



DRAINAGE DESIGN STRATEGY REPORT

PROJECT

POUND PLACE CARE HOME, ROUNDSTONE LANE, ANGMERING for ARUN DISTRICT COUNCIL

PROJECT NUMBER

18 031

CLIENT

HALLMARK CAREHOMES LTD

REPORT DATE

November 2018 – Third Issue



3 CADMAN COURT
LEEDS
LS27 0RX

DOCUMENT CONTROL

PROJECT NAME	POUND PLACE CARE HOME, ROUNDSTONE LANE
PROJECT NUMBER	18 031
CLIENT	HALLMARK CAREHOMES LTD

REVISION	DATE	WRITTEN BY	REVIEWED BY
Initial issue	MAR 18	MP	MR
Second issue	APR 18	MP	MR
Third Issue	Nov 18	MP	AR

CONTENTS

1.0	Introduction
2.0	Site Appraisal
3.0	Water Utility Records and Correspondence
4.0	Correspondence with local authority/ SFRA
5.0	Foul water drainage strategy
6.0	Surface Water Drainage Strategy
7.0	Conclusion

8.0 APPENDICES

Appendix A	Site Layout Plan
Appendix B	Extracts of Ground Investigation / Soakaway test results
Appendix C	EA Map of Flood Risk Zone
Appendix D	Correspondence with Arun District Council
Appendix E	Sewer Records & Contact
Appendix F	Arun District Council - Supplementary Requirements for SW Drainage Proposals
Appendix G	Foul Water Drainage Calculations
Appendix H	Proposed Plan of Site Drainage
Appendix I	Surface Water Key Plan of Catchment Areas Drainage Calculations

1.0 INTRODUCTION

- 1.1. Arc Engineers Ltd have been commissioned by Hallmark Carehomes Ltd to provide drainage design for both foul and surface water disposal for the new care home project at on Roundstone Lane, to be referred hereafter as 'the Site'.
- 1.2. The site is currently occupied by a single house with associated paved areas for parking and garden space. This will be demolished and replaced with a new care home facility. A site layout plan is included in Appendix A.
- 1.3. This report sets out the investigations undertaken to determine the most appropriate and suitable means of disposing of surface and foul water for the site. The report aims to follow the guidance set out in the following documents.
 - National Planning Policy Framework 2012 (NPPF)
 - National Planning Policy Guidance
 - The SuDS Manual 2015 (CIRIA C753)
 - Approved document H of the Building Regulations
 - Local Authority Strategic Flood Risk Assessment (SFRA)
- 1.4. The following data was reviewed as part of this assessment.
 - Online Flood mapping
 - British Geological Survey (BGS) on-line maps
 - Ground investigation report – Soakaway results
 - Utility drainage records for the local area.
 - Discussion with local District Council Senior Engineer
 - Discussion with drainage utility provider, Southern Water
- 1.5. It should be noted that this report sets out the proposed strategy for the actual design of the drainage for the Site. It is not intended to be a Flood Risk Assessment. In this instance ARC Engineers Ltd have been appointed to design the drainage design works for Pound Place. This has been based on information received from the architect, soakaway tests and advice from the district council.

2. SITE APPRAISAL

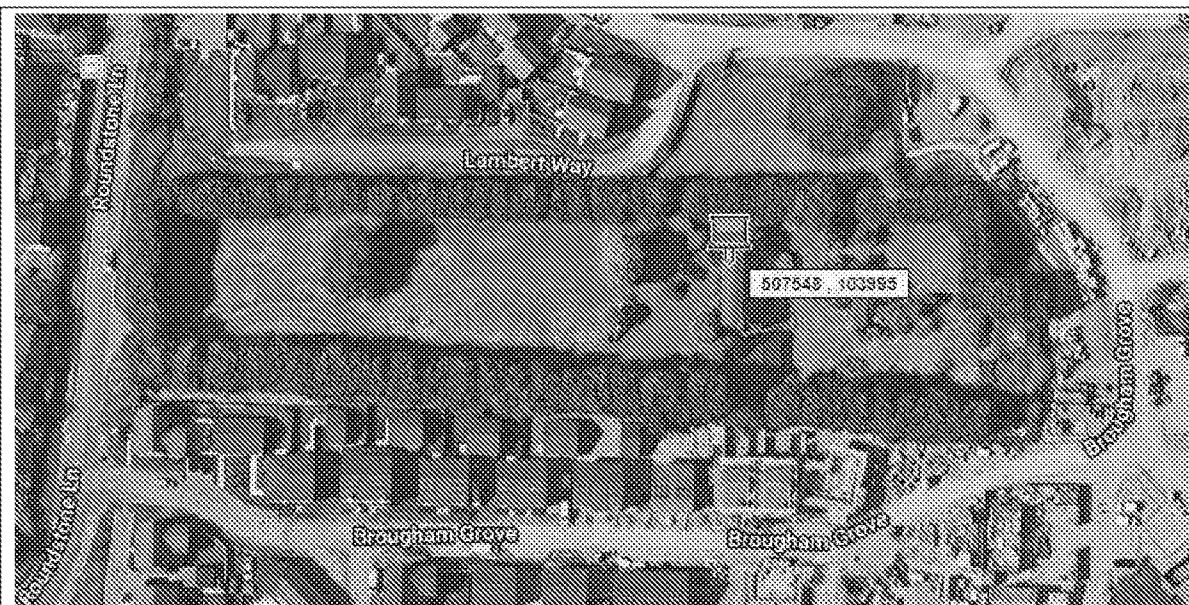
2.1. SITE SETTING

Site Name:	Pound Place, Roundstone Lane, Angmering, Littlehampton, BN16 4AX
Purpose of Development:	New Care Home for Arun District Council
Existing / Former Land Use:	House, garden and hardscaping.
OS NGR:	507548,103995
County:	West Sussex
Local Planning Authority:	Arun District Council
Internal Drainage Board:	N/A



Location Plan

Image produced from the Ordnance Survey map service.



AERIAL PHOTO OF CURRENT / FORMER USE

Image produced from grid-reference-finder

2.2. TOPOGRAPHY

A topographical survey was carried out by archidata on the 16th February 2018. Their drawing indicates that the site slopes from North to South and also slopes down East to West towards Roundstone Lane.

