Heyford Road, Kirtlington

Drainage Strategy

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Job Number:	**30700**

Date	Revision	Notes/Amendments/Issue Purpose
13th January 2023	-	Draft
19th January 2023	1	Final
4th July 2023	2	Revised Development Plan

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Contents

Acronyms	
AOD	Above Ordnance Datum
BGS	British Geological Survey
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
FFL	Finished Floor Level
FRA	Flood Risk Assessment
LLFA	Lead Local Flood Authority
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
SuDS	Sustainable Drainage Systems

1 Introduction

Price & Myers have been commissioned to undertake a drainage strategy report for the proposed residential development east of Heyford Road, Kirtlington. This statement will be used to support the planning application for the proposed works.

This FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF), Planning Practice Guidance "Flood Risk & Coastal Change" (PPG), Oxfordshire County Council Local Standards and Guidance for Surface Water Drainage, the Environment Agency (EA) advice and CIRIA documents guidelines.

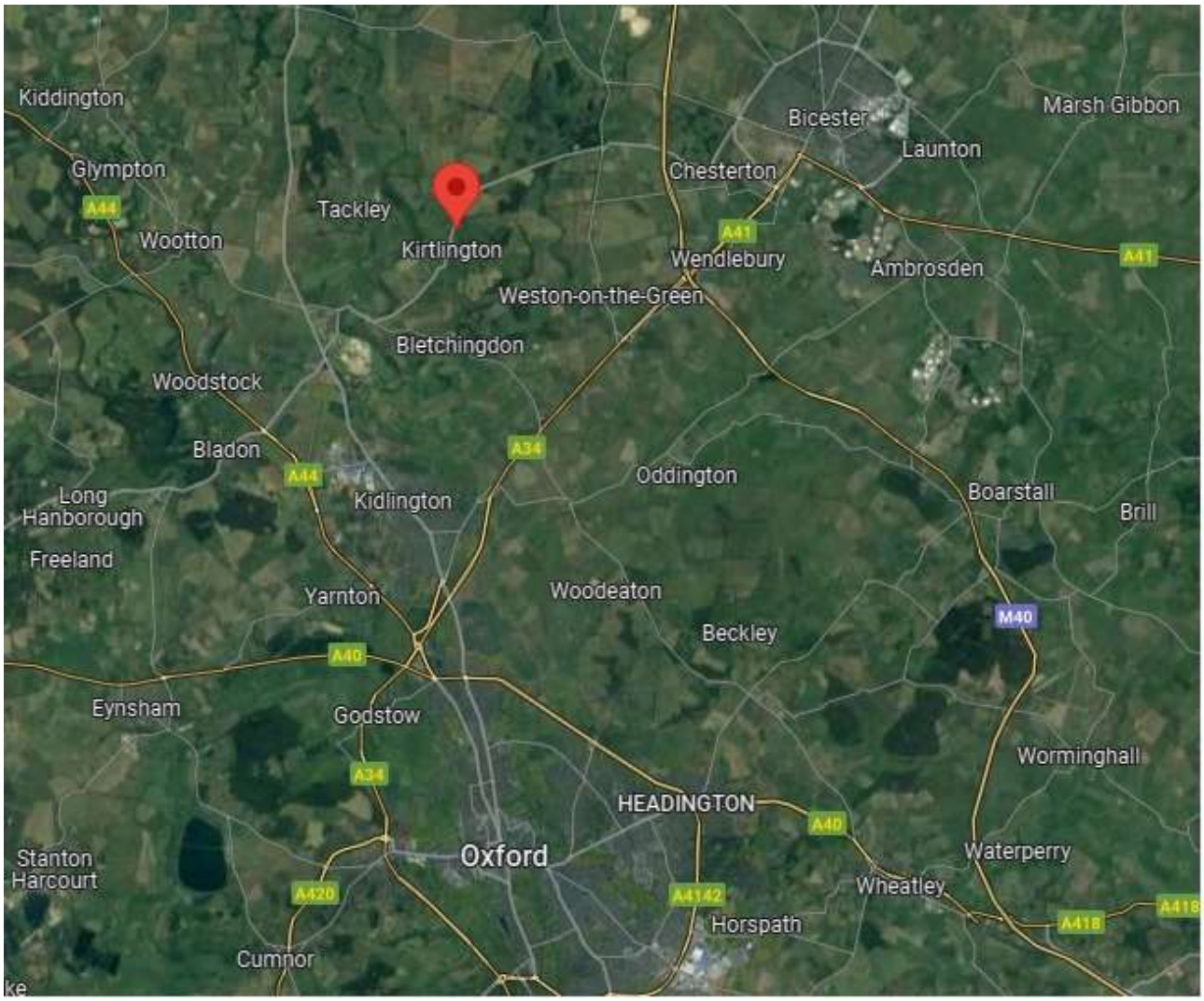


Figure 1.1 – Site Location (Google Maps 2023)

2 Site Description & Location

The site is on the east side of Heyford Road and it is situated at the north side of Kirtlington. The site occupies an area of approximately 2.2 ha and it is currently undeveloped. Access to the site is available from Heyford Road via an access road that serve existing properties at the north-west of the site.

The nearest postcode to the site is OX5 3HU and the Grid Reference is OS 450110/220210. The nearest watercourse to the site is an ordinary watercourse which is located approximately 300m south of the site.

Topographic survey information for the site shows that the site is reasonably flat with an average ground level of 102.70m AOD. The local topography shows that approximately 9% of the site area falls to the south-east. The north-eastern corner of the site falls to the north.

Figure 2.1 – Existing Site Layout, (Google Maps 2023)

3 Development Proposals

The proposals involve the construction of 14 no. houses with associated landscaping, access roads, garages, and car parking spaces. Access to vehicles and pedestrians will be provided from the existing access road that leads to Heyford Road.

Figure 3.1 - Proposed Site Layout

4 Flood Risk Summary

The EA's flood risk for planning map shows that the site area is located in Flood Zone 1 and therefore the flood risk from watercourses is considered low. The annual probability of flooding at the site location from rivers and the sea is less than 1 in 1,000.

The EA's flood risk from surface water and flood risk from reservoir failure maps also show that the site is at low risk of flooding from both sources. Furthermore, Thames Water have also confirmed that they hold no flooding records for this area (Appendix F).

Groundwater flooding is caused by the emergence of water from underground aquifers. It can be caused by a range of factors, including:

- Prolonged periods of rainfall
- Flooding of the superficial aquifer resulting from high river levels and
- Rebound – where abstraction of groundwater ceases, the groundwater level can return to a natural level. This may cause problems if springs start to reform in areas that have since been developed.

No basements are proposed which are vulnerable to groundwater flooding. While the site is reasonably flat, a fall towards the south-east exists. This will encourage water to flow to the south-east and towards the local watercourse, preventing ponding on site. Therefore, the flood risk from groundwater is considered low.

5 Surface Water Run-off Assessment

5.1 Existing Run-off

The site occupies an area of approximately 2.20 ha and it is currently undeveloped, generating greenfield run-off rates. The site's Greenfield run-off rates were calculated for various storm events based on the IH124 method, using UKSuDS tools.

Q_{BAR} = 1.67 l/s
Q_1 = 1.42 l/s
Q_{30} = 3.84 l/s
Q_{100} = 5.32 l/s

5.2 Climate Change

The current EA's Climate Change Allowances for Peak Rainfall in England Maps show that the site is within the Cherwell and Ray Management Catchment area. The EA's map shows that a 40% allowance must be applied for this development.

5.3 Urban Creep

Urban Creep describes future expansion within a development and activities such as building extensions and paving gardens. These activities increase the impermeable area of a site and often sit outside of the development control process.

The LLFA's Design Guidance document for surface water drainage systems states that "*in all calculations, proposed values of impermeable area should include a 10% allowance for Urban Creep, as taken from CIRIA C753 (version 6) paragraph 24.7.2.*" Therefore, a 10% increase in impermeable areas must be applied in the surface water drainage calculations.

5.4 Proposed Run-off

In accordance with EA guidelines, the Building Regulations, and Water Authorities advice, the preferred means of surface water drainage for any new development is to a suitable soakaway or infiltration drainage system. If this proves unviable, then discharge to a watercourse should be considered. As a last option, a connection to a sewer is recommended if available.

