Flood Risk Assessment for a Development at Southdean Road, Huyton, L14 8AJ

Contract Ref: FD358

For Breck Homes

Contents

Quality Assurance Record

Contributors for Townsend Water Engineering Limited:

Name	Role
Charles Townsend	Project Manager
Alice Osborne	Engineering Assistant

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1. INTRODUCTION

1.1 Purpose of this Report

Townsend Water Engineering Ltd. has been appointed by Breck Homes for a Flood Risk Assessment (FRA) for a residential development of 136 dwellings at the land north of Southdean Road, Huyton, Knowsley, L14 8AJ (Grid Ref: 342632, 392709) The proposed development comprises of a mix of 1,2,3 and 4 bed homes, maisonettes and apartments including infrastructure and landscaping. This report has been prepared in support of the planning permission for the development.

The report is based on the available flood risk information for the site detailed in Section 1.2 and prepared in accordance with the planning policy requirements set out in Section 1.3. The scope of the FRA is consistent with the 'Site Specific Flood Risk Assessment Checklist' from the National Planning Policy Framework (NPPF) and accompanying Planning Practice Guidance (PPG):

https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section

1.2 Sources of Information and Consultation

This Report has been informed by:

- Existing draft Site Plan drawings and respective topographic plan delivered by Breck Homes;
- UU Sewer Map;
- IGE Consulting soil logs;
- Knowsley Metropolitan Borough Council Local Flood Risk Management Strategy October 2017;
- BGS website http://mapapps.bgs.ac.uk/geologyofbritain/home.html?mode=boreholes;
- Defra Magic Map https://magic.defra.gov.uk/magicmap.aspx;
- Cranfield University Soil Mapping http://www.landis.org.uk/soilscapes/;
- The EA online flood maps;
- Flood Zone Map https://flood-map-for-planning.service.gov.uk/; and
- Flood Risk Map: https://flood-warning-information.service.gov.uk/long-term-flood-risk/.

1.3 Policy Context

This report has been prepared in accordance with the relevant national, regional and local planning policy and statutory guidance as follows:

- National policy contained within the National Planning Policy Framework (NPPF) dated December 2024; and
- The NPPF Planning Practice Guidance (PPG) dated in December 2024.

1.4 Structure of this Report

The Report has been prepared based on the following structure:

- Section 2 refers to spatial planning considerations by reference to the proposed land use, flood zoning and NPPF vulnerability;
- Section 3 presents the assessment of existing flood risk at the site;
- Section 4 presents the proposed development and findings of flooding;
- Section 5 presents an outline of Ironside Farrar drainage strategy design; and
- Section 6 provides a summary of the assessments.

Additional Appendices are provided that deal with the following:

- Appendix A: Topographical Survey;
- Appendix B: Soil Logs;
- Appendix C: Site Layout;
- Appendix D: Sewer Map; AND
- Appendix E: Ironside Farrar Drainage Strategy and Calculations.

2. SPATIAL PLANNING CONSIDERATION

2.1 Location and Background

The location of the proposed development site is shown in Figure 1 and Figure 2, with location details found in Table 1. The site is located at the land north of Southdean Road, Huyton, Knowsley, L14 8AJ (Grid Ref: 342632, 392709).

The proposed development is for approximately 136 dwellings, comprising a mix of 1,2,3 and 4 bed homes, maisonettes and apartments including infrastructure and landscaping. The development site is approximately 2.77ha and is currently partially brownfield and grass area.

Table 1: Site Details Grid Reference Details Taken from the Site https://www.streetmap.co.uk/

Reference	Value
OS X (Eastings)	342632
OS Y (Northings)	392709
Nearest Post Code	L14 8AJ
Nat. Grid	SJ 42646 92702

Directly to the north if the site is land earmarked for a potential link road. Further north of the site is Hope Primary School. To the east is residential areas then Ashbury Road. Southdean Road is to the south of the site, followed by residential areas. To the west are fields and St. Dominics Church. These features are shown in figure 2 and 3.

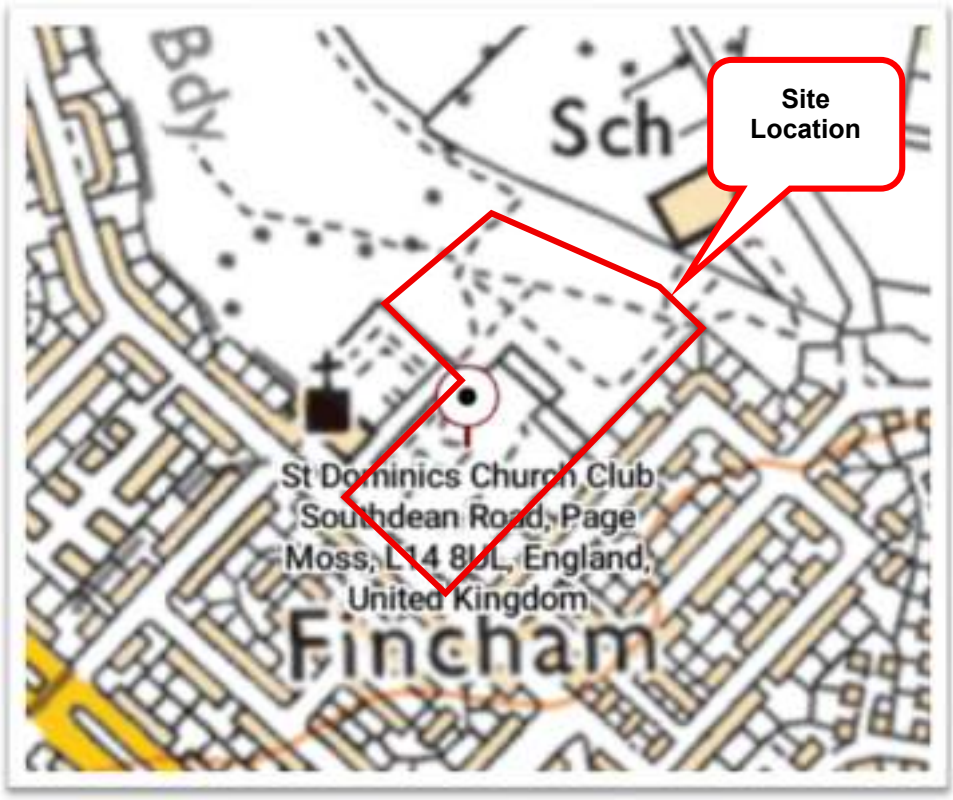


Figure 1: Site Location (Source: Bing OS Map)

Figure 2: Aerial View of the Site (Source: Google Maps)

2.2 Topography

The existing ground elevations on site is shown in the topographic drawing (Figure 3 and Appendix A). They indicate that the site falls from south-east to north-west. Ground levels vary between 25.18mAOD in the south-east to 23.35mAOD in the north-west.

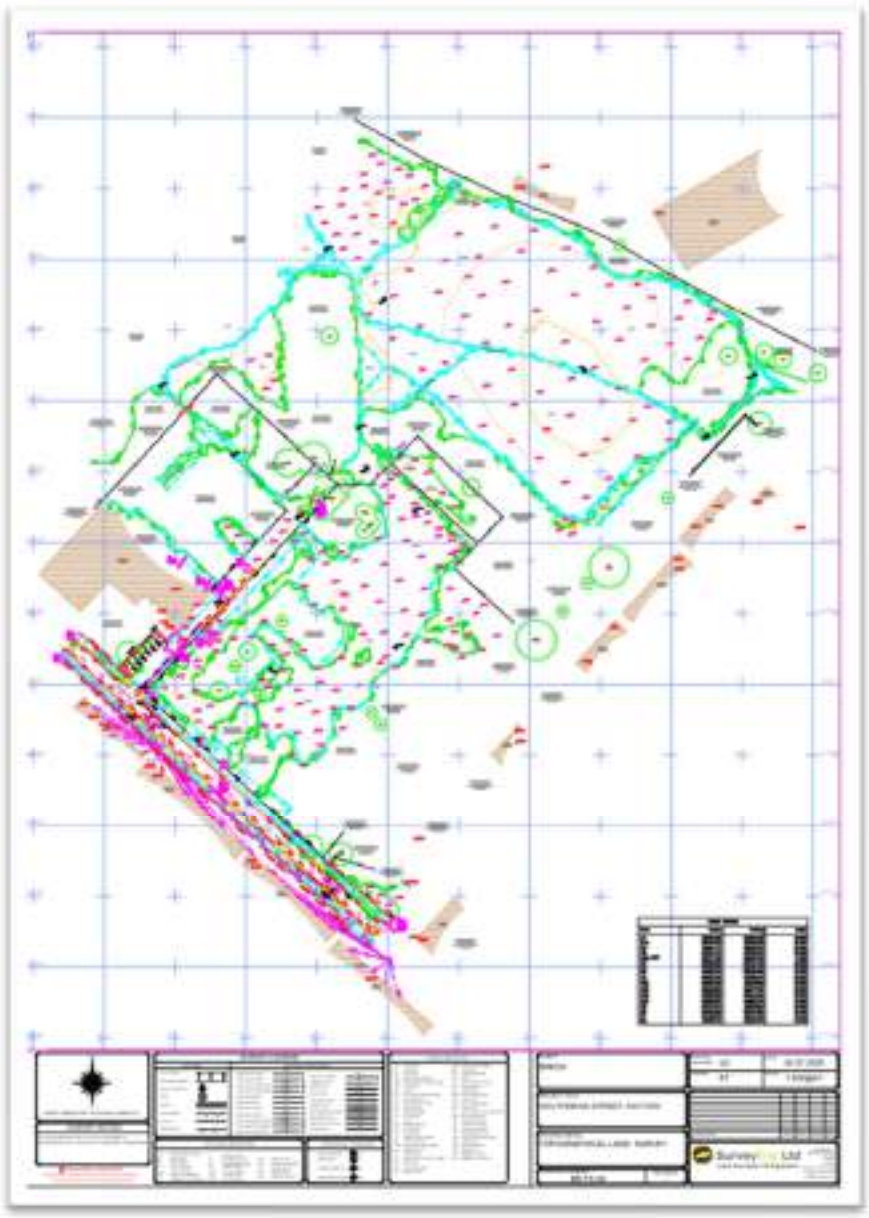


Figure 3: Topographical Survey

2.3 Geology and Soil

The geology at the site has been obtained from the British Geological Survey (BGS) website. The bedrock beneath the site is described as ‘Chester Formation - Sandstone’. Superficial deposits are described as ‘Till, Devensian - Diamicton’. (Figure 4: Bedrock underneath the Site (Source: BGS Bedrock Geology Mapping)).

Figure 4: Bedrock underneath the Site (Source: BGS Bedrock Geology Mapping)

Soilscapes Viewer describes the soil conditions at the site as ‘Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils’ with impeded drainage. Please see Figure 5 below.

Figure 5: Soilscapes

IGE Consulting undertook soil logs at the site and found that the ground is clay (Appendix B). The ground is unlikely to infiltrate as it is clay with impeded drainage. It is recommended that infiltration testing is undertaken at the site to confirm whether it can infiltrate.

2.4 Climate Change Allowances for River Flow

The Environment Agency and NPPF require a consideration of the impacts of climate change in Flood Risk Assessments (FRA). In May 2022, the Environment Agency updated the climate change allowances required in Flood Risk Assessments (last updated 27 May 2022); this advice updates previous climate change allowances to support the NPPF (DCLG, 2021).

The advice splits the country into regions and give climate change split into central, high, upper. According to the guidance the development should use 44% for river flows for more vulnerable development. Please see below the climate change map for river flow allowances:

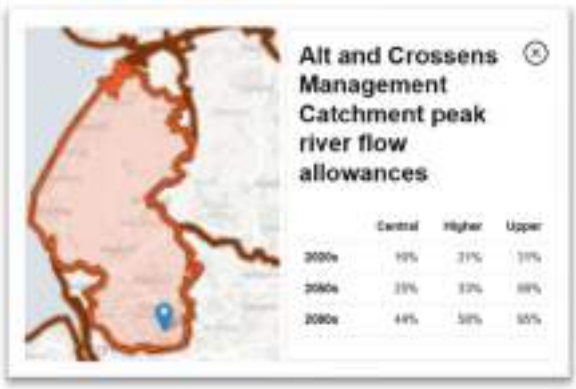


Figure 6: Peak River Flow Allowances

2.5 Climate Change Allowances for Rainfall

Figure 7 shows anticipated changes in small catchments, recommending a progressive increase, reaching 45% for the 'Upper End' allowance by 2125. This allowance would be recommended for this proposed development, which is classified as 'More Vulnerable' and has been taken to have a 100-year design life. The 45% climate change allowance is based on the 90th percentile, meaning that there is a 90% chance that rainfall will not increase by more than the 45% increment.

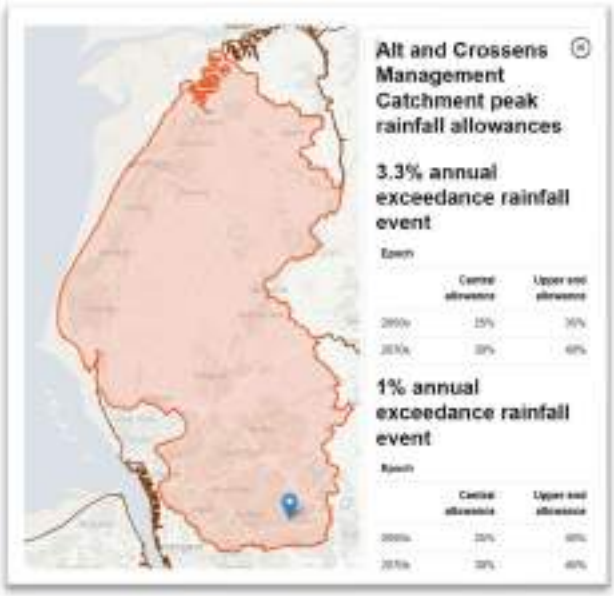


Figure 7: Peak Rainfall Intensity Allowance in Small and Urban Catchments

3. FLOOD HAZARD FOR EXISTING SITE

3.1 Source of Flood Risk

Flood sources and their possibilities at the site is further described below.

