

RIVERSIDE – REPLACEMENT DWELLING DRAINAGE – FOR PLANNING DOC

Drainage Information for Proposed Replacement Dwelling & Outbuildings

Revision P8

For;
Southern Rock Property

Site Address
Riverside,
Bolney Chapel Road,
Twineham,
RH17 5NN

Issued
28th March 2025

Our Reference
23-040



CREATIVE
STRUCTURES

DOCUMENT ISSUE REGISTER

Job	RIVERSIDE – REPLACEMENT DWELLING			
Document	DRAINAGE – FOR PLANNING DOC			
Issue	Date	Description	By	Checked
P1	21/04/2022	For DOC Approval	Philip Wainwright, CEng, MlstructE	22/04/2022
P2	27/04/2022	For DOC Approval	Philip Wainwright, CEng, MlstructE	27/04/2022
P3	22/06/2022	For DOC Approval	Philip Wainwright, CEng, MlstructE	23/06/2022
P4	24/07/2023	For DOC Approval	Philip Wainwright, CEng, MlstructE	25/07/2023
P5	27/09/2023	For DOC Approval	Philip Wainwright, CEng, MlstructE	27/09/2023
P6	09/07/2024	For DOC Approval	Philip Wainwright, CEng, MlstructE	09/04/2024
P7	12/12/2024	For DOC Approval	Philip Wainwright, CEng, MlstructE	13/12/2024
P8	28/03/2025	For DOC Approval	Philip Wainwright, CEng, MlstructE	28/03/2025

REVISION NOTES

P1 – THIS ISSUE COVERS THE DRAINAGE ONLY AND IS AIMED AT DISCHARGING THE PLANNING CONDITION AS EARLY AS POSSIBLE TO STREAMLINE THE PROGRAMME.

P2 – THIS ISSUE COVERS THE UPDATED FOOTPRINT AND LANDSCAPING TO LOXLEY HOUSE ONLY. THIS INCREASES THE VOLUME OF ATTENUATION REQUIRED.

P3 – THIS ISSUE COVERS THE SPLITTING OF THE DRAINAGE FEATURES, PER DWELLING FOR EASE OF FUTURE MAINTENANCE. THE SITE LEVELS HAVE ALSO BEEN ADDED WITH ALL DRAINAGE LEVELS ADDED TO ADDRESS DRAINAGE OFFICER COMMENTS.

A NOTE HIGHLIGHTING THE NEED FOR A MAINTENANCE AND ACCESS EASEMENT HAS ALSO BEEN ADDED.

P4 – THIS ISSUE COVERS THE CHANGE FROM THE PREVIOUS ‘LITTLE LOXLEY’ PROPOSAL TO THE LARGER ‘RIVERSIDE PROPOSAL. THE POINT OF DISCHARGE TO THE WATERCOURSE HAS BEEN MODIFIED TO SUIT THE NEW BUILDING LOCATION. THE DISCHARGE RATE REMAINS AT 1.0l/s, HOWEVER THE SIZE OF THE ATTENUATION HAS INCREASED TO SUIT THE LARGER CATCHMENT AREA(S).

P5 – THIS ISSUE COVERS THE INCREASE IN THE CLIMATE CHANGE FACTOR, IN LINE WITH GOV.UK GUIDANCE ON PEAK RAINFALL INTENSITIES. THE INCREASE FROM 40% TO 45% CC FACTOR INCREASES THE REQUIRED SIZE OF ATTENUATION FOR THE 1-in-100 YEAR EVENT FROM 51m³ TO 52m³ ONLY.

P6 – THIS ISSUES COVERS THE VOC FOR RIVERSIDE, WHERE THE DWELLING FOOR CATCHMENT AREA IS NOMINALLY INCREASED FROM 474.5m² TO 511.9m² (37.4m² INCREASE) AND THE REAR PATIO HARDSTANDING AREA FROM 187.6m² TO 615.2m²(427.6m² INCREASE). THIS REPRESENTS A 465m² TOTAL CATCHMENT AREA INCREASE THAT REQUIRES AN INCREASE FROM 52m³ OF ATTENUATION TO 102m³ OF ATTENUATION TO LIMIT THE NEW FLOWS TO 1l/s.

