



Client:
Yorkshire Housing

Carried out for:
Pearson Crescent, Barnsley

Drainage Statement

Project No: 04.12001

Date: April 2012

Issue Status	Draft/ 01 or Final/ A	Initial & date	Draft/ 01 or Final/ A	Initial & date	Draft/ 01 or Final/ A	Initial & date
Report Author:	Draft/01	RP 27.04.12	Final/01	RP 30.04.12	Final/02	RP 10.05.12
Checked:	Draft/01	EE 27.04.12	Final/01	EE 30.04.12	Final/02	EE 10.05.12
Approved:	Draft/01	EE 27.04.12	Final/01	EE 30.04.12	Final/02	EE 10.05.12

Adept Consulting Engineers Ltd
Park Square House, Park Square, Pudsey, Leeds, LS28 7RG

Tel : 0113 2394518 Fax : 0113 2393825
Email : inbox@adeptcsce.com Web : www.adeptcsce.com





1.0 INTRODUCTION

1.1 Reason for the Report

Adept Consulting Engineers Ltd has been commissioned by Yorkshire Housing to prepare a Drainage Statement to accompany the planning submission and tender for the proposed residential development at the site.

1.2 Objectives

The aim of this report is to present the findings of the assessment of flood risk associated with the proposed redevelopment. The objectives of this report have been undertaken in accordance with the requirements of Planning Policy Statement 25 (PPS25) and are as follows:

- Undertake a site visit to establish a better understanding of the existing site
- Identify and quantify the possible sources of flood risk to the site and the impact of flood risk to the surrounding area.
- Review constraints to development due to flood risk issues.
- Assess if the proposed development is likely to increase flood risk elsewhere due to increased runoff rates and volumes from the site.
- Identify any further study that maybe required and to recommend options for proceeding with the development proposals to ensure the development is safe and surface water run-off is appropriately managed.

1.3 Sources of Information

The following sources of information have been consulted for the review;

- Yorkshire Water correspondence dated 23rd February 2012.
- Infiltration tests carried out March 2012.
- Proposed site plans and existing topographical survey.
- GP Drains, drainage survey dates 23rd March 2012

1.4 Limitations

The opinions expressed in this report and the recommendations given, are based on the information obtained from the desktop assessment.

The information, views and conclusions drawn concerning the site are based, in part, on information supplied to Adept Consulting Engineers Ltd by other parties. Adept Consulting Engineers Ltd accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to Adept Consulting Engineers Ltd from others.

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2.0 SITE SETTING

2.1 Site Location

The site is located in Wombwell to the south east of Barnsley within an existing residential development. The site is bordered on all boundaries by existing residential properties.

The approximate centre of the site is given by National Grid Reference: 438615,403951.

2.2 Site Walkover Visit and Description

A site walkover survey was carried out as part of the Drainage Assessment conducted on 19th March 2012. The walkover was conducted in general accordance with CLR 2, ref. 9.1.

The site generally falls from 64m AOD in the south on Wortley Avenue to 52.5m AOD in the north on the junction of Pearson Crescent and Wortley Avenue. A topographical survey of the site has been carried out by CT Surveys.

2.3 Existing Drainage

The site is currently undeveloped following demolition of the existing properties between 2006-2011. A survey of the existing drainage system has been carried out by GP Drains that has located locations of a number of drains across the site that would have served the existing properties.

2.4 Hydrological Setting

The nearest surface water feature is shown to be 144m north west of the site.

2.5 Hydrogeology

The underlying solid geology beneath the site is classed as a secondary A.

2.5 Geology

The site investigation report picked up topsoil (0.15-0.5m bgl), pockets of made ground likely to be demolition material from the houses previously occupying the site to a maximum of 1.3m bgl made ground underlain by clay fill to 1.4m bgl.

Natural deposits were generally medium dense (clayey) gravelly sand and gravel to 2.0mbgl. This was underlain by stiff clay deposits in areas and medium dense to very dense sand in other areas. In summary, very variable. This was underlain by dense sandstone rockhead at depths between 1.30-2.60 m bgl to a maximum 3.05m bgl.



3.0 PROPOSED DEVELOPMENT

3.1 Proposed Development

As discussed above it is proposed to redevelop the existing site with construction of 56 new dwellings with new access roads and infrastructure to serve the properties.

It will be necessary to construct the on-site drainage as separate foul and surface water system. The surface water run-off will need to be carefully managed so as not to create flooding issues on site and adjacent/downstream of the site.

It is the clients intention to adopt as much of the drainage system as possible. Discussions will need to be progressed with Yorkshire Water to determine the extent of drains adopted.

3.2 Drainage Design Principles

Sustainable Drainage Systems (SUDS) are an integral part of the design of surface water drainage systems. There are physical measures and techniques whereby surface water returns directly to the ground at or near to the point at which it falls, controlling the rate of runoff from an area and allowing a more natural form of discharge.

It is essential to consider source control within the surface water drainage proposals; techniques which aim to manage the surface water at or close to the receiving surface should be utilised as widely as possible (e.g. porous pavements, soakaways, swales and detention ponds).