3.2 Fluvial Flood Risk

The proposed site is within Flood Zone 1 (area at low risk of flooding). Flood Zone 1 has an estimated less than 1 in 1000-year return period. Please see Figure 8:

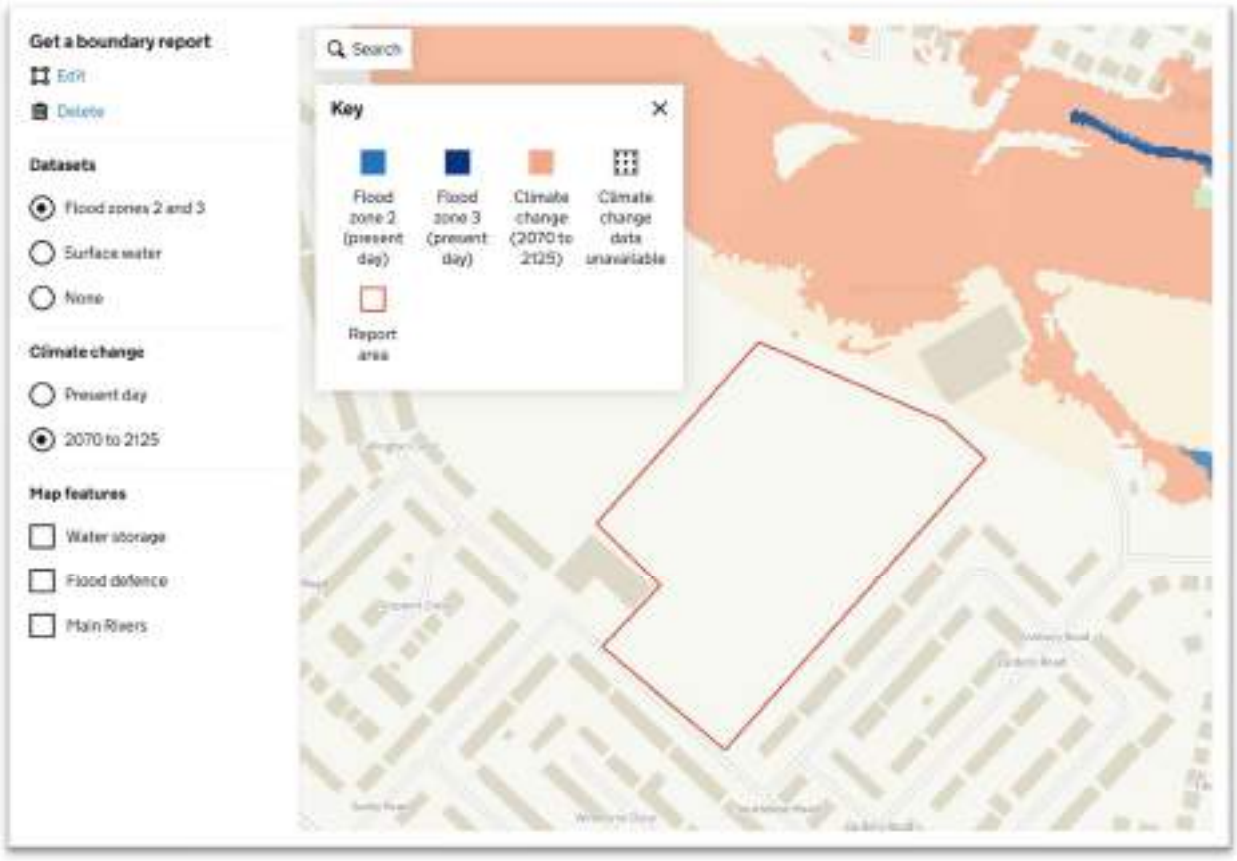


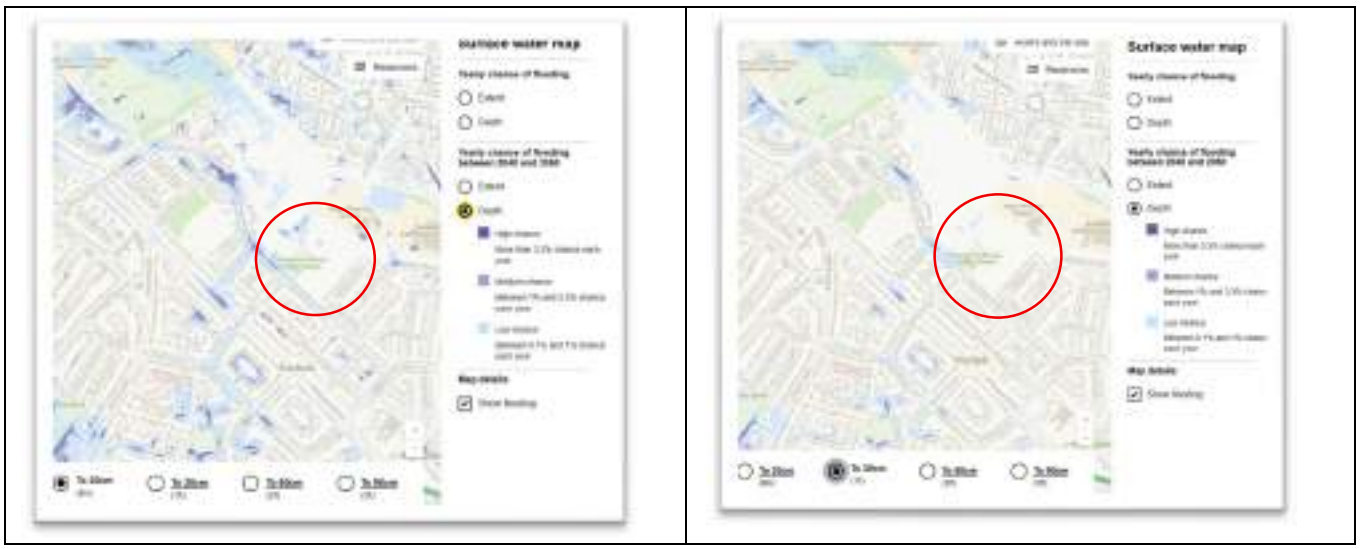
Figure 8: Environment Agency (EA) Flood Map (Climate Change 2070-2125)

3.2.1 Surface Water

The EA surface water flood extents and flood depth have been obtained from the EA open dataset. The site is at risk of surface water flooding in the 1 in 30 year AEP, this flood outline increases in the 1 in 100 year AEP and the 1 in 1000 year AEP. Please see Figure 9.

Figure 9: Extent of Flooding from Surface Water 1 in 30 Year, 1 in 100 Year and 1 in 1000 Year AEP (Source: EA Open Dataset)

We obtained the surface water flood depth to 20cm, 30cm, 60cm and 90cm for the site on the EA Long Term Flood Risk checker. The deepest surface water flooding on the site is up to 20cm and is mininal, in one spot in the north-west. Please see Figure 10.



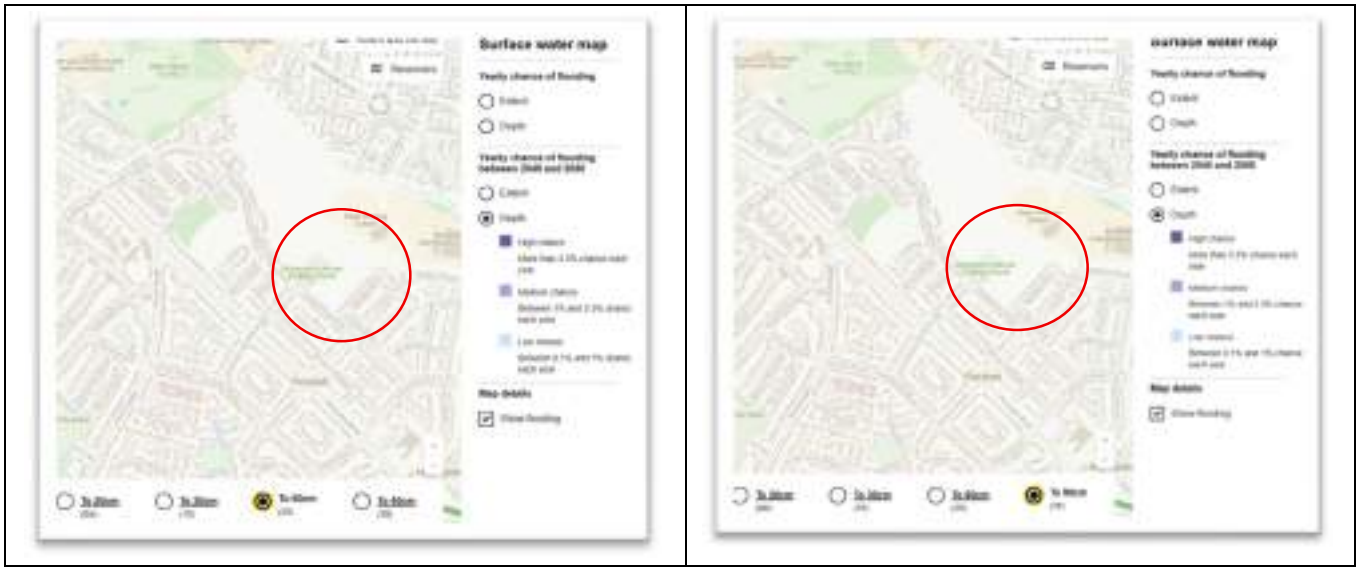


Figure 10: Surface Water Flood Depths at 20cm, 30cm, 60cm and 90cm (Source: EA Long Term Flood Risk Checker)

To investigate this further, we put the sites layout over the surface water flood depths, using ArcGIS. The spot of surface water up to 20cm is not in the same area as any dwellings. Please see Figure 11.

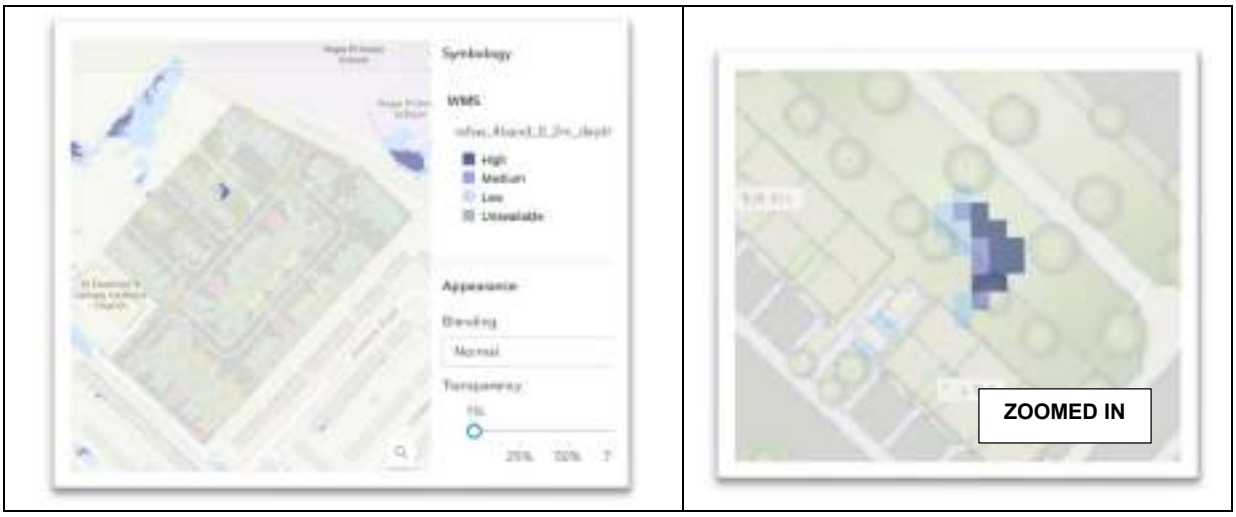


Figure 11: Surface Water Flood Depths at 20cm Over Site Proposed Layout + Zoomed In (Tool: ArcGIS)

Therefore, the site is not at risk of surface water flooding.

3.2.2 Flood Risk from Reservoir /Canals / Other Artificial Sources

The EA Extent of Flooding from Reservoirs map (Figure 12:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)), based only on large reservoirs (over 25,000 m^3 of water), shows that the site is not within potential risk of flooding in the event of a breach from reservoirs. Flooding from reservoirs is considered to be extremely unlikely and the risk of flooding to the site is considered to be low.

There is no flood risk from canals or other artificial sources as there are no canals or artificial sources within the vicinity of the site.

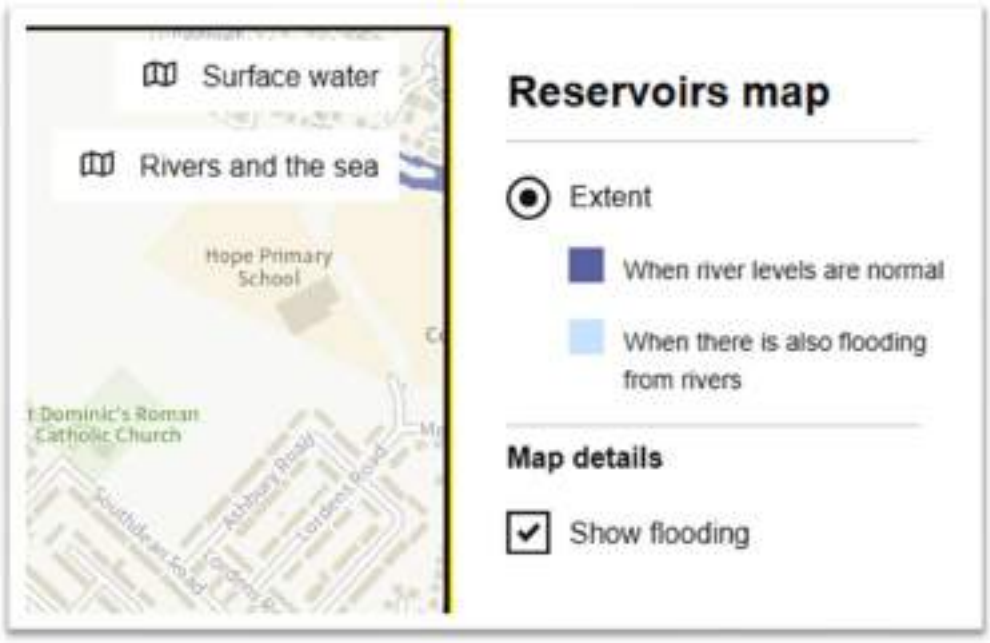


Figure 12:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)

3.2.3 Flood Risk from Groundwater

Groundwater flooding is noted to be unlikely on the long term flood risk checker for groundwater. Please see Figure 13.

Figure 13: Risk of Groundwater Flooding to Site (Long Term Flood Risk Checker - EA)

3.2.4 Flood Risk from Sewers

According to the United Utilities (UU) sewer map (Appendix D), there are no public sewers crossing the site. Therefore, flooding risk from sewers is believed to be low for this site. Please see Figure 14 below:

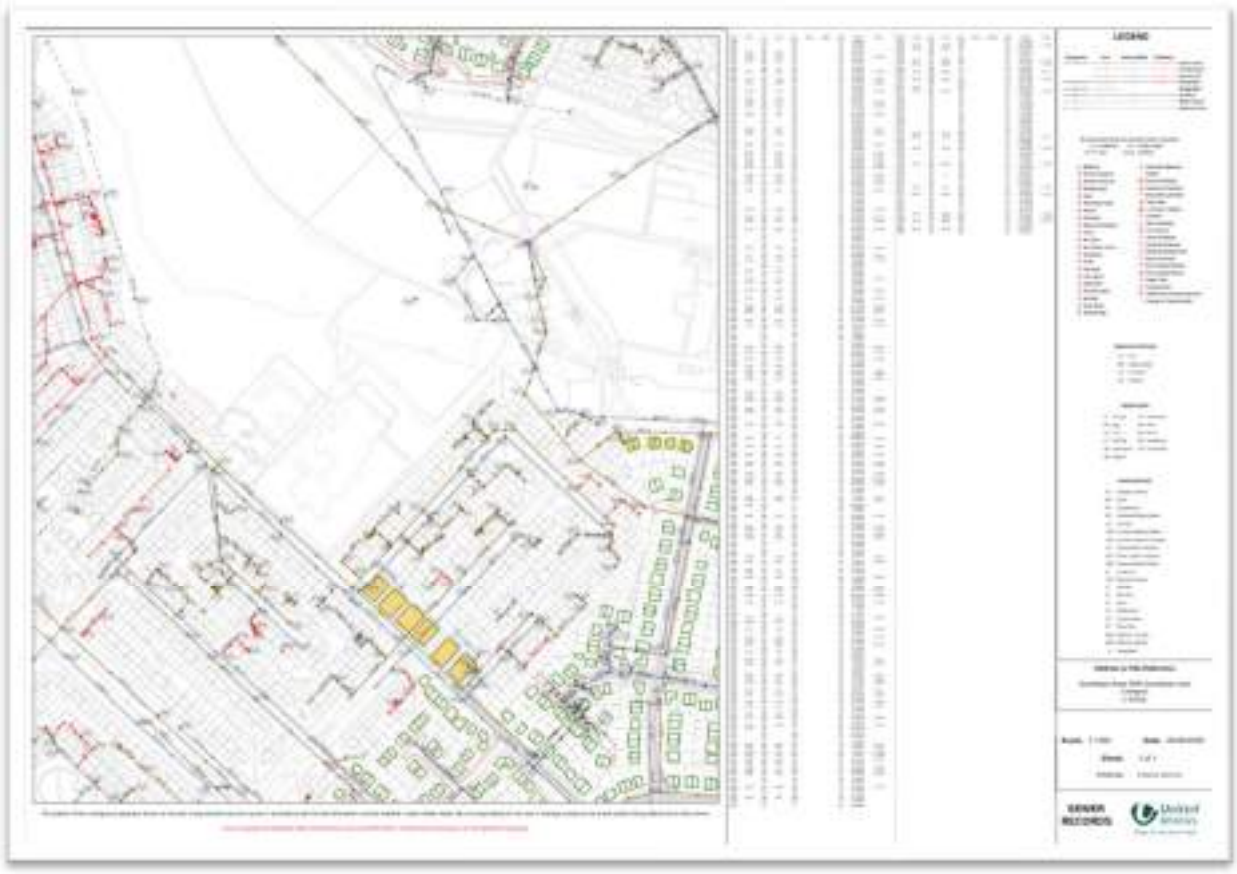


Figure 14: UU Sewer Map

3.3 Existing Surface Water Drainage Arrangements

The existing site drains to the south of the site to Southdean Road. The existing site is a mixture of greenfield and brownfield.