The LLFA's guidance document details the preference of discharge as follows from most preferable (1), to least preferable (4):

1. Into the ground (infiltration)
2. To a surface water body
3. To a surface water sewer, highway drain or other drain
4. To a combined sewer.

The ground conditions encountered during the site investigation works were topsoil/made ground overlying the Oxford Clay formation. Two soakaway tests in accordance with BRE Digest 365 were undertaken by Geo Integrity on 10th October 2022 (Appendix D). Both trenches failed to complete a test over the course of the day. This suggests that the porosity properties of the soil are not suitable for infiltration techniques.

The majority of the site area currently discharges greenfield run-off rates to the local ditch that runs approximately 300m to the south of the site. The FEH Web Service also confirms that most of the site area is within the catchment area of the local watercourse to the south of the site. Therefore, a drainage system can be designed to discharge greenfield run-off rates from the site to this watercourse, mimicking existing conditions.

Figure 5.1 – Watercourse's Catchment Area (FEH Web Service)

Sustainable Drainage Systems (SuDS) can be used for surface water storage. The development proposals suggest that permeable pavements and a pond can be incorporated on site. Porous surfaced systems such as permeable paving and porous asphalt can form the access roads. This will ensure that the new drainage system will remain shallow, avoiding pumping. The permeable surfaced systems will discharge attenuated flows into a pond. The pond will be excluded from the hydraulic calculations,

as it will not aim to store surface water. It will be designed to distribute water to a large area, mimicking existing conditions. The ground levels alongside the south bank will be even, allowing a trickle of water alongside the bank's length. This will prevent high flow rates from exiting the point at a local point.

National and local standards require surface water from greenfield sites to be restricted to existing rates. Furthermore, the LLFA's design guidelines state that "*there are two options for providing storage in order to limit peak discharge rates and volumes from the developed site. Either:*

- *Simple: Limit discharge rates for rainfall events up to and including the 1 in 100 year event (including climate change allowances) to the agreed QBAR rate (or 2l/s/ha whichever is greater) and 1 in 1 year event to the corresponding green field event; or*
- *Complex: For the greenfield volume, provide variable discharge rates to meet the equivalent greenfield 1 in 1, 1 in 30, and 1 in 100 rates, and either infiltrate or provide Long Term Storage for the additional volume of runoff produced by the development (The difference in runoff volume pre- and post-development for the 100 year 6 hour event), to discharge at rates below 2l/s/ha*.

The "Simple" approach has been adopted in the drainage design, aiming to reduce run-off as close to Q_{bar} rate as practically possible. MicroDrainage calculations show that a 69mm in diameter flow control device can be used in order to restrict the run-off from the site to 1.67l/s. However, this flow control cannot meet the Building Regulations minimum requirements for surface water drainage pipes. In accordance with the Building Regulations Part H, surface water drainage pipes must have a minimum diameter of 75mm to reduce the flood risk from blockages. MicroDrainage calculations show that a 75mm diameter flow control device will be able to restrict the run-off from the site to 2 l/sec which is slightly higher than the Q_{bar} flow rate and lower than the 1 in 30 year and 1 in 100 year peak flow rates. Therefore, the run-off from the proposed development to the ditch will be restricted to 2 l/sec for all storm events up to the 1 in 100 year plus 40% (increase due to the climate change). A Hydro-Brake will be used for surface water drainage. The proposed development will add 3,083m^2 of impermeable area to the site. An additional 10% will be added to this area for the surface water drainage calculations, due to the urban creep. Therefore, the total impermeable area for calculation purposes is 3,391m^2. Refer to Appendix C for the surface water drainage calculations.

5.5 Designing for Exceedance

The LLFA's guidance document for surface water drainage systems states that "*for events with a return-period in excess of 3.3% (1in30), surface flooding of open spaces such as landscaped areas or car parks is acceptable for short periods, but the layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes (further guidance in CIRIA publication C635 Designing for exceedance in urban drainage - good practice). No flooding of property should occur as a result of a 1% (1in100) storm event (including an appropriate allowance for climate change".* Drainage calculations show that no flooding will occur for storm events with a return period up to the 1 in 100 year plus 40%. Therefore, the LLFA's requirements have been met.

In storm events exceeding the 1 in 100 year plus 40%, the site's topography shows that the Hydro-Brake manhole and the pond will flood first. The local topography will direct overland flows to the local watercourse without affecting the proposed or any existing buildings. Refer to Appendix E for the exceedance flow plan.

5.6 Water Quality

CIRIA C753 "The SuDS Manual, Chapter 26" sets out the 'simple index approach to water quality risk management.

Step 1 of the simple index approach is to identify the pollution hazard indices for the proposed land use. The proposed development is considered to have a low pollution hazard level as Table 5.2 below shows. The associated pollution hazard indices are taken from Table 26.2 of The SuDS Manual:

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Other roofs	Low	0.3	0.2	0.05
Individual property driveways, residential car parks, low traffic roads and non-residential car parking with infrequent change	Low	0.5	0.4	0.4

Table 5.2 Pollution Hazard Indices

Step 2 of the simple index approach is to select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index. Run-off from hard standing areas on site will pass through at least two different SuDS. The minimum treatment that will be provided on site is a combination of permeable paving and filter drains. Table 5.3 shows that the mitigation indices of the treatment techniques are greater than the hazard indices for the proposed development.

Type of SuDS Component	TSS	Metals	Hydrocarbons
Permeable Pavement	0.7	0.6	0.7
Pond	0.7	0.7	0.5

Table 5.3 Surface Water Pollution Mitigation Indices

5.7 Surface Water Drainage Maintenance Strategy

The successful implementation and operation of a SuDS system depends on a robust and clear maintenance strategy being implemented. The following measures should form part of the site's proposed management plan.

It is envisaged that the house owners will be responsible to maintain the drainage system on site.

SuDS Element	Maintenance		
	Activity	Required Action	Typical Frequency
		Relevel uneven surfaces and reinstate design levels	
Permeable Paving	Monitoring / Inspections	Initial inspection	Monthly for three months after installation
		Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first six months

SuDS Element	Maintenance		
	Activity	**Required Action**	**Typical Frequency**
		Relevel uneven surfaces and reinstate design levels	
		Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
		Monitor inspection chambers	Annually
	Regular Maintenance	Brushing and vacuuming -standard cosmetic sweep over whole surface	Once a year after autumn leaf fall
		Rubbish and litter removal	As required
	Remedial Actions	Remediate any landscaping which through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
		Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	
		Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required
Ponds and Wetlands	**Regular Maintenance**	Remove litter and debris	Monthly, or as required
		Cut the grass – public areas	Monthly during growing season
		Cut the meadow grass	Half yearly – before nesting season in spring and in autumn
		Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly, at start, then as required
		Inspect inlets, outlets, banksides, structures, pipework etc. for evidence of blockage and/or physical damage	Monthly
		Inspect water body for signs of poor water quality	Monthly from May – October
		Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
		Check any mechanical devices, e.g. penstocks	

		Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base; include max 25% of pond surface)	Annually
		Remove 25% of bank vegetation from water's edge to a minimum of 1 m above water level	
		Tidy all dead growth before start of growing season	
		Remove sediment from any forebay.	Every 1–5 years, or as required
		Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required
	Occasional Maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%.	With effective pre-treatment, this will only be required rarely, e.g. every 25–50 years
	Remedial Actions	Repair erosion or other damage	As required
		Replant, where necessary	
		Aerate pond when signs of eutrophication are detected	
		Realign rip-rap or repair other damage	
		Repair / rehabilitate inlets, outlets and overflows.	

Table 5.4 SuDS Maintenance Strategy as taken from The SuDS Manual

6 Foul Water Drainage

The site is currently undeveloped and therefore there is no foul water drainage system in operation. Thames Water's sewer records show that there is a 150mm diameter foul water public sewer in Heyford Road. It is therefore proposed to connect the foul water drainage from the proposed development to this sewer. The site's topography confirms that a gravity drainage connection to this sewer is achievable. Furthermore, Thames Water have confirmed that there is sufficient capacity in this sewer to accommodate the additional flows from the proposed development (Appendix F).