In addition to source control methods, it would be necessary to incorporate attenuation areas into the surface water drainage proposals, should the proposed scheme fail to integrate sufficient source control measures.

The proposed development will increase the impermeable area of the existing site compared to the existing properties prior to demolition and subsequently will increase the volume of surface water run-off from the developed site, and this excess impermeable area needs to be considered in the final design.

It is likely that the existing properties were demolished within the last 5 years and for the purposes of establishing existing run-off could be classed as brownfield.

Underlying ground conditions have proven indifferent for infiltration techniques with infiltration rates varying from $12.3-117.8 \times 10^{-6}$ m/s. Only one of the results indicated a moderately good infiltration rate with the other three varying from $12.3-25.778 \times 10^{-6}$ m/s. It should be possible for Plots 1-8 on the development plan to drain to soakaway but the remaining plots are likely to require alternative SUDS systems in order to prevent flooding of adjacent and downstream properties.

Yorkshire Water have permitted an allowable discharge from the site of 10l/sec and surface water run-off from the site should be restricted to this rate. It is probably that the site be split into two sub-catchments for the purposes of draining to maximise what could be adopted by Yorkshire Water. Surface water attenuation should be provided to the satisfaction of the water authority and local authority subject to the finalised drainage scheme.

Consideration should also be given to compliance with the Code for Sustainable Homes.



3.3 Foul Drainage

Foul drainage from the site is to discharge to the 225mm diameter sewer adjacent to the site. This should also apply to the 300mm diameter sewer on Pearson Crescent and consent should be obtained from Yorkshire Water for any sewer connection.

Consideration should also be given to the building regulations requirements, not only Part H but also Part G relating to water efficiency and the expected foul flows from dwellings.

3.4 Maintenance

Consideration should be given to the operational and maintenance requirements of the proposed drainage system as part of the design process to ensure that it is robust enough to prevent blockages allow ease of maintenance and reduce long term maintenance costs. Furthermore, the drainage scheme should be designed so that it could function with very minimal maintenance.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The completion of this drainage statement recommends that following should be carried out:

- Sustainable Drainage Systems (SUDS) should be promoted as part of the overall scheme. This will be done through infiltration systems where appropriate along with underground attenuation to be agreed with the water authority and local authority. Plots 1-8 could drain via infiltration techniques with the remainder of the site draining to the public sewers in accordance with Yorkshire Waters requirements.
- The surface water drainage scheme should be designed in accordance with the Code for Sustainable Homes requirements.
- Foul Water drainage is to the public sewerage system.



ADEPT

CIVIL AND STRUCTURAL
CONSULTING ENGINEERS

APPENDIX 1

SITE LOCATION PLAN



Fig A1.1 Site Location Plan



Fig A1.2 Aerial Photography

APPENDIX 2

Yorkshire Water Correspondence, Solmek Permeability testing and GP Drain survey



YorkshireWater

28 FEB 2012

Yorkshire Water Services
Developer Services
Sewerage Technical Team
PO BOX 52
Bradford
BD3 7AY

Adept Consulting Engineers Ltd
Park Square House
Park Square
Pudsey
Leeds
LS28 7RG

Tel: 0845 120 8482
Fax: (01274) 372 834

For the Attention of Richard Parker

Email:
Planning.Sewerage@yorkshirewater.co.uk

For telephone enquiries ring:

Your Ref:
Our Ref: N001640

Kashif Khan on (0845)120 8482

23rd February 2012

Dear Sir,

RE: 04.12001 - Pearson Crescent, Aldham Estate, Barnsley - Pre-Planning Sewerage Enquiry - Residential on J886548

Thank you for your enquiry received 9th February 2012. Our charge of £62.82 (plus VAT) will be added to your account with us, reference ACE092. You will receive an invoice for your account in due course. Please find enclosed a complimentary extract from the Statutory Sewer Map. This indicates the recorded position of the public sewers. The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site:

There are 150/225 mm diameter public foul and surface water sewers recorded crossing the site. In this instance, building-over may take place under the control of Part H4 Building Regulations 2000.

Development of the site should take place with separate systems for foul and surface water drainage. The separate system should extend to the public sewer.

Foul water domestic waste should discharge to the 225 mm diameter public foul sewer recorded crossing/adjacent to the site.

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SUDS), for example the use of soakaways and/or permeable hardstanding etc., may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SUDS in this instance from the appropriate authorities.

Where appropriate, soakaways, swales and infiltration trenches (SUDS) may be adopted as part of the public sewer network. For general conditions for the adoption of SUDS please see the attached sheet. Further information may be seen in the DEFRA publication 'Interim Code of Practice for Sustainable Drainage Systems' (ISBN 0-86017-904-4). If the developer is considering adoption of SUDS they should contact our Developer Services Team on 0845 120 84 82.

As a last resort and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the 150/225 mm diameter public surface water sewer recorded crossing/adjacent to the site.

The surface water discharge from the site to be restricted to not greater than 10 (ten) litres/second.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority (Dearne and Dove IDD), with regard to surface water disposal from the site.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Developer Services Team (telephone 0845 120 84 82) for further information.

