

440009 : 403296



Map Name : SE3903SE
 Yorkshire Water,
 PO Box 500,
 Halifax Road,
 Bradford BD6 2LZ
 Contact Name :
 Search Advisor L.MULLOCK
 Contact Tel : 75 4506

Title

Notes

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Partial Key

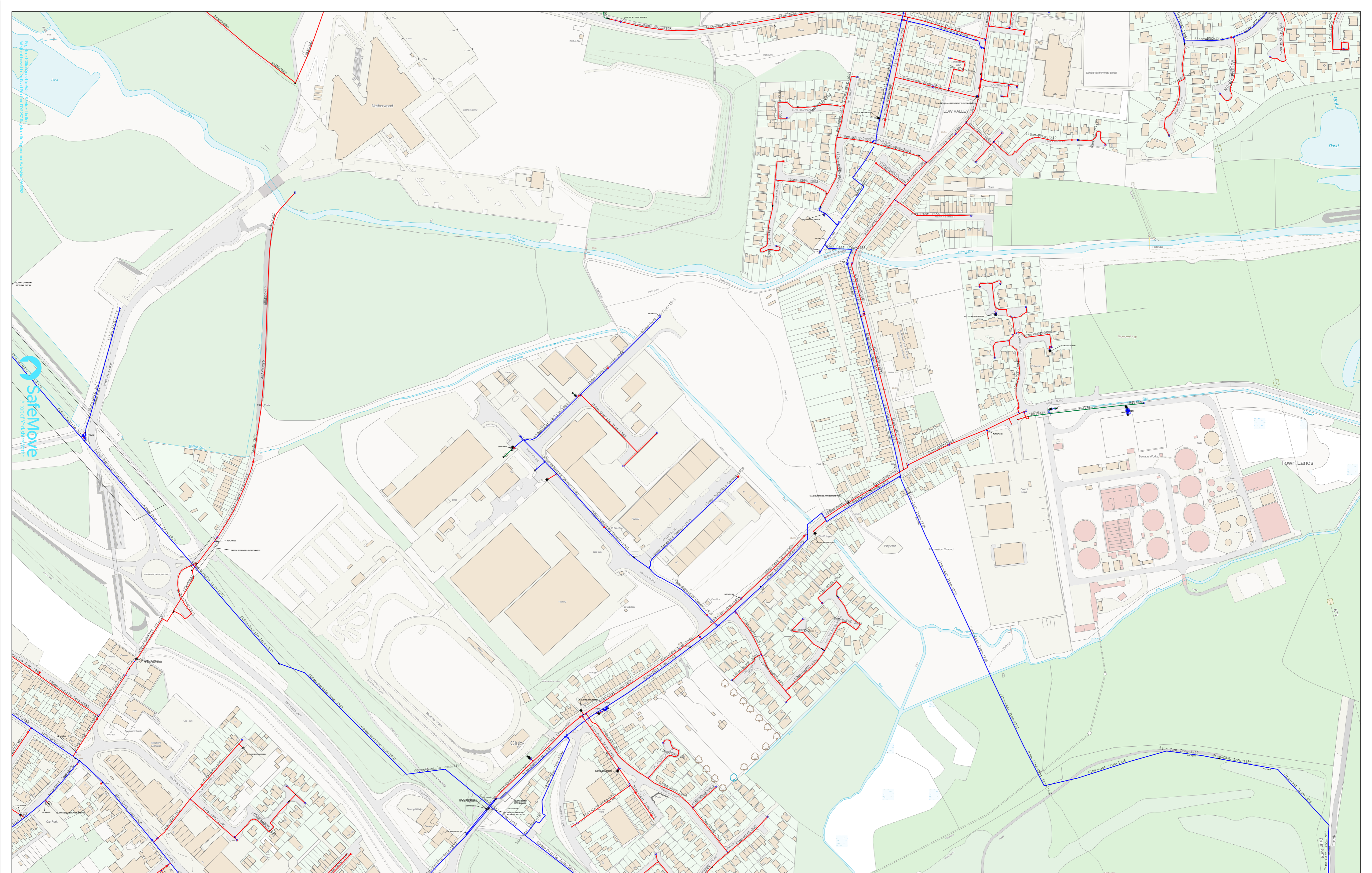
- Foul Sewer = F
- Combined Sewer = C
- Surface Water Sewer = SW
- Trade Sewer = TD
- Partially Separate = PS

Date Req : 14/02/2019, 09:49:02

Source : Sewer Network Enquiry

This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.

Date Gen : 14/02/2019, 09:49:09



440009 : 403296	Map Name : SE3903SE	Title	Partial Key	The position and depths of apparatus shown on this plan are approximate only. The exact positions and depths should be obtained by excavation trial holes.
	Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : Search Advisor L. MULLOCK Contact Tel : 75 4506	Notes	<ul style="list-style-type: none"> Water mains up to 4" in diameter Water mains over 4" in diameter Raw water mains Private water mains 	
		(c) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2014. All rights reserved Ordnance Survey Licence number 100022432	<ul style="list-style-type: none"> Scale : 1:2500	
			Drg No : Date Req : 14/02/2019, 09:49:39 Source : Water Network Enquiry	Maris No : Date Gen : 14/02/2019, 09:49:45

Appendix 5 – Environment Agency Correspondence

Ian Hopkinson
Enzygo Ltd,
Samuel House
First Floor
5 Fox Valley Way
Stocksbridge
Sheffield
S36 2AA

Date: 5th Jan 2018

Dear Mr Hopkinson,

Flood Map for Planning, Low Valley development

The Environment Agency would like to confirm that we have accepted the outputs from the provided Low Valley model to update our Flood Map for Planning for the development area.

We are providing you a draft copy of the revised Flood Map for Planning. Please note that Flood Zone 2 also includes the outlines of historic flood event extents in the area.

We confirm that we have now updated our internal systems with the provided extents for the development site and the amended Flood Map for Planning will be published on or around Wednesday the 31st of January 2018.