4. ASSESSMENT OF FLOOD RISK FOR PROPOSED DEVELOPMENT

4.1 Development Proposals

The proposed development is for the construction of 136 dwellings with access roads and car parking, as shown on the indicative masterplan Figure 15. Please see Appendix C for the layout.

The development area is 2.77ha and the impermeable area has been assessed as 1.55ha. Please see Figure 15 below:

Figure 15: Proposed Site (Source: Client)

4.2 Fluvial Flood Management

The Flood Map for Planning shows the site to be within Flood Zone 1, an area at low risk of fluvial flooding.

4.3 Surface Water flooding

The EA surface water flood extents and flood depth have been obtained from the EA open dataset. The site is at risk of surface water flooding in the 1 in 30 year AEP, this flood outline increases in the 1 in 100 year AEP and the 1 in 1000 year AEP. Please see Figure 9.

We obtained the surface water flood depth to 20cm, 30cm, 60cm and 90cm for the site on the EA Long Term Flood Risk checker. The deepest surface water flooding on the site is up to 20cm and is mininal, in one spot in the north-west. Please see Figure 10.

To investigate this further, the sites layout were put over the surface water flood depths, using ArcGIS. No dwellings are situated in the area of surface water up to the depth of 20cm. Please see Figure 11.

Therefore, the risk of surface water flooding to the site is low.

4.4 NPPF Vulnerability

The development will be classed as 'More Vulnerable' under the NPPF vulnerability classification (Table 3). The flood risk vulnerability and flood zone compatibility are displayed in Table 3:Flood Risk Vulnerability and Flood Zone Compatibility (Source NPPF Technical Guide). As noted in Section 3.2, the site is within a Flood Zone 1.

Table 2:Flood Risk Vulnerability Classification (Source: NPPF Technical Guide)

More Vulnerable (MV)
Hospitals, residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels
Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
Non–residential uses for health services, nurseries and educational establishments.
Landfill and sites used for waste management facilities for hazardous waste[6].
Sites used for holiday or short let caravans and camping, subject to a specific warning and evacuation plan.[7]

Table 3:Flood Risk Vulnerability and Flood Zone Compatibility (Source NPPF Technical Guide)

Flood Zone	Definition	Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
1	T>1,000	✔	✔	✔	✔	✔
2	$100<T_{fluv}<1,000$ $200<T_{tidal}<1,000$	✔	✔	Exc. Test	✔	✔
3a	$T_{fluv}<100$ $T_{tidal}<200$	Exc. Test	✔	✖	Exc. Test	✔
3b (functional floodplain)	$T_{fluv}<20$	Exc. Test	✔	✖	✖	✖

As the development is 'More Vulnerable' and it is in Flood Zone 1, as set out in section 3.2, according to Table 3:Flood Risk Vulnerability and Flood Zone Compatibility (Source NPPF Technical Guide), the sequential test is passed and there is no need for an exception test. The site is at low risk of surface water flooding as no dwellings are being placed in the areas at risk of surface water flooding.

5. DRAINAGE STRATEGY

Please find below the Ironside Farrar drainage strategy.

5.1 Existing Drainage Arrangements

5.1.1 Surface Water

It is assumed the existing drainage arrangements is that all the surface water from the existing site drains into the ground.

5.2 Infiltration Rates

The ground is unlikely to infiltrate as it is clay with impeded drainage according to IGE Consulting soil logs. However, it is recommended infiltration test are undertaken, to confirm whether it can drain to ground.

5.3 Run-off

The discharge has been set at Q-bar greenfield runoff rate of 18.6l/s.

5.4 Surface Water Drainage Strategy

5.4.1 Hierarchy of Discharge

In accordance with the Flood Risk and Coastal Change Planning Practice Guidance, where possible, preference should be given to multi-functional sustainable drainage systems, and to solutions that allow surface water to be discharged according to the following hierarchy of drainage options:

1. Into the ground (infiltration);

2. To a watercourse;

3. To a surface water sewer, highway drain, or another drainage system; and

4. To a combined sewer.

Infiltration: As detailed in section 2.3, infiltration is unlikely to be feasible at this site as IGE consulting undertook soil logs in August 2025 and found that the ground is clay. **However, there will be some infiltration into the ground through the filter drains. This has not been included in the calculations as in heavy rainfall events there will be little infiltration.**

Watercourse: There is no watercourse in the vicinity of the site.

Sewer: There is a UU sewer in the road to the south.

Conclusion: Infiltration and discharging into a watercourse is not feasible at this site, therefore, it is proposed to discharge the sites surface water into the UU sewer.

All lower options on the hierarchy will be discounted.

5.4.2 Sizing of SUDS Features

As discussed in section 4.1 of this report, the proposed area of the dwellings and associated features is 1.55ha. Infiltration SUDS systems have been discounted as the ground is clay and infiltration is not feasible. However there will be source control at the individual dwelling through permeable pavements and the filter drains. The permeable pavements will provide water quality to the surface water from the individual houses. As the ground does not infiltrate then the water from the permeable pavements will

drain to the drainage system. The filter drainage will provide infiltration in time of dry weather and will enable the first 5% of rainfall to be absorbed into the ground. For events higher than this it is likely infiltration will not be feasible. Therefore the filter drains have been ignored in the calculations.

The discharge will be restricted to Q-bar greenfield runoff rates of 18.6l/s in all events via Hydrobrake up the 1 in 100 year event plus climate change (45%). The storage will be held in an attenuation tank, up to and including the 1 in 100 year event plus 45% climate change.

Modelling of the surface water runoff to the design parameters was carried out using Causeway Flow, an industry leading software which allows design and analysis of SuDS features. The Causeway Flow modelling results are in Appendix E The following conservative assumptions and design parameters have been set within the Hydraulic model:

- Rainfall intensity was obtained using the Flood Estimation Handbook (FEH)methodology, and increased by 45%, over the 100 years design life of the proposed residential development, in line with the requirements of the NPPF;
- As previous commented no runoff loss have been assumed in the modelling, therefore, all the design rainfall landing on the impermeable surfaces is expected to reach the attenuation tank, permeable drives and filter drains;
- As per the conclusions in Section 3.3, the soil has been modelled with an infiltration rate of zero (0.0) m/hr; and
- A Hydro-Brake has been used to restrict the total discharge from the site to 18.6l/s.

Figure 16:Drainage Strategy

Please see Appendix E for Ironside Farrar full drainage strategy and calculations.

5.4.3 Maintenance Plan

Structures which manage surface water runoff require little maintenance, however a regular maintenance schedule e.g., after heavy rainfall, should be established by the site owners to reduce the risk of blockage within the drainage system and ensure the design remains in good working order. It is proposed to offer this up for adoption:

Table 4: Operation and Maintenance Requirements for Attenuation Tanks

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Table 5: Operation and Maintenance Requirements for Permeable Pavements

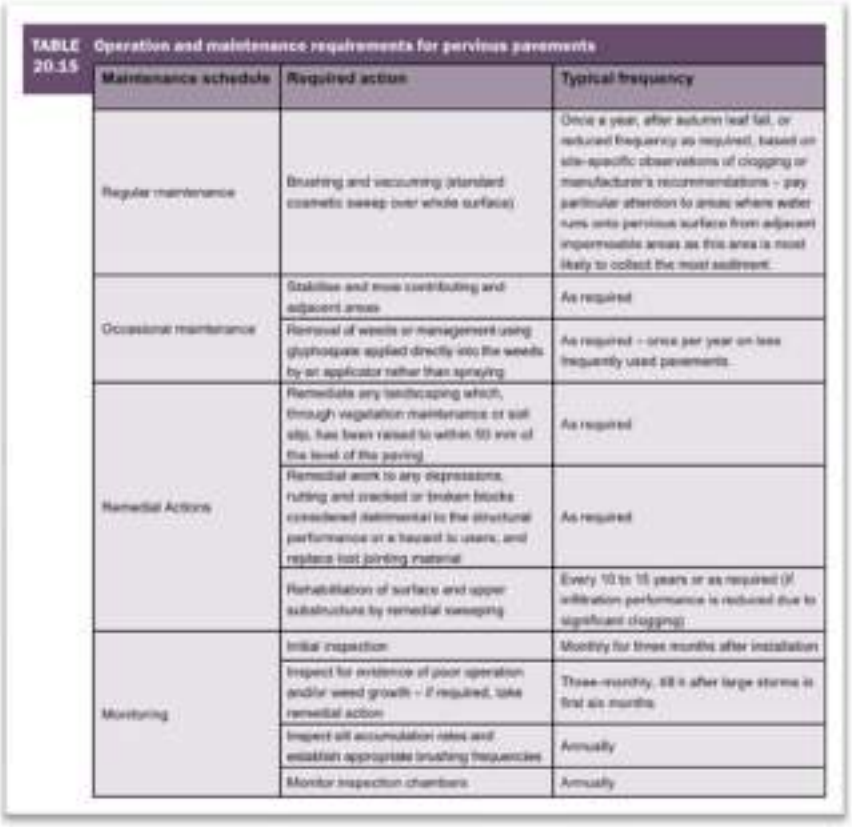


TABLE 20.15 Operation and maintenance requirements for pervious pavements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm 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	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	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 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 6: Operation and Maintenance Requirements for Filter Drains

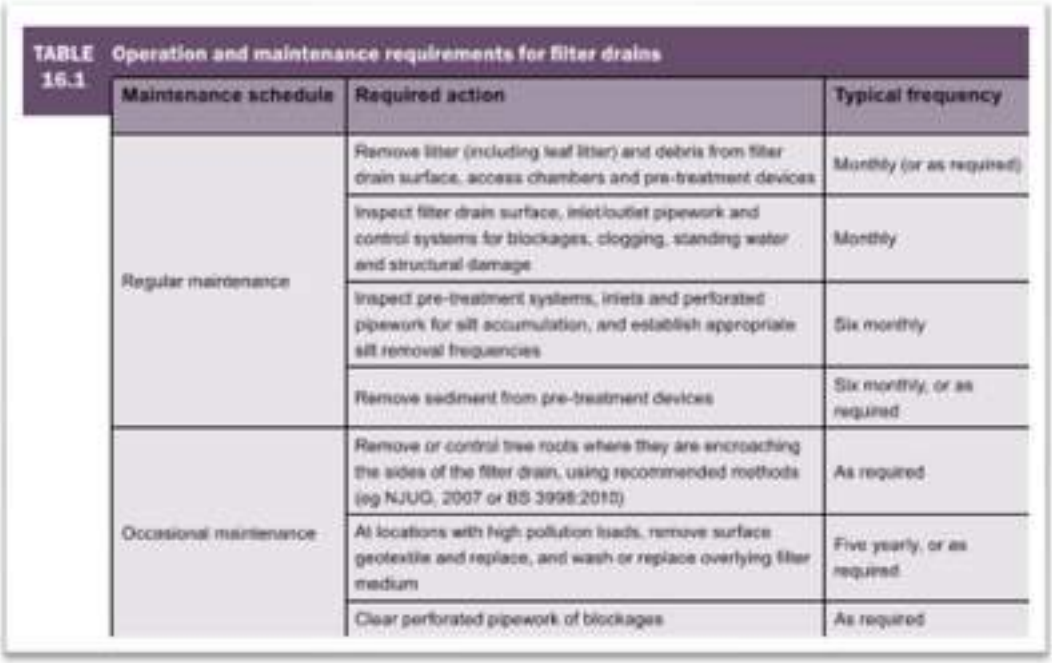


TABLE 16.1 Operation and maintenance requirements for filter drains

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly, or as required
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforated pipework of blockages	As required

6. SUMMARY & CONCLUSIONS

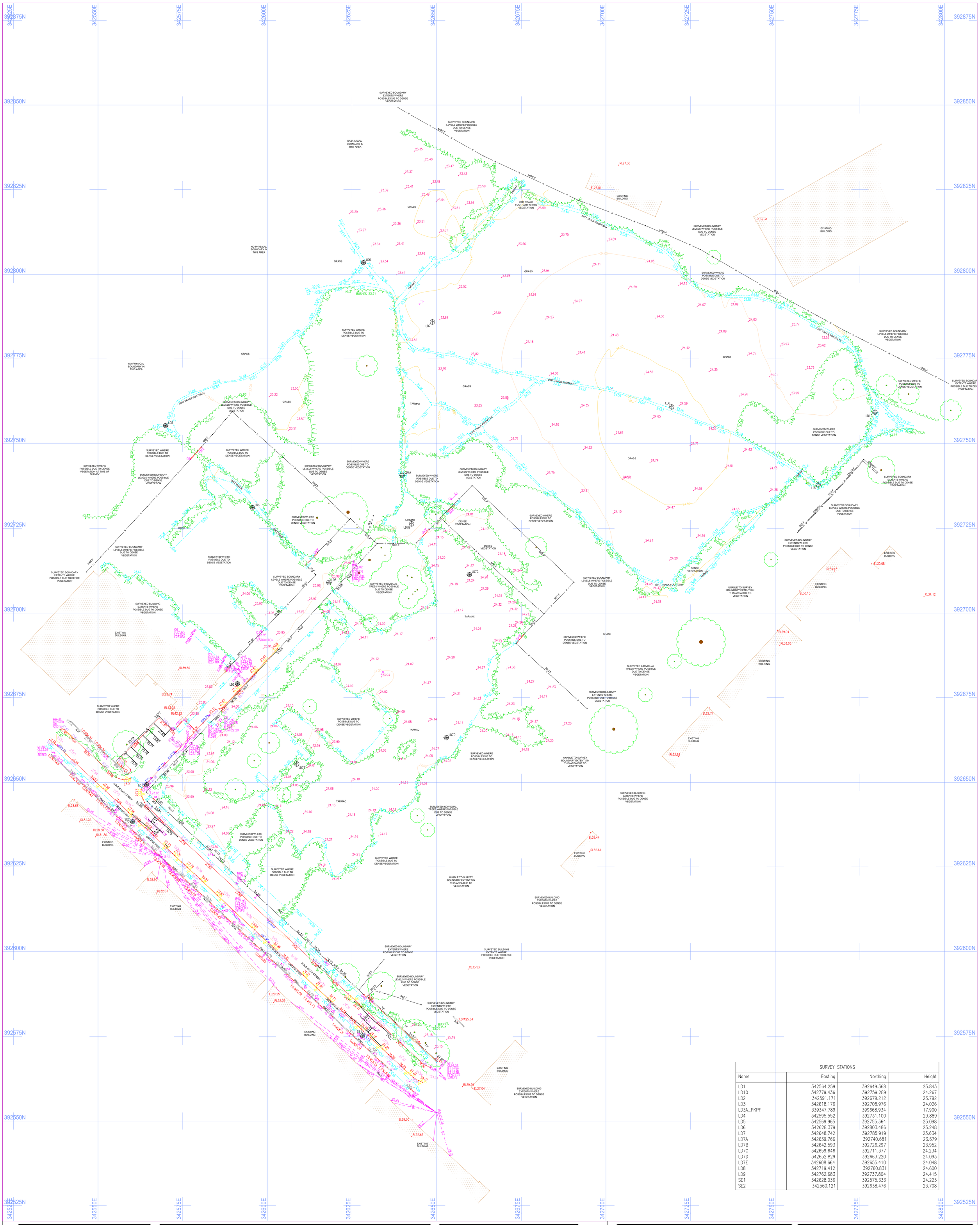
A summary of the main conclusions for the FRA is presented below:

- Development proposals are for a development of 136 dwellings at Southdean Road, Huyton, L14 8AJ;
- The development site is approximately 2.77ha, the impermeable area is 1.55ha;
- The site is within Flood Zone 1, an area at low risk of fluvial flooding;
- None of the dwellings are placed in areas at risk of surface water flooding. Therefore, the site is at low risk of surface water flooding;
- The site is at not at risk of reservoir flooding;
- The site is at low risk of groundwater, sewer and infrastructure flooding;
- In August 2025 IGE Consulting undertook soil logs at the site and found that the ground is clay;
- It appears infiltration will not be feasible on this site due to the clay ground on site and impeded drainage. However the filter drains will allow a minimal of infiltration however this has not been included in the calculations.
- The site will be required to have attenuation up to and including the 1 in 100-year event plus climate change of 45% for the surface water; and
- Ironside Farrar have been commissioned to undertake the drainage strategy, the site will discharge into the sewer to the south of the site at a Q-bar greenfield runoff rate of 18.6l/s. Attenuation will be held in an attenuation tank, permeable drives and filter drains.