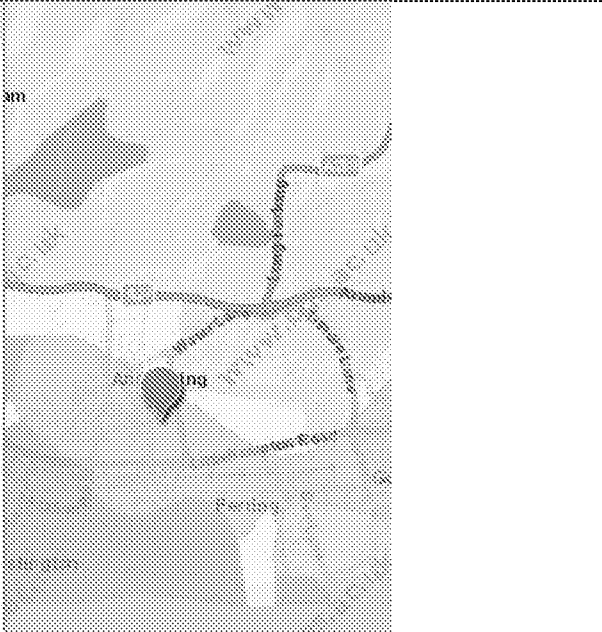
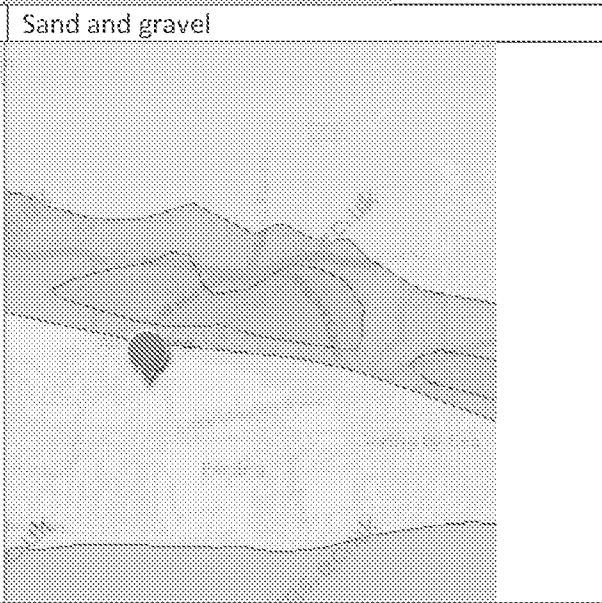
The proposed roof and hardscaped areas will both positively drain into permeable paving, SuDS features and soakaways.

2.3. GEOLOGY

2.3.1. REVIEW OF GROUND INVESTIGATION

Ashdown site investigations have provided soakaway tests which reveal that the ground consists of clay with little to no gravel to a depth of 2m. From the trial pits from 2m to 3m, the ground is very gravelly clay/ very clayey gravel. The tests show that the groundwater level is below 3m as the ground was dry up to 3m.

2.3.2. REVIEW OF BGS RECORDS

Map Key (close this window to activate map) 1:625 000 scale geology Superficial deposits - ALLUVIUM - CLAY, SILT AND SAND - BRICEARTH - SILT - BLOWN SAND - SAND AND GRAVEL - RAISED MARINE DEPOSITS - SAND AND GRAVEL - RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL - SAND AND GRAVEL OF UNCERTAIN AGE AND ORIGIN - SAND AND GRAVEL - CLAY-WITH-FLINTS FORMATION - DIAMICTON	
Superficial Deposits Map Key (close this window to activate map) 1:625 000 scale geology Bedrock geology - THAMES GROUP - CLAY, SILT, SAND AND GRAVEL - LAMBETH GROUP - CLAY, SILT, SAND AND GRAVEL - GREY CHALK SUBGROUP - CHALK - WHITE CHALK SUBGROUP - CHALK - GAULT FORMATION AND UPPER GREENSAND FORMATION (UNDIFFERENTIATED) - MUDSTONE, SANDSTONE AND LIMESTONE - LOWER GREENSAND GROUP - SANDSTONE AND MUDSTONE	
Bedrock	Chalk

2.3 PERCOLATION TEST RESULTS

Arun District Council specified that the soakaway tests were to be carried out in winter conditions. Therefore, three soakaway trial pits and five boreholes were tested in winter conditions. These tests showed that the ground is suitable for soakaways to a depth of 3m, the results can be found in the appendices.

2.4. HYDROLOGY

2.4.1. SURFACE WATER FEATURES

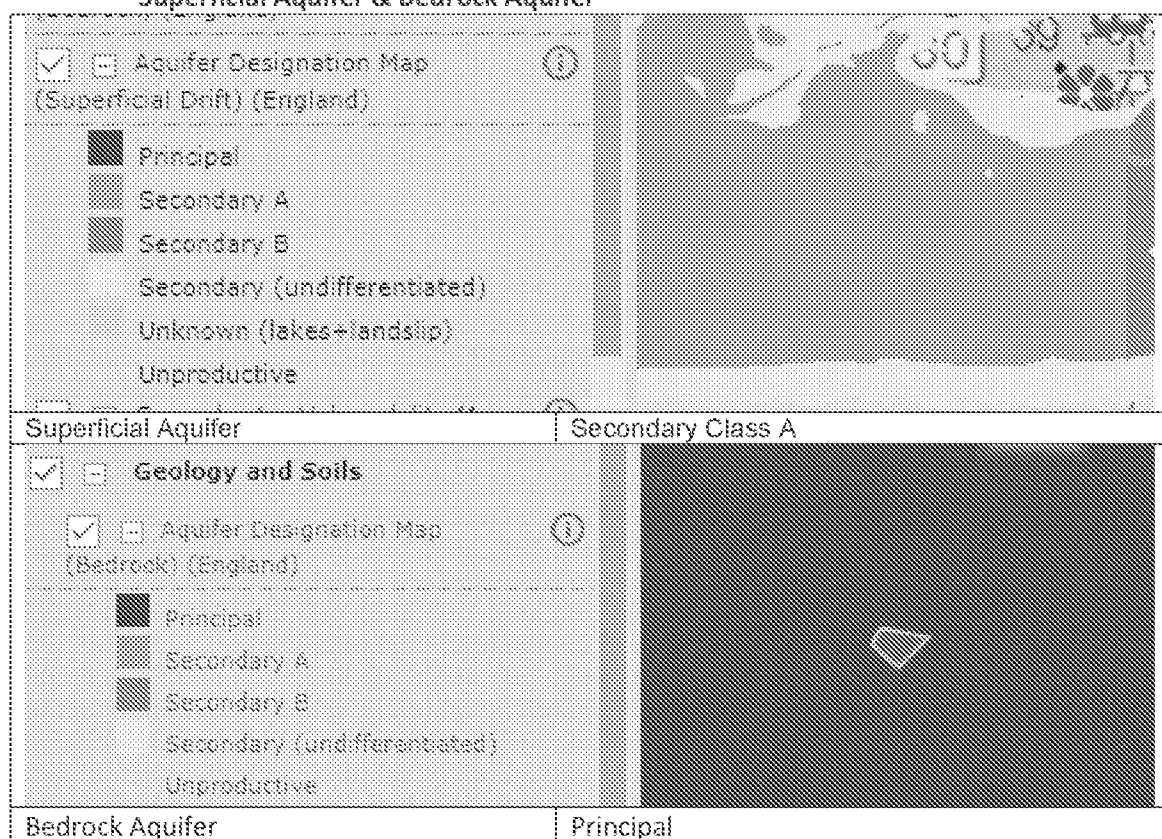
There are no surface water features on site. Nevertheless, it should be noted that Groundsure have written in their Floodview report (reference 17274084) that the site or any area within 50m of the study site are susceptible to pluvial (surface water) flooding.