Best regards,

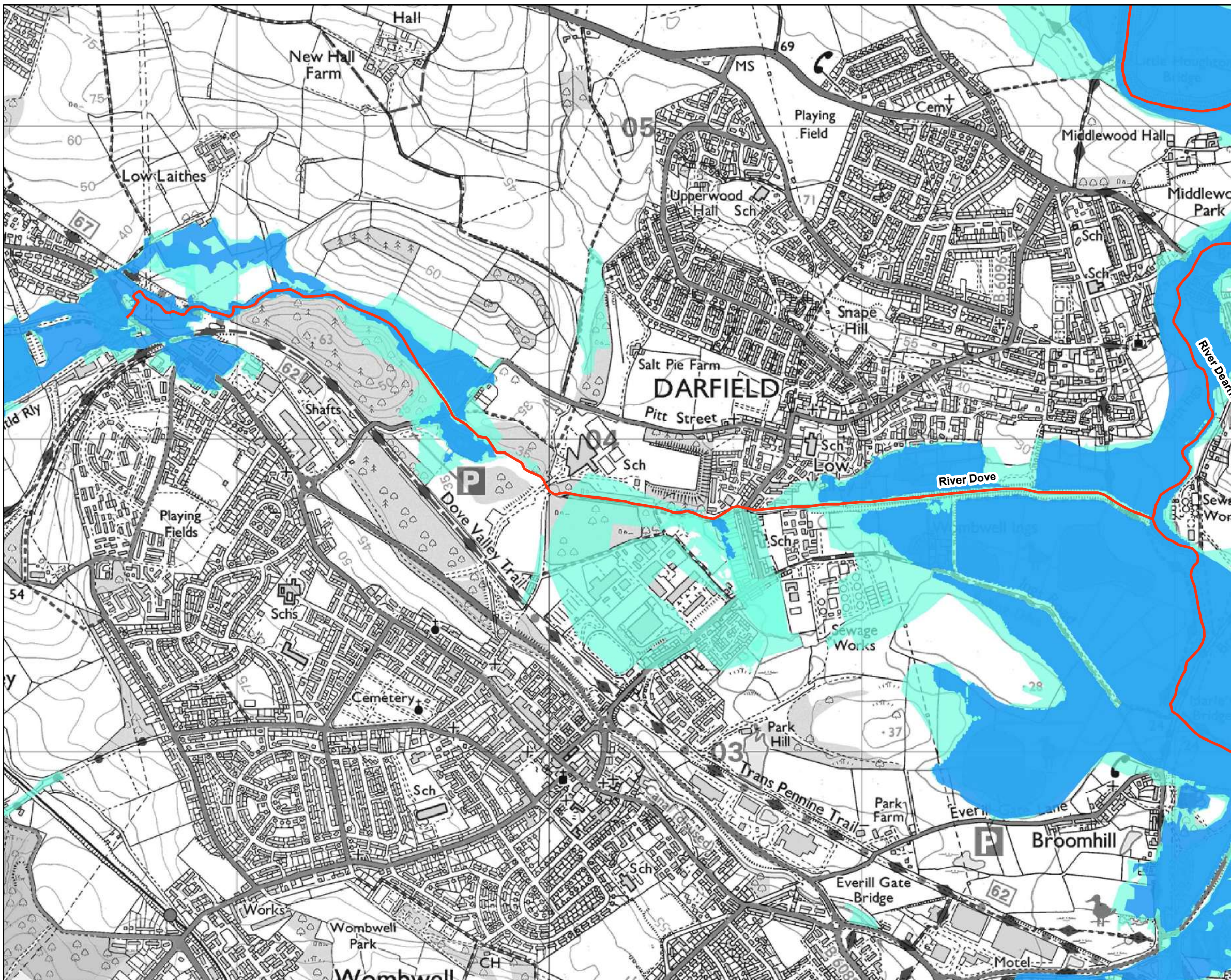
Aneta Plonczynska
FCRM Officer - Partnerships and Strategic Overview Yorkshire

Tel: 020 847 46874

Email: Aneta.Plonczynska@environment-agency.gov.uk

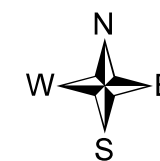
Environment Agency, Lateral, 8 City Walk, Leeds, LS11 9AT





www.environment-agency.gov.uk




Scale: 1:12,500



when reproduced @ A3



LEGEND

-  Main River
-  Draft Flood Zone 3
-  Draft Flood Zone 2

Appendix 6 – Barnsley Metropolitan Borough Council Correspondence

Ian Hopkinson

From: Charlotte Whitham
Sent: 16 May 2019 11:42
To: Ian Hopkinson
Subject: FW: CRM.1122.005 - Station Road, Wombwell- LLFA Consultation

From: HighwayDrainage <HighwayDrainage@barnsley.gov.uk>
Sent: 16 May 2019 11:39
To: Charlotte Whitham <Charlotte.whitham@enzygo.com>
Subject: FW: CRM.1122.005 - Station Road, Wombwell- LLFA Consultation

Hello Charlotte

I seem to remember Enzygo had more information about this site than we hold. A lot of work including including river modelling, flooding history was carried out for planning application 2005/2017. If you need anymore the best point of contact will be the EA for the River Dove and Danvm IDB who control Bulling Dyke.

Thanks

From: Park , Amber
Sent: 16 May 2019 11:18
To: HighwayDrainage
Subject: FW: CRM.1122.005 - Station Road, Wombwell- LLFA Consultation

Hi

We have had a call this morning in regards to this, I spoke to Kim who said you would be able to help.

Could you please lan back on 0114 321 5151

Thank you

From: DevelopmentControl & DevelopmentManagement
Sent: 13 May 2019 14:54
To: HighwayDrainage
Subject: FW: CRM.1122.005 - Station Road, Wombwell- LLFA Consultation

Hi

Is this something you can help with as it's not planning.

Thanks

From: Charlotte Whitham [<mailto:Charlotte.whitham@enzygo.com>]
Sent: 13 May 2019 14:41
To: DevelopmentControl & DevelopmentManagement
Cc: Ian Hopkinson
Subject: RE: CRM.1122.005 - Station Road, Wombwell- LLFA Consultation

To whom it may concern,

Please can you let me know if you have an update on the response to my below email?

Thank you,
Charlotte Whitham

From: Charlotte Whitham
Sent: 21 January 2019 09:54
To: developmentmanagement@barnsley.gov.uk
Cc: Ian Hopkinson <ian.hopkinson@enzygo.com>
Subject: CRM.1122.005 - Station Road, Wombwell- LLFA Consultation

