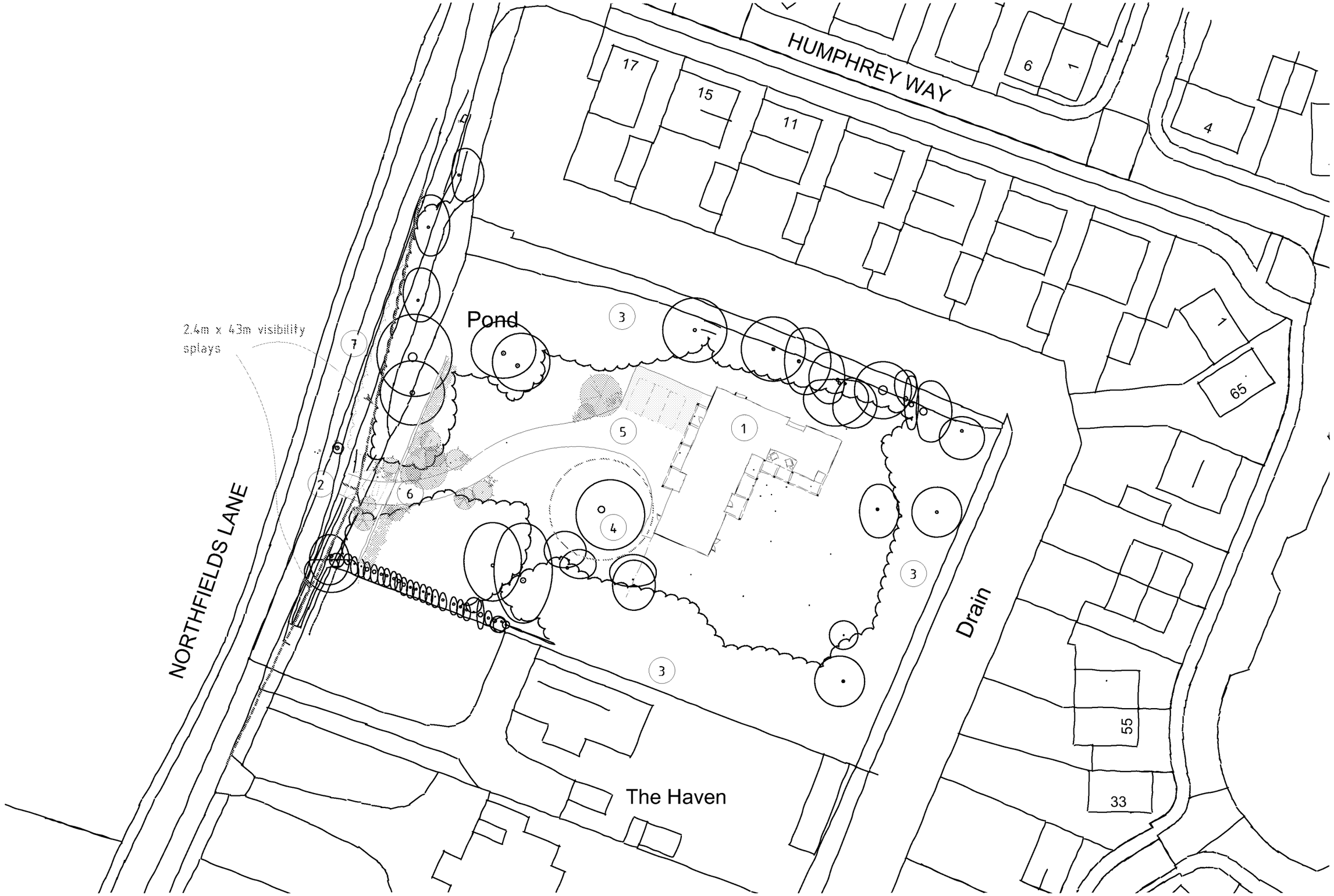
APPENDICES

Appendix A Architectural Development Proposals



KAS Studio
architectural services
hello@KASStudio.co.uk

ARUN DISTRICT COUNCIL AL/127/24/PL

KEY
1 PROPOSED DETACHED DWELLING (2-STOREY ELEMENT)
2 EXISTING SITE ACCESS REUSED AND ADAPTED TO SUIT
3 EXISTING BOUNDARY PLANTING BUFFER RETAINED
4 EXISTING OAK TREE RETAINED (GREEN DASHED LINE INDICATED RPA)
5 NEW DRIVE AND PARKING AREA
6 NEW ENTRANCE GATE WITHIN NEW FLINT WALL ALONG WESTERN BOUNDARY
7 EXISTING HEDGE CUT BACK AS REQUIRED TO ALLOW VISIBILITY SPLAYS

SUSTAINABILITY
POTENTIAL LOCATION OF ELECTRIC VEHICLE CHARGING POINT - SEE PROPOSED FLOOR PLAN
POTENTIAL AREA OF PV PANELS - SEE PROPOSED ROOF PLAN AND ELEVATIONS
POTENTIAL LOCATION OF AIR SOURCE HEAT PUMP - SEE PROPOSED FLOOR PLAN
CAR PARKING PROVISION 3no PARKING SPACES ON DRIVE
BINS AND BIKES PROVISION STORED WITHIN DEDICATED INTEGRAL STORAGE OR GARDEN SHED

N

NORTHFIELDS LANE, ALDINGBOURNE, FONTWELL, ARUN, PO20 3UH

Site/roof plan

STAGE 3

1:500 @ A3

SEPT | 2024

24005 - 03

Appendix B Topographic Survey

POINTS							
Number	Species	Trunk Dia	North	East	South	West	Height
No.1	Sycamore	0.45	3.0	2.5	4.0	3.0	12.0
No.2	Sycamore	0.20	0.1	3.0	4.5	3.0	12.0
No.3	Sycamore	0.20	1.0	1.0	1.0	1.0	12.0
No.4	Sycamore	0.30	3.5	3.5	3.5	1.0	12.0
No.5	Sycamore	0.30	4.5	3.0	4.0	2.0	12.0
No.6	Sycamore	0.28	4.5	3.0	3.0	2.0	15.0
No.7	Oak	1.20	6.0	5.5	5.5	5.0	17.0
No.8	Sycamore	0.60	4.5	4.5	4.5	4.5	17.0
No.9	Hawthorne	0.20	0.5	0.5	0.5	0.5	4.0
No.10	Conifer	0.20	0.5	0.5	1.5	1.0	4.0
No.11	Conifer	0.50	0.5	1.5	1.5	0.5	14.0
No.12	Conifer	0.30	1.0	0.5	1.0	0.5	14.0
No.13	Conifer	0.60	2.0	0.5	2.0	0.5	17.0
No.14	Conifer	0.15	2.0	0.5	0.1	0.5	17.0
No.15	Conifer	0.30	1.0	0.5	1.5	0.5	17.0
No.16	Conifer	0.30	1.0	0.5	1.5	0.5	17.0
No.17	Conifer	0.30	1.0	0.5	1.5	0.5	17.0
No.18	Conifer	0.30	1.0	0.5	1.5	0.5	17.0
No.19	Conifer	0.10	1.0	0.5	1.5	0.5	17.0
No.20	Conifer	0.20	1.0	0.5	1.5	0.5	17.0
No.21	Conifer	0.20	1.0	0.5	1.5	0.5	17.0
No.22	Conifer	0.25	1.0	0.5	1.5	0.5	17.0
No.23	Conifer	0.25	1.0	0.5	1.5	0.5	17.0
No.24	Conifer	0.45	1.0	0.5	1.5	0.5	17.0
No.25	Conifer	0.45	1.0	0.5	1.5	0.5	17.0
No.26	Conifer	0.30	1.0	0.5	1.5	0.5	17.0
No.27	Conifer	0.30	1.0	0.5	1.5	0.5	17.0
No.28	Conifer	0.30	1.0	0.5	1.5	0.5	17.0
No.29	Conifer	0.50	1.0	0.5	1.5	0.5	17.0
No.30	Conifer	0.50	1.0	0.5	1.5	0.5	17.0
No.31	Conifer	0.10	1.0	0.5	1.5	0.5	9.0
No.32	Conifer	0.15	1.0	0.5	1.5	0.5	9.0
No.33	Conifer	0.07	1.0	0.5	0.5	0.5	4.0
No.34	Sycamore	0.20	4.0	2.0	1.0	3.0	7.0
No.35	Sycamore	0.35	2.0	4.0	1.0	1.0	5.0
No.36	Oak	0.90	4.0	6.0	5.5	3.5	16.0
No.37	Sycamore	0.60	5.5	6.0	5.5	4.0	16.0
No.38	Oak	0.30	4.5	4.5	3.5	3.0	16.0
No.39	Ash	0.50	4.5	4.5	3.5	3.5	16.0
No.40	Ash	0.55	4.5	4.5	3.5	4.5	16.0
No.41	Unknown	0.40	4.5	4.5	4.5	4.5	16.0
No.42	Hawthorne	0.40	4.5	4.5	4.5	4.5	16.0
No.43	Hawthorne	0.40	4.5	4.5	4.5	2.0	16.0
No.44	Sycamore	0.40	3.5	1.0	3.0	4.0	18.0
No.45	Sycamore	0.35	0.5	3.0	6.0	4.0	16.0
No.46	Sycamore	0.30	0.5	3.0	6.0	0.5	16.0
No.47	Unknown	1.20	4.0	4.0	4.0	4.0	4.0
No.48	Unknown	0.60	4.0	1.0	1.0	1.0	4.0
No.49	Unknown	0.60	4.0	1.0	3.5	1.0	4.0
No.50	Unknown	1.00	4.0	4.0	4.0	1.0	4.0
No.51	Unknown	0.35	2.0	3.0	4.0	3.0	4.0
No.52	Unknown	0.35	3.5	3.0	4.0	2.5	4.0
No.53	Unknown	0.35	3.5	3.5	3.5	3.5	4.0
No.54	Ash	0.10	2.0	2.0	2.0	2.0	3.0
No.55	Ash	0.35	3.5	3.0	3.5	4.0	5.0
No.56	Unknown	0.20	3.5	3.0	3.5	3.0	5.0
No.57	Unknown	0.10	3.5	3.0	1.0	3.0	5.0
No.58	Ash	0.70	8.0	4.0	6.0	4.0	17.0
No.59	Ash	0.40	6.0	4.0	5.0	4.0	17.0

Abbreviations

Line types

Multi directional tree canopy

Trunk position at ground level

Multi bole

No.38

Tree number

Edge of canopy

Notes

Tree species should be confirmed by a arboricultural consultant if critical
Trunk sizes are measured at 1.5m above ground level

Eaves heights (where shown) are taken at the end of the tile / top of guttering.
Ridge heights are taken at the top of the ridge tile.
Service covers indicated where visible at time of survey

Grid North

J. Brotherton & Partners
Land Surveyors & Engineers
'Firdown' 113 Frogmore Lane
Waterlooville, Hampshire PO8 9RD
Tel: 023 9259 1979
Email: enquiries@jbpsurveys.co.uk
Web: www.jbpsurveys.co.uk

Client: Ed Rees

Drawing Title: Topographic Land Survey

Location: Northfields Lane, Westergate, Arun, PO20 3UH

Revisions / Status / Notes

The grid and datum for this survey is based on the Ordinance Survey grid OSGB36

Revision A Extra Levels where accessable 18-10-24

LEVELS BASED ON OSGB36 | Surveyor:- SB | Assistant:- TC
GRID BASED ON OSGB36 | Drawn By:- SB | Checked by:- JB

Drawing & CAD Ref. 24340A | REVISIONS A

SCALE (when prtinted) 1:200 @ A0 | Date Monday 22nd April 2024

Removal of this block also removes all warranties
This drawing has been created for use at a scale of 1:200
All critical dimensions, positions and levels to be checked on site

Appendix C BGS Information & Records

SU 90 NW 71 9351 0542 **Nyton** **Block G**

Surface level +11.6 m
Water struck at +8.2 m
August 1981

Overburden	3.4 m
Mineral	2.3 m
Bedrock	1.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Head Gravel	Silt, sandy, with rootlets	0.8	1.0
	Clay, silty, with chalk	0.2	1.2
	Clay, greyish brown, with chalk and angular flint pebbles, becoming more silty, with rootlets, near base	1.8	3.0
	Silt, sandy, chalky, light brown	0.4	3.4
	a 'Very clayey' sandy gravel Gravel: fine with coarse, angular to sub-rounded; flint (some white, porous) and some rock fragments Sand: coarse and fine with medium Fines: clay	1.0	4.4
Raised Beach Deposits (younger)	b 'Clayey' pebbly sand on sandy gravel Gravel: fine and coarse, angular to well rounded; flint with some chalk and other rock fragments Sand: fine with coarse and some medium	1.3	5.7
London Clay	Clay, grey, silty near top	1.0+	6.7

GRADING

	Mean for deposit percentages			Depth below surface (m)	Percentages						
	Fines	Sand	Gravel		Fines	Sand			Gravel		
					-¼	+¼ -1	+1 -4	+4 -16	+16 -64	+64 mm	
a	25	40	35	3.4–4.4	25	12	7	21	25	10	0
b	8	63	29	4.4–5.0	12	71	2	2	4	9	0
				5.0–5.7	5	26	9	16	28	16	0
				Mean	**8**	**47**	**6**	**10**	**16**	**13**	**0**
a+b	**16**	**52**	**32**	**3.4–5.7**	**16**	**32**	**6**	**14**	**20**	**12**	**0**

COMMERCIAL IN CONFIDENCE

IGS 1536 (1159) 2/00 1/76 — Institute of Geological Sciences — Sheet 1 of

Borehole Reg No: SU90NW/71
Temp borehole No: SU90/26
Nat Grid Ref: SU 93510542
Locality: S. of Nyton Fm, by Nyton Spinney
Surface level: 11.6 m O.D.(ft O.D.)
Drilled by: Sondadores
Drill type:
Hole diameter: 8"
Depth(s) bailed:
Date started: 18/8/81
Date finished: "
Recorded by: PHAN

Classification of ground	Thickness m	Nature
O.B.	3.4	silt + pebbly clay
Min	2.3	sandy gravel + pebbly sand
bedrock	5.7 to 6.7	London Clay

Remarks

Explanation: ▽ Groundwater depth first encountered; a▼ Morning water level; p▼ Evening water level; ═══ Casing depth; —— Borehole depth; w Water sample; U, sample; solid ornament shows fraction recovered; • Spot disturbed sample; ┤ Bulk sample; S.P.T. Standard Penetration Test

Geological Classification	Description of Strata	Depth	Sampling	Sample Nos	Water level	Drilling and Casing progress
brickearth	Soil					
	sandy silt with rootlets.					
	silty clay with chalk	1.0				
Thanet Sands + gravel	chalky gravelly clay	2.0				
		3.0	3.0	CBSS 009		
	light brown chalky sandy silt	3.0			▽ 3.4	
	Sandy gravel c.gr. 10% f.gr 20% c. sand 65% f. " trace 5%	3.4	3.4 to 4.4	CCB 008		
	fine sand 95% - a little clay, no pebbles	4.0	4.4 to 5.0	CCB 009		
	pebbly sand 5 c.gr 10 f.gr 30 c.s 50 m+f.s	5.0	5.0 to 5.7	CCB 010		
			5.7	CBSS 010A		
London Clay	grey clay, silty nr. top	6.0	5.7 to 6.7	CBSS 010		end @ 6.7

Appendix D Southern Water Public Sewer Records

(c) Crown copyright and database rights 2024 Ordnance Survey 100031673 | Scale: 1:1250 | Date: 20/09/24 | Wastewater Plan A3

Data updated: 22/08/24 | Map Centre: 493932,105832 | Our Ref: 1574436 - 1 | Powered by digdat

searches@bpcivils.co.uk

D2312 Northfields Ln

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2024 Ordnance Survey 100031673 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
7701	F	0.00	0.00	
8601	F	10.97	10.10	
8602	F	11.05	0.00	
8603	F	10.78	9.12	
8702	F	11.27	9.81	
8801	F	11.87	10.47	
8802	F	11.66	10.32	
9602	F	10.83	9.13	
9801	F	11.96	10.74	

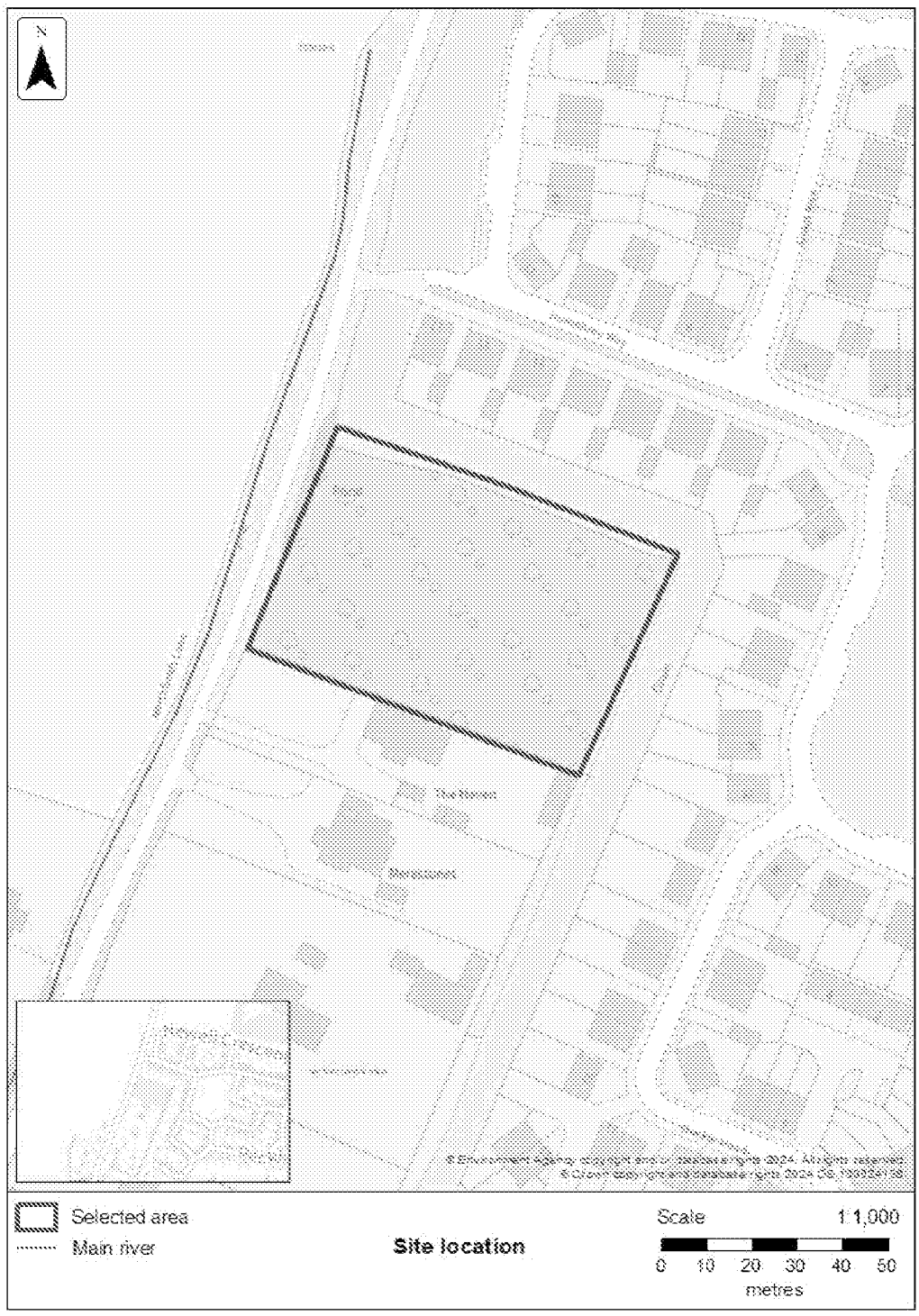
Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Appendix E Environment Agency Flood Risk Assessment Data

Flood risk assessment data

Location of site: Northfields Lane, Aldingbourne, Fontwell, PO20 3UH
Document created on: 17 September 2024
This information was previously known as a product 4.
Customer reference number: SSD375793

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- historic flooding
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- flood defences and attributes

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

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

For information on flooding from other sources such as surface water please contact the Lead Local Flood Authority, West Sussex County Council.

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

About the models used

Model name: Aldingbourne Catchment Modelling 2015
Scenario(s): Defended Fluvial, Undefended Fluvial
Date: 11 September 2015

Model name: Aldingbourne Updated Climate Change Allowances
Scenario(s): Defended climate change fluvial, Undefended climate change fluvial
Date: 2016

This model contains 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 occuring 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

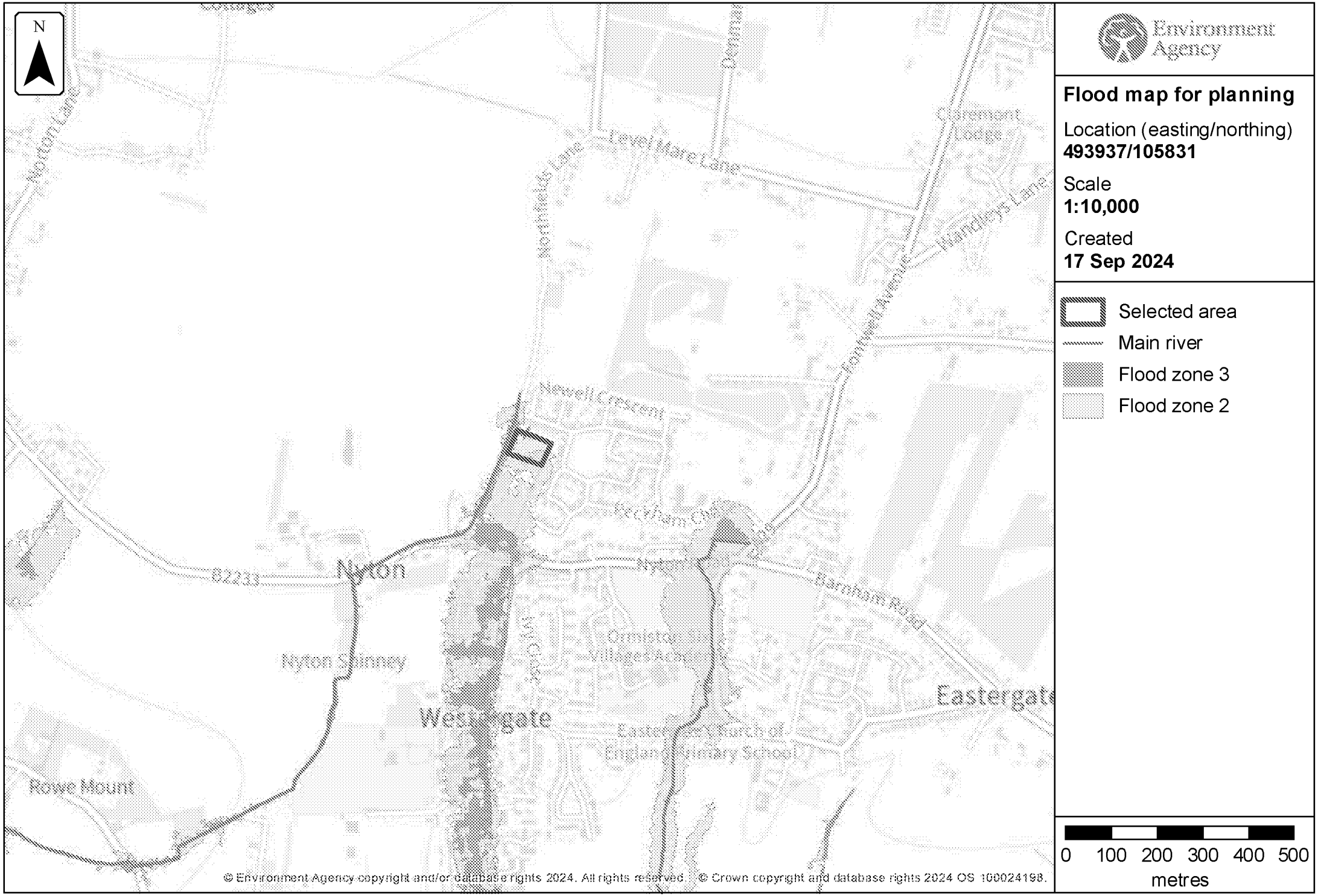
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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.



ARUN DISTRICT COUNCIL AL/127/24/PL

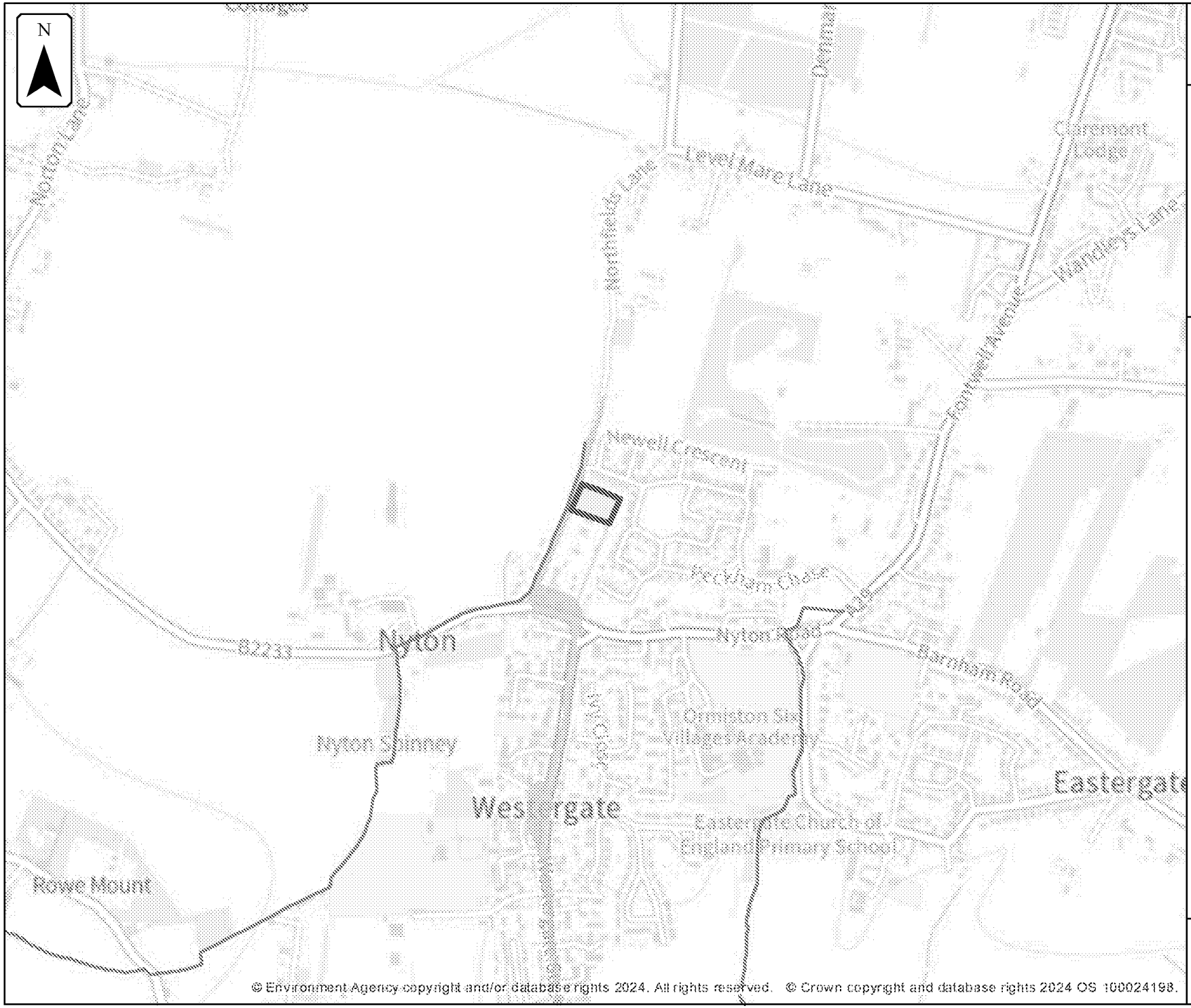
Historic flooding

This map is an indicative outline of areas that have previously flooded. Remember that:

- our records are incomplete, so the information here is based on the best available data
- it is possible not all properties within this area will have flooded
- other flooding may have occurred that we do not have records for
- flooding can come from a range of different sources - we can only supply flood risk data relating to flooding from rivers or the sea

You can also contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

Download recorded flood outlines in GIS format



Environment Agency

Historic flood map

Location (easting/northing)
493937/105831

Scale
1:10,000

Created
17 Sep 2024

Selected area

Main river

Date of flood event

November, 1960

0 100 200 300 400 500
metres

ARUN DISTRICT COUNCIL AL/127/24/PL

Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
1 November 1960	1 November 1960	drainage	other	No

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change

Modelled Flood Outlines (Defended Fluvial). Centred 493937,105831. Created 17/09/2024.

Environment Agency

N

Legend

- Site Boundary
- 5% AEP (Defended Fluvial)
- 1% AEP (Defended Fluvial)
- 0.1% AEP (Defended Fluvial)

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

Scale: 1:10,000

0 0.225 0.45
Kilometers

ARUN DISTRICT COUNCIL AL/127/24/PL

Modelled Flood Outlines (Undefended Fluvial). Centred 493937,105831. Created 17/09/2024.

Environment Agency

N

Legend

- Site Boundary
- 1% AEP (Undefended Fluvial)
- 0.1% AEP (Undefended Fluvial)

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

Scale: 1:10,000

0 0.225 0.45
Kilometers

ARUN DISTRICT COUNCIL AL/127/24/PL

Modelled Flood Outlines (Climate Change Defended). Centred 493937,105831. Created 17/09/2024.

Environment Agency

N

Legend

- Site Boundary
- 1% AEP +CC 35% Defended Fluvial
- 1% AEP +CC 45% Defended Fluvial
- 1% AEP +CC 105% Defended Fluvial

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

Scale: 1:10,000

0 0.225 0.45
Kilometers

ARUN DISTRICT COUNCIL AL/127/24/PL

Modelled Flood Outlines (Climate Change Undefended). Centred 493937,105831. Created 17/09/2024.

Environment Agency

N

Legend

- Site Boundary
- 1% AEP +CC 35% Undefended Fluvial
- 1% AEP +CC 45% Undefended Fluvial
- 1% AEP +CC 105% Undefended Fluvial

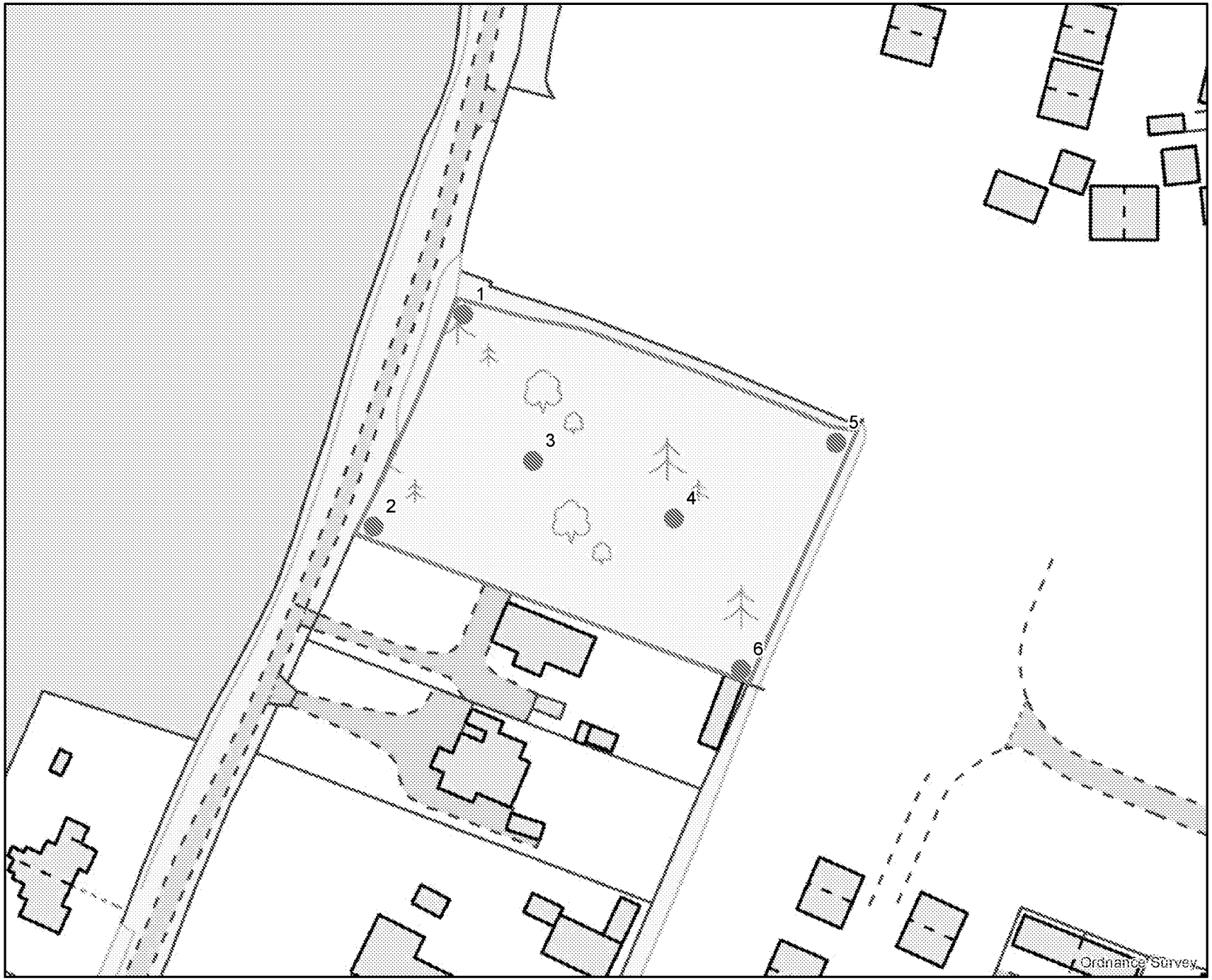
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

ARUN DISTRICT COUNCIL AL/127/24/PL

FRA Site Boundary & Node Points. Centred 493937,105831. Created 17/09/2024.



Environment Agency

N

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: 1:1,000

0 0.0225 0.045

Kilometers

ARUN DISTRICT COUNCIL AL/127/24/PL

Product 4 Flood Risk Data Requested by: Stuart Burnett

Site: Northfields Lane, Aldingbourne, Fontwell, PO20 3UH

Table 1: Water Levels: Fluvial Undefended

	NGR		Modelled Flood Levels in Metres AOD Undefended Annual Exceedance Probability					
Node Ref	Eastings	Northings	5%	1%	1% +CC (35%)	1% +CC (45%)	1% +CC (105%)	0.1%
1	493910	105863	-	-	12.43	12.51	12.68	-
2	493894	105823	-	-	12.26	12.32	12.46	-
3	493824	105835	-	-	-	-	12.51	-
4	493950	105825	-	-	-	-	12.47	-
5	493980	105839	-	-	-	-	12.71	-
6	493962	105796	-	-	-	-	12.47	-

Table 2: Water Levels: Fluvial Defended

	NGR		Modelled Flood Levels in Metres AOD Defended Annual Exceedance Probability					
Node Ref	Eastings	Northings	5%	1%	1% +CC (35%)	1% +CC (45%)	1% +CC (105%)	0.1%
1	493910	105863	-	12.10	12.17	12.17	12.68	12.63
2	493894	105823	-	-	-	-	12.46	12.41
3	493824	105835	-	-	-	-	12.51	-
4	493950	105825	-	-	-	-	12.47	12.44
5	493980	105839	-	-	-	-	12.71	-
6	493962	105796	-	-	-	-	12.44	12.39

Table 3: Water Depths: Fluvial Undefended

	NGR		Modelled Flood Depths in Metres Undefended Annual Exceedance Probability					
Node Ref	Eastings	Northings	5%	1%	1% +CC (35%)	1% +CC (45%)	1% +CC (105%)	0.1%
1	493910	105863	-	-	0.76	0.84	1.01	-
2	493894	105823	-	-	0.19	0.25	0.40	-
3	493824	105835	-	-	-	-	0.14	-
4	493950	105825	-	-	-	-	0.22	-
5	493980	105839	-	-	-	-	0.22	-
6	493962	105796	-	-	-	-	0.12	-

Office Address: Guildbourne House, Chatsworth Road, Worthing BN11 1LD.

[redacted]

Table 4: Water Depths: Fluvial Defended

	NGR		Modelled Flood Depths in Metres Defended Annual Exceedance Probability					
Node Ref	Eastings	Northings	5%	1%	1% +CC (35%)	1% +CC (45%)	1% +CC (105%)	0.1%
1	493910	105863	-	0.42	0.49	0.50	1.01	0.95
2	493894	105823	-	-	-	-	0.40	0.18
3	493824	105835	-	-	-	-	0.14	-
4	493950	105825	-	-	-	-	0.22	0.17
5	493980	105839	-	-	-	-	0.22	-
6	493962	105796	-	-	-	-	0.12	0.10

All levels taken from: Aldingbourne Modelling Study (Defended Only) (2015) by JBA Consulting, plus updated climate change allowances (2016).

Produced on: 17/09/2024

*** 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.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

Contact the Solent and South Downs Environment Agency team at ssdenquiries@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for

Appendix F Arun District Council Strategic Flood Risk Assessment Extract and Drainage Records

Arun District Council

Level 1 and Level 2 Strategic Flood Risk Assessment

Final Report

November 2016

Arun District Council
Civic Centre
Maltravers Road
LITTLEHAMPTON
West Sussex
BN17 5LF

that groundwater flooding will definitely be a problem within these areas, rather it provides an indication of potential risk.

Significant events of groundwater flooding reported in West Sussex[44] are reported to have occurred in:

- 1974
- Winter 1993–1994
- Winter 2000–2001
- Winter 2002–2003
- 2012 – Westergate/Barnham area
- 2013/14 – Westergate/Barnham area
- 2014 – Northfields Lane/Nyton Road/Level Mere Lane, Aldingbourne

It was observed that the extensive groundwater flooding of winter 2000 / 2001 followed a period of exceptionally high rainfall, but the direct source was not identified and therefore it may be that flooding was caused by a burst underground pipe rather than flooding from hard rock aquifers or superficial deposits[45]. Developers planning to build within groundwater emergence zones should still investigate whether groundwater flooding is likely to be a problem locally.

The Lidsey SWMP identified that groundwater flooding has been reported in Elm Grove in Barnham, Northfields Lane/Nyton Road in Westergate, and Wandleys Lane in Eastergate[46].

The Elmer Sands SWMP identified that the high water table during the winter period is the primary trigger for flooding in this area[47], and therefore this area may be susceptible to flooding from this source.

5.8 Flooding from artificial sources

5.8.1 Flooding from foul and surface water sewers

Sewer flooding occurs when intense rainfall overloads the sewer system capacity (surface water, foul or combined), and/or when sewers cannot discharge properly to watercourses due to high water levels. Sewer flooding can also be caused when problems such as blockages, collapses or equipment (such as pumps) failure occur in the sewerage system. Surface water inundation of manhole openings, entry of soil or groundwater into the sewer system via faults within the fabric of the sewerage system, is another cause of sewer flooding. Infiltration is often related to shallow groundwater, and may cause high flows for prolonged periods of time. The Lidsey SWMP identifies that information supplied by Southern Water described flooding predominantly resulted from hydraulic overload of sewers due to infiltration of groundwater[48].

Since 1980, the Sewers for Adoption guidelines have meant that most new surface water sewers have been designed to have capacity for a rainfall event with a 1 in 30 chance of occurring in any given year, although until recently this did not apply to smaller private systems. Arun District Council manages the permitted inflows to sewers at new developments through discharging of conditions on planning applications (which are encouraged to use sustainable urban drainage systems). Where these are not appropriate and connection to the public sewer system is needed then Southern Water largely apply restriction to flows. However, even where sewers are constructed to required specifications, they can still be overwhelmed by larger events of the magnitude often considered when looking at river or surface water flooding (e.g. a 1 in 100 chance of occurring in any given year). Existing sewers can also become overloaded as new development adds to their catchment, even with restrictions in place on permitted discharge, or due to incremental increases in roofed and paved surfaces at the individual property scale (urban creep).

Historical incidents of flooding are detailed by Southern Water in their DG5 register. This database records incidents of flooding relating to public foul, combined or surface water sewers and identifies

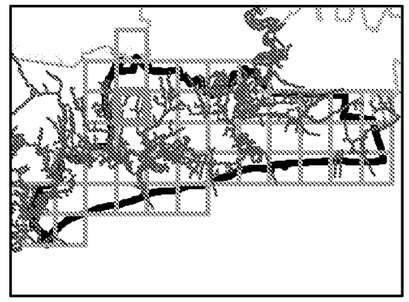
[44] Arun District Council: Strategic Flood Risk Assessment Vol II Technical Report (February 2008)
[45] Arun District Council: Strategic Flood Risk Assessment Vol II Technical Report (February 2008)
[46] West Sussex County Council: Lidsey SWMP (October 2014)
[47] Southern Water: Elmer Sands, Bognor Regis SWMP Report (January 2014)
[48] West Sussex County Council: Lidsey SWMP (October 2014)

N

Westergate

Eastergate

Key Plan



Legend

Arun District SFRA boundary

Main Rivers

- Aldingbourne Rife
- Ash Grove
- Barnham Lane Ditch
- Barnham Rife
- Black Ditch
- Drovey Ponds Ditch
- East Poling Drain
- Eel Springs Ditch
- Poling Rife
- Ferrybridge Rife
- Lidsey Rife
- Little Torrington Stream
- North Bersted Ditch
- Pagham Harbour Channels
- Pagham Rife
- River Arun
- Rope Walk Ditch
- Ryebank Rife
- Shripney Manor Ditch
- West Poling Drain
- Yapton Rife
- Ordinary watercourse

0 0.125 0.25 0.5 km

REF	Date	Comments
A	June 2016	-
B		
C		

ARUN DISTRICT COUNCIL

LEVEL 1 SFRA: APPENDIX B WATERCOURSES

Sheet No: 31 of 48 Index Number: APC_31

ARUN DISTRICT COUNCIL

Notes

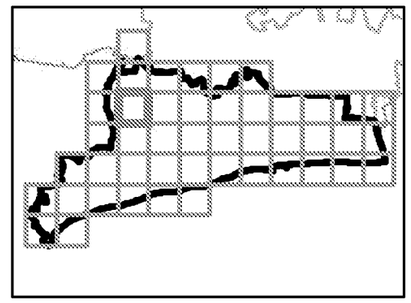
Zone 1: Comprised of land having a less than 1 in 1,000 annual probability of river or sea flooding in any year.

Zone 2: Comprised of land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding or 1 in 200 and 1 in 1,000 annual probability of sea flooding in any year.

Zone 3a: This zone comprises land assessed as having a greater than 1in 100 annual probability of river flooding or a greater than 1 in 200 annual probability of flooding from sea in any year.

Zone 3b: This zone comprises land where water has to flow or be stored in times of flood (the functional floodplain). The SFRA identified this Flood Zone as land which would flood with an annual probability of 1 in 20 years, where detailed modelling exists. In the absence of detailed hydraulic model information, a precautionary approach has been adopted with the assumption that the extent of Flood Zone 3b would be equal to Flood Zone 3a. If development is shown to be in Flood Zone 3a, further work should be undertaken as part of a detailed site specific

Key Plan



Legend

- Arun District SFRA boundary
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

0 0.125 0.25 0.5 km

REF	Date	Comments
A	June 2016	-
B		
C		

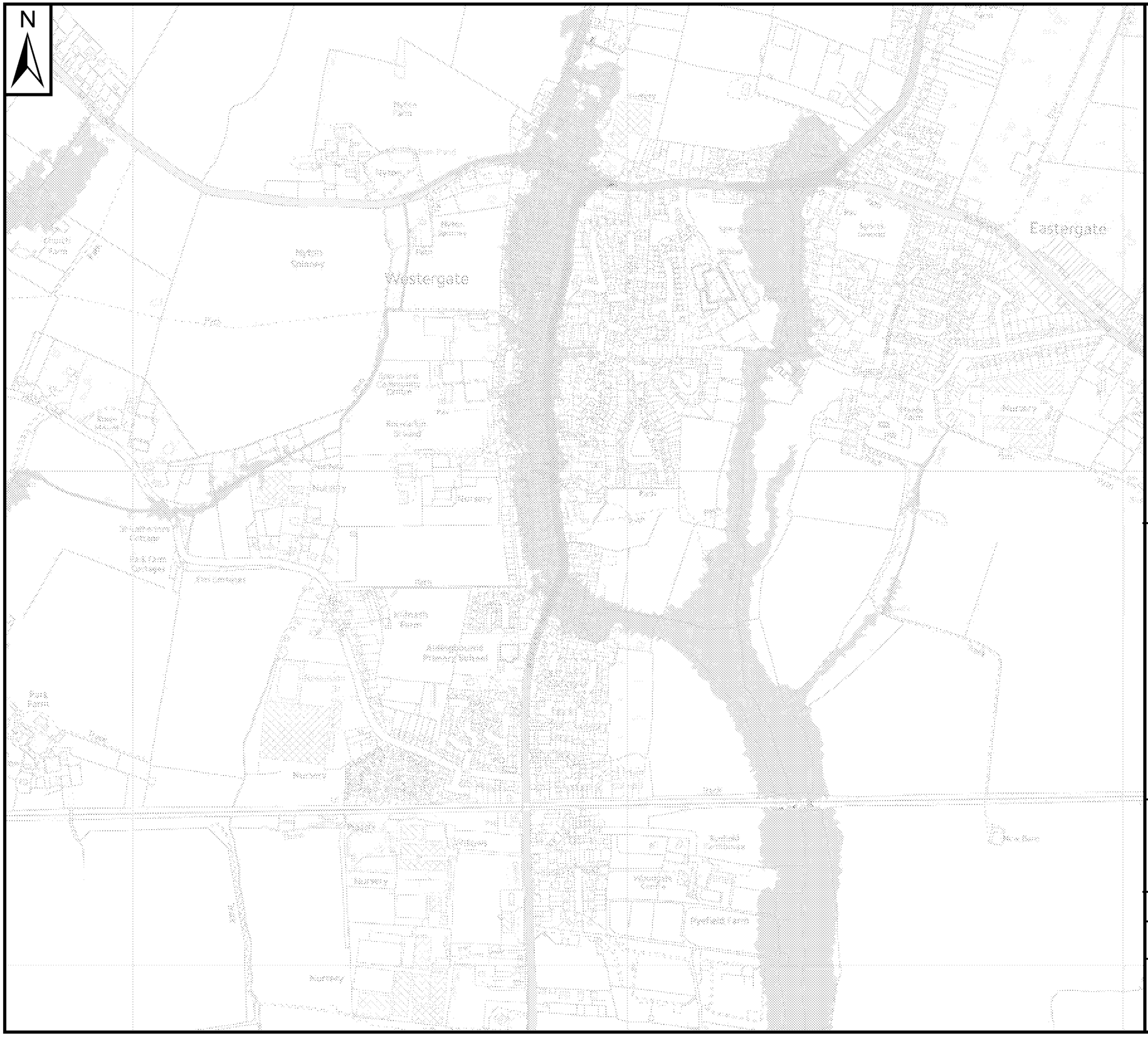
ARUN DISTRICT COUNCIL

LEVEL 1 SFRA: APPENDIX C FLOOD ZONES

Sheet No: 31 of 48 Index Number: APC_31

ARUN DISTRICT COUNCIL

ARUN DISTRICT COUNCIL AL/127/24/PL



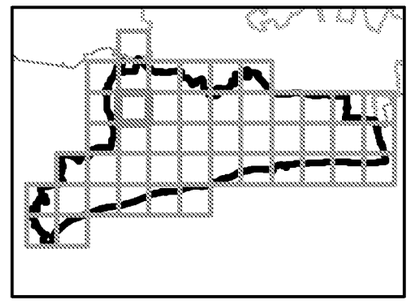
Notes

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 2016 (and updated in April 2016). 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 allowance are:

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

For tidal/coastal models, undefended case still water level 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)

0 0.125 0.25 0.5 km

REF	Date	Comments
A	August 2018	
B		
C		

ARUN DISTRICT COUNCIL

LEVEL 1 SFRA: APPENDIX D
CLIMATE CHANGE MAPPING

Sheet No: 31 of 46 Index Number: ADC_31

ARUN DISTRICT COUNCIL

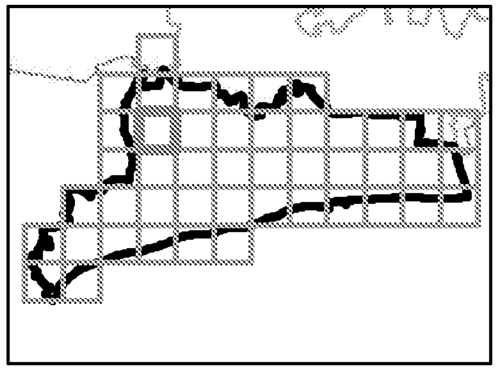
Notes

The updated Flood Map for Surface Water (uFMfSW) shows the flooding that takes place from the 'surface runoff' generated by rainwater (including snow and other precipitation) which:
(a) is on the surface of the ground (whether or not it is moving), and
(b) has not yet entered a watercourse, drainage system or public sewer.

The uFMfSW will pick out natural drainage channels, rivers, low areas in the floodplain and flow paths between buildings but it will only indicate flooding caused by local rainfall

Note: The uFMfSW shows predictions of flooded areas but does not show whether individual properties will be affected by surface water flooding or have been affected in the past. The uFMfSW should not be used to predict if individual properties will flood.

Key Plan



Legend

Arun District SFRA boundary
uFMfSW 30-year extent
uFMfSW 100-year extent
uFMfSW 1,000-year extent

0 0.125 0.25 0.5 km

REF	Date	Comments
A	June 2016	-
B		
C		

ARUN DISTRICT COUNCIL

LEVEL 1 SFRA: APPENDIX E
SURFACE WATER FLOOD RISK

Sheet No: 31 of 48 Index Number: ADC_31

ARUN DISTRICT COUNCIL

N

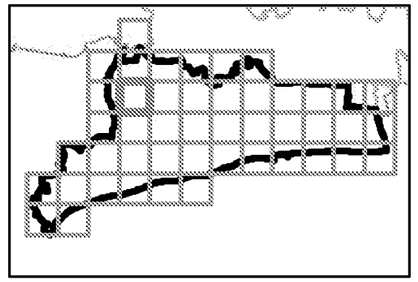
Notes

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

This data shows the proportion of each 1km grid square where geological and hydrogeological condition 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 ASTGWF 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 resolution datasets exist.

Key Plan



Legend

Arun District SFRA boundary

< 25%

>= 25% <50%

>= 50% <75%

>= 75%

0 0.125 0.25 0.5 km

REF	Date	Comments
A	June 2018	-
B		
C		

ARUN DISTRICT COUNCIL

LEVEL 1 SFRA: APPENDIX F
AREAS SUSCEPTIBLE TO GROUNDWATER

Sheet No: 31 of 46 Index Number: AGW_31

JBA consulting

ARUN DISTRICT COUNCIL

N

Westergate

Eastergate

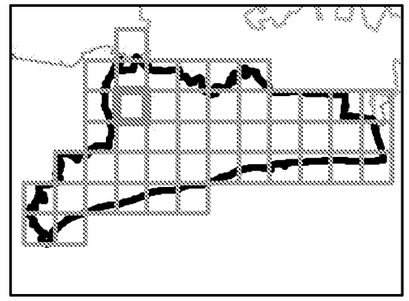
Notes

Flood Alerts are used to warn people of the possibility of flooding and encourage them to be alert, stay vigilant and make early preparations. It is issued earlier than a flood warning, to give customers advice notice of the possibility of flooding, but before we are fully confident that flooding in Flood Warning Areas is expected.

Flood Warnings warn people of expected flooding and encourage them to take action to protect themselves and their property.

Some areas may be covered by more than one flood warning area as they may be at risk of flooding from more than one

Key Plan



Legend

- Arun District SFRA boundary
- 065FWF5005
- 065FWC0401
- 065FWC0801
- 065FWF4903
- 065FWC0802
- 065FWF4904
- 065FWC2501
- 065FWF5201
- 065FWF5008
- 065FWF5302
- 065FWF4901
- 065FWF5907
- 065FWC2402
- 065FWF5006
- 065FWC2402

0 0.125 0.25 0.5 km

REF	Date	Comments
A	June 2014	-
B		
C		

ARUN DISTRICT COUNCIL

LEVEL 1 SFRA: APPENDIX G FLOOD WARNING AREAS

Sheet No: 31 of 48 Index Number: ADC_31

ARUN DISTRICT COUNCIL

N

Westergate

Eastergate

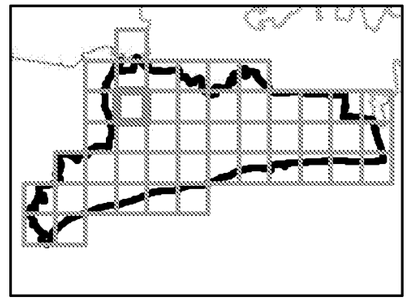
Notes

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

0 0.125 0.25 0.5 km

REF	Date	Comments
A	June 2015	-
B		
C		

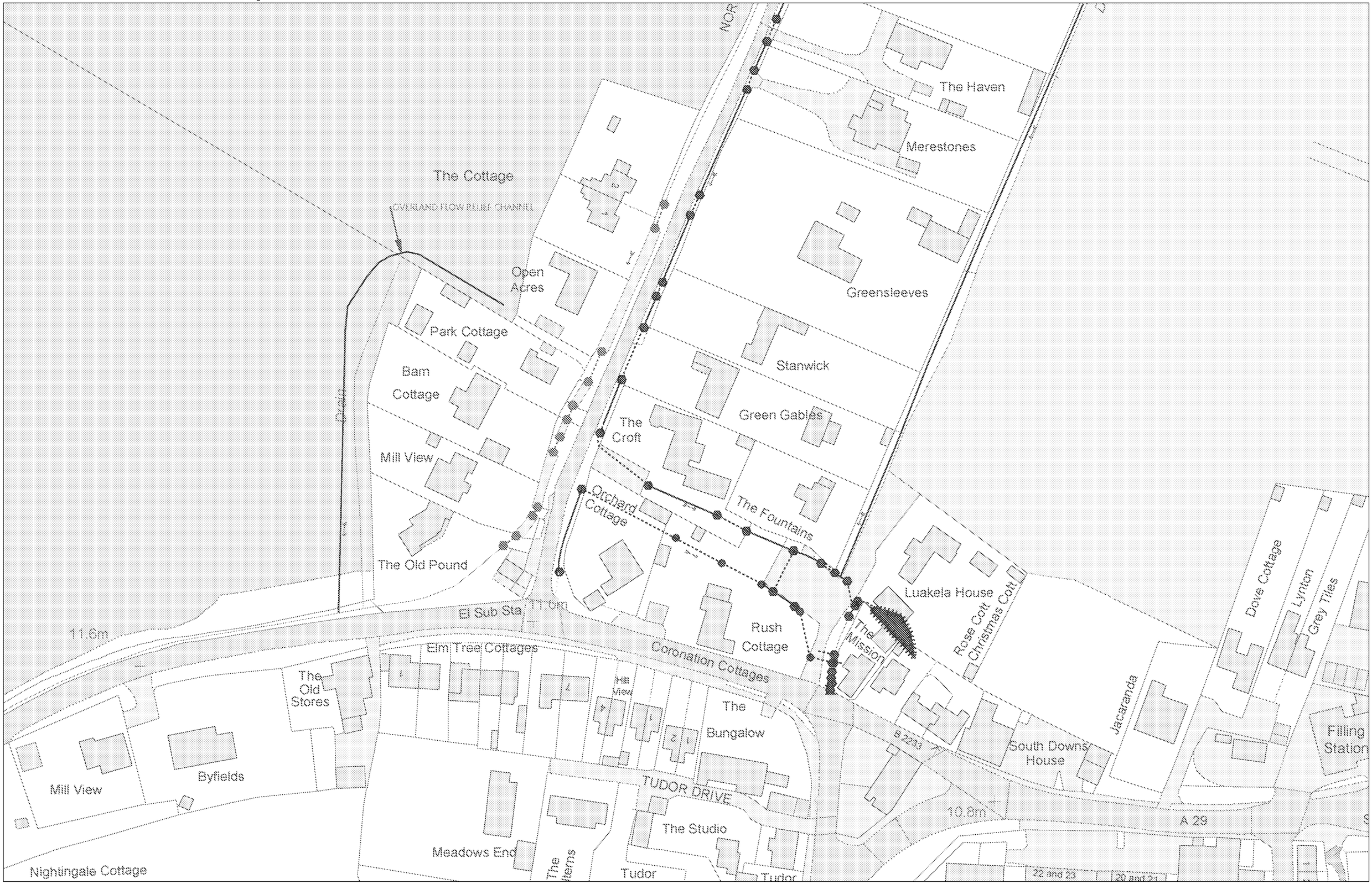
ARUN DISTRICT COUNCIL

LEVEL 1 SFRA: APPENDIX H HISTORIC FLOODING RECORDS

Sheet No: 31 of 48 Index Number: ADC_31

ARUN DISTRICT COUNCIL

Arun District Council Maps



Mapping produced by Arun District Council

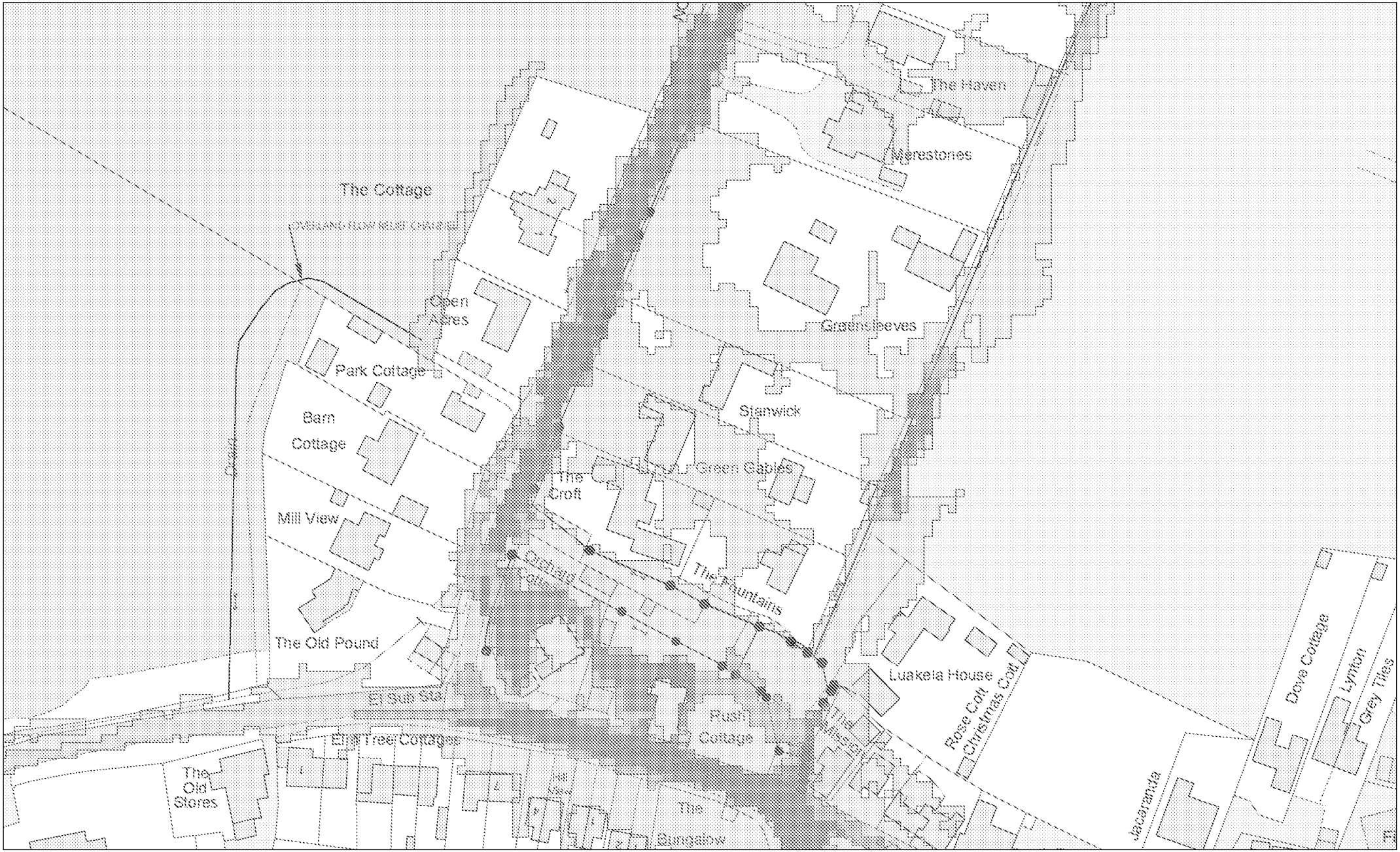
Production Date: 17 June 2021

Scale: 1:1000 @ A3

www.arun.gov.uk

ARUN DISTRICT COUNCIL 1:1274HL

Arun District Council Maps



Mapping produced by Arun District Council

Production Date: 20 August 2021

Scale: 1:1250@ A4

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Appendix G Wallingford Greenfield Run-off Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Stuart Burnett
Site name:	Northfields Lane
Site location:	Aldingbourne

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	50.84447° N
Longitude:	0.66696° W
Reference:	830804742
Date:	Sep 23 2024 13:24

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.3934

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics

	Default	Edited
SAAR (mm):	760	760
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):	0.79	0.79
1 in 1 year (l/s):	0.67	0.67
1 in 30 years (l/s):	1.82	1.82
1 in 100 year (l/s):	2.52	2.52
1 in 200 years (l/s):	2.95	2.95

Appendix H Causeway Flow Hydraulic Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.500
CV	1.000	Preferred Cover Depth (m)	1.200
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)	50.0		

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100 150

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.005	5.00	12.700	450	493943.091	105849.488	0.600
2	0.005	5.00	12.560	450	493963.346	105840.783	0.610
3	0.005	5.00	12.700	450	493934.218	105825.796	0.700
4	0.005	5.00	12.405	450	493943.405	105821.847	0.505
5	0.005	5.00	12.305	450	493956.647	105825.193	0.500
6			12.235	450	493966.181	105820.884	0.500
7			12.000		493975.715	105816.574	0.335
5a		5.00	12.860		493952.706	105828.271	1.020

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
1.000	1	2	22.046	0.600	12.100	11.950	0.150	147.0	150	Circular	5.44	50.0
1.001	2	5	16.968	0.600	11.950	11.805	0.145	117.0	150	Circular	5.75	50.0
2.000	3	4	10.000	0.600	12.000	11.900	0.100	100.0	150	Circular	5.17	50.0
2.001	4	5	13.658	0.600	11.900	11.805	0.095	143.8	150	Circular	5.44	50.0
1.002	5	6	10.462	0.600	11.805	11.735	0.070	149.5	150	Circular	5.96	50.0
1.003	6	7	10.463	0.600	11.735	11.665	0.070	149.5	150	Circular	6.17	50.0
3.000	5a	5	5.000	0.600	11.840	11.805	0.035	142.9	150	Circular	5.10	50.0

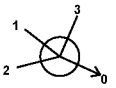
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	0.826	14.6	0.9	0.450	0.460	0.005	0.0
1.001	0.928	16.4	1.8	0.460	0.350	0.010	0.0
2.000	1.005	17.8	0.9	0.550	0.355	0.005	0.0
2.001	0.836	14.8	1.8	0.355	0.350	0.010	0.0
1.002	0.819	14.5	4.5	0.350	0.350	0.025	0.0
1.003	0.819	14.5	4.5	0.350	0.185	0.025	0.0
3.000	0.839	14.8	0.0	0.870	0.350	0.000	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	22.046	147.0	150	Circular	12.700	12.100	0.450	12.560	11.950	0.460
1.001	16.968	117.0	150	Circular	12.560	11.950	0.460	12.305	11.805	0.350
2.000	10.000	100.0	150	Circular	12.700	12.000	0.550	12.405	11.900	0.355
2.001	12.658	143.8	150	Circular	12.405	11.900	0.355	12.305	11.805	0.350
1.002	10.463	149.5	150	Circular	12.305	11.805	0.350	12.235	11.735	0.350
1.003	10.463	149.5	150	Circular	12.235	11.735	0.350	12.000	11.665	0.185
3.000	5.000	142.9	150	Circular	12.860	11.840	0.870	12.305	11.805	0.350

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	450	Junction		2	450	Manhole	Adoptable
1.001	2	450	Manhole	Adoptable	5	450	Manhole	Adoptable
2.000	3	450	Junction		4	450	Manhole	Adoptable
2.001	4	450	Manhole	Adoptable	5	450	Manhole	Adoptable
1.002	5	450	Manhole	Adoptable	6	450	Manhole	Adoptable
1.003	6	450	Manhole	Adoptable	7		Manhole	Adoptable
3.000	5a		Junction		5	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	493943.091	105849.488	12.700	0.600	450				
						0	1.000	12.100	150
2	493963.346	105840.783	12.560	0.610	450	1	1.000	11.950	150
									
						0	1.001	11.950	150
3	493934.218	105825.796	12.700	0.700	450				
						0	2.000	12.000	150
4	493943.405	105821.847	12.405	0.505	450	1	2.000	11.900	150
									
						0	2.001	11.900	150
5	493956.647	105825.193	12.305	0.500	450	1	3.000	11.805	150
						2	2.001	11.805	150
						 3	1.001	11.805	150
						0	1.002	11.805	150
6	493966.181	105820.884	12.235	0.500	450	1	1.002	11.735	150
									
						0	1.003	11.735	150
7	493975.715	105816.574	12.000	0.335		1	1.003	11.665	150
									

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
5a	493952.706	105828.271	12.860	1.020					
						0	3.000	11.840	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	10	0
10	0	10	0
30	0	10	0
30	40	10	0
100	0	10	0
100	45	10	0

Node 6 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.500	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	2.0		
Invert Level (m)	11.735	Diameter (m)	0.037		

Node 5a Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	11.840
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	64

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	25.0	0.0	0.400	25.0	0.0	0.401	0.0	0.0

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	11	12.127	0.027	1.0	0.0000	0.0000	OK
15 minute summer	2	11	11.985	0.035	2.0	0.0056	0.0000	OK
15 minute summer	3	11	12.024	0.024	1.0	0.0000	0.0000	OK
15 minute summer	4	11	11.937	0.037	2.0	0.0059	0.0000	OK
15 minute summer	5	11	11.895	0.090	5.0	0.0144	0.0000	OK
30 minute summer	6	20	11.896	0.161	1.8	0.0255	0.0000	SURCHARGED
30 minute summer	7	21	11.692	0.027	1.0	0.0000	0.0000	OK
120 minute summer	5a	78	11.889	0.049	1.4	1.1671	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	1.0	0.385	0.068	0.0577	
15 minute summer	2	1.001	5	2.0	0.367	0.121	0.1206	
15 minute summer	3	2.000	4	1.0	0.389	0.056	0.0261	
15 minute summer	4	2.001	5	2.0	0.389	0.135	0.0988	
15 minute summer	5	1.002	6	2.3	0.418	0.157	0.1501	
30 minute summer	6	1.003	7	1.0	0.472	0.072	0.0231	2.9
120 minute summer	5a	3.000	5	-1.4	-0.308	-0.098	0.0379	

Results for 10 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	12.137	0.037	2.0	0.0000	0.0000	OK
15 minute summer	2	11	12.000	0.050	4.0	0.0079	0.0000	OK
15 minute summer	3	10	12.034	0.034	2.0	0.0000	0.0000	OK
60 minute summer	4	47	11.968	0.068	2.8	0.0108	0.0000	OK
60 minute summer	5	46	11.968	0.163	7.0	0.0259	0.0000	SURCHARGED
60 minute summer	6	46	11.967	0.232	1.3	0.0369	0.0000	FLOOD RISK
60 minute summer	7	46	11.695	0.030	1.3	0.0000	0.0000	OK
60 minute summer	5a	46	11.968	0.128	5.3	3.0355	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	2.0	0.468	0.134	0.0927	
15 minute summer	2	1.001	5	3.9	0.397	0.237	0.1828	
15 minute summer	3	2.000	4	2.0	0.473	0.111	0.0422	
60 minute summer	4	2.001	5	2.8	0.283	0.189	0.1729	
60 minute summer	5	1.002	6	1.3	0.364	0.092	0.1842	
60 minute summer	6	1.003	7	1.3	0.502	0.089	0.0267	7.3
60 minute summer	5a	3.000	5	-5.3	-0.512	-0.358	0.0840	

Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	12.142	0.042	2.6	0.0000	0.0000	OK
60 minute winter	2	50	12.021	0.071	2.6	0.0113	0.0000	OK
15 minute summer	3	10	12.039	0.039	2.6	0.0000	0.0000	OK
60 minute winter	4	49	12.021	0.121	2.6	0.0192	0.0000	OK
60 minute winter	5	51	12.021	0.216	6.5	0.0343	0.0000	FLOOD RISK
60 minute winter	6	51	12.020	0.285	1.5	0.0453	0.0000	FLOOD RISK
60 minute winter	7	52	11.697	0.032	1.4	0.0000	0.0000	OK
60 minute winter	5a	51	12.021	0.181	4.7	4.2924	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	2.6	0.504	0.175	0.1124	
60 minute winter	2	1.001	5	2.6	0.260	0.159	0.2191	
15 minute summer	3	2.000	4	2.6	0.508	0.145	0.0563	
60 minute winter	4	2.001	5	2.6	0.270	0.176	0.2241	
60 minute winter	5	1.002	6	1.5	0.385	0.102	0.1842	
60 minute winter	6	1.003	7	1.4	0.518	0.099	0.0290	9.5
60 minute winter	5a	3.000	5	-4.7	-0.420	-0.314	0.0880	

Results for 30 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	12.150	0.050	3.6	0.0000	0.0000	OK
60 minute winter	2	53	12.115	0.165	3.6	0.0262	0.0000	SURCHARGED
60 minute winter	3	50	12.115	0.115	1.8	0.0000	0.0000	OK
60 minute winter	4	50	12.115	0.215	3.6	0.0342	0.0000	FLOOD RISK
60 minute winter	5	52	12.115	0.310	8.3	0.0492	0.0000	FLOOD RISK
60 minute winter	6	52	12.114	0.379	1.8	0.0602	0.0000	FLOOD RISK
60 minute winter	7	52	11.699	0.034	1.7	0.0000	0.0000	OK
60 minute winter	5a	52	12.115	0.275	6.2	6.5281	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	3.6	0.550	0.244	0.1500	
60 minute winter	2	1.001	5	3.6	0.294	0.218	0.2987	
60 minute winter	3	2.000	4	1.8	0.436	0.101	0.1607	
60 minute winter	4	2.001	5	3.1	0.308	0.212	0.2404	
60 minute winter	5	1.002	6	1.8	0.434	0.121	0.1842	
60 minute winter	6	1.003	7	1.7	0.541	0.116	0.0324	13.2
60 minute winter	5a	3.000	5	-6.2	-0.422	-0.417	0.0880	

Results for 100 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	12.148	0.048	3.3	0.0000	0.0000	OK
60 minute winter	2	51	12.091	0.141	3.4	0.0224	0.0000	OK
60 minute winter	3	51	12.091	0.091	1.7	0.0000	0.0000	OK
60 minute winter	4	51	12.091	0.191	3.4	0.0303	0.0000	SURCHARGED
60 minute winter	5	51	12.090	0.285	7.8	0.0453	0.0000	FLOOD RISK
60 minute winter	6	51	12.089	0.354	1.7	0.0563	0.0000	FLOOD RISK
60 minute winter	7	51	11.699	0.034	1.6	0.0000	0.0000	OK
60 minute winter	5a	50	12.090	0.250	5.8	5.9418	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	3.2	0.537	0.221	0.1330	
60 minute winter	2	1.001	5	3.4	0.294	0.206	0.2949	
60 minute winter	3	2.000	4	1.7	0.436	0.096	0.1439	
60 minute winter	4	2.001	5	2.9	0.300	0.197	0.2404	
60 minute winter	5	1.002	6	1.7	0.418	0.116	0.1842	
60 minute winter	6	1.003	7	1.6	0.535	0.111	0.0316	12.3
60 minute winter	5a	3.000	5	-5.8	-0.421	-0.392	0.0880	

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	57	12.233	0.133	2.4	0.0000	0.0000	OK
60 minute winter	2	57	12.233	0.283	4.8	0.0450	0.0000	SURCHARGED
60 minute winter	3	57	12.233	0.233	2.4	0.0000	0.0000	SURCHARGED
60 minute winter	4	57	12.233	0.333	4.8	0.0529	0.0000	FLOOD RISK
60 minute winter	5	58	12.232	0.427	10.2	0.0680	0.0000	FLOOD RISK
60 minute winter	6	58	12.231	0.496	2.0	0.0788	0.0000	FLOOD RISK
60 minute winter	7	58	11.702	0.037	1.9	0.0000	0.0000	OK
60 minute winter	5a	58	12.232	0.392	7.9	9.3208	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	2	2.4	0.472	0.164	0.3761	
60 minute winter	2	1.001	5	4.1	0.317	0.252	0.2987	
60 minute winter	3	2.000	4	2.4	0.446	0.133	0.1760	
60 minute winter	4	2.001	5	3.9	0.320	0.267	0.2404	
60 minute winter	5	1.002	6	2.0	0.434	0.138	0.1842	
60 minute winter	6	1.003	7	1.9	0.563	0.134	0.0360	17.6
60 minute winter	5a	3.000	5	-7.9	-0.450	-0.534	0.0880	