2.4.2. SURFACE WATERCOURSES

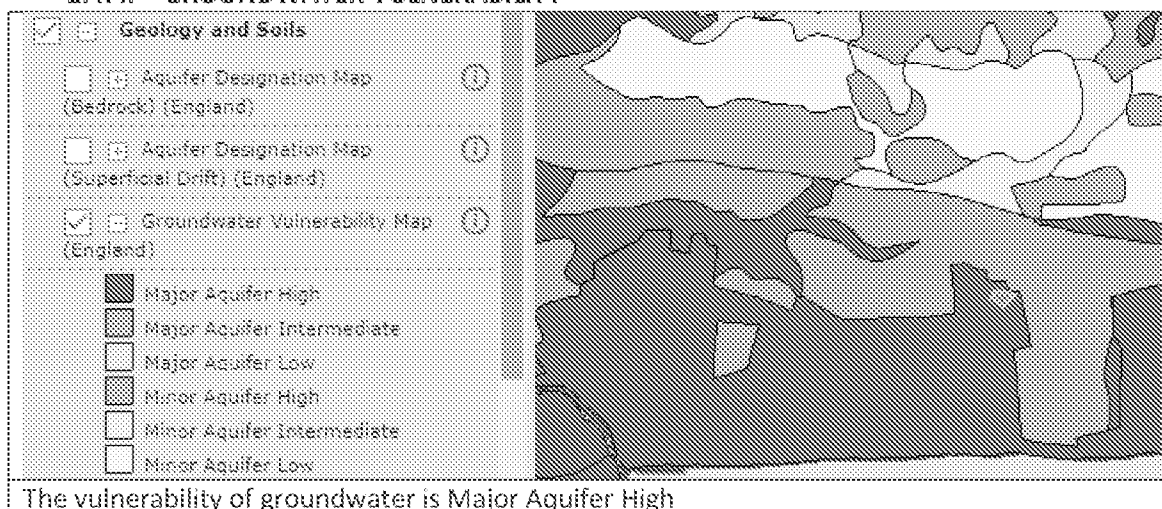
There are no watercourses in the close vicinity to the site.

2.4.3. SITE SENSITIVITY - HYDROLOGY

Superficial Aquifer & Bedrock Aquifer



2.4.4. GROUNDWATER VULNERABILITY



2.4.5. SOURCE PROTECTION ZONE

The site is not within a Source Protection Zone.

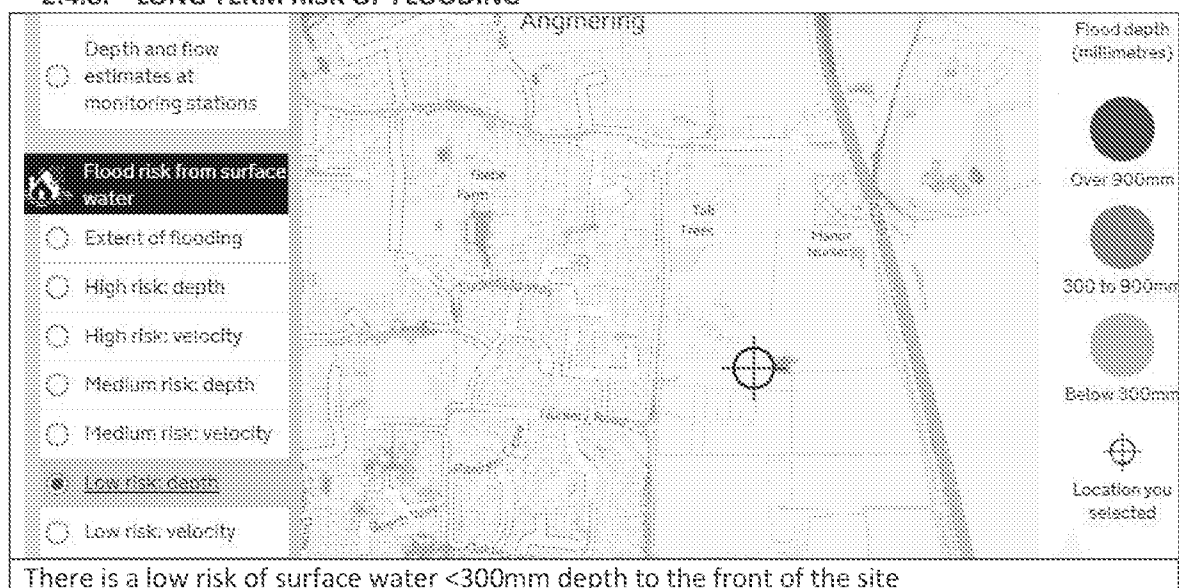
2.4.6. INFILTRATION TESTING

Tests have been carried out according to Arun District Council's suggestion of percolation tests during the winter to see if a soakaway will be suitable for the site. The borehole tests showed that when some 25 litres of water was introduced into the boreholes (up to three times), the water drained away immediately. The results from the trial pits also indicated that the water had been absorbed before the depth of 3m. From these tests, the results show that soakaways will be feasible. (See appendix for soakaway test results)

2.4.7. FLOOD ZONE RISK

The Environment Agency (EA) Flood Map indicates the development site to be located within Flood Zone 1; an area where flooding from rivers and the sea is very unlikely. There is less than 0.1% (1 in 1000) chance of flooding occurring each year. See Appendix D.

2.4.8. LONG TERM RISK OF FLOODING



3. WATER UTILITY RECORDS AND CORRESPONDANCE

- 3.1. There are no sewer records for the immediate site area. Drawings have been obtained for the sewer to the west of the site area, but these are considered too far away from the immediate site. Southern Water has been contacted to obtain more information about the drainage of the site and immediate surrounding area in Appendix E (on 02/03/18 – by MP). The Senior Engineer at Arun District Council advised that it should be noted that there were no public foul sewers in Roundstone Lane.
- 3.2. Foul water utility records were found on the council website for the neighbouring development to the north of the site. This showed a foul sewer to run to the east of the site. It is therefore tentatively proposed that the foul drainage will connect to manhole F06 to the east of the site. This connection is to be confirmed by Southern Water. ARC have also communicated with the developers of this neighbouring site to see if more information can be obtained for the existing foul cover and invert levels (Appendix E).

4. CORRESPONDANCE WITH LOCAL AUTHORITY / SFRA

An enquiry was made to Arun District Council on March 2nd 2018 by Arc Engineers to indicate preferred surface water drainage strategies. A response was received from the Senior Drainage and Coastal Engineer of Arun District Council on the 5th March 2018, outlining acceptable means of surface water drainage. The recommendation of utilising soakaways was preferred with other SuDS features such as permeable paving. Also, guidance notes for the methodology of winter percolation tests were distributed by Arun District Council which have been circulated with the Senior Drainage and Coastal Engineer's comments. This outlined that standpipes would not be required for the test and that the percolation test should be carried out to BRE365. A copy of this correspondence is provided in Appendix F.

5. FOUL WATER DRAINAGE STRATEGY

- 5.1. A gravity only foul drainage connection will be possible from the site, with the internal SVP's directed below ground to shallow inspection chambers around the perimeter of the building. Calculations for foul water flows are provided in Appendix G.
- 5.2. The proposed site is surrounded by a housing estate that is still being developed. It is understood that the housing development has a new drainage network that runs around the site. The foul drainage will likely connect to the east of the site from manhole F05 at a rate of 7.29 l/s, which is part of the neighbouring development. Refer to Appendix H for the proposed site drainage layout.

6. SURFACE WATER DRAINAGE STRATEGY

- 6.1. The surface water will be designed to flow into soakaways around the site. The soakaway tests were carried out in winter conditions as specified by Arun District Council (Soakaway test results can be found in the appendices.) There will also be permeable paving for the road and parking bays.