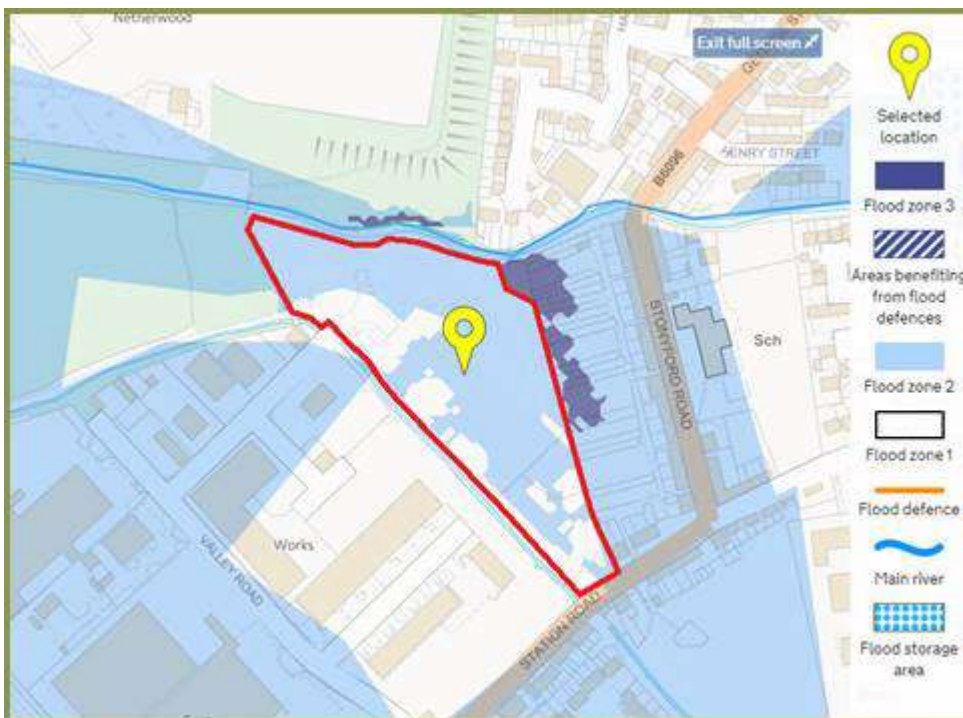
Our Reference: CRM.1122.005 - Station Road, Wombwell
Location: Station Road, Wombwell, S73 0BJ

To whom it may concern,

Enzygo have been commissioned to prepare a Flood Risk Assessment (FRA) in accordance with National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) for an application for development on land north of Station Road, Wombwell. The site is located at grid ref: 440492, 403647 and a site location has been attached.

Based on a review of the Environment Agency and Ordnance Survey mapping the River Dove (a main river) conveys flows east along the northern boundary of the Site. Bulling Dike (an ordinary watercourse) conveys flow south-east along the south-western boundary of the Site.

From our initial investigation, the Environment Agency flood map (see below) shows most of the Site is in Flood Zone 2; between the 1 in 1000-year and 1 in 100-year probability of fluvial (river) flooding (0.1% - 1% Annual Exceedance Probability [AEP]), at 'medium' risk. The south-eastern parts of the Site, furthest from the River Dove, are within Flood Zone 1; which is land located outside the extent of the 1 in 1000-year (<0.1% AEP) risk of fluvial flooding, at 'low' risk. Vehicular Site access is indicatively via Station Road along the southern boundary, located within Zones 1 and 2. Pedestrian access is planned along the south-western boundary of the Site, crossing Bulling Dike but within Flood Zone 1.



The development will be classed as 'more vulnerable' (residential) and the Site is at low to medium risk of fluvial flooding.

As part of completing an FRA it is standard to contact the Lead Local Flood Authority to determine the points outlined below. I was hoping someone may have records of flooding for the local area pertaining to the site plus other information of value to my enquires. Please note that we are also consulting the Environment Agency with regards to this proposed development and have also reviewed the local SFRA:

- Can you confirm the flood zone within the site?
- Do you have any records of historic flooding events on this site, either from fluvial sources and other sources (i.e. surface water, sewers, groundwater, reservoir etc.)? If you are aware of historical flooding at the site, can you please provide us with details of these historical flood events where it is available, including flood levels, estimated return periods, photographs, and other such data as may be relevant to our study?
- Do you have any information on drainage within the site and in the local area, including any known drainage problems on site and in the local area?
- The proposal is for a development of a brownfield Site, please could you indicate the maximum allowable discharge rate, and any requirements for betterment when discharging to watercourse as well as all other relevant drainage requirements.
- Please can you also indicate to us whether you are aware of any relevant environmentally sensitive receptors (such as aquatic wildlife in receiving watercourses, etc.) in the area around the site that we should be aware of when preparing this Flood Risk Assessment?
- As required by the Building Regulations, we will need to consider discharge of surface water from the site to soakaway / infiltration as a first option. We would be grateful if you could provide us with any information that you have that may assist in our assessment of this option, such as details of sensitive aquifers in the area, known contamination issues, etc.
- Do you have any information of any surface water flooding within the Site or its immediate vicinity?
- Do you have any information on highway drainage, including asset plans and drainage capacity?

Many thanks,

Charlotte Whitham
Assistant Hydrologist



Enzygo Ltd,
Samuel House
First Floor
5 Fox Valley Way
Stocksbridge
Sheffield
S36 2AA

Offices in Bristol, Sheffield and Manchester

Planning and EIA, Waste & Environmental Permitting, Noise and Vibration, Flood Risk and Hydrology, Hydrogeology, Landscape and Visual Impact, Arboriculture, SI and Geo-environmental, Ecology, Traffic and Transport

Office: +44 (0) 114 321 5151
Email: charlotte.whitham@enzygo.com
Web: www.enzygo.com

Registered Office: Stag House, The Chipping, Wotton under Edge, GL12 7AD
Registered in England & Wales registered number: 06525159 VAT number: 283 2596 77



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Appendix 7 – Internal Drainage Board Correspondence

Ian Hopkinson

From: Charlotte Whitham
Sent: 21 January 2019 13:25
To: Ian Hopkinson
Subject: FW: Station Road, Wombwell- IDB consultation
Attachments: Wombwell- 21 January 2019.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Saved in folder

From: Shire Group Planning <planning@shiregroup-idbs.gov.uk>
Sent: 21 January 2019 12:35
To: Charlotte Whitham <Charlotte.whitham@enzygo.com>
Subject: RE: Station Road, Wombwell- IDB consultation

Dear Charlotte

I attach our standard guidelines for discharge into a nearby watercourse. Please note our advice for when working near the River to contact the Environment Agency for any relevant conditions they may have.

To discharge into a nearby watercourse within the IDB district you will need to apply for consent to the Board, a form can be found on our website www.shiregroup-idbs.gov.uk.

I will contact the Board Engineer & Environmental Officer for any further advice we can give you on this location.

Kind Regards

Naomi Wright

(on behalf of the Shire Group of IDB's)

Tel: 01302 337798



From: Charlotte Whitham <Charlotte.whitham@enzygo.com>
Sent: 21 January 2019 10:39
To: Information (ShireGroup) <info@shiregroup-idbs.gov.uk>; Shire Group Planning <planning@shiregroup-idbs.gov.uk>
Cc: Ian Hopkinson <ian.hopkinson@enzygo.com>
Subject: Station Road, Wombwell- IDB consultation

To whom it may concern,

Enzygo Ltd are preparing a Flood Risk Assessment (FRA) and drainage assessment for a proposed residential development located on an (approximate) 3-hectare Site located on land to the north of Station Road, Wombwell, S73 0BJ (NGR: 440492, 403647). A location plan has been attached.

