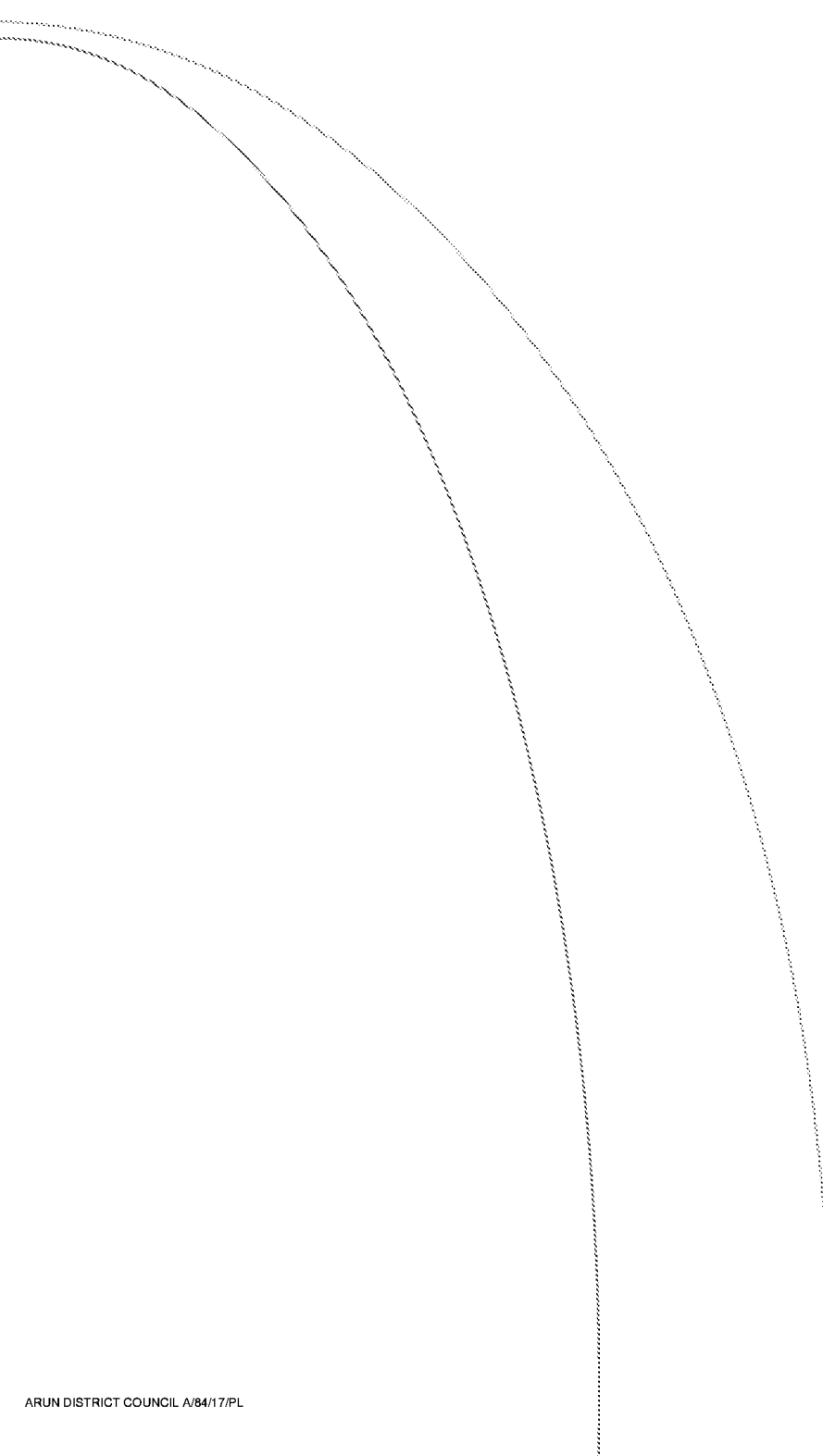


Appendix A – Site Location Plan





ARCTOTS
Architect & Property Consultants
The Drove, Six Crosses, Ditchling
BN26 9JH
Tel: 01323 815555
Fax: 01323 815555
Email: info@arctots.co.uk

The drawings are based on the information provided by the client and are not to be used for any other purpose without the written consent of the architect.

Do not scale the drawings. The dimensions of the buildings are given in the schedule of dimensions.

The drawings are based on the information provided by the client and are not to be used for any other purpose without the written consent of the architect.

Materials and workmanship are to comply with the specifications of the British Standards Institution (BSI) and the relevant British Standards (BS) and the relevant parts of the Building Regulations (BR).

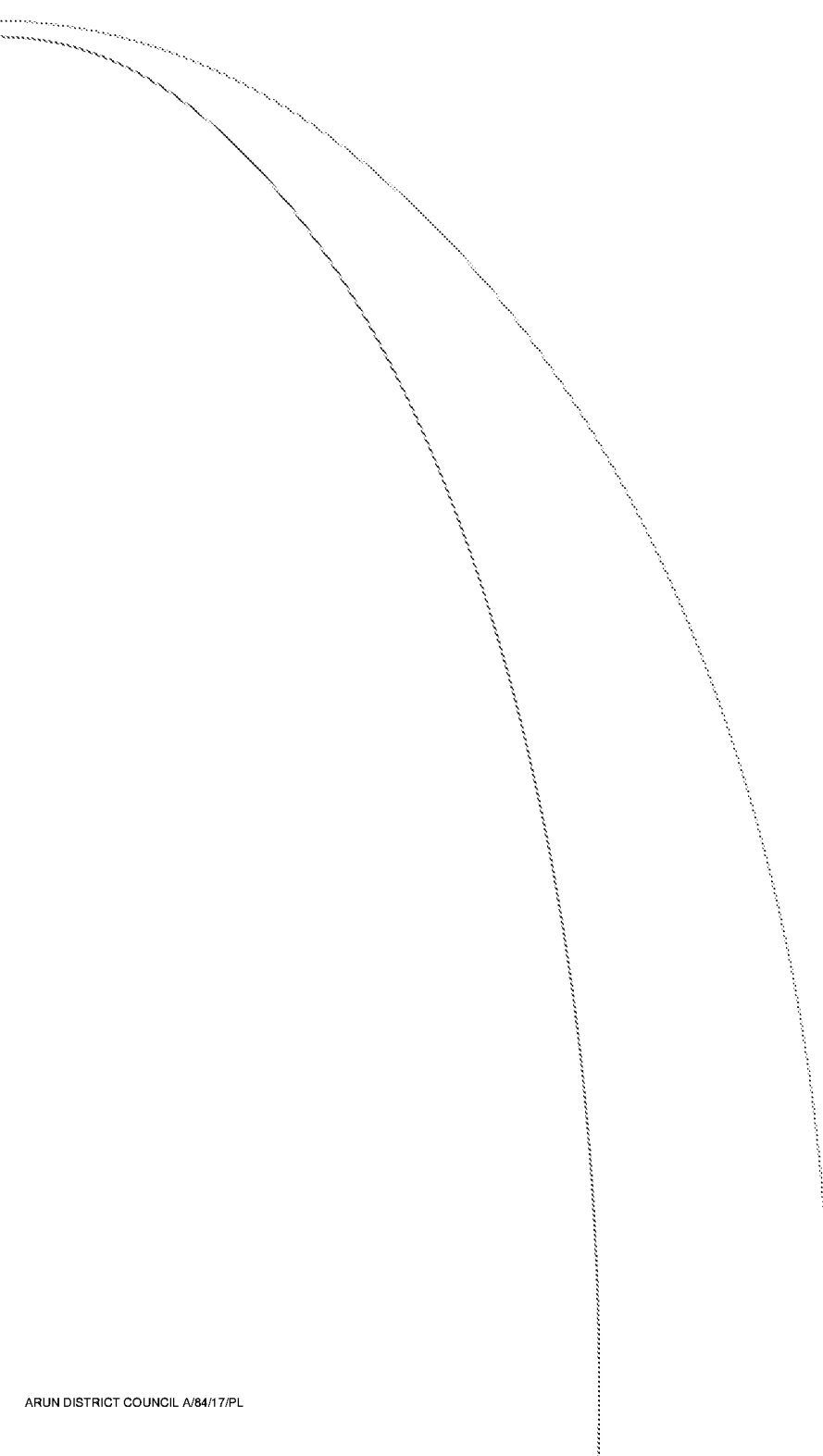
The design of the drawings is the property of the architect and is not to be used for any other purpose without the written consent of the architect.

- KEY**
- (A) Family Restaurant 500 sq ft
 - (B) Family Restaurant/Bar 700 sq ft
 - (C) 40 Bedrooms
 - (D) Temporary 4 Level 20,000 sq ft
 - (E) Football Change Room 650 sq ft
 - (F) Food Advice Room 1000 sq ft
 - (G) Nursery 1000 sq ft External Space 2750 sq ft
 - (H) Structure GCL, Tarpaulin and 3000 sq ft
- For Sale Plot 15 x 200
Large Plot 15 x 400

Out of Bounds
Rustington Golf Centre
Golfers Lane
West Sussex
BN16 4NB

Site Plan
As Existing

Appendix B – SFRA Evidence Maps





Notes

The Arun SFRA is a strategic assessment of flooding. Users of the SFRA should be aware of this when interpreting the information presented. The user is directed to the SFRA reports which outline the uncertainties associated with the studies. Particular attention is drawn to the following:

- Flood extent boundaries are not considered definitive. Land adjacent to these areas may also be at risk.
- Some flooding mechanisms have not been included in the assessment. The 'coastal risk area' is based on advice from LA Engineers and requires further assessment.

Arun District Council SFRA

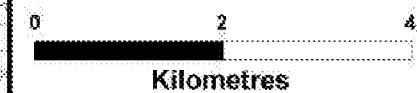
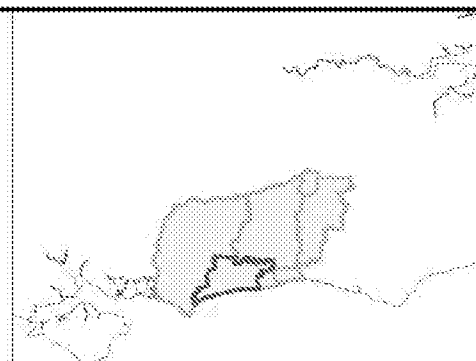
Map F1-F - Fluvial Flood Zone Extents



CAPITA SYMONDS

Legend

- Arun District Boundary
- Zone 3b Fluvial Extent (defended)
- Zone 3a Fluvial Extent (no defences)
- Zone 2 Fluvial Extent (no defences)



Scale at A3: 1:80,000

Date: 31/01/2008

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Map_F1-F.wor



Notes:

The Arun SFRA is a strategic assessment of flooding. Users of the SFRA should be aware of this when interpreting the information presented. The user is directed to the SFRA reports which outline the uncertainties associated with the studies. Particular attention is drawn to the following:

- Flood extent boundaries are not considered definitive. Land adjacent to these areas may also be at risk.
- Some flooding mechanisms have not been included in the assessment. The 'coastal risk area' is based on advice from LA Engineers and requires further assessment.

Arun District Council SFRA

Map H - Historic Flood Events



CAPITA SYMONDS

Legend

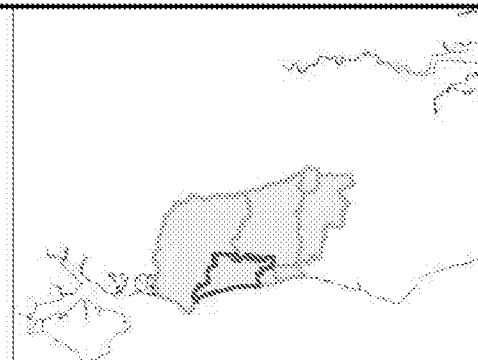
— Arun District Boundary

Historic Flood Events - Points

- Coastal
- Tidal
- Fluvial
- Surface Water
- Sewer
- Failure
- Unknown

Historic Flood Events - Areas

- Coastal
- Tidal
- Fluvial
- Surface Water
- Unknown



0 2 4
Kilometres

Scale at A3: 1:80,000

Date: 31/01/2008

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Map_H.wor



Notes:

The Arun SFRA is a strategic assessment of flooding. Users of the SFRA should be aware of this when interpreting the information presented. The user is directed to the SFRA reports which outline the uncertainties associated with the studies. Particular attention is drawn to the following:

- Flood extent boundaries are not considered definitive. Land adjacent to these areas may also be at risk.
- Some flooding mechanisms have not been included in the assessment. The 'coastal risk area' is based on advice from LA Engineers and requires further assessment.

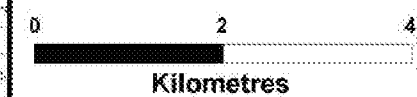
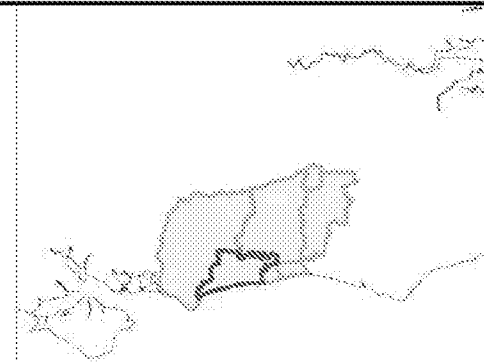
Arun District Council SFRA

Map C2-F - Climate Change Fluvial Flood Zones



CAPITA SYMONDS

-  Arun District Boundary
-  Future Flood Zone 3b (2056)
-  Future Flood Zone 3b (2106)
-  Future Flood Zone 3a (2056)
-  Future Flood Zone 3a (2106)



Scale at A3: 1:80,000

Date: 31/01/2008

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Map_C2-F wor



Notes:

The Arun SFRA is a strategic assessment of flooding. Users of the SFRA should be aware of this when interpreting the information presented. The user is directed to the SFRA reports which outline the uncertainties associated with the studies. Particular attention is drawn to the following:

- Flood extent boundaries are not considered definitive. Land adjacent to these areas may also be at risk.
- Some flooding mechanisms have not been included in the assessment. The 'coastal risk area' is based on advice from LA Engineers and requires further assessment.

Arun District Council SFRA

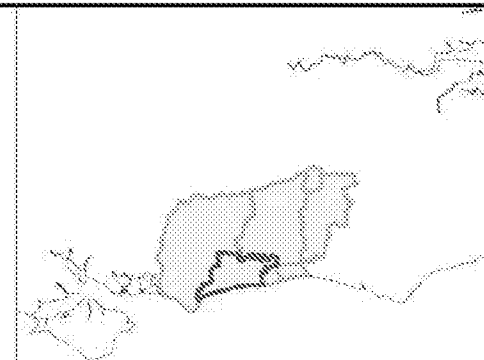
Map A1-T - Actual and Residual Flooding from the Sea



CAPITA SYMONDS

Legend

- Arun District Boundary
- Actual Defended Tidal Flood Risk (0.5% AEP, 2006)
- Residual Defended Tidal Flood Risk (0.1% AEP, 2006)
- Coastal Risk Area



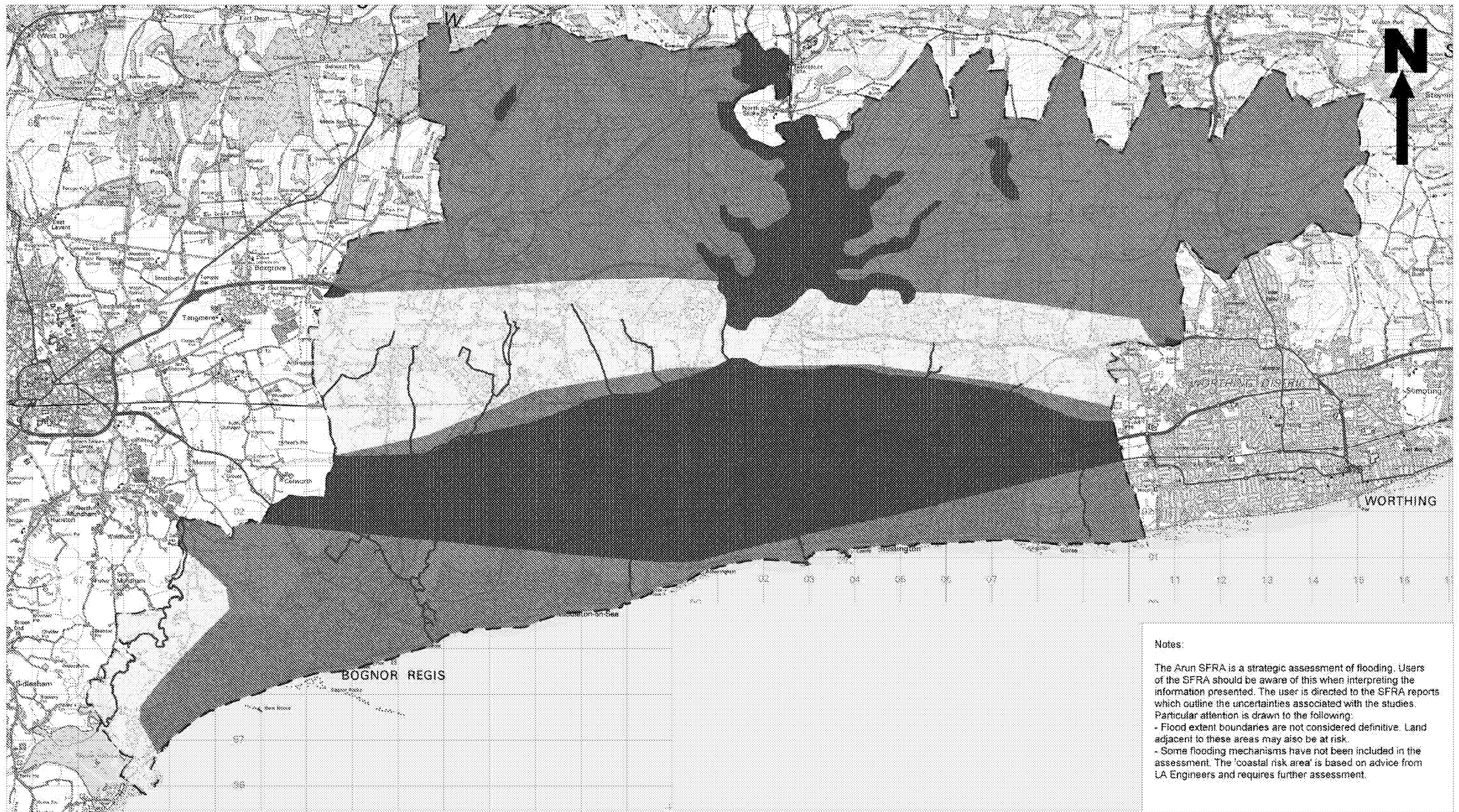
0 2 4
Kilometres

Scale at A3: 1:80,000

Date: 31/01/2008

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Map_A1-T.wor



Arun District Council SFRA

Map G1 - Indicative Risk of Groundwater Flooding



CAPITA SYMONDS

Legend

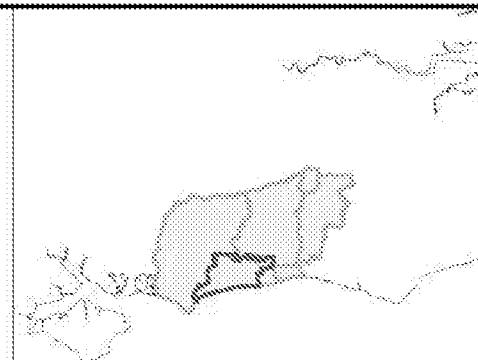
— Arun District Boundary

— Main River

Groundwater Emergence Zones

Groundwater Flood Risk

High
Medium



0 2 4
Kilometres

Scale at A3: 1:80,000

Date: 31/01/2008

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Map_G1.wor



Notes:

The Arun SFRA is a strategic assessment of flooding. Users of the SFRA should be aware of this when interpreting the information presented. The user is directed to the SFRA reports which outline the uncertainties associated with the studies. Particular attention is drawn to the following:

- Flood extent boundaries are not considered definitive. Land adjacent to these areas may also be at risk.
- Some flooding mechanisms have not been included in the assessment. The 'coastal risk area' is based on advice from LA Engineers and requires further assessment.

