90.946
5.004	S325	15 Winter		+40%						89.871
5.005	S326	15 Winter		+40%						88.640
5.006	S327	15 Winter		+40%						87.122
6.000	S331	15 Winter		+40%		Summer				85.601
5.007	S328	15 Winter		+40%		Summer				85.494
5.008		15 Winter			100/15					85.199
		15 Winter			100/15					84.892
		15 Winter			30/15					82.817
5.011		960 Winter		+40%	30/15	Summer				82.169
5.012		960 Winter		+40%	100/260					82.168
7.000		960 Winter			100/360	Winter				82.167
7.001		960 Winter		+40%	20/120	747 d de				82.167
1.018		960 Winter		+40%		Winter				82.167
1.019	5332	960 Winter	100	+40%	1/30	Winter				82.170
		Sur	charged	Flooded			Pipe			
		US/MH I	Depth	Volume	Flow /	Overflow	w Flow		Level	
	PN	Name	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded	
	2.002	Ph5-S2	1.003	0.000	0.84		84.5	FLOOD RISK		
		Ph5-S3	-0.102				87.1	OK		
	2.003	Ph5-S4		0.000				SURCHARGED		
		Ph5-S5		0.000				SURCHARGED		
		S436	0.503		2.27			SURCHARGED		
	4.000	S317	-0.152	0.000	0.48		105.3	OK		
	2.006	S318	0.346	0.000	0.98			SURCHARGED		
	2.007	S319	0.408	0.000	0.54		343.1	SURCHARGED		
	2.008	S320	1.433	0.000	0.92		469.3	FLOOD RISK		
	2.009	S500	1.594	0.000	1.71		465.0	FLOOD RISK		
	1.015	S315	1.174	0.000	2.18		2087.8	SURCHARGED		
				©1982	2-2019	Innovy	ze			

WBP Limited		Page 17
12a -18a Hitchin Street		
Biggleswade		
SG18 8AX		Micco
Date 05/07/2024 14:50	Designed by laurence	Drainage
File HAVERHILL PHASE 5A AND	Checked by	Diamage
Innovyze	Network 2019.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 5

		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
1.016	S316	0.435	0.000	1.50		2084.7	SURCHARGED	
1.017	HW300	-0.303	0.000	0.02		195.7	FLOOD RISK	
5.000	S321	-0.118	0.000	0.45		30.7	OK	
5.001	S322	-0.119	0.000	0.45		48.2	OK	
5.002	S323	-0.173	0.000	0.37		87.9	OK	
5.003	S324	-0.137	0.000	0.57		124.8	OK	
5.004	S325	-0.062	0.000	0.98		216.7	OK	
5.005	S326	-0.139	0.000	0.71		283.1	OK	
5.006	S327	-0.146	0.000	0.68		313.9	OK	
6.000	S331	0.240	0.000	0.86		29.4	SURCHARGED	
5.007	S328	0.171	0.000	0.68		334.7	SURCHARGED	
5.008	S328A	0.643	0.000	0.60		319.7	SURCHARGED	
5.009	S329	1.222	0.000	1.03		483.5	FLOOD RISK	
5.010	S330	1.032	0.000	1.78		625.8	FLOOD RISK	
5.011	S447	0.594	0.000	0.17		41.5	SURCHARGED	
5.012	HW301	-0.307	0.000	0.00		41.4	FLOOD RISK	
7.000	s333	0.115	0.000	0.01		9.0	FLOOD RISK	
7.001	HW304	-0.308	0.000	0.00		8.5	FLOOD RISK*	
1.018	HW302	0.667	0.000	0.13		37.1	FLOOD RISK	
1.019	s332	1.090	0.000	0.64		23.5	FLOOD RISK	

APPENDIX F

APPENDIX 6 – EXPLORATORY HOLE LOGS

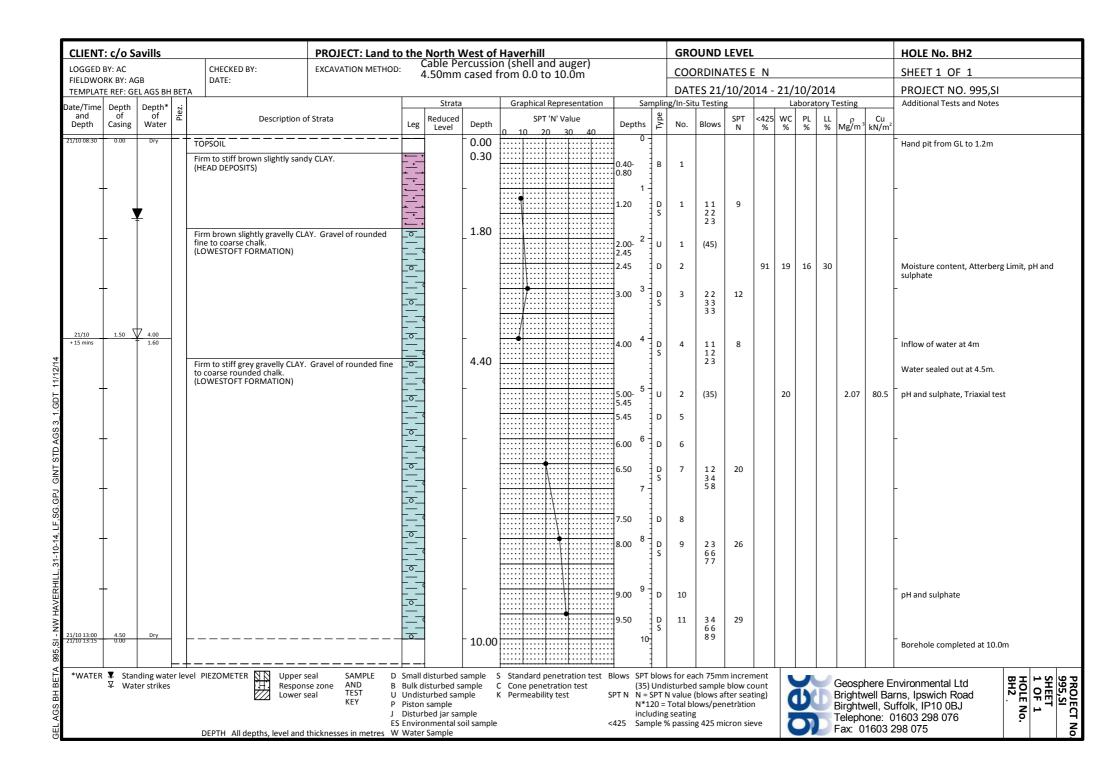
Borehole Logs (BH1 to BH8)

Windowless Sample Hole Logs
(WS1 to WS19 and WSA to WSI)

Trial Pit Logs
(TP1 to TP*)



CLIENT	Γ: c/o S	avills			PROJECT: Land t	o the	North \	<u> Vest of</u>	Haverhill			G	ROUN	ID LEV	EL						HOLE No. BH1
OGGED				CHECKED BY:	EXCAVATION METHOD	D:	1.50mm	rcussio) cased f	n (shell and rom 0.0 to 1	auger) .0.0m		С	OORD	INATES	SE N						SHEET 1 OF 1
	ORK BY: A		ВН ВЕТ	DATE:								D	ATES	20/10/	2014	- 20/	10/2	2014			PROJECT NO. 995,SI
te/Time		Depth					Strata		Graphical Re	oresentation	Sar	npling/Ir							esting		Additional Tests and Notes
and Depth	of Casing	of Wate	Pie I	Description o	f Strata	Leg	Reduced Level	Depth	SPT 'N' 0 10 20		Depths	Туре	o. Blo	ws SPT		5 WC %	PL %	LL %	ρ Mg/m³	Cu kN/m²	
/10 09:00	0.00	Dry	Τ-	TOPSOIL (Dark brown clay with	rootlets).			0.00			0 -										Hand pit from GL to 1.2m
_				Firm to stiff orange brown grey gravelly CLAY. Gravel of round (LOWESTOFT FORMATION)	mottled slightly ed fine to coarse chalk.	0	<u> </u>	0.30				В :	L								_
				1.50 Becoming pale in colour w	ith depth	 - - -	<u> </u>				1.20	D S	1 3 4	4	78	20	18	37			Moisture content, Atterberg Limit
_	_						<u> </u>	_			2.00	D 2	1 1 3 4	3							_
=	_						<u> </u>	_			3.00- 3.45	υι	`	5)							_
20/10	1.00 7	4.00				 - - -		_			3.45	D 4	. 1		89	21	17	35			Moisture content, Atterberg Limit Seepage inflow of water at 4m
_				Stiff grey gravelly CLAY. Grave	of rounded fine to	- - -		4.80		\	5 00 5 -		3 5	6							
				coarse chalk. (LOWESTOFT FORMATION)			<u> </u>			<i></i>	5.00	D S	5 2 6 8:	7							
-							- -	_		<i></i>	6.00	D 6									_
-	<u> </u>							_			7 -	S	7 2 6 6	6							pH and Sulphate _
-	_							_			7.50	D 8		2)	90	10	17	33	2.14	272.4	Maistura content Attachara Limit Tsiavi
											8.45	D 9	'		90	10	1/	33	2.14	2/2.4	Moisture content, Atterberg Limit, Triaxia
-	+					_o_	<u> </u>	-			9.00	D 1		5 33							_
10 16:30 10 16:45	1.50	Damp						10.00			10	S	7 9	8							Borehole completed at 10.0m
WATER	R ▼ Star ▼ Wa			vel PIEZOMETER Upper : Respon	se zone AND B seal TEST U KEY P	Bulk Undi Pisto	I disturbed s disturbed s sturbed san n sample irbed jar sai	ample (S Standard pen C Cone penetra K Permeability 1	tion test	(35) PTN N = 5 N*1	Undistui SPT N va	bed san ue (blov il blows,	nple blow	count eating)		D	D	Brightv Birghtv	vell Ba vell, Sι	nvironmental Ltd rns, Ipswich Road uffolk, IP10 0BJ 11603 298 076 298 075



CLIENT	T: c/o	Sav	ills			PROJECT: Land					GR	OUND	LEVE							HOLE No. BH3
LOGGED					CHECKED BY:	EXCAVATION METHO	D:	Cable Pe 1.50mm	ercussic cased	on (shell and auger) from 0.0 to 10.0m	CO	ORDIN	ATES I	E N						SHEET 1 OF 1
FIELDWC TEMPLAT			AGS BH B	BETA	DATE:						DA	TES 21,	/10/20	014 -	21/	10/2	2014			PROJECT NO. 995,SI
Date/Time		n D	epth*	Piez.				Strata	1	Graphical Representation Sampling	g/In-S	itu Testin	g					esting		Additional Tests and Notes
and Depth	of Casing	g V	of Vater	ية ا	Description o	f Strata	Leg	Reduced Level	Depth	SPT 'N' Value Depths	No.	Blows	SPT N	<425 %	wc %	PL %	LL %	ρ Mg/m	3 Cu kN/m²	
21/10 14:00	0.00		Dry	- 🛨	TOPSOIL				0.00	0 10 20 30 40 0 -										Hand pit from GL to 1.2m
					Stiff dark brown slightly silty gr	avelly CLAY. Gravel of	<u>×o_</u>		0.30	0.40- B	1									
					rounded fine to coarse chalk (LOWESTOFT FORMATION)		* <u></u>			0.40- B 0.80	-									
-	t						×		-	']										
							<u>-</u> ×	d		1.20 D S	1	2 2 4 4	18							
							<u>×°×</u>			5		4 6								
_	T						× ×	d		2.00 ² D S	2	1 2 3 4	15							
							* <u>~</u>					4 4								
_	1						×	d		3 3										_
							× -			3.00 D	3	1 2 3 3 5 5	16							
				L	Chiff have a shiff dard and a second	ally CLAV Convolution	<u>×</u>		3.70			55								
-	+				Stiff to very stiff dark grey grav rounded fine to coarse chalk. (LOWESTOFT FORMATION)	elly CLAY. Gravel of			- 3.70	4.00-	1	(60)		90	18	19	48			Moisture content, Atterberg Limit
					(LOWESTOFT FORMATION)		_ <u>-</u> _			4.45		(00)			10		10			Wosture content, Accepting Emile
										4.45 D	4									
-	†								-	4.45 D	5	3 5	36							-
								Q		S S		7 9 10 10								
										1										
-	Ť							Q		6.00 ⁶ D	6									-
										6.50- U	2	(80)								
_	1							•		6.95		(==,								
											7 8									
								d												
-	+								-	8.00 8 D	9	5 7	35							pH and sulphate
							<u> </u>	d		s	9	8 8 9 10	33							pri and sulphate
												3 10								
-	+							C .	-	9.00	10									-
24 /40 47-00	1.50		Davi				<u> </u>			9.00 9 D	11	4 8 9 10	44							
21/10 17:00 21/10 17:15	1.50 0.00		Dry	F			0		10.00	10] [0]		12 13								Borehole completed at 10.0m
				- ‡											<u> </u>					
*WATER	R ¥ Sta			leve	I PIEZOMETER Upper s Respon	se zone AND I		disturbed disturbed s		S Standard penetration test Blows SPT blows C Cone penetration test (35) Undis										invironmental Ltd
					Respon Lower s	eal TEST I	U Undi:	sturbed sar n sample		K Permeability test SPT N N = SPT N N*120 = T	value	(blows a	fter sea	ting)		D	D	Bright Birabt	well Ba	invironmental Ltd irns, Ipswich Road offolk, IP10 0BJ 01603 298 076
						J	J Distu	rbed jar sa onmental s		including	seatin	ıg			7	0)	1	Teleph	none: (uffolk, IP10 0BJ 01603 298 076
					DEPTH All depths, level and				Jampic	Sample 70	الددوم		. 5. 511 510					Fax: (01603 2	298 075

CLIENT	T: c/o \$	Savill	s		PROJECT: Land t	o the	North \	West of	Haverhill		GRO	DUND	LEVE							HOLE No. BH4	
LOGGED				CHECKED BY:	EXCAVATION METHOD	D :	Cable Pe 1.50mm	ercussic cased	on (shell and auger) from 0.0 to 10.0m		coc	RDIN	ATES	ΕN						SHEET 1 OF 1	
FIELDWO TEMPLA			S BH BET	DATE:							DAT	ES 23,	/10/20	014 -	23/	10/2	014			PROJECT NO. 995,SI	
Date/Time		Dep					Strata		· · · · · · · · · · · · · · · · · · ·	Samplin	g/In-Sit	tu Testin				aborat				Additional Tests and Notes	
and Depth	of Casing	Wa	ter =	Description	n of Strata	Leg	Reduced Level	Depth	SPT 'N' Value Depti	hs 2	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m	Cu kN/m²		
23/10 08:30	0.00	Dry	у	TOPSOIL				0.00	0 10 20 30 40	0 -										-	
				Stiff orange brown grey mo of rounded fine to coarse c	ttled gravelly CLAY. Gravel nalk.	<u>-</u>		0.20	0.40-	- B	1										
				(LOWESTOFT FORMATION)					0.40-0.80												
-	Ť					_ o _			1.20	1 - D	1	6 10	38							-	
									1.20	- S	1	10 12	30								
	1									2 -										_	
									2.00	- S	2	3 5 6 7	27								
]		77									
-	1					<u>-</u>		_	3 00	3 -	1	(80)			18			2 10	211 4	Triaxial test	
				Very stiff to hard dark grey	slightly gravelly CLAY.			3.30	3.00- 3.45	10	1	(80)			10			2.10	211.4	Triaxial test	
				Gravel of rounded fine to o (LOWESTOFT FORMATION)	parse chalk.		9		3.45] D	3										
-	+							_	4.00	4 = D	4	5 7	47							_	
							4		4.00] s		10 10 12 15									
									/	1											
-	†					=	4	-	l	5 - D	D5	3 6 8 10	40							_	
						<u>-</u>			3.00]		11 11									
							Q		1	1											
	T								6.00	6 d D	6									_	
							d		6.50] D	7	5 5	42								
	1							_	1:::::1::::::::::::::::::::::::::::::::	7 - S		8 10 12 12								-	
						_	C .]											
						<u>-</u> -			7.50	D	8										
-	+							_	1	8] D	9	37	60*							_	
									[] []	s	,	11 14 15 10									
]											
-	+							-	9.00	9 1 0	10									_	
						-				‡	_	(6.5)									
23/10 13:00	1.50	Dry	,				Q		9.50- 9.95	U	2	(90)			16			2.14	349.4	pH and sulphate, Triaxial test	
23/10 13:15	0.00	T Dry	У					10.00	9.95	10 D	11									 	
	<u> </u>		<u> </u>	<u> </u>			-		<u> </u>]					<u> </u>						
*WATEF	R ▼ Sta ▽ Wa			.H. Res	onse zone AND B	Bulk	disturbed s	ample		35) Undi	sturbe	d sample	blow c	ount						nvironmental Ltd rns, Ipswich Road uffolk, IP10 0BJ 01603 298 076	HS
				Low	KEY P	Pisto	sturbed sar n sample	•		N*120 = '	Total bl	lows/per				D	DE	Bright\ Biraht\	vell Ba vell. Su	rns, Ipswich Road uffolk, IP10 0BJ	∺ ≥
							rbed jar sa onmental s		ir	ncluding	seating	3			7	07	T	eleph	ione: C		
				DEPTH All depths, level a	nd thicknesses in metres W			,				-						ax: (11603 2	298 075	

CLIENT:	c/o Sa	avills			PROJECT: Land to	the	North \	Nest of	Hav	erhill		GR	OUND	LEVEL							HOLE No. BH5
OGGED B				CHECKED BY:	EXCAVATION METHOD:		1.50mm	rcussio cased	on (sr from	hell and auger) 0.0 to 10.0m		со	ORDIN	ATES I	E N						SHEET 1 OF 1
TELDWOR			BETA	DATE:								DA	TES 22	/10/20)14 -	22/	10/20	014			PROJECT NO. 995,SI
	Depth	Depth*					Strata		Gr	raphical Representation		ing/In-S	itu Testin				borate		esting		Additional Tests and Notes
and	of Casing	of Water	Piez.	Description o	f Strata	Leg	Reduced Level	Depth		SPT 'N' Value	Depths 2	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m³	Cu kN/m²	
Depth 1009:00	Casing 0.00	Dry		TOPSOIL Stiff orange brown grey mottler Gravel of rounded fine to medi (LOWESTOFT FORMATION) Stiff to very stiff dark grey slight Gravel of rounded fine to medi (LOWESTOFT FORMATION)	d slightly gravelly CLAY. um chalk.	Leg	Level	Depth 0.00 0.10 - 4.80		10 20 30 40	0.40- 0.80 1 1.20- 1.65 2 2.20 2 3.00 3 [9]	1 1 2 3 3 4 4 5 5 6 2 7 8 9 9	(55) 2 2 4 5 5 6 2 4 5 8 11 8 3 5 6 8 9 12 3 5 6 8 8 9 12			18	%		2.11	148.3	Hand pit from GL to 1.2m Triaxial test Moisture content, Atterberg Limit, Triaxial
+							•	_					7 8 10 10								_
	1.50	Dry				- - - -	d =	⁻ 10.00)		9.50	11	5 19 38 12	74*							Borehole completed at 10.0m
	v.ov ▼ Stan		er leve	el PIEZOMETER Upper s Respons Lower s	se zone AND B eal TEST U KEY P	Bulk of Undis Pistor Distu	I disturbed sidsturbed sisturbed sann sample rbed jar sar onmental s	sample ample nple	S Star C Cor K Per	indard penetration test Bi ne penetration test rmeability test Sf	9.50 [1] 10- 10- 0ws SPT blo (35) Ur PT N N = SP N*120	ws for edisturbed N valued Total Ing seating	ach 75m ed sample (blows a blows/pe	m increr e blow co ifter sea netration	ount ting) n		D	DE	Brightv Birghtv	vell Ba vell, Sι	nvironmental Ltd rns, Ipswich Road uffolk, IP10 0BJ 01603 298 076 298 075

