Haigh Huddleston & Associates
Civil & Structural Engineering Consultants
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E22/7944/MD/L003A

11 January 2023

FAO Helen Davies
Binks Executive Homes Limited
Cawthorne House
19 Tivy Dale
Cawthorne
Barnsley
S75 4EJ

Dear Helen,

Re : Proposed Development off Moor Lane, Gomersal, Cleckheaton

Further to our letter reference E22/7944/MH/002 dated 16 June 2022, and subsequent correspondence with Yorkshire Water, further investigation works have been undertaken in accordance with NPPG drainage hierarchy to determine if surface water disposal by infiltration or discharge to a water body would be feasible for the above development.

1. INFILTRATION

Haigh Huddleston & Associates have undertaken investigation works to confirm whether soak-a-ways would be a suitable long term method of surface water dispersal.

1.1 FIELDWORK

1.1.1 The fieldwork comprised of four trial holes undertaken using an 8 tonne tracked excavator equipped with a 600mm wide bucket. The trial pit locations were set by possible soak-a-way locations. The locations of the trial pits are indicated on drawing E22/7944/03 at the rear of the report.

1.1.2 Materials encountered within the trial pits were examined and categorised. The trial pit logs are at the rear of the report.

1.1.3 The soak-a-way tests were undertaken in accordance with the method specified in BRE Digest 365 Soak-a-way Design. An instantaneous supply of water was provided via an IBC. The trial pit was filled and the water levels were recorded against time as the water permeated into the natural strata.

1.1.4 The water level was monitored over an extended time period to determine the infiltration rate for the natural strata. The infiltration rate has been calculated in each case between the 75% and 25% full values as recommended in the BRE Digest 365.

1.1.5 The soak-a-way test results are attached to the rear of this report.

1.2 RESULTS OF THE INVESTIGATION

1.2.1 The surface of the trial pits consisted of rough grass and brambles over 0.25-0.3m of dark grey topsoil containing numerous rootlets. In TP02 the occasional brick was noted at the surface of the topsoil.

1.2.2 Beneath the topsoil was a 1.0-1.95m thick layer of soft to firm brown mottled grey clay with occasional angular sandstone gravels and cobbles. This became harder to excavate with depth.

1.2.3 In TP01 and TP02 in the southern half of the site, a moderately weak light grey mudstone excavated as angular gravels and flaggy cobbles in a clay matrix was encountered at 2.2m below existing ground levels and extended to the base of the trial pits.

1.2.4 In TP03, a moderately strong weathered sandstone was encountered at 2.2m below existing ground levels that proved difficult to excavate with the bladed bucket. The trial pit was terminated in this strata at 2.3m below existing ground levels.

1.2.5 In TP04, this was underlain by layer of firm to stiff grey clay becoming highly weathered mudstone with depth. A band of moderately strong sandstone was encountered in the northern half of the trial pit at a depth of 1.8-2.0m below existing ground levels. The trial pit terminated in the weathered mudstone strata at a depth of 2.3m below existing ground levels.

1.2.6 Ground water was only encountered in TP03. This was seepage from the base of the trial pit.

1.2.7 All four trial pits were used for infiltration testing. The infiltration rates calculated are summarised in the table below. The calculation sheets are included to the rear of the report along with the soak-a-way location plan.

SOAK-A-WAY TEST	INFILTRATION RATE (m/s $x10^{-6}$)
TP01	ABANDONED DUE TO STATIONARY WATER LEVELS
TP02	ABANDONED DUE TO STATIONARY WATER LEVELS
TP03	ABANDONED DUE TO RISING WATER LEVELS
TP04	ABANDONED DUE TO STATIONARY WATER LEVELS

1.2.8 The stationary water levels recorded throughout the site during the tests, in addition to the groundwater encountered within TP03, indicate that in this instance infiltration methods will not be a suitable method of surface water disposal for the development.

2. DISCHARGE TO A WATER BODY

2.1 We have been in communication with Leeds City Council FRM regarding the existing culvert recorded to the east of the site. A plan showing the LCC Flood Risk Assets detailing the location of the culvert is attached to the rear of this letter.

2.2 The head of the watercourse is shown in the rear garden of 15 Summerdale, and is recorded as being a 450x450mm stone culvert that is 1m deep. There are no records of any connections into the head of the run.

2.3 The shallow recorded depth of the culverted watercourse, and its distance from the site, indicate that a gravity connection to this watercourse may not be achievable. We understand that due to the risk of flooding, a surface water pumping station serving the development is unacceptable to Kirklees Council.