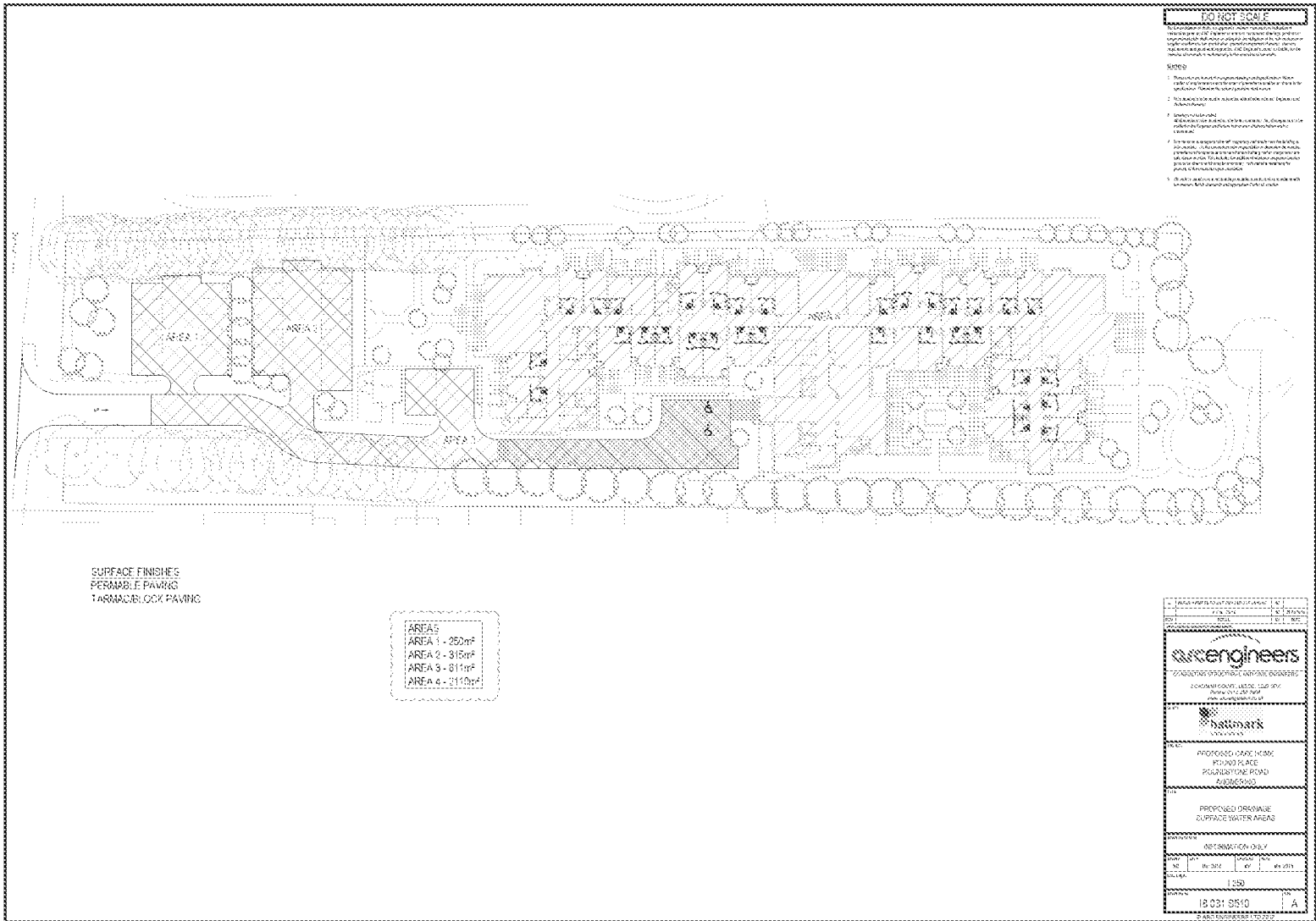
- 6.2. Arun District Council require that the drainage be designed for 1 in 10 and 1 in 100-year storm events. An allowance of 40% climate change has been applied and as the infiltration rate has been specified to drain 50% of its total volume, a 50% betterment has been included.
- 6.3. The soakaway tests showed that the ground is suitable for soakaways. Therefore, soakaways will be used for the surface water drainage from the roof, so there will be no discharge into existing sewers. The carpark has an area of 1176m², in the design it has been assumed that the carpark area will be permeable paving.
- 6.4. The hardstanding roof areas have been divided to indicate where the rainwater will go into each pipe, with a total area of 2318 m². A plan of the divided areas is shown in the appendix.
- 6.5. The drainage design relies on soakaways; where each network indicated runs into a soakaway. There are 5 soakaways in total. Using the soakaway test results, the percolation rate has been applied to the side of soakaways, the rate for the base has been set as 0m/hr as specified in the requirements by Arun District council.

7. CONCLUSION

- 7.1. Environment Agency mapping shows that the site is located within Flood Zone 1; with a low risk of flooding. However, from the FRA there is a high risk of groundwater flooding showing Major Aquifer High. As the soakaway results show that the water table is below 3m and has good soil properties of very gravelly clay/ very clayey gravel from 2m to 3m, where the soakaways are located, it is thought that it is unlikely to incur groundwater flooding.
- 7.2. The site is located in Angmering and is in the remit of Southern Water and Arun District Council. Arun district council have specified that there should be a climate change applied of 40%. They have also specified that the soakaways should drain 50% of its total volume in 24 hours for both 1 in10 and 1 in 100 year storm events.
- 7.3. The surface water runoff will flow into various soakaways around the site. With an allowance of 40% climate change, and the design has been based on soakaway tests carried out in winter conditions as requested by Arun District Council. The drainage design can be found in the appendices.
- 7.4. Permeable paving will be used for the carpark and road. As there are no watercourses in close proximity to the site, and the previous land use was a singular house, it is thought that there will be little contamination.
- 7.5. A gravity only foul discharge has been designed to connect to the existing sewer system found in the housing development that surrounds the site. It is suggested that the foul drainage connect to manhole F05 to the east of the site, at a rate of 7.29 l/s.
- 7.6. Calculations and corresponding drawings for both the surface water and foul drainage can be found in the appendices in sections G - J.