In accordance with requirement H3 of the Building Regulations 2010, surface water must discharge to one of the following, listed in order of priority

- i. Soakaway or infiltration system

ii. Watercourse

iii. Sewer

An initial review of the available borehole records at the Site shows that Made Ground is present to depths of up to 2.5m Below Existing Ground Level (begl) with groundwater at levels shown at 3.25 to 4.95mbegl. Due to the presence of Made Ground soakaway/infiltration methods for disposal of surface water would potentially mobilise contaminants and would therefore be unsuitable. The use of deep borehole soakaways would also be unfeasible due to shallow groundwater. Therefore, to discharge to a watercourse is the next suitable option for this Site.

The River Dove (a main river) conveys flows east along the northern boundary of the Site. Bulling Dike (an ordinary watercourse) conveys flow south-east along the south-western boundary of the Site. We believe these watercourses are in an area under the authority of the local IDB.

We are planning on discharging surface water to watercourse and ask what discharge rate would accept? We also ask what consents are required to allow us to discharge to watercourse.

In addition to this, do you have any of the following information at the Site?:

- Can you confirm the flood zone within the site?
- Do you have any records of historic flooding events on this site, either from fluvial sources and other sources (i.e. surface water, sewers, groundwater, reservoir etc.)? If you are aware of historical flooding at the site, can you please provide us with details of these historical flood events where it is available, including flood levels, estimated return periods, photographs, and other such data as may be relevant to our study?
- Do you have any information on drainage within the site and in the local area, including any known drainage problems on site and in the local area?
- The proposal is for a development of a brownfield Site, please could you indicate the maximum allowable discharge rate, and any requirements for betterment when discharging to watercourse as well as all other relevant drainage requirements
- Please can you also indicate to us whether you are aware of any relevant environmentally sensitive receptors (such as aquatic wildlife in receiving watercourses, etc.) in the area around the site that we should be aware of when preparing this Flood Risk Assessment?
- As required by the Building Regulations, we will need to consider discharge of surface water from the site to soakaway / infiltration as a first option. We would be grateful if you could provide us with any information that you have that may assist in our assessment of this option, such as details of sensitive aquifers in the area, known contamination issues, etc.
- Do you have any information of any surface water flooding within the Site or its immediate vicinity?
- Do you have any information on highway drainage, including asset plans and drainage capacity?

Kind regards,

Charlotte Whitham
Assistant Hydrologist



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Office: +44 (0) 114 321 5151

Email: charlotte.whitham@enzygo.com

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JBA Consulting, , , , . Telephone:

WEM Framework Suppliers 2013-2019 and the Shire Group of IDBs is a member of the JBA group of companies.

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www.shiregroup-idbs.gov.uk

PRE-APPLICATION PLANNING CONSULTATION



Shire

Group of IDBs

Enquiry Date:	21 January 2019	 <i>Epsom House Chase Park Redhouse Interchange Doncaster South Yorkshire DN6 7FE</i>
Contact:	Charlotte Whitham (Enzygo Ltd)	
Proposal	Residential Development	
Address	Land North of Station Road, Wombwell, Barnsley	
Date of Reply	21 January 2019	
Engineer to the Board/Officer	Paul Jones (Shire Group of IDB's)	
On behalf of	Danvm Drainage Commissioners	

The IDB as a Consultee give the following standard comments/recommendations:

If the surface water were to be disposed of via a soakaway system, the IDB would have no objection in principle but would advise that the ground conditions in this area may not be suitable for soakaway drainage. It is therefore essential that percolation tests are undertaken to establish if the ground conditions are suitable for soakaway drainage throughout the year.

If surface water is to be directed to a mains sewer system the IDB would again have no objection in principle, providing that the Water Authority are satisfied that the existing system will accept this additional flow.

If the surface water is to be discharged to any watercourse within the Drainage District, Consent from the IDB would be required in addition to Planning Permission, and would be restricted to 1.4 litres per second per hectare or greenfield runoff.

If there is an existing connection which is being altered, then the discharge is likely to be consented at the existing discharge rate.

If this is a new connection, then the likely discharge rate acceptable would be 1.4 l/s/ha. or 5 l/s for small sites.

No obstructions within 9 metres of the edge of a watercourse are permitted without Consent from the IDB.

If surface water or works are planned adjacent to a Main River within the Drainage District, then the Environment Agency should be contacted for any relevant Permits

Advice/recommendations:

SHOULD Consent be required from the IDB as described above then we would advise that this should be made a CONDITION of any Planning DECISION.

ANY surface water discharge into ANY watercourses in, on, under or near the site requires CONSENT from the Drainage Board.

For further guidance, pre-application advice & consent form visit:
www.shiregroup-idbs.gov.uk, and select "Danvm DC"

For direct enquiries e-mail: planning@shiregroup-idbs.gov.uk

IDB Location Plan of Proposed site



NB: IDB drain in blue is called "Bulling Dyke"

Appendix 8 – BGS Historical Borehole Records

British Geological Survey
BOREHOLE RECORD

British Geological Survey

BOREHOLE No. 5

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 5
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary coring - 98mm		SHEET 1 OF 2

BORING			SAMPLES		STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'M' RQD	%
17/10/77			0.00			0.00	27.18			
			0.10	U4	[diagonal lines]	0.10	27.08	TOPSOIL		
			0.55	SPT	[diagonal lines]			MADE GROUND	23	8.3
			1.00		[diagonal lines]			Well compacted dark grey mudstone with red and black shale, and coal fragments		9.7
			1.30	U4	[diagonal lines]					12
	1.70		1.75	SPT	[diagonal lines]	1.75	25.43	MADE GROUND		
			2.20	B	[diagonal lines]			Well compacted dark grey-black-brown mudstone with black shale, coal and sandstone fragments	19	13
		26/10 a.m. ▽	2.40-2.80	B	[diagonal lines]					24
			2.80	SPT	[diagonal lines]	2.90	24.28	MADE GROUND		
	3.20	3/11 a.m. ▽	3.25		[diagonal lines]			Black ash, coal and shale	7	34
		26/10 a.m. ▽	3.60	U4	[diagonal lines]	3.30	23.88	Medium brown very sandy, very gravelly CLAY		20
		water struck	4.05		[diagonal lines]	4.00	23.18			
	4.70		4.90	SPT	[diagonal lines]			Medium dense medium brown fine to coarse grained clayey SAND and GRAVEL		
17/10/77			5.35	SPT	[diagonal lines]				2	
25/10/77			6.00	SPT	[diagonal lines]				11	16
	6.20		6.45	SPT	[diagonal lines]					
			7.45	SPT	[diagonal lines]				8	13
	7.70		7.90	SPT	[diagonal lines]					
			8.00-8.30	B	[diagonal lines]					8.3
	9.00		9.00	SPT	[diagonal lines]				13	16
25/10/77			9.45		[diagonal lines]					
26/10/77					[diagonal lines]					