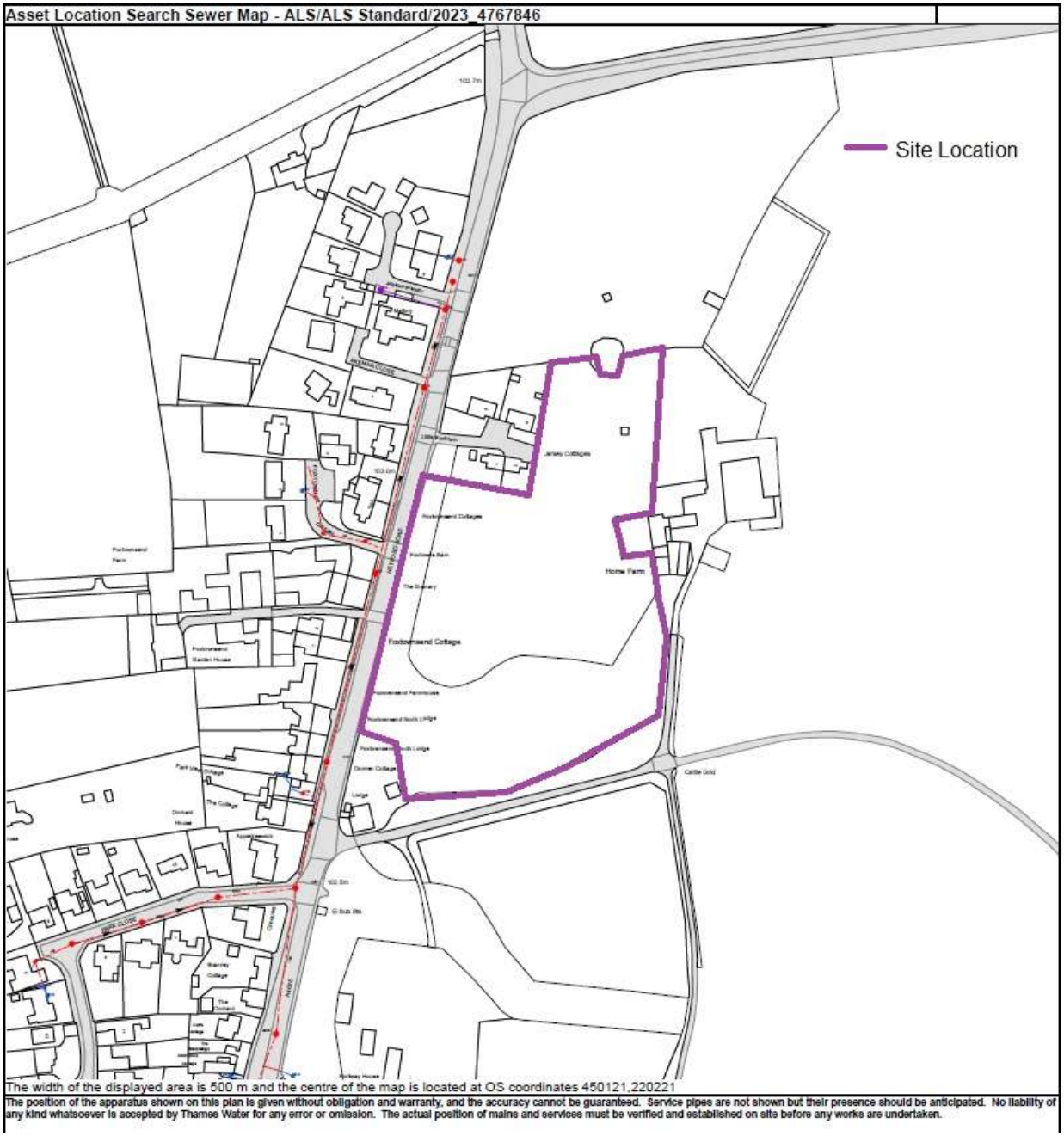


Figure 6.1 – Thames Water Sewer Records

7 Conclusions

I. The site is at very low risk of flooding from rivers, the sea, surface water, reservoirs and groundwater.

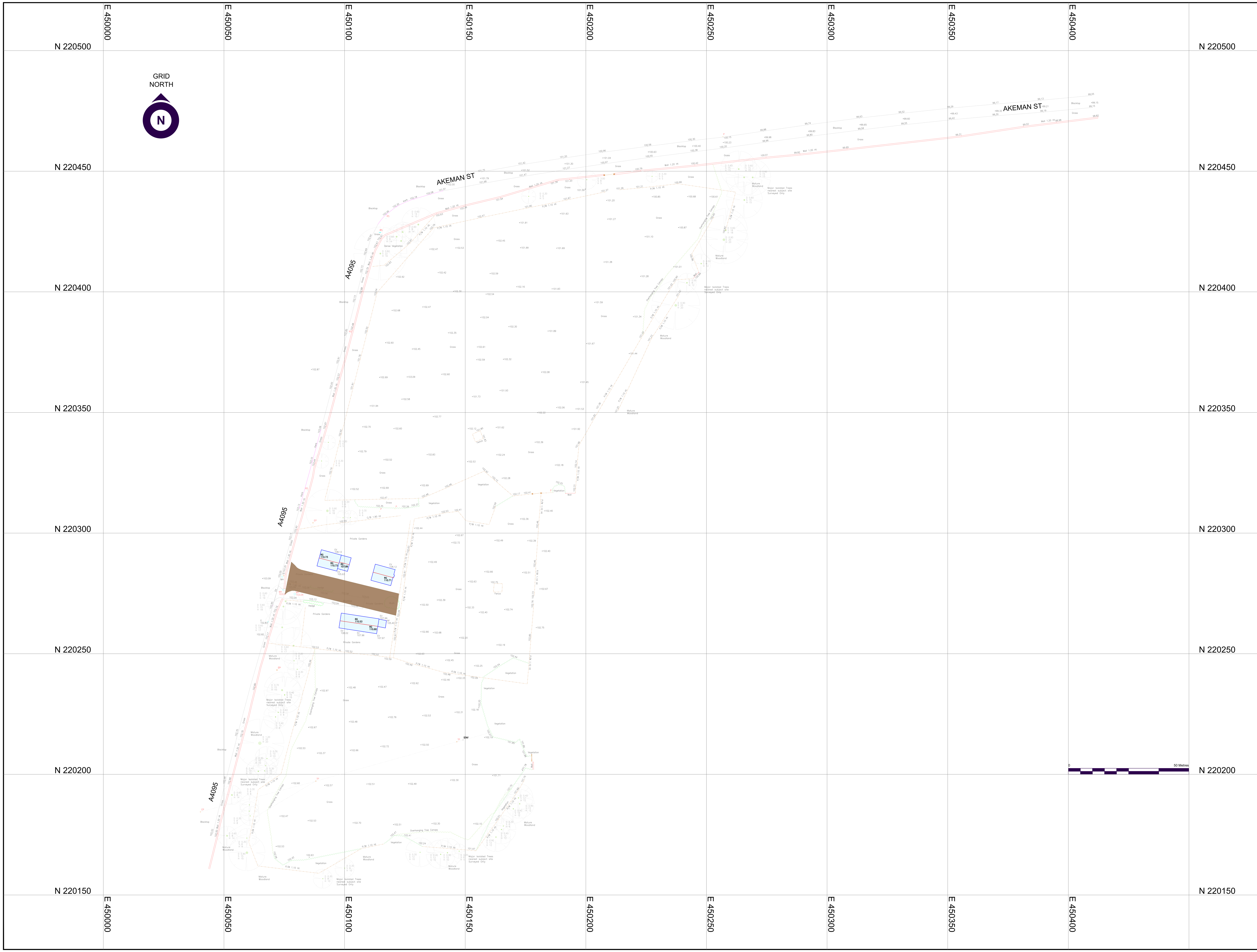
II. Soakaway test results show that the soil is not suitable for infiltration techniques. It is therefore proposed to discharge runoff from the site to the local watercourse that runs approximately 300m to the south of the site. Surface water runoff from the proposed development will be attenuated as close to the greenfield Q_{bar} rate as possible, mimicking existing conditions.

III. Permeable paving and a pond will be used for surface water collection and storage. A flow control device will restrict run-off from the site to the watercourse to 2l/sec for storm events up to the 1 in 100 year plus 40%.

IV. The proposed SuDS will provide sufficient water treatment, reducing the risk of contamination.

V. Foul water from the proposed development will discharge to the 150mm diameter foul water public sewer in Heyford Road.

Appendix A
Topographical Survey Drawing



SURVEY DRAWING NOTES

SURVEY CONTROL DETAILS

1. HORIZONTAL GRID

The survey is orientated to Ordnance Survey Grid North and is surveyed to a plane grid. All horizontal measurements and dimensions taken from this survey will be GROUND distance.