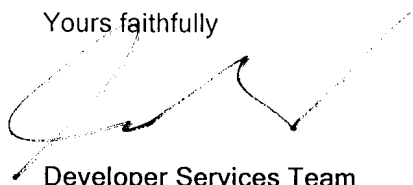
The public sewer network is for domestic sewage purposes. This generally means foul water for domestic purposes and, where a suitable surface water or combined sewer is available, surface water from the roofs of buildings together with surface water from paved areas of land appurtenant to those buildings. Land and highway drainage have no right of connection to the public sewer network. Highway drainage, however, may be accepted under certain circumstances; for instance, if SUDS are not a viable option and there is no highway drain available and if capacity is available within the public sewer network. In this event, the developer will be required to enter into a formal agreement with Yorkshire Water Services under Section 115 Water Industry Act 1991 to discharge non-domestic flows into the public sewer network.

No land drainage to be connected/discharged to public sewer.

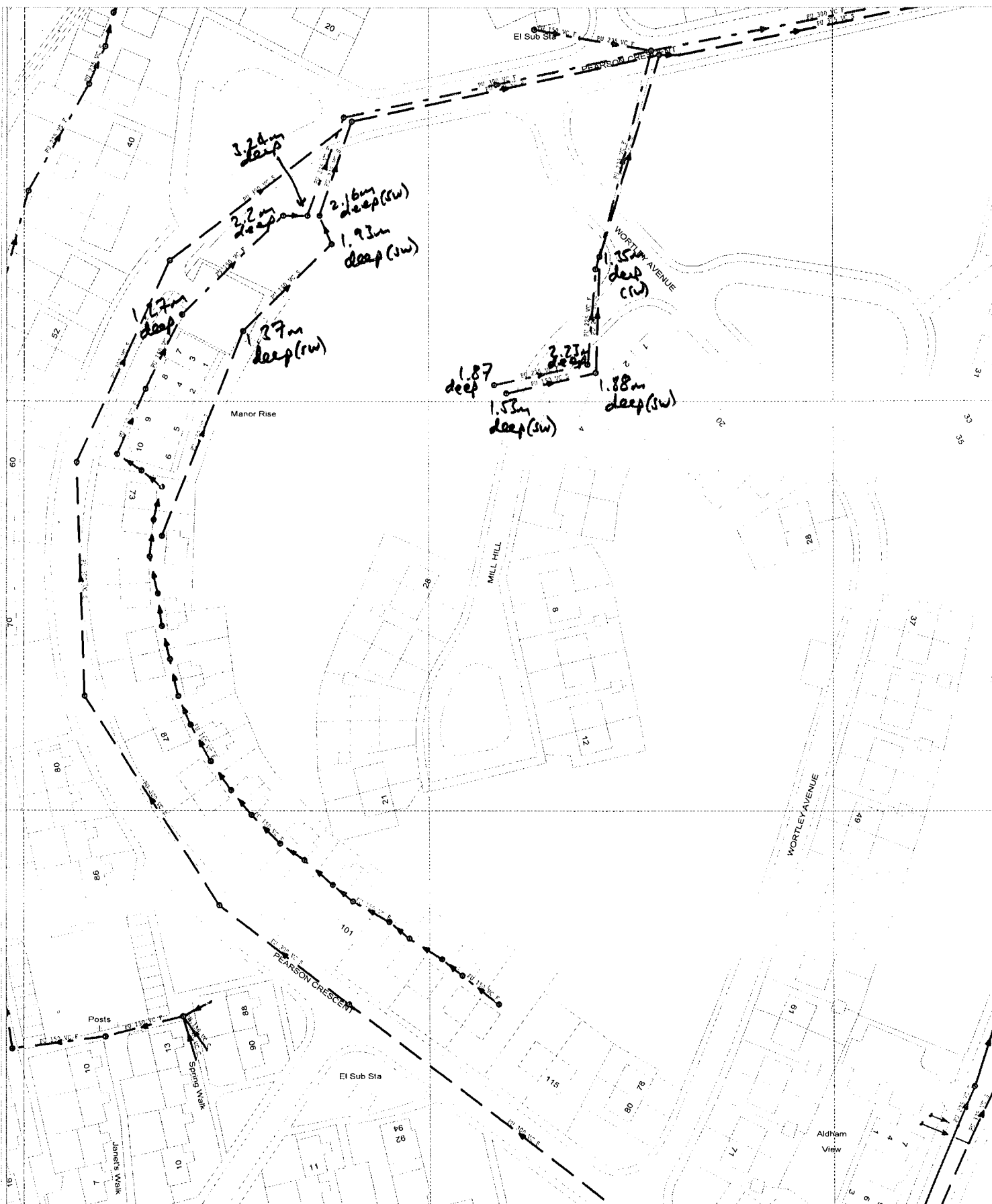
Any new connection to an existing public sewer will require the approval of Yorkshire Water. You may obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0845 120 84 82.