Arun District Council SFRA

Map L - Areas Prone to Flooding from the Land



CAPITA SYMONDS

Legend

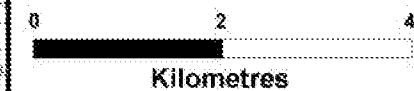
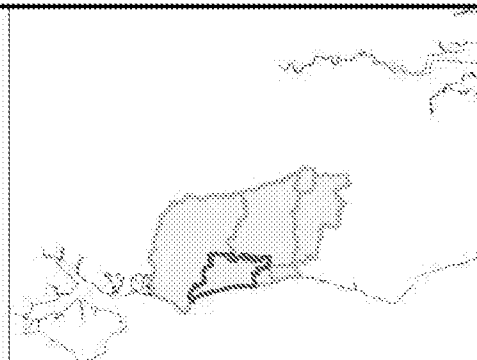
- Arun District Boundary
- Main River

Historic Surface Water Flooding

- Area
- Point

Risk of Flooding from Land

- Low to Medium
- Medium to High
- Urban



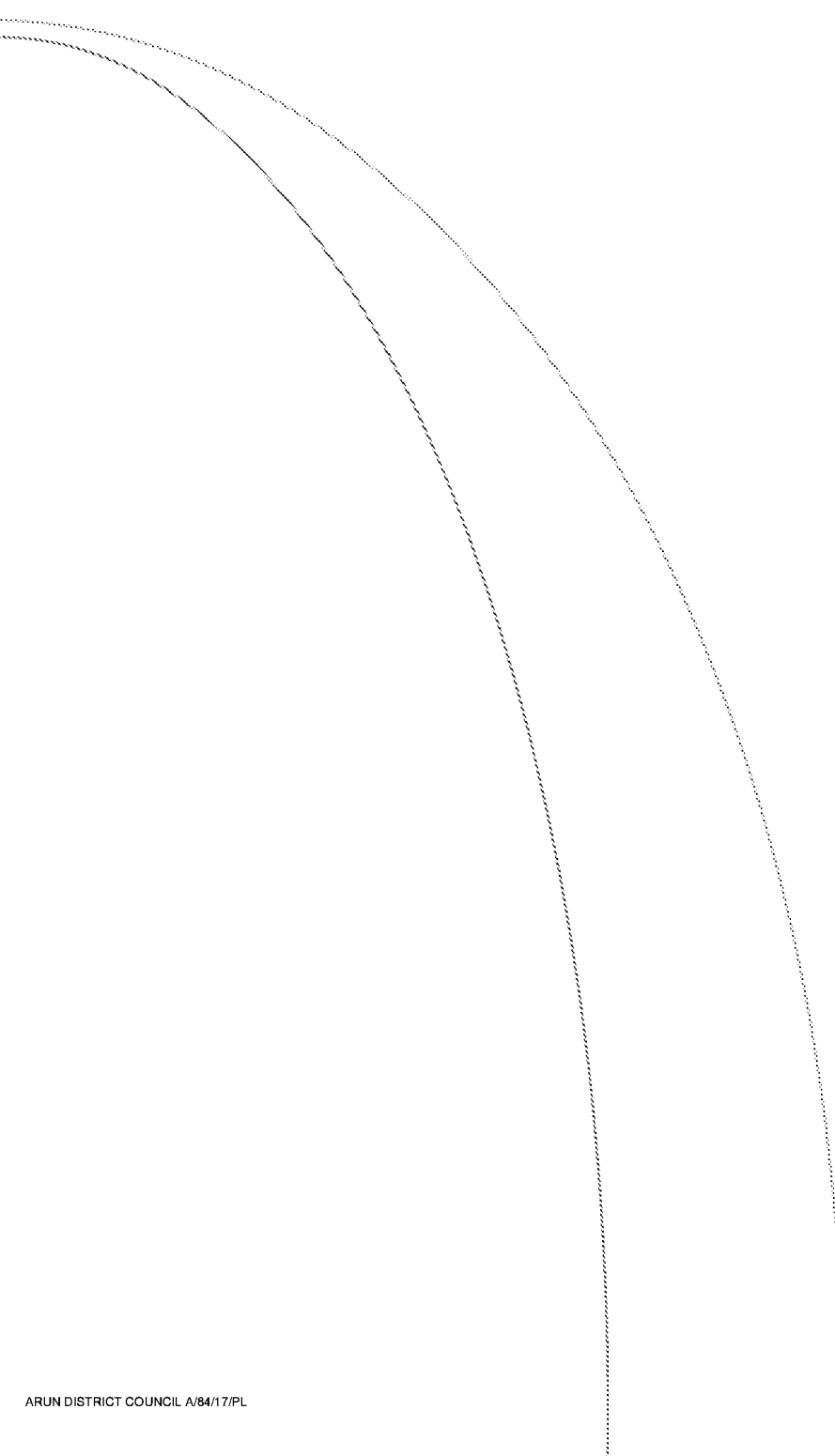
Scale at A3: 1:80,000

Date: 31/01/2008

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Map_L.wor

Appendix C – BGS Infiltration SuDS GeoReport





**British
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

GeoReports



Infiltration SuDS GeoReport:

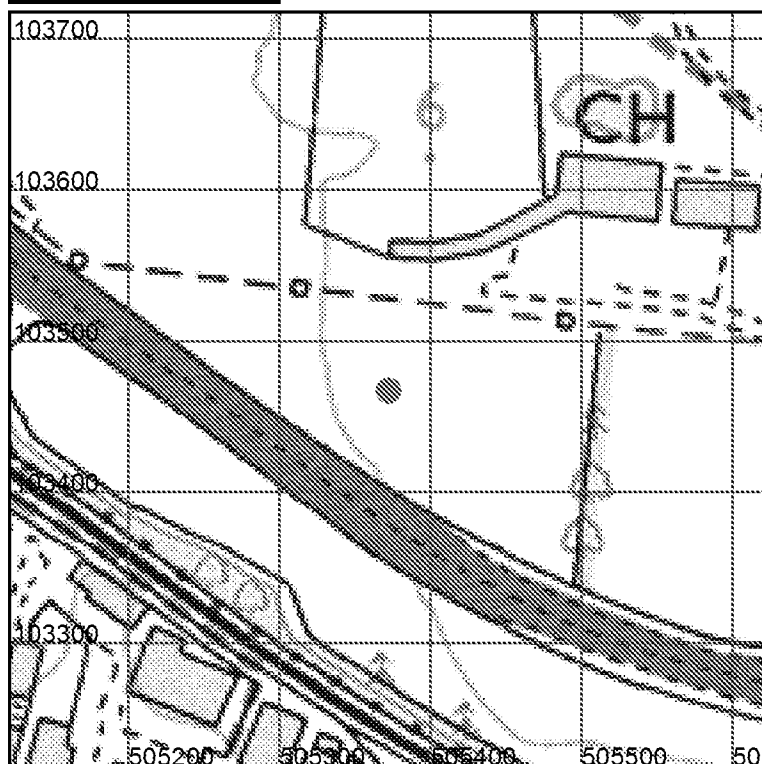
This report provides information on the suitability of the subsurface for the installation of infiltration sustainable drainage systems (SuDS). It provides information on the properties of the subsurface with respect to significant constraints, drainage, ground stability and groundwater quality protection.

Report Id: GR_213216/1

Client reference: Rustington Golf Centre 5555



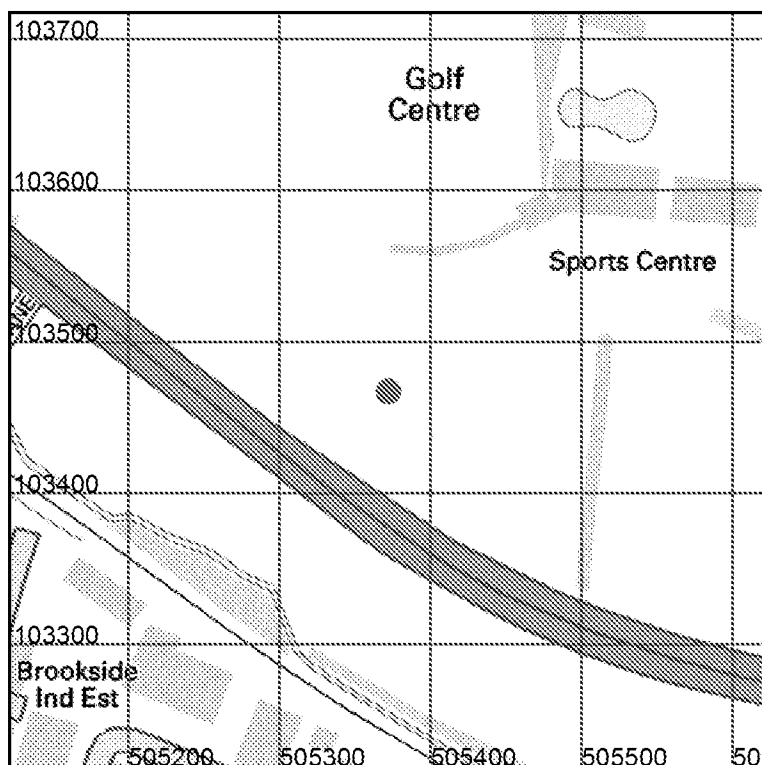
Search location



Point centred at:
505372,103467

Search location indicated in
red

This product includes mapping data licensed from Ordnance Survey.
© Crown Copyright and/or database right 2016. Licence number 100021290 EUL
Scale: 1:5 000 (1cm = 50 m)



Contains Ordnance Survey data © Crown Copyright and database right 2016
OS Street View: Scale: 1:5 000 (1cm = 50 m)



Assessment for an infiltration sustainable drainage system

Introduction

Sustainable drainage systems (SuDS) are drainage solutions that manage the volume and quality of surface water close to where it falls as rain. They aim to reduce flow rates to rivers, increase local water storage capacity and reduce the transport of pollutants to the water environment. There are four main types of SuDS, which are often designed to be used in sequence. They comprise:

- **source control:** systems that control the rate of runoff
- **pre-treatment:** systems that remove sediments and pollutants
- **retention:** systems that delay the discharge of water by providing surface storage
- **infiltration:** systems that mimic natural recharge to the ground.

This report focuses on infiltration SuDS. It provides subsurface information on the properties of the ground with respect to drainage, ground stability and groundwater quality protection. It is intended principally for those involved in the preliminary assessment of the suitability of the ground for infiltration SuDS, and those involved in assessing proposals from others for sustainable drainage, but it may also be useful to help house-holders judge whether or not further professional advice should be sought. If in doubt, users should consult a suitably-qualified professional about the results in this report before making any decisions based upon it.

This GeoReport is structured in two parts:

- **Part 1. Summary data.**

Comprises three maps that summarise the data contained within Part 2.

- **Part 2. Detailed data.**

Comprises a further 24 maps in four thematic sections:

- **Very significant constraints.** Maps highlight areas where infiltration may result in adverse impacts due to factors including: ground instability (soluble rocks, non-coal shallow mining and landslide hazards); persistent shallow groundwater, or the presence of made ground, which may represent a ground stability or contamination hazard.
- **Drainage potential.** Maps indicate the drainage potential of the ground, by considering subsurface permeability, depth to groundwater and the presence of floodplain deposits.
- **Ground stability.** Maps indicate the presence of hazards that have the potential to cause ground instability resulting in damage to some buildings and structures, if water is infiltrated to the ground.
- **Groundwater protection.** Maps provide key indicators to help determine whether the groundwater may be susceptible to deterioration in quality as a result of infiltration.

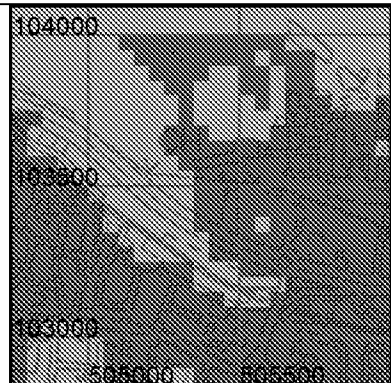
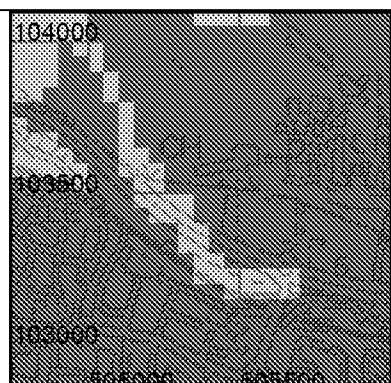
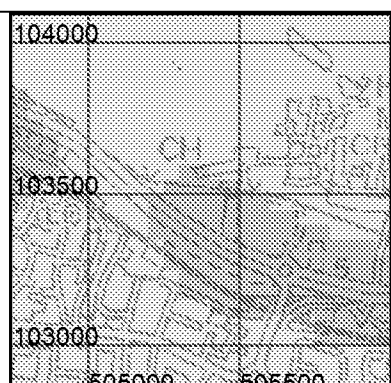


This report considers the suitability of the subsurface for the installation of infiltration SuDS, such as soakaways, infiltration basins or permeable pavements. It provides subsurface data to indicate whether, and which type of infiltration system may be appropriate. It does not state that infiltration SuDS are, or are not, appropriate as this is highly dependent on the design of the individual system. This report therefore describes the subsurface conditions at the site, allowing the reader to determine the suitability of the site for infiltration SuDS.

The map and text data in this report is similar to that provided in the '*Infiltration SuDS Map: Detailed*' national map product. For further information about the data, consult the '*User Guide for the Infiltration SuDS Map: Detailed*', available from <http://nora.nerc.ac.uk/16618/>.

PART 1: SUMMARY DATA

This section provides a summary of the data on the following pages.

In terms of the drainage potential, is the ground suitable for infiltration SuDS?	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ Highly compatible for infiltration SuDS. The subsurface is likely to be suitable for free-draining infiltration SuDS.
	☐ Probably compatible for infiltration SuDS. The subsurface is probably suitable although the design may be influenced by the ground conditions.
	☐ Opportunities for bespoke infiltration SuDS. The subsurface is potentially suitable although the design will be influenced by the ground conditions.
	☐ Very significant constraints are indicated. There is a very significant potential for one or more hazards associated with infiltration.
Is ground instability likely to be a problem?	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ Increased infiltration is very unlikely to result in ground instability.
	☐ Ground instability problems may be present or anticipated, but increased infiltration is unlikely to result in ground instability.
	☐ Ground instability problems are probably present. Increased infiltration may result in ground instability.
	☐ There is a very significant potential for one or more geohazards associated with infiltration.
Is the groundwater susceptible to deterioration in quality?	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ The groundwater is not expected to be especially vulnerable to contamination.
	☐ The groundwater may be vulnerable to contamination.
	☐ The groundwater is likely to be vulnerable to contaminants.
	☐ Made ground is present at the surface. Infiltration may increase the possibility of remobilising pollutants.