REMARKS Groundwater encountered at 4.00m, casing at 3.20m
Borehole dry on completion of shell and auger drilling
Slow water seepage into borehole overnight of the 26/10/77
Rotary coring commenced at 12.20m using water flush
Final standing water level in openhole was 3.25m

British Geological Survey
BOREHOLE RECORD

British Geological Survey

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 5
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rtoary Coring - 98mm		SHEET 2 OF 2

BORING		SAMPLES			STRATA			TESTING		
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	wt%
			10.25	SPT		10.55	16.63	Medium dense, medium brown fine to coarse grained clayey SAND and GRAVEL	11 for 150mm 104 for 150mm	15
	10.70		10.70	B				Medium grey-brown silty shaly weathered MUDSTONE		18
			10.70-11.00	SPT		11.20	15.98	Light grey silty MUDSTONE (Fireclay)	136	8.4
	11.60		11.45							
			12.05	SPT		12.20	14.98	Light grey medium bedded slightly fractured, silty, slightly weathered MUDSTONE	100 blws for 150mm	5.4
26/10/77 31/10/77			12.20						>300 R.Q.D.	
				Core 1 (100%)		12.70	14.48	Light grey white, thickly bedded weak MUDSTONE		36%
						13.30	13.88	(Fireclay)		
						13.60	13.58	Medium grey silty shaly strong MUDSTONE		
						13.74	13.44	Light grey thinly bedded, fresh SILTSTONE		
						14.05	13.13	Medium grey well bedded slightly fractured silty fresh MUDSTONE		
						14.55	12.63	Medium grey thinly bedded, laminated, fractured fresh SILTSTONE, strong, brittle		
						15.30	11.88	Medium to dark grey, medium bedded, fractured silty fresh MUDSTONE, strong, brittle		
31/10/77 1/11/77			15.50	Core 2 (100%)		15.90	11.28	Medium grey, medium bedded, laminated, fractured, fresh SILTSTONE, strong		19%
								Medium grey, medium bedded, laminated, fractured, fresh SILTSTONE, strong, with thin bands of dark grey MUDSTONE		
						17.40	9.78	Light to medium grey, medium bedded, laminated fresh SILTSTONE, strong with occasional thin mudstone bands		46%
			17.40	Core 3 (100%)						
			20.00			20.00	7.18	End of borehole		

REMARKS

SOUTH YORKSHIRE COUNTY COUNCIL
DEPARTMENT OF ENGINEERING
ENGINEERING SERVICES LABORATORY

BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 7
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 98mm		SHEET 1 OF 2

BORING			SAMPLES		STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'M' RQD	%
31/10/77			0.00			0.00	26.00			
			0.30	U4		0.30	25.70	TOPSOIL		
			0.75					MADE GROUND		12
			0.90	SPT				Well compacted dark grey mudstone with red and black shale and traces of coal fragments		
			1.35	SPT					12	14
	1.70									
		water struck								
		1/11/77	2.40	SPT		2.40	23.60	MADE GROUND		
			2.85	SPT				Loosely compacted dark grey mudstone with black shale, coal, clay and limestone, concrete and glass	7	41
	3.20									
31/10/77	4.00		4.00	SPT						
1/11/77			4.45	SPT					11	19
	5.00		5.00	SPT						
			5.45	SPT					9	17
	6.20		6.45	SPT		6.45	19.55			
			6.90	SPT				Medium dense, medium brown, fine to coarse grained clayey SAND and GRAVEL	21	12
	7.70		7.90	SPT						
			8.35	SPT					17	13
	9.20		9.20	SPT						
1/11/77			9.65	SPT		9.65	16.30		9	14
2/11/77								Medium grey silty weathered MUDSTONE		

REMARKS Groundwater encountered in openhole at 2.40m

SE 40 SW / 67G
 SOUTH YORKSHIRE COUNTY COUNCIL
 DEPARTMENT OF ENGINEERING
 ENGINEERING SERVICES LABORATORY

BOREHOLE RECORD

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 7
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 98mm		SHEET 2 OF 2

BORING		SAMPLES		STRATA				TESTING		
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	%
	10.00							Medium grey silty weathered MUDSTONE		
			10.75			10.90	15.10			
	11.20		11.20	SPT		11.10	14.90	Light grey silty CLAY (Fireclay)	14	13
2/11/77			11.20-11.50	B	X	11.35	14.65	Pieces of wood Probably old pit props and workings	80 blows for 150mm	
3/11/77			11.35-11.50	SPT				Medium grey silty fracture, medium bedded slightly weathered MUDSTONE, moderately strong	240 R.Q.D.	8.8
			11.50	Core 1 (100%)						
						12.50	13.50			56%
								Light grey-white silty thickly bedded slightly weathered weak MUDSTONE (Fireclay)		
						13.50	12.50			
3/11/77						13.90	12.10	Light grey thinly bedded, fractured fresh SILTSTONE, strong		
			14.00			14.00	12.00	Medium grey silty thinly bedded shaly fresh MUDSTONE, strong, brittle End of borehole		

REMARKS

SE 40 SW/67C


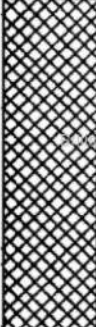
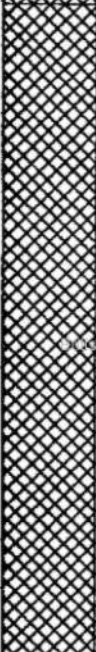


SOUTH YORKSHIRE COUNTY COUNCIL
 DEPARTMENT OF ENGINEERING
 ENGINEERING SERVICES LABORATORY

British Geological Survey
BOREHOLE RECORD

British Geological Survey

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 7A
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Rotary Openhole 100mm		SHEET 1 OF 2

BORING			SAMPLES		STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	%
3/11/77						0.00	26.00			
						0.20	25.80	TOPSOIL		
								MADE GROUND Dark grey mudstone with red shale and coal fragments		
						2.30	23.70	MADE GROUND Dark grey mudstone, brown clay and black shale		
						6.50	19.50	Brown SAND and GRAVEL		
						9.50	16.50	Light grey MUDSTONE		

REMARKS Good water returns all the way down
 No cavities detected

SE40SW/67G

SOUTH YORKSHIRE COUNTY COUNCIL
DEPARTMENT OF ENGINEERING
ENGINEERING SERVICES LABORATORY

BOREHOLE RECORD

British Geological Survey

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 7A
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Rotary Openhole - 100mm		SHEET 2 OF 2