All the above comments are based upon the information and records available at the present time. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours faithfully

A handwritten signature in black ink, appearing to be a stylized 'J' or 'K' followed by a flourish, representing the Developer Services Team.

Developer Services Team



438498 : 403806

Map Name : SE3803NW

Title

Notes



YorkshireWater

Yorkshire Water,
PO Box 500,
Halifax Road,
Bradford BD6 2LZ
Contact Name :
K KHAN
Contact Tel :

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Partial Key

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

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 Req : 23/02/2012, 16:30:39

Date Gen : 23/02/2012, 16:30:51

Source : Sewer Network Enquiry

UPN: Undefined

Originator: K KHAN, New Development - Waste Water,



Adept Consulting Engineers Ltd
Park Square House
Park Square
Pudsey
Leeds
LS28 7RG

20th March 2012
Contract Ref: S120208

FAO Mr Richard Parker

27 MAR 2012

Permeability Testing at Pearson Crescent, Wombwell

Solmek visited the above site on 19th March 2012 to carry out percolation trials as instructed. Please find attached a site location map and soakaway test location plan and the field test results. The testing was generally carried out in accordance with BRE Digest 365: Soakaway Design.

The trial pits were excavated, logged and then water was poured into the trial pits from a water bowser and depth measurements were taken at regular time intervals (see attached). Following completion of the percolation trials the trial pits were backfilled with arisings.

Below gives a summary of the related infiltration rate, where a classification has been given.

SA	Infiltration Rate (m/sec ^{*10⁻⁶})	Description of base stratum	Suitability (in accordance with BRE Digest 365).
1	12.30	Medium dense light yellowish brown clayey gravelly SAND.	Moderately Poor.
2	117.80	Medium dense yellowish brown gravelly SAND.	Moderately Good.
3	12.51	Stiff yellowish brown mottled pale grey slightly sandy, slightly gravelly CLAY.	Moderately Poor.
4	25.77	Medium dense yellowish brown SAND and GRAVEL.	Moderately Poor.

We would like to take this opportunity to thank you for using Solmek. An invoice for the works carried out is also enclosed.