PART 2: DETAILED DATA

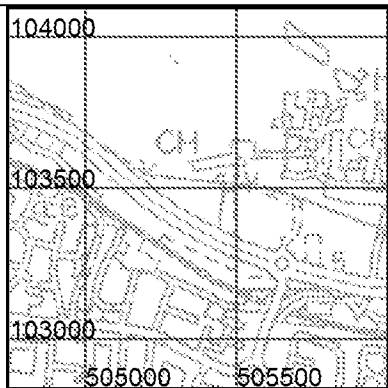
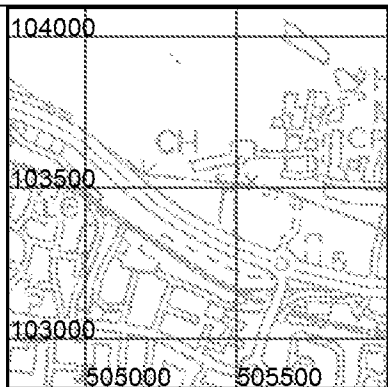
This section provides further information about the properties of the ground and will help assess the suitability of the ground for infiltration SuDS.

Section 1. Very significant constraints

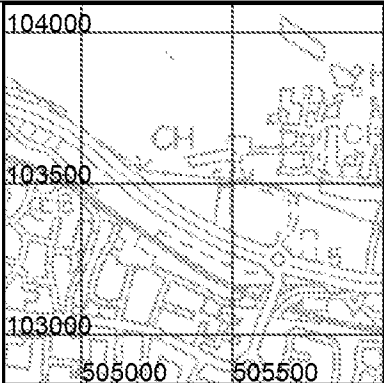
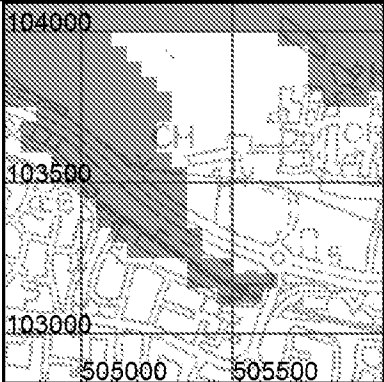
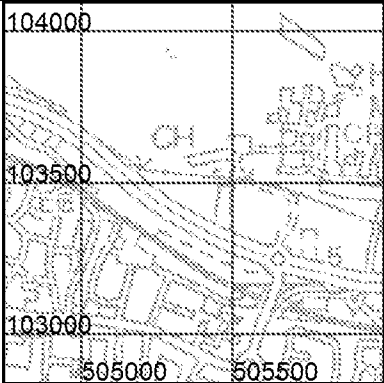
Where maps are overlain by grey polygons, geological or hydrogeological hazards may exist that could be made worse by infiltration. The following hazards are considered:

- soluble rocks
- landslides
- shallow mining
- shallow groundwater
- made ground

For more information read 'Explanation of terms' at the end of this report.

Soluble rock hazard	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	 Very significant soluble rock hazard. Soluble rocks are present with a very significant possibility of localised subsidence that could be initiated or made worse by infiltration. The site investigation should consider whether the potential for or the consequences of subsidence as a result of infiltration are significant.  Very significant soluble rock hazards are not present; however this hazard may still need to be considered. See Part 3.
Landslide hazard	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	 Very significant landslide hazard. Slope instability problems are almost certainly present and may be active. An increase in moisture content as a result of infiltration may cause the slope to fail. The site investigation should consider whether the potential for or the consequences of landslide as a result of infiltration are significant.  Very significant landslide hazards are not present; however this hazard may still need to be considered. See Part 3.



Shallow mining hazard	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☒ Very significant mining hazard. Shallow mining is likely to be present with a very significant possibility of localised subsidence that could be initiated or made worse by increased infiltration. Also, infiltration may increase the possibility of remobilising pollutants. The site investigation should consider whether the potential for or consequences of subsidence and/or remobilisation of pollutants as a result of infiltration are significant. ☐ Very significant mining hazards are not present; however this hazard may still need to be considered. See Part 3.
Persistent shallow groundwater	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☒ Very high likelihood of persistent or seasonally shallow groundwater. Persistent or seasonally shallow groundwater is likely to be present. Infiltration may increase the likelihood of soakaway inundation, or groundwater emergence at the surface. The site investigation should consider whether the potential for or the consequences of groundwater level rise as a result of infiltration are significant. ☐ See Part 2 for the likely depth to water table.
Made ground	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☒ Made ground present. Made ground is present at the surface. Infiltration may affect ground stability or increase the possibility of remobilising pollutants. The site investigation should consider whether the potential for or consequences of ground instability and/or pollutant leaching as a result of infiltration are significant. ☐ None recorded

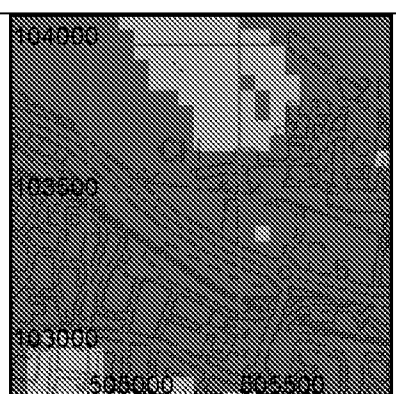
Section 2. Drainage potential

The following pages contain maps that will help you assess the drainage potential of the ground by considering the:

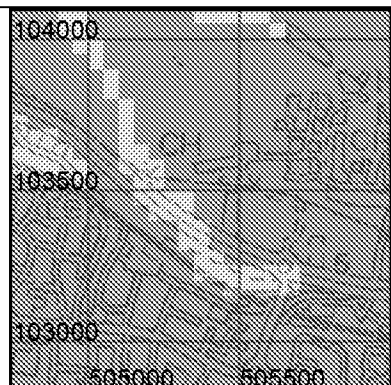
- depth to water table
- permeability of the superficial deposits
- thickness of the superficial deposits
- permeability of the bedrock
- presence of floodplains

Superficial deposits are not present everywhere and therefore some areas of the *superficial deposit permeability* map may not be coloured. Where this is the case, the *bedrock permeability* map shows the likely permeability of the ground. Superficial deposits in some places are very thin and hence in these places you may wish to consider both the permeability of the superficial deposits and the permeability of the bedrock. The *superficial thickness* map will tell you whether the superficial deposits are thin (< 3 m thick) or thick (>3 m). Where they are over 3 m thick, the permeability of the bedrock may not be relevant.

For more information read 'Explanation of terms' at the end of this report.

Depth to groundwater table	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	 Groundwater is likely to be more than 5 m below the ground surface throughout the year.
	 Groundwater is likely to be between 3 and 5 m below the ground surface for at least part of the year.
	 Groundwater is likely to be less than 3 m below the ground surface for at least part of the year.

Superficial deposit permeability



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Licence number 100021290 EUL



Superficial deposits are likely to be **free-draining**.



The superficial deposit permeability is **spatially variable**, but likely to permit moderate infiltration.

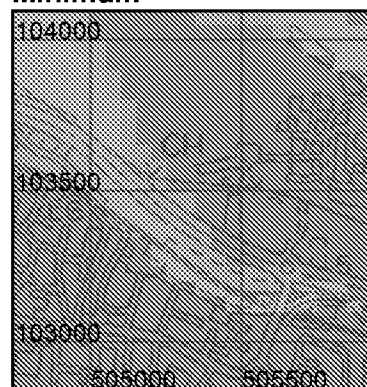


Superficial deposits are likely to be **poorly draining**.

These maps show the permeability range that is summarised above.

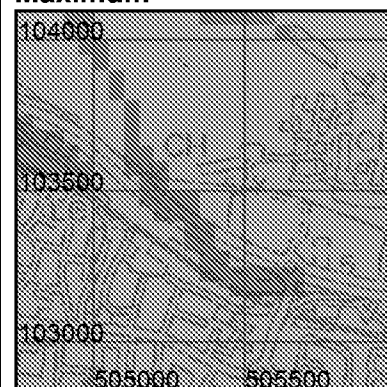
-  Very Low
-  Low
-  Moderate
-  High
-  Very High

Minimum



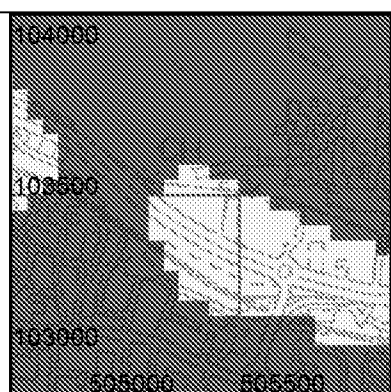
© Crown Copyright and/or database right 2016. All rights reserved.
Licence number 100021290 EUL

Maximum



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Licence number 100021290 EUL

Superficial deposit thickness



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Licence number 100021290 EUL

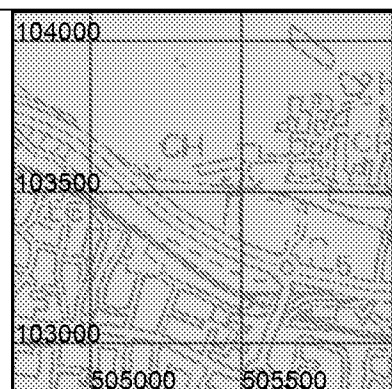


The thickness of superficial deposits is **< 3 m** and hence the permeability of the ground may be dependent on both the superficial deposits (where present) and underlying bedrock (see below).



The thickness of superficial deposits is **> 3 m** and hence the permeability of the superficial deposits is likely to determine the permeability of the ground.

Bedrock permeability



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Licence number 100021290 EUL



Bedrock deposits are likely to be **free-draining**.



The bedrock permeability is **spatially variable**, but likely to permit moderate infiltration.



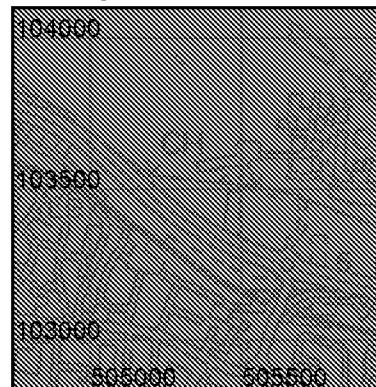
Bedrock deposits are likely to be **poorly draining**.

These maps show the permeability range that is summarised above.

Key

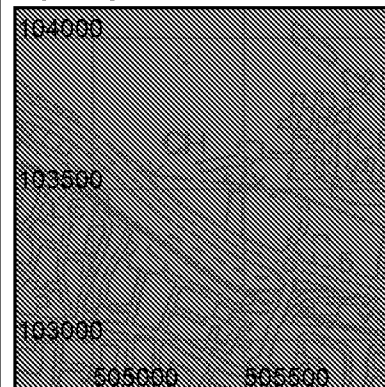
-  Very Low
-  Low
-  Moderate
-  High
-  Very High

Minimum



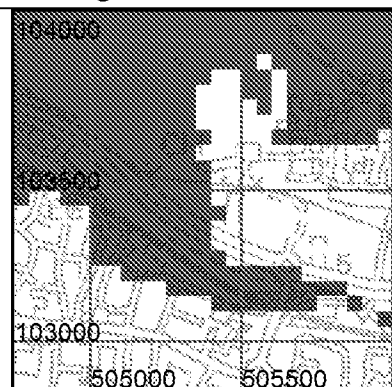
© Crown Copyright and/or database right 2016. All rights reserved.
Licence number 100021290 EUL

Maximum



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Licence number 100021290 EUL

Geological indicators of flooding



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Licence number 100021290 EUL



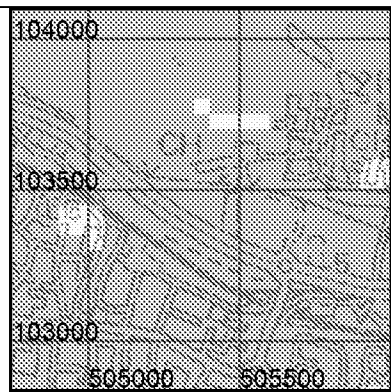
Superficial floodplain deposits or low-lying coastal areas have been identified. Groundwater levels may rise in response to high river or tide levels, potentially causing inundation of subsurface infiltration SuDS.

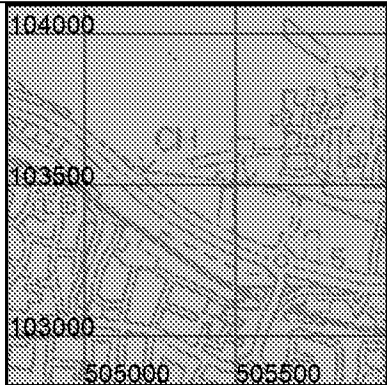
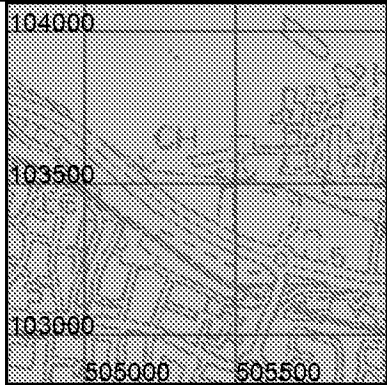
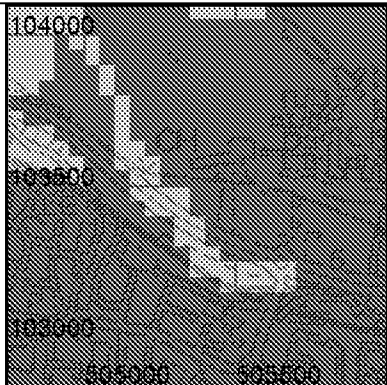
Section 3. Ground stability

The following pages contain maps that will help you assess whether infiltration may impact the stability of the ground. They consider hazards associated with:

- soluble rocks
- landslides
- shallow mining
- running sands
- swelling clays
- compressible ground, and
- collapsible ground

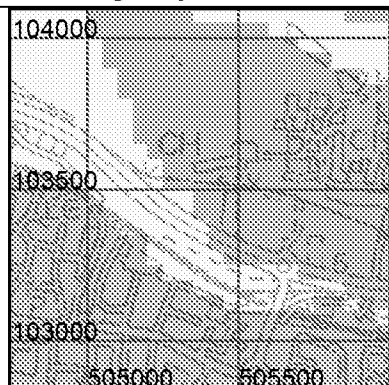
In the following maps, geohazards that are identified in green are unlikely to prevent infiltration SuDS from being installed, but they should be considered during design. For more information read 'Explanation of terms' at the end of this report.

Soluble rocks	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ Increased infiltration is unlikely to result in subsidence.
	☐ Increased infiltration is unlikely to cause localised subsidence, but potential impacts should be considered.
	☒ Increased infiltration may result in localised subsidence. The potential for or the consequences of subsidence associated with soluble rocks should be considered.
	☐ Very significant possibility of localised subsidence that could be initiated or made worse by infiltration.

Landslides	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ Increased infiltration is unlikely to lead to slope instability.
	☐ Slope instability problems may be present or anticipated, but increased infiltration is unlikely to cause instability
	☐ Slope instability problems are probably present or have occurred in the past, and increased infiltration may result in slope instability.
	☐ Slope instability problems are almost certainly present and may be active. An increase in moisture content as a result of infiltration may cause the slope to fail.
Shallow mining	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ Increased infiltration is unlikely to lead to subsidence.
	☐ Shallow mining is possibly present. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
	☐ Shallow mining could be present with a significant possibility that localised subsidence could be initiated or made worse by increased infiltration.
	☐ Shallow mining is likely to be present, with a very significant possibility that localised subsidence may be initiated or made worse by increased infiltration.
Running sand	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ Increased infiltration is unlikely to cause ground collapse associated with running sands.
	☐ Running sand is possibly present. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
	☐ Significant possibility for running sand problems. Increased infiltration may result in a geohazard.



Swelling clays



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Increased infiltration is unlikely to cause shrink-swell ground movement.

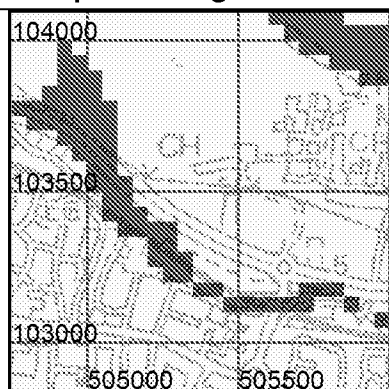


Ground is susceptible to shrink-swell ground movement. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.



Ground is susceptible to shrink-swell ground movement. Increased infiltration may result in a geohazard.

Compressible ground



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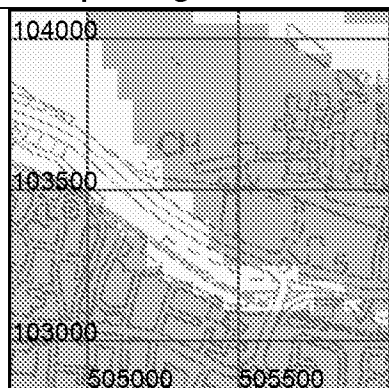


Increased infiltration is unlikely to lead to ground compression.



Compressibility and uneven settlement hazards are probably present. Increased infiltration may result in a geohazard.

Collapsible ground



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Increased infiltration is unlikely to result in subsidence.



Deposits with potential to collapse when loaded and saturated are possibly present in places. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.



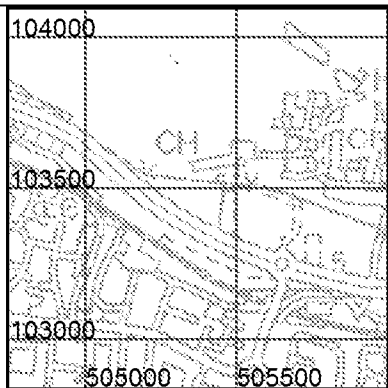
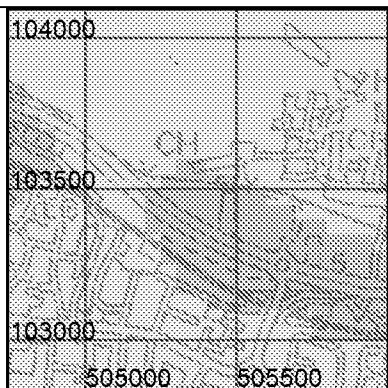
Deposits with potential to collapse when loaded and saturated are probably present in places. Increased infiltration may result in a geohazard.