BORING			SAMPLES		STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'M'	%
					[Key: Horizontal lines]	10.50	15.50	Light grey MUDSTONE		
					[Key: Horizontal lines]	11.00	15.00	Soft light grey MUDSTONE		
					[Key: Horizontal lines]	11.50	14.50	Soft light grey-white MUDSTONE (Fireclay)		
					[Key: Horizontal lines]			Light grey-white MUDSTONE (Fireclay)		
3/11/77					[Key: Horizontal lines]	14.00	12.00	End of borehole		

REMARKS




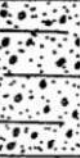
SE 40 SW/676

SOUTH YORKSHIRE COUNTY COUNCIL
DEPARTMENT OF ENGINEERING
ENGINEERING SERVICES LABORATORY

BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate		LOCATION: Wombwell		BOREHOLE No. 7 B	
CUT/FILL(M) —		CHAINAGE(M) —		OFFSET(M) —	
BORING METHOD/SIZE(MM) Rotary Openhole - 100mm/73mm				SHEET 1 OF 2	

BORING			SAMPLES		STRATA			TESTING		
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' ROD	%
4/11/77						0.00	26.00			
						0.30	25.70	TOPSOIL		
						3.00	23.00	MADE GROUND Medium grey mudstone with coal, red and black shale		
						6.00	20.00	MADE GROUND Black shale, red shale, mudstone and ash		
						7.00	19.00	Brown clayey SAND and GRAVEL		
								Loss of returns very soft drilling		

REMARKS Loss of water returns at 7.00m
No cavities detected

BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Hombwell	BOREHOLE No. 8
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 100mm		SHEET 1 OF 2

BORING		SAMPLES		STRATA				TESTING		
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	%
16/11/77			0.00			0.00	27.33			
			0.20			0.20	27.13	TOPSOIL		
			0.35	U4		0.50	26.83	MADE GROUND Red shale		11
			0.80	SPT				MADE GROUND Well compacted medium grey mudstone with black and red shale, brown clay and black ashes	24	17
16/11/77	1.25		1.25							
17/11/77			1.70							
			1.80	U4						15
			2.20							
			2.25	SPT		2.50	24.83			
			2.30							
			2.75	B				Firm medium brown silty sandy CLAY with sandstone fragments	9	25
			3.00-3.30							32
			3.60			3.50	23.83			
			3.75	U4				Firm medium brown mottled silty sandy stony CLAY with sandstone pebbles		17
			4.10							
			4.20	SPT					16	16
		water struck	4.65			4.65	22.68			
			5.00	B				Medium dense, medium brown, fine to coarse grained clayey SAND and GRAVEL		17
			5.20	SPT					21	13
			5.65							
			5.90	SPT						
			6.00							
			6.45	SPT					23	14
			6.70	B						9.7
17/11/77	7.20	21/11 a.m.	7.20							
18/11/77			7.60	SPT					33	13
			8.05							
			8.60							
			8.75	SPT						
			9.10			9.10	18.23		27	20
			9.20	B		9.40	17.93	Soft medium grey-brown silty sandy CLAY with sandstone pebbles		22
			9.25-9.55							
			9.55	SPT				Medium grey silty shaly weathered MUDSTONE	39	14
			10.00							

REMARKS Groundwater struck at 4.65m, casing at 4.10m
Borehole continually topped up with water to maintain stability in gravel

BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 8
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 100mm		SHEET 2 OF 2

BORING			SAMPLES		STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'M' RQD	%
	10.10		10.15	SPT B	[Key]	10.60	16.73	Medium grey silty shaly weathered MUDSTONE	26	13
	10.60		10.20-10.60							
18/11/77	11.00		11.05	SPT	[Key]			Medium to dark grey silty shaly weathered MUDSTONE	27	15
21/11/77			11.10	SPT	[Key]					
			11.55	SPT	[Key]				36	15
			12.35	SPT	[Key]					
21/11/77			12.80	Core 1 (40%)	[Key]	12.80	14.53		58	13
22/11/77			13.20	Core 2 (40%)	[Key]			Dark grey-black silty carbonaceous thinly bedded highly fractured moderately weathered MUDSTONE, weak	11%	0%
			13.50		[Key]	13.50	13.83			
				Core 3 (50%)	[Key]	14.20	13.13	Dark grey-black silty carbonaceous thinly bedded shaly fresh MUDSTONE, strong with ironstained joints		5%
					[Key]	14.50	12.83	Hard light grey laminated medium bedded SILTSTONE		
					[Key]			Lost water returns soft medium grey mudstone with pit props MADE GROUND - Backfilled workings		
			15.40	Core 4 (75%)	[Key]	15.30	12.03			
22/11/77			15.80		[Key]	15.80	11.53	Medium grey shaly broken mudstone and pit props MADE GROUND - Backfilled workings	0%	
23/11/77				Core 5 (100%)	[Key]	16.10	11.23	Broken medium grey mudstone - cavities	0%	
23/11/77			16.40		[Key]	16.40	10.93	Light to medium grey silty medium bedded fractured weak MUDSTONE (Fireclay)		
					[Key]			End of borehole		

REMARKS

British Geological Survey
BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 9
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 98mm		SHEET 1 OF 2

BORING		SAMPLES			STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	mf
27/10/77			0.00			0.00	25.77			
			0.20			0.20	25.57	TOPSOIL		
			0.60	U4				MADE GROUND		18
			1.05	SPT		1.00	24.77	Well compacted medium grey mudstone with red and black shale, ash, glass and coal fragments	16	20
		28/10 a.m. v				1.60	24.17	MADE GROUND		
								Well compacted black ashes with mudstone, black shale, and coal fragments		
			2.30	U4				Firm medium grey-brown mottled silty sandy stony CLAY		19
			2.75			2.80	22.97			
	3.00	water struck v	3.25	SPT				Firm dark grey-brown mottled very sandy pebbly CLAY with sandstone and traces of coal fragments	18	13
			3.85							
		27/10 p.m. v	4.30	SPT		4.30	21.47		19	12
	4.30		5.30	SPT				Firm medium to dark brown mottled very sandy very pebbly CLAY with sandstone fragments and traces of coal fragments		
			5.75			5.80	19.97		47	10
27/10/77	6.00		6.55	W				Medium dense, medium brown fine to coarse grained clayey SAND and GRAVEL		
28/10/77			6.55-7.00	B						
	7.00		7.10							
			7.55	SPT		7.45	18.32		38	15
						8.00	17.77	Dark grey silty shaly weathered MUDSTONE		
28/10/77	8.15		8.15	SPT		8.15	17.62	Hard light grey SILTSTONE	35 blows for zero penetration	
2/11/77						8.40	17.37	Hard black carboniferous very shaly brittle MUDSTONE	R.Q.D.	
				Core 1 (100%)		8.90	16.87	Medium grey, medium bedded, shaly fresh SILTSTONE, strong		
						9.80	15.97	Dark grey-black thinly bedded fractured, fresh MUDSTONE, strong, brittle	30%	
	8.15							Light grey-white silty MUDSTONE (Fireclay)		