The co-ordinate system used for the primary control is OSGB36; this has been calculated from ETRS89 using the OSTN015 transformation parameters.

For this particular project, the TRIMBLE VRS NOW network has been used with observations taken on the following date(s) 07/08/2021

Manufacturers quoted accuracy is typically RMS 10 – 20 mm in plan and 20 – 30 mm in height. These values can however fluctuate depending upon time of day, satellite geometry and other conditions that could cause degradation to the final solutions. for salient control and wherever possible and practical
Mean sea level corrections (MSL) are deemed to be insignificant and have therefore not been applied due to the low level of this site

2. VERTICAL DATUM:

Altitudes for the control have been calculated from GPS derived heights and converted to Orthometric heights (Ordnance Datum Newlyn - ODN) using OSGM15 transformation parameters.

3. This drawing is to be read in conjunction with all other relevant drawings :
4. Check scale bar and grid before taking non-figured dimensions from this drawing.

LEGEND

	BUILDING		GATE
			HEDGE/ VEGETATION /TREE CANOPY
99.90	CONTOUR	+30.29	SPOT LEVEL
	BANKING	STN/102 100.000	SURVEY STATION WITH LEVEL
			SAPLING
	FENCE & DESCRIPTION		TREE (INDICATIVE ONLY)

FENCE TYPE ABBREVIATIONS

B/W	Barbed wire	He	Heras
C/P	Chestnut Paling	I/R	Iron Railing
C/B	Close Boarded	P/W	Post and Wire
C/I	Corrugated Iron	P/R	Post and rail
C/L	Chain Link	P/C	POST AND CHAIN
C/Ba	Crash Barrier	P/Bw	POST AND BARBED WIRE
C/Pa	Concrete Panel	S/S	STEEL SECURITY
E/L	Electric	W/M	WIRE MESH
H/D	Hoarding		

SURVEY PLAN ABBREVIATIONS

BOL	BOLLARD	LP	LAMP POST
BBE	BELISHA BEACON	MKR	MARKER POST
BH	BOREHOLE	MH	MANHOLE
BP	BOUNDARY POST	MP	MILE POST
BS	BUS STOP	OHC	OVERHEAD CABLES
BT	BRITISH TELECOM IC	PI	PIPE
CATV	CABLE TELEVISION IC	PM	PARKING METER
CCTV	CLOSE CIRCUIT TV	PO	POST
CBX	CONTROL CABINET	PYL	ELECTRIC PYLON
CL	COVER LEVEL	RE	RODDING EYE
COL	COLUMN	RF/RG	ROOF/RIDGE LEVEL
CP	CATCH PIT	NP	NAME PLATE
CTV	CABLE TELEVISION POINT	RS	ROAD SIGN
DK	DROP KERB	RWP	RAINWATER PIPE
DRN	DRAIN	SC	STOP COCK
DWP	DOWN WATER PIPE	SFL	SOFFIT LEVEL
DP	DOWN PIPE	Slev	SILL LEVEL
EC	ELECTRICITY CONTROL BOX	SPO	SIGN POST/BOARD
ECB	ELECTRICITY CABLE	ST	STOP TAP
EV	EAVES LEVEL	STP	STUMP
EP	ELECTRICITY POLE	SV	STOP VALVE
ER	EARTH ROD	SW	STORM WATER
FFL	FINISHED FLOOR LEVEL	TAP	WATER TAP
FH	FIRE HYDRANT	TBX	TELEPHONE CALL BOX
FL	FLOOD LIGHT	THL	THRESHOLD LEVEL
G	GULLY	TL	TRAFFIC LIGHT
GV	GAS VALVE	TP	TELEPHONE POLE
GP	GATE POST	TRAIL PIT	TPIT
HLev	HEAD LEVEL	TW	TOP OF WALL
IC	INSPECTION COVER	SVP	SOIL & VENT PIPE
IL	INVERT LEVEL	WL	WATER LEVEL
KB	KERB	WM	WATER METER
KO	KERB OUTLET GULLY	WV	WATER VALVE
LB	LITTER BIN	WO	WASH OUT

GENERAL

A. NO ALLOWANCE HAS BEEN MADE FOR SUB SURFACE ENTRY INTO MANHOLES OR OTHER CHAMBERS OR VOIDS BELOW GROUND LEVEL. THEREFORE ANY DETAILS RELATING TO DEPTHS, SIZES ETC. ARE TAKEN FROM ABOVE GROUND AND AS SUCH WILL BE APPROXIMATE ONLY.
B. THE CONTRACTOR IS TO CHECK AND VERIFY ALL CRITICAL DIMENSIONS AND LEVELS BEFORE WORK STARTS.
C. BURIED SERVICES SHOWN ON THIS DRAWING MAY BE ASSUMED ROUTES AND WILL NORMALLY BE OF UNKNOWN CONDITION, CONTRACTORS SHOULD UNDERTAKE SUITABLE VALIDATION WORK AND TAKE PARTICULAR CARE DURING EXCAVATION WORK; SAFE DIGGING PRACTICES SHOULD BE FOLLOWED.
D. SHOULD THERE BE ANY CONFLICT BETWEEN THE DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS, THEN SURVEYOR SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
E. IT IS IMPORTANT TO NOTE THAT THE SAME ACCURACIES IMPLIED BY THE PLOTTING SCALE ARE EQUALLY APPLICABLE TO DIGITAL DATA SUPPLIED FOR CAD.
F. EVERY EFFORT IS MADE TO IDENTIFY ALL VISIBLE ABOVE GROUND FEATURES. HOWEVER, IT SHOULD BE BORNE IN MIND THAT THERE MAY BE ITEMS OBSCURED AT THE TIME OF SURVEY.
G. VISIBLE FEATURES IN THE VICINITY OF THE BOUNDARIES, AS SHOWN ON THIS SURVEY, MAY NOT REPRESENT THE EXTENT OF LEGALLY CONVEYED OWNERSHIP.
H. UNLESS OTHERWISE SPECIFIED FEATURES SHOWN USING LINE STYLES OR HATCHING ARE INDICATIVE ONLY, SUCH AS; ROAD MARKINGS, HEDGE CENTRELINES, BRICK HATCHING AND GLAZING DETAIL.

Project : KIRTLINGTON
Title : TOPOGRAPHICAL SURVEY
Scale: 1:500@A0 Date: 13/09/21
Drawn by: MJ

Appendix B
Calculations

Greenfield Run-off

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Dimitris Linardatos
Site name:	Heyford Road
Site location:	Kirtlington

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.87803° N
Longitude:	1.27323° W
Reference:	979675195
Date:	Jan 11 2023 17:45

Runoff estimation approach FEH Statistical

Site characteristics

Total site area (ha): 2.2

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.806
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.14

Hydrological characteristics	Default	Edited
SAAR (mm):	640	640
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):		1.67
1 in 1 year (l/s):		1.42
1 in 30 years (l/s):		3.84
1 in 100 year (l/s):		5.32
1 in 200 years (l/s):		6.24