Section 4. Groundwater quality protection

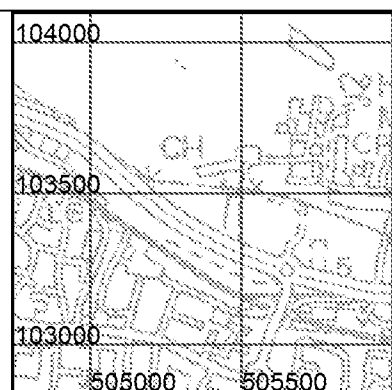
The following pages contain maps showing some of the information required to ensure the protection of groundwater quality. Data presented includes:

- groundwater source protection zones (Environment Agency data)
- predominant flow mechanism
- made ground

For more information read 'Explanation of terms' at the end of this report.

Groundwater source protection zones	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL Derived in part from Source Protection Zone data provided under licence from the Environment Agency © Environment Agency 2016.	☐ Groundwater is not within a source protection zone.
	☒ Source protection zone IV
	☒ Source protection zone III
	☒ Source protection zone II
	☒ Source protection zone I.
Predominant flow mechanism	
 © Crown Copyright and/or database right 2016. All rights reserved. Licence number 100021290 EUL	☐ Water is likely to percolate through the unsaturated zone to the groundwater through either the pore space in granular media or through porespace and fractures; these processes have some potential for contaminant removal and breakdown.
	☒ Water is likely to percolate through the unsaturated zone to the groundwater through fractures, a process which has little potential for contaminant removal and breakdown.

Made ground



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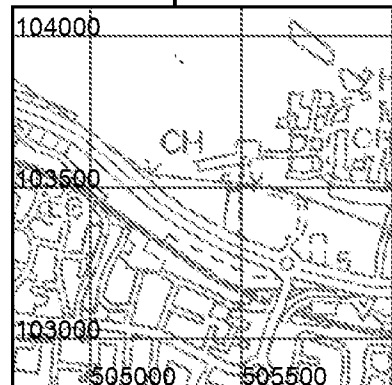


Made ground is present at the surface. Infiltration may increase the possibility of remobilising pollutants.

Section 5. Geological Maps

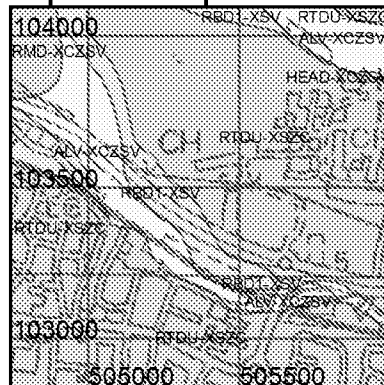
The following maps show the artificial, superficial and bedrock geology within the area of interest.

Artificial deposits



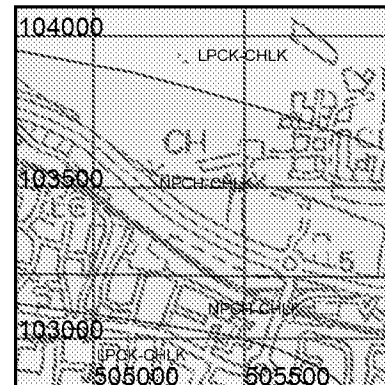
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Superficial deposits



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Bedrock



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Fault

Coal, ironstone or mineral vein

Note: Faults and Coals, ironstone & mineral veins are shown for illustration and to aid interpretation of the map. Not all such features are shown and their absence on the map face does not necessarily mean that none are present

Key to Artificial deposits:

No deposits recorded by BGS in the search area

Key to Superficial deposits:

Map colour	Computer Code	Rock name	Rock type
	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
	RBD1-XSV	RAISED BEACH DEPOSITS, 1	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
	RMD-XCZSV	RAISED MARINE DEPOSITS	CLAY, SILT, SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
	RTDU-XSZC	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY [UNLITHIFIED DEPOSITS CODING SCHEME]



Key to Bedrock geology:

Map colour	Computer Code	Rock name	Rock type
	LPCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK FORMATION AND PORTSDOWN CHALK FORMATION (UNDIFFERENTIATED)	CHALK
	NPCH-CHLK	NEW PIT CHALK FORMATION	CHALK



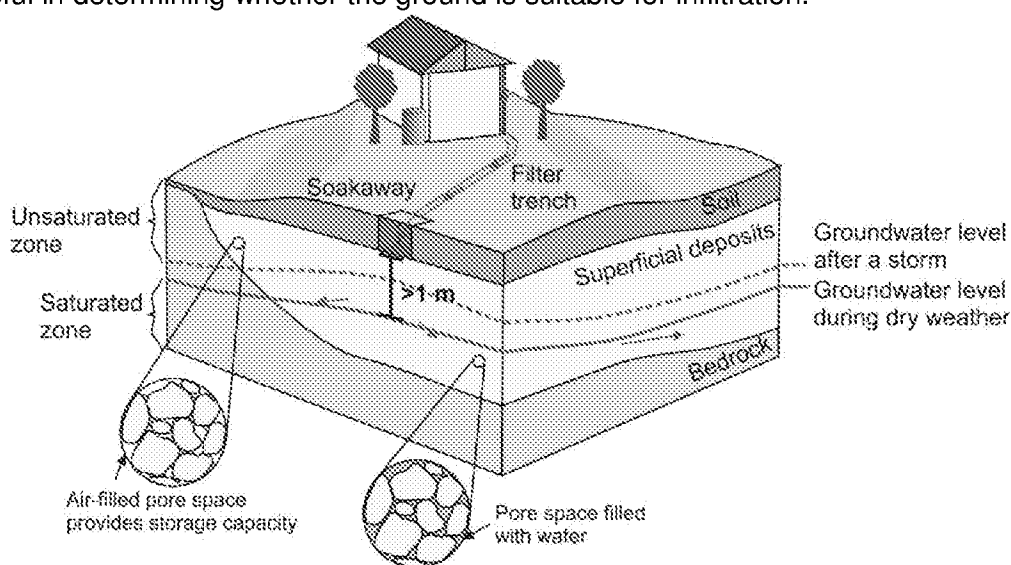
Limitations of this report:

- This report is concerned with the potential for infiltration-to-the-ground to be used as a SuDS technique at the site described. It only considers the subsurface beneath the search area and does NOT consider potential surface or subsurface impacts outside of that area.
- This report is NOT an alternative for an on-site investigation or soakaway test, which might reach a different conclusion.
- This report must NOT be used to justify disposal of foul waste or grey water.
- This report is based on and limited to an interpretation of the records held by the British Geological Survey (BGS) at the time the search is performed. The datasets used (with the exception of that showing depth to water table) are based on 1:50 000 digital geological maps and not site-specific data.
- Other more specific and detailed ground instability information for the site may be held by BGS, and an assessment of this could result in a modified assessment.
- To interpret the maps correctly, the report must be viewed and printed in colour.
- The search does NOT consider the suitability of sites with regard to:
 - previous land use,
 - potential for, or presence of contaminated land
 - presence of perched water tables
 - shallow mining hazards relating to coal mining. Searches of coal mining should be carried out via The Coal Authority Mine Reports Service: www.coalminingreports.co.uk.
 - made ground, where not recorded
 - proximity to landfill sites (searches for landfill sites or contaminated land should be carried out through consultation with local authorities/Environment Agency)
 - zones around private water supply boreholes that are susceptible to groundwater contamination.
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Explanation of terms

Depth to groundwater

In the shallow subsurface, the ground is commonly unsaturated with respect to water. Air fills the spaces within the soil and the underlying superficial deposits and bedrock. At some depth below the ground surface, there is a level below which these spaces are full of water. This level is known as the groundwater level, and the water below it is termed the groundwater. When water is infiltrated, the groundwater level may rise temporarily. To ensure that there is space in the unsaturated zone to accommodate this, there should be a minimum thickness of 1 m between the base of the infiltration system and the water table. An estimate of the *depth to groundwater* is therefore useful in determining whether the ground is suitable for infiltration.



Groundwater flooding

Groundwater flooding occurs when a rise in groundwater level results in very shallow groundwater or the emergence of groundwater at the surface. If infiltration systems are installed in areas that are susceptible to groundwater flooding, it is possible that the system could become inundated. The susceptibility map seeks to identify areas where the geological conditions and water tables indicate that groundwater level rise could occur under certain circumstances. A high susceptibility to groundwater flooding classification does not mean that groundwater flooding has ever occurred in the past, or will do so in the future as the susceptibility maps do not contain information on how often flooding may occur. The susceptibility maps are designed for planning; identifying areas where groundwater flooding might be an issue that needs to be taken into account.



Geological indicators of flooding

In floodplain deposits, groundwater level can be influenced by the water level in the adjacent river. Groundwater level may increase during periods of fluvial flood and therefore this should be taken into account when designing infiltration systems on such deposits. The *geological indicators of flooding* dataset shows where there is geological evidence (floodplain deposits) that flooding has occurred in the past.

For further information on flood-risk, the likely frequency of its recurrence in relation to any proposed development of the site, and the status of any flood prevention measures in place, you are advised to contact the local office of the Environment Agency (England and Wales) at www.environment-agency.gov.uk/ or the Scottish Environment Protection Agency (Scotland) at www.sepa.org.uk.

Artificial ground

Artificial ground comprises deposits and excavations that have been created or modified by human activity. It includes ground that is worked (quarries and road cuttings), infilled (back-filled quarries), landscaped (surface re-shaping), disturbed (near surface mineral workings) or classified as made ground (embankments and spoil heaps). The composition and properties of artificial ground are often unknown. In particular, the permeability and chemical composition of the artificial ground should be determined to ensure that the ground will drain and that any contaminants present will not be remobilised.

Superficial permeability

Superficial deposits are those geological deposits that were formed during the most recent period of geological time (as old as 2.6 million years before present). They generally comprise relatively thin deposits of gravel, sand, silt and clay and are present beneath the pedological soil in patches or larger spreads over much of Britain. The ease with which water can percolate through these deposits is controlled by their permeability and varies widely depending on their composition. Those deposits comprising clays and silts are less permeable and thus infiltration is likely to be slow, such that water may pool on the surface. In comparison, deposits comprising sands and gravels are more permeable allowing water to percolate freely.

Bedrock permeability

Bedrock forms the main mass of rock forming the Earth. It is present everywhere, commonly beneath superficial deposits. Where the superficial deposits are thin or absent, the ease with which water will percolate into the ground depends on the permeability of the bedrock.



Natural ground instability

Natural ground instability refers to the propensity for upward, lateral or downward movement of the ground that can be caused by a number of natural geological hazards (e.g. ground dissolution/compressible ground). Some movements associated with particular hazards may be gradual and of millimetre or centimetre scale, whilst others may be sudden and of metre or tens of metres scale. Significant natural ground instability has the potential to cause damage to buildings and structures, especially when the drainage characteristics of a site are altered. It should be noted, however, that many buildings, particularly more modern ones, are built to such a standard that they can remain unaffected in areas of significant ground movement.

Shrink-swell

A shrinking and swelling clay changes volume significantly according to how much water it contains. All clay deposits change volume as their water content varies, typically swelling in winter and shrinking in summer, but some do so to a greater extent than others. Contributory circumstances could include drought, leaking service pipes, tree roots drying-out the ground or changes to local drainage patterns, such as the creation of soakaways. Shrinkage may remove support from the foundations of buildings and structures, whereas clay expansion may lead to uplift (heave) or lateral stress on part or all of a structure; any such movements may cause cracking and distortion.

Landslides (slope stability)

A landslide is a relatively rapid outward and downward movement of a mass of ground on a slope, due to the force of gravity. A slope is under stress from gravity but will not move if its strength is greater than this stress. If the balance is altered so that the stress exceeds the strength, then movement will occur. The stability of a slope can be reduced by removing ground at the base of the slope, by placing material on the slope, especially at the top, or by increasing the water content of the materials forming the slope. Increase in subsurface water content beneath a soakaway could increase susceptibility to landslide hazards. The assessment of landslide hazard refers to the stability of the present land surface. It does not encompass a consideration of the stability of excavations.

Soluble rocks (dissolution)

Some rocks are soluble in water and can be progressively removed by the flow of water through the ground. This process tends to create cavities, potentially leading to the collapse of overlying materials and possibly subsidence at the surface. The release of water into the subsurface from infiltration systems may increase the dissolution of rock or destabilise material above or within a cavity. Dissolution cavities may create a pathway for rapid transport of contaminated water to an aquifer or water course.



Compressible ground

Many ground materials contain water-filled pores (the spaces between solid particles). Ground is compressible if a building (or other load) can cause the water in the pore space to be squeezed out, causing the ground to decrease in thickness. If ground is extremely compressible the building may sink. If the ground is not uniformly compressible, different parts of the building may sink by different amounts, possibly causing tilting, cracking or distortion. The compressibility of the ground may alter as a result of changes in subsurface water content caused by the release of water from soakaways.

Collapsible deposits

Collapsible ground comprises certain fine-grained materials with large pore spaces (the spaces between solid particles). It can collapse when it becomes saturated by water and/or a building (or other structure) places too great a load on it. If the material below a building collapses it may cause the building to sink. If the collapsible ground is variable in thickness or distribution, different parts of the building may sink by different amounts, possibly causing tilting, cracking or distortion. The subsurface underlying a soakaway will experience an increase in water content that may affect the stability of the ground. This hazard is most likely to be encountered only in parts of southern England.

Running sand

Running sand conditions occur when loosely-packed sand, saturated with water, flows into an excavation, borehole or other type of void. The pressure of the water filling the spaces between the sand grains reduces the contact between the grains and they are carried along by the flow. This can lead to subsidence of the surrounding ground. Running sand is potentially hazardous during the drainage system installation. During installation, excavation of the ground may create a space into which sand can flow, potentially causing subsidence of surrounding ground.

Shallow mining hazards (non coal)

Current or past underground mining for coal or for other commodities can give rise to cavities at shallow or intermediate depths, which may cause fracturing, general settlement, or the formation of crown-holes in the ground above. Spoil from mineral workings may also present a pollution hazard. The release of water into the subsurface from soakaways may destabilise material above or within a cavity. Cavities arising as a consequence of mining may also create a pathway for rapid transport of contaminated water to an aquifer or watercourse. The mining hazards map is derived from the geological map and considers the potential for subsidence associated with mining on the basis of geology type. Therefore if mining is known to occur within a certain rock, the map will highlight the potential for a hazard within the area covered by that geology.



For more information regarding underground and opencast **coal mining**, the location of mine entries (shafts and adits) and matters relating to subsidence or other ground movement induced by **coal mining** please contact the Coal Authority, Mining Reports, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG; telephone 0845 762 6848 or at www.coal.gov.uk. For more information regarding other types of mining (i.e. non-coal), please contact the British Geological Survey.