7. REFERENCES

Author	Date	Title/Description
Department for Communities and Local Government	Dec 2024	Guidance to the National Planning Policy Framework
Ministry of Housing, Communities and Local Government.	Dec 2024	National Planning Policy Framework

Appendix A: Topographical Survey



SURVEY STATIONS

Name	Easting	Northing	Height
LD1	342564.259	392649.368	23.843
LD10	342779.436	392759.289	24.267
LD2	342591.171	392679.212	23.792
LD3	342618.176	392708.976	24.026
LD3A_PKPF	339347.789	399668.934	17.900
LD4	342595.552	392731.100	23.889
LD5	342569.965	392755.364	23.098
LD6	342628.379	392803.486	23.248
LD7	342648.742	392785.919	23.634
LD7A	342639.766	392740.681	23.679
LD7B	342642.593	392726.297	23.952
LD7C	342659.646	392711.377	24.234
LD7D	342652.829	392663.220	24.093
LD7E	342608.664	392655.410	24.048
LD8	342719.412	392760.831	24.600
LD9	342762.683	392737.804	24.415
SE1	342628.036	392575.333	24.223
SE2	342560.121	392638.476	23.708

N
W E
S

SURVEY ORIENTATED TO OS GRID (OSGB36-15)

SURVEY NOTES

ALL LEVELS ARE RELATED TO O.S DATUM (OSGB36-15)
ESTABLISHED AT SE1 USING THE LEICA SMARTNET GPS NETWORK

SURVEY LEGEND

FEATURES

TOP OF BANK
BOTTOM OF BANK
SURVEY STATION
TREE
HEDGE
TREE CANOPY
BUSHES
VEGETATION

BOUNDARY ANNOTATIONS

BARB WIRE FENCE — BW.F
CHAIN LINK FENCE — C/L.F
CONC POST AND PANEL — CP&P.F
CONC POST TIMB PANEL — CP&TP.F
ELECTRIC FENCE — EL.F
HERAS FENCE — HER.F
IRON RAIL FENCE — IR.F
KNEE RAIL FENCE — KR.F
MISCELLANEOUS FENCE — MISC.F
POST AND WIRE FENCE — P&W.F
RANCH STYLE FENCE — RS.F
SECURITY FENCE — SEC.F
TIMBER FENCE — T.F
BRICK WALL — B.W
BLOCK WALL — BL.W
CONCRETE WALL — C.W
GABIEN WALL — G.W
MISCELLANEOUS WALL — MISC.W
RETAINING WALL — R.W
RETAINING LOG WALL — RL.W
STONE WALL — S.W

LEVEL PREFIX ANNOTATIONS

ASL	ARCH SPRING LEVEL	IL	INVERT LEVEL		
BL	BED LEVEL	PL	PARAPET LEVEL	TRH	TREE HEIGHT
BD	BACK DROP	RL	ROOF/RIDGE LEVEL	THR	THRESHOLD LEVEL
CL	COVER LEVEL	SL	SOFFIT LEVEL	WL	WATER LEVEL
DH	TOP OF DOOR	TOF	TOP OF FENCE	WS	WINDOW SILL
DTC	DEPTH TO CROWN	TOP	TOP OF PIPE	WSF	WINDOW SOFFIT
FFL	FINISHED FLOOR LEVEL	TOW	TOP OF WALL		

GEOTECHNICAL INFORMATION

TRIAL HOLE / PIT — TH
BORE HOLE — BH
WINDOW SAMPLE — WS
MONITORING POINT — MP

SURVEY ANNOTATIONS

AV	AIR VALVE	OHC	OVERHEAD CABLES
B	BOLLARD	PB	POST BOX
BS	BUS STOP	PM	PARKING METER
BT	BRITISH TELECOM IC	PS	POST
CPS	CONCRETE PAVING SLABS	PYL	ELECTRICITY PYLON
CP	CATCH PIT	RE	RODDING EYE
DR	DRAIN	RS	ROAD SIGN
EB	ELECTRIC CONTROL BOX	RWP	RAIN WATER PIPE
EL	ELECTRICAL IC	ST	STOP TAP
EP	ELECTRICITY POLE	SM	SERVICE MARKER
ER	EARTH ROD	SP	SIGN POST
FH	FIRE HYDRANT	SV	STOP VALVE / SLUICE VALVE
FP	FLAG POLE	SVP	SOIL VENT PIPE
G	GULLY	TB	TELEPHONE BOX
GH	GREENHOUSE	TL	TRAFFIC LIGHTS
GP	GATE POST	TM	TELEPHONE MAST
GV	GAS VALVE	TP	TELEGRAPH POLE
IC	INSPECTION COVER	TPS	TACTILE PAVING SLABS
JB	JUNCTION BOX	VP	VENT PIPE
JKW	JAPANESE KNOT WEED	WM	WATER METER
KO	KERB OUTLET	WO	WASH OUT
LH	LAMP HOLE	UTL	UNABLE TO LIFT
LP	LAMP POST/LIGHT COLUMN	UTS	UNABLE TO SURVEY
MH	MANHOLE		
MP	MONITOR POINT		
NP	NAME PLATE		

CLIENT
BRECK

PROJECT ENGINEER: LD
DATE: 30.07.2025
DRAWN: ET
SCALE: 1:500@A1

PROJECT TITLE
SOUTHDEAN STREET, HUYTON

-	-	-	-	-
DESCRIPTION	REV	DATE	DRWN	APPR

DRAWING DETAIL
TOPOGRAPHICAL LAND SURVEY

DRAWING NUMBER: BR.TS.39
REVISION: -

SurveyEng Ltd
Land Surveyors & Engineers
14 GREEN MILL
WESTHOUGHTON
BOLTON
LANCS
BL5 3GE
TEL/FAX: 0800 772 3040
MOB: 07850069993
info@surveyeng.co.uk

Appendix B: IGE Consulting Soil Logs

Trial Pit

TP01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342583.77	392656.56	24.06	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES			(0.15)		Soft dark brown slightly gravelly very sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, ceramic, mudstone and sandstone. [MADE GROUND]
		0.20	HV	150 (kPa)	23.91	0.15		
		0.40	ES			(0.35)		Stiff orangish brown slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine to coarse of red brick, ceramic and sandstone. [MADE GROUND]
		0.40	B		23.56	0.50		
						(0.20)		Yellowish brown gravelly very clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of red brick. [MADE GROUND]
					23.36	0.70		*Becoming dark greyish brown. (0.50m)*
		1.00	ES					Stiff locally firm slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		1.00	B					*Recovered as cobble sized pieces. (0.70m)*
		1.50	HV	98 (kPa)				*Becoming firm and no longer recovered as cobble sized pieces. (1.70m)*
		1.90	HV	51 (kPa)		(2.30)		
		1.90	B					
		2.10	HV	53 (kPa)				
		2.50	HV	74 (kPa)				
		2.80	HV	71 (kPa)				
		2.80	B					
					21.06	3.00		*End of Trial Pit at 3.00m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 130°
L = 2.10m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP01

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342583.77	392656.56	24.06	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 130°
L = 2.10m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP02

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342606.19	392634.59	24.28	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					24.18	(0.10) 0.10		ASPHALT. [MADE GROUND]
		0.20	ES			(0.20)		Dark grey very gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of red brick, ceramic, concrete, sandstone and slate. Cobbles are very angular to angular of concrete and red brick. [MADE GROUND]
		0.40	ES		23.98	0.30		
		0.40	B			(0.30)		
					23.68	0.60		Soft to firm blueish grey slightly gravelly slightly sandy CLAY. Gravel is angular to subangular fine to coarse of red brick and mudstone. [MADE GROUND]
		0.80	B			(0.40)		Greenish brown slightly gravelly silty fine to coarse SAND. Gravel is angular to subangular fine to coarse of red brick. [MADE GROUND]
					23.28	1.00		Firm orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		1.20	HV	69 (kPa)				
		1.20	ES					
		1.20	B					*Becoming stiff locally firm and light brown with low cobble content. Cobbles are subrounded to rounded of mudstone. (1.40m)*
		1.50	HV	83 (kPa)				
		2.00	HV	60 (kPa)				
		2.00	B			(2.10)		
		2.60	HV	55 (kPa)				
		2.70	B					
		2.90	HV	103 (kPa)				
					21.18	3.10		*End of Trial Pit at 3.10m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 125°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP02

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342606.19	392634.59	24.28	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 125°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP03

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342648.47	392657.54	24.09	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					23.99	(0.10)		ASPHALT.
						0.10		[MADE GROUND]
					23.89	(0.10) 0.20		CONCRETE.
		0.30	ES			(0.20)		[MADE GROUND]
					23.69	0.40		Black very sandy slightly clayey very angular to subrounded fine to coarse GRAVEL of red brick, concrete and sandstone with low cobble content. Cobbles are angular of red brick.
		0.50	HV	55 (kPa)				[MADE GROUND]
		0.50	ES			(0.40)		
		0.50	B					
					23.29	0.80		Firm blueish grey slightly gravelly slightly sandy silty CLAY with a mild humic odour. Gravel is very angular to subangular fine to coarse of red brick, concrete, mudstone and sandstone.
		0.90	HV	92 (kPa)				[MADE GROUND]
		0.90	B					Firm orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone.
								[GLACIAL TILL]
		1.50	HV	56 (kPa)				*Occasional cobble sized pockets of light grey fine to coarse SAND and greenish brown fine to coarse SAND. (1.50m)*
		1.90	B			(2.30)		*Becoming stiff and brown. (2.00m)*
		2.20	HV	67 (kPa)				*Becoming firm. (2.50m)*
		2.60	B					
		2.80	HV	75 (kPa)				
					20.99	3.10		*End of Trial Pit at 3.10m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 40°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP03

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342648.47	392657.54	24.09	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 40°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP04

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342647.01	392702.24	24.25	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					24.10	(0.15) 0.15		ASPHALT. [MADE GROUND]
					24.00	(0.10) 0.25		Beige very sandy slightly clayey angular to subangular fine to coarse GRAVEL of limestone. [MADE GROUND]
		0.40	ES			(0.25)		
		0.40	B		23.75	0.50		Black very gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. Cobbles are very angular to subangular of red brick and concrete. [MADE GROUND]
		0.60	HV	55 (kPa)				
		0.60	ES					
		0.60	B			(0.50)		
					23.25	1.00		Firm orangish brown mottled blueish grey slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of mudstone and sandstone. [MADE GROUND]
		1.20	ES					Stiff orangish brown mottled grey slightly gravelly sandy CLAY. Gravel is subrounded to well rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		1.20	B					*Recovering as coarse gravel to cobble sized pieces. (1.00 - 3.00m)*
		1.80	ES					
		1.80	B					
		2.00	HV	115 (kPa)		(2.00)		
		2.50	HV	108 (kPa)				
		2.70	B					
		2.90	HV	115 (kPa)				
					21.25	3.00		*End of Trial Pit at 3.00m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 155°
L = 2.20m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP04

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342647.01	392702.24	24.25	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-19	2025-08-19

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 155°
L = 2.20m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP05

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342599.57	392700.08	23.99	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					23.89	(0.10) 0.10		ASPHALT. [MADE GROUND]
		0.30	ES			(0.30)		Dark brown very sandy slightly clayey very angular to rounded fine to coarse GRAVEL of red brick, concrete, mudstone and sandstone with moderate cobble content. Cobbles are angular of red brick. [MADE GROUND]
		0.30	B		23.59	0.40		
						(0.25)		Very stiff orangish brown slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [MADE GROUND]
		0.60	ES		23.34	0.65		
		0.60	B					Soft blueish grey slightly gravelly sandy silty CLAY. Gravel is angular to subangular fine to coarse of red brick, mudstone and sandstone. [MADE GROUND]
		0.80	ES					
		0.80	B					
						(0.95)		
		1.20	HV	18 (kPa)				
					22.39	1.60		Firm orangish brown slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		2.00	HV	87 (kPa)				
		2.00	ES					
		2.00	B			(1.30)		
								Becoming stiff and sandy. (2.40m)
		2.50	HV	81 (kPa)				
		2.70	B					
					21.09	2.90		*End of Trial Pit at 2.90m*

Remarks
Terminated due to hard digging. No strike.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Stable during excavation
Orientation: 310°
L = 2.10m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP05

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342599.57	392700.08	23.99	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated due to hard digging. No strike.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Stable during excavation
Orientation: 310°
L = 2.10m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP06

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342595.98	392724.33	24.02	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	ES					Dark brown very gravelly slightly clayey fine to coarse SAND with moderate cobble content. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. Cobbles are angular of red brick. [MADE GROUND]
		0.20	B			(0.50)		
					23.52	0.50		
		0.70	ES					Dark greyish brown very sandy slightly clayey angular to subrounded fine to coarse GRAVEL of red brick, concrete, ceramic, slate and sandstone. [MADE GROUND]
		0.70	B			(0.80)		
					22.72	1.30		*Greenish brown gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone and red brick. (1.20 - 1.30m)*
		1.50	HV	78 (kPa)				Stiff orangish brown slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone. [GLACIAL TILL]
		1.50	ES					*Occasional cobble sized pockets of orangish brown fine to coarse SAND. (1.30 - 2.00m)*
		1.50	B					*Becoming stiff locally firm. (2.00m)*
		2.20	HV	75 (kPa)		(1.70)		
		2.60	B					
		2.70	HV	68 (kPa)				
					21.02	3.00		*End of Trial Pit at 3.00m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 10°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP06

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342595.98	392724.33	24.02	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 10°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP07

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342688.77	392665.19	24.25	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES			(0.20)		Soft dark brown slightly gravelly very sandy CLAY with occasional rootlets. Gravel is angular to subrounded fine to coarse of red brick. [MADE GROUND]
					24.05	0.20		
		0.40	ES			(0.40)		Brown very gravelly slightly clayey fine to coarse SAND. Gravel is very angular to rounded fine to coarse of red brick, ceramic, mudstone and sandstone. [MADE GROUND]
		0.40	B					
					23.65	0.60		
		0.70	ES					Soft to firm dark blueish grey sandy organic CLAY with a mild humic odour. [MADE GROUND]
		0.70	B			(0.90)		
					22.75	1.50		
		1.80	ES					Soft black slightly gravelly slightly sandy silty organic CLAY. Gravel is very angular to subangular fine to coarse of red brick, ceramic and glass. [MADE GROUND]
		1.80	B					
		2.00	HV	19 (kPa)				
						(1.50)		
					21.25	3.00		Firm orangish brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		3.20	HV	54 (kPa)				
		3.20	ES			(0.60)		
		3.20	B					
					20.65	3.60		*End of Trial Pit at 3.60m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.60m TP JCB 3CX
Stable during excavation
Orientation: 270°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP07

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342688.77	392665.19	24.25	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.60m TP JCB 3CX
Stable during excavation
Orientation: 270°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP08