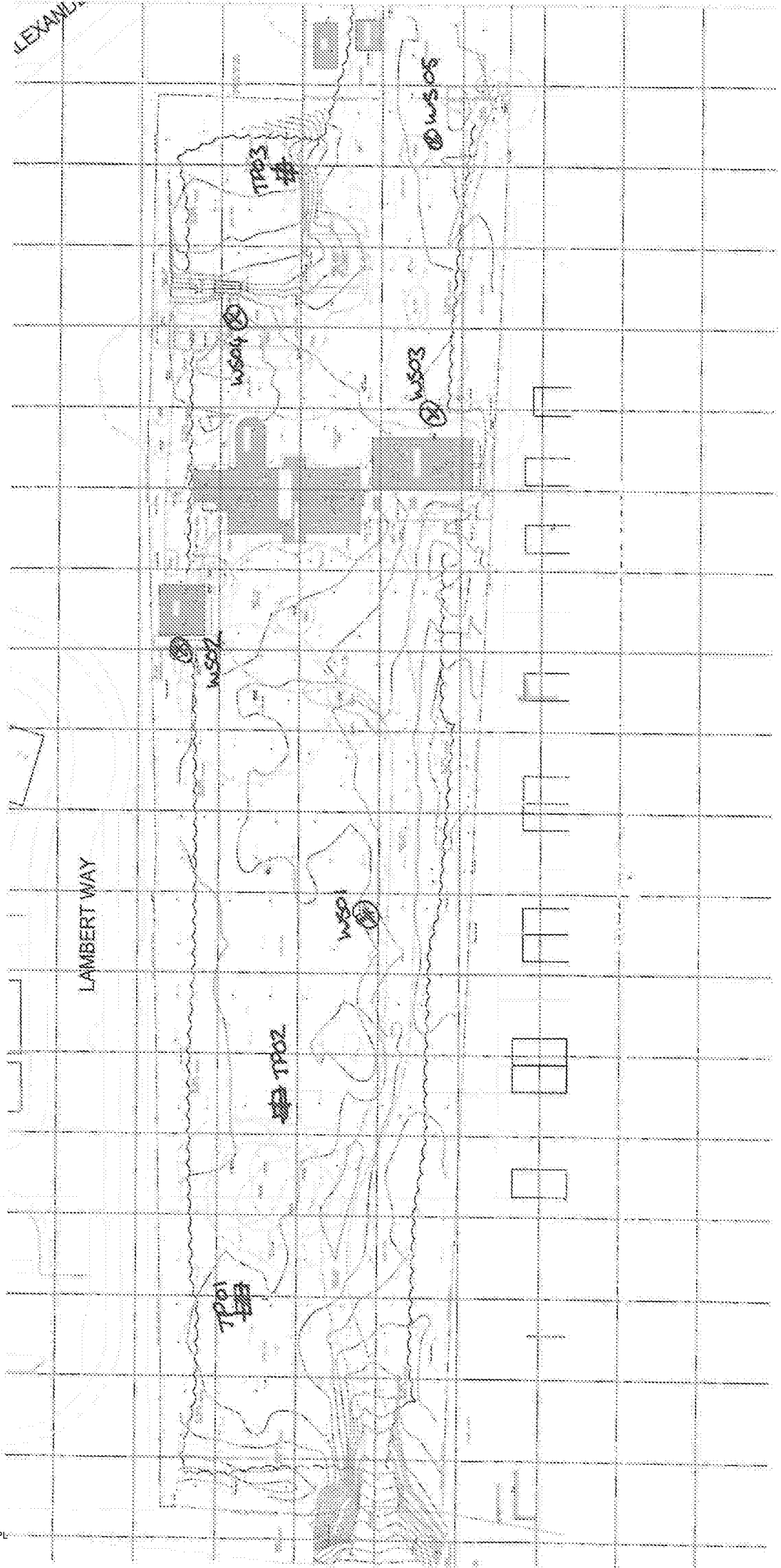
8. APPENDICES

Appendix A Site Layout Plan



Appendix B Extracts of Ground Investigation / Soakaway test results

LEXANDER



ASHDOWN SITE INVESTIGATION LIMITED

Site: Pound Place, Angmering, West Sussex

Report No.: R18-12844

Sheet No.: 1 of 3

SUMMARY OF TRIAL PIT FALLING HEAD SOAKAGE TEST RESULTS

TP01 (Test 1)		TP01 (Test 2)		TP01 (Test 3)	
Time (secs)	Depth to water (m bgl)	Time (secs)	Depth to water (m bgl)	Time (secs)	Depth to water (m bgl)
0	1.90	0	1.10	0	0.96
10	2.13	10	1.54	10	1.40
20	2.33	20	1.85	20	1.67
30	2.54	30	2.13	30	1.84
40	2.73	40	2.34	40	2.00
50	Dry	50	Dry at 2.50*	50	2.16
				60	2.25
				70	Dry at 2.30*
Pit Length - 0.45m Pit Width - 1.90m Pit Depth - 2.80m bgl		Pit Length - 0.45m Pit Width - 1.90m Pit Depth - 2.80m bgl		Pit Length - 0.45m Pit Width - 1.90m Pit Depth - 2.80m bgl	

Remarks: bgl - below ground level.

*Trial pit collapsed during soakage testing.

ASHDOWN SITE INVESTIGATION LIMITED

Site: Pound Place, Angmering, West Sussex

Report No.: R18-12844

Sheet No.: 2 of 3

SUMMARY OF TRIAL PIT FALLING HEAD SOAKAGE TEST RESULTS

TP02 (Test 1)		TP02 (Test 2)		TP02 (Test 3)	
Time (secs)	Depth to water (m bgl)	Time (secs)	Depth to water (m bgl)	Time (secs)	Depth to water (m bgl)
0	0.95	0	0.85	0	0.87
10	1.43	10	1.25	10	1.16
20	1.73	20	1.48	20	1.32
30	2.05	30	1.70	30	1.50
40	2.22	40	1.96	40	1.70
50	2.36	50	2.05	50	1.85
60	2.43	60	2.16	60	2.00
90	2.55	90	2.33	90	2.20
120	Dry at 2.60*	120	Dry at 2.40*	120	Dry at 2.40
Pit Length - 0.45m Pit Width - 1.90m Pit Depth - 3.00m bgl		Pit Length - 0.45m Pit Width - 1.90m Pit Depth - 3.00m bgl		Pit Length - 0.45m Pit Width - 1.90m Pit Depth - 3.00m bgl	

Remarks: bgl - below ground level.

*Trial pit collapsed during soakage testing.

ASHDOWN SITE INVESTIGATION LIMITED

Site: Pound Place, Angmering, West Sussex

Report No.: R18-12844

Sheet No.: 3 of 3

SUMMARY OF TRIAL PIT FALLING HEAD SOAKAGE TEST RESULTS

TP03 (Test 1)	
Time (mins)	Depth to water (m bgl)
0	0.50
0.25	0.55
0.50	0.60
1	0.63
2	0.63
3	0.64
4	0.65
8	0.68
16	Dry at 0.75*
Pit Length - 0.30m Pit Width - 0.30m Pit Depth - 0.90m bgl	

TP03 (Test 2)	
Time (mins)	Depth to water (m bgl)
0	0.54
0.5	0.59
1	0.61
2	0.64
4	0.68
8	0.74
12	0.79
16	0.82
22	0.85
28	Dry
Pit Length - 0.30m Pit Width - 0.30m Pit Depth - 0.90m bgl	

TP03 (Test 3)	
Time (mins)	Depth to water (m bgl)
0	0.51
1	0.58
2	0.60
8	0.66
14	0.70
24	0.74
35	0.77
48	0.79
50	Dry
Pit Length - 0.30m Pit Width - 0.30m Pit Depth - 0.90m bgl	

Remarks: bgl - below ground level.

*Trial pit collapsed during soakage testing and cleared to 0.90m before start of second test.

ASHDOWN SITE INVESTIGATION LIMITED

Site: Pound Place, Angmering, West Sussex

Report No.: R18-12844

Sheet No.: 1 of 1

SUMMARY OF BOREHOLE FALLING HEAD SOAKAGE TEST RESULTS

WS03	
Time (mins)	Depth to water (m bgl)
0	*
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

WS04	
Time (mins)	Depth to water (m bgl)
0	*
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

Notes: bgl – below ground level.

*25 Litres of water introduced into the borehole three times which drained away instantly each occasion.