2.4 As Yorkshire Water will not requisition sewers to watercourses, to get a connection from site to the head of the watercourse, we would have to get the agreement of plots 15, 17, 19 and 21 Summerdale to lay new sewers within their land. It is unlikely the existing residents will agree to this as there is no material benefit to them from the laying of the new sewer through their land, and the construction and future maintenance will cause considerable inconvenience. In addition to this, there is no straight route to the watercourse due to the existing buildings, and it looks like there will be insufficient space for the required easements to an adoptable sewer. Our client has undertaken a letter drop to the affected properties regarding the proposals and to date there has been no response.

2.5 Finally, although the site and existing culvert are located with Kirklees Council's boundary, the culvert serves the Calder-Batley Beck catchment area, which ultimately discharges into Leeds City Council assets. An application would therefore be need to make to both councils for them to agree to a discharge rate and works to facilitate the proposed connection.

2.6 It is therefore considered that a gravity connection to the existing 450x450 culvert indicated on the attached plan is not a feasible method of discharging the surface water run-off from the development.

3. DISCHARGE TO THE ADOPTABLE SEWER NETWORK

3.1 The proposed access to the site from Moor Lane is located in the higher south west corner of the site, where it will not be possible to make a gravity connection for the surface water sewer serving the entire site due to the topography.

3.2 However, we understand that Kirklees Council own 41, Moor Lane at the lower southern end of the site. They are amenable to a gravity sewer being constructed through their land from site to the existing adopted surface water sewer in Moor Lane.

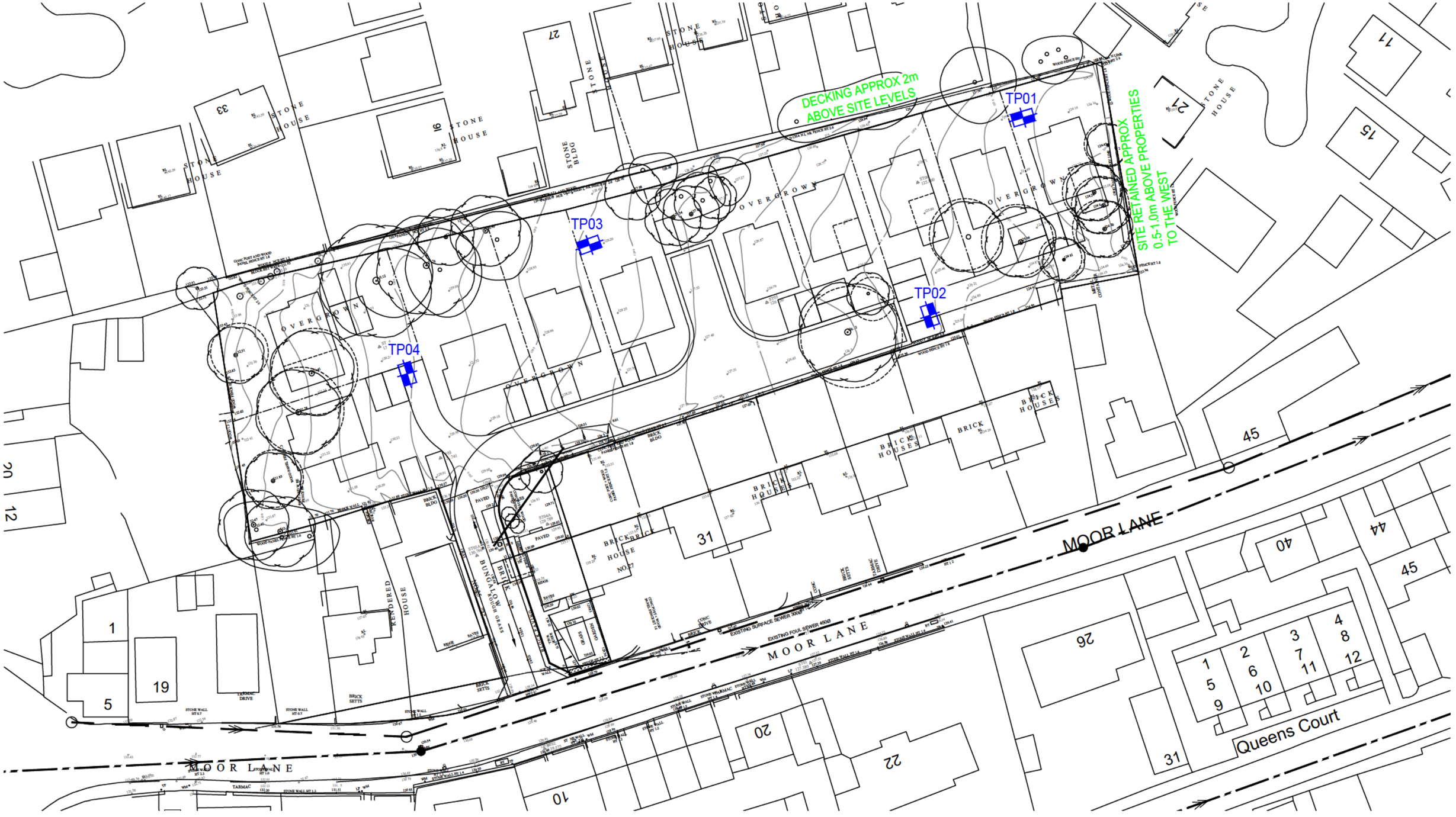
3.3 As infiltration methods and a discharge to an existing water body are not feasible in this instance, we are pursuing an agreement with Yorkshire Water to discharge to the existing adopted surface water sewer in Moor Lane to the south of the site at a rate of 3.5 l/s.