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342650.58	392625.57	24.30	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES			(0.20)		Soft dark brown slightly gravelly very sandy CLAY with occasional rootlets. Gravel is angular to subrounded fine to coarse of red brick. [MADE GROUND]
					24.10	0.20		
		0.50	ES					Dark brown very gravelly slightly clayey fine to coarse SAND with occasional cobble sized pockets of very stiff slightly gravelly sandy CLAY. Gravel is very angular to subangular fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.50	B			(0.70)		
					23.40	0.90		
		1.10	ES					Stiff orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to well rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		1.10	B					
		1.20	HV	86 (kPa)				
						(2.10)		
		2.00	B					*Becoming light brown and very sandy. (2.00m)*
								Excavated as coarse gravel to cobble sized pieces with occasional cobble sized pockets of light brown fine to coarse SAND. (0.90 - 3.00m)
		2.30	HV	75 (kPa)				
		2.80	HV	76 (kPa)				
		2.80	B					
					21.30	3.00		*End of Trial Pit at 3.00m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 50°
L = 2.10m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP08

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342650.58	392625.57	24.30	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 50°
L = 2.10m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP09

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342628.44	392616.46	24.25	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					24.05	(0.20) 0.20		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is angular to subangular fine to coarse of red brick. [MADE GROUND]
						(0.60)		Dark brown very gravelly clayey fine to coarse SAND with moderate cobble content. Gravel is very angular to subangular fine to coarse of red brick, concrete, slate, mudstone and sandstone. Cobbles are very angular to angular of red brick. [MADE GROUND] *Brick feature across length of pit. (0.40 - 0.80m)*
					23.45	0.80		Stiff orangish brown slightly gravelly slightly sandy CLAY. Gravel is subrounded to well rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL] *Becoming firm and light brown. (1.80m)* *Recovering as cobble sized pieces. (0.80 - 3.50m)*
						(2.70)		
					20.75	3.50		*End of Trial Pit at 3.50m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.50m TP JCB 3CX
Stable during excavation
Orientation: 295°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP09

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342628.44	392616.46	24.25	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.50m TP JCB 3CX
Stable during excavation
Orientation: 295°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP10

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342673.90	392649.10	24.30	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	ES			(0.40)		Dark brown very gravelly slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of red brick. [MADE GROUND]
		0.20	B					
					23.90	0.40		Very stiff orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		0.80	ES					
		0.80	B					
						(2.60)		
		1.80	B					*Becoming stiff and light brown. (1.80m)*
		1.90	HV	77 (kPa)				*Recovering as fine gravel to cobble sized pieces. (0.40 - 3.00m)*
		2.80	HV	77 (kPa)				
		2.90	HV	84 (kPa)				
		2.90	B		21.30	3.00		*End of Trial Pit at 3.00m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 225°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP10

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342673.90	392649.10	24.30	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-20	2025-08-20

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 225°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP11

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342627.84	392669.05	24.15	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.05	ES		24.05	(0.10) 0.10		Soft dark brown slightly gravelly very sandy CLAY. Gravel is angular to subangular fine to coarse of red brick. [MADE GROUND]
		0.20	ES					
		0.20	B			(0.40)		Dark brown very gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is very angular to subrounded fine to coarse of red brick, concrete, ceramic and sandstone. Cobbles are very angular to angular red brick. [MADE GROUND]
					23.65	0.50		
		0.60	ES			(0.20)		
		0.60	B		23.45	0.70		Soft to firm bluish grey slightly gravelly sandy silty CLAY. Gravel is angular to subangular fine to medium of red brick and ceramic. [MADE GROUND]
		0.90	HV	92 (kPa)				Stiff orangish brown slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		0.90	ES					
		0.90	B					*Becoming light brown and firm. (1.40m)*
		1.60	HV	80 (kPa)		(2.30)		
		2.00	HV	78 (kPa)				
		2.00	B					
		2.50	HV	77 (kPa)				
		2.80	HV	87 (kPa)				
		2.80	B					
					21.15	3.00		*End of Trial Pit at 3.00m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 315°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP11
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342627.84	392669.05	24.15	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 315°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP12

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342650.52	392749.50	23.75	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES			(0.30)		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick and concrete. [MADE GROUND]
					23.45	0.30		
		0.40	ES			(0.30)		Dark brown very gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of red brick, concrete and sandstone. [MADE GROUND]
		0.40	B		23.15	0.60		
		0.70	ES					Very stiff orangish brown slightly gravelly very sandy CLAY. Gravel is subrounded to well rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		0.70	B					*Excavated as gravel and cobble sized pieces. (0.60 - 1.20m)*
								Cobble sized pockets of orangish brown fine to coarse SAND. (1.20m)
								Becoming stiff. (1.20m)
		1.50	HV	79 (kPa)				
		1.50	B			(2.40)		
		2.00	HV	83 (kPa)				
		2.50	HV	74 (kPa)				
		2.50	B					*Low cobble content of subrounded to well rounded mudstone and sandstone. (2.50m)*
		2.80	HV	75 (kPa)				
					20.75	3.00		*End of Trial Pit at 3.00m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 85°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP12

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342650.52	392749.50	23.75	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 85°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP13

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342726.31	392704.26	24.87	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.40)		Dark brown gravelly clayey fine to coarse SAND with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, ceramic, sandstone and mudstone. [MADE GROUND]
		0.30 0.30	ES B		24.47	0.40		
		0.60 0.60	ES B					Very stiff orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to well rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
								100mm ceramic land drain oriented west to east. (0.80m)
		1.50	B					*Becoming stiff, light brown and silty. (1.40m)*
								Recovered as cobble sized pieces. (0.40 - 2.30m)
						(2.60)		
		2.40 2.40	HV B	91 (kPa)				
					21.87	3.00		*End of Trial Pit at 3.00m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 50°
L = 2.50m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP13

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342726.31	392704.26	24.87	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 50°
L = 2.50m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP14

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342697.89	392748.79	24.57	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES			(0.30)		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subangular fine to coarse of red brick and sandstone. [MADE GROUND]
					24.27	0.30		
		0.50	ES			(0.40)		Dark brown very gravelly clayey fine to coarse SAND. Gravel is very angular to angular fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.50	B					
					23.87	0.70		*Occasional cobble sized pieces of very stiff orangish brown slightly gravelly slightly sandy CLAY. (0.30 - 0.70m)*
		0.80	ES					
		0.80	B					Dark blueish grey very gravelly clayey fine to coarse SAND with a mild humic odour. Gravel is very angular to rounded fine to coarse of red brick, concrete, sandstone and mudstone. [MADE GROUND]
						(0.60)		
					23.27	1.30		Firm orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		1.60	HV	87 (kPa)				
		1.60	ES					
		1.60	B					
		1.80	HV	75 (kPa)				*Locally stiff. (1.80m)*
		2.10	HV	125 (kPa)		(1.80)		
		2.50	B					
		3.00	HV	85 (kPa)				
					21.47	3.10		*End of Trial Pit at 3.10m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 325°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP14

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342697.89	392748.79	24.57	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 325°
L = 2.30m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP15

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342649.59	392773.31	23.66	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES		23.46	(0.20) 0.20		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subangular fine to coarse of red brick and sandstone. [MADE GROUND]
		0.40 0.40	ES B		23.06	(0.40) 0.60		Dark brown very gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is very angular to subangular fine to coarse of red brick, concrete, sandstone, plastic and ceramic. Cobbles are very angular of red brick. [MADE GROUND]
		0.80 0.80	ES B		22.16	(0.90) 1.50		Soft to firm bluish grey slightly gravelly sandy CLAY with low cobble content. Gravel is very angular to subrounded fine to coarse of red brick. Cobbles are angular of red brick. [MADE GROUND]
		1.70 1.70 1.70	HV ES B	81 (kPa)	20.66	(1.50) 3.00		Firm to stiff light brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		2.30	HV	104 (kPa)				
		2.60	B					
		2.80	HV	97 (kPa)				
								End of Trial Pit at 3.00m

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 305°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP15
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342649.59	392773.31	23.66	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 305°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP16

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342751.24	392730.68	24.67	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20 0.20	ES B			(0.40)		Dark brown very gravelly clayey fine to coarse SAND with low cobble content. Gravel is very angular to angular fine to coarse of red brick, concrete, slate and sandstone. Cobbles are very angular of red brick. [MADE GROUND]
					24.27	0.40		Very stiff orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		0.60 0.60	ES B					*Recovered as cobble sized pieces. (0.40 - 1.50m)*
		1.50 1.50	HV B	87 (kPa)				*Becoming stiff and light brown. (1.50m)*
						(2.60)		
		2.00	HV	89 (kPa)				
		2.40 2.40	HV B	71 (kPa)				
		2.90	HV	110 (kPa)				
					21.67	3.00		*End of Trial Pit at 3.00m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 215°
L = 2.60m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP16
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342751.24	392730.68	24.67	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-21	2025-08-21

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable during excavation
Orientation: 215°
L = 2.60m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP17

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342727.20	392748.03	24.76	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.05	ES		24.66	(0.10) 0.10		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.50 0.50	ES B			(1.40)		Dark brown gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is very angular to subrounded fine to coarse of red brick, concrete, clinker, plastic, mudstone and sandstone. Cobbles are angular to subangular of red brick. [MADE GROUND]
		1.70 1.70 1.70	HV ES B	104 (kPa)	23.26	1.50		Firm to stiff slightly gravelly sandy CLAY. Gravel is subrounded to well rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL] *Excavated as cobble sized pieces. (1.50m)*
		2.40	HV	118 (kPa)		(1.80)		
		2.70	B					
		3.00	HV	91 (kPa)				
					21.46	3.30		*End of Trial Pit at 3.30m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.30m TP JCB 3CX
Stable during excavation
Orientation: 305°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP17

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342727.20	392748.03	24.76	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.30m TP JCB 3CX
Stable during excavation
Orientation: 305°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP18

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342697.02	392774.04	24.46	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.05	ES		24.36	(0.10) 0.10		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.20 0.20	ES B					
		0.80	ES					Dark brown very gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is very angular to subrounded fine to coarse of red brick, concrete, ceramic, clinker, slate, mudstone, sandstone and coal. Cobbles are very angular to angular of red brick and ceramic. [MADE GROUND]
						(1.90)		
					22.46	2.00		*Brick structure in north face of pit, pit moved west. (1.99m)*
		2.10 2.10 2.10	HV ES B	97 (kPa)				Stiff orangish brown slightly gravelly sandy CLAY with low cobble content. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. Cobbles are well rounded of sandstone. [GLACIAL TILL]
		2.60	HV	84 (kPa)		(1.10)		
					21.36	3.10		*End of Trial Pit at 3.10m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 310°
L = 4.00m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP18

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342697.02	392774.04	24.46	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 310°
L = 4.00m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP19

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342699.30	392801.02	24.24	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Strata: Description
					24.14	(0.10) 0.10		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
						(0.30)		
					23.84	0.40		Dark brown gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is very angular to angular fine to coarse of red brick, concrete, clinker, slate and sandstone. Cobbles are very angular to rounded of red brick and concrete. [MADE GROUND]
						(0.20)		
					23.64	0.60		Light orangish brown very gravelly fine to coarse SAND with low cobble content. Gravel is very angular to angular fine to coarse of red brick, concrete, plastic and ceramic. [MADE GROUND]
								Concrete obstruction across pit.
								End of Trial Pit at 0.60m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at 0.60m bgl due to obstruction. No strike.

Method, Plant, Stability, Dimensions
0.00 - 0.60m TP JCB 3CX
Stable during excavation
Orientation: 290°
L = 2.50m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP19a

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342697.84	392799.54	24.27	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
					24.17	(0.10) 0.10		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
						(0.30)		
					23.87	0.40		Dark brown gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is very angular to angular fine to coarse of red brick, concrete, clinker, slate and sandstone. Cobbles are very angular to rounded of red brick and concrete. [MADE GROUND]
						(0.20)		
					23.67	0.60		Light orangish brown very gravelly fine to coarse SAND with low cobble content. Gravel is very angular to angular fine to coarse of red brick, concrete, plastic and ceramic. [MADE GROUND]
								Concrete obstruction across pit.
								End of Trial Pit at 0.60m

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0

Remarks
Terminated at 0.60m bgl due to obstruction. No strike.

Method, Plant, Stability, Dimensions
0.00 - 0.60m TP JCB 3CX
Stable during excavation
Orientation: 290°
L = 2.50m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP19b

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342694.17	392803.27	24.18	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
					24.08	(0.10) 0.10		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.30 0.30	ES B			(0.40)		
					23.68	0.50		Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of red brick. Cobbles are very angular of red brick. [MADE GROUND]
		0.70 0.70	ES B			(0.80)		Dark greyish brown very sandy slightly clayey very angular to subrounded fine to coarse GRAVEL of red brick, ceramic, metal, plastic, clinker and sandstone. [MADE GROUND] *Becoming light orangish brown. (0.75m)*
					22.88	1.30		Firm orangish brown slightly gravelly sandy silty CLAY. Gravel is angular to subangular fine to coarse of red brick. [MADE GROUND]
		1.50 1.50	ES B			(0.30)		
					22.58	1.60		*End of Trial Pit at 1.60m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Terminated at 1.60m bgl due to obstruction. No strike.

Method, Plant, Stability, Dimensions
0.00 - 1.60m TP JCB 3CX
Stable during excavation
Orientation: 290°
L = 2.50m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP19b

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342694.17	392803.27	24.18	1:25
Project Name		**Project No.**	**Start Date**	**End Date**
Southdean Road		4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at 1.60m bgl due to obstruction. No strike.

Method, Plant, Stability, Dimensions
0.00 - 1.60m TP JCB 3CX
Stable during excavation
Orientation: 290°
L = 2.50m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP20

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342670.85	392806.42	23.67	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES		23.47	(0.20) 0.20		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.50 0.50	ES B			(0.90)		Dark brown very sandy slightly clayey very angular to subrounded fine to coarse GRAVEL of red brick, concrete, ceramic, metal, glass, plastic, clinker and sandstone. [MADE GROUND]
		1.30 1.30 1.30	HV ES B	77 (kPa)	22.57	1.10		Firm to stiff orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL] *20mm ceramic land drain oreinted north to south, dry. (1.40m)*
		1.80	HV	75 (kPa)		(2.00)		
		2.20	B					
		2.40	HV	80 (kPa)				
		2.90 2.90	HV B	75 (kPa)	20.57	3.10		*End of Trial Pit at 3.10m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 220°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP20
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342670.85	392806.42	23.67	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable during excavation
Orientation: 220°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP21

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342654.59	392821.73	23.64	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					23.54	(0.10) 0.10		Soft dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.30	ES			(0.30)		
		0.30	B		23.24	0.40		Dark brown very gravelly clayey fine to coarse SAND with low cobble content. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. Cobbles are angular of red brick. [MADE GROUND]
						(0.40)		
		0.70	ES					Very stiff orangish brown slightly gravelly sandy CLAY. Gravel is very angular to subrounded fine to coarse of red brick, concrete, mudstone and sandstone. [MADE GROUND]
		0.70	B		22.84	0.80		
		0.90	ES					
		0.90	B			(0.40)		Soft to firm blueish grey slightly gravelly sandy silty CLAY. Gravel is very angular to subrounded fine to coarse of red brick. [MADE GROUND]
					22.44	1.20		Soft orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. [GLACIAL TILL]
		1.50	HV	41 (kPa)				
		1.50	ES					
		1.50	B					
		2.00	HV	71 (kPa)				*Becoming firm. (2.00m)*
						(2.00)		
		2.60	HV	62 (kPa)				
		2.60	B					*Becoming stiff. (2.70m)*
		2.80	HV	88 (kPa)				
					20.44	3.20		*End of Trial Pit at 3.20m*

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.20m TP JCB 3CX
Stable during excavation
Orientation: 280°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Trial Pit

TP21

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	342654.59	392821.73	23.64	1:25

Project Name	Project No.	Start Date	End Date
Southdean Road	4450	2025-08-22	2025-08-22

Client
Breck Homes Ltd

Consultant
IGE Consulting Ltd

Contractor

Remarks
Terminated at target depth. No strike.