Appendix C EA Map of Flood Risk Zone

Flood map for planning

Your reference
Pound Place

Location (easting/northing)
507548/103995

Created
29 Mar 2018 1:58

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

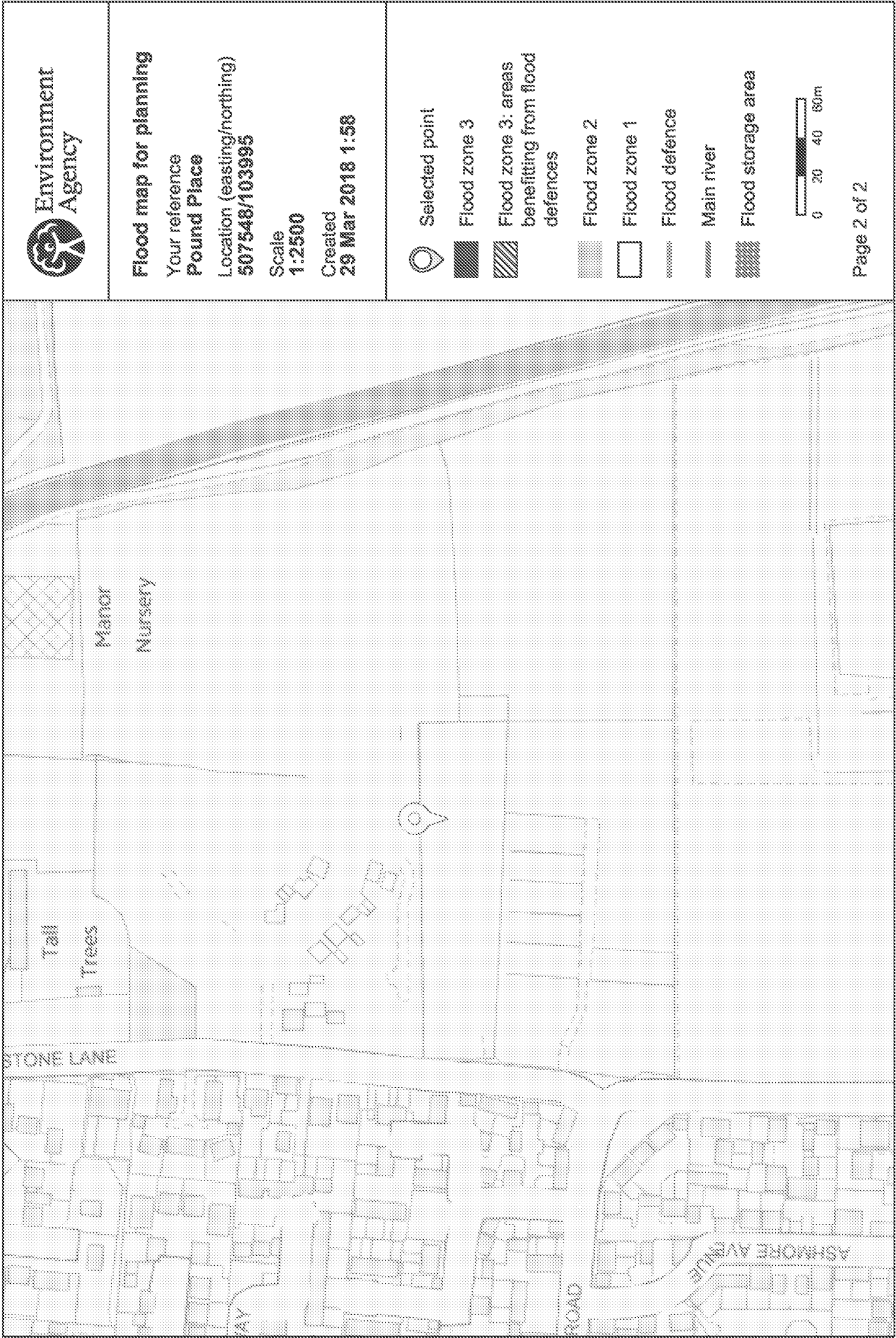
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



Flood map for planning

Your reference
Pound Place

Location (easting/northing)
507548/103995

Scale
1:2500

Created
29 Mar 2018 1:58



Selected point



Flood zone 3



Flood zone 3: areas
benefiting from flood
defences



Flood zone 2



Flood zone 1



Flood defence



Main river



Flood storage area



Appendix D Correspondence with Arun District Council

Morwenna Parkin

From: Paul Cann [REDACTED]
Sent: 07 March [REDACTED]
To: Morwenna Parkin
Cc: Andrew Rimmington
Subject: RE: Planning Consultation - PAA/108/16

Morwenna

On this size development, standpipes are not required for groundwater monitoring or the percolation testing.

Hopefully, you have found groundwater data from the adjacent developments?

Percolation tests to BRE365 can be carried out next week, at an agreed depth.

Regards

Paul Cann
Senior Engineer (Drainage & Coastal)

From: Morwenna Parkin [REDACTED]
Sent: 07 March 2018 09:00 [REDACTED]
To: Paul Cann [REDACTED]
Cc: Andrew Rimmington [REDACTED]
Subject: RE: Planning Consultation - PAA/108/16

Good morning Paul,

We are starting to look at site investigation for the project.

The table below shows the items needed for standpipe installations, which are being considered for the site investigation.

Standpipe Installations

Supply perforated or un-perforated HDPE tube with an internal diameter up to 50mm capped top and bottom required to form a piezometer or standpipe (exclusive of annulus backfill materials).

Supply bentonite, or similar material, to form seal to standpipe installation up to 50mm diameter within boreholes up to 100mm diameter.

Supply pea gravel, or similar material, to form annulus to standpipe installation up to 50mm diameter within boreholes up to 100mm diameter.

Supply and install protective cover small flush set in concrete

Are standpipes required by Arun District Council or are the soakaway tests being carried out next week in winter conditions adequate?

Thank you in advance

Kind regards,

Morwenna Parkin

Project Engineer

MEng BEng (INT) Hons GMICE



STRUCTURAL ENGINEERING DES

copying, distribution or the taking of any action in reliance on the contents of this e-mail is strictly prohibited. If you have received this transmission in error, please notify us immediately and we will permanently delete this message. ARC Engineers Ltd makes every effort to keep its network free of viruses and it is the responsibility of the recipient to ensure that any e-mails or attachments are virus free.

Please consider the environment before printing this email.

Registered in England & Wales, Company Number 6365556

From: Paul Cann

Sent: 06 March 2018 14:40

To: Morwenna Parkin

Subject: RE: Planning consultation - 17th July 2017

Morwenna

I think it will be a case at looking at the planning system to identify the consultant details/foul drainage details. Please note that there were no public foul sewers in Roundstone Lane before the developments.

Paul Cann

Senior Engineer (Drainage & Coastal)

From: Morwenna Parkin [REDACTED]
Sent: 06 March 2018 14:18
To: Paul Cann
Cc: Andrew Rimmington
Subject: RE: Planning Consultation - PAA/108/16

Hi Paul

Yes no problem, would you be able to pass on the contact details for the consulting engineers on the other developments please?

The reason I tried to call earlier was to try to gain some information on the foul drainage. On the existing drawings we've been shown there is no foul drainage to the north or south of the immediate site area. I wanted to know how the other developments to the north and south had been serviced? I assume that there is a foul drain nearby that could be used?

Any information that you could give me on this would be extremely helpful, thanks for your help so far

Kind regards,
Morwenna Parkin
Project Engineer
MEng BEng (INT) Hons GMICE



CONSULTING CIVIL & STRUCTURAL ENGINEERING DES

This e-mail contains confidential information belonging to the sender which is legally privileged and thus protected from disclosure. If you are not the intended recipient then any disclosure, copying, distribution or the taking of any action in reliance on the contents of this e-mail is strictly prohibited. If you have received this transmission in error, please notify us immediately and permanently delete this message. ARC Engineers Ltd makes every effort to keep its network free of viruses and it is the responsibility of the recipient to ensure that any e-mails or attachments are virus free.

Please consider the environment before printing this email.