Attenuation Calculations

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 999 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.202	0.202	0.0	2.0	2.0	106.5	O K
30 min Summer	0.235	0.235	0.0	2.0	2.0	124.2	O K
60 min Summer	0.272	0.272	0.0	2.0	2.0	143.7	O K
120 min Summer	0.311	0.311	0.0	2.0	2.0	164.4	O K
180 min Summer	0.334	0.334	0.0	2.0	2.0	176.5	O K
240 min Summer	0.350	0.350	0.0	2.0	2.0	184.8	O K
360 min Summer	0.369	0.369	0.0	2.0	2.0	194.8	Flood Risk
480 min Summer	0.379	0.379	0.0	2.0	2.0	200.0	Flood Risk
600 min Summer	0.383	0.383	0.0	2.0	2.0	202.4	Flood Risk
720 min Summer	0.384	0.384	0.0	2.0	2.0	203.0	Flood Risk
960 min Summer	0.386	0.386	0.0	2.0	2.0	203.6	Flood Risk
1440 min Summer	0.383	0.383	0.0	2.0	2.0	202.1	Flood Risk
2160 min Summer	0.371	0.371	0.0	2.0	2.0	195.7	Flood Risk
2880 min Summer	0.354	0.354	0.0	2.0	2.0	186.7	Flood Risk
4320 min Summer	0.290	0.290	0.0	2.0	2.0	153.0	O K
5760 min Summer	0.238	0.238	0.0	2.0	2.0	125.5	O K
7200 min Summer	0.194	0.194	0.0	2.0	2.0	102.7	O K
8640 min Summer	0.160	0.160	0.0	2.0	2.0	84.4	O K
10080 min Summer	0.133	0.133	0.0	2.0	2.0	70.3	O K
15 min Winter	0.228	0.228	0.0	2.0	2.0	120.5	O K
30 min Winter	0.266	0.266	0.0	2.0	2.0	140.4	O K
60 min Winter	0.308	0.308	0.0	2.0	2.0	162.4	O K
120 min Winter	0.353	0.353	0.0	2.0	2.0	186.2	Flood Risk
180 min Winter	0.379	0.379	0.0	2.0	2.0	200.1	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	183.535	0.0	97.8	19
30 min Summer	106.544	0.0	114.6	34
60 min Summer	61.850	0.0	143.5	64
120 min Summer	35.905	0.0	167.9	124
180 min Summer	26.121	0.0	183.8	182
240 min Summer	20.843	0.0	195.7	242
360 min Summer	15.164	0.0	213.5	362
480 min Summer	12.100	0.0	226.7	482
600 min Summer	10.156	0.0	237.1	600
720 min Summer	8.803	0.0	245.5	720
960 min Summer	7.089	0.0	260.3	874
1440 min Summer	5.225	0.0	271.0	1112
2160 min Summer	3.851	0.0	332.0	1512
2880 min Summer	3.101	0.0	354.6	1932
4320 min Summer	2.195	0.0	370.9	2684
5760 min Summer	1.717	0.0	387.7	3456
7200 min Summer	1.420	0.0	396.1	4176
8640 min Summer	1.215	0.0	401.9	4840
10080 min Summer	1.066	0.0	405.3	5544
15 min Winter	183.535	0.0	110.5	19
30 min Winter	106.544	0.0	128.5	33
60 min Winter	61.850	0.0	161.9	62
120 min Winter	35.905	0.0	189.1	122
180 min Winter	26.121	0.0	206.7	180

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
240 min Winter	0.397	0.397	0.0	2.0	2.0	209.5	Flood Risk
360 min Winter	0.419	0.419	0.0	2.0	2.0	221.1	Flood Risk
480 min Winter	0.431	0.431	0.0	2.0	2.0	227.5	Flood Risk
600 min Winter	0.437	0.437	0.0	2.0	2.0	230.9	Flood Risk
720 min Winter	0.440	0.440	0.0	2.0	2.0	232.3	Flood Risk
960 min Winter	0.444	0.444	0.0	2.0	2.0	234.2	Flood Risk
1440 min Winter	0.436	0.436	0.0	2.0	2.0	230.2	Flood Risk
2160 min Winter	0.419	0.419	0.0	2.0	2.0	221.0	Flood Risk
2880 min Winter	0.393	0.393	0.0	2.0	2.0	207.7	Flood Risk
4320 min Winter	0.302	0.302	0.0	2.0	2.0	159.5	O K
5760 min Winter	0.224	0.224	0.0	2.0	2.0	118.1	O K
7200 min Winter	0.163	0.163	0.0	2.0	2.0	85.9	O K
8640 min Winter	0.120	0.120	0.0	2.0	2.0	63.5	O K
10080 min Winter	0.095	0.095	0.0	1.9	1.9	50.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
240 min Winter	20.843	0.0	219.9	238
360 min Winter	15.164	0.0	239.5	356
480 min Winter	12.100	0.0	253.8	470
600 min Winter	10.156	0.0	264.8	584
720 min Winter	8.803	0.0	273.2	694
960 min Winter	7.089	0.0	285.8	914
1440 min Winter	5.225	0.0	280.8	1168
2160 min Winter	3.851	0.0	373.8	1624
2880 min Winter	3.101	0.0	399.2	2080
4320 min Winter	2.195	0.0	418.0	2936
5760 min Winter	1.717	0.0	438.2	3680
7200 min Winter	1.420	0.0	448.3	4328
8640 min Winter	1.215	0.0	455.6	4928
10080 min Winter	1.066	0.0	460.5	5448

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 450950 220300 SP 50950 20300
C (1km)	-0.021
D1 (1km)	0.312
D2 (1km)	0.344
D3 (1km)	0.244
E (1km)	0.287
F (1km)	2.468
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.339

Time (mins) From:	To:	Area (ha)
0	4	0.339

Model Details

Storage is Online Cover Level (m) 0.650

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	176.0
Max Percolation (l/s)	488.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	0.000	Membrane Depth (m)	0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0074-2000-0500-2000
Design Head (m)	0.500
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	74
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.500	2.0	Kick-Flo®	0.342	1.7
Flush-Flo™	0.149	2.0	Mean Flow over Head Range	-	1.7

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)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.9	0.800	2.5	2.000	3.8	4.000	5.2	7.000	6.8
0.200	2.0	1.000	2.7	2.200	3.9	4.500	5.5	7.500	7.1
0.300	1.8	1.200	3.0	2.400	4.1	5.000	5.8	8.000	7.3
0.400	1.8	1.400	3.2	2.600	4.3	5.500	6.1	8.500	7.5
0.500	2.0	1.600	3.4	3.000	4.6	6.000	6.3	9.000	7.8
0.600	2.2	1.800	3.6	3.500	4.9	6.500	6.6	9.500	8.0

Appendix C
Drainage Strategy

KEY:

- New Foul Water Drain
- New Surface Water Drain
- Existing Foul Water Sewer
- Proposed Manhole
- Existing Manhole
- Hydrobrake Manhole
- Permeable Surfaced System
- New surface water distribution pond

F05
CL: 102.65
IL: 101.75

F07
CL: 102.75
IL: 102.23

100mm @ 1:80

F06
CL: 102.70
IL: 101.87

150mm @ 1:150

F03
CL: 102.65
IL: 101.38

F04
CL: 102.65
IL: 101.54

F02
CL: 102.65
IL: 101.21

TW MH0201
CL: 102.65
IL: 100.85

F01
CL: 102.55
IL: 100.96

New TWMH
CL: 102.65
IL: 100.79 (TBC)

Hydrobrake Manhole
Peak Flow 2l/s

150mm @ 1:150

150mm @ 1:150

TW MH0101
CL: 102.30
IL: 100.26

Pond is not designed for water storage. Pond is designed to distribute greenfield run-off to a large area, mimicking existing conditions

Porous/Permeable Surface

420mm Coarse graded aggregate (4/20mm)

Geomembrane

Geotextile

Formation

Porous Surfaced System Detail

102.50

Pipe Inlet

102.00

Pond depth - 0.7m

Section A-A

PRICE & MYERS

Job No.	30700	Page	SK 6000	Rev	2
Date	03/07/2023	Eng	ARu	Chd	DLin
Job	Land off Heyford Road, Kirtlington				

1:1000 @ A3

LAND OFF HEYFORD ROAD KIRTLINGTON

0m 20 40 60m

scale 1:1000

Appendix D
Infiltration Test Results

4 Church Street
Maids Moreton
MK18 1QE

01280 816409
07858 367 125
murraybateman@geo-integrity.co.uk
www.geo-integrity.co.uk

Our Ref: FW/22-09-09

Abbeymill Homes,
Market House,
Silver End,
Olney,
Buckinghamshire,
MK46 4AL

20th October 2022

For the attention of Declan McBrearty

Dear Declan,

Soakaway Testing – Heyford Road, Kirtlington, OX5 3HU

Following receipt of the acceptance email and purchase order for our proposal, reference E01375Rev01, on the 16th of September 2022, we have pleasure in providing you with our interpretative soakaway letter report for the site situated at Heyford Road, Kirtlington, OX5 3HU, centred at OS Reference SP 50142 20245. This is a soakaway letter report and should not be relied upon for geotechnical design purposes.

1. Objectives and Sitework Information

The site is located on the outskirts of the village of Kirtlington, approximately 8.5km southwest from the centre of Bicester. The site is an almost J-shaped open field, currently used to keep horses. Open fields are present beyond the northern, eastern and southern boundaries, with residential dwellings also on the eastern and western boundaries; Heyford Road runs north-south along the western boundary also.