Method, Plant, Stability, Dimensions
0.00 - 3.20m TP JCB 3CX
Stable during excavation
Orientation: 280°
L = 2.40m
W = 0.60m

Logger
LG

Checked By: LM

Appendix C: Site Layout

KEY:

- Type A — 1b2p 50 Bungalow
- Type B — 2b3p 61 Bungalow
- Type C — 2b3p 74 House Type M4(2)
- Type D — 2b4p 81 Aspect House Type
- Type F — 3b4p 86 House Type
- Type H — 3b5p 93 House Type M4(2)
- Type P1 — 1b2p GF Maisonette 50; Type P2 — 1b2p FF Maisonette 57
- Type M1 — 2b3p 61 Apartments x2 (Ground Floor Only)
- Type M2 — 1b2p 61 Apartments x10
- Communal Areas
- Type T — 4b5p 100 House Type
- Indicates Cycle Stores

House type	m²	ft²	Total No.	Total m²	Total ft²
TYPE A - 1B2P Bungalow M4(2)	50	[illegible]	[illegible]	[illegible]	[illegible]
TYPE B - 2B3P Bungalow M4(2)	61	[illegible]	[illegible]	[illegible]	[illegible]
TYPE C - 2B3P House Type M4(2)	74	[illegible]	[illegible]	[illegible]	[illegible]
TYPE D - 2B4P Aspect House Type	81	[illegible]	[illegible]	[illegible]	[illegible]
TYPE F - 3B4P House Type	86	[illegible]	[illegible]	[illegible]	[illegible]
TYPE H - 3B5P House Type	93	[illegible]	[illegible]	[illegible]	[illegible]
Type M1 - 2B3P Apartment	61	[illegible]	[illegible]	[illegible]	[illegible]
Type M2 - 1B2P Apartment	61	[illegible]	[illegible]	[illegible]	[illegible]
TYPE P1 - 1B2P Maisonette GF	50	[illegible]	[illegible]	[illegible]	[illegible]
TYPE P2 - 1B2P Maisonette FF	57	[illegible]	[illegible]	[illegible]	[illegible]
TYPE T - 4B5P House Type	100	[illegible]	[illegible]	[illegible]	[illegible]
		TOTAL	[illegible]	[illegible]	[illegible]

	Site Area		Density		Coverage			
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

REV	DATE	DRAWN	DESCRIPTION	ARCH CHECK	ENG CHECK
J	SEPT.25	DH	FOOTPATH ADDED TO FRONT OF PLOTS 103-116 AND RANSOM STRIP ADDED TO NORTH-WESTERN BOUNDARY	-	-
H	SEPT.25	SHW	PLANNERS COMMENTS ENDORSED	-	-
G	JULY.25	SHW	HOUSING MIX UPDATED	-	-
F	JULY.25	SHW	SCHEME RE-DESIGNED TO NEW ENTRANCE ROAD LOCATION	-	-
E	JUNE.25	SHW	RED EDGE BOUNDARY UPDATED, LAYOUT UPDATED TO SUIT	-	-
D	FEB.25	SHW	LAYOUT UPDATED WITH NEW HOUSE TYPE RANGE	-	-
C	SEPT.24	SHW	MAISONETTES REMOVED & REPLACED WITH PUBLIC OPEN SPACE	-	-
B	SEPT.24	SHW	RED EDGE BOUNDARY UPDATED, LAYOUT UPDATED TO SUIT	-	-
A	OCT.23	SHW	LINK ROAD TO FUTURE DEVELOPMENT LAND ADDED TO NORTH WEST BOUNDARY	-	-

TITLE:

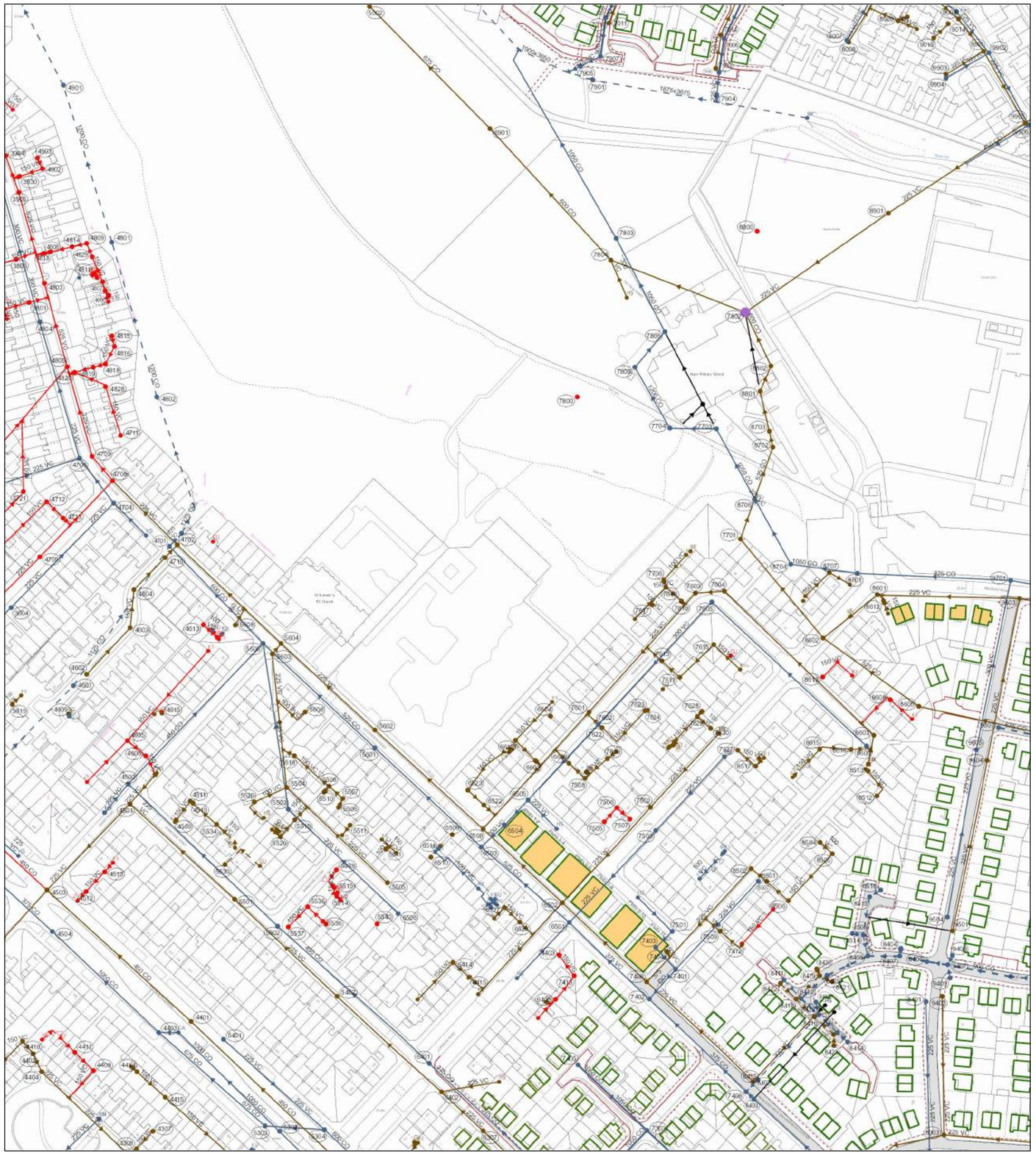
PROPOSED SITE LAYOUT

Breck
Breck Homes
20 Sceptre Court
Bamber Bridge
Preston
PR5 6AW
tel: 01253 587 010
web: www.breck.co.uk/homes
hello@breck.co.uk

PROJECT: SOUTHDEAN ROAD, KNOWSLEY

DATE:	SCALE:	JOB REF:	DRAWING NUMBER:	REV:
SEPT.25	1:500 @ A1	-	P01 Southdean Road / Proposed Site Layout	J

Appendix D: Sewer Map



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4828		CO		150			VC	19.25647	
8612		FO		150			VC	4.439714	
4808		CO		150			VC	4.715232	
9607	25.72	SW	24.08	675			VC	47.65412	
6401	25.49	SW	22.45	450			CO	113.7581	1 in 242
9701	25.27	SW	21.77	525			CO	85.09406	
4602		FO	0	150			VC	35.406	
8606		SW	0	300			VC	117.4564	
5303	25.7	SW	21.86	675			CO	78.64477	1 in 1573
3801		CO		150			VC	10.84555	
6901	23.12	FO	19.93	675			CO	95.46204	1 in 597
5502	24.7	SW	21.98	450			CO	114.5862	1 in 273
7616		FO		150			VC	2.852151	
8007	24.86	SW	23.46	225			VC	37.21559	1 in 149
4411		CO		150			VC	14.53667	
8402	26.26	FO	24.12	225			VC	80.81614	
7010	24.05	SW	21.75	900			CO	21.60015	1 in 432
5401	25.33	SW	24.08	225			VC	75.0733	1 in 139
8507		FO	0	150			VC	11.17033	
4702	23.45	FO	20.8	225			VC	50.54424	1 in 297
4811		CO		100			VC	2.614017	
6602		FO		150			VC	10.91181	
6522		FO		150			VC	8.523097	
8415	26.29	SW	23.41	300			VC	9.463069	1 in 68
9403	26.92	FO	25.38	225			VC	77.00649	1 in 120
4713		CO		150			VC	5.666707	
4409		CO		150			VC	20.41599	
4502	24.22	SW	21.48	450			CO	108.2081	1 in 271
4815		CO		150			VC	6.254664	
8514	26.83	SW	25.01	225			VC	12.05611	1 in 16
9303	27.31	FO	24.73	225			VC	55.01608	1 in 104
4404	25.57	FO	23.69	225			VC	92.65527	1 in 113
5602	24.06	FO	21.38	225			VC	70.76723	1 in 236
4803	23.18	CO	20.36	525			VC	52.55461	1 in 584
7615		FO		150			VC	26.17521	
7011	24.06	FO	22.31	150			VC	13.32184	1 in 83
9903	24.51	FO	22.44	225			VC	24.69818	1 in 123
8802	23.8	FO	21.17	600			CO	32.96058	1 in 50
7505		CO		0			VC	10.47083	
7802	23.5	FO	20.1	600			CO	80.18153	1 in 617
6523		FO		150			VC	12.13604	
5541		FO		100			VC	2.451221	
6603		FO		150			VC	4.144598	
6610		FO		150			VC	15.61809	
7603	25.27	FO	22.96	225			VC	88.52683	1 in 153
5618		FO		150			VC	7.471674	
5302	25.85	SW	23.75	1000			CO	78.49203	1 in 714
7806	23.46	SW	21.36	1050			CO	58.36423	1 in 584
8422		FO		0			VC	12.19181	
7014	24.13	FO	22.42	150			VC	20.50469	1 in 108
8506		FO	0	150			VC	16.14097	
8608		CO		0			VC	22.89943	
4711		CO		150			VC	28.2882	
8404		SW		0			UN	4.431471	
4501	24.19	FO	21.67	225			VC	66.46308	1 in 369
7508		FO		150			VC	12.13923	
5601	24	SW	21.55	525			CO	84.89994	1 in 181
5605	23.54	SW	21.06	600			CO	74.96666	1 in 1249
7506		CO		0			VC	9.673367	
4706		SW	0	225			VC	78.83977	
7404	25.51	FO	23.66	150			VC	3.605551	
7611		FO		150			VC	13.55957	
4401	25.34	FO	21.7	450			CO	108.3005	1 in 471
7904	24.73	SW	21.53	225			VC	3.892991	
4807		CO		150			VC	15.01239	
7403	25.55	SW	23.97	225			VC	16.27882	1 in 29
5535		CO		150			VC	15.56211	
9008	24.51	FO	22.43	225			VC	22.80351	1 in 120
4509		FO		150			VC	1.243428	
6506	24.63	SW	22.99	225			VC	84.17244	1 in 129
8408	26.99	SW	24.26	900			CO	25.12246	1 in 419
8601	24.81	FO	21.84	225			VC	38.41875	1 in 45
4806		CO		150			VC	8.315828	
9906	24.34	SW	22.39	450			CO	41.05945	1 in 513
7704	23.6	SW	21.49	1200			CO	39.01759	1 in 434
8405		SW		0			UN	7.411474	
7617		FO		100			VC	1.663015	
4902		CO		150			VC	13.38391	
8516		SW		0			UN	7.444685	
8505		FO	0	150			VC	36.84252	
4805	23.41	CO	20.54	525			VC	48.0384	1 in 267
5503	24.34	SW	22.32	225			VC	93.05912	1 in 78
7605		SW	0	300			VC	92.69843	
8008	24.87	FO	23.12	225			VC	37.73592	1 in 180
3805		CO		150			VC	11.48729	
7804	23.32	FO	19.93	600			CO	99.08582	
8401	26.98	SW	25.15	225			VC	83.02409	1 in 94
4701	23.47	SW	19.27	1125			CO	9.791761	1 in 490
8801	23.88	FO	20.21	600			CO	15.32556	1 in 383
4414		FO		150			VC	21.16679	
7623		FO		150			VC	1.515247	
4819		CO		150			VC	10.68925	
8702	23.86	FO	20.26	525			CO	9.219544	
7602	24.88	SW	22.62	300			VC	57.31492	1 in 169
8406	26.76	SW	24.34	900			CO	15.51486	1 in 388
4704		SW	0	225			VC	31.37252	
9501	26.66	FO	24.19	225			VC	96.65793	1 in 105
5402	25.05	FO	22.62	225			VC	78.51752	1 in 174
5534		FO		150			VC	17.67037	
4705		CO	0	225			VC	58.57549	
9007	24.49	SW	22.88	225			VC	29.20616	1 in 209
5606		FO		100			PVC	21.36699	
5536		CO		150			VC	11.66859	
4604		FO	0	150			VC	9.809502	
6503	24.42	SW	22	525			CO	80.65978	1 in 179
7706		FO		100			VC	4.165703	
7503	25.18	SW	23.37	225			VC	70.03571	1 in 85
4816		CO		150			VC	10.74061	
7606	24.22	SW	21.69	900			CO	18.90775	1 in 236
9504		SW	0	225			VC	94.36631	
9905	24.34	FO	21.82	225			VC	90.97253	1 in 144
8410	26.76	SW	24.15	900			CO	13.43024	1 in 448
4308		FO		150			VC	5.430373	
5504	24.28	FO	22.27	225			VC	74.43118	1 in 165
4802	23.06	SW	20.7	1200			CO	89.56004	1 in 1120
9901	24.72	FO	22.24	225			VC	46.14109	1 in 118
4804	23.24	SW	21.49	300			VC	82.38986	1 in 515
7613		FO		150			VC	11.15564	
8504		FO		100			VC	9.167875	
5603	23.64	FO	21.81	225			VC	7.81025	1 in 11
8602	25.28	FO	20.65	525			CO	71.70077	1 in 652
7907	24.29	SW		0			UN	0.3849325	
4606		CO		150			VC	12.02205	
8421		FO		0			UN	7.75026	
8501	25.93	SW	23.73	225			VC	67.20863	1 in 132
4809		CO		150			VC	8.353204	
4820		CO		150			VC	3.236188	
6505	24.54	SW	22.27	300			VC	19.10497	1 in 174
7604	25.39	FO	23.07	225			VC	16.03122	1 in 160
4709	23.47	CO	20.6	225			VC	51.54153	1 in 859
3905	22.96	CO	20.45	525			VC	21.67308	1 in 94
3721		CO		150			VC	39.48689	
8009		FO		100			VC	17.20843	
8411		SW		0			UN	13.97188	
8615		FO		150			VC	18.0044	
8603	25.85	FO	24.15	225			VC	115.2779	1 in 107
4708	23.37	CO	20.63	225			VC	17.80135	1 in 593
4818		CO		150			VC	6.983793	
4503	24.61	CO	0	450			CO	70.76723	
7905	24.65	SW	21.75	225			VC	7.507918	
9407	26.69	SW	24.37	900			CO	11.70556	1 in 390
4712		CO		150			VC	12.89651	
3930		CO		150			VC	3.479918	
8417	26.86	FO	25.42	150			VC	14.91962	1 in 83
8703	23.7	FO	20.28	525			CO	22.71351	1 in 126
8901	23.55	FO	21.19	225			VC	96.57108	1 in 169
4513		CO		150			VC	15.05105	
7303	26.04	SW	23.58	1050			CO	50.26499	1 in 419
4511		FO		150			VC	13.17609	
8616		FO		150			VC	11.2226	
9408		SW		0			UN	5.73593	
4601	24.36	SW	21.19	1125			CO	94.14432	1 in 554
8502	25.93	FO	24.01	225			VC	85.63316	
4605		CO		150			VC	13.22543	
9902	24.7	SW	22.73	225			VC	45.65085	1 in 304
5514		CO		150			VC	5.474545	
7908	24.16	FO	22.57	150			VC	18.8171	1 in 125
7601	24.84	FO	22.38	225			VC	87.78806	
9904	24.52	SW	22.82	225			VC	27.78489	1 in 347
3604		SW	0	225			VC	81.32035	
4703	23.54	SW	19.9	1275			CO	15.62342	
4829		CO		150			VC	8.022324	
5304	26.05	SW	22.46	675			CO	33.06055	1 in 59
8413	26.89	SW	24.87	225			VC	14.3185	1 in 179
8420		FO		0			UN	4.218541	
8513		FO		150			VC	1.906317	
6307	25.84	FO	24.58	225			VC	31.64321	1 in 21
7405	26.09	SW	23.71	1050			CO	52.77357	1 in 406
8407	27.08	SW	24.3	900			CO	17.70074	1 in 443
3410		FO		150			VC	9.016814	
8403	26.34	SW	23.18	375			CO	5.821041	1 in 97
8605	26.01	FO	20.79	525			CO	65.21503	1 in 532
7624		FO		150			VC	34.48833	
4403	25.21	SW	21.73	1050			CO	81.34495	1 in 508
8419	26.88	FO	25.02	150			VC	18.44835	1 in 80
4813		CO		150			VC	3.519878	
7803	23.5	SW	21.24	1050			CO	120.9448	
9406	27.25	SW	24.46	900			CO	35.43847	1 in 394
4307		FO		150			VC	13.42379	
9604	25.93	FO	23.26	225			VC	91.78235	1 in 135
7903	24.14	SW		0			UN	0.4067355	
7901		SW		1900			CO	225.5833	
5515		FO		150			VC	4.778636	
4814		CO		150			VC	12.12154	
8418	26.77	FO	24.79	150			VC	13.93789	1 in 77
6504	24.52	SW	22.15	300			VC	17.69181	1 in 221
8409	26.85	SW	24.2	900			CO	19.23418	1 in 385
5002	24.82	FO	19.77	675			CO	104.69	1 in 1496
8412	26.61	SW	24.12	300			VC	49.23011	1 in 69
7501	25.61	SW	23.75	225			VC	12.72792	
7808	23.96	SW	21.4	1200			CO	25.89085	1 in 647
5501	24.53	FO	22.13	225			VC	78.56844	1 in 175
8515	26.82	SW	25.13	225			VC	21.33554	1 in 178
8512		FO		150			VC	17.92936	
4415		FO		150			VC	62.2962	
6402	25.75	FO	23.06	225			VC	78.57153	1 in 179
7609		FO		150			VC	16.42836	
4603		FO	0	150			VC	21.15381	
4801	22.87	SW	20.6	1200			CO	91.09336	
7509		FO		150			VC	10.88604	
8423		FO		0			UN	6.084485	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7622		FO		150			VC	11.13892	
3904	22.84	CO	20.22	525			VC	96.16652	1 in 566
4504	24.72	SW	21.55	375			CO	87.04597	
9409		SW		0			UN	7.367774	
6508		FO	0	225			VC	81.3941	
9603	25.31	FO	22.55	225			VC	79.02531	1 in 118
7408	26.19	SW	23.03	375			CO	33.34029	1 in 476
8503		SW		0			UN	5.923941	
9605	25.86	SW	23.36	300			VC	95.90099	1 in 75
8414		SW		0			UN	7.682192	
7401	26.38	SW	23.22	375			CO	12.04159	1 in 100
4901		SW		1200			CO	92.13034	
8416	26.59	FO		225			VC	49.61615	
6501	24.79	SW	22.26	525			CO	64.53681	1 in 258
5511		FO		0			VC	7.026095	
9015		FO		150			VC	11.22671	
6528		FO		150			VC	10.15998	
6414		FO		150			VC	11.98786	
5510		FO		0			VC	4.152339	
4402		FO		150			VC	11.12768	
6527		FO		150			VC	11.69667	
7628		FO		150			VC	3.862435	
5519		FO		150			VC	9.889931	
3619		FO		100			UN	7.184205	
8704	24.74	SW	21.62	1050			CO	39.51768	
7502	25.22	FO	23.4	225			VC	72.08839	1 in 77
7629		FO		150			VC	9.888007	
4512		CO		150			VC	6.915394	
5604	23.66	FO	21.08	225			VC	79.53463	1 in 318
5520		FO		150			VC	12.26034	
5508		FO		0			VC	7.344094	
7618		FO		150			VC	11.6294	
7402	25.36	SW	22.63	375			CO	61.42174	1 in 166
8707		FO		150			VC	13.15482	
5526		FO		100			VC	19.64301	
7406		FO	0	225			VC	64.35671	
6403		CO		150			VC	0.6320217	
5506		FO	0	0			VC	5.486662	
8701	24.92	SW	21.7	1050			CO	37.33631	1 in 622
6415		FO		150			VC	10.22816	
7701	24.57	FO	20.53	525			CO	23.29106	1 in 333
7413		CO		150			VC	14.09627	
8517		FO		150			VC	13.36648	
6406		CO		150			VC	16.71959	
5507		FO		0			VC	10.03218	
7703	23.65	SW	21.62	1200			CO	25.74322	1 in 198
8706		FO	20.53	525			CO	30.79221	1 in 440
5505	24.66	FO	22.93	225			VC	77.10383	1 in 119
4903		CO		150			VC	6.580926	
6502	24.67	FO	22.08	225			VC	60.16777	
5608		FO		150			VC	10.5614	