Registered in England & Wales, Company Number 6365566

From: Paul Cann [REDACTED]
Sent: 06 March 2018 14:18
To: Morwenna Parkin [REDACTED]
Subject: RE: Planning [REDACTED]

Hi Morwenna

Unfortunately, I haven't got time to look into this. May I suggest contacting the consulting engineers on the other developments to see if they are able to provide you with the data?

Regards

Paul Cann
Senior Engineer (Drainage & Coastal)



Save the environment - think before you print.

From: Morwenna Parkin [REDACTED]
Sent: 05 March 2018 17:00
To: Paul Cann
Subject: RE: Planning Consultation - PAA/108/16

Hi Paul,

Thanks you for sending on the guidance notes for SuDS,
We haven't got the highest recorded ground water level for the site area, please could you help us to find this?

Kind regards,
Morwenna Parkin
Project Engineer
MEng BEng (INT) Hons GMICE
[REDACTED]



CONSULTING CIVIL & STRUCTURAL ENGINEERING DES

This e-mail contains confidential information belonging to the sender which is legally privileged and thus protected from disclosure. If you are not the intended recipient then any disclosure, copying, distribution or the taking of any action in reliance on the contents of this e-mail is strictly prohibited. If you have received this transmission in error, please notify us immediately and we will permanently delete this message. ARC Engineers Ltd makes every effort to keep its network free of viruses and it is the responsibility of the recipient to ensure that any e-mails or attachments are virus free.

Please consider the environment before printing this email.

Registered in England & Wales, Company Number 6365566

From: Paul Cann [REDACTED]
Sent: 05 March 2018 13:12
To: Morwenna Parkin [REDACTED]
Subject: RE: Planning Consultation - PAA/108/16

Morwenna

I would suggest that you give a ring to discuss the surface water drainage requirements.

Regards

Paul Cann
Senior Engineer (Drainage & Coastal)

[REDACTED]

From: Amanda Scholes On Behalf Of Planning.Responses
Sent: 05 March 2018 09:21
To: Paul Cann
Subject: FW: Planning Consultation - PAA/108/16

From: Morwenna Parkin [REDACTED]
Sent: 02 March 2018 12:00
To: Planning.Responses
Cc: Andrew Rimmington
Subject: Planning Consultation - PAA/108/16

Dear Planning Officer,

I am a Project Engineer at arc engineers currently working on a the drainage strategy for a proposed care home at Pound Place, Angmering, BN16 4AX.

Our proposed approach will be permeable paving, SUDS features and soakaways as there appears to be no surface water sewer, which should be suitable with the granular ground conditions.

I also understand that Arun council would like soakaway tests to be carried out in winter conditions, which we hope to carry out as soon as possible.

Please could you give futher input into any concerns/ preferences you have with the drainage and anything else that you would like in respect of drainage?

Kind regards,
Morwenna Parkin
Project Engineer
MEng BEng (INT) Hons GMICE
[REDACTED]



CONSULTING CIVIL & STRUCTURAL ENGINEERING DES

This e-mail contains confidential information belonging to the sender which is legally privileged and thus protected from disclosure. If you are not the intended recipient then any disclosure, copying, distribution or the taking of any action in reliance on the contents of this e-mail is strictly prohibited. If you have received this transmission in error, please notify us immediately and permanently delete this message. ARC Engineers Ltd makes every effort to keep its network free of viruses and it is the responsibility of the recipient to ensure that any e-mails or attachments are virus free.

Please consider the environment before printing this email.

Registered in England & Wales, Company Number 5355566

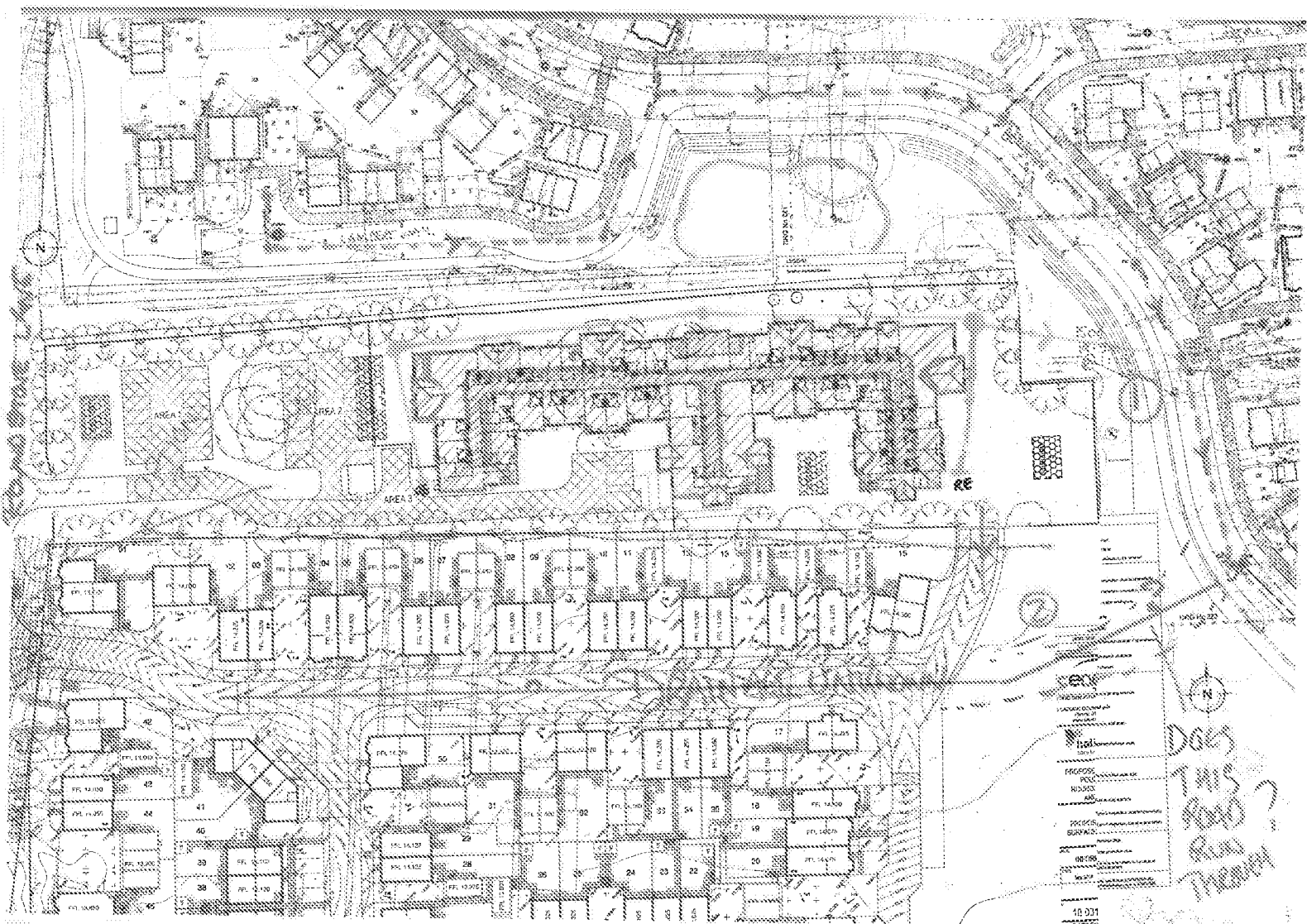
<http://www.arun.gov.uk>

NLPG UPRN 100062237016

DX 57406 Littlehampton

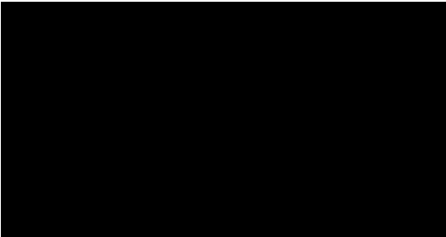
Important Notice This e-mail is intended exclusively for the addressee and may contain information that is confidential and/or privileged. If you are not the intended recipient (or authorised to receive it for the addressee), please notify the sender and delete the e-mail immediately. Using, copying, or disclosing it to anyone else, is strictly prohibited and may be unlawful. Any views, opinions or options presented are solely those of the author and do not necessarily represent those of Arun District Council. The information in this e-mail may be subject to public disclosure under the Freedom of Information Act 2000, therefore we cannot guarantee that we will not provide the whole or part of this e-mail to a third party. The Council reserves the right to monitor e-mails in accordance with relevant legislation. Whilst outgoing e-mails are checked for viruses, we cannot guarantee this e-mail is virus-free or has not been intercepted or changed and we do not accept liability for any damage caused. Any reference to "e-mail" in this disclaimer includes any attachments.