Groundwater source protection zones

In England and Wales, the Environment Agency has defined areas around wells, boreholes and springs that are used for the abstraction of public drinking water as source protection zones. In conjunction with Groundwater Protection Policy the zones are used to restrict activities that may impact groundwater quality, thereby preventing pollution of underlying aquifers, such that drinking water quality is upheld. The Environment Agency can provide advice on the location and implications of source protection zones in your area (www.environment-agency.gov.uk/)





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- Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.
- Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
- The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
- Data may be compiled from the disparate sources of information at BGS's disposal, including material donated to BGS by third parties, and may not originally have been subject to any verification or other quality control process.
- Data, information and related records, which have been donated to BGS, have been produced for a specific purpose, and that may affect the type and completeness of the data recorded and any interpretation. The nature and purpose of data collection, and the age of the resultant material may render it unsuitable for certain applications/uses. You must verify the suitability of the material for your intended usage.
- If a report or other output is produced for you on the basis of data you have provided to BGS, or your own data input into a BGS system, please do not rely on it as a source of information about other areas or geological features, as the report may omit important details.
- The topography shown on any map extracts is based on the latest OS mapping and is not necessarily the same as that used in the original compilation of the BGS geological map, and to which the geological linework available at that time was fitted.
- Note that for some sites, the latest available records may be quite historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

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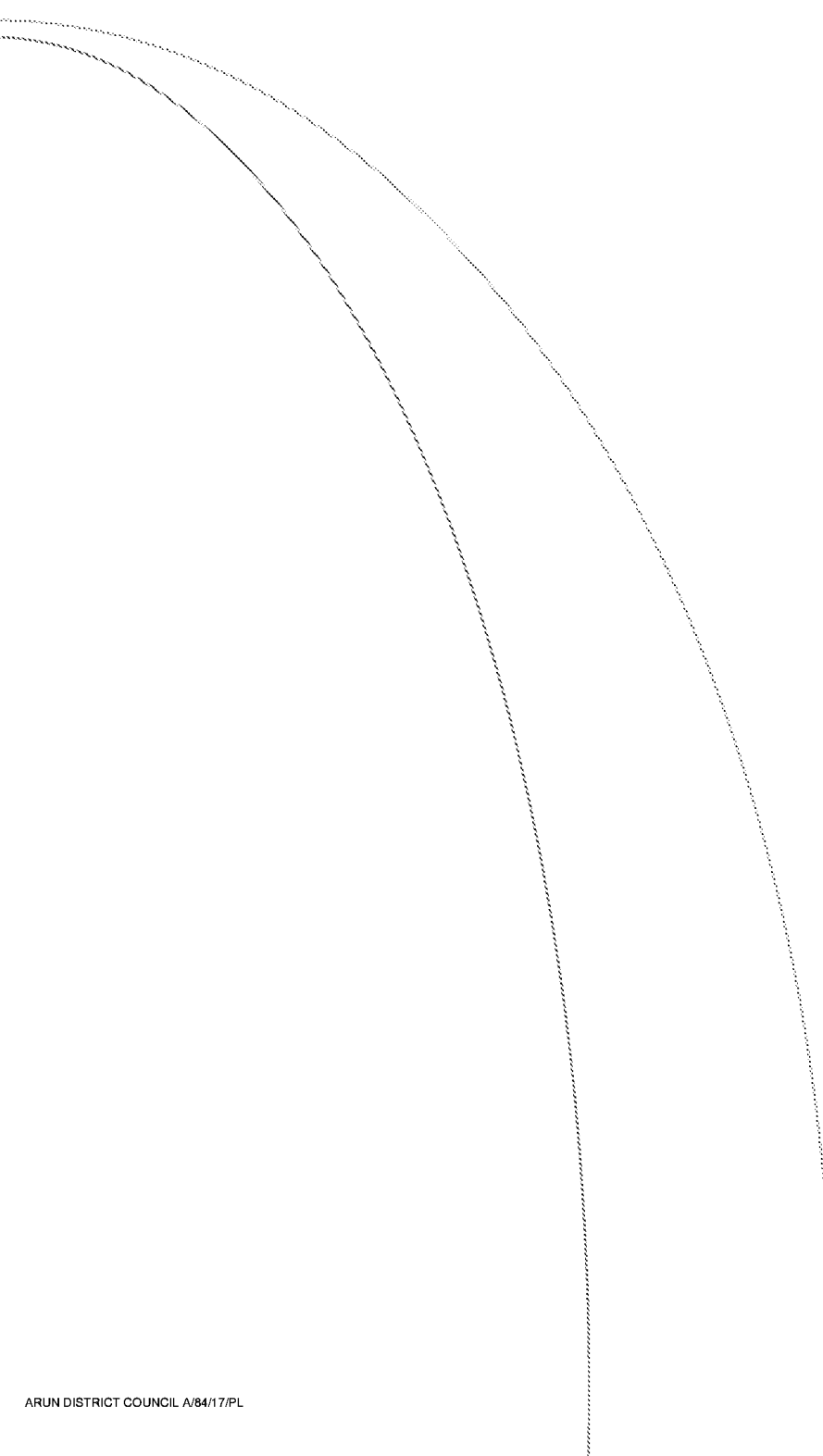
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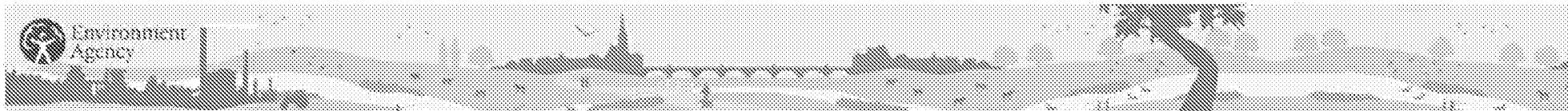
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Appendix D – EA Flood Maps





Enter a postcode or place name:

Rustington, West Sussex

Other topics for this area...

Flood Map for Planning (Rivers and Sea)

Flood Map for Planning (Rivers and Sea)

Map legend

Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

☒ Flood Map for Planning (Rivers and Sea)

☒ Flood Zone 1

☒ Flood Zone 2

☒ Flood defences (not all may be shown)

☒ Areas benefiting from flood defences (Not all may be shown)

☒ Main River Line

☒ Main River Line

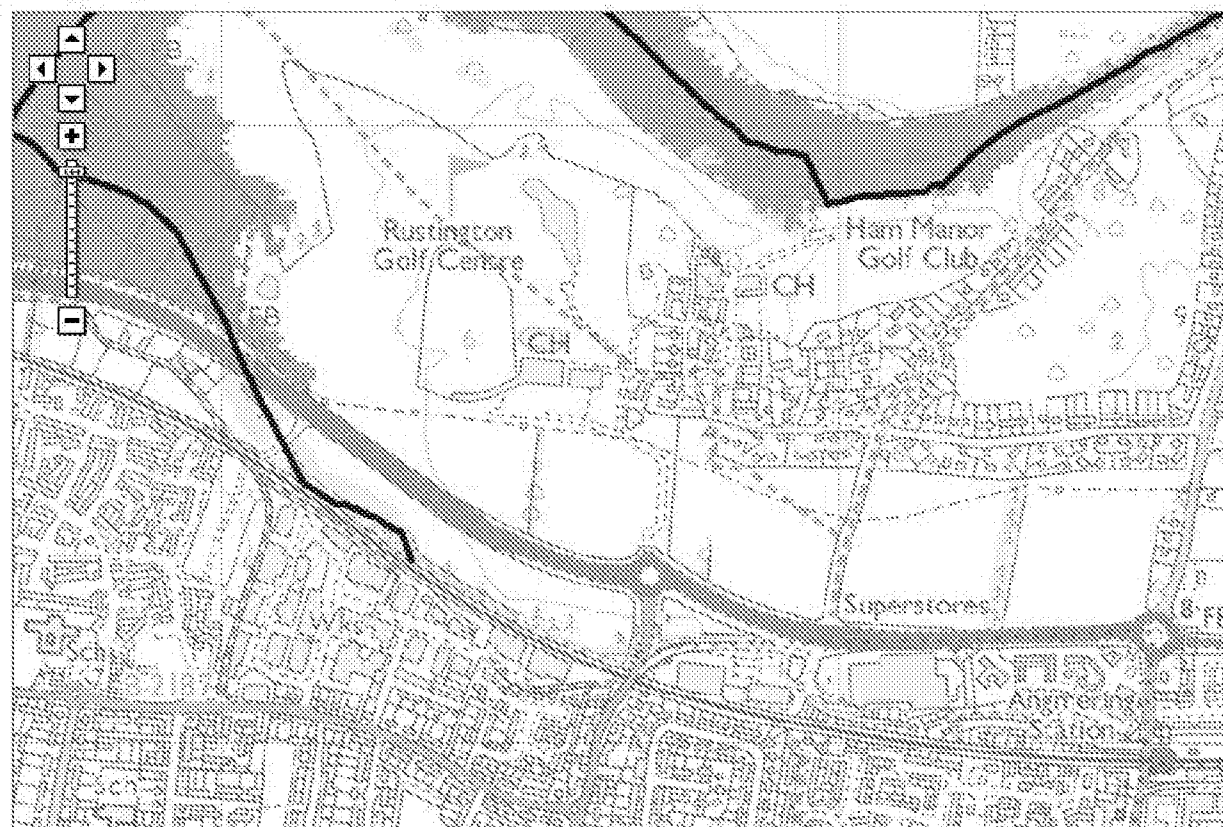
☒ Other national environmental organisations

☒ Natural Resources Wales Area of responsibility

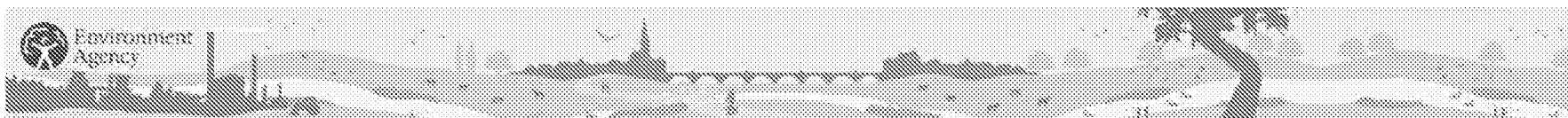
☒ Scottish Environment Protection Agency Area of responsibility

X: 505,659;Y: 103,519 at scale 1:10,000

Other maps Data search Text only version



Customers in Wales - From 1 April 2013 Natural Resources Wales (NRW) has taken over the responsibilities of the Environment Agency in Wales.
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Enter a postcode or place name:

Other topics for this area...



Risk of Flooding from Surface Water



[View other Interactive Maps](#)

Risk of Flooding from Surface Water

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

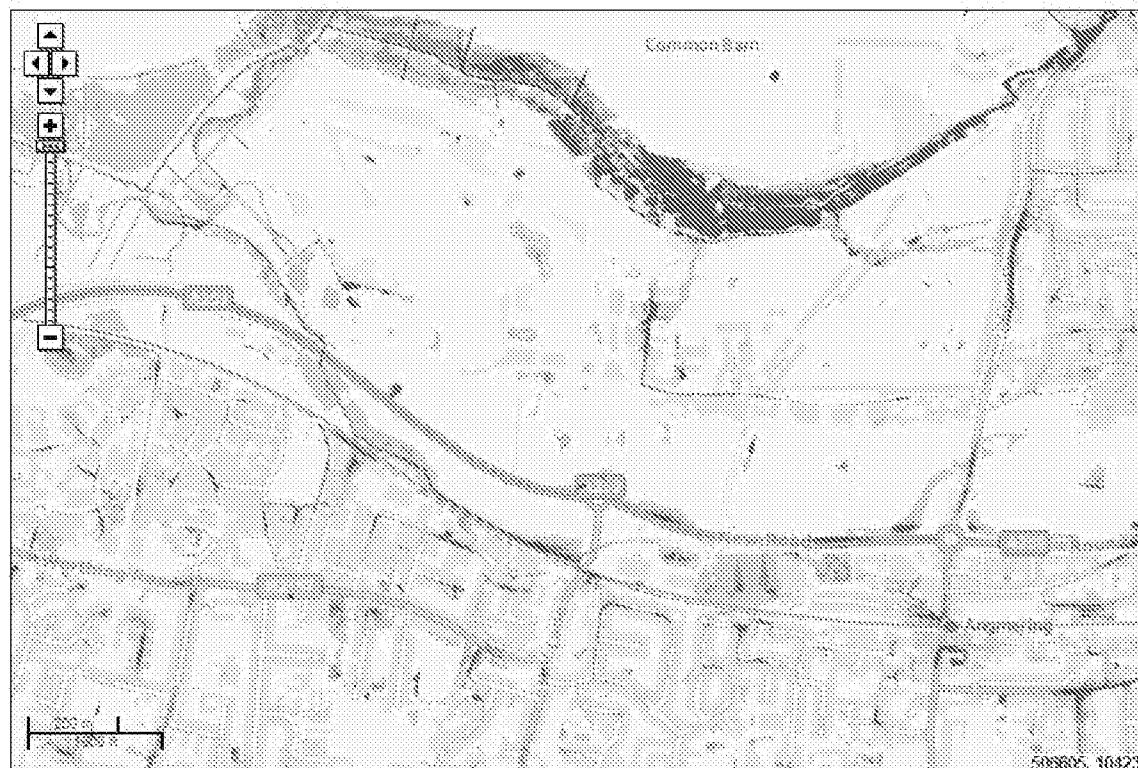
The shading on the map shows the risk of flooding from surface water in this particular area.

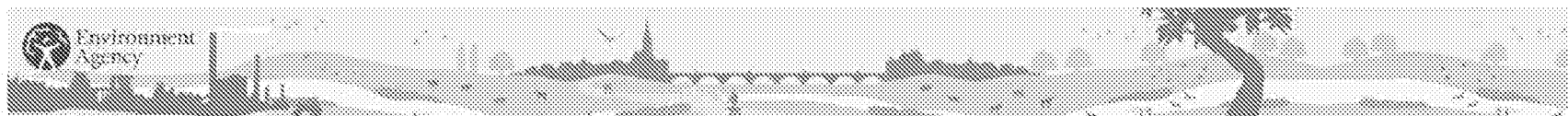
Click on the map for a more detailed explanation.

Map of X: 505,658; Y: 103,516 at scale 1:10,000

[Data search](#)

Map legend	
☒	Risk of Flooding from Surface Water
	High
	Medium
	Low
	Very Low
☒	Other national environmental organisations
	Natural Resources Wales Area of responsibility
	Scottish Environment Protection Agency Area of responsibility





Enter a postcode or place name:

Other topics for this area...



Risk of Flooding from Reservoirs ▼

[View other Interactive Maps](#)

Risk of Flooding from Reservoirs

Reservoir flooding is extremely unlikely to happen.

The shading on the map shows the area that could be flooded if a large reservoir were to fail and release the water it holds. A large reservoir is one that holds over 25,000 cubic metres of water, equivalent to approximately 10 Olympic sized swimming pools. Since this is a worst case scenario, it's unlikely that any actual flood would be this large.

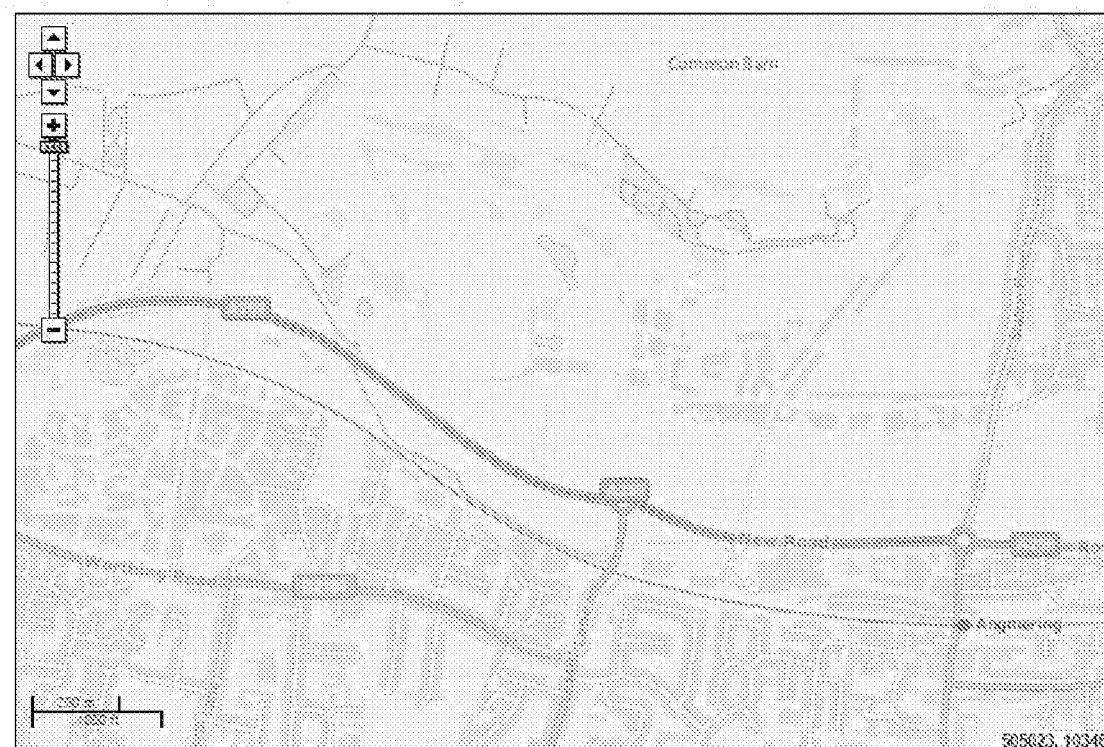
[Click on the shading to see details of reservoirs that could cause flooding in this area.](#)

Map legend

- ✓ Risk of Flooding from Reservoirs
- Maximum extent of flooding
- ✓ Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility

Map of X: 505,563; Y: 103,556 at scale 1:10,000

Data search:



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Enter a postcode or place name:

Other topics for this area...