The objectives of this site investigation were:-

- To conduct deep and shallow infiltration tests following BRE Digest 365

On the 10th of October 2022, we attended site and undertook two soakaway tests in general accordance with BRE Digest 365. The two infiltration pits were excavated using a JCB 3CX, with the excavation locations and depths chosen by geo-Integrity Ltd. The trial pits were filled with water using multiple water barrels; the infiltration of the water was then monitored over the course of the tests. The location of the exploratory holes can be seen on the Exploratory Hole Location Plan below.

2. Published Geology

Reference to the British Geological Survey website and Sheet 218, Chipping Norton 1968, indicates that the site is underlain by Oxford Clay Formation (including Kellaways Beds) bedrock strata of Jurassic Age.

The **Oxford Clay Formation** is described as silicate-mudstone, grey, generally smooth to slightly silty, with sporadic beds of argillaceous limestone nodules.

The **Kellaways Formation** is described as mudstone, grey commonly silici-silty or silici-sandy, with beds of generally calcareous siltstone and sandstone.

3. Ground Conditions Encountered

The ground conditions encountered at this site were Topsoil/Made Ground overlying the Oxford Clay Formation.

Topsoil/Made Ground

Topsoil was encountered in SA 1 from ground level to 0.25m bgl; Made Ground was encountered in SA 2 from ground level to 0.40m bgl.

Topsoil was encountered as firm to stiff light brown slightly gravelly clay, with gravel of quartzite.

The Made Ground was encountered as firm to stiff dark brown sandy very gravelly clay, with gravel of brick, metal, ash, glass, ceramic, flint and quartzite, with cobbles of limestone.

Oxford Clay Formation

Oxford Clay Formation was encountered in both trial pits from a minimum depth of 0.25m bgl to a maximum depth of 1.95m bgl where the deepest hole terminated.

Firm brown sandy clay with rare limestone cobbles was encountered in both trial pits from a minimum depth of 0.25m bgl to a maximum depth of 0.60m bgl.

Stiff to very stiff grey and brown silty clay was encountered in both trial pits from a minimum depth of 0.50m bgl to a maximum depth of 1.95m bgl where the deepest hole terminated; in SA 1 this became dark grey with yellow silt bands.

Groundwater

Groundwater was not struck in any of the exploratory holes during the investigation.

4. Soil Infiltration Comments

The two trial pits were tested for their infiltration potential using the methods set out in BRE Digest 365; the full results are attached.

Both locations failed to complete a single test over the course of the day.

Therefore it is considered the underlying soils are effectively impermeable and traditional soakaway drainage will not be viable on this site.

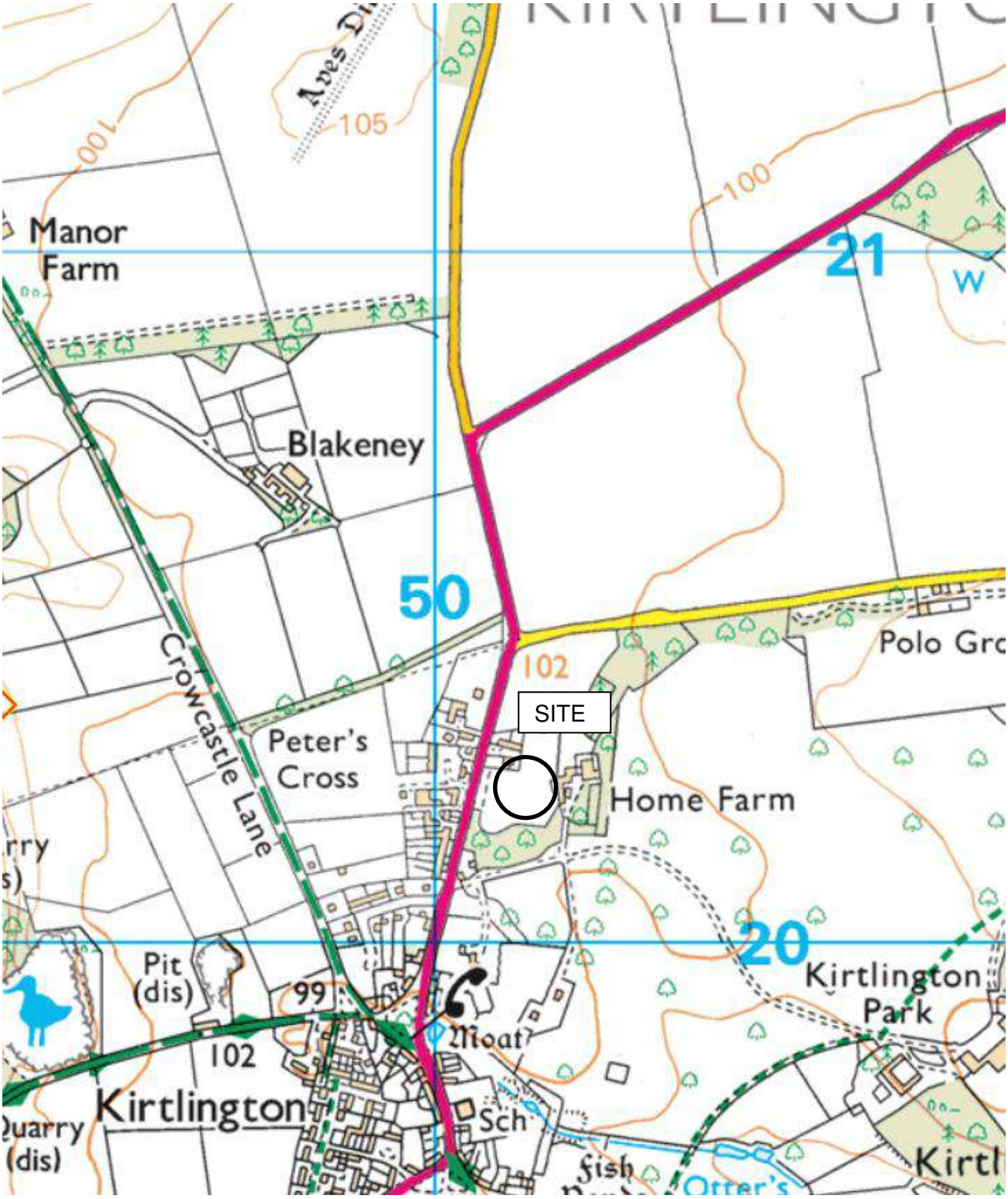
We trust this information is satisfactory to you. In the event of any queries please contact us.