LEGEND

Abandoned · Foul · Surface Water · Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined · blue - surface water
brown - foul · purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

Southdean Road 4450 Southdean road,
Liverpool,
L14 8UL

Scale: 1:1250 **Date:** 26/06/2025

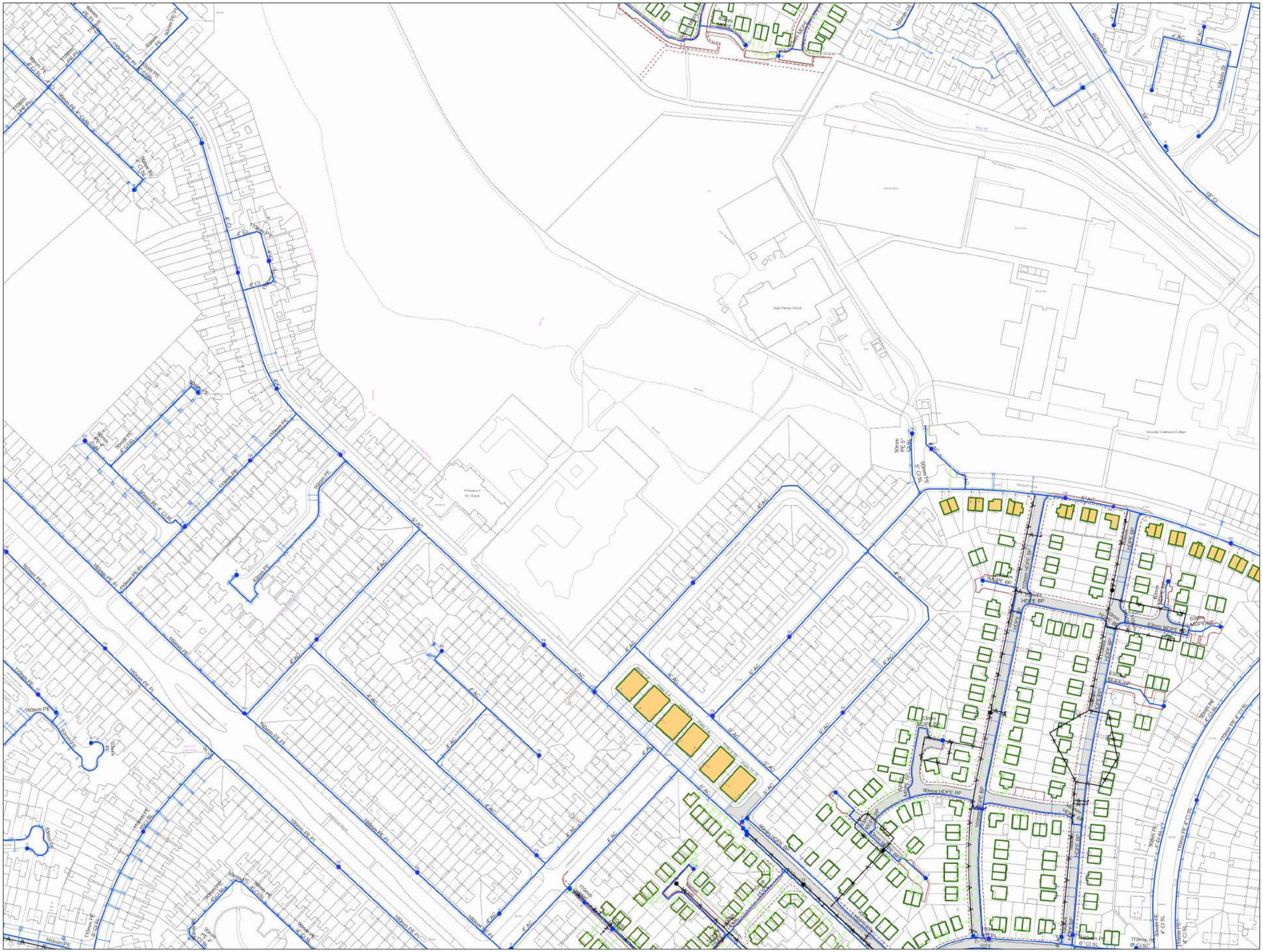
Sheet: 1 of 1

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.



LEGEND

Proposed	Abandoned	Live
		Distribution Main
		Trunk Main
		Comms Pipe
		Private Pipe
		Concessionary Service
		Raw Water
		LDTM Raw Water
		LDTM Treated Water

- Air Valve
- AC Valve, open
- AC Valve, closed
- CC Valve, open
- CC Valve, closed
- Non Return Valve
- Pressure Management Valve
- OMS Valve
- Stop Tap
- Flow Meter
- Domestic Meter
- Commercial Meter
- Pump
- Hydrant
- Fire Hydrant
- Anode
- Chlorination Point
- De-chlorination Point
- Strainer Point
- Access Point
- Hatch Box
- IP Point
- Sampling Station
- Logger Box
- Bore Hole
- Inlet Point
- Bulk Supply Point
- End Cap
- Site Termination
- Change of Characteristic
- Condition Report

Property Types

- Water Tower
- Valve House
- Booster Pumping Station
- Intake Pumping Station
- Water Treatment Works
- Supply Reservoir
- Service Reservoir
- Impounding Reservoir
- Pipe Bridge

Symbology for proposed assets is the same as above, but shown in green.
Symbology for abandoned assets is the same as above, but shown in black.

Address or Site Reference:

Southdean Road 4450 Southdean road,
Liverpool,
L14 8UL

Scale: 1:1250
Date: 26/06/2025

Printed by: Property Searches

WATER MAIN RECORDS

United Utilities
Water for the North West

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Appendix E: Ironside Farrar Drainage Strategy and Calculations

NOTE: THIS DRAWING IS ISSUED FOR INFORMATION / TENDER PURPOSES ONLY UNTIL THE APPROPRIATE TECHNICAL APPROVALS AND CONSENTS HAVE BEEN GRANTED. ALL WORK COMMENCING PRIOR TO APPROPRIATE TECHNICAL APPROVALS IS UNDERTAKEN AT THE CLIENT'S RISK.

Proposed On-line Cellular Storage (acceptable to some NAVs). Dimensions 42 x 17 x 0.8m. Units to be suitable for approximately 900mm of cover and occasional loading from vehicles such as large lawnmower.

Possible Future Link Road. No access to Existing SW / Foul Sewers to the north due to 3rd Party ownership.

Control Manhole with vortex flow control unit to limit flows 18.6 l/s @ 2.3m head (173mmØ Orifice) - QBar Greenfield Runoff Rate for the development.

Proposed SW Connection to Ex 525mmØ SW Sewer at new manhole S1. I.L. 21.309 TBC on site.

Proposed Foul Connection to Ex 225mmØ Foul Sewer at new manhole F1. I.L. 21.253 TBC on site.

Ex MH 7606 C.L.23.49m I.L.21.36m

Ex MH 7606 C.L.20.06m I.L.21.40m

Ex MH 7703 C.L.23.66m I.L.21.62m

Ex MH 7704 C.L.23.8m I.L.21.49m

Ex MH 4701 C.L.23.47m I.L.19.27m

Ex MH 4702 C.L.23.45m I.L.20.80m

Ex MH 5604 C.L.23.66m I.L.21.08m

Ex MH 5605 C.L.23.54m I.L.21.06m

Ex MH 5603 C.L.23.45m I.L.21.91m

Ex MH 5602 C.L.24.06m I.L.21.28m

Ex MH 5601 C.L.24.00m I.L.21.50m

Ex MH 5604

SAXBY ROAD

ASHBURY ROAD

BOUNDARY LEVELS TBC

KEY

S.W. Foul

- Proposed Sewer
- Proposed Disconnection Manhole
- Existing SW Sewer
- Existing Foul Sewer
- 30.00 Proposed Finished Floor Level
- 31.25 Proposed Level
- 29.35 Existing Level
- Denotes possible SuDS feature location (Filter Drain)
- Denotes possible SuDS feature location (Grass filter strip)
- SuDS feature - Permeable private driveway construction
- RET Denotes possible retaining wall locations (above 600mm).

North Point

Quality Ass.

UKAS 005 Quality Assurance ISO 9001:2015 SGS Certificate GB02/54539

Project: Southdean Road, Huyton

Client: Breck Homes

Title: Preliminary Drainage Layout

PRELIMINARY

IronsideFarrar
EnvironmentalConsultants
EnvironmentalPlanners
CivilEngineers
LandscapeArchitects
GraphicDesign
3 Worsley Court MANCHESTER M28 3NJ
Tel. 0161 703 8801 Fax. 0161 703 8279
manchester@ironsidefarrar.com
EDINBURGH GLASGOW

Original Size: A1

Drawn: BK | Checked By: RDE | Date: 11/09/2025 | Scale: 1:500

Drawing No.: 30701/100 | Revision:

NOTE: THIS DRAWING IS ISSUED FOR INFORMATION / TENDER PURPOSES ONLY UNTIL THE APPROPRIATE TECHNICAL APPROVALS AND CONSENTS HAVE BEEN GRANTED. ALL WORK COMMENCING PRIOR TO APPROPRIATE TECHNICAL APPROVALS IS UNDERTAKEN AT THE CLIENT'S RISK.

Pipe No.	Pipe Length (m)	Road Area (Ha)	House & Drive (Ha)	House & Drive + 10% (Ha)	Total Area (Ha)	Hatch
1.000	35.682	0.047	0.082	0.090	0.137	
2.000	12.969	0.027	0.060	0.066	0.093	
1.001	26.859					
1.002	10.822		0.113	0.124	0.124	
1.004	7.088					
1.005	35.258	0.050			0.050	
1.006	50.716	0.086	0.249	0.274	0.360	
3.000	93.714	0.106	0.063	0.069	0.175	
3.001	8.294	0.011	0.134	0.147	0.158	
3.002	47.767	0.039	0.066	0.073	0.112	
1.007	55.205	0.054	0.150	0.165	0.219	
1.008	10.991		0.110	0.121	0.121	
	TOTALS	0.420	1.027	1.129	1.549	

Possible Future Link Road. No access to Existing SW / Foul Sewers to the north due to 3rd Party ownership.

Proposed On-line Cellular Storage (acceptable to some NAVs). Dimensions 42 x 17 x 0.8m. Units to be suitable for approximately 900mm of cover and occasional loading from vehicles such as large lawnmower.

Control Manhole with vortex flow control unit to limit flows 18.6 l/s @ 2.3m head (173mmØ Orifice) - QBar Greenfield Runoff Rate for the development.

Proposed SW Connection to Ex 525mmØ SW Sewer at new manhole S1. I.L. 21.309 TBC on site.

Proposed Foul Connection to Ex 225mmØ Foul Sewer at new manhole F1. I.L. 21.253 TBC on site.

SAXBY ROAD

ASHBURY ROAD

LORDENS ROAD

PRELIMINARY

North Point

Quality Ass.
UKAS 005 Quality Assurance ISO 9001:2015 SGS Certificate GB02/54539

Project
Southdean Road, Huyton

Client
Breck Homes

Title
Preliminary Impermeable Areas Plan

Original Size
A1

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Drawn BK | Checked By RDE
Date 12/09/2025 | Scale 1:500

Drawing No. 30701/101 | Revision

IronsideFarrar
Environmental Consultants
Environmental Planners
Civil Engineers
Landscape Architects
Graphic Design
3 Worsley Court MANCHESTER M28 3NJ
Tel. 0161 703 8801 Fax. 0161 703 8279
manchester@ironsidefarrar.com
EDINBURGH GLASGOW

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.650
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	x
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	100.0		

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	10	0.137	5.00	24.850	Manhole	Adoptable	1800	342714.707	392749.312	1.599
✓	11	0.093	5.00	24.550	Manhole	Adoptable	1800	342694.623	392785.364	1.356
✓	9			24.700	Manhole	Adoptable	1800	342688.753	392773.799	1.538
✓	8	0.124	5.00	24.450	Manhole	Adoptable	1800	342662.729	392780.444	1.355
✓	7	0.000		24.450	Manhole	Adoptable	1050	342655.566	392772.332	1.732
✓	6	0.000	5.00	24.450	Manhole	Adoptable	1050	342661.396	392754.350	1.877
✓	5	0.050	5.00	24.550	Manhole	Adoptable	1800	342665.281	392748.422	1.995
✓	4	0.360	5.00	24.700	Manhole	Adoptable	1800	342641.340	392722.539	2.233
✓	14	0.175	5.00	24.920	Manhole	Adoptable	1800	342713.427	392722.890	2.316
✓	13	0.158	5.00	24.700	Manhole	Adoptable	1800	342650.276	392653.650	2.330
✓	12	0.112	5.00	24.600	Manhole	Adoptable	1800	342642.041	392652.661	2.251
✓	3	0.219	5.00	24.130	Manhole	Adoptable	2100	342607.047	392685.174	1.975
✓	2	0.121	5.00	23.880	Manhole	Adoptable	2400	342569.549	392644.659	1.863
✓	1			23.718	Manhole	Adoptable	1800	342560.632	392638.233	2.109

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	35.682	400.0	450	Circular_Default Sewer Type	24.850	23.251	1.149	24.700	23.162	1.088
2.000	12.969	400.0	450	Circular_Default Sewer Type	24.550	23.194	0.906	24.700	23.162	1.088
1.001	26.859	400.0	450	Circular_Default Sewer Type	24.700	23.162	1.088	24.450	23.095	0.905
1.002	10.822	400.0	450	Circular_Default Sewer Type	24.450	23.095	0.905	24.450	23.068	0.932
1.004	7.088	400.0	675	Circular_Default Sewer Type	24.450	22.573	1.202	24.550	22.555	1.320
1.005	35.258	400.0	675	Circular_Default Sewer Type	24.550	22.555	1.320	24.700	22.467	1.558
1.006	50.716	162.6	675	Circular_Default Sewer Type	24.700	22.467	1.558	24.130	22.155	1.300
3.000	93.714	400.0	600	Circular_Default Sewer Type	24.920	22.604	1.716	24.700	22.370	1.730
3.001	8.294	400.0	600	Circular_Default Sewer Type	24.700	22.370	1.730	24.600	22.349	1.651
3.002	47.767	400.0	600	Circular_Default Sewer Type	24.600	22.349	1.651	24.130	22.230	1.300

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	10	1800	Manhole	Adoptable	9	1800	Manhole	Adoptable
2.000	11	1800	Manhole	Adoptable	9	1800	Manhole	Adoptable
1.001	9	1800	Manhole	Adoptable	8	1800	Manhole	Adoptable
1.002	8	1800	Manhole	Adoptable	7	1050	Manhole	Adoptable
1.004	6	1050	Manhole	Adoptable	5	1800	Manhole	Adoptable
1.005	5	1800	Manhole	Adoptable	4	1800	Manhole	Adoptable
1.006	4	1800	Manhole	Adoptable	3	2100	Manhole	Adoptable
3.000	14	1800	Manhole	Adoptable	13	1800	Manhole	Adoptable
3.001	13	1800	Manhole	Adoptable	12	1800	Manhole	Adoptable
3.002	12	1800	Manhole	Adoptable	3	2100	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.007	55.205	400.0	675	Circular_Default Sewer Type	24.130	22.155	1.300	23.880	22.017	1.188
1.008	10.991	26.9	225	Circular_Default Sewer Type	23.880	22.017	1.638	23.718	21.609	1.884

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.007	3	2100	Manhole	Adoptable	2	2400	Manhole	Adoptable
1.008	2	2400	Manhole	Adoptable	1	1800	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	✓	100 year (l/s)	38.6
Rainfall Events	Singular	Drain Down Time (mins)	240	Check Discharge Volume	✓
Summer CV	0.750	Additional Storage (m³/ha)	20.0	100 year 360 minute (m³)	626
Winter CV	0.840	Starting Level (m)			
Analysis Speed	Detailed	Check Discharge Rate(s)	✓		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440	2160

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	40	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	QBar/QMed conversion factor	1.075
Greenfield Method	FEH	Growth Factor 100 year	2.08
Positively Drained Area (ha)	2.383	Betterment (%)	0
SAAR (mm)	866	QMed	17.3
Host	1	QBar	18.6
BFIHost	0.351	Q 100 year (l/s)	38.6
Region	10		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	2.383	Storm Duration (mins)	360
Soil Index	4	Betterment (%)	0
SPR	0.49	PR	0.514
CWI	124.665	Runoff Volume (m³)	626

Node 2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	22.017	Product Number	CTL-SHE-0173-1860-2300-1860
Design Depth (m)	2.300	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	18.6	Min Node Diameter (mm)	2100

Node 6 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Main Channel Length (m)	58.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.573	Main Channel Slope (1:X)	400.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets

7

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	714.0	714.0	0.800	714.0	789.8	0.801	0.0	789.8

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	11	23.337	0.086	14.0	0.3680	0.0000	OK
15 minute winter	11	11	23.281	0.087	9.5	0.3426	0.0000	OK
15 minute winter	9	11	23.276	0.114	22.1	0.2901	0.0000	OK
15 minute winter	8	11	23.237	0.142	33.3	0.6222	0.0000	OK
15 minute winter	7	14	22.740	0.022	32.6	0.0188	0.0000	OK
120 minute winter	6	92	22.641	0.068	12.2	0.0585	0.0000	OK
120 minute winter	5	86	22.638	0.083	7.1	0.2531	0.0000	OK
120 minute winter	4	86	22.636	0.169	16.8	0.9761	0.0000	OK
15 minute winter	14	11	22.692	0.088	17.8	0.3569	0.0000	OK
120 minute winter	13	84	22.637	0.267	11.8	1.0417	0.0000	OK
120 minute winter	12	84	22.637	0.288	14.0	1.0188	0.0000	OK
120 minute winter	3	82	22.637	0.482	35.2	2.7373	0.0000	OK
120 minute winter	2	84	22.636	0.619	23.9	3.6045	0.0000	SURCHARGED
120 minute winter	1	86	21.674	0.065	18.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	13.4	0.539	0.084	0.9410	
15 minute winter	11	2.000	9	8.7	0.409	0.054	0.3444	
15 minute winter	9	1.001	8	21.4	0.581	0.133	0.9996	
15 minute winter	8	1.002	7	32.6	0.839	0.203	0.4217	
15 minute winter	7	Flow through Pond	6	31.9	0.143	0.003	15.5452	
120 minute winter	6	1.004	5	6.8	0.431	0.015	0.1535	
120 minute winter	5	1.005	4	7.4	0.425	0.016	1.6738	
120 minute winter	4	1.006	3	16.8	0.378	0.023	8.6764	
15 minute winter	14	3.000	13	16.6	0.469	0.048	5.4381	
120 minute winter	13	3.001	12	10.3	0.474	0.030	1.0564	
120 minute winter	12	3.002	3	13.6	0.552	0.040	8.0327	
120 minute winter	3	1.007	2	19.8	0.318	0.042	16.9807	
120 minute winter	2	1.008	1	18.5	1.855	0.183	0.1094	154.5

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	10	23.352	0.101	18.9	0.4287	0.0000	OK
15 minute winter	11	11	23.305	0.111	12.9	0.4331	0.0000	OK
15 minute winter	9	11	23.300	0.138	30.0	0.3506	0.0000	OK
15 minute winter	8	11	23.263	0.168	45.3	0.7345	0.0000	OK
15 minute winter	7	13	22.745	0.027	44.6	0.0232	0.0000	OK
120 minute winter	6	96	22.707	0.134	29.0	0.1162	0.0000	OK
120 minute winter	5	96	22.706	0.151	16.0	0.4611	0.0000	OK
30 minute winter	4	24	22.715	0.248	42.2	1.4287	0.0000	OK
30 minute winter	14	25	22.720	0.116	18.4	0.4705	0.0000	OK
30 minute winter	13	23	22.711	0.341	39.0	1.3309	0.0000	OK
30 minute winter	12	23	22.709	0.360	45.8	1.2738	0.0000	OK
120 minute winter	3	92	22.707	0.552	37.9	3.1334	0.0000	OK
15 minute winter	2	14	22.734	0.717	77.0	4.1762	0.0000	SURCHARGED
15 minute winter	1	14	21.674	0.065	18.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	18.3	0.575	0.114	1.2024	
15 minute winter	11	2.000	9	11.8	0.423	0.073	0.4620	
15 minute winter	9	1.001	8	29.2	0.622	0.182	1.2751	
15 minute winter	8	1.002	7	44.6	0.914	0.278	0.5291	
15 minute winter	7	Flow through Pond	6	48.0	0.168	0.005	28.4214	
120 minute winter	6	1.004	5	-15.1	0.481	-0.032	0.3894	
120 minute winter	5	1.005	4	-14.4	0.430	-0.031	3.0428	
30 minute winter	4	1.006	3	40.5	0.537	0.055	10.8547	
30 minute winter	14	3.000	13	17.8	0.459	0.052	9.3389	
30 minute winter	13	3.001	12	35.8	0.603	0.104	1.4175	
30 minute winter	12	3.002	3	41.5	0.615	0.121	9.9331	
120 minute winter	3	1.007	2	21.3	0.346	0.046	18.4721	
15 minute winter	2	1.008	1	18.6	1.858	0.185	0.1100	94.0

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	11	23.480	0.229	59.8	0.9740	0.0000	OK
15 minute winter	11	11	23.464	0.270	40.6	1.0570	0.0000	OK
15 minute winter	9	11	23.459	0.297	93.7	0.7560	0.0000	OK
15 minute winter	8	11	23.417	0.322	143.0	1.4107	0.0000	OK
180 minute winter	7	176	23.156	0.438	67.5	0.3794	0.0000	OK
180 minute winter	6	176	23.157	0.584	79.2	0.5055	0.0000	OK
180 minute winter	5	176	23.157	0.602	81.4	1.8329	0.0000	OK
15 minute winter	4	12	23.222	0.755	429.4	4.3574	0.0000	SURCHARGED
15 minute winter	14	11	23.557	0.953	168.0	3.8634	0.0000	SURCHARGED
15 minute winter	13	11	23.486	1.116	169.0	4.3520	0.0000	SURCHARGED
15 minute winter	12	11	23.447	1.098	205.5	3.8856	0.0000	SURCHARGED
15 minute summer	3	12	23.333	1.178	321.3	6.6899	0.0000	SURCHARGED
15 minute winter	2	11	23.343	1.326	101.3	7.7195	0.0000	SURCHARGED
15 minute winter	1	8	21.674	0.065	18.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	55.7	0.671	0.347	3.4240	
15 minute winter	11	2.000	9	38.1	0.560	0.237	1.3634	
15 minute winter	9	1.001	8	92.1	0.804	0.573	3.1232	
15 minute winter	8	1.002	7	142.2	1.299	0.885	1.1817	
180 minute winter	7	Flow through Pond	6	-34.1	0.077	-0.004	346.5790	
180 minute winter	6	1.004	5	-79.2	-0.669	-0.170	2.3534	
180 minute winter	5	1.005	4	-76.6	-0.426	-0.164	12.2163	
15 minute winter	4	1.006	3	-306.7	0.865	-0.417	18.1045	
15 minute winter	14	3.000	13	102.1	0.596	0.298	26.3971	
15 minute winter	13	3.001	12	159.5	0.700	0.466	2.3362	
15 minute winter	12	3.002	3	207.1	0.759	0.605	13.4549	
15 minute summer	3	1.007	2	104.7	0.630	0.224	19.7070	
15 minute winter	2	1.008	1	18.6	1.858	0.185	0.1100	276.8

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	11	23.543	0.292	76.3	1.2426	0.0000	OK
15 minute winter	11	11	23.527	0.333	51.8	1.3046	0.0000	OK
15 minute winter	9	11	23.522	0.360	119.0	0.9169	0.0000	OK
15 minute winter	8	11	23.473	0.378	182.7	1.6534	0.0000	OK
180 minute winter	7	180	23.407	0.689	84.2	0.5964	0.0000	OK
180 minute winter	6	180	23.407	0.834	108.7	0.7219	0.0000	SURCHARGED
180 minute winter	5	180	23.407	0.852	111.9	2.5938	0.0000	SURCHARGED
15 minute summer	4	11	23.480	1.013	608.7	5.8448	0.0000	SURCHARGED
15 minute winter	14	10	23.850	1.246	183.5	5.0526	0.0000	SURCHARGED
15 minute winter	13	11	23.743	1.373	193.0	5.3550	0.0000	SURCHARGED
15 minute winter	12	11	23.724	1.375	227.2	4.8675	0.0000	SURCHARGED
15 minute summer	3	11	23.640	1.485	420.1	8.4386	0.0000	SURCHARGED
15 minute summer	2	11	23.726	1.709	72.1	9.9531	0.0000	FLOOD RISK
15 minute summer	1	188	21.674	0.065	18.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	70.7	0.680	0.440	4.3677	
15 minute winter	11	2.000	9	48.3	0.578	0.301	1.6981	
15 minute winter	9	1.001	8	117.7	0.859	0.733	3.7356	
15 minute winter	8	1.002	7	181.8	1.418	1.132	1.3777	
180 minute winter	7	Flow through Pond	6	-44.2	0.079	-0.005	507.3295	
180 minute winter	6	1.004	5	-108.7	-0.684	-0.233	2.5303	
180 minute winter	5	1.005	4	-105.8	-0.464	-0.227	12.5863	
15 minute summer	4	1.006	3	-426.9	-1.196	-0.581	18.1045	
15 minute winter	14	3.000	13	105.0	0.618	0.307	26.3971	
15 minute winter	13	3.001	12	178.5	0.722	0.521	2.3362	
15 minute winter	12	3.002	3	251.0	0.891	0.733	13.4549	
15 minute summer	3	1.007	2	-93.5	0.638	-0.200	19.7070	
15 minute summer	2	1.008	1	18.6	1.859	0.185	0.1100	277.5