Yours faithfully

Stephen Fisk
On behalf of Solmek

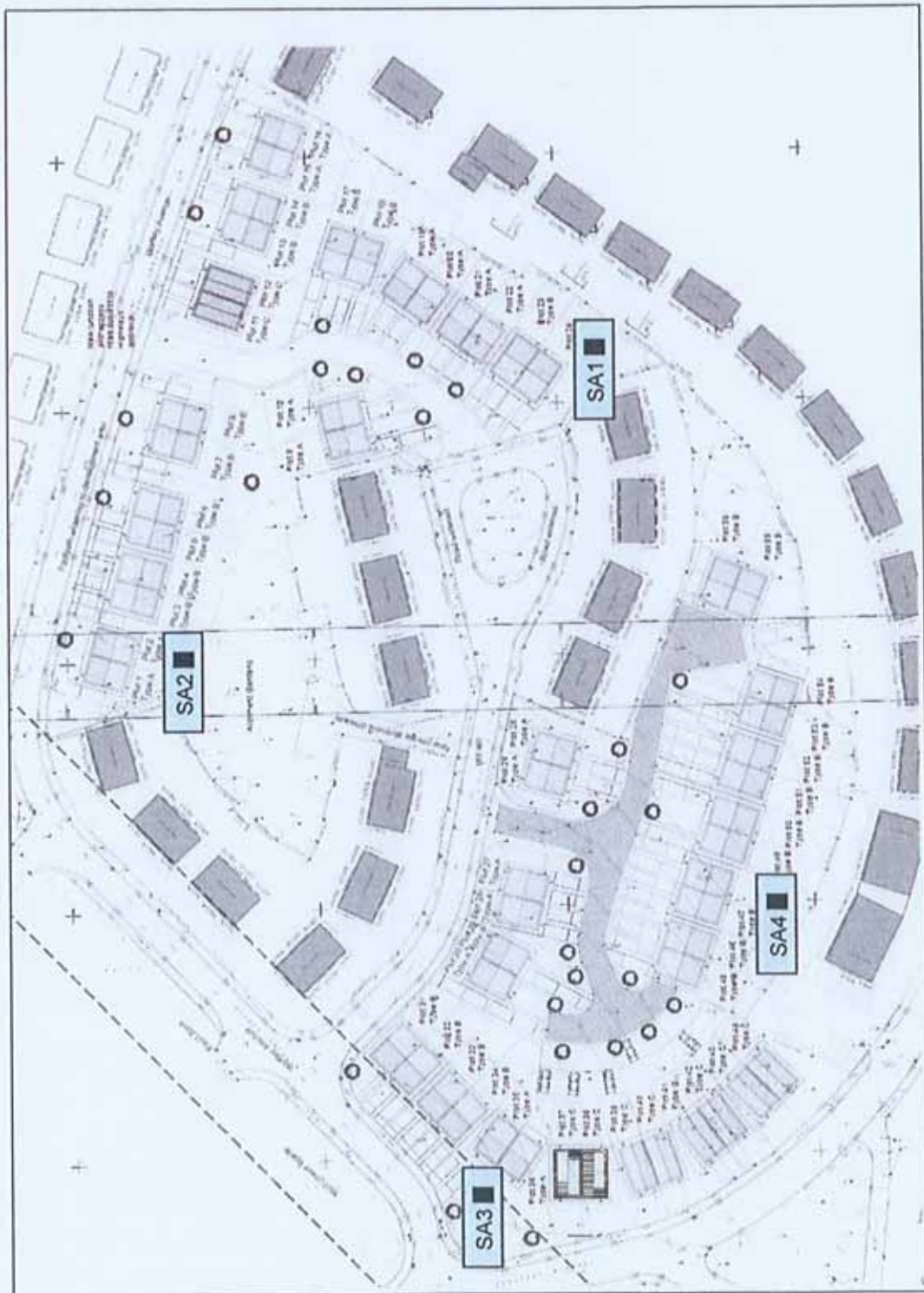




Client:	Adept Consulting Engineers Ltd	
Project:	Pearson Crescent, Wombwell	
Title:	Site Location Map	
Drawing No:	Figure 1	Scale: NTS
Date	March 2012	

Title	Soakaway Location Plan
Project	Pearson Crescent, Wombwell
Client	Adept Consulting Engineers
Date	March 2012
Fig No	Figure 2
Scale	NTS

Solmek
 12 Yarm Road
 Stockton on Tees
 Cleveland
 TS18 3NA
 Tel: +44 (0) 1642 607 083
 Fax: +44 (0) 1642 612 355
 Email: south@solmek.com
www.solmek.com



Job No: S120208

Project: Pearson Crescent, Wombwell

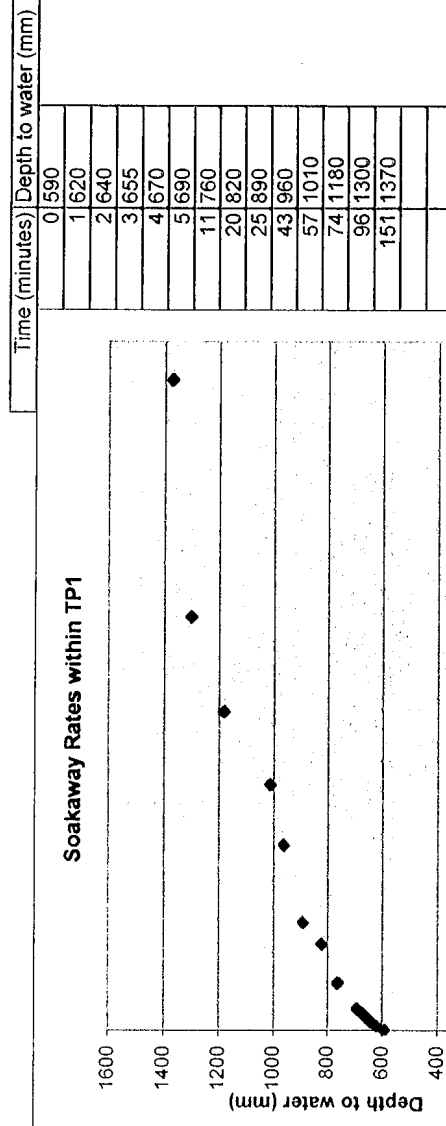
Client: Adept CSCE

Date: 19/03/2012

Soakaway Test Results Soak Away 1 (SA1)



Test pit dimensions	
Length	1200 mm (Plan area = 0.36 m ²)
Width	300 mm
Depth =	1700 mm (Total depth)
Initial parameters	
Depth to water =	590 mm
Start time =	0 min
Final parameters	
Depth to water =	1370 mm
End time =	151 min
Average Soakaway Rate = 30.99 m³/sec*10⁻⁶	
Average soakaway area = 2.52 m² (sides + base)	
Infiltration Rate = 12.30 m/sec*10⁻⁶	



Ground Conditions	
Depth (m)	Strata Description
0.00-0.45	MADE GROUND: Grass over brown slightly clayey slightly gravelly sandy topsoil with rootlets.
0.45-1.70	Medium dense light yellowish brown clayey gravelly SAND.
1.70	End of trial pit.

(based on BRE Digest 365)

Job No: S120208

Project: Pearson Crescent, Wombwell

Client: Adept CSCE

Date: 19/03/2012

Soakaway Test Results
Soak Away 2 (SA2)



Test pit dimensions

Length 1200 mm (Plan area = 0.36 m²)

Width 300 mm

Depth = 2000 mm (Total depth)

Initial parameters

Depth to water = 1330 mm Mean water depth = 335 mm

Start time = 0 min

Change in depth = 670 mm

Final parameters

Depth to water = 2000 mm Time interval = 25 min

End time = 25 min

Average Soakaway Rate = 160.80 m³/sec*10⁻⁶

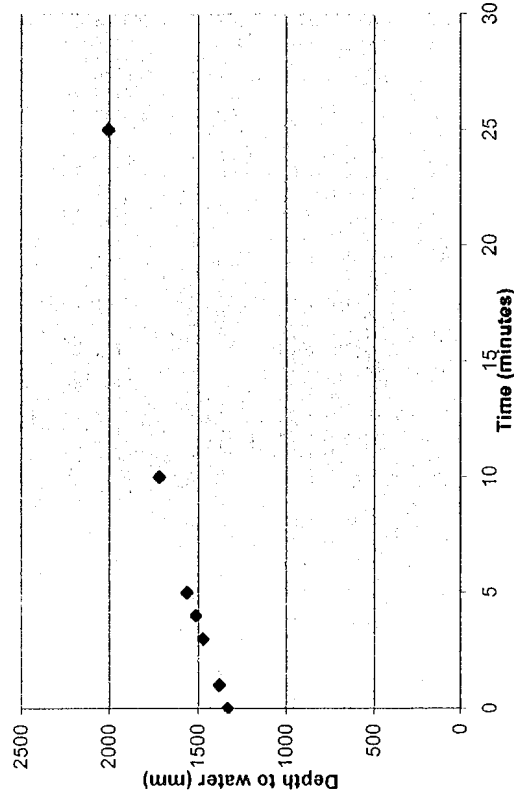
Average soakaway area = 1.37 m² (sides + base)

Infiltration Rate = 117.80 m/sec*10⁻⁶

Time (minutes) Depth to water (mm)

0	1330
1	1380
3	1470
4	1510
5	1560
10	1715
25	2000

Soakaway Rates within TP1



Ground Conditions

Depth (m)	Strata Description
0.00-0.45	MADE GROUND: Grass over sandy slightly gravelly clay topsoil.
0.20-0.70	MADE GROUND: Firm brown slightly sandy, slightly gravelly clay fill.
0.70-2.00	Medium dense yellowish brown gravelly SAND.
2.00	End of trial pit.

(based on BRE Digest 365)

Job No: S120208

Project: Pearson Crescent, Wombwell

Client: Adept CSCE

Date: 19/03/2012

Soakaway Test Results Soak Away 3 (SA3)

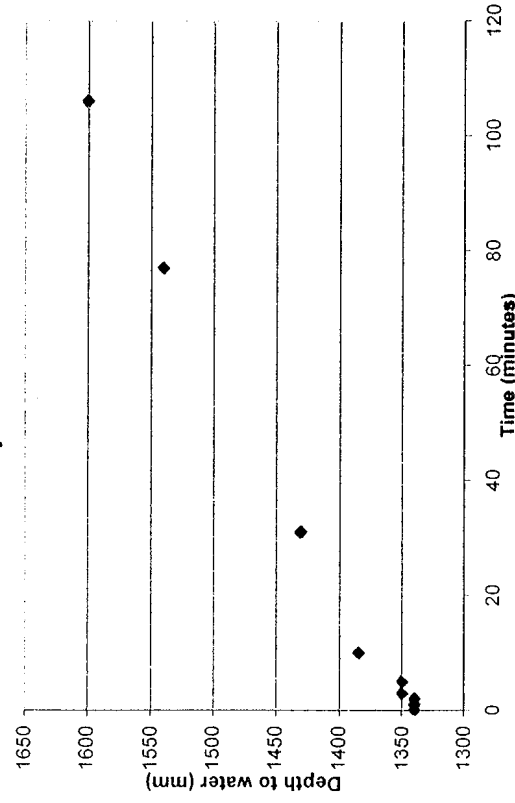


Test pit dimensions		(Plan area = 0.42 m ²)	
Length	1400 mm		
Width	300 mm		
Depth =	1750 mm (Total depth)		
<u>Initial parameters</u>			
Depth to water =	1340 mm	Mean water depth =	280 mm
Start time =	0 min	Change in depth =	260 mm
<u>Final parameters</u>			
Depth to water =	1600 mm	Time interval =	106 min
End time =	106 min		
Average Soakaway Rate =	17.17 m ³ /sec*10-6		
Average soakaway area =	1.37 m ² (sides + base)		
<u>Infiltration Rate =</u>		<u>12.51 m/sec*10-6</u>	
<u>Ground Conditions</u>			
Depth (m)	Strata Description		
0.00-0.15	MADE GROUND: Grass over sandy slightly gravelly clay topsoil.		
0.15-0.35	MADE GROUND: Firm greyish brown slightly sandy clay fill.		
0.15-1.10	MADE GROUND: Red/brown sandy gravel fill.		
1.10-1.75	Stiff yellowish brown mottled pale grey slightly sandy slightly gravelly CLAY		

Time (minutes) | Depth to water (mm)

0	1340
1	1340
2	1340
3	1350
5	1350
10	1385
31	1430
77	1540
106	1600

Soakaway Rates within TP1



(based on BRE Digest 365)

Job No: S120208

Project: Pearson Crescent, Wombwell

Client: Adept CSCE

Date: 19/03/2012

Soakaway Test Results Soak Away 4 (SA4)