Appendix E Sewer Records & Contact





Cornerstone Projects Ltd
91
Market Street
Wirral
CH47 5AA

Your ref ANG
Our ref 281024
Date 15 February 2018
Contact 

Attention: Jake Hughes

Dear Customer

Re: Provision of public sewer and water main record extract

Location: Pound Place, Littlehampton, BN16 4AL

Thank you for your order regarding the provision of extracts of our sewer and/or water main records. Please find enclosed the extracts from Southern Water's records for the above location.

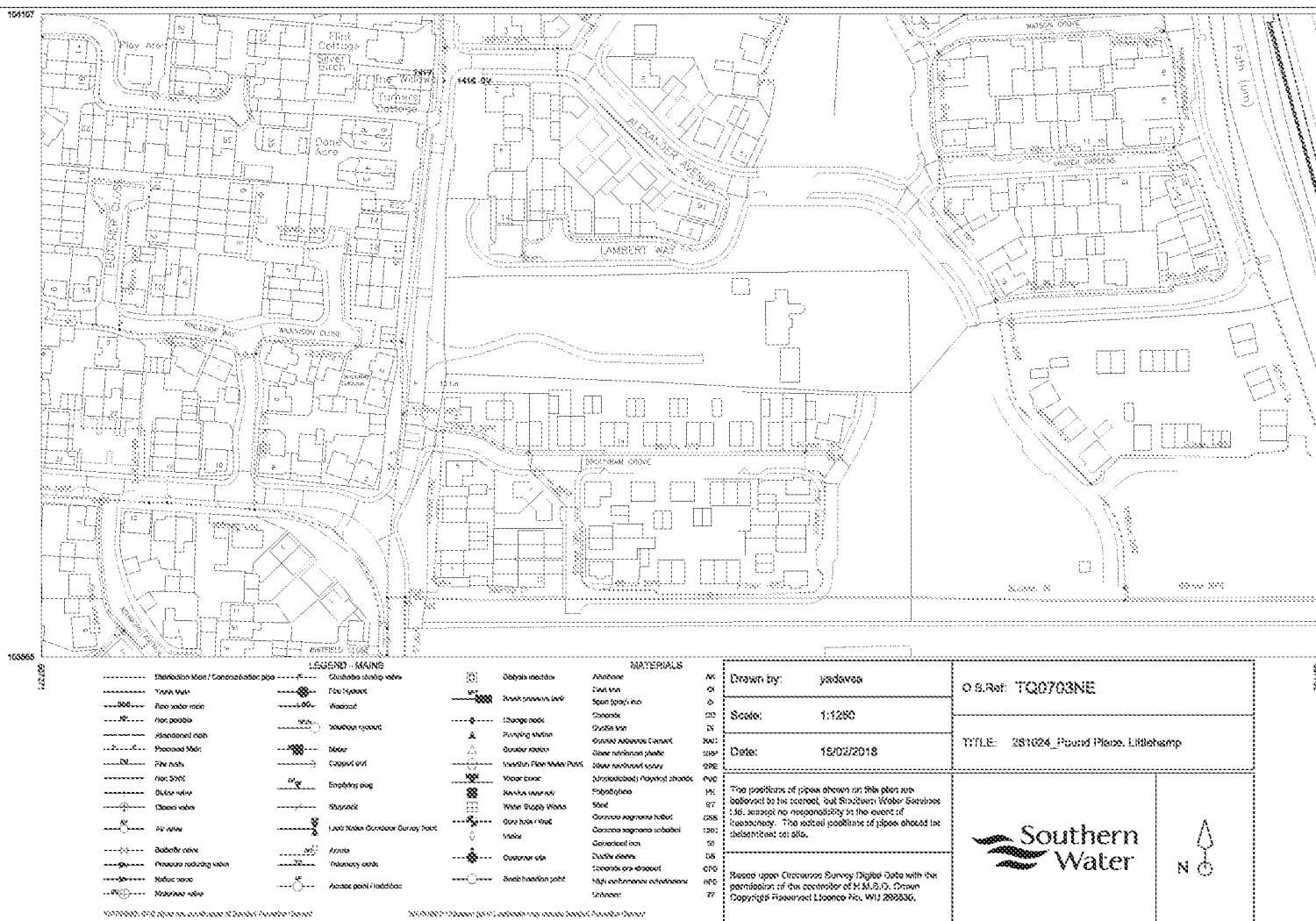
We confirm payment of your fee in the sum of £49.92 and enclose a VAT receipt for your records.

Customers should be aware that there are areas within our region in which there are neither sewers nor water mains. Similarly, whilst the enclosed extract may indicate the approximate location of our apparatus in the area of interest, it should not be relied upon as showing that further infrastructure does not exist and may subsequently be found following site investigation. Actual positions of the disclosed (and any undisclosed) infrastructure should therefore be determined on site, because Southern Water does not accept any responsibility for inaccuracy or omission regarding the enclosed plan. Accordingly it should not be considered to be a definitive document.

Should you require any further assistance regarding this matter, please contact the LandSearch team.

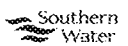
Yours faithfully

LandSearch



SEWER RECORDS PAGE 1 OF 2



5/2/19 O.S. REF. TQ0703NE Title: 281024_Fround Place, Littlehampton	Drawn by: yedavsa Scale: 1:1250 Date: 15/02/2018	The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. REVISIONS AND COMMENTS ARE AVAILABLE ON REQUEST FROM THE DESIGN TEAM Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 268892	15/7/18 N 
--	---	---	--





Thank you in advance

Kind regards,
 Morwenna Parkin
 Project Engineer
 MEng BEng (INT) Hons GMICE
 Tel - 0113 253 3904



CONSULTING CIVIL & STRUCTURAL ENGINEERING DES

Morwenna Parkin

From: Morwenna Parkin
Sent: 28 March 2018 09:31
To: 'stuart@civil.co.uk'
Cc: Andrew Rimmington
Subject: Foul drainage levels - Angmering
Attachments: Site plan & proposed drainage 3 of 4-swanbourne park angmering.pdf

Hi Stuart,

Thank you for talking to me on the phone just now

As I explained, I am looking into the drainage strategy for a site in proximity to the developments for Swanbourne Park by CEP.

Please would it be possible to get the cover levels and invert levels (possibly in CAD format) for foul drains F05, F06 and F07?

I have highlighted these below from the drawing (attached) from the government website of foul drainage: