

Appendix 4

Flood Maps

Flood map for planning

Your reference
Roman Acre

Location (easting/northing)
502325/102738

Created
29 Jan 2025 13:28

**Your selected location is in flood zone 2
– an area with a medium probability of flooding.**

This means:

- you may need to complete a flood risk assessment for development in this area
- you should ask the Environment Agency about the level of flood protection at your location and request a Flood Defence Breach Hazard Map (You can email the Environment Agency at: enquiries@environment-agency.gov.uk)
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (find out more at www.gov.uk/guidance/flood-risk-assessment-standing-advice)

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.

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

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2024 OS AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

Roman Acre

Location (easting/northing)








502325/102738

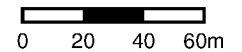
Scale

1:2500

Created

29 Jan 2025 13:28





-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area






Key

Surface water

-  Extent
-  High
More than 3.3% chance each year
-  Medium
Between 1% and 3.3% chance each year
-  Low
Between 0.1% and 1% chance each year

-  Depth

Map details

- Show flooding
-  Selected address
-  15m boundary

Pause to updates of flood risk data

We have [paused updates to information about flood risk](#) from rivers and the sea and surface water while we get ready for new data.

Surface water and other sources of flooding

Use the [long term flood risk service](#) to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

Or you can contact your Lead Local Flood Authority for further information.

Your Lead Local Flood Authority is West Sussex County.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Arun Coastal Model, 2012
Scenario(s): undefended tidal
Date: 20 August 2012

Model name: Littlehampton Update 2017 - River Arun Modelling Study
Scenario(s): Defended tidal
Date: 1 March 2017

These models contain the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

The flood zones are not currently being updated. The last update was in November 2023. Some of the flood zones may have changed, however all source data is included in the models below.







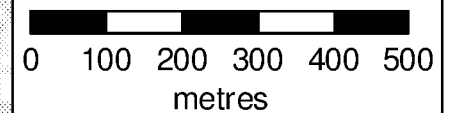
Past floods

Location (easting/northing)
502328/102737

Scale
1:10,000

Created
26 Nov 2024

-  Selected area
-  Main river
- Date of flood event
 -  February, 2020
 -  February, 1983



Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
1 February 2020	1 February 2020	sea	overtopping of defences	No
2 February 1983	2 February 1983	main river	overtopping of defences	No






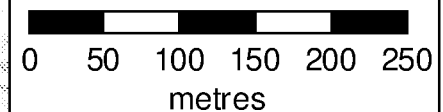
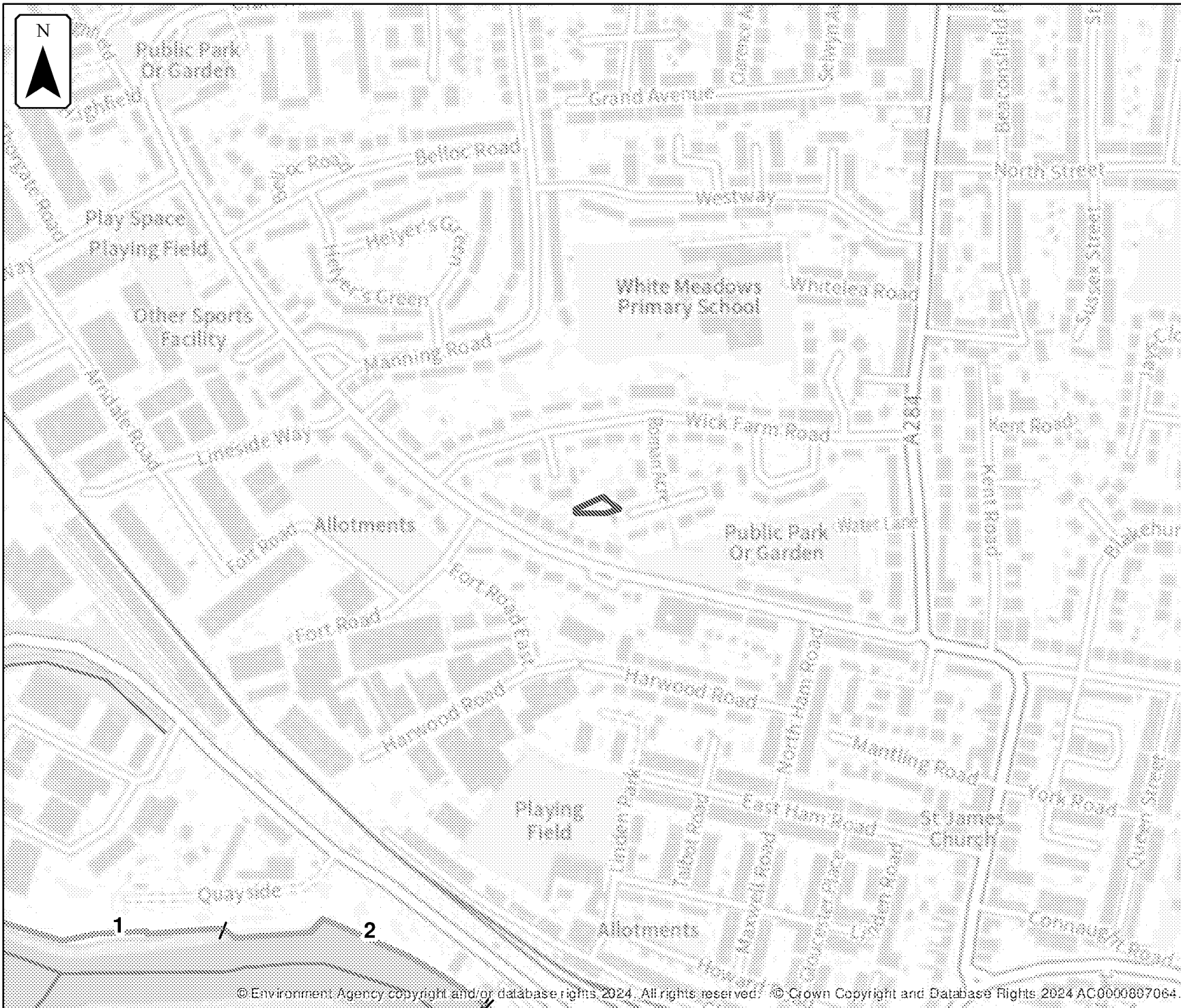
Flood defences

Location (easting/northing)
502328/102737

Scale
1:5,000

Created
26 Nov 2024

-  Selected area
-  Main river
-  Flood defence

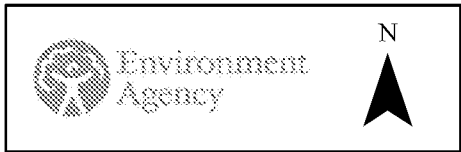


Flood defences data






Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	447212	Wall	300		4.80	4.80	4.80
2	447018	Wall	300		4.40	4.40	4.40

Any blank cells show where a particular value has not been recorded for an asset.

Modelled Flood Outlines (Defended Tidal). Centred BN17 7HN. Created 26/11/2024.

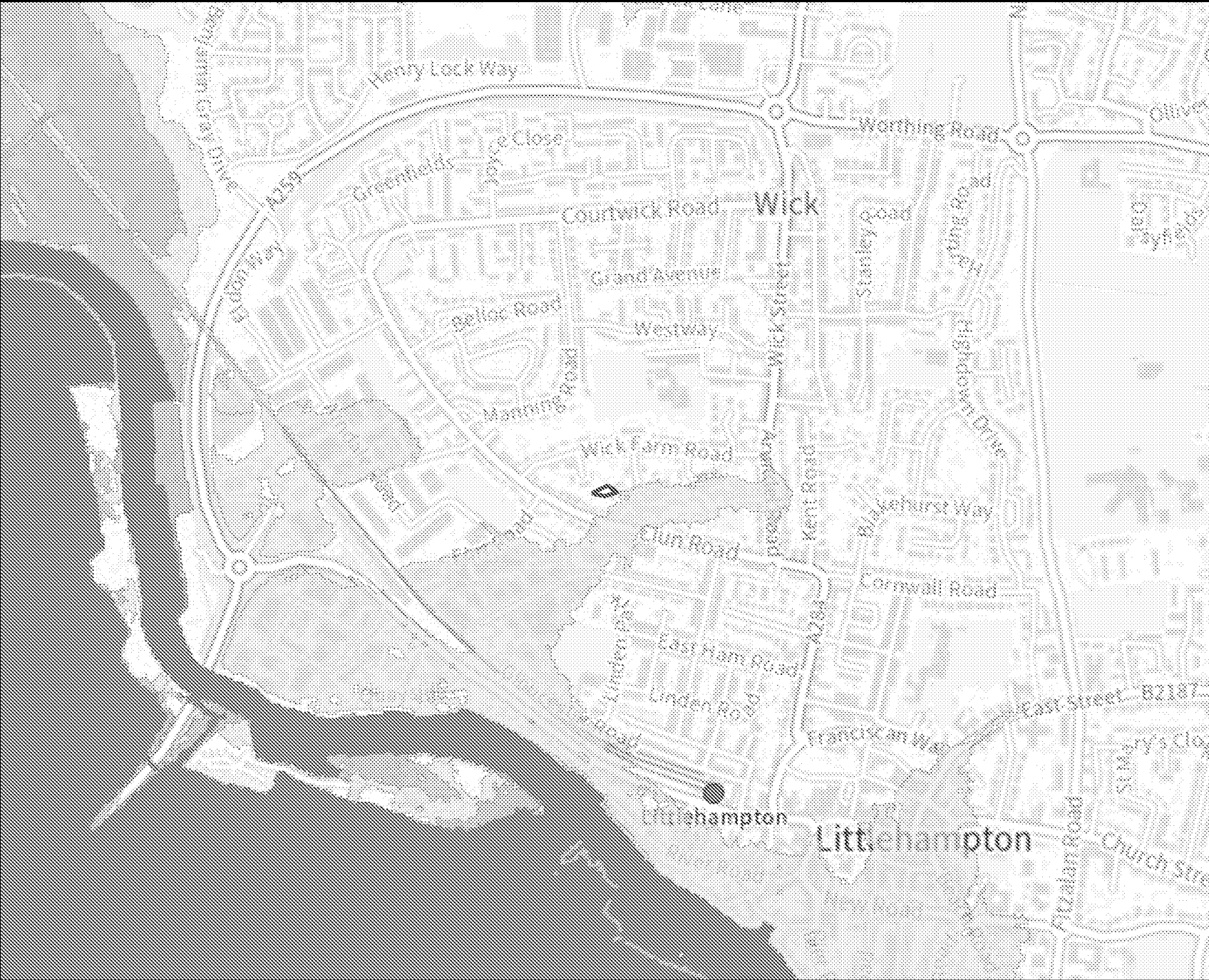
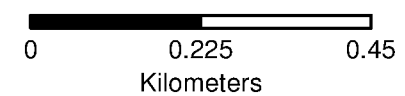


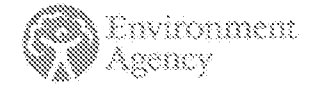
Legend

-  Site Boundary
-  0.5% AEP Defended Tidal
-  0.5% AEP (2065) Defended Tidal
-  0.5% AEP (2115) Defended Tidal
-  0.1% AEP Defended Tidal

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000










N

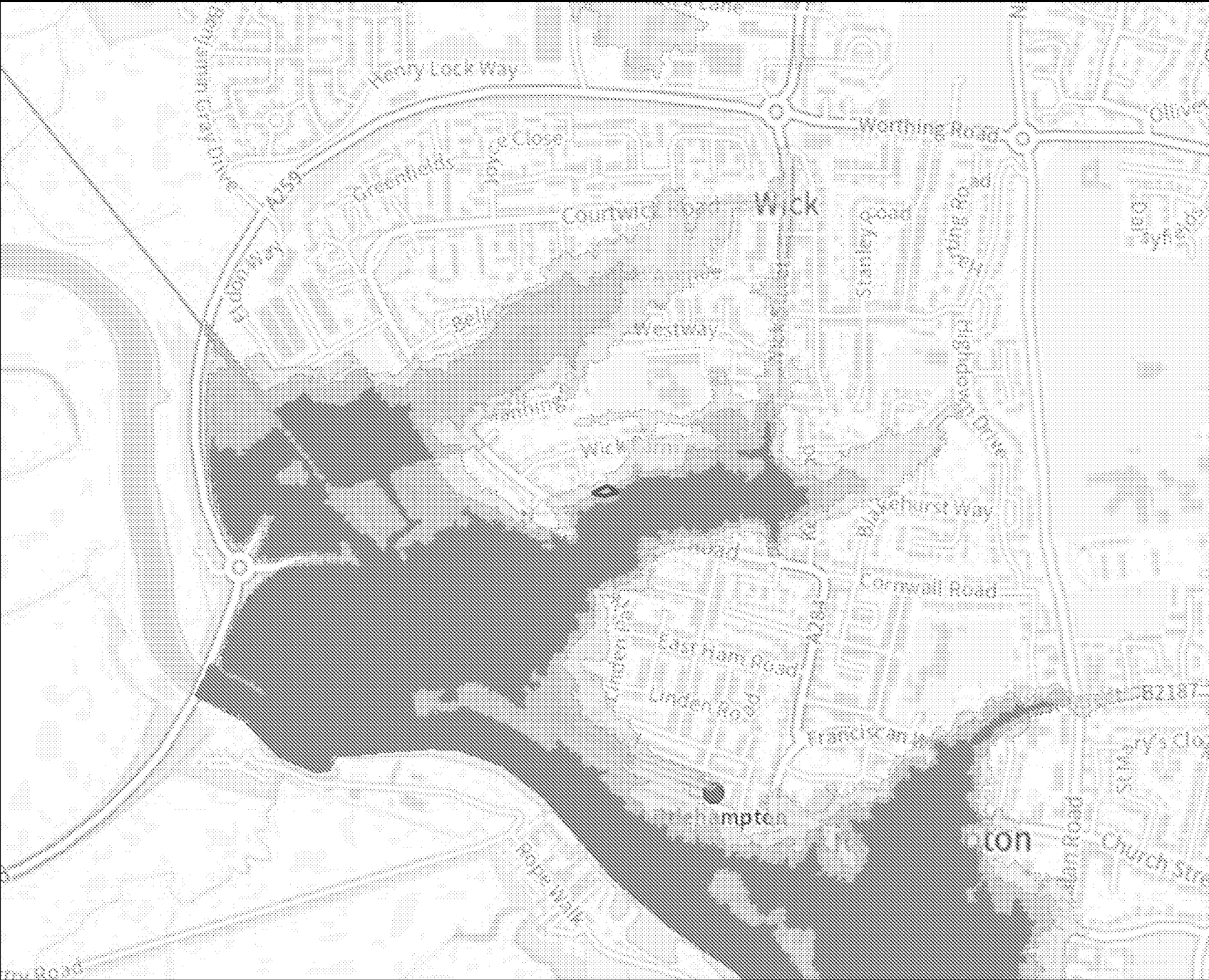
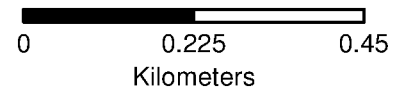


Legend

-  Site Boundary
-  0.5% AEP (2012) (Undefended)
-  0.5% AEP (2070) (Undefended)
-  0.5% AEP (2115) (Undefended)
-  0.1% AEP (2012) (Undefended)

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000





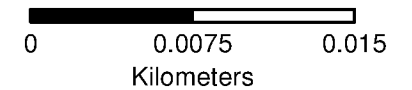
Legend

 Site Nodes

 Site Boundary

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:350



Product 4 Flood Risk Data Requested by: Stuart Magowan
Site: 7 Roman Acre, Wick, Littlehampton, BN17 7HN
Table 1: Water Levels: Tidal Undefended

Node Ref	NGR		Modelled Flood Levels in Metres AOD			
	Eastings	Northings	Undefended Annual Exceedance Probability			
			0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	502309	102733	-	-	4.88	-
2	502333	102745	-	-	4.88	-
3	502328	102736	-	-	4.88	-
4	502328	102729	-	4.27	4.88	-
5	502348	102735	3.70	4.27	4.88	3.97

Table 2: Water Levels: Tidal Defended

Node Ref	NGR		Modelled Flood Levels in Metres AOD			
	Eastings	Northings	Defended Annual Exceedance Probability			
			0.5%	0.5% (2065)*	0.5% (2115)*	0.1%
1	502309	102733	-	-	-	-
2	502333	102745	-	-	-	-
3	502328	102736	-	-	-	-
4	502328	102729	-	-	-	-
5	502348	102735	-	-	-	-

Table 3: Water Depths: Tidal Undefended

Node Ref	NGR		Modelled Flood Depths in Metres			
	Eastings	Northings	Undefended Annual Exceedance Probability			
			0.5%	0.5% (2070)*	0.5% (2115)*	0.1%
1	502309	102733	-	-	0.43	-
2	502333	102745	-	-	0.49	-
3	502328	102736	-	-	0.61	-
4	502328	102729	-	0.23	0.84	-
5	502348	102735	0.04	0.53	1.14	0.24

Table 4: Water Depths: Tidal Defended

Node Ref	NGR		Modelled Flood Depths in Metres			
	Eastings	Northings	Defended Annual Exceedance Probability			
			0.5%	0.5% (2065)*	0.5% (2115)*	0.1%
1	502309	102733	-	-	-	-
2	502333	102745	-	-	-	-
3	502328	102736	-	-	-	-
4	502328	102729	-	-	-	-
5	502348	102735	-	-	-	-

All levels taken from: Arun Coastal Modelling (2012), by JBA Consulting, with updated defended modelling (2017).

Produced on: 26/11/2024

*** The flood risk data provided is based on existing EA hydraulic models with an allowance for climate change. Please note the climate change allowances provided are not up to date. These were updated on 27 July 2021.**

You should refer to 'Flood risk assessments: climate change allowances' for the most up to date allowances. You will need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

There is no additional information or health warnings for these levels/depths or the model from which they have been produced.



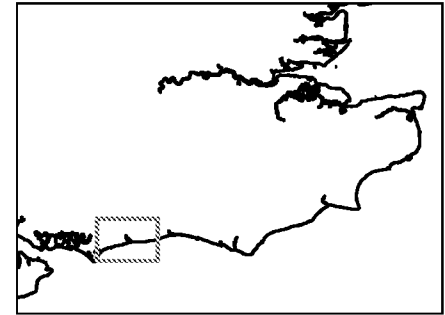
Notes

Hydraulic modelling has been undertaken as part of this SFRA to provide updated climate change flood mapping in the Arun District for Flood Zone 3a. This modelling followed the latest guidance for climate change in FRAs/SFRAs released by the Environment Agency in February 2018 (and updated in April 2019). Climate change for fluvial events has been based on the Higher Central estimates for the years 2031, 2061 and 2111. Present day flood risk information is available for comparison. Arun District is within the South East River Basin District and therefore allowances are:

- 2031 = +15% flows
- 2061 = +30% flows
- 2111 = +45% flows

For tidal/coastal events, undefended base still water levels and defended case still water level with wave overtopping simulations have been completed to inform future flood risk within the Arun District. Again, climate change allowance predictions are for the years 2031, 2061 and 2111, with present day outputs for comparison.

Key Plan



Legend

- Arun District SFRA boundary
- Present Flood Zone 3a
- Future Flood Zone 3a (2031)
- Future Flood Zone 3a (2061)
- Future Flood Zone 3a (2111)

REF	Date	Comments
A	August 2018	-



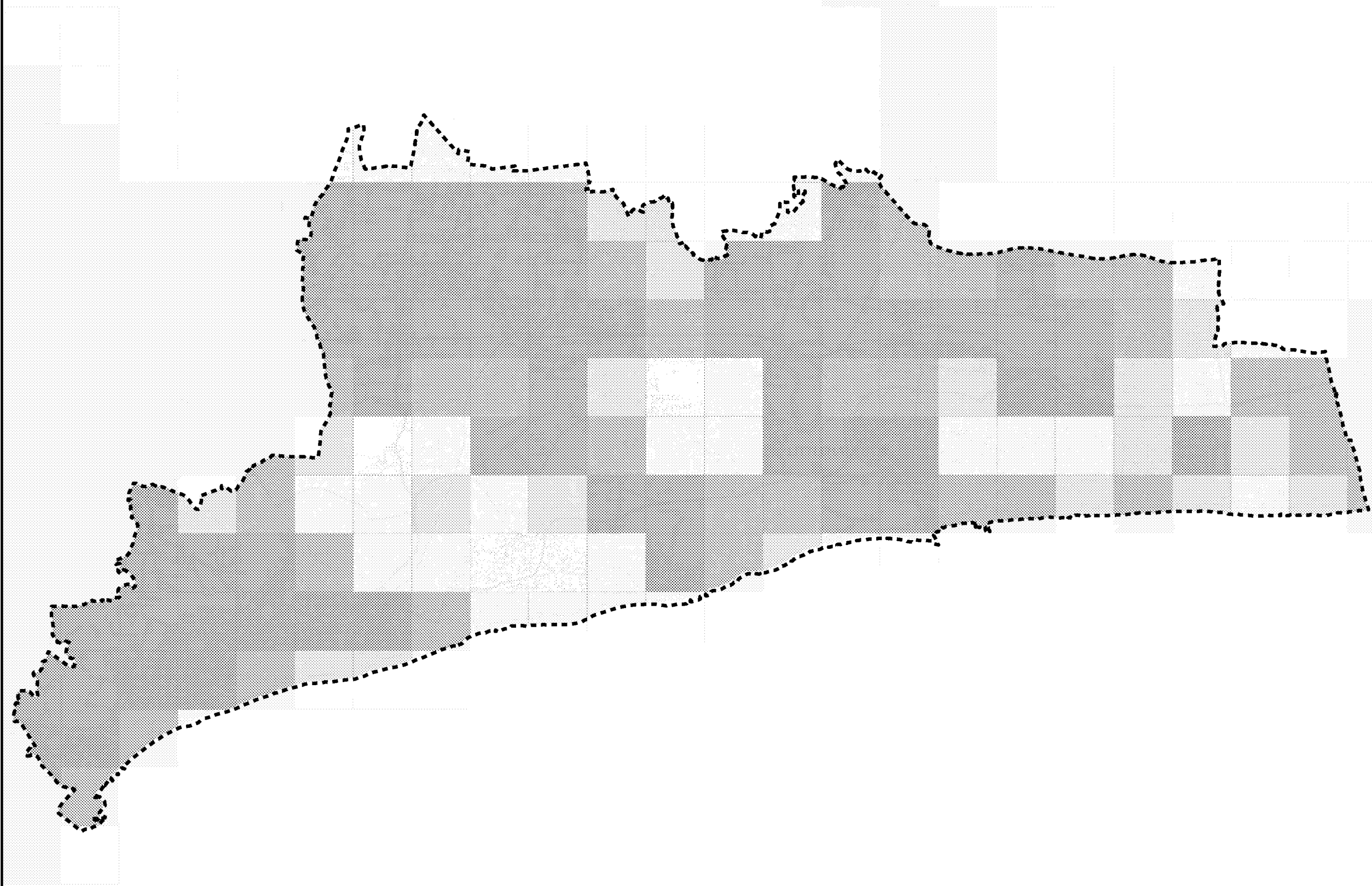
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ARUN DISTRICT COUNCIL

SFRA APPENDIX D
CLIMATE CHANGE MAPPING

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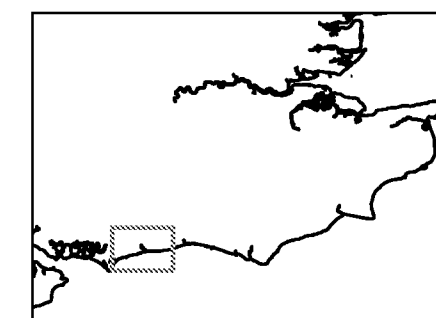
Notes

The Areas Susceptible to Groundwater Flooding (ASGWFF) is a strategic scale map showing groundwater flood areas on a 1km square grid. The data was produced to annotate Inundative Flood Risk Areas for Preliminary Flood Risk Assessment (PFRA) studies and allow the Local Flood Authority (LFA) to determine whether there may be a risk of flooding from groundwater.

The data shows the proportion of each 1km grid square where geological and hydrogeological conditions show that groundwater might emerge. It does not show the likelihood of groundwater flooding occurring. It does not take account of the chance of flooding from groundwater rebound. This dataset covers a large area of land, and only isolated locations within the overall susceptible area are actually likely to suffer the consequences of groundwater flooding.

The ASGWFF data should be used only in combination with other information, for example local data or historic data. It should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale. However, the data can help to identify areas for assessment at a local scale where finer measure datasets exist.

Key Plan



Legend

- Arun District SFRA boundary
- Areas Susceptible to Groundwater Flooding Classification
- < 25%
- >= 25% < 50%
- >= 50% < 75%
- >= 75%

REF	Date	Comments
1	June 2015	-



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ARUN DISTRICT COUNCIL
SFRA: APPENDIX F
AREAS SUSCEPTIBLE TO
GROUNDWATER FLOODING

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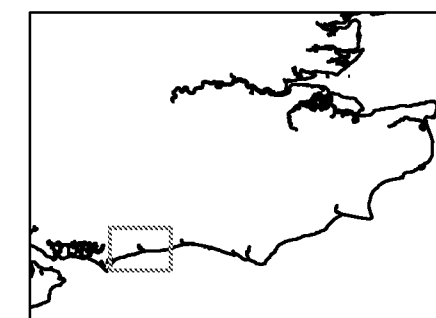
Notes

The Historic Flooding Map shows the recorded incidents and flood outlines provided by Arun District Council, West Sussex County Council, Southern Water and Environment Agency. Historical flood extent was obtained from the Environment Agency.

Flooding incidents provided have been categorised based upon the details provided in the records. Unknown flood points could not be determined from the information provided, and therefore could be from a number of sources.

Please note that not all historical records may be shown on this map, and that it is therefore advised you contact Arun District Council for updated information post 2015.

Key Plan



Legend

Arun District SFRA boundary

Historic flood outline

Source of flooding

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

REF	Date	Comments
A	June 2015	-



This map is based upon Ordnance Survey, and other data for protection of Designated Curves on the A27 at the Linsteads at the Arun, in Sussex, 2015. © Crown Copyright. Ordnance Survey is a registered trademark of the Ordnance Survey. All rights reserved. 100010001

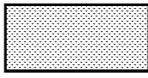
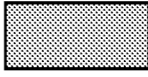


ARUN DISTRICT COUNCIL

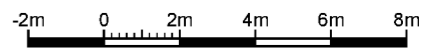
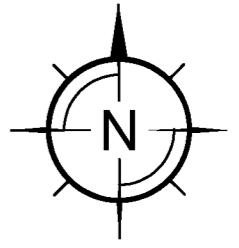
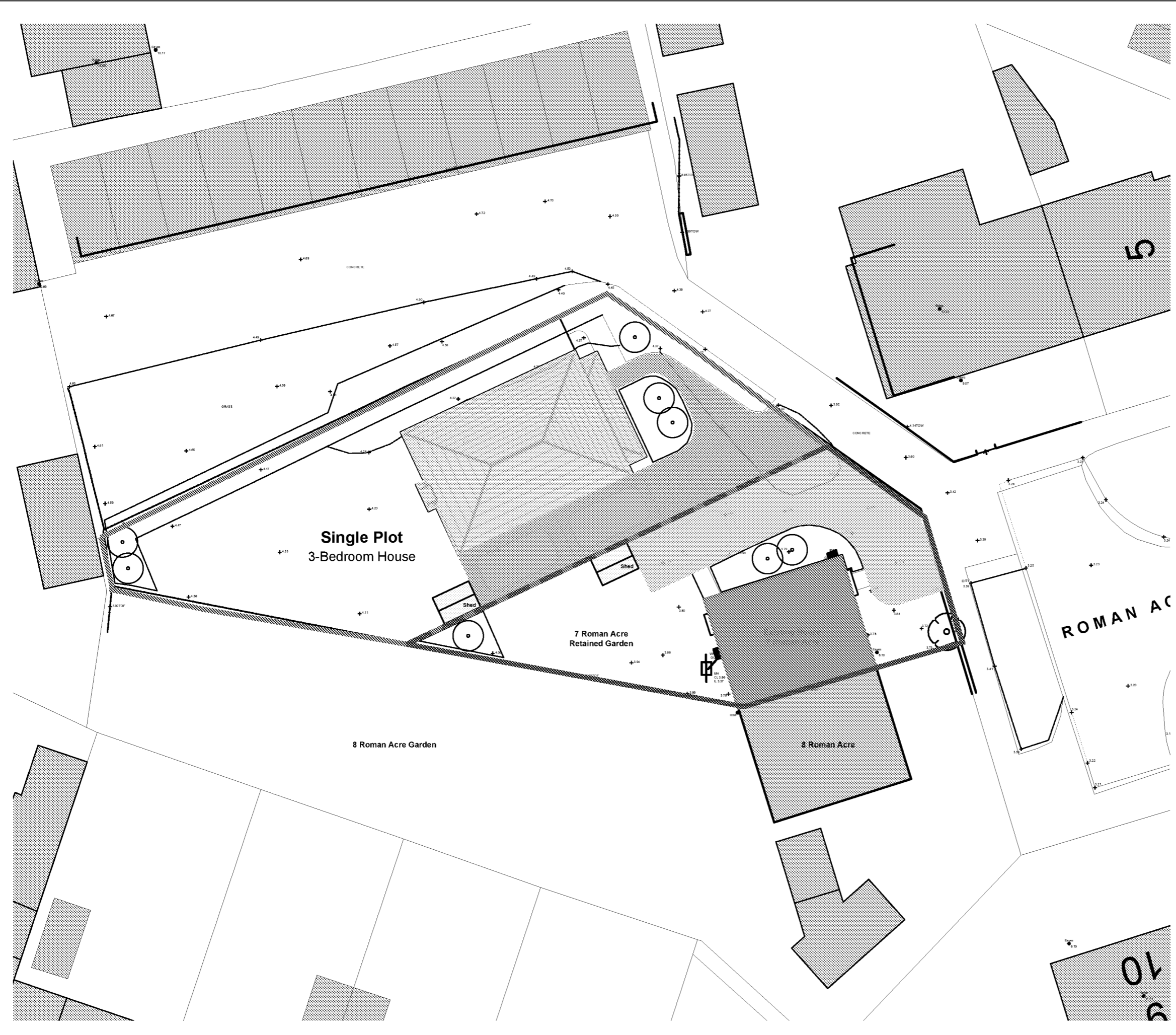
SFRA / APPENDIX H
HISTORIC FLOOD RECORDS

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Appendix 5
Proposed Site Layout
and Drained Areas Plan

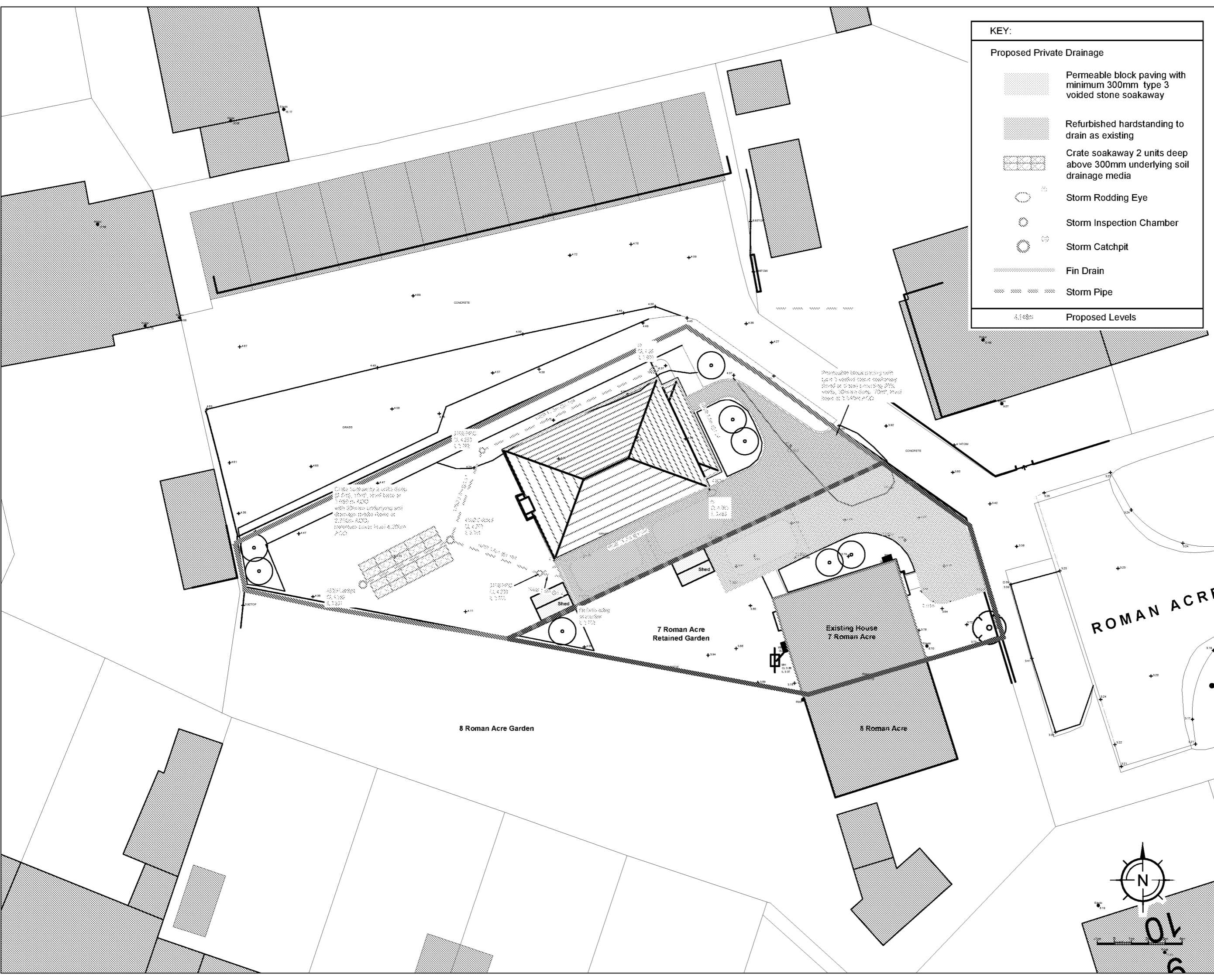
Drainage Areas	
	Proposed Roof Area 78m ²
	Proposed Drive 69m ²
	Refurbished Drive (to drain as existing) 60m ²
	Existing Roof Area (to drain as existing) 46m ²



TITLE Proposed Site Layout and Drained Areas Plan	
SCALE 1:200 @ A3	PROJECT No. 23953
REPORT TYPE FRA	DRG. No. 04

Appendix 6

Preliminary Drainage Strategy Plans and Calculations



KEY:

- Permeable block paving with minimum 300mm type 3 voided stone soakaway
- Refurbished hardstanding to drain as existing
- Crate soakaway 2 units deep above 300mm underlying soil drainage media
- Storm Rodding Eye
- Storm Inspection Chamber
- Storm Catchpit
- Fin Drain
- Storm Pipe
- Proposed Levels

- GENERAL NOTES:**
- All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.
 - This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.
 - The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.
 - Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.
- DRAINAGE NOTES:**
- All adoptable pipes, bends and junctions shall be vitrified clay in accordance with the current version of BS EN 295-1, with flexible joints and kilnmark certified.
 - All Adoptable sewers shall be in strict accordance with the SSG Appendix C - Design and Construction Guidance. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S bedding. Where the depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class Z bedding.
 - All private building drainage shall be constructed in strict accordance with the current version of BS EN 752:2017. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.
 - Where a pipe is within 1m of a foundation the trench shall be filled with class GEN 3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN 3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm; in both cases the pipe shall be bedded and surrounded in the 150mm thick class GEN 3 concrete.
 - Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN 3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
 - All sumps shall have rodding access plates fitted at their bases (ground floor level).
 - Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.
 - Any discrepancy between the drawing and site should be reported immediately to the Engineer.
 - All manhole and chamber sizes are given as a minimum to meet the SSG Appendix C-Design and Construction Guidance.

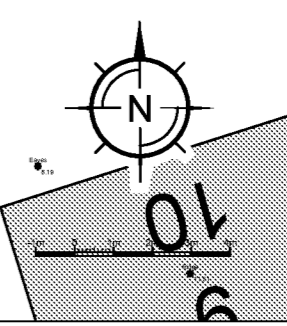
REV	DATE	BY	DESCRIPTION	CHK

Issue Status **FOR APPROVAL**

The Civil Engineering Practice
 11 Tungsten Building
 George Street
 Fishergate
 Sussex
 BN41 1RA

01323 424426
 info@cep.co.uk
 www.cep.co.uk

CLIENT	Jeff Djevciet
PROJECT	7 Roman Acre, Wick, Littlehampton
TITLE	Proposed Drainage Strategy Plan Preferred Option
DRAWN	N Thompson
DATE	Jan 2025
PROJECT NO.	20053
PREPARED	S Magowan
CHECKED	SRM
SCALE	1:100 @ A1, 1:200 @ A3
REV. No.	05
REV.	-



Design Settings

Rainfall Methodology	FEH-22		Minimum Velocity (m/s)	0.75
Return Period (years)	2		Connection Type	Level Soffits
Additional Flow (%)	0		Minimum Backdrop Height (m)	0.200
CV	1.000		Preferred Cover Depth (m)	0.500
Time of Entry (mins)	5.00		Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00		Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	150.0			

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.004	5.00	4.250	1200	502321.571	102739.976	0.458
2	0.004	5.00	4.200	1200	502324.950	102732.731	0.845
3_OUT	0.007	5.00	3.950	1200	502338.027	102737.607	0.200
4			4.200	1200	502319.691	102734.704	0.899
5_OUT			4.200	1200	502316.393	102733.709	0.900

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	1	4	5.597	0.600	3.792	3.301	0.491	11.4	100	5.04	57.4
1.000	2	4	5.617	0.600	3.355	3.301	0.054	104.0	100	5.12	57.1
1.001	4	5_OUT	3.445	0.600	3.301	3.300	0.001	3445.0	150	5.48	56.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.000	2.301	18.1	0.8	0.358	0.799	0.004	0.0	14	1.153
1.000	0.753	5.9	0.8	0.745	0.799	0.004	0.0	25	0.530
1.001	0.163	2.9	1.6	0.749	0.750	0.008	0.0	81	0.168

Simulation Settings

Rainfall Methodology	FEH-22		Analysis Speed	Normal		Starting Level (m)
Rainfall Events	Singular		Skip Steady State	x		Check Discharge Rate(s) x
Summer CV	1.000		Drain Down Time (mins)	240		Check Discharge Volume x
Winter CV	1.000		Additional Storage (m³/ha)	0.0		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	0	0
100	45	0	0

Node 3_OUT Offline Orifice Control

Flap Valve	✓		Invert Level (m)	3.750		Discharge Coefficient	0.600
Loop to Node	2		Diameter (m)	0.100			



Node 5 OUT Depth/Area Storage Structure

Base Inf Coefficient (m/hr) 0.00000 Safety Factor 2.0 Invert Level (m) 3.050
 Side Inf Coefficient (m/hr) 0.00360 Porosity 0.95 Time to half empty (mins)

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	10.0	5.6	0.800	10.0	5.6	0.801	0.0	5.6

Node 3 OUT Depth/Area Storage Structure

Base Inf Coefficient (m/hr) 0.00360 Safety Factor 2.0 Invert Level (m) 3.540
 Side Inf Coefficient (m/hr) 0.00000 Porosity 0.30 Time to half empty (mins) 550

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	70.0	70.0	0.300	70.0	70.0	0.301	0.0	70.0



Results for 30 year Critical Storm Duration. Lowest mass balance: 99.59%

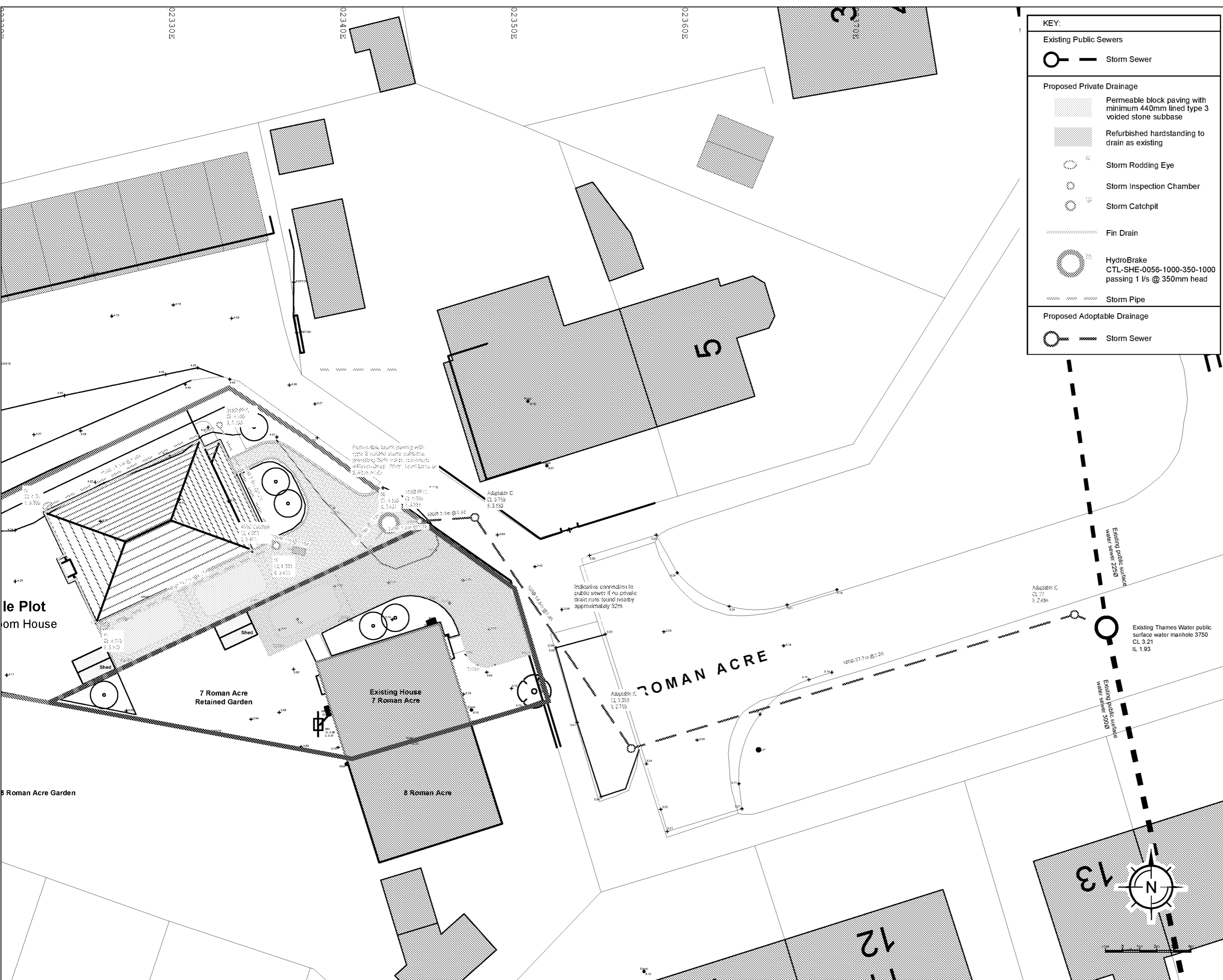
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	1	10	3.814	0.022	2.0	0.0254	0.0000	OK
240 minute winter	2	352	3.446	0.091	0.4	0.1026	0.0000	OK
600 minute winter	3_OUT	570	3.721	-0.029	0.3	3.7970	0.0000	OK
240 minute winter	4	468	3.445	0.144	0.8	0.1634	0.0000	OK
240 minute winter	5_OUT	340	3.445	0.145	0.8	3.9217	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	1	2.000	4	2.0	0.707	0.110	0.0215	
240 minute winter	2	1.000	4	0.4	0.261	0.068	0.0429	
600 minute winter	3_OUT	Infiltration		0.0				
600 minute winter	3_OUT	Orifice	2	0.0				0.0
240 minute winter	4	1.001	5_OUT	0.8	0.309	0.279	0.0600	
240 minute winter	5_OUT	Infiltration		0.0				

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
600 minute winter	1	765	4.001	0.209	0.3	0.2365	0.0000	FLOOD RISK
600 minute winter	2	825	4.001	0.646	0.5	0.7306	0.0000	FLOOD RISK
960 minute winter	3_OUT	930	3.823	0.073	0.4	6.0256	0.0000	OK
600 minute winter	4	675	4.001	0.700	0.7	0.7914	0.0000	FLOOD RISK
600 minute winter	5_OUT	795	4.001	0.701	0.6	8.3980	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
600 minute winter	1	2.000	4	0.3	0.224	0.017	0.0438	
600 minute winter	2	1.000	4	0.5	0.182	0.079	0.0439	
960 minute winter	3_OUT	Infiltration		0.0				
960 minute winter	3_OUT	Orifice	2	0.3				1.3
600 minute winter	4	1.001	5_OUT	0.6	0.245	0.207	0.0606	
600 minute winter	5_OUT	Infiltration		0.0				



KEY:

Existing Public Sewers

— Storm Sewer

Proposed Private Drainage

Permeable block paving with minimum 440mm lined type 3 voided stone subbase

Refurbished hardstanding to drain as existing

Storm Rodding Eye

Storm Inspection Chamber

Storm Catchpit

Fin Drain

HydroBrake CTL-SHE-0056-1000-350-1000 passing 1 l/s @ 350mm head

Storm Pipe

Proposed Adoptable Drainage

Storm Sewer

- GENERAL NOTES:**
- All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.
 - This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.
 - The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.
 - Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.
- DRAINAGE NOTES:**
- All adoptable pipes, bends and junctions shall be vitrified clay in accordance with the current version of BS EN 295-1, with flexible joints and kilnmark certified.
 - All adoptable sewers shall be in strict accordance with the SSG Appendix C - Design and Construction Guidance. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S bedding. Where the depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class Z bedding.
 - All private building drainage shall be constructed in strict accordance with the current version of BS EN 752 2017. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.
 - Where a pipe is within 1m of a foundation the trench shall be filled with class GEN 3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN 3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm; in both cases the pipe shall be bedded and surrounded in 150mm thick class GEN 3 concrete.
 - Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN 3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
 - All syps shall have rodding access plates fitted at their bases (ground floor level).
 - Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.
 - Any discrepancy between the drawing and site should be reported immediately to the Engineer.
 - All manhole and chamber sizes are given as a minimum to meet the SSG Appendix C-Design and Construction Guidance

REV	DATE	BY	DESCRIPTION	CHK

Issue Status **FOR APPROVAL**

The Civil Engineering Practice
 11 Tungsten Building
 George Street
 Fishergate
 Sussex
 BN41 1RA

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 info@cep.co.uk
 www.cep.co.uk

CLIENT	Jeff Djevdet
PROJECT	7 Roman Acre, Wick, Littlehampton
TITLE	Proposed Drainage Strategy Plan Option 2
DRAWN	N Thompson
DATE	Jan 2025
PROJECT NO.	20953
DESIGNED	S Magowan
CHECKED	SRM
REV. NO.	06
SCALE	1:100 @ A1, 1:200 @ A3

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	0.75
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	0.500
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	150.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.004	5.00	4.350	1200	502333.037	102745.109	0.554
2	0.004	5.00	4.063	1200	502336.350	102738.057	0.600
3	0.007	5.00	3.950	1200	502340.490	102738.612	0.570
4_OUT			3.210	1200			1.331

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	7.791	0.600	3.796	3.463	0.333	23.4	100	5.08	57.3
1.001	2	3	1.000	0.600	3.463	3.453	0.010	100.0	100	5.10	57.2
1.002	3	4_OUT	55.000	0.600	3.380	1.879	1.501	96.6	100	5.82	54.3

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.602	12.6	0.8	0.454	0.500	0.004	0.0	18	0.907
1.001	0.769	6.0	1.7	0.500	0.397	0.008	0.0	36	0.653
1.002	1.278	10.0	2.9	0.470	1.231	0.015	0.0	37	1.111

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	45	0	0

Node 3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	3.380	Product Number	CTL-SHE-0056-1000-0350-1000
Design Depth (m)	0.350	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200



Node 3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	3.400
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	70.0	0.0	0.440	70.0	0.0	0.441	0.0	0.0

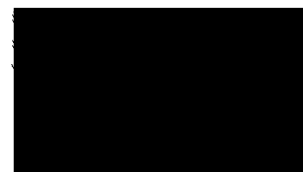
Appendix 7

Outline Drainage Management and Maintenance Plan

Drainage Management and Maintenance Plan



The Civil Engineering Practice
11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA



Project	Roman Acre, Wick, Littlehampton
Project Number	23953
By	Steve Doughty
Date	30 January 2025

1 Introduction

- 1.1 This Drainage Maintenance Schedule has been prepared as the initial draft of the document that will become the Drainage Maintenance and Management Manual.
- 1.2 The Drainage Maintenance and Management Manual will be completed as part of the Operation and Maintenance Manual to be provided by the Principal Contractor on completion of construction.
- 1.3 The Drainage Maintenance and Management Manual will be handed over the Site Owner on project completion.

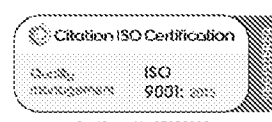
2 During Construction

- 2.1 Once appointed the Contractor will prepare a site specific method statement for the control of silt and other pollutants during construction. CIRIA Report C532, Control of water pollution from construction sites, provides further guidance on this.
- 2.2 The Contractor will maintain the proposed drainage system during construction and until the handing over of the site.

3 Surface Water Drainage System

3.1 Overview

- 3.1.1 The surface water drainage system has been designed as a Sustainable Urban Drainage System (SuDS)
- 3.1.2 The system has been designed to collect surface water from the roofs and discharge it to ground via soakaways.
- 3.1.3 Driveways and parking areas have been designed as permeable paving with infiltration to ground.
- 3.1.4 In the event that infiltration is unviable surface water will be discharged at a restricted rate to the existing private drains beneath the garden of number 7 Roman Acre.



4 Schedule of Maintenance

4.1 There are three categories of maintenance activities:

- **Regular maintenance**

Basic tasks undertaken on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.

- **Occasional maintenance**

Tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).

- **Remedial maintenance**

Intermittent tasks that may be required to rectify faults associated with the system. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.

4.2 The following maintenance schedule details the typical tasks to be undertaken at different intervals.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Manage vegetation and remove nuisance plants – aesthetics	As required
	Litter and debris removal – catchpits and manholes	Monthly or as required
	Cleaning of gutters and any filters on downpipes	3 Monthly
	Remove sediment and debris from silt trap chambers, channel drains and inlet chambers	6 monthly
	Visual inspection of permeable paving for defects and settlement	Annually
	Sweeping / brushing of permeable paving	Every 2 years
	Surface and foul water pipework – jetting / rodding	Every 2 years or as required
Corrective Maintenance	Remove debris / blockages to silt traps / channel drains	As required
	Repairs to access chambers / manhole covers	As required
	Replace any broken permeable blocks / surface, remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipes, channel drains or gulleys for blockages or standing water and clear	As required
	Reconstruct storage structures if performance deteriorates or failure occurs	As required

Indicative Schedule of Maintenance for the Proposed Drainage System

Component	Inspection Frequency					
	1 Month	3 Months	6 Months	1 Year	After leaf fall in Autumn	2 Years
Gullies, Channels and Gutters		✓			✓	
Catchpits	✓				✓	
Surface and Foul Water Pipework						✓
Permeable Paving				✓		
Flow Controls			✓			
Storage Facilities				✓		

Inspection Frequency Summary

5 Health and Safety

5.1 Designers Residual Risks

5.1.1 There are no significant residual risks associated with the construction of the proposed surface or foul water drainage network or permeable paving system beyond common site risks that would reasonably be anticipated by a competent Civil Engineering Contractor.

5.2 Construction Phase

5.2.1 The Principal Contractor will undertake a construction phase Health and Safety Plan for the site.

5.2.2 Prior to handover the Principal Contractor will undertake a review of maintenance activities required and prepare suitable Health and Safety documentation as part of the site hand over documents.

6 Design Life

6.1 The design life of the development is likely to exceed the design life of the components within the SuDS network. During the routine drainage inspections it may be determined that some components have reached the end of their functional life cycle.

6.2 Where possible repairs should be the first option considered however if repairs are unviable it will be necessary for the property owner to arrange for the replacement of the faulty component.

7 Emergency Plan

7.1 Potential flood and maintenance indicators:

- Manholes or inspections chambers overflowing
- Gullies overflowing or ponding
- Channel drains overflowing or ponding
- Other visual indicators of the drainage system not performing as it should

7.2 Should any of the items above occur then immediate action as outlined below should be undertaken:

- Inspect for blockages in the problem area
- Should the problem not be identified via an initial inspection:
 - For unadopted onsite drainage the Site Owner should appoint a suitable drainage engineer to inspect and survey the system and jet any blockages
 - Where it is suspected that there is a problem with the downstream drainage network the Owner or relevant statutory undertaker of that system should be alerted

8 Appended Documents

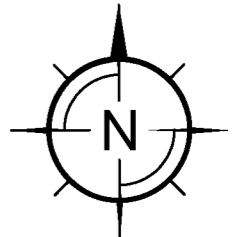
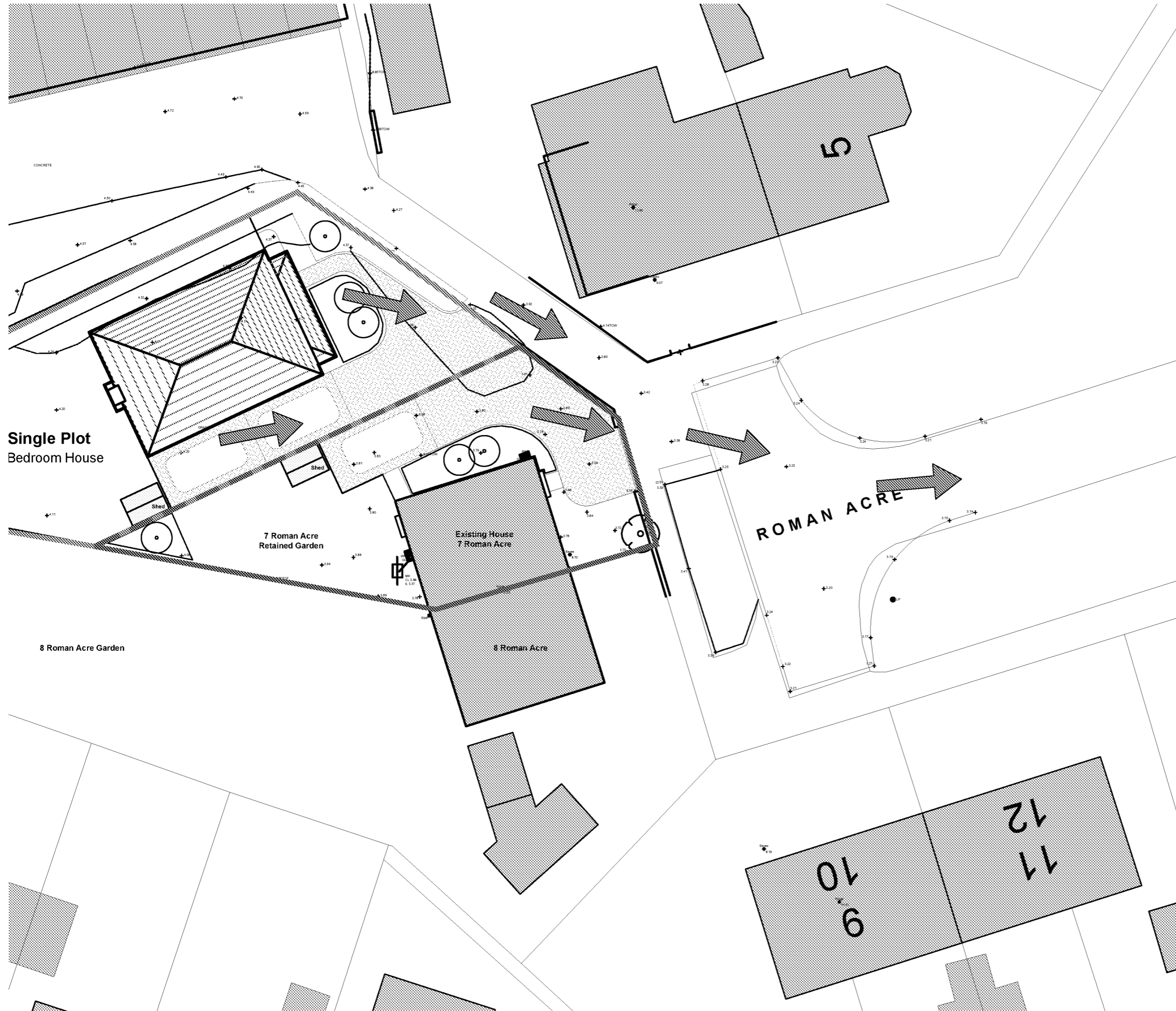
Approved Drainage Drawings and Construction Details (to be added once approved)

Pre Handover Inspection Checklist (to provided by Principal Contractor)

Maintenance Checklist (to provided by Principal Contractor at handover)

Maintenance Record Pro Forma (to provided by Principal Contractor at handover)

Appendix 8
Surface Water Exceedence
Route Plan



TITLE	
Surface Water Exceedance Route Plan	
SCALE	PROJECT No.
1:200 @ A3	23953
REPORT TYPE	DRG. No.
FRA	07