Test pit dimensions

Length 1300 mm (Plan area = 0.39 m²)
Width 300 mm
Depth = 1800 mm (Total depth)

Initial parameters

Depth to water = 860 mm Mean water depth = 620 mm
Start time = 0 min

Final parameters

Depth to water = 1500 mm Change in depth = 640 mm
End time = 68 min Time interval = 68 min

Average Soakaway Rate = 61.18 m³/sec*10-6
Average soakaway area = 2.37 m² (sides + base)

Infiltration Rate = 25.77 m/sec*10-6

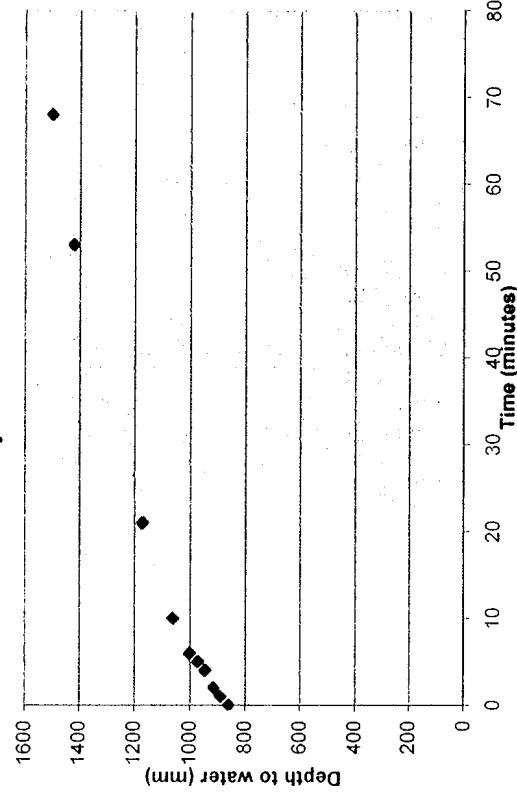
Ground Conditions

Depth (m)	Strata Description
0.00-0.35	MADE GROUND: Grass over greyish brown sandy slightly gravelly clay topsoil with rootlets.
0.35-1.80	Medium dense yellowish brown SAND and GRAVEL.
1.80	End of trial pit.

Time (minutes) Depth to water (mm)

0	860
1	890
2	915
4	945
5	970
6	1000
10	1060
21	1170
53	1420
68	1500

Soakaway Rates within TP1



(based on BRE Digest 365)

G.P. DRAIN SURVEYS

CLEANING, JETTING, RE-LINING, REPAIRS & SURVEYS

Our Ref : GMP/lhg/1621

Your Ref : Richard Parker

23rd March 2012

Adept Consulting Engineers Ltd
Park Square House
Park Square
Pudsey
Leeds
LS28 7RG

BARN 1 MARSH FARM
MARSH LANE
SOUTHOWRAM
HALIFAX
HX3 9NR

TELFAX: 01422 368177
MOBILE: 07973 834690

For the attention of : Mr Richard Parker.

C.C.T.V. DRAINAGE SURVEY REPORT.

Pearson Crescent Aldham Estate Barnsley

Manhole	Invert	Pipe Size	Material	Service
1	1410mm	6"	Clay	Surface Water
2	1660mm	6"	Clay	Foul
3	1230mm	9"	Clay	Surface Water
4	1850mm	4"	Clay	?
5	1650mm	6"	Clay	?
6	700mm	6"	Clay	Combined
7	1820mm	6"	Clay	Combined
8	1540mm	6"	Clay	Surface Water
9	1610mm	6"	Clay & plastic	Foul
10	2260mm	6"	Clay	Foul
11	3220mm	6"	Clay	Foul
12	1890mm	6"	Clay	Surface Water
A	UTL DAMAGED LID		Clay	Foul
B	2200mm	9" & 12"	Clay & concrete	Surface Water
C	2650mm	9" & 12"	Clay	Foul
D	1900mm	9" 12" & 15"	Clay & concrete	Surface Water
E	2200mm	9"	Clay	Foul
F	1850mm	9"	Clay	Surface Water
G	1660mm	9"	Clay	Surface Water
H	1480mm	9"	Clay	Surface Water
I	1640mm	9"	Clay	Surface Water

M/H1 - OUTFALL

00.0 – Start scan

00.0 to 04.3 – Silt within the drain

00.3 – Minor root intrusion

04.2 – Minor root intrusion

04.3 – Blind branch 2.0'clock drain at this point now becomes live (in use)

12.6 to 15.7 – Silt & rubble within the drain

15.0 – Blind branch 9.0'clock

17.0 – Drain rod stuck in the drain

20.0 – Blind branch 1.0'clock

31.2 – Blind branch 1.0'clock

35.5 – Blind branch 1.0'clock

38.3 to 41.2 – Silt & rubble within the drain

44.2 – Enter a Manhole

47.0 – Blind branch 1.0'clock

48.4 – Rubble within the drain

Proprietor: G.M. PYLE

Consultant: Eur.Eng., J.B. PYLE, B.Eng., C.Eng.
FICE., FStructE., MCIArb., MBAE., ARICS., FConsE.

59.2 – Multiple fractures

61.0 – End of survey due to running out of camera reel

Conclusion

This drain run could be used as an outfall for the connection of surface water discharge from the proposed site.

M/H2 – OUTFALL

00.0 – Start scan

07.5 – Blind branch 9.0'clock

21.5 to 25.5 – Cobwebs on the camera lens

25.5 – Clean camera lens and continue survey

25.5 – Film in reverse

19.6 – Continue survey

21.9 – Enter a Manhole situated in the rear of the first properties garden at this point the drain becomes live (in use)

30.0 – Enter a Manhole

38.2 – Enter a Manhole

46.0 – Enter a Manhole

53.7 – Enter a Manhole

61.2 – Enter a Manhole

61.9 – Longitudinal crack

62.0 – End of survey due to running out of camera reel

Conclusion

This drain run could be used as an outfall for the connection of foul water discharge from the proposed site.

M/H3 – OUTFALL

00.0 – Start scan

07.4 – Offset joint

09.9 to 10.6 – Rubble within the drain

10.6 – End survey at the Outfall Surface Water Sewer

Conclusion

This drain run could be used as an outfall for the connection of surface water discharge from the proposed site.

M/H4 – OUTFALL

00.0 – Start scan

15.0 – Blind branch 9.0'clock

19.9 – Drain increases in size from 4" to 6"

24.9 – End survey at a concealed Manhole (silt trap)

24.9 – Film in reverse

00.0 – End survey back at M/H4

Conclusion

This drain run could be used as an outfall for the connection of surface water discharge from the proposed site.

M/H5 – OUTFALL

00.0 – Start scan
 01.2 – Silt within the drain
 04.2 – Line of the drain deviates slightly left
 04.3 – Enter a Manhole (unable to lift lid)
 04.6 – Drain increases in size to 9”
 07.7 – Silt within the drain
 27.2 – Silt within the drain
 28.1 – Enter a concealed Manhole
 40.7 – Silt within the drain
 41.6 – Enter a concealed Manhole
 42.0 – Unable to continue survey due to concealed Manholes

Conclusion

We are unsure what this drain run used to serve, either foul or surface water. We would recommend that it not be used as an outfall drain for the proposed site.

M/H6 – M/H7 (LIVE DRAIN)

00.0 – Start scan
 15.9 – Blind branch 10.0’clock (old connection)
 19.4 – Blind branch 9.0’clock (old connection)
 37.9 – End survey at M/H7

Conclusion

This drain is still in use and serving other properties and will have to be either diverted or left as it is during the development of the proposed site.

M/H7 – OUTFALL

00.0 – Start scan
 02.3 – Scale within the drain
 05.4 – Enter a concealed Manhole
 20.0 to 21.4 – Foul water holding in the drain being caused by a blockage in the Outfall Sewer within SEWER E
 21.4 – End survey at or near FOUL WATER SEWER E

Conclusion

This drain run could be used as an outfall for the connection of foul water discharge from the proposed site.

M/H8 – OUTFALL

00.0 – Start scan
 00.0 to 02.6 – Silt & rubble within the drain
 04.8 – Enter a concealed Manhole
 04.8 to 07.6 – Silt within the drain
 07.4 – Blind branch 3.0’clock
 18.4 – Radial fracture
 22.1 – End survey at SURFACE WATER SEWER F

Conclusion

This drain run could be used as an outfall for the connection of surface water discharge from the proposed site. Please note that the drain running into M/H8 is still live and serving the properties further upstream (please see drawing) and will have to be either diverted or left as it is during the development of the proposed site.

M/H9 – M/H10

00.0 – Start scan

00.6 – Radial crack

09.6 – End survey at M/H10

Conclusion

This drain is still in use and serving other properties and will have to be either diverted or left as it is during the development of the proposed site. This drain run could be used as an outfall for the connection of foul water discharge from the proposed site.

M/H10 – M/H11

00.0 – Start scan

00.3 – Line of the drain deviates right

05.9 – Line of the drain deviates left

06.7 – End survey at M/H11

Conclusion

This drain is still in use and serving other properties and will have to be either diverted or left as it is during the development of the proposed site. This drain run could be used as an outfall for the connection of foul water discharge from the proposed site.

M/H11 – OUTFALL

00.0 – Start scan

23.4 – End survey at the OUTFALL FOUL SEWER A

Conclusion

This drain is still in use and serving other properties and will have to be either diverted or left as it is during the development of the proposed site. This drain run could be used as an outfall for the connection of foul water discharge from the proposed site.

M/H12 – OUTFALL

00.0 – Start scan

00.0 to 03.0 – Silt & rubble within the drain

07.0 – Radial crack

07.7 – Rubble within the drain

07.8 – Line of the drain deviates right

08.4 – Enter a concealed Manhole (silt trap)

08.6 – Unable to continue survey past the concealed Manhole (silt trap)

Conclusion

This drain run could be used as an outfall for the connection of surface water discharge from the proposed site.

END OF SURVEY