REMARKS Groundwater encountered in open borehole at 3.25m
 Rotary coring commenced at 8.15m using water flush

BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 9
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 98mm		
SHEET 2 OF 2		

BORING		SAMPLES			STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'M' RQD	m%
2/11/77			11.10	Core 2 (100%)		10.80	14.97	Light grey-white thickly bedded silty slightly weathered MUDSTONE, weak. (Fireclay)	69%	
			12.40		13.37	Light grey-white silty slightly shaly, slightly weathered MUDSTONE, weak, blocky. (Fireclay)				
			13.05		12.72	Medium grey, medium bedded fractured fresh MUDSTONE, strong				
			13.30		12.47	Hard medium grey fractured silty MUDSTONE				
			14.00		11.77	Light grey, medium bedded slightly fractured fresh SILTSTONE, strong				
End of borehole										

REMARKS

British Geological Survey
BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wombwell	BOREHOLE No. 10
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 100mm		SHEET 1 OF 2

BORING			SAMPLES		STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	qc
10/11/77			0.00			0.00	26.58			
		water struck	0.20			0.20	26.38	TOPSOIL		
			0.50-0.70	B				MADE GROUND		
			0.70	SPT				Medium grey mudstone with black and red shale	14	6.4
	1.20		1.15							
			1.35	U4						11
			1.65	SPT					19	13
			2.10							
	2.40		2.60	U4		2.50	24.08			
			2.75	SPT		2.75	23.83	Soft medium to dark brown silty CLAY		36
			3.05					Soft dark grey-brown-green silty organic CLAY		
			3.10	SPT					6	42
			3.55							
	3.90		4.05	U4		4.20	22.38			30
			4.50	SPT				Medium brown fine to coarse grained very clayey SAND and GRAVEL	8	16
10/11/77	4.70	water struck	4.95			5.00	21.58			8.6
14/11/77		15/11 p.m.	5.00-5.30	B				Medium dense, medium brown fine to coarse grained SAND and GRAVEL	16	14
			5.30	SPT						10
	5.80		5.75			5.90	20.68			
	6.10		5.95-6.25	B				Medium dense, medium brown fine to medium grained SAND and GRAVEL with sub-angular sandstone fragments	7	14
			6.45	SPT						7.7
			6.70	B						
			7.15-7.45	SPT						
			7.50	B						
			7.95	SPT					20	16
			8.20-8.50	B						10
			8.50	SPT					17	22
			8.95	B		8.90	17.68			
	9.20		9.00	SPT		9.00	17.58	Soft medium grey silty CLAY with mudstone fragments		23
			9.45	B				Dark grey silty highly weathered MUDSTONE		16
			9.90	SPT		10.00	16.58			

REMARKS Groundwater struck in open borehole at 0.30m
Groundwater again struck at 4.95m, casing at 3.90m
Rotary coring commenced at 11.80m using water flush

BOREHOLE RECORD

British Geological Survey

SITE: Station Road Industrial Estate	LOCATION: Wortwell	BOREHOLE No. 10
CUT/FILL(M) —	CHAINAGE(M) —	OFFSET(M) —
BORING METHOD/SIZE(MM) Shell and Auger - 150mm/Rotary Coring - 100mm		SHEET 2 OF 2

BORING		SAMPLES			STRATA			TESTING		
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	%
16/11/77			10.00			10.00	16.58			
	10.30		10.45	SPT				Dark grey-black silty shaly highly weathered MUDSTONE	26	11
			10.45-10.65	B		10.50	16.08			27
			10.65	SPT				Dark grey-black silty shaly weathered MUDSTONE	53	13
			11.10							
	11.30		11.45	SPT						110 for 200mm N=165
16/11/77			11.80	SPT		11.80	14.78			R.Q.D.
17/11/77						12.10	14.48	Weak dark grey-black silty carbonaceous highly fractured shaly MUDSTONE		0%
						12.20	14.38			
				Core 1 (30%)				Medium grey laminated interbedded thinly bedded silty MUDSTONE and SILTSTONE		
								Medium grey shaly broken mudstone. MADE GROUND - Backfilled cavities Lost water returns		
			14.15			14.20	12.38			
				Core 2 (100%)				Light to medium grey silty fractured MUDSTONE (Fireclay)		52%
						14.75	11.83			
								Light grey medium bedded fractured fresh SILTSTONE, strong with occasional thin MUDSTONE bands		
17/11/77			15.50			15.50	11.08	End of borehole		

REMARKS

SE40SW/222

BOREHOLE No. AND LOCATION	DEPTH		SOIL DESCRIPTION 405L, 035D	SAMPLES	
	From	To		Depth	Test and Result
Borehole 3 9.7.73. British Geological Survey British Geological Survey British Geological Survey British Geological Survey British Geological Survey British Geological Survey British Geological Survey British Geological Survey British Geological Survey	0	0.2	Grass and topsoil.		
	0.2	0.35	Light brown very clayey sand.		
	0.35	1.45	Dark grey weathered mudstone with fragments of burnt colliery shale, sandstone and clay. (Fill.)	1.0- 1.3	m 18
				1.3- 1.6	m LL PL 44 63 49
	1.45	1.6	Black silty topsoil with fragments of mudstone and brick.		
	1.6	1.7	Firm dark brown very clayey sand with fragments of mudstone.	1.7- 1.95	m LL FL 28 40 26
	1.7	2.45	Firm to stiff rusty brown and light grey mottled sandy clay with occasional fragments of mudstone.	2.0- 2.45	M LL PL DD DU FU 26 28 21 1750 20 7
	2.45	7.1	Loose brown medium and coarse grained sand with fine to coarse subrounded gravel and with some soft thin clayey bands.	3.1- 3.55 3.5- 4.5	m N m P P P7 P36 P200 16 6 14 100 83 48 15 7
				4.5- 5.05	m N 16 4
				4.6- 5.6	m m 17
				5.7- 6.1	m m 5
				6.4- 6.85	m N 14 10
				6.4- 7.1	m m 12