CLIENT: c/o Savills		PROJECT: Land to the				GRO	UND	LEVEL							HOLE No. BH6
LOGGED BY: AC	CHECKED BY:	EXCAVATION METHOD:	1.50mm	rcussio cased f	n (shell and auger) from 0.0 to 8.3m	coo	RDINA	ATES E	N						SHEET 1 OF 1
FIELDWORK BY: AGB TEMPLATE REF: GEL AGS BH BET	DATE:					DATE	ES 24/	10/20	14 -	24/	10/2	014			PROJECT NO. 995,SI
Date/Time Depth Depth*			Strata		Graphical Representation Samplin	ıg/In-Situ	ı Testing				borat				Additional Tests and Notes
and of of 글 Depth Casing Water	Description of	of Strata Leg	Reduced Level	Depth	SPT 'N' Value Depths	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m³	Cu kN/m²	
Depth Casing Water 24/10 08:30 0.00 bry	TOPSOIL Firm to stiff orange brown grey Gravel of rounded fine to med (LOWESTOFT FORMATION) Very stiff to hard dark grey slig Gravel of rounded fine to med (LOWESTOFT FORMATION)	/ mottled gravelly CLAY	Level	4.00	0 10 20 30 40 Depths ≥ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 2 3 4 2 5 6 7 8 9	55567888 (50) 24568 235567 (70)	29 24 23	94	18	19	48		kN/m²	Hand pit from GL to 1.2m Moisture content, Atterberg Limit, Triaxial test
*WATER ▼ Standing water lev ▼ Water strikes		se zone AND B Bulk seal TEST U Undi KEY P Pisto J Distu	Il disturbed sa disturbed san isturbed sample urbed jar sam ronmental so	mple (ple l iple	S Standard penetration test Blows SPT blow C Cone penetration test (35) Und C Permeability test SPT N N = SPT N N*120 = including (425 Sample 9	isturbed N value (I Total blo s seating	sample blows af ows/pen	blow co ter seati etration	unt ng)		שׁלַע	DE	Brightv Birghtv	vell Ba	nvironmental Ltd rns, Ipswich Road uffolk, IP10 0BJ 11603 298 076

CLIENT	T: c/c	o Sa	vills			PROJECT: Land to	the	North \	Nest of	Haverhill		GRO	UND	LEVEL							HOLE No. BH7
LOGGED					CHECKED BY:	EXCAVATION METHOD:		Cable Pe 1.50mm	ercussic cased	on (shell and auger) from 0.0 to 8.2m		coo	RDINA	ATES E	E N						SHEET 1 OF 1
FIELDWC TEMPLA				I BETA	DATE:							DATE	ES 24/	10/20)14 -	24/	10/2	2014			PROJECT NO. 995,SI
Date/Time			Depth*	èZ.				Strata	l I	Graphical Representation Sa		g/In-Situ	ı Testin	g				tory T	esting		Additional Tests and Notes
and Depth	of Casi		of Water	Piez.	Description of	of Strata	Leg	Reduced Level	Depth	SPT 'N' Value Depths	Type	No.	Blows	SPT N	<425 %	wc %	PL %	LL %	ρ Mg/m	³ Cu kN/m²	
24/10 14:00	0.00	0	Dry	Ηŧ	TOPSOIL			+	0.00	0 10 20 30 40	1									<u> </u>	Hand pit from GL to 1.2m
					Firm to stiff orange brown gre	/ mottled slightly			0.40	0 40-	B	1									
					gravelly CLAY. Gravel of round chalk.	ed fine to medium		d		0.40-0.80]	-									
-	†				(LOWESTOFT FORMATION)		-		<u> </u>		1		()								
							-	Q C		1.20- 1.65	1 U	1	(40)								
										1.65	D	1									
-	T						믇	•		2.00	D S	2	1 2 3 4	17							
							<u></u>]		4 6								
	1							d	-	3 - 3	1		4.0	40							_
					Very stiff dark grey gravelly CL	AY Gravel of rounded	<u> </u>		3.30	3.00	D S	3	13 35 56	19							
					fine to coarse chalk. (LOWESTOFT FORMATION)	Graver or rounded		d			1		30								
-	+				,				-	4.00-	‡	2	(55)		92	20	19	42	2.12	205.6	Moisture content, Atterberg Limit, pH and
							-	•		4.00-4.45	1		(,								sulphate, Triaxial test
										\	P	4									
-	t						=	•	-	5.00	<u> </u>	5	24	27							-
							<u>-</u>				S		66 78								
								d		6	1										
										6.50	D	6									
							\equiv	C		6.50] _D	7	2 4	28							
_	1								Ļ	7] s		5 6 8 9								-
										1]										
							<u>-</u>			7.50	D	8									pH and sulphate
24/10 17:00	1.50		Dry				<u> </u>														-
24/10 17:15	0.00	0						1	8.20] c		25								Borehole completed at 8.20m
										1:::::]										
-	t								-	9]										-
]										
_	1								L	10											
-	T									10]										
*\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	 T (Stand	ing wo+	Er Jev	PIEZOMETER DUpper	seal SAMPLE D S		disturbed	samnle	S Standard penetration test Blows SPT	hlow	s for ear	h 75mr	n increr	nent	_		_		<u> </u>	
VVAIE	, <u>Ā</u> /	Wate	r strikes	er ieve		se zone AND B E	Bulk	disturbed s disturbed s sturbed san	ample) Undi	sturbed	sample	blow co	ount		4				invironmental Ltd irns, Ipswich Road uffolk, IP10 0BJ 01603 298 076
					Lower	KEY P	Pisto	n sample		N*1	L20 = 1	Total blo seating	ows/per	netràtio	n n		D		Birght	well, Su	
						ES I	Envir	rbed jar sar onmental s						icron sie	eve	2	•)	D	Teleph	none: (01603 298 076
					DEPTH All depths, level and	thicknesses in metres W	Wate	r Sample								- 25		100	. u.v. (

CLIENT	: c/o	Sav	vills		PROJECT: Land to	o the	North \	Nest of	f Haverhill		GR	OUND	LEVEL							HOLE No. BH8
LOGGED			,	CHECKED BY: DATE:	EXCAVATION METHOD):	6.00mm	ercussio cased t	on (shell and auger) from 0.0 to 10.0m		co	ORDIN	ATES I	E N						SHEET 1 OF 1
			AGS BH BE								DA	TES 23,	/10/20)14 -	23/1	.0/20	14			PROJECT NO. 995,SI
ate/Time			Depth*				Strata		Graphical Representation		ng/In-Si I	itu Testin					ry Tes	ting		Additional Tests and Notes
and Depth	of Casin		of Water	Description	on of Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Depths 2	No.	Blows	SPT N	<425 %	WC %	PL %	LL % M	ρ g/m³	Cu kN/m²	
23/10 14:00	0.00	+	Dry	TOPSOIL		_	-	0.00	 	0 -										Hand pit from GL to 1.2m
				Firm brown slightly silty CLA	ΑΥ	×		0.40).40- B	1									
				(HEAD DEPOSITS)		<u> </u>).80 1 -										
Ī						X			•		1	12	14	100	24	20	51			Moisture content, Atterberg Limit
						× -			, , , , , , , , , , , , , , , , , , , 	1.20 D	-	23	-	100		-				mostare content, ricersery amin
23/10		$_{\perp}$	2.00	Soft brown very sandy CLA (HEAD DEPOSITS)	<i>1</i> .		•	1.80		1.80 2 D	2									
				Soft to firm brown slightly g		<u>-•</u> -	•	2.20		2.00 ² D S	3	11 12 23	8							Seepage inflow of water at 2m
				of rounded fine to coarse of (HEAD DEPOSITS)	naik.	<u> </u>	7			1		23								
-	-					<u>•</u>	•	-		3.00 3 D	4	12	9							-
						<u> </u>	ð			- S		22								
						<u>•</u>	•			1										
_	_						1	-		1.00 4 D	5	12	11							_
23/10		7	4.50			<u>-</u>			 			33								Seepage inflow of water at 4.5m
							4			5 - 5										
				Stiff grey gravelly CLAY. Gr	avel of rounded fine to	<u>-</u> •		5.20	No.	5.00 S D	6	1 2 1 2	10							
				coarse chalk. (LOWESTOFT FORMATION)			9					3 4								
_	_							-		5.00 6 D	7									Water sealed out at 6.0m.
							d			5.00	′									water sealed out at 6.0111.
										5.50 D	8	13 45	19							
-	-					_	d	_		7 =		4 5 5 5								-
				7.50.0	de el caralle															
				7.50 Becoming very stiff wi	n deptn.		đ			7.50 D	9									
-								-		3.00- 8 U	1	(45)			18			2.16	217.2	Triaxial test
									1	3.45 D	10									
_	_							_		9 -										_
						<u> </u>			<u> </u>	0.00 D	11									
									•	0.50 D	12	2 3 4 5	23							
23/10 17:00 23/10 17:15	6.00		Dry	<u> </u>				10.00]	10		68								Borehole completed at 10.0m
				L		.L_				1										
*WATER	▼ S	tandi	ing water le	evel PIEZOMETER Upp					S Standard penetration test Blo								 €	nenh	nere F	nvironmental Ltd 무급 나 오
	<u>+</u> ∨	vater	strikes		er seal TEST U	Undi	disturbed s sturbed sar		C Cone penetration test K Permeability test SP	TN N=SPTI	N value		fter sea	ting)		30	Br	ighṫw	ell Ba	nvironmental Ltd
					j	Distu	n sample Irbed jar sai			including	g seatin					5				nvironmental Ltd rns, Ipswich Road uffolk, IP10 0BJ 01603 298 076
				DEPTH All depths, level a	ES and thicknesses in metres W		onmental s er Sample	oil sample	e <4.	25 Sample 9	% passi	ng 425 m	icron sie	eve		1	Fa	x: 0	1603 2	298 075

CLIENT	: c/o Sa	vills			PROJECT: Land to							GRO	DUND	LEVE	-						HOLE No. WS1
LOGGED E				CHECKED BY:	EXCAVATION METHOD:	:	Window		•	ier		coc	DRDINA	ATES I	E N						SHEET 1 OF 1
FIELDWOI TEMPLAT			I BETA	DATE:			Uncased	ı (O 4.0	, m			DAT	ES 28/	10/20)14 -	28/1	0/20)14			PROJECT NO. 995,SI
ate/Time	Depth	Depth*					Strata	9	G	Graphical Representation	Samplir		tu Testin				orato		sting		Additional Tests and Notes
and Depth	of Casing	of Water	Piez.	Description of	Strata	Leg	Reduced Level	Depth	0	SPT 'N' Value 10 20 30 40	Depths 2	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ ⁄lg/m³	Cu kN/m²	
	-			TOPSOIL (Dark brown slightly sa clay with rootlets. Gravel of ang fine to medium flint and infrequ	ndy slightly gravelly gular to subrounded lent brick fragments)			0.00			0 -										Groundwater not encountered during drilli
				Firm becoming stiff brown sligh	the candy gravally CLAV			0.45			0.20 J 0.35 J	2									Metals, PAH, TPH, Moisture content, pH and Sulphate
				Gravel of subrounded to round subrounded fine to coarse flint. (LOWESTOFT FORMATION)	ed chalk and angular to	- <u>`</u> -	•	0.13			0.70 J 0.80 D	3									Metals, PAH, TPH, Moisture content, pH and Sulphate
-	-						•	_			1.00 1 D	2	1 1 2 2	11							Shear vane test = 48kN/m ² Shear vane test = 50kN/m ²
				1.20 Becomes brown grey mott	led with depth	 	† -						34								
							•														
-	-					- <u>·</u> -	- -	-			2.00 2 D C	3	11 5 5 5	22							Shear vane test = 87kN/m²
							à						57								
						- <u>-</u> -	· d														
	_					- <u>°</u> -	•	_			3.00 3 D	4	4 4 4 6	26							
							•						79								Silear valle test – 112NV/III
						_ <u>-</u> _	•				-										
-	-						•	- 4.00			4.00 4 D	5	5 7	44							 50mm diameter monitoring well installed t
											c		8 10 12 14								4.0m Windowless sample hole completed at 4.0 depth
*WATER	▼ Stan ▼ Wat			PIEZOMETER Upper St. Respons	e zone AND B real TEST U KEY P	Bulk o Undis Pistor	disturbed disturbed s sturbed san n sample	ample nple	C Co	tandard penetration test B Cone penetration test Permeability test SI	(35) Und PT N N = SPT I N*120 =	isturbe N value Total b	d sample (blows a lows/per	blow c	ount ting)			Bi Bi	rightwe ightwe	ell Ba ell, Sut	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ p1603 298 076
				DEPTH All depths, level and t	ES	Envir	rbed jar sa onmental s		e	<4	including 125 Sample 9			icron sie	eve	C	7	Te	elepho	ne: 0	01603 298 076 298 075

CLIENT	: c/o S	avills			PROJECT: Land to							GR	OUND	LEVE	L					HOLE No. WS2
LOGGED FIELDWO		:1		CHECKED BY: DATE:	EXCAVATION METHOD	:	Window Uncased		•	iei		СО	ORDIN	ATES	ΕN					SHEET 1 OF 1
TEMPLAT			н вет				oncase	ı to 4.0	ווו ע			DA	TES 28	/10/2	014 -	28/1	10/20	14		PROJECT NO. 995,SI
ate/Time	Depth	Depth*					Strata	9	(Graphical Representation		ling/In-S	Situ Testir				borato		ting	Additional Tests and Notes
and Depth	of Casing	of Water	. 	Description of	Strata	Leg	Reduced Level	Depth		SPT 'N' Value 10 20 30 40	Depths 2	No.	Blows	SPT N	<425 %	WC %	PL %	LL % M	ρ Cu g/m³ kN/m	2
-	-		10	TOPSOIL (Dark brown slightly sa	ndy slightly gravelly			0.00		10 20 30 40	0 -									Groundwater not encountered during drill
				TOPSOIL (Dark brown slightly sa clay with rootlets. Gravel of any fine to coarse flint and infreque	gular to subrounded nt fine to medium brick				ļ		0.10] J	1								No collapse of sidewalls during drilling
				and charcoal fragments)						••• •••• ••••	0.30	2								No collapse of sidewalls during drilling
				Firm becoming stiff brown sligh	tly sandy gravelly CLAY	-	•	0.47	ļ		1 1									
				Gravel of subrounded to round subrounded fine to coarse flint.	ed chalk and angular to	<u> </u>	à		ļ		+ +									
				(LOWESTOFT FORMATION)		<u> </u>	-				0.70] J	3								
				0.80 Becomes brown grey mott	led with depth	<u> </u>			ļ		0.80	1								Shear vane test = 70kN/m ²
-	<u> </u>		間			<u> </u>	•	-	ļ		1.00	2								Shear vane test = 76kN/m ²
			#]			_ <u>-</u>			ļ											
						<u> </u>			ļ	•••	1									
						_ <u>-</u> -			L]									
			1:[]:[+ +									
						<u> </u>					1 1									
			1.[].[ļ											
-	_					- <u>°</u> -		-			2.00 2]	3								Shear vane test = 82kN/m²
							•		ļ											
						<u> -:</u> -				• • • • • • • • • • • • • • • • • • • •	1									
							•		ļ]									
						_ <u>-</u> ;-			ļ		+									
							•				1 1									
			<u> </u>			<u></u>			ļ		-									
-	_					<u> </u>	7				3.00 3 7	4								Shear vane test = 91kN/m²
						<u>-</u> -			ļ											
							3		1		† †									
						<u>•</u>	1		ļ]									
						<u> </u>	ð		ļ		+									
						<u>-</u> •-	•				[]									
							Ž		ļ											
-	Ť					_	•	4.00	ļ		4.00	5								50mm diameter monitoring well installed
									ļ											4.0m Shear vane test = 96kN/m ²
									1											Windowless sample hole completed at 4.0 depth
			\perp			<u> </u>					1 1					Ш				
*WATER	▼ Star ∇ Wat			el PIEZOMETER Upper si Respons Lower si	eal TEST U	Bulk of Undis Pistor	disturbed disturbed sar sturbed sar n sample rbed jar sa	ample nple	C C	Standard penetration test ECone penetration test Permeability test S	(35) Ur PT N N = SP ⁻¹ N*120	ndisturb ΓN valu	ed sample e (blows a blows/pe	e blow c after sea	count ating)		5	Bri Big	ightwell B ghtwell, S	Environmental Ltd arns, Ipswich Road, uffolk, IP10 0BJ 01603 298 076 298 075
						Envir	onméntal s		le	<	425 Sample			icron si	eve	7		Fa	ieprione: v: 01603	01603 298 076 298 075

CLIENT	Γ: c/o S	avills			PROJECT: Land to th					GRO	OUND	LEVEL						HOLE No. WS3
LOGGED				CHECKED BY:	EXCAVATION METHOD:		wless sa	•		coc	RDINA	ATES E	N					SHEET 1 OF 1
TEMPLAT			H BETA	DATE:		Uncase	eu to 1.8) III		DAT	ES 29/	10/20	14 - 29	9/10/	2014			PROJECT NO. 995,SI
Date/Time		Depth*	Piez.			Stra		Graphical Representation		_	u Testing				atory Te	esting		Additional Tests and Notes
and Depth	of Casing	of Water	Ē	Description o	f Strata Le	Reduce Level	d Depth	SPT 'N' Value 0 10 20 30 40	Depths ≥	No.	Blows	SPT <	<425 W	C PL %	LL %	Mg/m³	Cu kN/m²	
-	†		 	TOPSOIL (Dark brown sandy cla			0.00	10 20 30 40	0 -									Groundwater not encountered during drilling
				TOPSOIL (Brown slightly sandy s Gravel of angular to subrounde	slightly gravelly clay. d fine to medium flint		0.05		0.10] J 0.20] J	1 2								No collapse of sidewalls during drilling
				Gravel of angular to subrounde and rare fine brick and charcoa	fragments) tly sandy gravelly CLAY.	<u>:</u>	0.30		0.20	2								No collapse of sidewalls during drilling
				Firm becoming stiff brown sligh Gravel of subrounded to round subrounded fine to coarse flint.	ed chalk and angular to	-]									
				(LOWESTOFT FORMATION)		==			0.60 J	3								
					<u>-</u>				0.80 D	1								Shear vane test = 74kN/m ²
_					•	<u>-</u>] ,]									_
					<u>-</u> -			ļ	1.00 D	2								Shear vane test = 84kN/m ²
						<u>:-</u>]]									
					<u>*</u>	_		ļ										
					0				1 1									
					<u>-</u> -			ļ	+ +									
							1.80		1.80 D	3								Infiltration test undertaken at 1.48m depth Shear vane test = 96kN/m ²
-	+						+	 	2 -									Windowless sample hole completed at 1.8m
]]									depth
								····	+ +									
									1 1									
								····	+ +									
]]									
								····	+ +									
_	T								3 -									
								····	+ +									
]]									
								 	† †									
]]									
								· · · · · · · · · · · · · · · · · · ·	1 1									
-	+						-		4 -									-
									<u> </u>									
									<u> </u>									
*WATER	R ▼ Star ▼ Wa	nding wat ter strike	ter lev	el PIEZOMETER Upper s Respons Lower s	se zone AND B Bul eal TEST U Uni KEY P Pist J Dis ES Env	k disturbed disturbed s ton sample turbed jar s vironmenta	sample ample ample	,	(35) Und PT N N = SPT N*120 =	disturbed N value Total bl g seating	d sample (blows af ows/pen	blow cou fter seatin retration	unt ng)	dec	DE	Brightv Bightw Feleph	vell Ba ell, Su one: 0	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076 298 075
				DEPTH All depths, level and			•			-						-ax: 0	1003 2	290 073

CLIENT	: c/o S	avill	s		PROJECT: Land to	o the	North	West of	f Hav	erhill				GRC	UND	LEVEL						HOLE No. WS4
LOGGED		E1		CHECKED BY: DATE:	EXCAVATION METHOD):	Window Uncased			I				COO	RDINA	ATES E	E N					SHEET 1 OF 1
FIELDWO TEMPLAT			S BH BET				oncase	ı to 2.0	111					DAT	ES 29/	10/20	014 -	29/1	0/201	.4		PROJECT NO. 995,SI
ate/Time	Depth	Dep	th* zi				Strata	9	Gr	aphical Rep	resentation	S			u Testing	_				Testing		Additional Tests and Notes
and Depth	of Casing	Wa	f ter	Description of	f Strata	Leg	Reduced Level	Depth		SPT 'N'		Depths	Type	No.	Blows	SPT N	<425 %	wc %	PL L %	L ρ 6 Mg/m	Cu kN/m²	
_	=		-	TOPSOIL (Dark brown slightly g	ravelly sandy clay with	=		0.00		10 20	30 40											Groundwater not encountered during drill
				rootlets. Gravel of angular to s	/			0.05	ļ	·····		0.10	- J	1								No collapse of sidewalls during drilling
				TOPSOIL (Dark brown slightly s clay. Gravel of angular to subry flint and rare fine brick and cha	ounded fine to medium	\ <u>.</u> =		0.23				1	1									,
				Stiff becoming very stiff pale by slightly sandy gravelly CLAY. G	rown grey mottled	- <u>-</u> -	•			 		0.50]]	2								
				rounded fine to coarse chalk as subrounded fine to coarse flint	nd angular to	<u> </u>	t			····]									
				(LOWESTOFT FORMATION)		<u>•</u>						0.80	D	1								Shear vane test = 68kN/m ²
Ī	_						t	-		ļ		1.00	10	2								Shear vane test = 82kN/m ²
						<u>-</u> -							1									
						<u> </u>	•						+									
							à			ļļ		1	1									
						<u> </u>						1	1									
						<u> </u>	\$			·····			+									
	_							2.00		ļļ		2.00	ם [3								Shear vane test = 87kN/m ² Windowless sample hole completed at 2.1
												1	1									depth
									<u> </u>	<u> </u>		_	1									
]									
													1									
	_									····		3										
	_								ļ	Ţ]	7									_
												1	1									
									<u> </u>	<u> </u>		_	}									
]									
												1	1									
	_							L	<u> </u>	<u> </u>		_]									
Ī										ļ <u>.</u>		. 4]									
												1	1									
			L	<u> </u>		. L _				<u> </u>		-	1									
'WATER	¥ Star ⊻ Wat			vel PIEZOMETER Upper s Respon Lower s	se zone AND B eal TEST U KEY P	Bulk o Undis Pistor Distu	disturbed sar sturbed sar n sample rbed jar sa	ample nple mple	C Cor K Per	ndard pene ne penetrat meability to	st S	35) FTN N: N* ind	5) Undi: = SPT N 120 = 1 cluding	sturbed I value (Total blo seating	d sample (blows af ows/pen	blow co ter sea etration	ount ting) n	D	20	Bright Bight	well Ba well, Su	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076 298 075
				DEPTH All depths, level and			onmental s r Sample	oil sample	9		•	:425 Sa	mple %	passin	g 425 mi	cron sie	eve					298 075

CLIENT	: c/o Sa	vills		T	PROJECT: Land to	o the	North N Window	Nest of	Have	erhill r			GRC	UND	LEVE	•						HOLE No. WS5
OGGED E	BY: LF RK BY: GE			CHECKED BY: DATE:	EXCAVATION METHOD		Uncased		•	ı			COC	RDIN	ATES I	E N						SHEET 1 OF 1
	E REF: GE		н вета	DATE.			Officasec	1 10 4.0					DAT	ES 29/	10/20)14 -	29/	10/20	014			PROJECT NO. 995,SI
ite/Time	Depth	Depth'	*				Strata	l 	Gra	aphical Representation	S		g/In-Sit	u Testin				aborato	ory Te	esting		Additional Tests and Notes
and Depth	of Casing	of Water	. =	Description o	f Strata	Leg	Reduced Level	Depth		SPT 'N' Value 10 20 30 40	Depths	Туре	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m³	Cu kN/m²	2
_	-		\	TOPSOIL (Dark brown slightly grootlets. Gravel of angular to somedium flint)	ravelly sandy clay with ubrounded fine to			0.00		30 40	0.10	_ J	1									Groundwater not encountered during dril Metals, PAH, TPH, Moisture content, pH ai Sulphate
				TOPSOIL (Dark brown slightly sa clay. Gravel of angular to subro flint and rare fine brick and cha	ounded fine to medium rcoal fragments)	<u></u>		0.40														No collapse of sidewalls during drilling
				Firm becoming stiff pale brown sandy gravelly CLAY. Gravel of rounded fine to coarse chalk ar subrounded fine to coarse flint (LOWESTOFT FORMATION)	subrounded to d angular to		•				0.70	D	1									
	-			1.00 Becoming dark yellow browdepth	wn grey mottled with		•	-			1 	_ c		23 34 55	17							
							d - -				1.60	D	2									
	-			2.00 Becoming dark brown grey	mottled with depth		† • •	_				c		3 3 4 4 5 6	19							
							† •				2.60	D	3									
	-						.	_			3 	C		4 4 5 5 7 6	23							
				3.50 Occasional iron oxide stain	ing below 3.5m depth		• •				3.60	D	4									
	-							4.00				c		5 5 5 7 7 9	28							Windowless sample hole completed at 4.1 depth
WATER	▼ Stand ▼ Wate			I PIEZOMETER Upper s Respons	se zone AND B real TEST U KEY P	Bulk o Undis Pistor	disturbed disturbed s sturbed sar n sample	ample nple	C Con	ndard penetration test ne penetration test meability test	(3! SPT N N N*	5) Undi = SPT N 120 = 1	sturbed I value (Total bl	d sample (blows a ows/per	blow c	ount ting)		D.	D B	Brightv Bightw	vell Ba ell, Su	Environmental Ltd arns, Ipswich Road, offolk, IP10 0BJ 01603 298 076
				DEPTH All depths, level and	ES	Envir	rbed jar sa onmental s		2		ind <425 Sa		seating passin		icron sie	eve	7		5 I	eleph	one: (01603 298 076 298 075

CLIENT	: c/o S	avills	i		PROJECT: Land t									GRO	DUND	LEVEL						HOLE No. WS6
LOGGED FIELDWO		EI		CHECKED BY: DATE:	EXCAVATION METHOD):	Windov Uncase		•	I				coc	ORDINA	ATES I	E N					SHEET 1 OF 1
TEMPLAT			ВН ВЕТ				Uncased	1 10 1.9	' 111					DAT	ES 29/	10/20	014 -	29/1	0/201	L4		PROJECT NO. 995,SI
ate/Time	Depth	Dept					Strat	9	Gr	aphical Rej	resentation				tu Testin					/ Testing		Additional Tests and Notes
and Depth	of Casing	of Wat		Description o	f Strata	Leg	Reduced Level	Depth	,	SPT 'N' 10 20	Value 30 40	Dept	hs 2	No.	Blows	SPT N	<425 %	wc %	PL L % 9	L ρ 6 Mg/r	Cu n³ kN/m²	
-			-	TOPSOIL (Dark brown slightly g rootlets. Gravel of angular to s		$\not\equiv$		0.00				0.10	0 -	1								Groundwater not encountered during dril
				\medium flint) TOPSOIL (Dark brown slightly s	andy slightly gravelly	/ -•-	•	0.25					1,	1								No collapse of sidewalls during drilling
				clay. Gravel of angular to subn flint and rare fine brick and cha	rcoal fragments)	/ <u></u>	t					†	-									
				Stiff becoming very stiff pale b slightly sandy gravelly CLAY. G rounded fine to coarse chalk a	nd angular to	<u>.</u>						0.60] J	2								
				subrounded fine to coarse flint (LOWESTOFT FORMATION)								0.80	D	1								
-	_			1.00 Becoming yellow brown g below 1.0m	rey mottled with depth	<u> </u>	7	-		 			1 -									-
				25.0W 1.0H		<u> </u>							-									
						- <u>·</u>				<u> </u>		1	-									Infiltration test undertaken at 1.41m dep
						<u> </u>	ð															
						- <u>·</u> -	_	1.89				1.80	D	2								
-	-							- 1.83				1	2 -									Windowless sample hole completed at 1. depth
]									
												1										
													-									
												:]									
-	-							-		 		1	3 -									-
												1	-									
									<u></u>			1	}									
												1	}									
												1	}									
-	_							-		1		1	4 -									-
									ļ]]									
				L		L]]									
WATER	▼ Star ▼ War			vel PIEZOMETER Upper : Respon	se zone AND B real TEST U KEY P	Bulk o Undis Pistor	disturbed disturbed s sturbed sai n sample rbed jar sa	ample nple	C Cor	ndard pen ne penetra meability t) 1 N T G 1	(35) Und N = SPT N	isturbe V value Total b	d sample (blows at lows/per	blow co	ount ting)		bu	Bright Bight	twell Ba well, Su	Environmental Ltd Irns, Ipswich Road, Iffolk, IP10 0BJ 01603 298 076 298 075
				DEPTH All depths, level and	ES	S Envir	onmental s		e						ь ng 425 mi	cron sie	eve	C		Fax:	none: (01603 :	01603 298 076 298 075

CLIENT	: c/o S	avills			PROJECT: Land to						GROU	IND LEVE	_					HOLE No. WS7
LOGGED				CHECKED BY:	EXCAVATION METHOD	:	Window		•		COORI	DINATES	E N					SHEET 1 OF 1
FIELDWO TEMPLAT			1 BET	DATE:		'	Uncased	ı to 4.0	m		DATES	5 29/10/20	014 - 2	9/10/2	2014			PROJECT NO. 995,SI
ate/Time	Depth	Depth*					Strata	9	Graphical Representation	Samplin	g/In-Situ T			Labora				Additional Tests and Notes
and Depth	of Casing	of Water	Piez.	Description of	Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Depths ≥	No. B	SPT N	<425 W	/C PL % %	LL %	ρ Mg/m	Cu kN/m²	
=	-			TOPSOIL (Dark brown slightly gr angular to subrounded fine to n and charcoal fragments)	nedium flint, rare brick			0.00	c	0 - 0.10 J	1							Groundwater not encountered during drilli Metals, PAH, TPH, Moisture content, pH an Sulphate No collapse of sidewalls during drilling
				Firm becoming stiff brown grey gravelly CLAY. Gravel of subrou to coarse chalk and angular to s coarse flint. (LOWESTOFT FORMATION)	mottled slightly sandy nded to rounded fine ubrounded fine to		i d	0.30	c).40] J	2							Metals, PAH, TPH, Moisture content, pH an Sulphate
_	-			1.00 Occasional iron oxide stain	ing below 1.0m depth			_	c	0.80 D	1							_ Shear vane test = 56kN/m²
-	_			2.00 Becoming dark yellow brow depth	vn grey mottled with			_		1.80 D	2							Shear vane test = 82kN/m²
_	-			3.50 Becoming dark grey with b depth	rown mottling with				3	3 - - - - - - - - - - - - - - - - - - -	4							Shear vane test = 94kN/m²
-	-							4.00		4 -								Shear vane test = 88kN/m² Windowless sample hole completed at 4.0 depth 50mm diameter monitoring well installate 4.0m
*WATER	▼ Stan ∇ Wat	ding wat er strikes	er lev	el PIEZOMETER Upper si Respons Lower so	ee zone AND B eal TEST U KEY P	Bulk of Undis Pistor Distur	listurbed s turbed sar n sample rbed jar sa	ample nple mple	•	(35) Undi T N N = SPT N N*120 = ⁻ including	sturbed sa I value (blo Total blow seating	ample blow c ows after sea vs/penetràtio	ount ting) n	<u>e</u>	D	Brightv Bightw	well Ba vell, Su	invironmental Ltd irns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076
				DEPTH All depths, level and t	ES	Enviro	onmental s		<42	25 Sample %	passing 4	125 micron sie	eve	0)) i	Fax: 0	1603	298 075

CLIENT	: c/o S	avills			PROJECT: Land to						GRO	DUND	LEVEL							HOLE No. WS8
LOGGED				CHECKED BY:	EXCAVATION METHOD):	Window		•		coc	ORDINA	ATES E	N						SHEET 1 OF 1
FIELDWO TEMPLAT			H BETA	DATE:			Uncased	ı to 2.0	/ m		DAT	ES 29/	10/20)14 -	29/1	10/20	014			PROJECT NO. 995,SI
Date/Time		Depth*	Piez.				Strata		Graphical Representation	 	ng/In-Sit	tu Testini				borato	ory Te	sting		Additional Tests and Notes
and Depth	of Casing	of Water	- Bi	Description of	Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Depths 현	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m³	Cu kN/m²	
_	-			TOPSOIL (Dark brown slightly sa clay. Gravel of angular to subro flint and rare fine brick and cha Firm becoming stiff yellow brow sandy gravelly CLAY. Gravel of:	unded fine to medium rcoal fragments) on grey mottled slightly subrounded to	-0-	•	0.00		0 - 0.10 J	1 2									Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling
				rounded fine to coarse chalk an subrounded fine to coarse flint. (LOWESTOFT FORMATION) 0.80 - Becoming yellow brown a	-		•			0.80 D	1									
-	_			1.00 - Becoming brown/grey mo			•	_		1 -										Shear vane test = 78kN/m²
							• • • •			1.70 D	2									Infiltration test undertaken at 1.58m depth
								2.00		2 -										Shear vane test = 102kN/m ²
																				Windowless sample hole completed at 2.0m depth
-	_							_		3 -										-
	-							_		4 -										-
*WATER	▼ Star ∇ Wat	nding wat ter strikes	er leve	el PIEZOMETER Upper si Respons Lower si	se zone AND B eal TEST U	Bulk o Undis	disturbed s sturbed sar	ample	S Standard penetration test C Cone penetration test K Permeability test	(35) Und SPT N N = SPT	listurbed N value	d sample (blows at	blow co	ount ting)		Di l	В	riahtw	ell Bar	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ
				DEPTH All depths, level and t	J ES	Distu Envir	n sample rbed jar sa onmental s r Sample		e .	N*120 = including 425 Sample 9	g seating	g				חכ	Te	elepho	one: 0	ffolk, IP10 0BJ

CLIENT	: c/o S	avil	ls			PROJECT: Land to	o the	North	West o	of Ha	averhill			GRO	UND	LEVEL	-						HOLE No. WS9
LOGGED					CHECKED BY:	EXCAVATION METHOD):	Windov						coo	RDINA	ATES I	E N						SHEET 1 OF 1
FIELDWO TEMPLAT			S BH BE	TA	DATE:			Uncase	ı to 2.C	u m	I			DAT	ES 29/	10/20)14 -	29/1	10/20	14			PROJECT NO. 995,SI
ate/Time		Dep						Strata	3		Graphical Representation		Samplin			_	ļ.,		borato		ting		Additional Tests and Notes
and Depth	of Casing		oth* of ater		Description o	f Strata	Leg	Reduced Level	Depth	1 0	SPT 'N' Value	Dept		No.	Blows	SPT N	<425 %	WC %	PL %	LL % N	ρ 1g/m³	Cu kN/m²	
	_			T	TOPSOIL (Dark brown slightly sa clay. Gravel of angular to subro lint and rare fine brick and cha	andy slightly gravelly nunded fine to medium rcoal fragments)			0.00)		0.10	0 -	1									Groundwater not encountered during drilli
				5	Stiff becoming very stiff yellow slightly sandy gravelly CLAY. Gr counded fine to coarse chalk an	brown grey mottled avel of subrounded to	- <u>•</u> -	•	0.30	, 													No collapse of sidewalls during drilling
				. s	subrounded fine to coarse flint. LOWESTOFT FORMATION)	u angulai to	 					0.50]]	2									
=	_			1	L.00 - Becoming brown/grey m	ottled with depth	 		_		•	0.80	1 - C	1	35	23							-
					3 · · · /0 · / · ·							† -			35 78								
							 					1.60	D	2									
												1.00		۷									
-	_					. — — — — — —	 -		2.00)		 	2 -										Windowless sample hole completed at 2.1 depth
																							50mm diameter monitoring well installed 2.0m
												<u>.</u>											
-	_								_	[<u> </u>	3 -										-
												 -	1										
												 - -											
=	_								_			<u> </u> -	4 -										-
				<u> </u>								<u> </u>											
WATER	¥ Star ¥ Wa			evel	PIEZOMETER Upper s Respons Lower s	se zone AND B eal TEST U KEY P	Bulk o Undis Pistor	disturbed disturbed s sturbed sai n sample rbed jar sa	ample nple	C (Standard penetration test Cone penetration test Permeability test S) I NTQ I	SPT blow 35) Undi N = SPT N N*120 = 1 ncluding	sturbed value (Total blo	l sample blows af ows/pen	blow co	ount ting)		50	Br Bi	ightw ghtwe	ell Bar ell, Suf	nvironmental Ltd rns, lpswich Road, ffolk, IP10 0BJ 11603 298 076 198 075
					DEPTH All depths, level and	ES	S Envir	onmental s		le	<		Sample %			cron sie	eve	7					1603 298 076 298 075

CLIENT	: c/o S	avills			PROJECT: Land to th					GROU	ND L	EVEL							HOLE No. WS10
LOGGED		F.I		CHECKED BY:	EXCAVATION METHOD:	Window		·		COORE	DINA.	TES E	N						SHEET 1 OF 1
TEMPLAT			H BETA	DATE:		Uncased	ιιο 2.0	111		DATES	30/1	10/20	14 -	30/	10/2	014			PROJECT NO. 995,SI
Date/Time	Depth of	Depth*	Piez.			Strata		· · · · · · · · · · · · · · · · · · ·		g/In-Situ T	esting					ory Te	esting		Additional Tests and Notes
and Depth	Casing		ا ا	Description o	f Strata Le	Reduced Level	Depth	SPT 'N' Value Depth	Type	No. Bl	lows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m	Cu kN/m²	
				Description o TOPSOIL (Dark brown slightly sz clay. Gravel of subangular to su medium flint and rare chalk) Stiff pale brown gravelly (LAY. rounded fine to coarse chalk. (LOWESTOFT FORMATION) Stiff dark grey brown mottled g angular to subrounded fine to o (LOWESTOFT FORMATION)	andy slightly gravelly abrounded fine to Gravel of subangular to oravelly CLAY. Gravel of	E Level	Depth - 0.00 0.15 - 1.10	0.10 20 30 40 Depth 0.10 0.10 0.75 0.75	s ddAL	1	225 233 445	SPT N	<425 %	WC %	PL %	LL %	Mg/m	Cu kN/m²	Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling Shear vane test = 108kN/m² Shear vane test = 116kN/m² Shear vane test = 132kN/m² Windowless sample hole completed at 2.0m depth
Į Į								·····	+										
]										
-	Ť						-	·											-
•									<u> </u>										
]										
*WATER	I ▼ Star ▼ War	 nding wa ter strike	⊢ + ter leve s	Upper s Respons Lower s	se zone AND B Bul eal TEST U Und KEY P Pist J Dist ES Env	k disturbed s disturbed sar ton sample turbed jar sa vironmental s	ample nple mple	K Permeability test SPT N N N in	5) Undi = SPT N *120 = ' cluding	s for each saturbed sa value (blo Fotal blows seating passing 42	ample b ows after s/pene	olow co er seat etration	ount ing) 1	9	リンプ	DE	Bright\ Bightw Feleph	vell Ba rell, Su one: 0	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ 11603 298 076 198 075

CLIENT	: c/o S	avills			PROJECT: Land to								GRO	UND	LEVEL						HOLE No. WS11	
LOGGED				CHECKED BY:	EXCAVATION METHOD	:	Window		•			L	coo	RDINA	ATES E	. N					SHEET 1 OF 1	
FIELDWO TEMPLAT		L LAGS BH B	ETA	DATE:			Uncased	a to 4.0	TTI				DAT	ES 30/	10/20)14 - :	30/10/	′201 [∠]	1		PROJECT NO. 995,SI	
ate/Time	Depth			-			Strata	9	Graphical Rep	resentation	Sa	mpling		u Testing					Testing	_	Additional Tests and Notes	
and Depth	of Casing	of Water	Piez.	Description of	Strata	Leg	Reduced Level	Depth	SPT 'N' '	Value 30 40	Depths	Туре	No.	Blows	SPT N	<425 %	WC PI	. LL %	ρ Mg/m	Cu kN/m²		
-	-	TI III		TOPSOIL (Desiccated dark brow clay with rootlets. Gravel of sub flint and chalk with very rare br	n sandy slightly gravelly pangular fine to coarse ck fragments)			0.00		30 40	0	-	4								Groundwater not encounterd duri	-
				Stiff pale brown grey mottled gree desiccated CLAY. Gravel of ang to coarse chalk.			4	0.30			0.20	- J	1								No collapse of sidewalls during dril	ling
				(LOWESTOFT FORMATION)		 	- C				 0.75	D	1									
-	_		∄1	1.10 Becoming brown dark grey to hard with depth 1.30 Orange brown sandy pock			4	-			1	c		3 2 4 4 4 6	18						Shear vane test = 104kN/m²	
							ō.				1.50	D	2								Shear vane test = 136kN/m²	
-	_						<u> </u>	_			- 2 	c		3 4 4 5 6 6	21						Shear vane test = 136kN/m²	
				2.80 Becoming dark brown dark depth	grey mottled with	-	0				2.50] D	3								Shear vane test = 120kN/m ² Shear vane test = 128kN/m ²	
-	_	- - - - - -						_			3	c		4 4 5 6 7	26						Shear vane test = 128kN/m ²	
						- - - - - - - - - -	<u> </u>														Shear vane test = 140kN/m ²	
	-	· I						⁻ 4.00			4	c		5 7 7 8 10 12	37						Windowless sample hole complete 50mm diameter monitorng well ins	
`WATER		ding water er strikes	leve	I PIEZOMETER Upper si Respons Lower si	e zone AND B eal TEST U KEY P	Bulk o Undis Pisto Distu	disturbed disturbed s sturbed san n sample rbed jar sa	ample nple mple	S Standard pene C Cone penetrat K Permeability to	ion test est S	(35) SPTN N = N*: incl) Undi: SPT N 120 = 1 luding	sturbed value (Fotal blo seating	l sample blows af ows/pen	blow co ter sea etration	ount ting) 1	Jec	(1)	Bright Bightv	well Ba vell, Su	Environmental Ltd Irns, Ipswich Road, Iffolk, IP10 0BJ 01603 298 076	SHEET 1 OF 1
				DEPTH All depths, level and t			onmental s	oil sampl	2	<	:425 San	nple %	passing	g 425 mi	cron sie	ve			Fax:	01603	298 075	

CLIENT	: c/o	Sav	ills		1			P	ROJEC	T: Lanc		North							- (KOL	JND L	EVEL						_ H	HOLE No. WS12		
LOGGED FIELDWO		CEI			CHECK DATE:	KED BY:		EX	CAVATI	ON METH	OD:	Windov Uncase			ı				C	OOR	RDINA	TES E	N					S	SHEET 1 OF 1		
TEMPLAT			AGS B	H BET								uncase	u (U 1	/ 111						ATE:	S 30/2	10/20	14 -	30/1	0/201	14		P	PROJECT NO. 995,SI		
ate/Time	Depth		epth'		·			•				Strat	a	Gr	aphical R	epresen	tation		oling/I		Testing			Lat	orator		ing	Α	Additional Tests and Notes		
and Depth	of Casing	gΙ	of Water	اخ		[Descripti	ion of Str	ata		Leg	Reduced Level	Depth			N' Value		Depths	Type v	lo. E	Blows	SPT N	<425 %	WC %	PL L	L % Mg	ρ C g/m³ kN,	Cu /m²			
		33 \			TOPSOIL (subangula fragments Firm brow subangula (LOWESTO	Dark bro r to subr of brick rn slightly r fine ch	own sligh rounded () y gravell	ntly grave I fine to co	lly clay. oarse fli	nt with		Level	1.68	0	SP1 10 20		40	0-0.10	J	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Blows	N N	<425 %	%	% 5	LL M	Ç/m³ kN,	G M Si Iri Iri Iri Iri Iri Iri Iri Iri Iri Ir	iroundwater not encontered of Actals, PAH, TPH, Moisture colulphate infiltration test undertaken at (1 ocollapse of sidewalls during hear vane test = 72kN/m² hear vane test = 60kN/m² hear vane test = 52kN/m² hear vane test = 72kN/m² hear vane test = 72kN/m² principle in the sample hole complepth	ntent, p	bH an depth 3
															:			1													
															·····			-													
_	1												-					4 -										-			
															·····			+													
															[].			1													
															·····			-													
*WATER	¥ Sta ▼ Wa	andir ater	ng wa strike	ter le	↓ — — — - vel PIEZOMI	ETER	Up Res Lov	per seal sponse zo wer seal	one Al	ND ST	B Bulk U Undi P Pisto J Distu	I disturbed disturbed sa sturbed sa n sample rbed jar sa conmental er Sample	sample mple mple	C Cor K Per	dard penetimeability	ation te	st Si	TN N=SI N*12	ndistu T N va) = Tot ing sea	rbed s due (bl al blov ating	sample l lows aft ws/pene	olow co er seat etration	ount ing) 1			Briq Big Tel	ghtwell htwell,	Barns Suffol : 016	ironmental Ltd s, Ipswich Road, lk, IP10 0BJ so 3298 076	HOLE No.	SHEET 1 OF 1

CLIENT	: c/o S	avills			PROJECT: Land to						GROUND LEVE	<u> </u>	HOLE No. WS13
LOGGED				CHECKED BY:	EXCAVATION METHOD:	:	Window		•		COORDINATES	E N	SHEET 1 OF 1
FIELDWO TEMPLAT			BH BET	DATE:		'	Uncased	to 4.0	m		DATES 30/10/2	014 - 30/10/2014	PROJECT NO. 995,SI
ate/Time		Dept					Strata	9	Graphical Representation		g/In-Situ Testing	Laboratory Testing	Additional Tests and Notes
and Depth	of Casing	of Wate	l iel	Description of	Strata	Leg	Reduced Level	Depth	SPT 'N' Value De	Depths 2	No. Blows SPT	<425 WC PL LL p Cu Mg/m³ kN/n	12
				TOPSOIL (Dark brown slightly si gravelly clay with rootlets. Grav subrounded fine to medium flir Stiff to very stiff gravelly CLAY. fine to coarse chalk and flint. (LOWESTOFT FORMATION)	el of subangular to t)	<u></u>	<u> </u>	0.40	0.21		1		Groundwater not encountered during drillin No collapse of sidewalls with depth
_	_			Soft to firm brown and orange I sandy slightly gravelly CLAY. Gr coarse flint. (LOWESTOFT FORMATION)	orown mottled slightly avel of subangular			1.00		1 -			Shear vane test = 52kN/m ²
_	_			Very stiff to hard pale brown gr CLAY. Gravel of subangular to s coarse chalk. (LOWESTOFT FORMATION)	ey mottled gravelly ubrounded fine to	O	4 - - - - -	1.50	1.50	50 D	2		Shear vane test = 52kN/m ²
							- - - -						Shear vane test = 68kN/m ²
_							d - - - - -	_	3.51	3 - 3 - 50 D	3		Shear vane test = 128kN/m²
-	_						- - - -	- 4.00		4 -			Windowless sample hole completed at 4.0r depth 50mm diameter monitorng well installed to
*WATER	▼ Star ▼ Wat	nding w ter strik	rater lev	vel PIEZOMETER Upper son Respons Lower so	e zone AND B eal TEST U KEY P J ES	Bulk o Undis Pistor Distur Enviro	disturbed s sturbed san n sample rbed jar sa onmental s	ample nple mple	,	(35) Undis N N = SPT N N*120 = T including	isturbed sample blow I value (blows after se Total blows/penetrati	ount ting) n Geosphere Brightwell B Bightwell, S	Environmental Ltd arns, Ipswich Road, uffolk, IP10 0BJ 01603 298 076 298 075

and	K BY: GE	L AGS BH E	Plez.	CHECKED BY: DATE:	EXCAVATION METHO	J:	Windov	viess sa	mpie	Γ					RDINA	TECT	E NI					CUEET 4 OF 4
te/Time D	REF: GE Depth of	Depth*						4+0 2 0) m				⊢	COO	אווטאי	1152	L IN					SHEET 1 OF 1
te/Time D	Depth of	Depth*		-			Uncase	u 10 Z.C	111					DATE	ES 30/	10/20	014 -	30/1	0/20	14		PROJECT NO. 995,SI
		of	¥				Strat	a	Gr	aphical Rep	resentation	San	npling		u Testing					y Testin	g	Additional Tests and Notes
		-		Description o	f Strata	Leg	Reduced Level	Depth		SPT 'N' 1 10 20	/alue 30 40	Depths	Туре	No.	Blows	SPT N	<425 %	WC %	PL I	LL p	Cu m³ kN/m²	2
			Ŧ	TOPSOIL (Dark brown slightly si	lty slightly sandy slightly			0.00		TT	J	0 -										Groundwater not encountered during dri
				gravelly CLAY with rootlets. Grato medium flint and chalk)	avel of subangular fine							0.15 -	J	1								Metals, PAH, TPH, Moisture content, pH a
			F	Stiff pale brown slightly gravelly	CLAY. Gravel of			0.30	1			1 :										Sulphate No collapse of sidewalls during drilling
				subangular to subrounded fine (LOWESTOFT FORMATION)	to coarse chalk.		Q			 		-										Shear vane test = 88kN/m ²
				Stiff dark brown and dark grey Gravel of subangular to subrou				0.60] [
				chalk. (LOWESTOFT FORMATION)	nded fille to coarse		0			.	·	· -										Infiltration test undertaken at 0.70m dep Shear vane test = 132kN/m ²
1				(LOWESTOTT TORMATION)								1 -										
				1.10 Becoming hard with depth		=	d		ļ		· · · · · · · · ·	-										
				J J 30pm							1	1 -										
							d			.	·	-										Shear vane test = 140kN/m ²
											 	1.50	D	1								
				1.70 Orange brown sandy clay p	oocket present	<u> </u>	0			.		· -										Shear vane test = 100kN/m ²
				, , ,	•	<u>-</u> -] [,
+			F				4	1.97			 	2 -										Windowless sample hole completed at 1.
												; :										depth
										.		-										
										1	1] [
									····	.												
] -										
									ļ	.		· -										
Ť												3 -										
										.		-										
										.] [
										 	1	_										
] -										
									1			1 :										
+								-				4 -										-
										1	1	-										
										.												
			. ot				_				<u> </u>] :										
		ding water er strikes	leve	PIEZOMETER Upper s Respons Lower s	se zone AND B eal TEST U KEY P	Bulk of Undis Pistor Distu	disturbed disturbed s sturbed sa n sample rbed jar sa onmental	sample mple mple	C Cor K Per	ndard pene ne penetrati meability te	st S	(35) SPT N N = 5 N*13	Undist SPT N v 20 = To ding s	turbed value (l otal blo seating	l sample blows af ows/pen	blow co ter sea etration	ount ting) n		De la	Brigh Bigh Tele	htwell Ba twell, Su phone: (Environmental Ltd arns, Ipswich Road, uffolk, IP10 0BJ 01603 298 076 298 075

CLIEN	T: c/o S	Savills	3		PROJECT: Land t	o the	North \	West of	f Haverhill		GR	OUND	LEVE	L						HOLE No. WS15
LOGGED		·		CHECKED BY:	EXCAVATION METHOD	J:	Window		•		со	ORDIN.	ATES I	ΕN						SHEET 1 OF 1
	ORK BY: G TE REF: G		BH BET	DATE:			Uncased	1 (0 2.0	· III		DA	TES 30,	/10/20	014 -	30/	10/20	014			PROJECT NO. 995,SI
Date/Time							Strata	9	Graphical Representation			itu Testin	Г			borato	ory Te	sting		Additional Tests and Notes
and Depth	of Casing	of Wat	er 🚡	Description o	f Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Depths 2	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m³	Cu kN/m²	
-	†		-	TOPSOIL (Desiccated dark brow	n slightly silty slightly	-		0.00	10 10 20 30 40	0 -										Groundwater not encountered during drilling
				gravelly desiccated CLAY with re subangular to subrounded fine		-		0.20		0.10	1									No collapse of sidewalls during drilling
				Stiff to desiccated pale brown a gravelly slightly cobbly desiccat	ed CLAY. Gravel of					1 1										The conapse of side frames during drining
				subangular to rounded fine to ((LOWESTOFT FORMATION)	coarse chaik					+ +										
						=	Q			1 1										
										0.75	1									
	+			1.00 Becoming hard and dark g	rev with denth	\equiv	đ	-		1 -										Infiltration test undertaken at 0.9m depth
				1.00 becoming hard dire durk g	rey with depth					1 1										
						=	C C		ļļ	+ +										
										1 1.										
							0		·····	1.50	2									
						<u> -°-</u>				1 1										
						<u> </u>	d			2 -										
	T							2.00] [Windowless sample hole completed at 2.0m depth
										1 1										
										+ +										
										1 1										
!									ļļ	1 1										
										1 1										
	+							-		3 -										-
										1 1										
i									·····	+ +										
]]										
										1 1										
]]										
	1									1 4										
										"]										
										1 1										
										+ +										
*WATER	l R ▼ Sta	nding v	vater lev	vel PIEZOMETER D Upper s	eal SAMPLE D	Small	disturbed	sample	S Standard penetration test	H H	ws for e	ach 75m	l m increr	nent						
	∑ Wa	ater stri	kes	vel PIEZOMETER Upper s Respons Lower s	se zone AND B eal TEST U	Bulk	disturbed s sturbed sar	ample	C Cone penetration test K Permeability test		disturbe	ed sample	blow c	ount		D	G	Geospl Brightv	here E vell Ba	invironmental Ltd Irns, Ipswich Road, Iffolk, IP10 0BJ 01603 298 076
				222	KEY P	Pisto	n sample rbed jar sa		,	N*120		olows/per			-	V		ightw	ell, Su	ffolk, IP10 0BJ
				DEPTH All depths, level and	E:	S Envir	onmental s		2	<425 Sample			icron sie	eve	(וכ) F	eiepn ax: 0	one: (1603 2	01603 298 076 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
				DEFITE All deputs, level and	uncknesses in metres W	· wate	Jampie								1750					

CLIENT	: c/o S	avill	s		PROJECT: Land to	o the	North	West of	Have	erhill			GR	OUND	LEVE	L					HOLE No. WS16
LOGGED				CHECKED BY:	EXCAVATION METHOD		Windov		•	ſ			cod	ORDIN	ATES	E N					SHEET 1 OF 1
FIELDWO TEMPLAT			S BH BET	DATE:			Uncase	u to 4.0	rm				DA	ΓES 31,	/10/20	014 -	31/1	10/201	L4		PROJECT NO. 995,SI
ate/Time		Dep		T '			Strat	a	Gr	aphical Rep	resentation		ing/In-Si	itu Testin					/ Testing		Additional Tests and Notes
and Depth	of Casing	Wa	fl≝	Description o	f Strata	Leg	Reduced Level	Depth	0 .	SPT 'N'	/alue 30 40	Depths 2	No.	Blows	SPT N	<425 %	wc %	PL L % 9	L ρ 6 Mg/n	Cu kN/m²	
	-			TOPSOIL (Dark grey brown sligh of fine to medium flint with occ	ntly gravelly clay. Gravel asional brick).			0.00	Ĭ	ļļ		0.10	1								Groundwater not encountered during d
				Firm becoming stiff dark yellow	brown clightly gravelly			0.30					1								No collapse of sidewalls during drilling
				desiccated CLAY. Gravel of fine occasional medium chalk.	to medium flint with		4			·····											
				(LOWESTOFT FORMATION) 0.50 Rootlets present																	
							đ			 		1 1									
=	_						4	-				1 -									_
												<u> </u>									
						=	đ		<u></u>			<u> </u>									
				1.50 No desiccation below 1.5r sandy and firm with depth	n and becoming slightly		đ			[]]]									
]]									
-	-					\equiv	4	-				2 -									-
				2.20 Recoming gravally and pal	a gray orango brown	_ <u></u>	<u> </u>					; ;									
				2.20 Becoming gravelly and pal mottled below 2.2m. Gravel is flint	fine to coarse chalk and	 _o_						; ;									
							d			 	 	† †									
						_ 	4					:									
	_											3 -									_
							•					<u> </u>									
										<u> </u>		<u> </u>									
									-			<u> </u>									
							d		ļ			<u> </u>									
						_ <u>o_</u>															
	_							4.00		ļļ		4 7									Windowless sample hole completed at 4
												; ;									
				<u> </u>					ļ	<u> </u>		1 1					Ш				
WATER	▼ Star ▼ Wat			vel PIEZOMETER Upper s Respon Lower s	se zone AND B eal TEST U KEY P	Bulk o Undis Pistor	disturbed disturbed saturbed saturbed n sample rbed jar sa	sample mple	C Cor	ndard pene le penetrat meability to	on test	SPTN N = SPT	disturbe N value = Total b	ed sample (blows a llows/per	blow c	ount iting)		DU	Bright Bight	well Ba well, Su	invironmental Ltd irns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076 298 075
				DEPTH All depths, level and	ES	Envir	onmental :		e		<	425 Sample			icron sie	eve					298 075

CLIENT	: c/o S	avill	5		PROJECT: Land t							GRO	DUND	LEVEL	•					HOLE No. WS17		
LOGGED				CHECKED BY:	EXCAVATION METHO	J:	Window		•			coc	ORDIN	ATES I	<u> </u>					SHEET 1 OF 1		
FIELDWO FEMPLAT			BH BET	DATE:			Uncased	to 2.0	m			DAT	ES 31/	10/20)14 - 31	/10/2	2014			PROJECT NO. 995,SI		
te/Time		Dep		1			Strata	9	Graphical Rep	resentation			tu Testin			Labora		sting		Additional Tests and Notes		-
and Depth	of Casing	Wa	. I ë	Description o	f Strata	Leg	Reduced Level	Depth	SPT 'N' \		Depths ≥	No.	Blows	SPT N	<425 W	C PL %	LL %	ρ Mg/m³	Cu kN/m²			
-	-		-	TOPSOIL (Dark brown slightly gr	ravelly clay. Gravel is			0.00	0 10 20	30 40	0 -									Groundwater not encountered	with de	— epth
				fine to medium flint with occasi	onal brick).				[]		0.10] J	1								No colleges of side wells during	ماناانم	
				Firm dark brown slightly gravell	y CLAV Gravel of fine			0.35	l	1	1 1									No collapse of sidewalls during	arilling	
				to coarse flint and chalk. (HEAD DEPOSITS)	y CLAT. Graver of fine				 	 	+ +											
				(12.2.2.2.3.00.10)							1 1											
				Firm becoming stiff dark yellow	brown gravelly CLAY.	<u> </u>		0.80	 		+ +											
4	_			Gravel of fine to coarse flint and (LOWESTOFT FORMATION)	d chalk.		4	_			1 1									-		
									<u> </u>	1	<u> </u>											
				1.30 Becoming dark grey and d	ark orange brown		đ				1											
				mottled with depth]]											
				4.CF Cabbles of shall assessed		==	đ		<u> </u>		+ +											
				1.65 Cobbles of chalk present					ļļļ		1											
				L				- 2 00			2 -											
								2.00	 		-									Windowless sample hole comp	leted at	: 2
]]											
									<u> </u>		+ +											
]]											
									<u> </u>		1 1											
											+ +											
1	_							-			3 -											
									<u> </u>		+ +											
									ļ		1 1											
									ll	 	1 1											
									<u> </u>													
											1 1											
+	-							-	 	1	4 -									-		
]											
										1												
	<u> </u>	<u> </u>		<u> </u>					<u> </u>	<u>.ll</u>	1 1		<u> </u>									_
WATER	▼ Star ▼ Wat	nding v ter stri	vater le kes	vel PIEZOMETER Upper s Respon: Lower s	se zone AND B eal TEST U KEY P	Bulk of Undis Pistor Distur	disturbed s disturbed s sturbed san n sample rbed jar san	ample (nple I mple	Standard pene Cone penetrati Permeability te	on test st S	(35) Und PT N N = SPT I N*120 = including	isturbed N value Total bl g seating	d sample (blows a lows/per g	blow co fter sea netration	ount ting) n	6	D B B	Brightw Bightwe Telepho	vell Ba ell, Su one: 0	invironmental Ltd irns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076	HOLE No.	יייייייייייייייייייייייייייייייייייייי
				DEPTH All depths, level and			onmental s r Sample	oil sample		<	425 Sample 9	% passin	ng 425 m	icron sie	eve	O	⊌ Ė	ax: 0	1603 2	298 075	.	

CLIEN	Γ: c/o S	Savil	ls		PROJECT: Land to						GRO	DUND	LEVE							HOLE No. WS18
LOGGED	BY: LF ORK BY: G	·		CHECKED BY:	EXCAVATION METHOD:		Window		·		coc	ORDIN	ATES	ΕN						SHEET 1 OF 1
	JRK BY: G TE REF: G		SS BH BE	DATE:			Uncased	1 to 4.0	m		DAT	ΓES 31,	/10/2	014 -	31/	10/2	014			PROJECT NO. 995,SI
Date/Time		Dej	pth* z				Strata	1	Graphical Representation		ng/In-Si	tu Testin	g			aborat	ory Te	esting		Additional Tests and Notes
and Depth	of Casing		of 를 ater	Description	of Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Depths 원	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m	Cu kN/m²	
	†		+	TOPSOIL (Dark brown slightly	gravelly clay with			0.00	0 10 20 30 40	0 -										No collapse of sidewalls during drilling
				rootlets. Gravel of angular to s medium flint and infrequent of	narcoal fragments).					-										
				Firm becoming stiff dark brow Gravel of angular to subround	n slightly gravelly CLAY.			0.30		1										
				(HEAD DEPOSITS)	ed fille to filedidiff fillit.	<u> </u>	0			-										
										1										
						==	đ		0	.80 D	1									
31/10	7	1.0	00					-		1 -										Seepage inflow of water at 1m
							4			1										Seepage iiiiow or water at 1111
						° 				.20 D	2									
								4.50		1										
				Firm becoming stiff orange bro Gravel of subrounded to roun	dod fine to coarce chalk			1.50		-										
				and angular to subrounded fir (LOWESTOFT FORMATION)	e to coarse flint.		9			1										
									····											
•	Ť					<u> </u>				2 -										
				2.20 Becoming brown grey mo	ttled with depth		d			-										
]										
							4			1										
]										
							d			1										
	+					<u>-</u> -		-		.00 3 D	3									_
							d			.00										
						<u>-</u> -				-										
							d			1										
										+										
						=	d			1										
	Ť							4.00		4 -										Windowless sample hole completed at 4.0m
										+										
]										
*WATEF	 R ▼ Stai	nding	water le	+	seal SAMPLE D	<u>⊢ −</u> Small	disturbed	sample	S Standard penetration test Blo	ws SPT blow	s for ea	 ach 75mr	n increi	l ment			-			Z = 12 (a) (a =
	<u>∇</u> Wa	ater st	rikes		nse zone AND B seal TEST U	Bulk o	disturbed s sturbed san	ample	C Cone penetration test	(35) Und N N = SPT I	isturbe	d sample	blow c	ount		D	IN E	3riahtv	vell Ba	invironmental Ltd irns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076
				221	KEY P	Pistor	n sample rbed jar sai		,	N*120 =	Total b	lows/per			-	V		Bightw	ell, Su	160k, IP10 0BJ
				DEPTH All depths, level and	ES	Envir	onmental s		<42	25 Sample 9			icron si	eve	7	•)				01603 298 076 P
				DEPTH All depths, level and	uncknesses in metres W	vvale	ı sampie								123			•		-

CLIENT	: c/o S	avill	S		PROJECT: Land t	o the	North \	West of	f Hav	erhill			GR	OUND	LEVE	-					HOLE No. WS19
LOGGED				CHECKED BY:	EXCAVATION METHOD	J:	Window			r			cod	ORDIN	ATES	E N					SHEET 1 OF 1
FIELDWO TEMPLAT			BH BET	DATE:			Uncased	ı to 4.0	m				DAT	ΓES 31,	/10/20) 14 -	31/1	0/201	4		PROJECT NO. 995,SI
ate/Time		Dep		,			Strata	3	Gr	aphical Repr	esentation		ng/In-Si	tu Testin		<u> </u>			Testing		Additional Tests and Notes
and Depth	of Casing	0	Fie J	Description o	f Strata	Leg	Reduced Level	Depth	0	SPT 'N' V 10 20	alue 10 40	Depths 같	No.	Blows	SPT N	<425 %	wc %	PL LI	L ρ Mg/m	Cu kN/m²	
-	-		20	TOPSOIL (Dark brown gravelly was Gravel of frequent fine to coars	ery desiccated clay. e flint and chalk).			0.00		Ţ		0 -									Groundwater not encountered during drilli
				·	•																No collapse of sidewalls during drilling
				Dark brown pale grey mottled g desiccated CLAY. Gravel of fine	ravelly cobbly very			0.40				† †									
				chalk with frequent cobbles of (LOWESTOFT FORMATION)	chalk.	=	9					1									
										.		}									
-	-							-				1 -									-
							q				[
										.	ļ										
												† †									
							0			:		† †									
						<u> </u>				· · · · · · · · ·		2 -									
							<u> </u>					-									
							•]									
]									
							4]]									
				2.80 Becoming dark grey with d	epth	_°_	<u> </u>														
-	-			3.00 No desiccation below 3.0m	1			-				3 -									_
						\equiv	Q			:		† †									
							q			.											
-	_		EH:				1	4.00				4 -									Windowless sample hole completed at 4.0
											ļ										50mm diameter monitorng well installed
										:	ļ										
WATER	¥ Stai	l nding v	water lev	vel PIEZOMETER Dupper s								lows SPT blov							Cons	hore 5	invironmental I td
	<u>∇</u> Wa	ter str	kes	Respons	eal TEST U	Undis	disturbed sar sturbed sar n sample			ne penetration meability tes		PTN N = SPT	N value	d sample (blows a lows/per	fter sea	ting)	6	bib	Bright	well Ba	invironmental Ltd irns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076 298 075
					j	Distu	rbed jar sa onmental s		2		<	includin 425 Sample	g seatin	g			7	77	Teleph	none: (ffolk, IP10 0BJ 01603 298 076
				DEPTH All depths, level and								o Jumple	passii				-		Fax: (01603	298 075

CLIENT	: c/o S	avills			PROJECT: Land to						GROUN	D LEV	'EL						HOLE No. WSA
LOGGED				CHECKED BY:	EXCAVATION METHOD):	Window		•		COORDI	NATE	SEI	١					SHEET 1 OF 1
FIELDWO TEMPLAT		L L AGS BH E	BETA	DATE:			Uncased	το 4.0	m 		DATES 1	8/11/	/2014	ļ <u>-</u> 18	3/11	/201	4		PROJECT NO. 995,SI
Date/Time		Depth*	Piez.				Strata				/In-Situ Tes	T					Testing		Additional Tests and Notes
and Depth	of Casing	of Water	Ē	Description o	f Strata	Leg	Reduced Level	Depth	SPT 'N' Value Depths	Туре	No. Blov	vs SP	T <4	25 W	C P	L LL 5 %	ρ Mg/m	Cu kN/m²	
-	-		1	TOPSOIL (Dark brown gravelly s	lightly silty clayey sand	-	1	0.00	0 1										Groundwater not encountered during drilling
				with occasional rootlets. Gravel subrounded fine to medium flir				0.25	0.10	J	1								No collapse of sidewalls during drilling
				Firm becoming very stiff yellow Gravel of angular to subrounde and subrounded to rounded fir	brown gravelly CLAY. d fine to coarse flint			0.25	0.30	J	2								Metals, PAH, TPH, Moisture content, pH and
			Ħ·1	(LOWESTOFT FORMATION)			4												Sulphate
		ŀ		0.50 - Becoming desiccated with 0.60 - 1.00 - Becoming dark gre	n depth y brown with depth	_ o _													
		:				_ <u>_</u> _			 										
_	_		ĦI	100 100 0				_	1-	С									_
			1	1.00 - 4.00 - Becoming grey bro	wn mottled with depth	<u> </u>	}		 -		11 1 9 8 8 9	3	١						
		ŀ	#1				1		1		89	,							
							d												
						<u>-</u>													
		ŀ				==-	4		ļ										
-	†		∄.			<u>-</u>		-	2 -	С	66		L						-
		ŀ	∄:				4		 		89								
l			Ħŀ						1										
							4												
			1						1										
-							4		<u> </u>										
-	_	<u> </u>				<u>-</u> -		_	3 -	С	6.8	3 40							-
							4		<u> </u>		99	9	,						
									1		101								
						_ - _			1										
							1		ļļļļ										
-	 							4.00	4 -	С	89		9						Windowless sample hole completed at 4.0m
									ļ		10 1 13 1								
									_										
		<u> </u>	-+			<u> </u>	1	<u> </u>											
*WATER	¥ Stan ▼ Wat	ding watei er strikes	r leve	el PIEZOMETER Upper s Respons Lower s	se zone AND B eal TEST U KEY P	Bulk o Undis Pistor Distu	disturbed disturbed s sturbed sar n sample rbed jar sar onmental s	ample nple mple	K Permeability test SPT N N = SI N*12 includ	Jndist PT N v O = To ding s	curbed sam value (blow otal blows/p eating	ple blov s after s penetrà	v coun seating tion	t	(I)	D	Bright Bight Telep	well Ba vell, Su hone: (invironmental Ltd irns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076
				DEPTH All depths, level and				on sample	\$425 Samp	ле %	Jassing 425	пистоп	sievė		U		Fax:	01603	298 075

CLIEIVI	Γ: c/o S	avi	lls			PROJECT: Land t	o the	North	West o	f Hav	<u>verhill</u>			GRO	UND	LEVEL	•					HOLE No. WSB
LOGGED					CHECKED BY:	EXCAVATION METHO	J:	Windov		•	er			coo	RDINA	ATES I	<u> N</u>					SHEET 1 OF 1
FIELDWO TEMPLAT			GS BH F	SETA	DATE:			Uncase	u to 2.0	, m				DATE	ES 18/	11/20)14 -	18/1	L1/20	14		PROJECT NO. 995,SI
ate/Time			pth*		-			Strata	a	Gı	raphical Representation		Samplin			_	L.,		borato		ing	Additional Tests and Notes
and Depth	of Casing		of ater	Piez.	Description o	f Strata	Leg	Reduced Level	Depth	0	SPT 'N' Value	Dept		No.	Blows	SPT N	<425 %	wc %	PL %	LL % M	ρ Cu g/m³ kN/r	n ²
<u>-</u>					TOPSOIL (Dark brown slightly grootlets. Gravel of angular to sumedium flint)	brounded fine to			0.00			0.20	0 -	1								Groundwater not encountered during drill No collapse of sidewalls during drilling Metals, PAH, TPH, Moisture content, pH ar Sulphate
					Firm becoming stiff light orange Gravel of angular to subrounde and subrounded fine to coarse (LOWESTOFT FORMATION)	e brown gravelly CLAY. d fine to coarse flint chalk		•	0.30			0.40] 1	2								Metals, PAH, TPH, Moisture content, pH as Sulphate
_					0.80 - Becoming brown grey mo	ottled with depth		4	_				1 -									Infiltration test undertaken at 0.69m dept
_	_							•	- 2.00				2 -									Windowless sample hole completed at 2.0 depth
												-										
_									_				3 -									
_	<u> </u>								_				4 -									-
WATER	t ¥ Sta ∇ Wa			leve	el PIEZOMETER Upper s Respon: Lower s	se zone AND B eal TEST U KEY P	Bulk (Undis Pisto Distu	I disturbed disturbed sa sturbed sa n sample rbed jar sa conmental s	sample mple mple	C Co K Pe	andard penetration test one penetration test rmeability test	SPT N I	SPT blows (35) Undi N = SPT N N*120 = 1 ncluding Sample %	sturbed value (l rotal blo seating	l sample blows af ows/pen	blow co ter sea etration	ount ting) n		bu	Bri Bio	ghtwell E htwell, S	Environmental Ltd sarns, Ipswich Road, suffolk, IP10 0BJ 01603 298 076 3 298 075

CLIENT	: c/o S	avills			PROJECT: Land to		North	West o	f Hay	verhill		GRC	DUND	LEVE							HOLE No. WSC
OGGED I		-1		CHECKED BY: DATE:	EXCAVATION METHOD:		Windov Uncased			ICI		COC	RDINA	ATES I	E N						SHEET 1 OF 1
	RK BY: GE E REF: GE		H BETA				oncase	J 10 4.C	ווו כ			DAT	ES 18/	11/20)14 -	18/1	1/20	14			PROJECT NO. 995,SI
ite/Time	Depth	Depth*					Strat	9	G	Graphical Representation			u Testin				orato		sting		Additional Tests and Notes
and Depth	of Casing	of Water	Piez.	Description of	Strata	Leg	Reduced Level	Depth		SPT 'N' Value	Depths 글	No.	Blows	SPT N	<425 %	wc %	PL %	LL % N	ρ ∕lg/m³ l	Cu kN/m²	
-	=			TOPSOIL (Dark brown slightly gr occasional rootlets. Gravel of ar fine to medium flint and occasion	avelly clay with gular to subrounded and fine brick			0.00		10 20 30 40	0 -				,~	,,	70	70			No collapse of sidewalls during drilling
				fragments) Firm brown slightly gravelly CLA subrounded fine to medium flin (HEAD DEPOSITS)	Y. Gravel of angular to t	<u>-</u> -	•	0.30			0.20 J 0.40 J	2									No collapse of sidewalls during drilling
				0.60 - Becoming slightly sandy v	with depth																
-	-			1.00 - 1.50 - Becoming soft with	depth	- - - - - -	- - -	-			1 - c		11 11 22	6							
				Firm becoming stiff yellow brow gravelly CLAY. Gravel of angular coarse flint and frequent subroi to coarse chalk (LOWESTOFT FORMATION)	to subrounded fine to		- -	1.50													
	_						d - - - -				2 - c		43 43 55	17						•	-
	-						α - - -				3 -										
	7	7 3.50				 - - - -	<u> </u>				C		33 44 56	19							50mm diameter monitoring well installed 3.0m
18/11		y 3.5U					- - -														Inflow of water at 3.5m
+	_							- 4.00			4 - c		4 4 6 6 6 8	26							Windowless sample hole completed at 4.0 depth
 WATER	▼ Stan ∇ Wat			el PIEZOMETER Upper su Respons Lower su	e zone AND B real TEST U KEY P	Bulk of Undis	disturbed sturbed saturbed saturbed saturbed saturbed far sample	ample mple	C Co	itandard penetration test Bl Cone penetration test Permeability test SF	ows SPT blow (35) Und PTN N = SPT N N*120 = including	sturbed I value Total bl	d sample (blows at ows/per	blow c	ount ting)	D		Br Bi	rightwe ightwe	ell Bai II, Suf	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ p1603 298 076
				DEPTH All depths, level and t	ES	Envir	onmental s		le	<4	125 Sample 9			icron sie	eve	C		F	ыерно ах: 01	603 2	01603 298 076 298 075

SD	HOLE No. WSD						L	.EVEI	UND	GRC				hill	Have	Vest of	North \	to the	PROJECT: Land t	P				/ills	c/o Sa	LIENT
1	SHEET 1 OF 1						ΕN	TES	RDIN/	COC					•		Window	יטו:	EXCAVATION METHOD	EX	BY:	CHECKED E				OGGED I
. 995,SI	PROJECT NO. 99			014	11/2	18/	014 -	11/2	ES 18/	DAT					III	ιο 2.0	Jncased					DATE:	ETA	AGS BH BE		ELDWOI EMPLAT
	Additional Tests and I				aborate			_			Samplii		sentation	hical Repre	Gra		Strata								Depth	e/Time
		Cu kN/m²	ρ Mg/m³	LL %	PL %	WC %	<425 %	SPT N	Blows	No.	ths de	D	lue 0 40	SPT 'N' Va	0 10	Depth	Reduced Level	Leg	f Strata	cription of Str	Desc		P.E	of Water	of Casing	and Depth
t encountered during dril lewalls during drilling , Moisture content, pH ai	No collapse of sidewa Metals, PAH, TPH, Mo									1	0 -	0.2				0.00		2	clay with occasional fine	ly sandy clay int)	wn slightl avel of fli	TOPSOIL (Brow to medium gra	Ť			
ndertaken at 0.55m dept	Sulphate Infiltration test under									2],	0.4				0.30			vn CLAY with occasional I chalk	llow brown C f flint and cha TION)	g stiff yel gravel of FORMAT	Firm becoming fine to coarse g (LOWESTOFT F				
acitalicii acolosiii acpe																			y/orange brown	pale grey/or	ecoming	0.70 - 2.00 - Be mottled.				
	-										1 -					-										
ole hole completed at 2.	- Windowless sample b										2 -					⁻ 2.00										-
oie noie completed at 2.	depth																									
											-	-														
												• •														
	-										3 -	-				-										
	_	-									4 -					-										
											-												1			
HOLE No.	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ 11603 298 076	ell Barı ell, Suff	Brightv Bightw	DE	D		ount iting) in	blow c ter sea etràtio	sample blows af ows/pen	sturbed I value Total bl seating	(35) Und N = SPT N*120 = including	SPT N	n test	lard penetr penetratio eability tes	C Cone K Perm	mple ple iple	isturbed s turbed sar sample bed jar sa	B Bulk o U Undis P Pistor I Distur	se zone AND B eal TEST U KEY P	Upper seal Response zo Lower seal		I PIEZOMETER	leve	ng water l strikes	Stand Wate	WATER
)	rns. Ipswich Ro	ell Barı ell, Suff one: 0'	Brightv Bightw Feleph	DE	シシン	9	ount iting) in	blow c ter sea etràtio	sample blows af ows/pen	sturbed I value Total bl seating	(35) Und N = SPT N*120 =	SPT N	n test	penetratio	C Cone K Perm	mple ple iple	isturbed s turbed sar sample bed jar sai inmental s	B Bulk o U Undis P Pistor J Distur ES Enviro	se zone AND B eal TEST U KEY P	Response zo Lower seal			leve	ng water le strikes	Stand Wate	WATER

CLIENT	: c/o S	avills			PROJECT: Land to	the	North \	Nest of	Haverhill		GRO	DUND I	LEVEI						HOLE No. WSE
LOGGED FIELDWO		FI		CHECKED BY: DATE:	EXCAVATION METHOD:		Window Jncased		•		coc)RDIN <i>A</i>	TES	E N					SHEET 1 OF 1
TEMPLAT			I BETA										_	014 - 18					PROJECT NO. 995,SI
Date/Time and	Depth of	Depth*	Piez.				Strata	l I	Graphical Representation		ng/In-Sit	tu Testing			Laborate				Additional Tests and Notes
Depth	Casing	Water		Description of	Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Depths d ∠	No.	Blows	SPT N	<425 W0	PL %	LL %	ρ Mg/m³	Cu kN/m²	
	<u> </u>	<u> </u>		TOPSOIL (Dark grey slightly sand fine gravel of flint and brick) Firm yellow brown sandy CLAY of speckling (HEAD DEPOSITS)				0.40		0 -									No collapse of sidewalls during drilling Rising to 0.8m on completion
18/11	7	1.80		Stiff dark brown/pale grey mott Gravel is fine to coarse flint and (HEAD DEPOSITS)	led gravelly CLAY. chalk			1.20		C		11 23 23	10						
+ 20 mins		0.80		Orange brown fine to medium g fine to medium flint (HEAD DEPOSITS) Stiff dark brown/pale grey mott Gravel is fine flint and chalk (LOWESTOFT FORMATION) 2.25 - becoming dark grey				2.00		2 - c		3 4 4 5 5 5	19						Moderate inflow of water at 1.8m
31-10-14, LF,36.GF3 GIN I 3 ID AGS 3.	_							_		3 - c		33 44 57	20						50mm diameter monitoring well installed to 2.6m
995,SI - NW MAVERFILL,	_							- 4.00		4 - c		33 45 59	23						Windowless sample hole completed at 4.0m depth
*WATER	▼ Star ▼ War	nding wat ter strikes	er leve	el PIEZOMETER Upper se Respons Lower se	e zone AND B real TEST U KEY P J ES	Bulk d Undist Piston Distur Enviro	listurbed s turbed sar sample bed jar sa onmental s	ample nple mple	,	(35) Und PTN N = SPT I	listurbe N value Total bl g seating	d sample (blows af lows/pen	blow c ter sea etratio	ount ting) n	90	B B T	rightw ightwe elepho	ell Bar ell, Suf one: 0	nvironmental Ltd rns, Ipswich Road, folk, IP10 0BJ 1603 298 076 198 075

LOGGE	ENT: c/o Savills GED BY: SG CHECKED BY:				PROJECT: Land to	the	North V	Nest o	f Haverhill			GRO	UND	LEVE	L						HOLE No. WSF
		EI		CHECKED BY:	EXCAVATION METHOD:		Window		•			coo	RDINA	ATES	ΕN						SHEET 1 OF 1
	ORK BY: G		вн вет	DATE:			Jncased	1 to 2.C	· III			DAT	ES 18/	11/20	014 -	18/	11/20	014		_	PROJECT NO. 995,SI
Date/Tim							Strata		Graphical Representation		Sampling	g/In-Sit	u Testing				aborato		sting		Additional Tests and Notes
and Depth	of Casing	of Wat	er	Description o	of Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Dep	ths A	No.	Blows	SPT N	<425 %	wc %	PL %	LL %	ρ Mg/m³	Cu kN/m²	
	†		-	TOPSOIL (Dark grey slightly san	dy clay with occasional			0.00	7 7 70 40	1	0 -										
				fine gravel of flint and brick)				0.25	ļ	0.20	.	1									No collapse of sidewalls during drilling Metals, PAH, TPH, Moisture content, pH and
				Firm becoming soft orange bro occasional fine to medium grav	wn sandy CLAY with rel of flint	<u> </u>		0.25			1	-									Sulphate
				(HEAD DEPOSITS)		<u></u>				0.45	- 1	2									
						<u>:-</u>				1	1										
					•	 -			· · · · · · · · · · · · · · · · · · ·		+										
	+					<u>:-</u> :		_		-	1 -										_
					•	<u> </u>					+										
18/11	7	1.30				<u>:</u> -]										Inflow of water at 1.3m
						<u>:</u>				_]										illiow of water at 1.5iii
				Stiff dark brown/pale grey mot	tled slightly gravelly	<u></u> _		1.60]]										
				Stiff dark brown/pale grey mot CLAY. Gravel is fine to medium (LOWESTOFT FORMATION)	flint and chalk			-100			1										
				(20112010111011111111111111111111111111	-				ļ		+										
	Ť							2.00		1	2										Window sample hole completed at 2.00m dept
									ļļ		+										
]	1										
									 	+	+ 1										
										1	1										
									· · · · · · · · · · · · · · · · · · ·		+										
	1							_]	3 -										-
											1										
]										
										1]										
]]										
										1]										
	†							<u> </u>		1	4 -										-
									ļļ	+	+										
										1	1										
		<u> </u>		<u> </u>				<u> </u>	<u> </u>	4			<u> </u>								
*WATE	R ¥ Sta ▼ Wa	nding v ter stri	vater le	vel PIEZOMETER Upper s Respon Lower s	se zone AND B B seal TEST U U KEY P P J D ES E	Bulk d Undist Piston Distur Enviro	listurbed sa turbed san sample bed jar sar onmental se	ample nple mple		SPT N	SPT blow: (35) Undi: N = SPT N N*120 = 1 including Sample %	sturbed I value (Total blo seating	d sample (blows af ows/pen	blow c fter sea retratio	ount ting) n		びい	B B T	rightv lightw eleph	vell Bar ell, Sut one: 0	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076 298 075

CLIENT	: c/o S	avills			PROJECT: Land t						GROUND	LEVE	L					HOLE No. WSG
LOGGED I				CHECKED BY:	EXCAVATION METHOD):	Window		•		COORDIN	IATES	E N					SHEET 1 OF 1
FIELDWO TEMPLAT			вн вет	DATE:		1	Uncased	ı to 2.0	ווו ע		DATES 19)/11/2	014 -	19/1	1/201	14		PROJECT NO. 995,SI
ate/Time		Depti					Strata	9	Graphical Representation	T.	ng/In-Situ Testi					y Testir	ıg	Additional Tests and Notes
and Depth	of Casing	of Wate	Fi I	Description o	f Strata	Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40	Depths dd ∠	No. Blows	SPT N	<425 %	wc %	PL L	L Mg/	Cu m³ kN/m²	2
1	-			TOPSOIL (Dark brown slightly g clay with occasional rootlets. G subrounded fine to medium fli	ravel of angular to			0.00		0 -								Groundwater not encountered during drilli Metals, PAH, TPH, Moisture content, pH an Sulphate No collapse of sidewalls during drilling
				Dark orange brown fine to med (HEAD DEPOSITS)				0.40										
	_			Firm dark orange brown very s CLAY. Gravel of angular to subr flint (HEAD DEPOSITS)	andy slightly gravelly ounded fine to medium		Č	0.70										Shear vane test = 70kN/m² Infiltration test undertaken at 0.73m depth
				1.00 - Becoming gravelly with d flint 1.10 - 1.70 - Becoming black sp	•		o o			']								Shear vane test = 50kN/m ²
							- -											
				Orange brown clayey gravelly S to rounded fine to coarse chalk (HEAD DEPOSITS)	AND. Gravel of angular and flint	-0-	- : :	1.70										
1	_				- — — — — — — -			2.00		2 -								Windowless sample hole completed at 2.0 depth
	_							_		3 -								_
										·!								
+	_							_		4 -								-
WATER	▼ Star ▼ Wat	iding w er strik	rater le	vel PIEZOMETER Upper s Respon Lower s	se zone AND B eal TEST U KEY P	Bulk o Undis Pistor	disturbed disturbed s sturbed sar n sample rbed jar sa	ample nple	S Standard penetration test E C Cone penetration test K Permeability test S	(35) Und 1 TPS = N N TP	isturbed samp N value (blows Total blows/po	le blow o after sea	count ating)		ST.	Brig Bigh	htwell Ba ntwell, Su	Environmental Ltd arns, Ipswich Road, iffolk, IP10 0BJ 01603 298 076
				DEPTH All depths, level and	ES	S Enviro	onmental s		e <	425 Sample 9		nicron si	eve	C		Fax	pnone: (: 01603	01603 298 076 P

CLIENT	: c/o S	avil	ls		PROJECT: Land t								GRO	DUND	LEVEL	•					HOLE No. WSH
LOGGED		EI		CHECKED BY:	EXCAVATION METHO	D:	Windov		•	1			coc	ORDINA	ATES E	E N					SHEET 1 OF 1
FIELDWO TEMPLAT			S BH BE	DATE:			Uncase	u to 2.C	ווו ע				DAT	ES 19/	11/20)14 -	19/11	/201	4		PROJECT NO. 995,SI
ate/Time		Dep		T .	•		Strat	a	Gr	raphical Represe	entation		ng/In-Si	tu Testin		L ,			Testing		Additional Tests and Notes
and Depth	of Casing	0	of lä	Description	of Strata	Leg	Reduced Level	Depth	0	SPT 'N' Valu		Depths ≥	No.	Blows	SPT N	<425 %	WC 1	PL LL % %	ρ Mg/m	Cu kN/m²	
	-		Γ	TOPSOIL (Dark brown slightly angular to subrounded fine	gravelly clay. Gravel of o medium flint)			0.00				0 -									Groundwater not encountered during drill
				Firm orange brown slightly g	avelly CLAY with			0.30				0.20 J	1								Borehole collapsed to 1.7m on completion Infiltration test undertaken at 0.24m depth
				occasional sandy pockets. Gi subrounded fine to medium (HEAD DEPOSITS)	flint	<u> </u>	d					0.40] J	2								
				0.40 - Becoming orange browdepth	n/grey mottled with	_ <u>o_</u>	<u> </u>														Shear vane test = 61kN/m ²
_	_			0.90 - Becoming slightly sand	y with depth			-				1 -									Shear vane test = 40kN/m²
			<u>-</u>															Shear vane test = 36kN/m²			
	1.70 - 2.00 - With a sandy clay Soft yellow brown/grey mott			•	1.80																
_	_			chalk	tled sandy gravelly CLAY. If ine to coarse flint and		2	2.00		· · · · · · · · · · · · · · · · · · · · · · · · · · · · ·		2 -									Shear vane test = 23kN/m ²
				(LOWESTOFT FORMATION)																	Windowless sample hole completed at 2.0 depth
										. .											
												<u> </u>									
												3 -									_
												<u> </u>									
												4 -									
WATER	▼ Star ▼ Wa			evel PIEZOMETER Uppe Resp Lowe	onse zone AND B r seal TEST U	Bulk J Undi	··l I disturbed disturbed s sturbed sa n sample	sample	C Co	ndard penetrat ne penetration meability test	test	(35) Uno PT N N = SPT	disturbe N value	d sample	blow co	ount ting)	d	T	Bright	well Ba	Invironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ 01603 298 076 298 075
				DEPTH All depths, level a	J E	Distu S Envir	rbed jar sa onmental		e		<	includin 425 Sample	g seatin	g			ō	2	Teleph	none: (11603 298 076 298 075

CLIENT	: c/o S	avill	S			PROJECT: Land to							GR	DUND	LEVE	L						HOLE No. WSI
LOGGED I		-1			CHECKED BY:	EXCAVATION METHOD:	:	Window		•	er		cod	ORDIN	ATES	ΕN						SHEET 1 OF 1
FIELDWO TEMPLAT			S BH BE	ГΑ	DATE:			Uncased	ı to 2.0	וווע			DAT	ΓES 19,	/11/2	014 -	19/1	11/20	014			PROJECT NO. 995,SI
ate/Time	Depth	Dep						Strata	3	G	raphical Representation		ng/In-Si	tu Testin	g		La	borato	ory Te	sting		Additional Tests and Notes
and Depth	of Casing	Wa	f <u>ë</u> ter		Description of	Strata	Leg	Reduced Level	Depth	0	SPT 'N' Value 10 20 30 40	Depths d ≥	No.	Blows	SPT N	<425 %	wc %	PL %	LL %	ρ Mg/m³	Cu kN/m²	
	_			ar	OPSOIL (Dark brown slightly gr ngular to subrounded fine to n	nedium flint)			0.00			0.10	1									Groundwater not encountered during drilli Metals, PAH, TPH, Moisture content, pH an Sulphate
				Fi of (H	irm brown slightly sandy slightl f angular to subrounded fine to HEAD DEPOSITS)	y gravelly CLAY. Gravel o medium flint		<u> </u>	0.25			0.30	2									No collapse of sidewalls during drilling
					irm becoming stiff brown/grow	mottled gravelly CLAV		- -	0.90													Shear vane test = 62kN/m²
+	-			ar	irm becoming stiff brown/grey iravel of angular to subrounded nd subrounded to rounded cha OWESTOFT FORMATION)	d fine to coarse flint alk		- - -	_			1 - c		2 2 2 2 2 3	9							Shear vane test = 78kN/m²
								-														Shear vane test = 80kN/m²
-	-			<u>:</u> 				<u> </u>	2.00			2 -										– Shear vane test = 76kN/m² Widow sample hole completed at 2.0m de
																						whow sample hole completed at 2.0m de
-	-								-			3 -										-
												·										
1	=								_			4 -										
					<u>-</u>			_														
WATER	▼ Star ▼ Wat	nding v ter stri	water le ikes	vel	PIEZOMETER Upper se Respons Lower se	e zone AND B eal TEST U KEY P	Bulk of Undis Pistor Distur	listurbed s turbed san sample bed jar sa	ample nple mple	C Co K Pe	·	(35) Und SPT N N = SPT N*120 = includin	isturbe N value Total b g seatin	d sample (blows a lows/per g	blow of fter sea netratio	count ating) on		De	D B B	Brightv Bightw	vell Bar ell, Sut	nvironmental Ltd rns, Ipswich Road, ffolk, IP10 0BJ 11603 298 076
					DEPTH All depths, level and t			onmental s r Sample	oil sample	e	•	425 Sample	% passii	ng 425 m	icron si	eve			⊌ F	ax: 0	1603 2	298 075



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP1
Job No	Date 28-10-14	Groun	d Level (m)	Co-Ordinates ()	IPI
995,SI	28-10-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark brown slightly gravelly clay. Gravel is fine to medium flint - with occasional fine to medium brick fragments)				Groundwater not encountered during excavation
-	- -				No collapse of sidewalls during excavation
0.35-1.50	Stiff dark yellow brown slightly gravelly CLAY. Gravel is fine to medium flint and chalk (LOWESTOFT FORMATION)				
-	0.80 - 1.50 - Becoming gravelly				
-	1.00 - 1.50 - Becoming dark grey with occasional cobble of flint and chalk				
-	- -				
· ·					Trial pit completed at 1.5m depth
-	<u> </u>				
_					
-					
-	- -				

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL



Project			Client		TRIAL PIT No				
Land to the No	orth West of Haverhi	II	c/o Savi	ills	TP2				
Job No	Date 28-10-14	Groun	d Level (m)	Co-Ordinates ()	IPZ				
995,SI	28-10-14								
Fieldwork By			Logged By		Sheet				
GEL			SG		1 of 1				

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown clay with occasional medium gravel of flint				Groundwater not encountered during excavation
0.30-1.40	Firm becoming stiff dark yellow brown slightly gravelly CLAY. Gravel of				No collapse of sidewalls during excavation
	Firm becoming stiff dark yellow brown slightly gravelly CLAY. Gravel of - fine to coarse flint and chalk with occasional cobble of chalk and flint (LOWESTOFT FORMATION)				
-	0.60 - Becoming pale grey/orange brown mottled		0.60-0.80	1B	CBR
-	<u>-</u> -				
-	1.00 - Becoming very gravelly	- <u> </u>			
-	<u> </u>				
-					Trial pit completed at 1.4m depth
-	- -				
	_ _ _				
-					
	<u>-</u>				
_					



Project			Client		TRIAL PIT No				
Land to the No	orth West of Haverhi	II	c/o Savi	lls	ТР3				
Job No	Date 28-10-14	Groun	1175						
995,SI	28-10-14								
Fieldwork By			Logged By		Sheet				
GEL			SG		1 of 1				

Depth	DESCRIPTION	Legend	Depth	No	'
0.00-0.25	TOPSOIL (Dark brown clay with occasional medium gravel of flint)				Groundwater not encountered during excavation
0.25-1.50	 Firm becoming stiff dark yellow brown CLAY with frequent fine to coarse gravel of flint and chalk and occasional roots (2mm) (LOWESTOFT FORMATION) 				No collapse of sidewalls during excavation
	- 0.65 - Becoming gravelly				
-	0.90 - Becoming pale grey/orange brown mottled				
-					
-	- - -	<u> </u>			Trial pit completed at 1.5m depth
	- - -				
	_				
-	- -				
-					



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	Ills	TP4
Job No	Date 28-10-14	Groun	d Level (m)	174	
995,SI	28-10-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of - chalk, flint and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation
0.25-1.50	- Firm becoming stiff dark yellow brown slightly gravelly CLAY. Gravel is fine to coarse chalk and flint (LOWESTOFT FORMATION)				No collapse of sidewalls during excavation
-	- 0.55 - Becoming gravelly		0.60-0.70	1B	Moisture content, CBR
-	0.90 - Becoming pale grey with occasional cobbles of chalk, flint and —ironstone				
-	- - -				
_					Trial pit completed at 1.5m depth
_	-				
-	- -				



Project			Client		TR	IAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls		TP5
Job No 995,SI	Date 28-10-14 28-10-14	Groun	d Level (m)		175	
Fieldwork By		!	Logged By		Sheet	
GEL			SG			1 of 1

	l l				
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of - flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation
					No collapse of sidewalls during excavation
0.30-1.50	Firm becoming stiff dark yellow brown CLAY with occasional fine to - medium gravel of flint and chalk (LOWESTOFT FORMATION)				during excession
-	0.60 - Becoming gravelly				
-	0.90 - Becoming pale grey with occasional cobbles of flint and chalk				
-	- -				
_					T. J. T J J 4 . 5
	<u>-</u> -				Trial pil completed at 1.5m depth
	_				
-					
-	-	-			
-		1			
-	-	1			
		1			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	ills	TP6
Job No	Date 29-10-14	Groun	d Level (m)	Co-Ordinates ()	IPO
995,SI	29-10-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
Depth 0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of - flint, chalk and occasional coarse gravel of brick fragments)	Legend	Depth 0.70-1.00		No collapse of sidewalls during excavation Very slow inflow of water
¥ - - - - -					Very slow inflow of water at 1.5 m Rising to 1.45m after 20 minutes Trial pit completed at 1.5m depth



Project			Client				TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls			TP7
Job No	Date 30-10-14	Groun	d Level (m)	Co-Ordinates (()		IP/
995,SI	30-10-14						
Fieldwork By			Logged By				Sheet
GEL			SG				1 of 1
	<u> </u>		<u> </u>			 -	

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasionalcoarse gravel of brick fragments	-	·		
	-				No collapse of sidewalls during excavation
0.30-1.20	Firm dark yellow brown very gravelly CLAY. Gravel is fine to coarse flint, - chalk and occasional cobble of flint (HEAD DEPOSITS)				aam, enarado.
-	- -				Moisture content, CBR
-	0.80 - Becoming pale grey - - -				
-	-	+°			
1.20-1.80	Soft orange brown very gravelly sandy CLAY. Gravel is fine to coarse - chalk and flint (HEAD DEPOSITS)				
-	- -				
Z I					
1.80-1.90	Stiff dark grey CLAY with frequent fine to coarse gravel of chalk and flint (LOWESTOFT FORMATION)				Slight seepage inflow of water at 1.8 m Trial pit completed at 1.9m depth
	- -				'
	-				
	_				

Shoring/Support: NONE Stability: STABLE

Checked By Plant UsedMECHANICAL **EXCAVATOR**



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhil	II	c/o Savi	lls	TP8
Job No 995,SI	Date 30-10-14 30-10-14	Groun	d Level (m)	IPO	
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

				_	
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of - flint, chalk and occasional gravel of brick fragments)	-			Groundwater not encountered during excavation
					No collapse of sidewalls during excavation
0.30-1.05	Firm becoming stiff dark yellow brown gravelly CLAY. Gravel is fine to - coarse flint and chalk (LOWESTOFT FORMATION)				carring excuration
-	0.60 - Becoming dark yellow brown/pale grey mottled with occasional - cobble of chalk				
_	0.80 - Becoming pale grey				
		-			Trial pit completed at 1.05m depth
-		-			
-	- -	-			
-	-	-			
	-	-			
	- -				
	_	-			
		-			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP9
Job No	Date 30-10-14	Groun	d Level (m)	Co-Ordinates ()	179
995,SI	30-10-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of - flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation
					No collapse of sidewalls during excavation
0.30-0.70	Firm dark brown CLAY with occasional fine to coarse gravel of flint (HEAD DEPOSITS)				
-					
	-				
0.70-1.50	coarse flint and chalk				
}	(LOWESTOFT FORMATION)				
-					
-					
-	_				
-		0			Trial pit completed at 1.5m depth
]			цери
-		-			
}		-			
<u> </u>	-	†			
[]			
-		-			
}		-			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhil	II	c/o Savi	lls	TP10
Job No 995,SI	Date 30-10-14 30-10-14	Groun	d Level (m)	IPIO	
Fieldwork By		•	Logged By		Sheet
GEL			SG		1 of 1

GL	-	30				1 01 1
Depth	DESCRIPT		Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with freque - flint, chalk and occasional coarse gravel of b				Groundwater not encountered during excavation	
0.30-0.70	Firm dark brown CLAY with occasional fine (HEAD DEPOSITS)	to coarse gravel of flint				No collapse of sidewalls during excavation
0.70-1.40	Firm becoming stiff dark yellow brown grav - coarse flint and chalk (LOWESTOFT FORMATION)	elly CLAY. Gravel is fine to				
-	_0.95 - Becoming pale grey/dark yellow brov - - -	vn mottled -				
-			-			Trial pit completed at 1.4m depth
-	_		_			
-	 - -		-			
	-		-			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	ills	TP11
Job No	Date 30-10-14	Groun	d Level (m)	IPII	
995,SI	30-10-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation
0.30-1.30	Firm becoming stiff dark yellow brown CLAY with frequent fine to coarse gravel of flint and chalk (LOWESTOFT FORMATION)				No collapse of sidewalls during excavation
-	- - -				Trial pit completed at 1.3m
-	- - -	-			depth
	- - -	-			
+	-	1			
-	- -	1			
-		-			
,	-				



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP12
Job No	Date 30-10-14	Groun	d Level (m)	Co-Ordinates ()	1712
995,SI	30-10-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of - flint, chalk and occasional coarse gravel of brick fragments)	-			Groundwater not encountered during excavation
-	-				No collapse of sidewalls during excavation
0.35-1.40	 Firm becoming stiff dark yellow brown gravelly CLAY. Gravel is fine to coarse flint and chalk (LOWESTOFT FORMATION) 				
-	0.80 - Becoming dark yellow brown/pale grey mottled				
-	- - -				
-		-			Trial pit completed at 1.4m depth
_	- - -				
_		-			
_	_				
-	- -]			
_					



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhil	II	c/o Savi	lls	TP13
Job No 995,SI	Date 30-10-14 30-10-14	Groun	d Level (m)	1112	
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

0.					1 0, 1
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation
0.25-1.40	- Firm becoming stiff dark yellow brown CLAY with frequent fine to coarse gravel of chalk and flint (LOWESTOFT FORMATION)				No collapse of sidewalls during excavation
	0.80 - Becoming dark grey/dark yellow brown mottled		0.70-0.80	1B	Moisture content, CBR
-	0.90 - With occasional cobble of flint and chalk				
	- - 				Trial pit completed at 1.4m depth
-	- - -				
-	- - -				
	- - -				
	-				



Project			Client		TRIAL PIT No
Land to the North West of Haverhill			c/o Savi	lls	TP14
Job No	Date 31-10-14	Groun	d Level (m)	Co-Ordinates ()	1714
995,SI	31-10-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. - Gravel of angular to subrounded fine to coarse flint and occasional fine brick and charcoal fragments)				Groundwater not encountered during excavation
0.30.1.40	Firm has a raine stiff around hypers and all CLAY Convel of subraying all				No collapse of sidewalls during excavation
0.30-1.40	Firm becoming stiff orange brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION)				
	- (LOWESTOFT FORMATION)				
_	_				
-	1.00 - Becoming pale brown				
	- 1.00 - Becoming pale brown				
_	_				
-		-			Trial pit completed at 1.4m depth
	_				
_	_				
-		-			
]			
-					
r L					



Project			Client		TRIAL PIT No
Land to the North West of Haverhill				lls	TP15
Job No 995,SI	Date 31-10-14 31-10-14	Groun	d Level (m)	1112	
•	31-10-14		Loggod Pv		Sheet
Fieldwork By			Logged By		
GEL			LF		1 of 1

				_	
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. - Gravel of angular to subrounded fine to coarse flint and occasional fine brick and charcoal fragments				Groundwater not encountered during excavation
- 0.25-1.10	Firm becoming stiff brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION) 0.50 - With occasional cobbles of chalk 0.70 - Becoming brown/grey mottled				No collapse of sidewalls during excavation
_					Trial pit completed at 1.1m depth
-	- -	-			
	- - -				
	- 	_			
	· -	-			
	- -	-			
,		-			

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL



Project			Client		TRIAL PIT No
Land to the North West of Haverhill			c/o Savi	lls	TP16
Job No	Date 31-10-14	Groun	d Level (m)	Co-Ordinates ()	1510
995,SI	31-10-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

	·				
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. - Gravel of angular to subrounded fine to coarse flint and occasional fine brick and charcoal fragments	-			Groundwater not encountered during excavation
					No collapse of sidewalls during excavation
0.30-1.40	Firm becoming stiff orange brown gravelly CLAY. Gravel of subrounded - to rounded fine to coarse chalk and angular to subrounded fine to coarse flint - (LOWESTOFT FORMATION)	_ _			aumig encartation
_	- 0.70 - With a cobble of metamorphic material				
-	0.90 - Becoming brown/grey mottled				
-	1.00 - With occasional iron oxide staining				
	_	<u>+°</u>			
-	-				
-					Trial pit completed at 1.4m
	-	1			depth
	- -]			
_	-	-			
-	-	1			
	- -]			
-	_	-			
-	-	-			
-	-	1			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP17
Job No	Date 31-10-14	Groun	d Level (m)	Co-Ordinates ()	IP1/
995,SI	31-10-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. - Gravel of fine to coarse angular to subrounded flint and occasional fine charcoal fragments)				Groundwater not encountered during excavation
					No collapse of sidewalls during excavation
0.30-1.40	Firm becoming stiff yellow brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse	<u>-^-</u>			
-	flint (LOWESTOFT FORMATION)				
	-				
		<u></u>			
-	0.80 - Becoming yellow brown/grey mottled				
-	_				
-	-	<u> </u>			
-					Trial pit completed at 1.4m
-	-	1			depth
	- -]			
_	-	-			
-	-	-			
T	_	1			
	- -]			
-					
-	-	1			
t L				L	

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL



Project			Client			TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls		TP18
Job No	Date 31-10-14	Groun	d Level (m)	1510		
995,SI	31-10-14					
Fieldwork By			Logged By			Sheet
GEL			LF			1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. - Gravel of fine to coarse angular to subrounded flint and occasional fine charcoal fragments				Groundwater not encountered during excavation
0 20 4 50					No collapse of sidewalls during excavation
0.30-1.50	Firm becoming stiff yellow brown gravelly CLAY. Gravel of fine to coarse - subrounded to rounded chalk and angular to subrounded fine to coarse flint				
t	(LOWESTOFT FORMATION)	<u> </u>			
-					
_					
-		<u>-</u>			
-	_	<u>~_</u>			
-					Trial pit completed at 1.5m
					depth
-					
}		-			
<u> </u>]			

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL



Project			Client		Т	RIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls		TP19
Job No 995,SI	Date 31-10-14 31-10-14	Groun	d Level (m)		1613	
Fieldwork By			Logged By		Shee	t:t
GEL			LF			1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. - Gravel of fine to coarse angular to subrounded flint and occasional fine charcoal fragments)				Groundwater not encountered during excavation
0.25-1.50	- Firm becoming stiff yellow brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION)	0 -			No collapse of sidewalls during excavation
	0.90 - Becoming grey/brown mottled				
-					Trial completed at 1.5m depth
-	-	-			
	- -]			
-	-	-			
<u>t</u>		\perp			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP20
Job No	Date 18-11-14	Groun	d Level (m)	Co-Ordinates ()	1720
995,SI	18-11-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

0	-					1 01 1
Depth	DESCRIPT		Legend	Depth	No	Remarks/Tests
Depth 0.00-0.30 0.30-1.45		silty clay. Gravel of fine to	Legend	Depth	No	Remarks/Tests No collapse of sidewalls during excavation
	- - - - - - -					Seepage inflow of water a 1.45 m Trial completed at 1.45m depth



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	Ills	TP21
Job No	Date 18-11-14	Groun	d Level (m)	Co-Ordinates ()	IPZI
995,SI	18-11-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

	<u> </u>				
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly gravelly silty clay. Gravel of fine to - coarse angular to sub rounded flint)	-			Groundwater not encountered during excavation
					No collapse of sidewalls during excavation
0.30-1.35	Firm becoming stiff brown gravelly CLAY. Gravel of angular to - subrounded fine to coarse flint and subrounded to rounded fine to coarse chalk - (LOWESTOFT FORMATION)				aamg encaration
-	1.00 - Becoming light brown				
-		-			Trial completed at 1.35m depth
-	-				
		-			
-	<u>L</u>]			
_					
-		-			
		-			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhil	II	c/o Savi	lls	TP22
Job No	Date 18-11-14	Groun	d Level (m)	IPZZ	
995,SI	18-11-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

	=	<u>-</u> '				1 01 1
Depth	DESCRIPT	ION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly gravelly coarse angular to sub rounded flint)	silty clay. Gravel of fine to				Groundwater not encountered during excavation
						No collapse of sidewalls during excavation
0.30-1.45	Firm orange brown Clay - (HEAD DEPOSITS)					0
-						
-	_					
	_					
	- -					
-	_	-				
-	_					
-	-					
	1.30 - Becoming sandy					
-						Trial completed at 1.45m depth
-	-					Сери
-	-					
_	- -					
-		-				
-	_					
-	_		1			
]			



Project			Client			TRIAL PIT No
Land to the North West of Haverhill c/o Savills						TP23
Job No	Date 18-11-14	Groun	d Level (m)	1725		
995,SI	18-11-14					
Fieldwork By			Logged By			Sheet
GEL			LF			1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with rootlets. Gravel of - angular to subrounded fine to medium flint)	-			No collapse of sidewalls
0.30-1.50	Firm orange brown slightly gravelly CLAY. Gravel of angular to subrounded fine to medium flint and chalk (LOWESTOFT FORMATION)				during excavation
¥ -	1.00 - Becoming slightly sandy with frequent gravel				Seepage inflow of water at 1.2 m
		-			Trial completed at 1.5m depth
-	- - -	-			
-		-			
4	-				

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP24
Job No	Date 18-11-14	Groun	d Level (m)	Co-Ordinates ()	1724
995,SI	18-11-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

				_	
Depth	DESCRIPTION	Legend	Depth	No	,
0.00-0.28	TOPSOIL (Dark brown slightly gravelly clay with rootlets. Gravel of - angular to subrounded fine to medium flint)				Groundwater not encountered during excavation
-					No collapse of sidewalls during excavation
0.28-1.20	Firm becoming stiff brown gravelly CLAY. Gravel of angular to subrounded fine to coarse flint with frequent subrounded fine to coarse chalk (LOWESTOFT FORMATION)				during excavation
	1.00 - Becoming grey/brown mottled				
	-				Trial completed at 1.2m depth
		_			
-					
_					
	_ _ _				
	_ _ _				
, [

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP25
Job No	Date 18-11-14	Groun	d Level (m)	Co-Ordinates ()	1725
995,SI	18-11-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Brown slightly sandy clay with occasional fine to medium gravel of flint and flint)	-			
					No collapse of sidewalls during excavation
0.30-1.40	⊦ flint and chalk				during excavation Perched inflow of water a 0.3 m
	(LOWESTOFT FORMATION)				
	-				
	0.80 - Becoming pale grey/orange brown mottled				
	_				
	_				
					Trial completed at 1.4m
	-	1			depth
]			
		-			
	_	1			
	<u> </u>]			
		-			
		-			
	_	1			



Project			Client					TRIAL PIT No
Land to the No	orth West of Haverhi	I	c/o Savi	lls				TP26
Job No	Date 18-11-14	Groun	Ground Level (m) Co-Ordinates ()				1720	
995,SI	18-11-14							
Fieldwork By			Logged By					Sheet
GEL			LF					1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	TOPSOIL (Brown slightly sandy clay with occasional fine to medium - gravel of flint and flint)				
0.20-1.20	Firm becoming stiff orange brown gravelly CLAY. Gravel of angular to rounded fine to coarse flint with frequent chalk (LOWESTOFT FORMATION)				No collapse of sidewalls during excavation
	0.90 - Becoming grey/brown mottled				
		-			Perched inflow of water at 1.2 m Trial completed at 1.2m depth
-	- - -				
-	- - -	-			
-	- - -	-			



Project			Client		TRIAL PIT No
Land to the No	TP27				
Job No	Date 18-11-14	Groun	d Level (m)	IPZ/	
995,SI	18-11-14				
Fieldwork By			Logged By		Sheet
GEL			LF		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	TOPSOIL (Brown slightly sandy clay with occasional fine to medium - gravel of flint and flint)	-	Берин	140	Groundwater not encountered during excavation
0.20-1.45	Firm becoming stiff yellow brown gravelly CLAY. Gravel of angular to - subrounded fine to coarse flint with frequent subrounded to rounded fine to coarse gravel and cobbles of chalk (LOWESTOFT FORMATION)				No collapse of sidewalls during excavation
- - - -	0.80 - Becoming grey/brown mottled				
		-			Trial completed at 1.45m depth
	- - -				
-		-			
	_ _ _	-			
	_	1			

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL



Project			Client		TRIAL PIT No
Land to the No	TP28				
Job No	Date 19-11-14	Groun	d Level (m)	1720	
995,SI	19-11-14				
Fieldwork By		•	Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel - of flint)				Groundwater not encountered during excavation
					No collapse of sidewalls during excavation
0.30-1.50	Firm dark orange brown gravelly CLAY. Gravel of fine to coarse flint and - chalk	<u>-</u>			daring excuvation
-	(HEAD DEPOSITS)				
-	0.60 - becoming very gravelly				
-	0.60 - becoming very graveny -				
-	-				
	_				
	_				
	1.10 - with cobble of flint				
	<u>-</u>				
-					Trial completed at 1.5m
_		-			depth
-	-	-			
_	-	1			
-	-	1			
-	-	1			
]			
	_]			
	<u>-</u>]			



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	TP29	
Job No	Date 19-11-14	Groun	d Level (m)	Co-Ordinates ()	1729
995,SI	19-11-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

					_
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel - of flint)				Groundwater not encountered during excavation
0.25-0.60	- Firm dark orange brown slightly sandy CLAY with occasional fine to coarse gravel of chalk and flint - (HEAD DEPOSITS)				No collapse of sidewalls during excavation
0.60-1.20	CLAY. Gravel of fine to coarse flint and chalk		0.70-0.80	1B	CBR
	_ (HEAD DEPOSITS)		0.70 0.00	10	33.
1.20-1.50	Stiff pale grey/pale orange brown mottled gravelly CLAY. Gravel of fine				
	to coarse chalk [
_	- - -				Trial completed at 1.5m depth
-	- -				
	-				
+	-				
[- -				
,					



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	TP30	
Job No	Date 19-11-14	Groun	d Level (m)	Co-Ordinates ()	1730
995,SI	19-11-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel - of flint)				Groundwater not encountered during excavation
0.20-0.60	Firm dark orange brown slightly sandy CLAY - (HEAD DEPOSITS)		0.20	1J	No collapse of sidewalls during excavation
-			0.40	2J	
0.60-1.50	Stiff pale grey/dark orange brown mottled gravelly CLAY. Gravel of fine to coarse chalk with occasional fine to medium flint (LOWESTOFT FORMATION)				
	_ 				
-	- -				
-	- -	<u>-</u>			
-					Trial completed at 1.5m depth
-	- -				
	-				
-	_	-			
-	-	-			
	-	1			
T L					1



Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	TP31	
Job No	Date 19-11-14	Groun	d Level (m)	Co-Ordinates ()	11531
995,SI	19-11-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

	l l				
Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel - of flint)				Groundwater not encountered during excavation
			0.20	1J	No collapse of sidewalls during excavation
0.30-0.65	Firm becoming stiff pale grey/yellow brown mottled gravelly CLAY. - Gravel of fine to medium chalk and flint (LOWESTOFT FORMATION)				
_					
0.65-1.50	Stiff dark grey gravelly CLAY. Gravel of fine to medium flint (LOWESTOFT FORMATION)		0.70	2J	
-	- 				
	<u>-</u> -				
		<u>-</u>			Trial completed at 1.5m depth
-					acpu.
-					
	<u>-</u>				
-	-	-			
-		-			
-	-	-			
		1			



TRIAL PIT LOG

Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	Ills	TP32
Job No	Date 19-11-14	Groun	d Level (m)	Co-Ordinates ()	1752
995,SI	19-11-14				
Fieldwork By		•	Logged By		Sheet
GEL			SG		1 of 1

GL	_					1 01 1
Depth	DESCRIPT		Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark grey brown slightly sandy cla of flint)	y with occasional fine gravel				Groundwater not encountered during excavation
-						No collapse of sidewalls during excavation
. 0.35-1.50	Firm becoming stiff pale grey/yellow brown Gravel is fine to medium chalk with occasio (LOWESTOFT FORMATION)	mottled gravelly CLAY. nal fine to medium flint				
-	- - 					Trial completed at 1.5m depth
-	_					
			-			
,	-					

Shoring/Support: NONE Stability: STABLE Checked By Plant UsedMECHANICAL

EXCAVATOR



TRIAL PIT LOG

Project			Client		TRIAL PIT No
Land to the No	orth West of Haverhi	II	c/o Savi	lls	TP33
Job No	Date 19-11-14	Groun	d Level (m)	Co-Ordinates ()	1733
995,SI	19-11-14				
Fieldwork By			Logged By		Sheet
GEL			SG		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	-
0.00-0.25	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel - of flint)				Groundwater not encountered during excavation
0.25-1.50	- Firm becoming stiff pale grey/yellow brown gravelly CLAY. Gravel is fine to medium chalk with occasional fine to medium flint - (LOWESTOFT FORMATION)				No collapse of sidewalls during excavation
-	 - -				Trial completed at 1.5m depth
Ī					
_					
-	- -				
-	- -				
-	<u>-</u>]			

APPENDIX 7 – INFILTRATION TEST RESULTS



Time	Depth to Water	Borehole	e Dimens	sions [m]			
[min]	[mbgl]	Diame	ter	Depth			
0	1.48	0.10		1.80			
1	1.48						
2	1.48	Infiltration Ra		lations		Borehole WS3	
3	1.48	Parameter	Unit	Result			
4	1.48	height				Run 1 of 1	
5	1.48	h ₂₅	[m]	1.5600			
10	1.48	h ₇₅	[m]	1.7200		Test Date 29/10/2014	
15	1.48	h ₇₅ -h ₂₅	[m]	0.160			
20	1.48					Groundwater Encountered at: n/a	
30	1.48	time					
45	1.48	t ₇₅	[s]	N/A		Soakage Rate	
60	1.48	t ₂₅	[s]	N/A		-	Time [min]
90	1.48	t ₇₅ - t ₂₅	[s]	N/A		0 10 20 30 40 50 60 70 80 90 100	110 120
120	1.48					.00	
		effective volun					
		V ₇₅₋₂₅	[m³]	1.28E-03		.10	
		effective area				.20	
		ap ₅₀	[m ²]	5.88E-02	[]	.30	
		infiltration rate			Depth [mbgl]	.40	
		f	[m/s]	N/A	ept	.50	
						.60	
						.70	
						.70	
						.80.	
					m	gl - metres below ground level	
E		CLIENT		REPORT NO			ATE
V Haverhill		Savills		995,GI	ļu	SG AD 05	December 2014

Time	Depth to Water	Borehol	le Dimens	sions [m]														
[min]	[mbgl]	Diame	eter	Depth														
0	1.41	0.10		1.89														
1	1.41																	
2	1.41	Infiltration Ra					Borel	nole	WS6	;								
3	1.41	Parameter	Unit	Result														
4	1.41	height					Run		1 of 1	1								
5	1.41	h ₂₅	[m]	1.5300														
10	1.41	h ₇₅	[m]	1.7700			Test I	Date	29/10	0/2014	Ļ							
15	1.41	h ₇₅ -h ₂₅	[m]	0.240														
20	1.41						Groui	ndwa	ter En	coun	tered	at:	n/a					
30	1.41	time																
45	1.41	t ₇₅	[s]	N/A						Soa	akage	e Ra	te					
60	1.41	t ₂₅	[s]	N/A													Tim	e [min]
90	1.41	t ₇₅ - t ₂₅	[s]	N/A		0	10	20	30	40	50	60	70	80	90	100	110	120
120	1.41					1.00							1111			100		
		effective volui				1.10												
		V ₇₅₋₂₅	[m ³]	1.93E-03		1.10												
		effective area				4.00												
		ap ₅₀	[m²]	8.41E-02	[lg	1.30												
		infiltration rate			Depth [mbgl]	1.50												
		f	[m/s]	N/A	Dept	1.60												
						1.70												
						1.80												
						1.60												
						1.90 ⊥												
					n	nbgl - me	tres be	low gr	ound l	evel								
E		CLIENT		REPORT NO		ITE SUPE	RVISIO	N		ULATIC	ONS			ECKED	ВҮ		DATE	
N Haverhill		Savills		995,GI	L	F			SG				AD			C)5 Dece	ember 201

Time	Depth to Water	Boreho	le Dimens	sions [m]															
[min]	[mbgl]	Diamo	eter	Depth															
0	1.58	0.10)1	2.00															
1	1.58																		
2	1.56	Infiltration Ra					Borel	hole	WS8	}									
3	1.56	Parameter	Unit	Result															
4	1.56	height					Run		1 of	1									
5	1.56	h ₂₅	[m]	1.6500															
10	1.56	h ₇₅	[m]	1.8500			Test	Date	29/1	0/2014	4								
15	1.56	h ₇₅ -h ₂₅	[m]	0.200															
20	1.56						Grou	ndwa	iter Er	coun	terec	d at:	n/a	a					
30	1.56	time																	
45	1.56	t ₇₅	[s]	N/A						So	akag	e Ra	ite						
60	1.56	t ₂₅	[s]	N/A														Tim	e [min]
90	1.56	t ₇₅ - t ₂₅	[s]	N/A		0	10	20	30	40	50	60	70) (80	90	100	110	120
120	1.56			,		1.00													
		effective volui				1.10													
		V ₇₅₋₂₅	[m ³]	1.61E-03		1.20													
		effective area				1.30													
		ap ₅₀	[m ²]	8.73E-02	[lg ₁]	1.40													
		infiltration rate			Depth [mbgl]	1.50		• •											
		f	[m/s]	N/A	ept	1.60													
					Ω	1.70													
						1.80													
						1.90													
						2.00 ⊥													
					n	nbgl - me	tres be	low g	round l	evel									
E		CLIENT		REPORT NO		ITE SUPE	RVISIO	N		ULATIO	ONS			ECKI	ED B	Y		ATE	
V Haverhill		Savills		995,GI	L	F			SG				ΑC)			į0	5 Dec	ember 201