Yours sincerely

Fiona White
Engineering Geologist

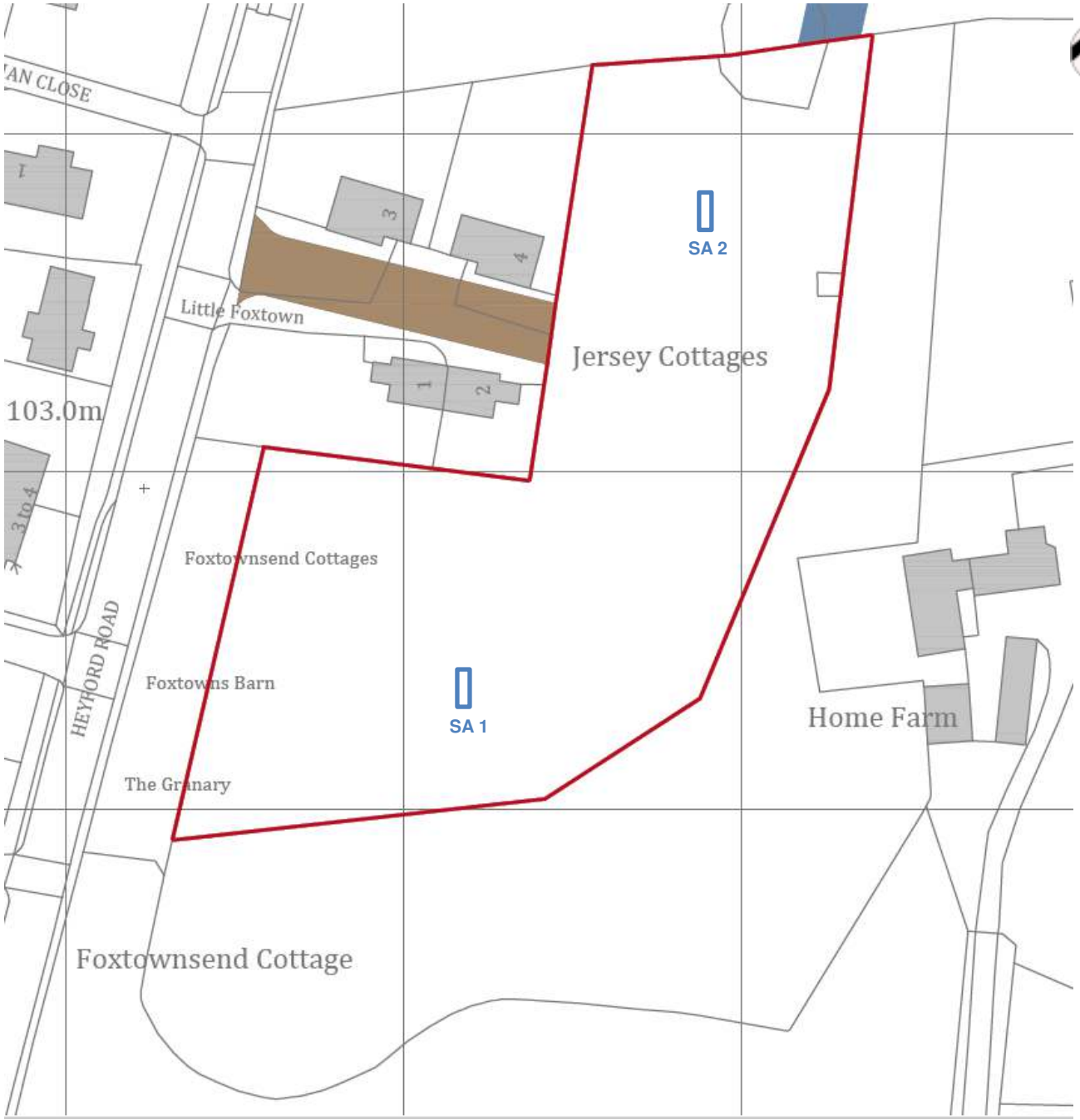
Geo-Integrity Ltd.

Site Plan



September 2022 **SITE LOCATION PLAN** Report No:- 22-09-09

Geo-Integrity, - 07858 367 125 Email:- murraybateman@geo-integrity.co.uk



Key

BRE 365 Test Locations

GEO INTEGRITY

4 Church Street
Maids Moreton
MK18 1QE

Tel:- 01280 816409
Mob:- 07858 367 125
www. geo-integrity.co.uk

Exploratory Hole Location Plan

SITE:- Heyford Road, Kirtlington, OX5 3HU

JOB NO.:- 22-09-09

CLIENT:- Abbeymill Homes

Drawn	Checked
FW	MB

Scale: Not To Scale, for indicative purposes only

10th October 2022

10th October 2022

Geo-Integrity, - 07858 367 125 Email:- murraybateman@geo-integrity.co.uk

10th October 2022

10th October 2022

Geo-Integrity, - 07858 367 125 Email:- murraybateman@geo-integrity.co.uk

10th October 2022

Geo-Integrity, - 07858 367 125 Email:- murraybateman@geo-integrity.co.uk

www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site	Trial Pit Number
Heyford Road, Kirtlington, OX5 3HU	SA 1

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
			Abbeymill Homes	22-09-09
	Location (Handheld GPS) 450124 E 220195 N	Dates 10/10/2022	Project Contractor Geo-Integrity Ltd.	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.25)	TOPSOIL Firm to stiff light brown slightly gravelly CLAY. Gravel is medium to coarse sub-angular of quartzite.		
0.20	D				0.25			
					(0.25)	OXFORD CLAY FORMATION Firm brown sandy CLAY with rare limestone cobbles.		
0.40	D				0.50			
0.70	D					OXFORD CLAY FORMATION Stiff to very stiff grey and brown silty CLAY.		
					(1.45)			
						Becoming dark grey with yellow silt bands		
					1.95			
						Complete at 1.95m		

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:40	FW	22-09-09.SA 1

www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site Heyford Road, Kirtlington, OX5 3HU			**Trial Pit Number** SA 2
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)**	**Client** Abbeymill Homes	**Job Number** 22-09-09
	Location (Handheld GPS) 450161 E 220278 N	**Dates** 10/10/2022	**Project Contractor** Geo-Integrity Ltd.	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.40) 0.40	MADE GROUND Firm to stiff dark brown sandy very gravelly CLAY. Gravel is medium to coarse angular of brick, limestone, quartzite, metal, ash, glass and ceramic, with cobbles of limestone.		
					(0.20) 0.60	OXFORD CLAY FORMATION Firm brown sandy CLAY with rare limestone cobbles.		
					(0.35) 0.95	OXFORD CLAY FORMATION Stiff to very stiff grey and brown silty CLAY.		
						Complete at 0.95m		

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:40	FW	22-09-09.SA 2

Geo-Integrity Ltd.
www.geo-integrity.co.uk
murraybateman@geo-integrity.co.uk
07858 367 125
01280 816409

Trial Pit Infiltration Testing to BRE Digest 365

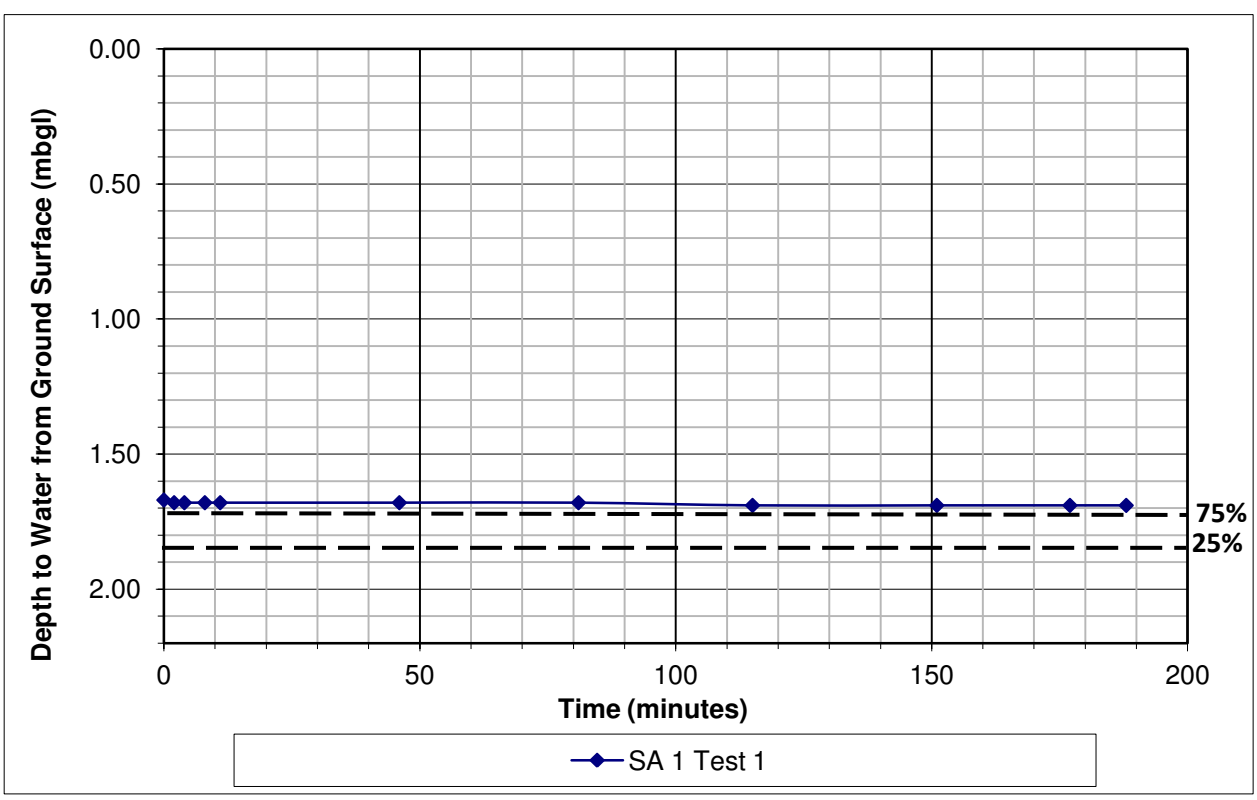
Client: Abbeymill Homes
Site: Heyford Road, Kirtlington, OX5 3HU
Dimensions: 0.30m x 2.2m x 1.9m (width x length x depth)

Report No: 22-09-09
Date Tested: 10/10/22
Test Location: SA 1

Test Response Zone Description - : Oxford Clay Formation

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	1.67	115	1.69		
2	1.68	151	1.69		
4	1.68	177	1.69		
8	1.68	188	1.69		
11	1.68				
46	1.68				
81	1.68				

Unable to Calculate Soil Infiltration Rate



Geo-Integrity Ltd.
www.geo-integrity.co.uk
murraybateman@geo-integrity.co.uk
07858 367 125
01280 816409

Trial Pit Infiltration Testing to BRE Digest 365

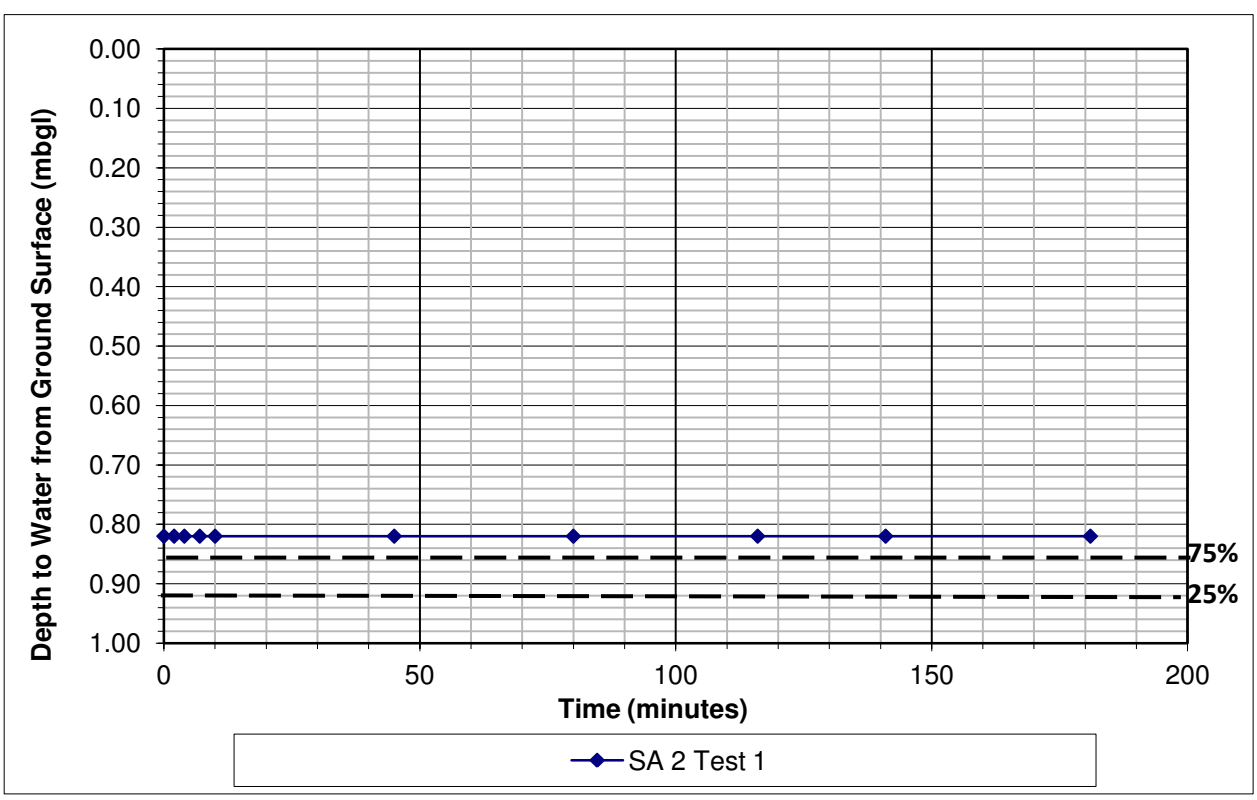
Client: Abbeymill Homes
Site: Heyford Road, Kirtlington, OX5 3HU
Dimensions: 0.30m x 1.25m x 0.96m (width x length x depth)

Report No: 22-09-09
Date Tested: 10/10/22
Test Location: SA 2

Test Response Zone Description - : Oxford Clay Formation

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.82	116	0.82		
2	0.82	141	0.82		
4	0.82	181	0.82		
7	0.82				
10	0.82				
45	0.82				
80	0.82				

Unable to Calculate Soil Infiltration Rate



Appendix E
Exceedance Flow

KEY:

- New Foul Water Drain
- New Surface Water Drain
- Existing Foul Water Sewer
- Proposed Manhole
- Existing Manhole
- Hydrobrake Manhole
- Permeable Surfaced System
- New surface water distribution pond
- Exceedance Routes

F05
CL: 102.65
IL: 101.75

F07
CL: 102.75
IL: 102.23

100mm @ 1:80

F06
CL: 102.70
IL: 101.87

150mm @ 1:150

F03
CL: 102.65
IL: 101.38

F04
CL: 102.65
IL: 101.54

F02
CL: 102.65
IL: 101.21

TW MH0201
CL: 102.65
IL: 100.85

F01
CL: 102.55
IL: 100.96

New TWMH
CL: 102.65
IL: 100.79 (TBC)

Hydrobrake Manhole
Peak Flow 2l/s

150mm @ 1:150

150mm @ 1:150

Pond is not designed for water storage. Pond is designed to distribute greenfield run-off to a large area, mimicking existing conditions

TW MH0101
CL: 102.30
IL: 100.26

Mallory
AKEMAN CLOSE
FOXTOWNS GREEN
HEYFORD ROAD
Jersey Cottages
Foxtownsend Cottages
Foxtowns Barn
The Granary
Dormer Cottage
Lodge
Cattle Grid
103.0m

PRICE & MYERS

Job No. 30700 Page SK 6001 Rev 2

Date 03/07/2023 Eng ARu Chd DLin

Job Land off Heyford Road, Kirtlington

1:1000 @ A3

LAND OFF HEYFORD ROAD KIRTLINGTON

0m 20 40 60m

scale 1:1000

Appendix F
Thames Water Correspondence

Dimitris Linardatos

Price & Myers
37 Alfred Place
London
WC1E 7DP

Wastewater pre-planning
Our ref DS6101721

10 January 2023

Pre-planning enquiry: Confirmation of sufficient capacity (Foul water only)

Dear Dimitris,

Thank you for providing information on your development on Hedyford Road, Kirtlington, Kidlington, OX5 3HU for the proposed developments of 13 general housing units to be build. Proposed Foul water to be discharged into Foul water manhole SP50200201 via gravity. Surface water is not to be discharged into the Thames water's sewer.

We have completed the assessment of the foul water flows based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

The disposal hierarchy being:

1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2) rainwater infiltration to ground at or close to source
3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
4) rainwater discharge direct to a watercourse (unless not appropriate)
5) controlled rainwater discharge to a surface water sewer or drain
6) controlled rainwater discharge to a combined sewer.

Where connection to the public sewerage network is required to manage surface water flows we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

Please see the attached 'Planning your wastewater' leaflet for additional information.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you've any further questions, please contact me on 07747642636.

Yours sincerely

Nathanael Bryant Sanjaya.
Adoption Engineer
Developer Services

Sewer Flooding
History Enquiry

Property Searches

Price & Myers LLP

Alfred Place

Search address supplied	Portway House Heyford Road Kirtlington Kidlington OX5 3HU
Your reference	30700
Our reference	SFH/SFH Standard/2023_4767850
Received date	**3 January 2023**
Search date	**3 January 2023**

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Sewer Flooding
History Enquiry

Property Searches

Search address supplied: Portway House,Heyford Road,Kirtlington,Kidlington,OX5 3HU

This search is recommended to check for any sewer flooding in a specific address or area

TWUL, trading as Property Searches, are responsible in respect of the following:-

(i) any negligent or incorrect entry in the records searched;

(ii) any negligent or incorrect interpretation of the records searched;

(iii) and any negligent or incorrect recording of that interpretation in the search report

(iv) compensation payments

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Sewer Flooding
History Enquiry

Thames Water Property Searches

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

- A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- "Internal flooding" from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- "At Risk" properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company's reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water on Tel: 0800 316 9800 or website www.thameswater.co.uk

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540