Groundwater



Map legend

☐ Groundwater source protection zones

☒ Inner zone (Zone 1)

☒ Inner zone - subsurface activity only (Zone 1a)

☒ Outer zone (Zone 2)

☒ Outer zone - subsurface activity only (Zone 2a)

☒ Total catchment (Zone 3)

☒ Total catchment - subsurface activity only (Zone 3a)

☒ Special interest (Zone 4)

☐ BGS Aquifer Maps - Superficial Deposits Designation

☒ Principal

☒ Secondary A

☒ Secondary B

☒ Secondary (undifferentiated)

☒ Unworked (lakes and landfills)

☐ BGS Aquifer Maps - Bedrock Designation

☒ Principal

☒ Secondary A

☒ Secondary B

☒ Secondary (undifferentiated)

☐ Groundwater vulnerability zones

☒ Major Aquifer High

☒ Major Aquifer Intermediate

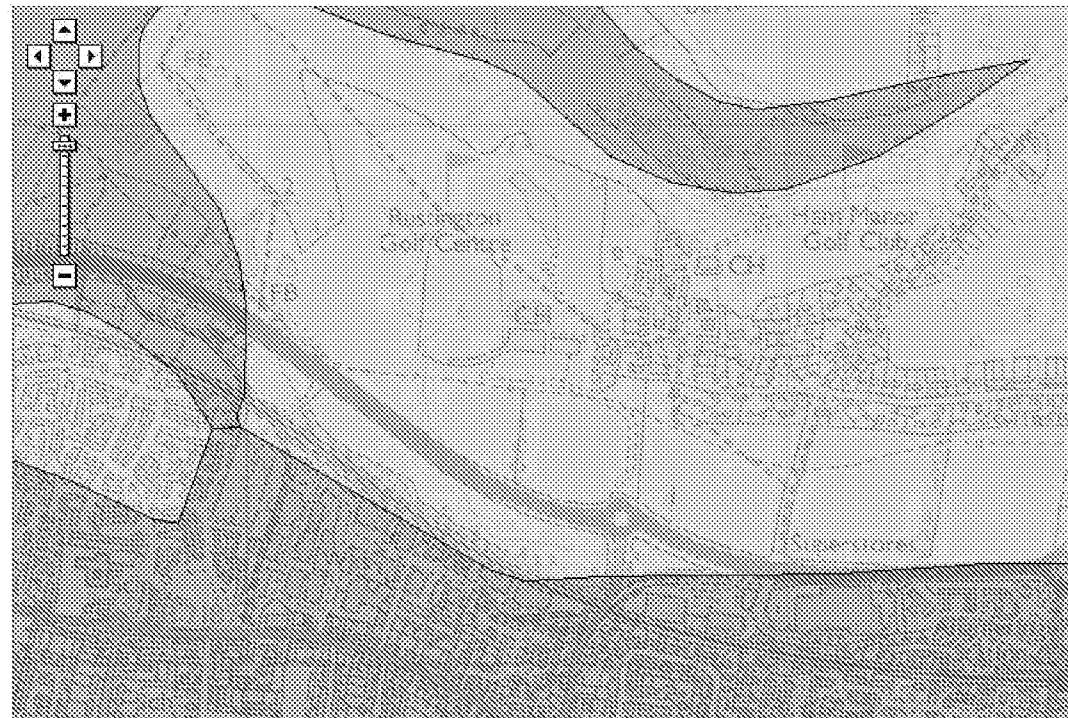
☒ Major Aquifer Low

☒ Minor Aquifer High

☒ Minor Aquifer Intermediate

Map of X: 505,563; Y: 103,556 at scale 1:10,000

Other maps Data search Text only version



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More about Groundwater

Groundwater Source Protection Zones:

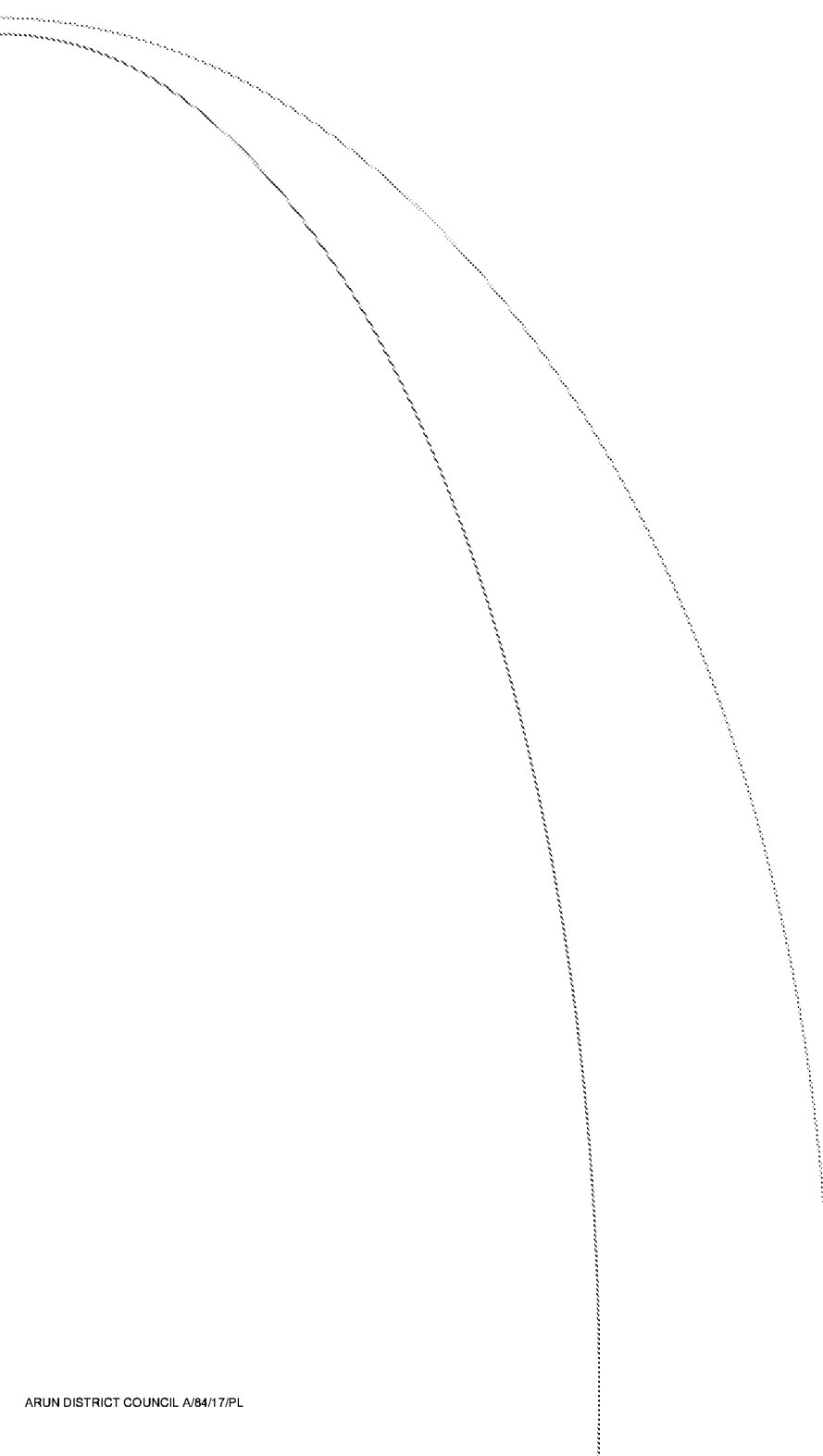
Groundwater provides a third of our drinking water. We ensure that your water is safe to drink defining Source Protection Zones. These zones help to monitor the risk of contamination from any activities that might cause pollution in the area.

The Source Protection Zones are not displayed at scales greater than 1:20,000 (Ordnance Survey 1:50,000 scale) as the data was only modelled to this level and is not accurate past this. They should not be compared against field boundaries.

Understanding Groundwater Source Protection Zones maps

British Geological Survey's Aquifer Maps:

Appendix E – Topographical Survey





NOTES

- The Survey Grid is on Ordnance Survey Level & Grid.
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REV	DATE	BY	AMENDMENT
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SURVEY



THE DESIGN STUDIO
94 HIGH STREET, STEYING
WEST SUSSEX BN44 3RD

CLIENT
Rustington Golf Course

JOB TITLE
Rustington Golf Course
Golfers Lane
Angmering
BN16 4NB

DRAWING TITLE
Topographical Survey
of Academy Course &
Car Park with Contours

DATE	SCALE-A1 SHEET	DRAWN BY
29.06.15	1:500	RM
		CHECKED RM

JOB NO.	DRAWING NO.	REVISION
CS00586	AC1.01	

LEGEND

BANKING

BUSHES & HEDGES

MARSH

TREES

NOTES:

GATES

RETAINING WALL

ABBREVIATIONS (WHERE APPLICABLE)

SLOPING MASONRY

FENCE

WALL

BUILDING

OPEN SIDED BUILDING

GLASS ROOFED

CONTOURS

OVERHEAD WIRES

MANHOLE

MARKER

NOTICE BOARD

NAME PLATE

OVERHEAD WIRE

PARKING METER

RIDGE LEVEL

ROAD SIGN

ROOFING EYE

RETAINING WALL

STOP COOK

SLURGE VALVE

SOFT LEVEL

STRUCTURAL SLAB LEVEL

STATION

TREE STUMP

TELEGRAPH POLE

TELEPHONE CALL BOX

TOP OF GIRE

TURNSTILE

TOP OF WALL

UNDERGROUND

UNABLE TO SURVEY

VENT PIPE

WATER LEVEL

WATER METER

WASH OUT

WASTE PIPE

WATER VALVE

BUILDING

WINDOW HEAD LEVEL

SKYLIGHT

SOIL AND WASTE PIPE

THRESHOLD LEVEL

WASH BASIN

WATER TANK

BARBED WIRE FENCE

CORRUGATED IRON FENCE

CLOSE BOARD FENCE

CHAIN LINK FENCE

CHESTNUT PALING FENCE

FENCE POST

INTERVIEW FENCE

MISCELLANEOUS FENCING

POST AND CHAIN FENCE

POST AND RAIL FENCE

POST AND WIRE

TUBULAR STEEL RAIL

WIRE MESH FENCE

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1:100



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REV	DATE	BY	AMENDMENT
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SURVEY



THE DESIGN STUDIO
94 HIGH STREET, STEYNING
WEST SUSSEX BN44 3RD

TEL: (01903) 868645
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contact@cornerstudio.co.uk
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CLIENT
Rustington Golf Course

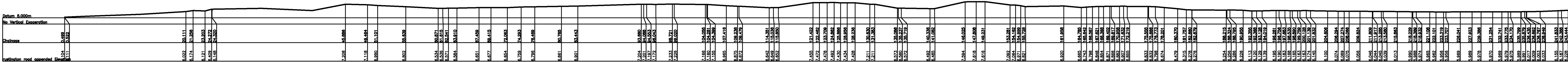
JOB TITLE

Rustington Golf Course
Golfers Lane
Angmering
BN16 4NB

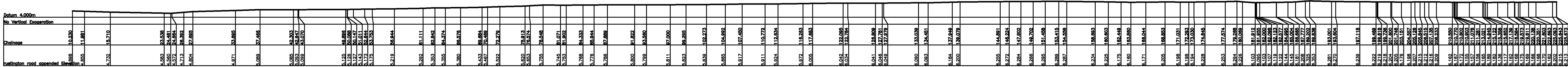
DRAWING TITLE
Topographical Survey
of Academy Course &
Car Park without Contours

DATE	SCALE-A1 SHEET	DRAWN BY
29.06.15	1:500	RM
		CHECKED RM

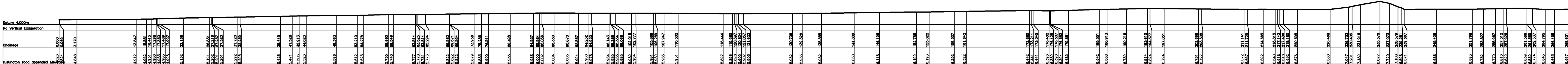
JOB NO.	DRAWING NO.	REVISION
CS00586	AC1.02	



SITE SECTION A-A



SITE SECTION B-B



SITE SECTION C-C

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CORNER STUDIO LTD ARE REGISTERED PARTNERS WITH HORSHAM DISTRICT COUNCIL FOR STREAMLINED BUILDING REGULATIONS APPLICATIONS



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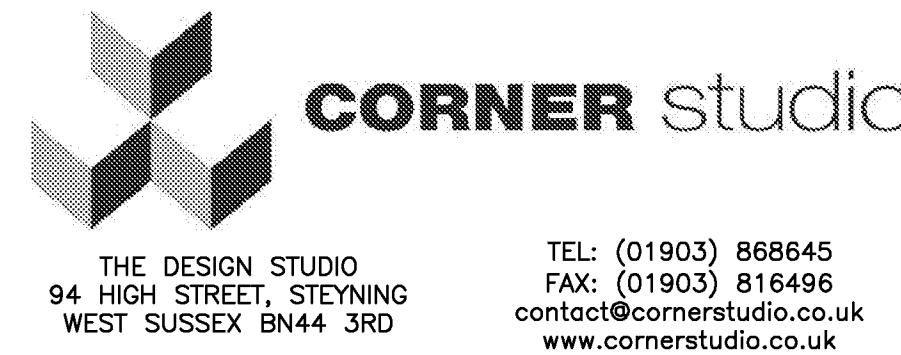
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REV	DATE	BY	AMENDMENT
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SURVEY



CLIENT
Rustington Golf Course

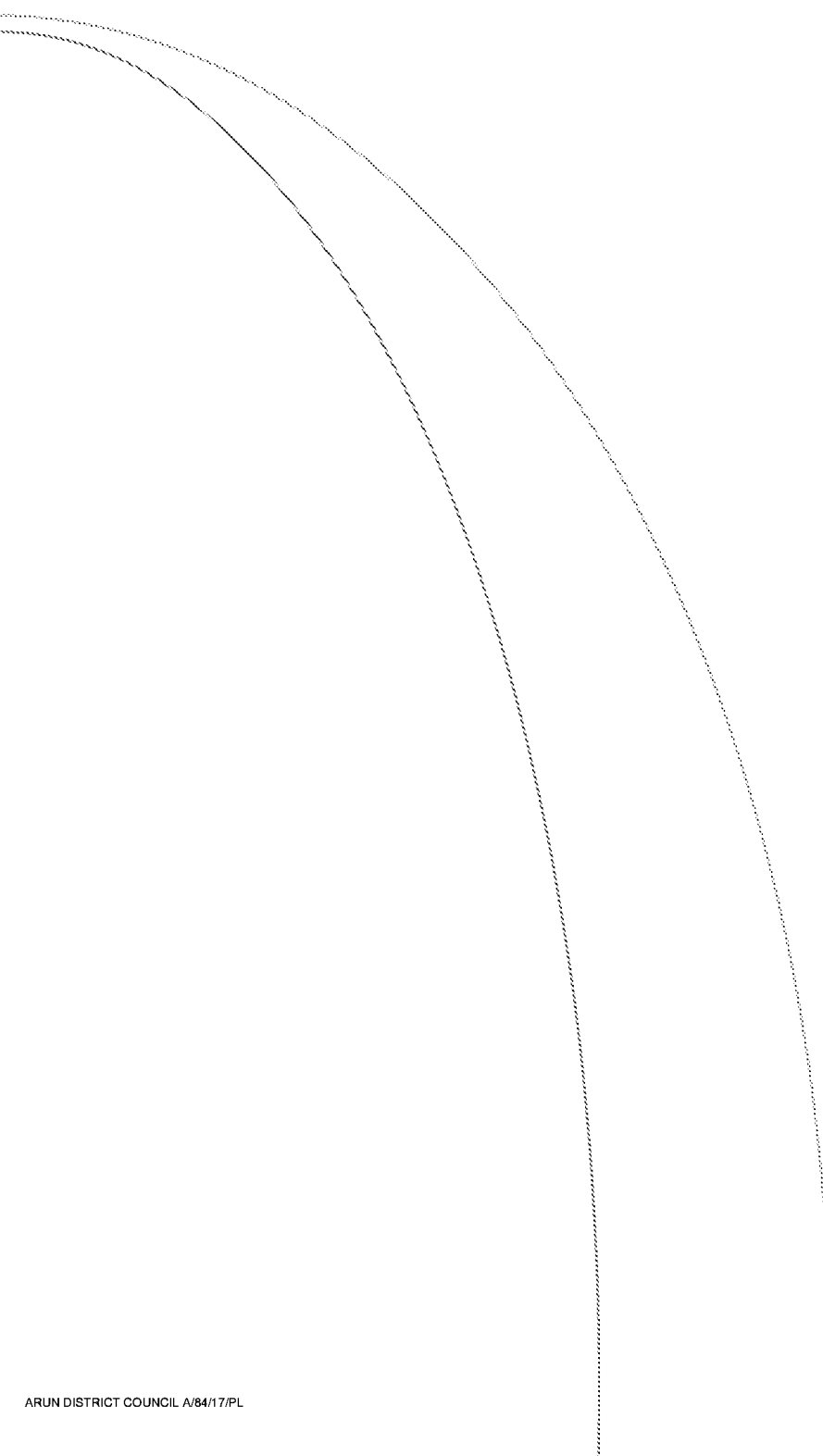
JOB TITLE
Rustington Golf Course
Golfers Lane
Angmering
BN16 4NB

DRAWING TITLE
Site Section

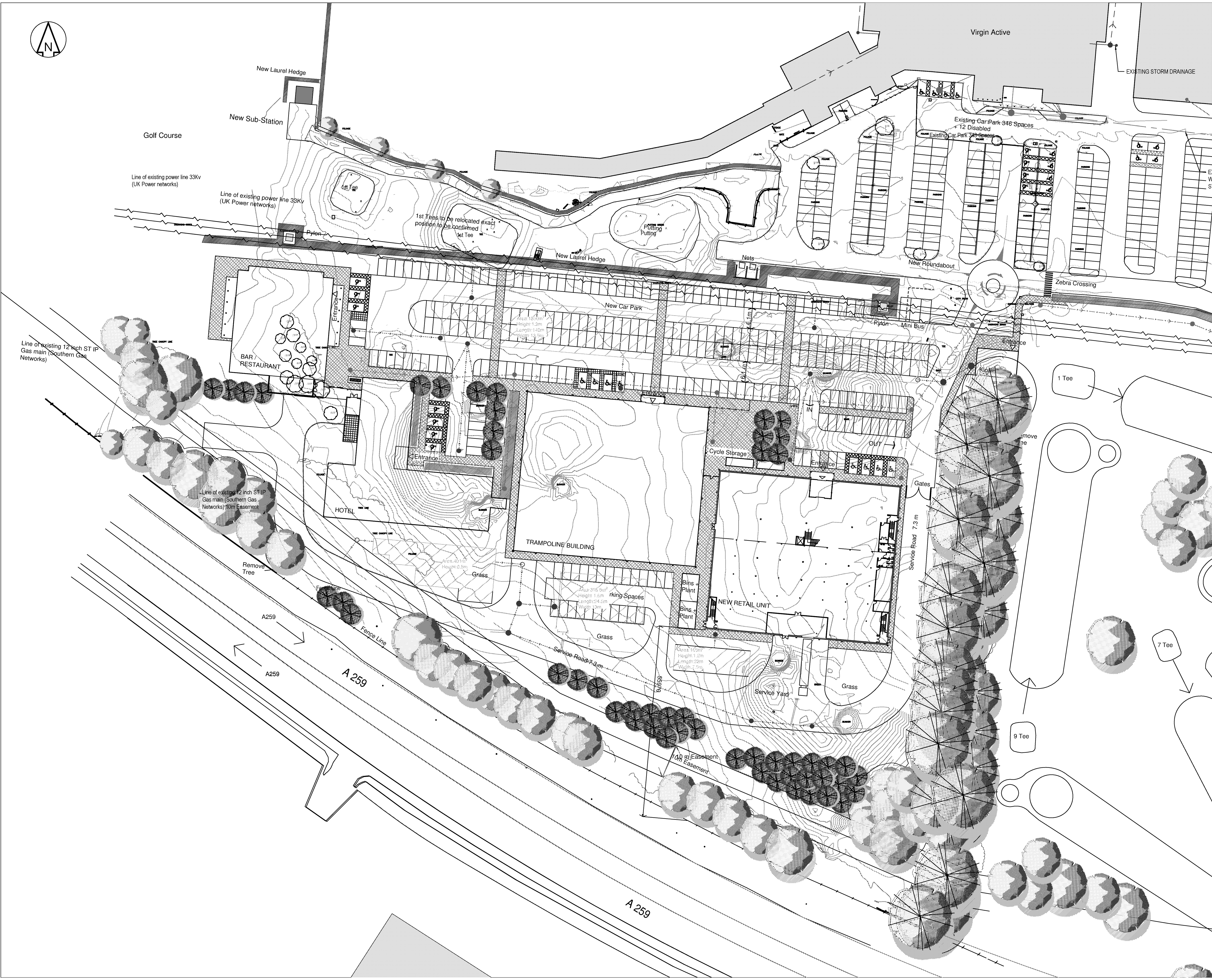
DATE	SCALE-A1 SHEET	DRAWN BY
29.06.15	1:500	RM

JOB NO.	DRAWING NO.	REVISION
CS00586	AC1.03	

Appendix F – Proposed Site Layout



Appendix G – Proposed Drainage Strategy & Micro- Drainage Calculations



DO NOT SCALE OFF THIS DRAWING

- Notes:
1. All dimensions in metres unless stated otherwise.
 2. This drawing has been prepared for the exclusive use of the commissioning party and unless agreed in writing by Robert West Consulting Limited no other party may use or rely on its contents. No liability is accepted by Robert West Consulting Limited for any use of this drawing other than for the purpose for which it was originally prepared.
 3. It should be noted that this drawing may include data provided by third parties. No liability is accepted by Robert West Limited as to the accuracy of this data.
 4. Levels in m AOD.