BOREHOLE No. AND LOCATION	DEPTH		SOIL DESCRIPTION	SAMPLES	
	From	To		Depth	Test and Result
Borehole 3 (Cont) British Geological Survey	7.1	7.25	Firm to stiff dark brown and grey very sandy silty clay with fragments of sandstone, mudstone and subrounded gravel.	7.1-	m 13
				7.25	LL 24 PL 17
	7.25	7.45	Brown medium and coarse grained sand with fine to coarse sub-rounded gravel.	7.25-	m 14
				7.7	P1 ₂ 100 P ₂ 87 P7 66 P36 24 P200 9
British Geological Survey	7.45	9.2	Dark grey highly weathered shaly ironstained mudstone.	7.7-	m 14
				7.8	LL 36 PL 25
	9.2	9.9	Old workings containing abundant water and mudstone fragments.	7.3-	m 14
				8.25	N 66
British Geological Survey	9.9	11.05	Fragments of dark grey ironstained water bearing shaly mudstone with a piece of timber showing saw marks.	9.9-	m 21
				10.35	Non Plastic
	11.05	11.35	Light grey very sandy mudstone.	10.5-	m 16
				10.7	
British Geological Survey				10.7-	LL 25
				11.1	PL 18
				11.1-	m 7
				11.25	
				11.25-	m 5
British Geological Survey				11.35	125 blows for 110mm initial penetration. N > 350
		11.35	End of Borehole. Water from old workings rose to with 1.5m of ground level.		
British Geological Survey					
British Geological Survey					

SE40SW/223

BOREHOLE No. AND LOCATION	DEPTH		SOIL DESCRIPTION 4048/0372	SAMPLES	
	From	To		Depth	Test and Result
Borehole 3A	0	0.2	Grass and topsoil.		
	0.2	1.5	Light brown clayey sand.	0.6- 1.3	m LL FL 33 26 34
	1.5	1.65	Firm light brown very sandy clay.	1.35- 1.7	m LL FL DD cJ cU 38 50 33 1330 7 4
	1.65	2.25	Very soft rusty brown and grey mottled sandy clay with occasional fragments of weathered mudstone.	1.7- 1.3 1.9- 2.35	m LL FL DD cJ cU 38 34 43 29 1370 20 0
	2.25	2.9	Soft dark grey clayey silt and silty clay with veins of iron-staining, fragments of mudstone and peat.	2.35- 2.45 2.5- 2.95	m LL FL DD cJ cU 11 14 56 36 1220 19 0
	2.9	3.1	Soft clayey organic silt with fragments of mudstone and pieces of rotter wood.	2.95- 3.05 3.1- 3.55	m LL FL DD cJ cU 86 17 16
	3.1	5.05	Dark brown medium and coarse grained slightly clayey sand and fine to coarse gravel with occasional fragments of mudstone.	3.5- 4.1	m P1 $\frac{1}{2}$ P $\frac{1}{2}$ P7 P36 P200 16 100 69 39 12 6
	5.05	5.4		4.7- 5.15 5.2- 5.4	m N m 21 13 14

BOREHOLE No. AND LOCATION	DEPTH		SOIL DESCRIPTION	SAMPLES	
	From	To		Depth	Test and Result
Borehole 3A (cont) <small>British Geological Survey</small>	5.05	5.4	Fine dark grey sandy clay and clayey sand with occasional fine gravel and fragments of mudstone.	5.4-	m 24
				5.8	
<small>British Geological Survey</small>	5.4	5.6	Dark brown medium grained sand.	6.0-	m 13
				6.3	P2 100 P7 46 P7 33 P36 19 P200 8
<small>British Geological Survey</small>	5.6	6.8	Dark brown medium and coarse grained sand with fine to coarse subrounded gravel.	6.8-	m 23
				7.0	
<small>British Geological Survey</small>	6.8	6.85	Fine dark brown very sandy clay with occasional subrounded gravel.	7.0-	m 14
				7.35	LL 46 PL 23 DD 2000 CU 120 SU 0
<small>British Geological Survey</small>	6.85	7.0	Fine grey very silty clay with occasional gravel.	7.35-	m 16
				7.45	
<small>British Geological Survey</small>	7.0	7.6	Stiff light grey silty clay with fragments of mudstone.	7.65-	m 13
				8.3	LL 31 PL 22 DD 2090 CU 45 SU 24
<small>British Geological Survey</small>	7.6	8.3	Light grey weathered mudstone with bands of dark grey silty shaly mudstone.	8.3-	m 10
				8.4	
<small>British Geological Survey</small>	8.3	11.5	Dark grey weathered mudstone with some silty sandy bands.	8.5-	m 10
				8.95	m 41
<small>British Geological Survey</small>	8.3	11.5	Dark grey weathered mudstone with some silty sandy bands.	8.9-	m 14
				9.4	
<small>British Geological Survey</small>	8.3	11.5	Dark grey weathered mudstone with some silty sandy bands.	9.5-	m 10
				9.95	LL 29 PL 22
<small>British Geological Survey</small>	8.3	11.5	Dark grey weathered mudstone with some silty sandy bands.	9.95-	m 10
				10.05	
<small>British Geological Survey</small>	11.5	12.4	Light grey weathered mudstone.	10.9-	m 8
				11.35	m 43
<small>British Geological Survey</small>	12.4	15.15	Dark grey weathered mudstone, silty in parts.	12.0-	m 8
				12.45	LL 22 PL 16 DD 2130 CU 65 SU 28
<small>British Geological Survey</small>	12.4	15.15	Dark grey weathered mudstone, silty in parts.	12.45-	m 7
				12.55	

SE40SW/223

BOREHOLE No. AND LOCATION	DEPTH		SOIL DESCRIPTION	SAMPLES	
	From	To		Depth	Test and Result
Borehole 3a (cont) British Geological Survey	13.15	16.2	Light grey sandy ironstained weathered mudstone becoming less weathered below 15m. British Geological Survey	13.1-	n 6
				13.55-	F 113 British Geological Survey
British Geological Survey	16.2	17.5	Light grey fractured very sandy mudstone.	14.4-	n 5
				14.85-	F 222
British Geological Survey	17.5	13.0	Light grey fine to medium grained sandstone. British Geological Survey	14.7-	Core 1
				15.55-	Recovery 95% R&D 15%
British Geological Survey	13.0	19.7	Dark grey fractured silty mudstone with some weathered bands, sandy below 19.4m.	15.55-	Core 2
				17.0-	Recovery 55% R&D 15%
British Geological Survey	19.7	19.3	Light grey fine grained sandstone British Geological Survey	17.0-	Core 3
				17.95-	Recovery 75% R&D 50%
British Geological Survey	19.8	19.9	Dark grey fractured sandy mudstone	17.95-	Core 4
				19.1-	Recovery 65% R&D 20%
British Geological Survey	19.9	20.55	Light grey fine grained sandstone with some silty mudstone bands. British Geological Survey	19.1-	Core 5
				20.55-	Recovery 100% R&D 50%
British Geological Survey	20.55	20.55	End of Borehole.		
British Geological Survey			British Geological Survey		British Geological Survey
British Geological Survey			British Geological Survey		British Geological Survey
British Geological Survey			British Geological Survey		British Geological Survey



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