I trust that the above is acceptable to yourself, but should you have any queries please do not hesitate to contact me.

Yours sincerely

MICHAEL DEAN BSc (Hons) HND
m.dean@haighhuddleston.co.uk

SITE INVESTIGATION WORKS



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e martin@haighhuddleston co.uk

Client	Binks Executive Homes
Project	Moor Lane, Gomersal
Detail	Site Investigation Plan

Scale	Dwn	Chkd	Date	Dwg No.
1:500@A3	MD		Jan'23	E22/7944/03

TRIAL HOLE NO. 1

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Client :	**BINKS EXECUTIVE HOMES**	**Job No :**	**7944**
Site :	**MOOR LANE, GOMERSAL**	**Date :**	**19 DECEMBER 2022**

0.0		
	0.3	Sample taken at 0.1m. Rough grass and brambles over dark grey soil with numerous rootlets.
0.5		Soft to firm light brown mottled grey clay with occasional angular sandstone cobbles.
	0.9	Sample taken at 0.9m.
1.0		
1.5		
2.0		
	2.2	
2.5		Moderately weak highly weathered light grey/brown mudstone excavated as small angular gravels and flaggy cobbles in a clay matrix.
	2.8	Difficult to excavate. Sides stable.
3.0		
3.5		
4.0		

REMARKS:

Ground water encountered during excavation	NO
Sample taken	YES at 0.1 & 0.9m.
Sides of excavation remained stable	YES
Level	……

NOTES:

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TRIAL HOLE NO. 2

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Client :	**BINKS EXECUTIVE HOMES**	**Job No :**	**7944**
Site :	**MOOR LANE, GOMERSAL**	**Date :**	**19 DECEMBER 2022**

0.0		
	0.3	Sample taken at 0.1m. Rough grass over dark grey topsoil with numerous rootlets and occasional brick.
0.5	**0.7**	Soft to firm orange mottled grey clay with occasional angular gravels and cobbles. Sample taken at 0.7m.
1.0		
1.5		
2.0		Becoming harder to excavate with depth.
	2.2	
	2.3	Moderately weak highly weathered grey mudstone excavated as small angular gravels in a clay matrix.
2.5		
3.0		
3.5		
4.0		

REMARKS:

Ground water encountered during excavation	NO
Sample taken	YES @ 0.1 & 0.7m
Sides of excavation remained stable	YES
Level	……

NOTES:

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TRIAL HOLE NO. 3

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Client :	**BINKS EXECUTIVE HOMES**	**Job No :**	**7944**
Site :	**MOOR LANE, GOMERSAL**	**Date :**	**19 DECEMBER 2022**

0.0		
	0.25	Rough grass and brambles over dark grey topsoil with numerous rootlets. Sample taken at 0.1m.
0.5	**0.7**	Soft to firm orange mottled grey slightly sandy clay with angular gravels. Sample taken at 0.7m.
1.0		
1.5		
2.0		
	2.2	
	2.3	Moderately strong light brown sandstone. Difficult to excavate. Groundwater seeping from base.
2.5		
3.0		
3.5		
4.0		

REMARKS:

Ground water encountered during excavation	YES
Sample taken	YES @ 0.1 & 0.7m.
Sides of excavation remained stable	YES
Level	……

NOTES:

……

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TRIAL HOLE NO. 4

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Client :	**BINKS EXECUTIVE HOMES**	**Job No :**	**7944**
Site :	**MOOR LANE, GOMERSAL**	**Date :**	**19 DECEMBER 2022**

0.0		
	0.3	Sample taken at 0.1m. Rough grass and brambles over dark grey topsoil with numerous rootlets.
0.5		Soft to firm orange mottled grey slightly sandy clay with gravels.
1.0		
	1.3	Sample taken at 1.3m.
1.5		Firm to stiff grey clay with gravels becoming highly weathered mudstone excavated as small angular gravels. Moderately strong sandstone difficult to excavate at 1.8 – 2.0m.
2.0		
	2.3	
2.5		
3.0		
3.5		
4.0		

REMARKS:

Ground water encountered during excavation	NO
Sample taken	YES at 0.1 & 1.3m.
Sides of excavation remained stable	YES
Level	……

NOTES:

……

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Soil Permeability test

TP01

Site **Moor Lane, Gomersal** **Date** Dec'22

Client **Binks Executive Homes** **Job No.** E22/7944

Pit dimensions m

Length	2.4
Width	0.65
Depth	2.8

Time	Time into Test Mlns	Dip Reading mm	Vol cu.m	Vol Change cu.m	Contact area Avge sq.m	Permeability lit/ sq.m/sec
10.48	0	1900	1.40400		7.05000	
10.50	2	1900	1.40400	0.00000	7.05000	0.00000
10.55	7	1900	1.40400	0.00000	7.05000	0.00000
11.00	12	1900	1.40400	0.00000	7.05000	0.00000
12.15	87	1900	1.40400	0.00000	7.05000	0.00000
13.29	161	1900	1.40400	0.00000	7.05000	0.00000
14.27	219	1900	1.40400	0.00000	7.05000	0.00000

ABANDONED DUE TO STATIONARY WATER LEVEL

Average Permeabilty Value: 0.000000000 lit/ sq.m/sec

Soil Permeability test

TP02

Site **Moor Lane, Gomersal** **Date** Dec'22

Client **Binks Executive Homes** **Job No.** E22/7944

Pit dimensions m

Length	2.7
Width	0.65
Depth	2.3

Time	Time into Test Mlns	Dip Reading mm	Vol cu.m	Vol Change cu.m	Contact area Avge sq.m	Permeability lit/ sq.m/sec
11.50	0	1560	1.29870		6.71300	
11.55	5	1570	1.28115	0.01755	6.64600	0.00876
12.00	10	1570	1.28115	0.00000	6.64600	0.00000
13.27	97	1570	1.28115	0.00000	6.64600	0.00000
14.00	130	1570	1.28115	0.00000	6.64600	0.00000
14.50	180	1570	1.28115	0.00000	6.64600	0.00000

ABANDONED DUE TO STATIONARY WATER LEVEL

Average Permeabilty Value: 0.001751628 lit/ sq.m/sec

Soil Permeability test

TP03

Site **Moor Lane, Gomersal** **Date** Dec'22

Client **Binks Executive Homes** **Job No.** E22/7944

Pit dimensions m

Length	2.7
Width	0.7
Depth	2.7

Time	Time into Test Mlns	Dip Reading mm	Vol cu.m	Vol Change cu.m	Contact area Avge sq.m	Permeability lit/ sq.m/sec
12.43	0	1560	2.15460		9.64200	
12.45	2	1570	2.13570	0.01890	9.57400	0.01639
12.50	7	1570	2.13570	0.00000	9.57400	0.00000
13.32	49	1550	2.17350	-0.03780	9.71000	-0.00156
14.02	79	1550	2.17350	0.00000	9.71000	0.00000
15.05	142	1550	2.17350	0.00000	9.71000	0.00000

ABANDONED DUE TO RISING WATER LEVEL

Average Permeabilty Value: 0.002967379 lit/ sq.m/sec

Soil Permeability test

TP04

Site **Moor Lane, Gomersal** **Date** Dec'22

Client **Binks Executive Homes** **Job No.** E22/7944

Pit dimensions m

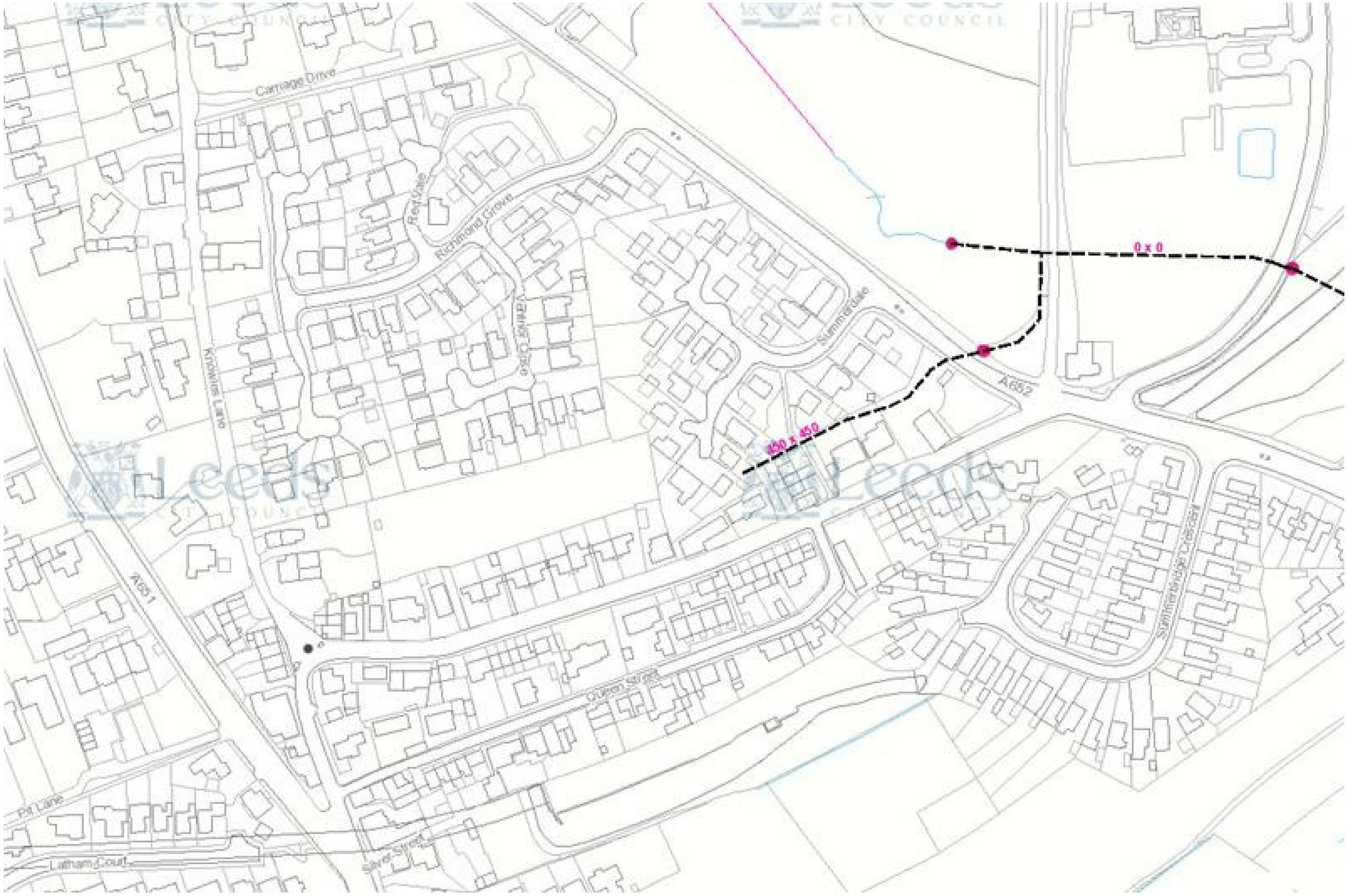
Length	3.1
Width	0.7
Depth	2.3

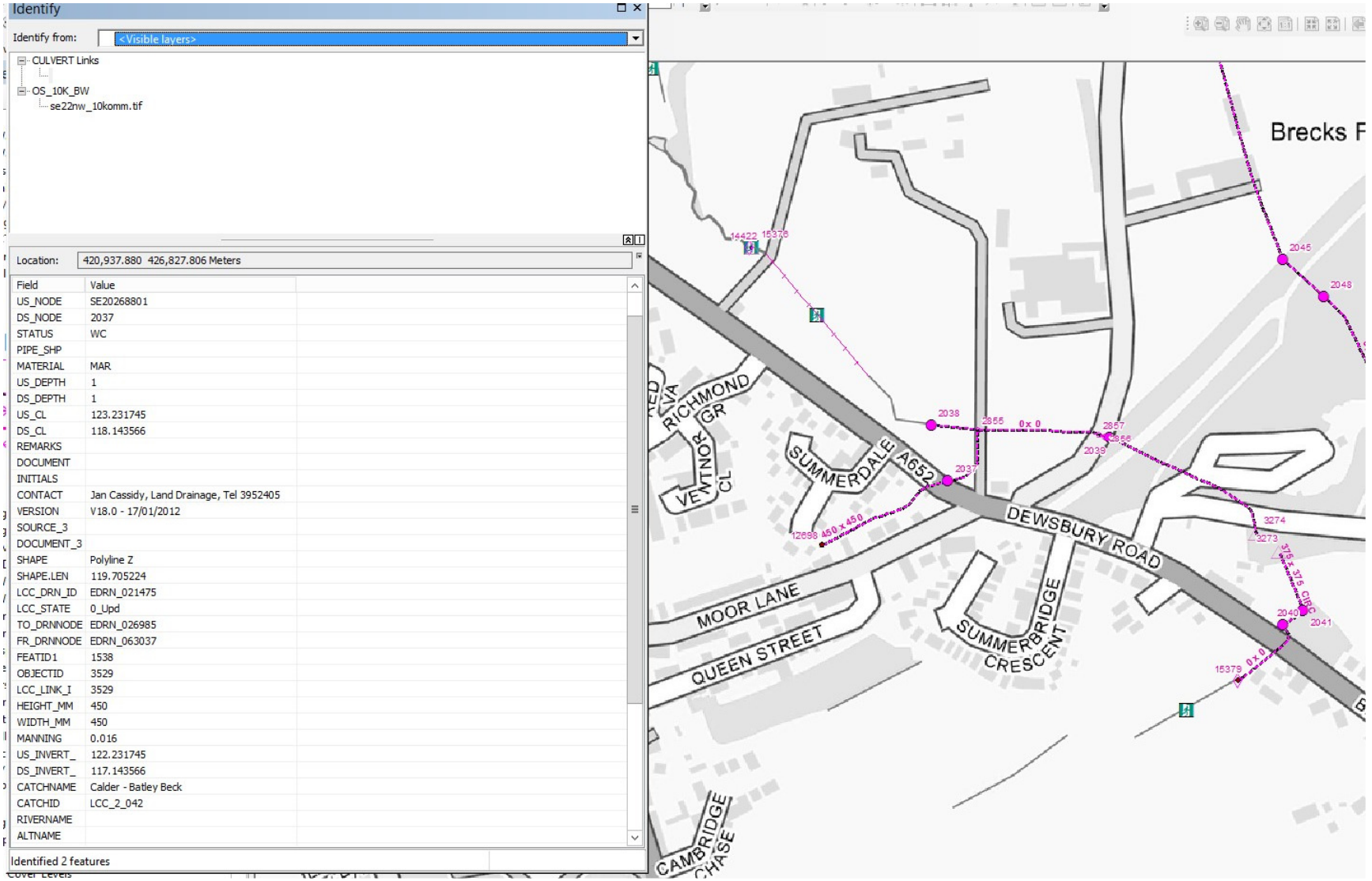
Time	Time into Test Mlns	Dip Reading mm	Vol cu.m	Vol Change cu.m	Contact area Avge sq.m	Permeability lit/ sq.m/sec
13.20	0	1660	1.38880		7.03400	
13.25	5	1660	1.38880	0.00000	7.03400	0.00000
13.30	10	1660	1.38880	0.00000	7.03400	0.00000
14.04	44	1660	1.38880	0.00000	7.03400	0.00000
15.20	120	1660	1.38880	0.00000	7.03400	0.00000

ABANDONED DUE TO STATIONARY WATER LEVEL

Average Permeabilty Value: 0.000000000 lit/ sq.m/sec

EXISTING WATERCOURSE

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Jan Cassidy, Land Drainage, Tel 3952405
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2037
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DEWSBURY ROAD
RICHMOND GR
VENTNOR CL
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3273
MOOR LANE
QUEEN STREET
SUMMERBRIDGE CRESCENT
2040
2041
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CAMBRIDGE