Drainage Notes:

Proposed site area: 3.43 ha

Existing impermeable area: 0ha (Greenfield)

Proposed impermeable area: 2.09 ha (61% of whole site)

1. This drawing should be read with accompanying MicroDrainage calculations
2. This proposed surface water drainage strategy is based on the Flood Risk Assessment completed by RWC in April 2017. All storage will outfall by percolation into the ground at a conservative rate of 3×10^{-6} m/sec.
3. The design has been carried out to ensure that no surface flooding occurs from the sewer network during a 30 year storm event, as per the statutory undertakers requirements. Due to the use of infiltration devices, the additional flows during a 1:100 year (+40% c.c.) storm event are also held within the network with no surface water flooding.
4. The proposed landscaping scheme and tree locations are to be coordinated with the location of the sewers and infiltration areas.
5. The surface water drainage /design to be refined in further design phases following site percolation testing to establish an accurate infiltration design rate at the relevant areas.

Drainage Key

Proposed Foul Water Gravity Sewer

Proposed Storm Drainage

Existing Surface Water Drainage

Existing Foul Water Drain

Proposed Kerb Drain

Proposed Lateral Drain

Proposed Gully

Proposed Cellular Infiltration Storage Structure

P4	28.04.17	AT	DRAINAGE HAS AMENDED TO FIT THE REVISED ARCHITECT LAYOUT	RB	RB
P3	22.04.16	CH	SW DRAINAGE REVISED TO SHOW BUILDING F	MB	RB
P2	11.04.16	CH	NEW ARCHITECTS LAYOUT ADDED	MB	RB
P1	09.03.16	CH	PRELIMINARY ISSUE	MB	RB
Rev	Date	By	Comment	Chkd	Appr

Status

PRELIMINARY

Client

RUSTINGTON INVESTMENT LTD

Robert West

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St Mary's Street
Worcester
Worcestershire WR1 1HB

t: 01905 28288
f: 020 7939 9909
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Project

RUSTINGTON GOLF CENTRE

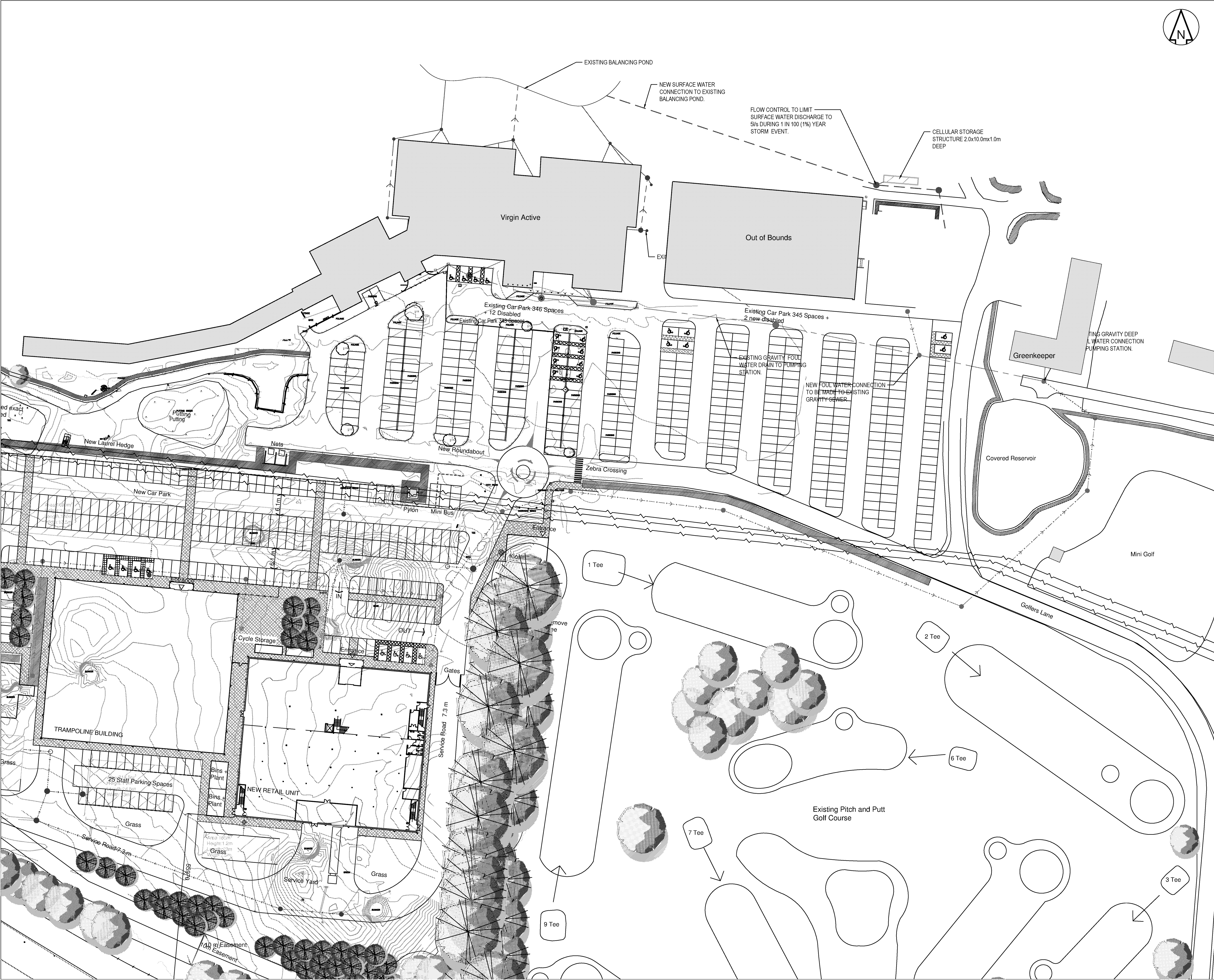
Drawing Title

SURFACE AND FOUL WATER
DRAINAGE STRATEGY
SHEET 1 OF 2

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Drawn	Checked	Approved	Scale
By CH	By MB	By RB	1:500 @ A1
Date 09.03.16	Date 09.03.16	Date 09.03.16	

Client No.	Project No.	Discipline	Drawing No.	Rev
5555	001	C	100	P4



Client No.	Project No.	Discipline	Drawing No.	Rev
5555	001	C	101	P4

Robert West Consulting			Page 1				
			5555/001				
			Rustington Golf Centre Car park, Bar, Retail unit, Tr				
Date 07-04-17			Designed by AT				
File CARPARK.SRCX			Checked by				
Micro Drainage			Source Control 2016.1				
<u>Summary of Results for 100 year Return Period (+40%)</u>							
Half Drain Time : 3599 minutes.							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	4.186	0.186	2.9	0.0	2.9	334.2	O K
30 min Summer	4.250	0.250	2.9	0.0	2.9	448.5	O K
60 min Summer	4.319	0.319	2.9	0.0	2.9	572.9	O K
120 min Summer	4.392	0.392	2.9	0.0	2.9	703.6	O K
180 min Summer	4.434	0.434	2.9	0.0	2.9	779.2	O K
240 min Summer	4.462	0.462	3.0	0.0	3.0	829.9	O K
360 min Summer	4.501	0.501	3.0	0.0	3.0	900.3	O K
480 min Summer	4.529	0.529	3.0	0.0	3.0	949.9	O K
600 min Summer	4.549	0.549	3.0	0.0	3.0	986.6	O K
720 min Summer	4.565	0.565	3.0	0.0	3.0	1014.6	O K
960 min Summer	4.587	0.587	3.0	0.0	3.0	1053.9	O K
1440 min Summer	4.609	0.609	3.0	0.0	3.0	1093.7	O K
2160 min Summer	4.615	0.615	3.0	0.0	3.0	1104.7	O K
2880 min Summer	4.606	0.606	3.0	0.0	3.0	1087.2	O K
4320 min Summer	4.579	0.579	3.0	0.0	3.0	1040.3	O K
5760 min Summer	4.554	0.554	3.0	0.0	3.0	994.2	O K
7200 min Summer	4.529	0.529	3.0	0.0	3.0	950.5	O K
8640 min Summer	4.507	0.507	3.0	0.0	3.0	909.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
15 min Summer	124.633	0.0	246.3	27			
30 min Summer	83.789	0.0	247.1	42			
60 min Summer	53.779	0.0	495.4	72			
120 min Summer	33.337	0.0	497.2	130			
180 min Summer	24.832	0.0	497.8	190			
240 min Summer	20.006	0.0	497.8	250			
360 min Summer	14.706	0.0	497.1	370			
480 min Summer	11.818	0.0	496.0	488			
600 min Summer	9.966	0.0	494.5	608			
720 min Summer	8.665	0.0	492.9	728			
960 min Summer	6.943	0.0	489.1	966			
1440 min Summer	5.071	0.0	480.2	1444			
2160 min Summer	3.696	0.0	972.5	2160			
2880 min Summer	2.949	0.0	956.5	2796			
4320 min Summer	2.142	0.0	914.2	3424			
5760 min Summer	1.705	0.0	1759.7	4168			
7200 min Summer	1.427	0.0	1793.5	4976			
8640 min Summer	1.235	0.0	1731.7	5800			
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Robert West Consulting				Page 2			
				5555/001			
				Rustington Golf Centre Car park, Bar, Retail unit, Tr			
Date 07-04-17				Designed by AT			
File CARPARK.SRCX				Checked by			
Micro Drainage				Source Control 2016.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
10080 min Summer	4.485	0.485	3.0	0.0	3.0	870.3	O K
15 min Winter	4.209	0.209	2.9	0.0	2.9	374.6	O K
30 min Winter	4.280	0.280	2.9	0.0	2.9	502.9	O K
60 min Winter	4.358	0.358	2.9	0.0	2.9	642.7	O K
120 min Winter	4.440	0.440	2.9	0.0	2.9	790.2	O K
180 min Winter	4.488	0.488	3.0	0.0	3.0	876.1	O K
240 min Winter	4.520	0.520	3.0	0.0	3.0	934.0	O K
360 min Winter	4.565	0.565	3.0	0.0	3.0	1015.2	O K
480 min Winter	4.598	0.598	3.0	0.0	3.0	1073.1	O K
600 min Winter	4.622	0.622	3.0	0.0	3.0	1116.4	O K
720 min Winter	4.641	0.641	3.0	0.0	3.0	1150.2	O K
960 min Winter	4.668	0.668	3.0	0.0	3.0	1199.0	O K
1440 min Winter	4.698	0.698	3.0	0.0	3.0	1253.0	O K
2160 min Winter	4.713	0.713	3.0	0.0	3.0	1279.8	O K
2880 min Winter	4.710	0.710	3.0	0.0	3.0	1274.2	O K
4320 min Winter	4.679	0.679	3.0	0.0	3.0	1219.6	O K
5760 min Winter	4.646	0.646	3.0	0.0	3.0	1159.2	O K
7200 min Winter	4.612	0.612	3.0	0.0	3.0	1099.6	O K
8640 min Winter	4.580	0.580	3.0	0.0	3.0	1040.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
10080 min Summer	1.093	0.0	1657.6	6656			
15 min Winter	124.633	0.0	246.9	27			
30 min Winter	83.789	0.0	247.9	41			
60 min Winter	53.779	0.0	497.3	70			
120 min Winter	33.337	0.0	499.5	130			
180 min Winter	24.832	0.0	500.4	188			
240 min Winter	20.006	0.0	500.5	246			
360 min Winter	14.706	0.0	500.1	364			
480 min Winter	11.818	0.0	499.1	482			
600 min Winter	9.966	0.0	497.8	600			
720 min Winter	8.665	0.0	496.3	716			
960 min Winter	6.943	0.0	492.7	952			
1440 min Winter	5.071	0.0	484.1	1416			
2160 min Winter	3.696	0.0	381.4	2100			
2880 min Winter	2.949	0.0	967.2	2768			
4320 min Winter	2.142	0.0	931.0	3984			
5760 min Winter	1.705	0.0	1894.1	4496			
7200 min Winter	1.427	0.0	1845.5	5408			
8640 min Winter	1.235	0.0	1789.1	6320			
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Robert West Consulting		Page 3																										
		5555/001 Rustington Golf Centre Car park, Bar, Retail unit, Tr																										
Date 07-04-17 File CARPARK.SRCX		Designed by AT Checked by																										
Micro Drainage		Source Control 2016.1																										
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			5555/001					
			Rustington Golf Centre					
			Retail unit					
Date 28-04-17			Designed by AT					
File RETAIL UNIT.SRCX			Checked by					
Micro Drainage			Source Control 2016.1					
<u>Summary of Results for 100 year Return Period (+40%)</u>								
Half Drain Time : 3069 minutes.								
Storm Event		Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
15 min Summer		4.580	0.180	0.3	0.0	0.3	27.3	O K
30 min Summer		4.641	0.241	0.3	0.0	0.3	36.6	O K
60 min Summer		4.708	0.308	0.3	0.0	0.3	46.8	O K
120 min Summer		4.777	0.377	0.3	0.0	0.3	57.4	O K
180 min Summer		4.818	0.418	0.3	0.0	0.3	63.5	O K
240 min Summer		4.844	0.444	0.3	0.0	0.3	67.6	O K
360 min Summer		4.881	0.481	0.3	0.0	0.3	73.1	O K
480 min Summer		4.907	0.507	0.3	0.0	0.3	77.0	O K
600 min Summer		4.925	0.525	0.3	0.0	0.3	79.9	O K
720 min Summer		4.939	0.539	0.3	0.0	0.3	82.0	O K
960 min Summer		4.958	0.558	0.3	0.0	0.3	84.9	O K
1440 min Summer		4.975	0.575	0.3	0.0	0.3	87.5	O K
2160 min Summer		4.975	0.575	0.3	0.0	0.3	87.4	O K
2880 min Summer		4.963	0.563	0.3	0.0	0.3	85.6	O K
4320 min Summer		4.938	0.538	0.3	0.0	0.3	81.8	O K
5760 min Summer		4.913	0.513	0.3	0.0	0.3	78.0	O K
7200 min Summer		4.888	0.488	0.3	0.0	0.3	74.2	O K
8640 min Summer		4.865	0.465	0.3	0.0	0.3	70.7	O K
Storm Event		Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
15 min Summer		124.633	0.0	21.2	27			
30 min Summer		83.789	0.0	21.7	42			
60 min Summer		53.779	0.0	42.8	72			
120 min Summer		33.337	0.0	44.2	130			
180 min Summer		24.832	0.0	44.6	190			
240 min Summer		20.006	0.0	44.8	250			
360 min Summer		14.706	0.0	45.1	370			
480 min Summer		11.818	0.0	45.2	488			
600 min Summer		9.966	0.0	45.2	608			
720 min Summer		8.665	0.0	45.1	728			
960 min Summer		6.943	0.0	44.9	966			
1440 min Summer		5.071	0.0	44.1	1444			
2160 min Summer		3.696	0.0	88.4	2160			
2880 min Summer		2.949	0.0	87.0	2504			
4320 min Summer		2.142	0.0	82.7	3244			
5760 min Summer		1.705	0.0	144.6	4040			
7200 min Summer		1.427	0.0	150.5	4840			
8640 min Summer		1.235	0.0	152.4	5696			
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			5555/001				
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Retail unit							
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Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
10080 min Summer	4.843	0.443	0.3	0.0	0.3	67.4	O K
15 min Winter	4.601	0.201	0.3	0.0	0.3	30.6	O K
30 min Winter	4.670	0.270	0.3	0.0	0.3	41.1	O K
60 min Winter	4.745	0.345	0.3	0.0	0.3	52.5	O K
120 min Winter	4.824	0.424	0.3	0.0	0.3	64.4	O K
180 min Winter	4.870	0.470	0.3	0.0	0.3	71.4	O K
240 min Winter	4.900	0.500	0.3	0.0	0.3	76.0	O K
360 min Winter	4.943	0.543	0.3	0.0	0.3	82.5	O K
480 min Winter	4.973	0.573	0.3	0.0	0.3	87.1	O K
600 min Winter	4.995	0.595	0.3	0.0	0.3	90.4	O K
720 min Winter	5.012	0.612	0.3	0.0	0.3	93.0	O K
960 min Winter	5.036	0.636	0.3	0.0	0.3	96.6	O K
1440 min Winter	5.060	0.660	0.3	0.0	0.3	100.3	O K
2160 min Winter	5.068	0.668	0.3	0.0	0.3	101.5	O K
2880 min Winter	5.059	0.659	0.3	0.0	0.3	100.2	O K
4320 min Winter	5.026	0.626	0.3	0.0	0.3	95.1	O K
5760 min Winter	4.993	0.593	0.3	0.0	0.3	90.1	O K
7200 min Winter	4.958	0.558	0.3	0.0	0.3	84.9	O K
8640 min Winter	4.924	0.524	0.3	0.0	0.3	79.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
10080 min Summer	1.093	0.0	146.3	6464			
15 min Winter	124.633	0.0	21.5	27			
30 min Winter	83.789	0.0	21.9	41			
60 min Winter	53.779	0.0	43.9	70			
120 min Winter	33.337	0.0	44.8	128			
180 min Winter	24.832	0.0	45.2	188			
240 min Winter	20.006	0.0	45.5	246			
360 min Winter	14.706	0.0	45.8	364			
480 min Winter	11.818	0.0	46.0	482			
600 min Winter	9.966	0.0	46.0	598			
720 min Winter	8.665	0.0	46.0	716			
960 min Winter	6.943	0.0	45.8	950			
1440 min Winter	5.071	0.0	45.0	1410			
2160 min Winter	3.696	0.0	90.4	2084			
2880 min Winter	2.949	0.0	89.1	2736			
4320 min Winter	2.142	0.0	85.3	3456			
5760 min Winter	1.705	0.0	161.1	4336			
7200 min Winter	1.427	0.0	164.5	5264			
8640 min Winter	1.235	0.0	159.7	6152			
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<u>Model Details</u> Storage is Online Cover Level (m) 6.000 <u>Cellular Storage Structure</u> Invert Level (m) 4.400 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.01080 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.01080 <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>160.0</td> <td>160.0</td> <td>1.201</td> <td>0.0</td> <td>220.7</td> </tr> <tr> <td>1.200</td> <td>160.0</td> <td>220.7</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <u>Depth/Flow Relationship Outflow Control</u> Invert Level (m) 0.000 <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Flow (l/s)</th> <th>Depth (m)</th> <th>Flow (l/s)</th> <th>Depth (m)</th> <th>Flow (l/s)</th> <th>Depth (m)</th> <th>Flow (l/s)</th> </tr> </thead> <tbody> <tr><td>0.100</td><td>0.0000</td><td>1.200</td><td>0.0000</td><td>3.000</td><td>0.0000</td><td>7.000</td><td>0.0000</td></tr> <tr><td>0.200</td><td>0.0000</td><td>1.400</td><td>0.0000</td><td>3.500</td><td>0.0000</td><td>7.500</td><td>0.0000</td></tr> <tr><td>0.300</td><td>0.0000</td><td>1.600</td><td>0.0000</td><td>4.000</td><td>0.0000</td><td>8.000</td><td>0.0000</td></tr> <tr><td>0.400</td><td>0.0000</td><td>1.800</td><td>0.0000</td><td>4.500</td><td>0.0000</td><td>8.500</td><td>0.0000</td></tr> <tr><td>0.500</td><td>0.0000</td><td>2.000</td><td>0.0000</td><td>5.000</td><td>0.0000</td><td>9.000</td><td>0.0000</td></tr> <tr><td>0.600</td><td>0.0000</td><td>2.200</td><td>0.0000</td><td>5.500</td><td>0.0000</td><td>9.500</td><td>0.0000</td></tr> <tr><td>0.800</td><td>0.0000</td><td>2.400</td><td>0.0000</td><td>6.000</td><td>0.0000</td><td></td><td></td></tr> <tr><td>1.000</td><td>0.0000</td><td>2.600</td><td>0.0000</td><td>6.500</td><td>0.0000</td><td></td><td></td></tr> </tbody> </table>			Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	0.000	160.0	160.0	1.201	0.0	220.7	1.200	160.0	220.7				Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	0.0000	1.200	0.0000	3.000	0.0000	7.000	0.0000	0.200	0.0000	1.400	0.0000	3.500	0.0000	7.500	0.0000	0.300	0.0000	1.600	0.0000	4.000	0.0000	8.000	0.0000	0.400	0.0000	1.800	0.0000	4.500	0.0000	8.500	0.0000	0.500	0.0000	2.000	0.0000	5.000	0.0000	9.000	0.0000	0.600	0.0000	2.200	0.0000	5.500	0.0000	9.500	0.0000	0.800	0.0000	2.400	0.0000	6.000	0.0000			1.000	0.0000	2.600	0.0000	6.500	0.0000		
Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)																																																																																							
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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	75	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.269	4-8	0.080

Total Area Contributing (ha) = 0.349

Total Pipe Volume (m³) = 39.148

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	17.807	0.262	68.0	0.074	5.00	0.0	0.600	o	600	Pipe/Conduit	⚙
1.001	75.489	1.161	65.0	0.097	0.00	0.0	0.600	o	600	Pipe/Conduit	⚙
1.002	9.095	0.079	115.1	0.030	0.00	0.0	0.600	o	600	Pipe/Conduit	⚙

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	61.81	5.10	5.100	0.074	0.0	0.0	0.0	2.96	835.8	12.4
1.001	59.84	5.52	4.838	0.171	0.0	0.0	0.0	3.02	854.8	27.7
1.002	59.53	5.58	3.677	0.201	0.0	0.0	0.0	2.27	641.5	32.4

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.000	4.806	0.024	200.0	0.098	5.00	0.0	0.600	o	375	Pipe/Conduit	
2.001	36.115	0.181	200.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.002	7.955	0.040	200.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.003	11.499	0.056	205.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.003	10.382	0.042	247.2	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.004	1.600	0.006	266.7	0.050	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.005	0.500	0.002	250.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
2.000	61.99	5.06	4.124	0.098	0.0	0.0	0.0	1.28	141.1	16.5
2.001	59.76	5.53	4.160	0.098	0.0	0.0	0.0	1.28	141.1	16.5
2.002	59.29	5.64	3.919	0.098	0.0	0.0	0.0	1.28	141.1	16.5
2.003	58.62	5.79	3.879	0.098	0.0	0.0	0.0	1.26	139.2	16.5
1.003	58.14	5.90	3.598	0.299	0.0	0.0	0.0	1.54	436.7	47.1
1.004	58.06	5.92	3.556	0.349	0.0	0.0	0.0	1.49	420.3	54.9
1.005	58.04	5.93	3.549	0.349	0.0	0.0	0.0	1.54	434.2	54.9

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<u>Manhole Schedules for Storm</u>											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
2	6.900	1.800	Open Manhole	1500	1.000	5.100	600				
3	6.400	1.562	Open Manhole	1500	1.001	4.838	600	1.000	4.838	600	
5	5.200	1.523	Open Manhole	1500	1.002	3.677	600	1.001	3.677	600	
4	5.200	1.076	Open Manhole	1350	2.000	4.124	375				
5	5.200	1.100	Open Manhole	1350	2.001	4.100	375	2.000	4.100	375	
6	5.200	1.281	Open Manhole	1350	2.002	3.919	375	2.001	3.919	375	
6	5.550	1.671	Open Manhole	1500	2.003	3.879	375	2.002	3.879	375	
7	5.350	1.752	Open Manhole	1500	1.003	3.598	600	1.002	3.598	600	
								2.003	3.823	375	
8	5.500	1.944	Open Manhole	1500	1.004	3.556	600	1.003	3.556	600	
9	5.500	1.951	Open Manhole	1500	1.005	3.549	600	1.004	3.550	600	1
	5.500	1.953	Open Manhole	0		OUTFALL		1.005	3.547	600	
<u>Free Flowing Outfall Details for Storm</u>											
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)					
1.005		5.500	3.547	0.000	0	0					
<u>Simulation Criteria for Storm</u>											
Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000								
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000								
Hot Start (mins)	0	Inlet Coefficient	0.800								
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000								
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60								
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1								
Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0						
Number of Online Controls	2	Number of Storage Structures	2	Number of Real Time Controls	0						
<u>Synthetic Rainfall Details</u>											
Rainfall Model	FSR	M5-60 (mm)	19.000								
Return Period (years)	2	Ratio R	0.350								
Region	England and Wales	Profile Type	Summer								
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<u>Synthetic Rainfall Details</u> Cv (Summer) 0.750 Storm Duration (mins) 30 Cv (Winter) 0.840		
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Online Controls for Storm

Orifice Manhole: 8, DS/PN: 1.004, Volume (m³): 5.9

Diameter (m) 0.018 Discharge Coefficient 0.600 Invert Level (m) 3.556

Depth/Flow Relationship Manhole: 9, DS/PN: 1.005, Volume (m³): 3.5

Invert Level (m) 3.549

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.0000	1.200	0.0000	3.000	0.0000	7.000	0.0000
0.200	0.0000	1.400	0.0000	3.500	0.0000	7.500	0.0000
0.300	0.0000	1.600	0.0000	4.000	0.0000	8.000	0.0000
0.400	0.0000	1.800	0.0000	4.500	0.0000	8.500	0.0000
0.500	0.0000	2.000	0.0000	5.000	0.0000	9.000	0.0000
0.600	0.0000	2.200	0.0000	5.500	0.0000	9.500	0.0000
0.800	0.0000	2.400	0.0000	6.000	0.0000		
1.000	0.0000	2.600	0.0000	6.500	0.0000		

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.200 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	2	15 Winter	100	+40%					5.215
1.001	3	15 Winter	100	+40%					4.984
1.002	5	15 Winter	100	+40%	2/30 Winter				4.898
2.000	4	2880 Winter	100	+40%	100/240 Winter				4.727
2.001	5	2880 Winter	100	+40%	100/240 Winter				4.727
2.002	6	2880 Winter	100	+40%	30/15 Summer				4.755
2.003	6	15 Winter	100	+40%	2/30 Winter				4.782
1.003	7	15 Winter	100	+40%	2/15 Winter				4.878
1.004	8	15 Winter	100	+40%	2/15 Summer				4.893
1.005	9	2880 Winter	100	+40%					3.556

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged		Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)			
1.000	2	-0.485	0.000	0.08		41.9		OK	
1.001	3	-0.454	0.000	0.13		99.0		OK	
1.002	5	0.621	0.000	0.25		88.4		SURCHARGED	
2.000	4	0.228	0.000	0.02		1.7		SURCHARGED	
2.001	5	0.252	0.000	0.01		1.4		SURCHARGED	
2.002	6	0.461	0.000	0.01		1.3		SURCHARGED	
2.003	6	0.528	0.000	0.01		0.9		SURCHARGED	
1.003	7	0.680	0.000	0.02		4.6		SURCHARGED	
1.004	8	0.737	0.000	0.00		0.8		SURCHARGED	
1.005	9	-0.593	0.000	0.00		0.0		OK	

Appendix H - Trial Pit Investigation

Appendix H - Trial Pit Investigation

HERTS & ESSEX SITE INVESTIGATIONS



2nd February 2017

MRS/13945



For The Attention Of F.Navarro Esq.:

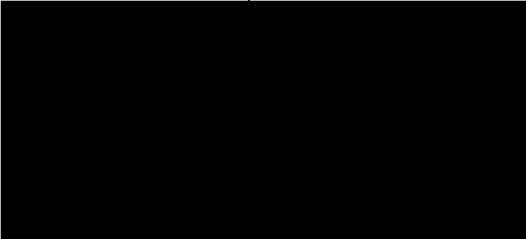
Dear Sir,

RE : Hotel & Leisure Complex, Rustington : Laboratory Testing...

Please find enclosed laboratory testing results of a sample delivered to our offices.

We hope this is satisfactory, however, should you have any queries please do not hesitate to contact us.

Yours Faithfully



Date Feb 2017

LIQUID AND PLASTIC LIMIT TEST RESULTS

[illegible]

2. Standard Golf
 3. Tee Box
 4. Fairway
 5. Rough
 6. Green
 7. Putting Green
 8. Sand Trap
 9. Water Hazard
 10. Obstacle
 11. Road
 12. Path
 13. Building
 14. Parking Lot
 15. Drive
 16. Fence
 17. Wall
 18. Gate
 19. Sign
 20. Light
 21. Bench
 22. Tree
 23. Shrub
 24. Flower
 25. Grass
 26. Soil
 27. Rock
 28. Sand
 29. Water
 30. Sky

Proposed Site (Black) Pl
 24/1/17 TRIAL PIT LOCATIONS

Proposed Site (Black) Pl
 24/1/17 TRIAL PIT LOCATIONS

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 24/1/17 TRIAL PIT LOCATIONS

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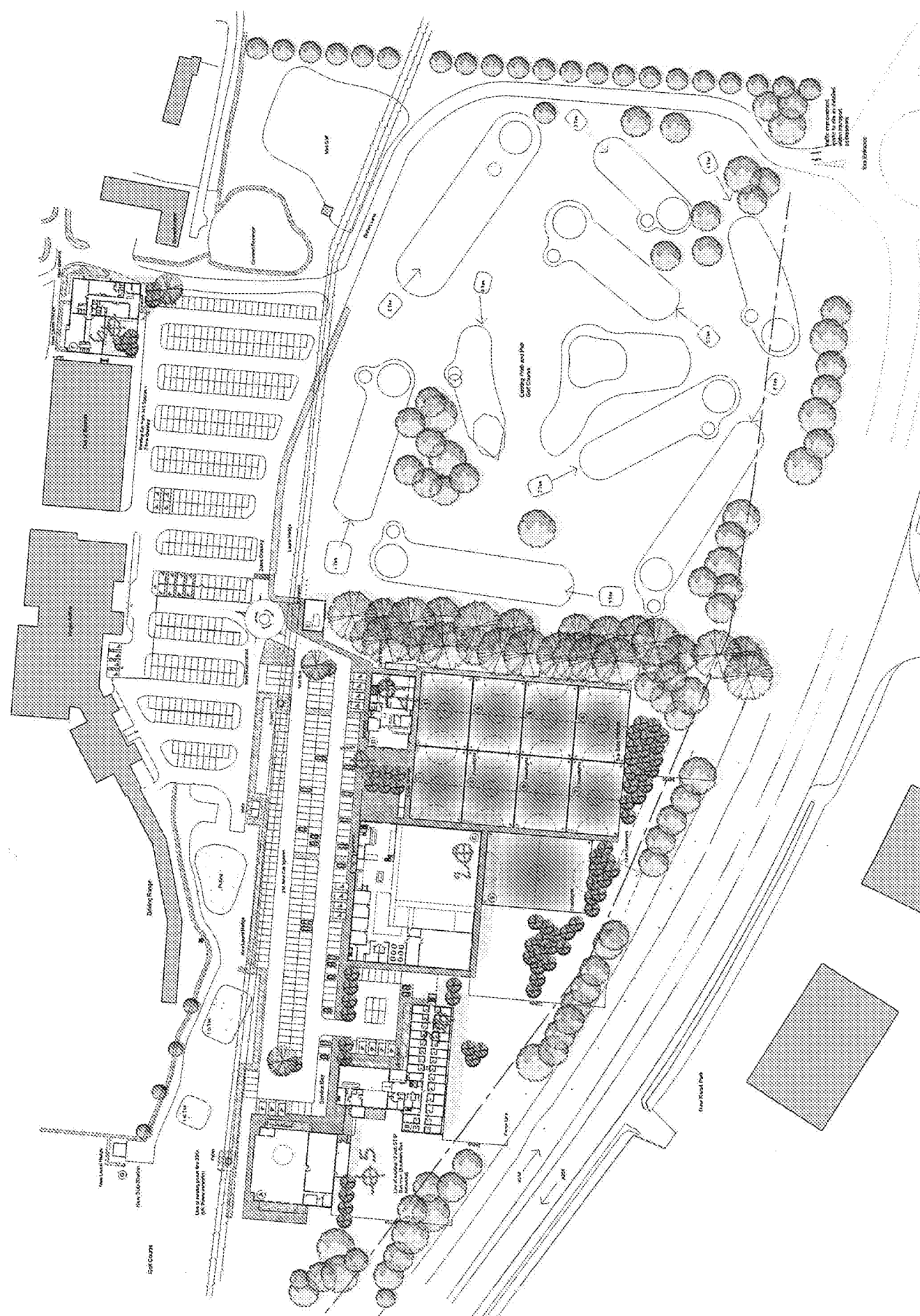
Proposed Site (Black) Pl
 24/1/17 TRIAL PIT LOCATIONS

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 24/1/17 TRIAL PIT LOCATIONS

Proposed Site (Black) Pl
 24/1/17 TRIAL PIT LOCATIONS

Proposed Site (Black) Pl
 24/1/17 TRIAL PIT LOCATIONS



MNP

24/1/17 TRIAL PIT LOCATIONS

Proposed trial pits will be a minimum of the following:
 1. Tee Box
 2. Fairway
 3. Rough
 4. Green
 5. Putting Green
 6. Sand Trap
 7. Water Hazard
 8. Obstacle
 9. Road
 10. Path
 11. Building
 12. Parking Lot
 13. Drive
 14. Fence
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