Time	Depth to Water	Boreho	le Dimens	ions [m]																			
[min]	[mbgl]	Diam	eter	Depth																			
0	0.15	0.10)1	1.68																			
1	0.15																						
2	0.15	Infiltration R					Во	reh	ole	W	S12												
3	0.15	Parameter	Unit	Result																			
4	0.15	height		T			Ru	n		1 (of 1												
5	0.15	h ₂₅	[m]	0.5325																			
10	0.15	h ₇₅	[m]	1.2975			Tes	st D	ate	30	/10/2	2014	ļ										
15	0.15	h ₇₅ -h ₂₅	[m]	0.765																			
20	0.15						Gre	oun	ldwa	ater	Enc	oun	tere	d at:	r	n/a							
30	0.15	time																					
45	0.15	t ₇₅	[s]	N/A								Soa	akaç	je Ra	ate								
60	0.15	t ₂₅	[s]	N/A																	Tim	e [mi	n]
90	0.15	t ₇₅ - t ₂₅	[s]	N/A		0		10	20	3	0	40	50	60)	70	80	90	10	00	110	120)
120	0.15					0.00 +																	
		effective volu				0.10 + 0.20 +	-	•	•			•		•									
		V ₇₅₋₂₅	[m ³]	6.14E-03		0.30																	
						0.40																	
		effective area				0.50 0.60																	
		ар ₅₀	[m ²]	2.51E-01	憲	0.60																	
					gqu	0.80																	
		infiltration rate			Depth [mbgl]	0.90																	
		f	[m/s]	N/A	ept	1.00 +																	
						1.20																	
						1.30													+++				
						1.40 - 1.50 -																	
						1.60																	
						_{1.70} L																	
					r	nbgl - me	etres	belo	ow g	roun	d lev	el											
SITE		CLIENT		REPORT NO		ITE SUPI	ERVIS	SION	N			.ATIC	ONS				KED	BY			TE		
NW Haverhill		Savills		995,GI	L	.F				SG					P	۱D				¦05	Dece	mbe	er 201
		İ		į	- !					į					į					į			

Time	Depth to Water	Boreho	le Dimens	ions [m]																
[min]	[mbgl]	Diam	eter	Depth																
0	0.70	0.10	01	1.97																
1	0.70																			
2	0.70	Infiltration R					Во	oreh	ole	WS	614									
3	0.70	Parameter	Unit	Result																
4	0.70	height	Γ				Ru	ın		1 o	f 1									
5	0.70	h ₂₅	[m]	1.0250																
10	0.70	h ₇₅	[m]	1.6750			Te	st C	Date	30/	10/201	14								
15	0.70	h ₇₅ -h ₂₅	[m]	0.650																
20	0.70						Gr	our	ndwa	ater I	Encou	ntere	d at:	n/a						
30	0.70	time																		
45	0.70	t ₇₅	[s]	N/A							S	oakag	e Rat	е						
60	0.70	t ₂₅	[s]	N/A														Time	e [min	1]
90	0.70	t ₇₅ - t ₂₅	[s]	N/A			0	10	20	30	40	50	60	70	80	90	100	110	120	
120	0.70					0.00														
		effective volu				0.10 · 0.20 ·														
		V ₇₅₋₂₅	[m ³]	5.22E-03		0.30														
						0.40 · 0.50 ·														
		effective area)			0.60														
		ар ₅₀	[m ²]	2.05E-01		0.70 · 0.80 ·	(D)D		• •	<u> </u>		•	•			•			*	
					bgl	0.90														
		infiltration rate	6		Depth [mbgl]	1.00 · 1.10 ·														
		f	[m/s]	N/A	ptk	1.20 ·														
					De	1.30 · 1.40 ·														
						1.50														
						1.60 · 1.70 ·														
						1.80														
						1.90 · 2.00 ·														
		<u> </u>				2.00														
		-			_	nbgl - m	atros	s hal	0.64.0	roun	امیروا ا									
					"	iingi - II	ieties	ט טפו	ow g	Journ	a level									
SITE		CLIENT	l	REPORT NO	S	ITE SUF	PERVI	SIOI	N	CAI	CULAT	IONS		CHF	CKED I	ву	D	ATE		
NW Haverhill		Savills		995,GI	L				-	SG				AD				Dece	mber	2014
		i I			į					l							į			

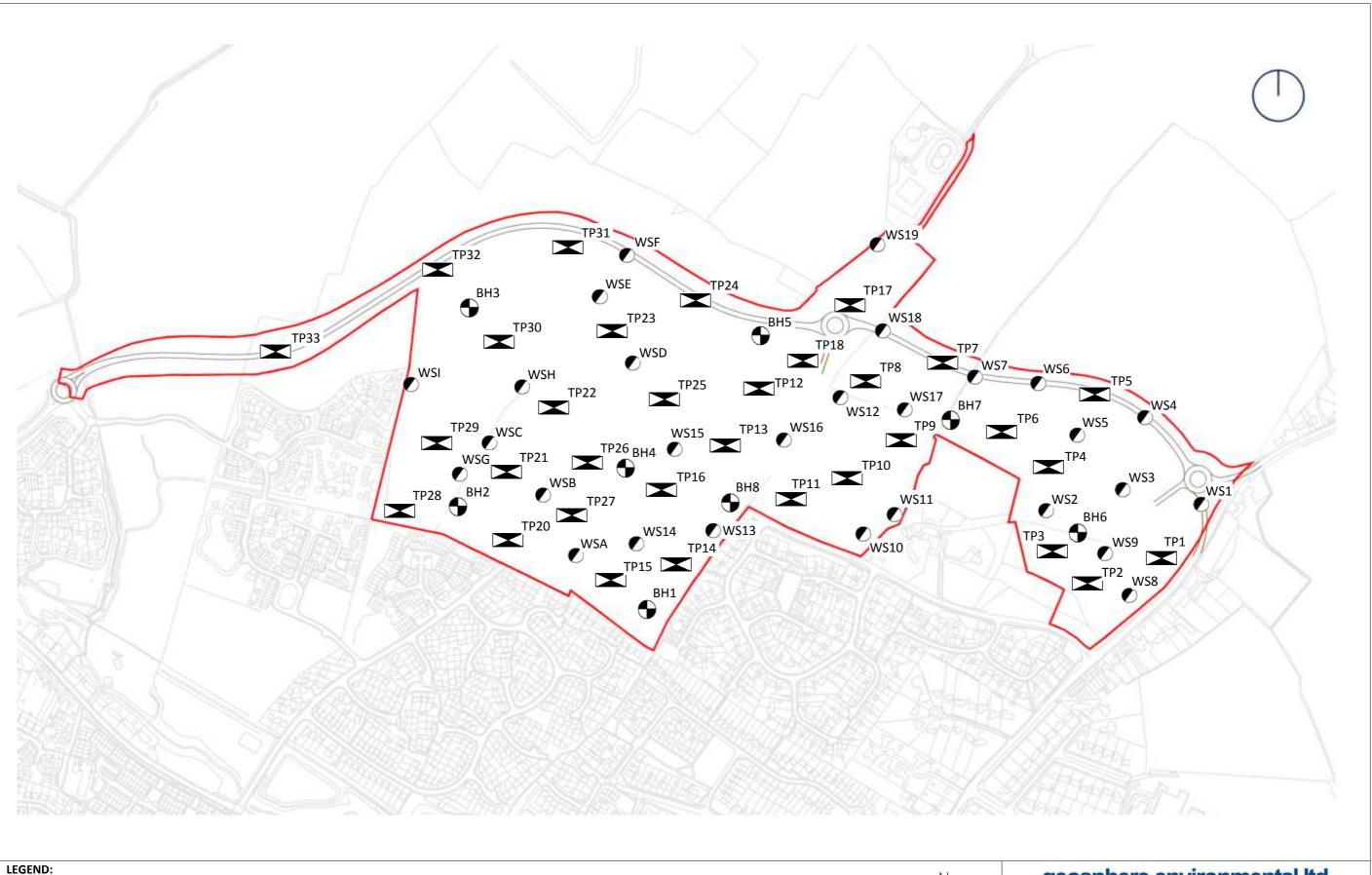
Time	Depth to Water	Boreho	le Dimens	sions [m]														
[min]	[mbgl]	Diam	eter	Depth														
0	0.900	0.10		2.00														
1	0.900			<u>'</u>														
2	0.900	Infiltration Ra	ate Calcu	lations			Bore	hole	WS1	5								
3	0.900	Parameter	Unit	Result														
4	0.900	height					Run		1 of	1								
5	0.900	h ₂₅	[m]	1.1737														
10	0.900	h ₇₅	[m]	1.7250			Test	Date	30/1	0/2014	ļ							
15	0.900	h ₇₅ -h ₂₅	[m]	0.551														
20	0.905						Grou	ndwa	ater Er	ncoun	tered	at:	n/a					
30	0.905	time																
45	0.905	t ₇₅	[s]	N/A						Soa	akage	Rat	е					
60	0.905	t ₂₅	[s]	N/A													Time	[min]
90	0.905	t ₇₅ - t ₂₅	[s]	N/A		0	10	20	30	40	50	60	70	80	90	100	110	120
120	0.905	10 20		I		0.00 +	10	20	30	40	- 1		70	80	90	100	110	120
		effective volui	me			0.10												
		V ₇₅₋₂₅	[m ³]	4.43E-03		0.30												
		10 20				0.40 0.50												
		effective area		I		0.60												
		ар ₅₀	[m ²]	1.83E-01	_	0.70												
		1 00			Depth [mbgl]	0.90		• •		-		-			+			-
		infiltration rate	9		프	1.00 - 1.10 -												
		f	[m/s]	N/A	pth	1.20												
					De	1.30 - 1.40 -												
						1.50												
						1.60 -												
						1.80												
						1.90												
						2.00												
						nbgl - me	troc ho	م بدرماد	round l	ovel								
					"	iingi - III6	iles De	a wor	; ound i	evel								
E		CLIENT		REPORT NO	S	SITE SUPE	RVISIC	N	CALC	ULATIO	ONS		CHF	CKED I	ву	ח	ATE	
		Savills		i i	L				SG				AD	J., L.D I				mber 20:
W Haverhill				995,GI									i .		-			cei

Time	Depth to Water	Borehole	Dimensi	ions [m]														
[min]	[mbgl]	Diamete	er	Depth														
0	0.69	0.101		2.00														
1	0.69																	
2	0.69	Infiltration Rate					Borel	nole	WSB									
3	0.69	Parameter	Unit	Result														
4	0.69	height					Run		1 of 1									
5	0.69	h ₂₅	[m]	1.0175														
10	0.69	h ₇₅	[m]	1.6725			Test I	Date	18/11	/2014								
15	0.69	h ₇₅ -h ₂₅	[m]	0.655														
20	0.69						Groui	ndwa	iter En	count	tered	at:	n/a	l				
30	0.69	time																
45	0.69	t ₇₅	[s]	N/A						Soa	kage	e Ra	te					
60	0.69	t ₂₅	[s]	N/A													Time	[min]
90	0.69	t ₇₅ - t ₂₅	[s]	N/A		() 10	20	30	40	50	60	70	80	90	100	110	120
120	0.69			1		0.00	, IO			10			111			100		
		effective volume	Э			0.10 - 0.20 -												
		V ₇₅₋₂₅	[m ³]	5.26E-03		0.30 -												
						0.40 - 0.50 -												
		effective area				0.60 -												
		ap ₅₀	[m ²]	2.16E-01		0.70 • 0.80 •	•	• •		•		1						
		1.55			Depth [mbgl]	0.90 -												
		infiltration rate			느	1.00 - 1.10 -												
		f	[m/s]	N/A	pth	1.20 -												
					De	1.30 - 1.40 -												
						1.50 -												
						1.60 - 1.70 -												
						1.80 -												
						1.90 - 2.00 -												
						2.00												
						ahal m	etres be	low a	round I	avol								
					"	ingi - III	etres be	iow gi	ouna I	evel								
TE		CLIENT		REPORT NO	S	ITE SLIP	ERVISIO	N	CALC	JLATIC	ONS		СН	ECKED	BY	ח	ATE	
W Haverhill		Savills		995,GI	L				SG				AD					mber 201
				İ	į				ļ							İ		

Time	Depth to Water	Borehole	e Dimens	sions [m]														
[min]	[mbgl]	Diame	ter	Depth														
0	0.550	0.10		2.00														
1	0.550				•													
2	0.550	Infiltration Ra	te Calcu	lations			Boreh	ole	WSD									
3	0.560	Parameter	Unit	Result														
4	0.560	height					Run		1 of 1									
5	0.560	h ₂₅	[m]	0.9125														
10	0.560	h ₇₅	[m]	1.6375			Test D	ate	18/11	/2014								
15	0.560	h ₇₅ -h ₂₅	[m]	0.725														
20	0.570						Groun	dwa	ter End	count	ered	l at:	n/a	a				
30	0.580	time																
45	0.595	t ₇₅	[s]	N/A						Soa	kad	e Ra	te					
60	0.600	t ₂₅	[s]	N/A							5						Tim	e [min]
90	0.610	t ₇₅ - t ₂₅	[s]	N/A		0	10	20	30	40	50	60	70) 80	90	100	110	120
120	0.620	10 20				0.00	10		30	40	30	1111			90	100	110	120
		effective volun	пе			0.10												
		V ₇₅₋₂₅	[m ³]	5.82E-03		0.20												
		10 20				0.40												
		effective area				0.60	•	-		•		•			•			
		ар ₅₀	[m ²]	2.38E-01		0.70												
		1 33			Depth [mbgl]	0.90												
		infiltration rate			<u>E</u>	1.00												
		f	[m/s]	N/A	pth	1.20												
					De	1.30												
						1.50												
						1.60 -												
						1.80												
						1.90												
						2.00												
						nbgl - met	rac hali	OW Gr	ound la	wal								
					"	iingi - iilet	162 0610	ow gr	ound le	vei								
E		CLIENT		REPORT NO	SI	ITE SUPER	RVISION	V	CALCU	ILATIC	NS		СН	ECKED	BY	ļr	DATE	
		Savills		i	LI			•	SG		. 10		AD					ember 20
W Haverhill		Savills		995,GI	LI	.F			SG				AD)		()5 Dec	er

Time	Depth to Water	Borehole Dimensions [m]												
[min]	[mbgl]	Diamete	r	Depth										
0	0.730	0.090		2.00										
1	0.750													
2	0.760	Infiltration Rate					Boreho	ole V	VSG					
3	0.765	Parameter	Unit	Result										
4	0.765	height					Run	1	of 1					
5	0.770	h ₂₅	[m]	1.0475										
10	0.790	h ₇₅	[m]	1.6825			Test Da	ate 1	9/11/2014					
15	0.800	h ₇₅ -h ₂₅	[m]	0.635										
20	0.810						Ground	dwate	r Encounte	red at:	n/a			
30	0.830	time												
60	0.870	t ₇₅		N/A					Soal	age Ra	e			
90	0.900	t ₂₅	[s]	N/A									Tim	e [min]
120	0.930	t ₇₅ - t ₂₅	[s]	N/A		0	10 20	30 40	50 60 70	80 90	100 110 12	0 130 140	150 160 17	0 180
180	0.970					0.00								
		effective volume				0.10								
		V ₇₅₋₂₅	[m ³]	4.05E-03		0.30								
		effective area	effective area											
		ap ₅₀	[m ²]	1.86E-01	[lgı	0.70 0.80 0.90	·•••	•						
		infiltration rate			Depth [mbgl]	1.00								
		f	[m/s]	N/A	Dept	1.20								
					_	1.40								
						1.60								
						1.70								
						1.90								
						2.00								
						المطما	اا ممس		الجنيما المست					
					l n	nbgl - me	res belo	w grou	ınd level					
SITE		CLIENT		REPORT NO	S	ITE SUPE	RVISION	c	ALCULATIO	NS	CHECKE	D BY	DATE	
NW Haverhill		Savills		995,GI	L	.F		S	G		AD		05 Dece	ember 2014

Time	Depth to Water	Borehole Dimensions [m]		
[min]	[mbgl]	Diameter	Depth	
0	0.24	0.090	2.00	
1	0.26			
2	0.36	Infiltration Rate Calc		Borehole WSH
3	0.43	Parameter Unit	Result	
5	0.48	height		Run 1 of 1
10	0.63	h ₂₅ [m]	0.6050	
20	0.68	h ₇₅ [m]	1.3350	Test Date 19/11/2014
30	0.69	h ₇₅ -h ₂₅ [m]	0.730	
60	0.68			Groundwater Encountered at: n/a
90	0.68	time		
120	0.68	t ₇₅ [s]	N/A	Soakage Rate
		t ₂₅ [s]	540.00	Time [min]
		t ₇₅ - t ₂₅ [s]	N/A	0 10 20 30 40 50 60 70 80 90 100 110 120
		effective volume v ₇₅₋₂₅ [m³] effective area ap ₅₀ [m²]		0.40 0.50 0.60 0.70
		infiltration rate f [m/s]		0.80 0.90 E 1.00 - 1.10 - 1.20 - 1.30
				1.40 1.50 1.60 1.70 1.80 1.90 2.00
				mbgl - metres below ground level
SITE NW Haverhill		CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION CALCULATIONS CHECKED BY DATE LF SG AD 05 December 201





geosphere environmental ltd

Brightwell Barns, Ipswich Road, Brightwell, Suffolk. IP10 0BJ T 01603 298 076 E info@geosphere-environmental.co.uk

SITE

Land to the north west of Haverhill, Suffolk

Proposed window sample locations

Proposed Trial Pit Locations

Proposed borehole locations

TITLE
Exploratory Hole Location Plan
CLIENT
c/o Savills

Site Boundary

Ref. 995,SI DRAWN BY SG DRAWING NO. 995,SI / Rev 0 CHECKED AD

DATE
December 2014
SCALE
Not to scale

APPENDIX G

Below Ground Drainage Pipes Operation and Maintenance Plan

Maintenance Schedule	Required Action	<u>Frequency</u>
Regular Maintenance	Inspect and identify and areas that are not operating correctly. Take remedial action if required.	Monthly for three months, then annually.
	Remove debris from the catchment surfaces. (where it may cause risk to performance).	Monthly.
	Remove sediment from inspection chambers.	Annually, or as required
	Maintain vegetation to designed limits in the vicinity of below ground drainage pipes to avoid damage to drainage system.	Monthly, or as required.
Remedial Actions	Repair physical damage if necessary.	As required
Monitoring	Inspect all inlets and outlets to ensure they are in good condition and operating as designed.	Annually.
	Survey inside of pipe runs for sediment build up and remove as necessary.	Every five years, or as required.

Cellular Crate Storage Tanks Operation and Maintenance Plan

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Debris removal from catchment surface (where it may cause risk to performance)	Monthly
	Remove sediment from pretreatment structures	Annually
	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Annually or as required
Remedial Actions	Repair/rehabilitation of inlets, overflows, outlets, and vents	As required
Monitoring	Inspect/check all inlets outlets, vents, and overflows to ensure that they are in good condition and are operating as designed	Annually and after large storms.

Inlets, Outlets and Inspection Chambers Operation and Maintenance Plan

Inlets, Outlets and Inspection Chambers							
Maintenance Schedule	Required Action	Frequency					
Regular Maintenance	Inspect surface structures removing obstructions and silt as necessary.	Monthly.					
	Check there is no physical damage. Strim vegetation 1m min. surround to structures and keep hard aprons free from silt and debris.	Monthly.					
	Remove cover and inspect ensuring water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt.	Annually.					
	Undertake inspection after leaf fall in autumn	Annually.					
Occasional Maintenance	Check topsoil levels are 20mm above edges of baskets and chambers to avoid mower damage	As required					
Remedial Actions	Check structures and repair or replace as design detail as necessary.	As required					
	Check for the effects of erosion, particularly at headwall locations and make good to the banks and erosion protection materials.	As required and following large storms.					
	Repair physical damage if necessary.	As required.					