PREVIOUSLY THIS REPORT COVERED BOTH LOXLEY HOUSE & RIVERSIDE, AS THESE WERE ORIGINALLY ONE JOINT APPLICATION, HOWEVER THIS PROJECT (RIVERSIDE) IS NOW IN NEW OWNERSHIP AND THUS THE PREVIOUSLY INSTALLED ADJACENT PROPERTY, LOXLEY HOUSE HAS BEEN OMITTED FROM THIS REPORT. THE CONVEYANCING FOR RIVERSIDE INCLUDED THE REQUIRED EASEMENTS FOR LOXLEY TO DRAIN ACROSS THE NEW BOUNDARY LINE, IN ADDITION TO RIVERSIDE HAVING PERMISSION TO ROUTE THE EXISTING LOXLEY DRAINS AROUND ANY NEW EXTERNAL PATIO DEVELOPMENTS.

P7 – THIS ISSUES COVERS THE ADDITION OF THE OUTBUILDINGS AND THE UPDATED LANDSCAPING LEVELS FOR RIVERSIDE. THIS REPRESENTS A NOMINAL INCREASE IN TOTAL CATCHMENT AREA THAT REQUIRES AN INCREASE FROM 102m³ OF ATTENUATION TO 109m³ OF ATTENUATION TO LIMIT THE NEW FLOWS TO 1l/s.

ONLY DRAWING 51 IS UPDATED WITH ALL CHANGES CLOUDED. THE NEW CALCULATIONS ARE INCLUDED WITHIN SECTION C.

P8 – THE FFL & EXTERNAL HARDSCAPING LEVELS HAVE BEEN RAISED 600mm ONLY. THIS DOES NOT AFFECT THE DESIGN, NOR CALCULATIONS. ONLY THE COVER & INVERT LEVELS HAVE BEEN UPDATED, WITH ONLY DRAWING 51 REVISED, TO SUIT

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SECTION A

PROJECT DETAILS

1) Local Authority:

MID-SUSSEX DC

2) Based on architectural drawings:

BY GOULD BAXTER

3) Parts of structure:

DRAINAGE ONLY

4) Design assumptions made in calculations:

a) *N/A*

PROJECT OVERVIEW & DESIGN PHILOSOPHY

Introduction

The proposed works at Riverside comprise the demolition of the existing East Hookers) detached annex building and the construction of a new dwelling.

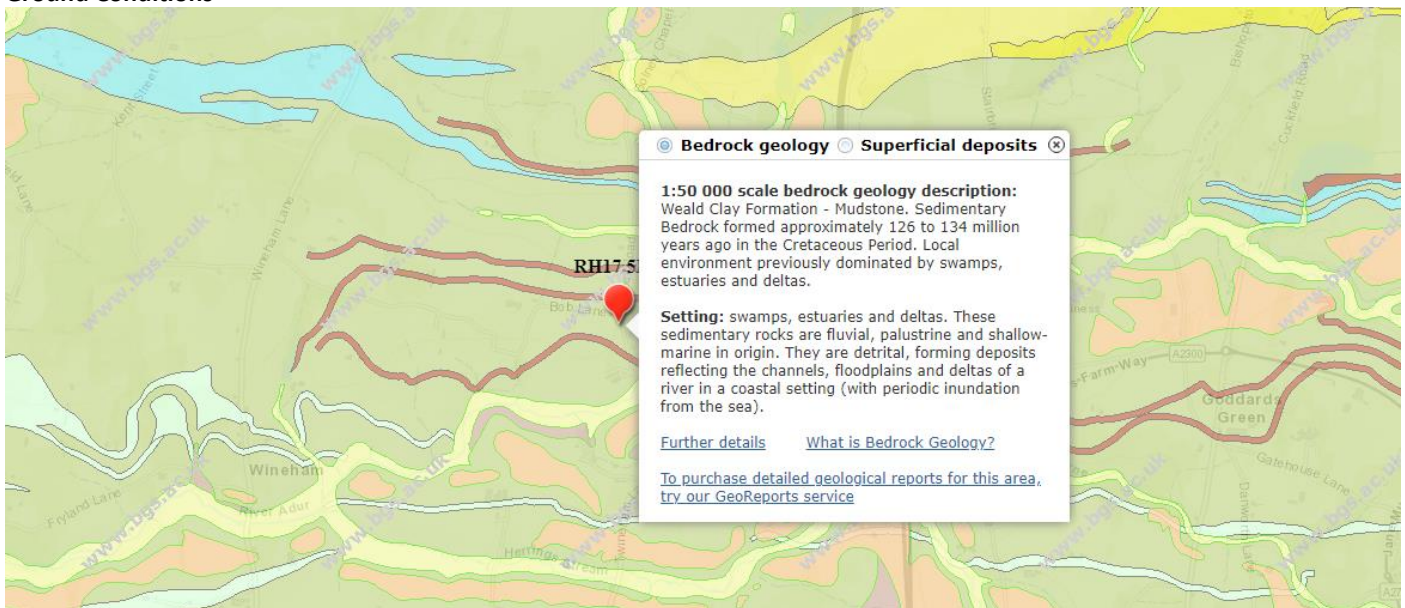
These proposals have previously been approved for the previous scheme. The drainage for the adjacent property, Loxley House have been installed. Thus, this package of information addresses the revised Riverside drainage design to enable the planning condition to be discharged. We have also been appointed to undertake the main sub and super structure design for the replacement building. This is detailed within a separate Building Regulations package of information.

The existing site comprises a two-storey brick building with pitched roof and a detached annex bungalow in addition to fields and a tennis court. At the bottom of the site (to the South-East) is the Holmbush Gill portion or the River Adur (see OS map extract on the next page).

The existing foul drainage arrangement comprises a shared foul treatment plant/septic tank between the original East Hookers dwelling & detached bungalow/annex. There are no known overflows or drains running down to the watercourse. The new foul drainage strategy comprises a foul treatment plant, which discharges to the watercourse at the bottom (north) of the site.

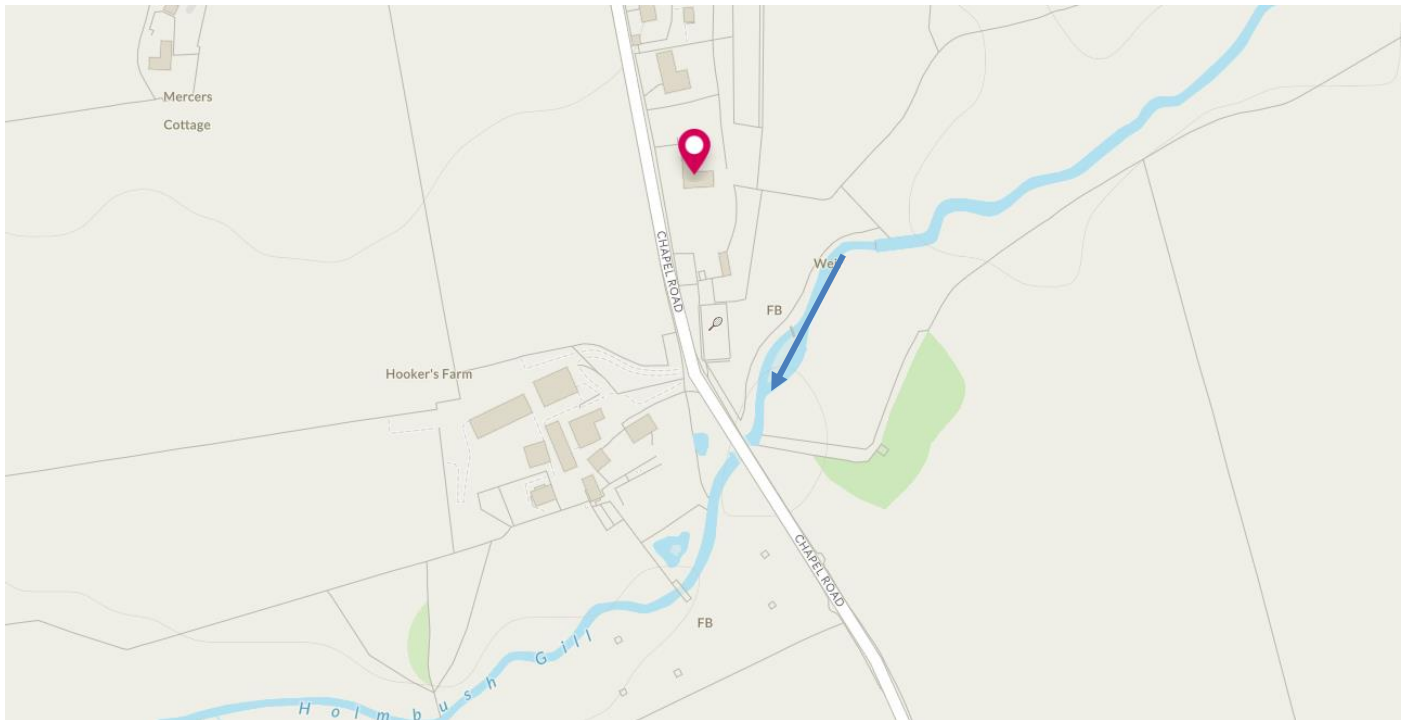
The new stormwater drainage proposals for Riverside, the Outbuildings and the rear Patio Area(s) comprise typical RWP that route to an attenuation tank with a controlled outflow to the adjacent river. The flows are controlled to 1.0 l/s,

Ground Conditions



The above figure is taken from the British Geological Survey website and shows that the site lies within the Weald Clay Formations. We are involved in a site just 200m away, where falling head tests confirmed the subsoils are non-porous.

Watercourse Network



The image above is taken from the Ordnance Survey (OS) website and shows the site location (red drop) with the river network connecting to the South-East. The arrow in blue shows the direction that the river flows.

The links below show videos taken from site on 23rd March 2022. They show the river at the base of the site.

https://www.dropbox.com/s/mmdnvzwld1m6wcw/IMG_6601.MOV?dl=0

https://www.dropbox.com/s/gatv0nikbnivcuv/IMG_6605.MOV?dl=0

See photos on the following pages – These are to be read in conjunction with plan drawing 24-040-51



Image 01 – Showing the existing East Hookers Dwelling



Image 02 – View looking South from the main dwelling showing the detached Annex/Bunglallow



Image 03 – View looking South along the River Adur at the base of the garden (direction of flow)



Image 04 – View looking North along the River Adur at the base of the garden (against the flow).

SECTION B

DRAWINGS

- 22-016-51 PROPOSED SITE DRAINAGE PLAN (PREVIOUS INCLUDED FOR COMPARISON)
- 22-016-51 PROPOSED SITE DRAINAGE PLAN (UPDATED TO SUIT RAISED LEVELS)
- 22-016-52 PROPOSED DRAINAGE DETAILS – SHEET 1 of 2
- 22-016-53 PROPOSED DRAINAGE DETAILS – SHEET 2 of 2

REFER TO DRAWINGS 23-040-52 & 53 FOR TYPICAL DRAINAGE DETAILS

SITE NOTES/OBSERVATIONS

THE SITE IS LOCATED WITHIN THE WEALD CLAY FORMATION.

THERE ARE NO PUBLIC SEWERS WITHIN THE HIGHWAY (BOLNEY CHAPEL ROAD).

THE EXISTING DWELLINGS WERE SERVED BY AN EXISTING SEPTIC TANK.

THE EXISTING STORMWATER FLOWS COULD NOT BE CONFIRMED DURING OUR VISIT ON 23RD MARCH 2022. THESE EITHER DISCHARGED IN TO THE LOCAL DITCHES ON SITE, WHICH ULTIMATELY RUN DOWN TO THE RIVER ADUR AT THE BASE OF THE SITE, OR THEY ROUTE DIRECTLY TO THE RIVER ADUR.

THE 2ND NEW DWELLINGS (THE ADJACENT CONSTRUCTED LOXLEY HOUSE & THIS RIVERSIDE PROJECT) ARE TO BE PROVIDED WITH SEPARATE FOUL TREATMENT PLANTS & SEPARATE STORMWATER ATTENUATION SYSTEMS.

PLEASE NOTE: ALL COVER LEVELS TO BE CONFIRMED FOLLOWING CONFIRMATION OF ALL EXTERNAL LEVELS.

MAIN CONTRACTOR TO CHECK EXISTING INVERT LEVELS IN ROAD PRIOR TO ANY DRAINAGE WORKS COMMENCING TO ENSURE THAT THE LEVELS AS STATED ON THIS DRAWING ARE CORRECT AND THAT THE PROPOSED DRAINAGE SCHEME WORKS

MAIN CONTRACTOR TO CONFIRM AND ALLOW FOR REMOVAL OF ALL REDUNDANT DRAINS ON SITE AND CAPPING OFF TO LIVE DRAINS, ETC AS REQUIRED

ALL RWP AND SVP'S TO HAVE RODDING EYES.

ALL GAS, TELECOMMS, WATER etc UTILITY SERVICES TO BE DIVERTED/RELOCATED AS REQUIRED. SERVICES DESIGN BY OTHERS.

DRAINAGE NOTES:

- PIPEWORK TO BE UPVC-U PIPES & INSPECTION CHAMBERS TO BS EN 13598-1:2020
- ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT 'H', BS EN 752:2017 AND TO THE SATISFACTION OF THE BUILDING CONTROL OFFICER
- ALL ADOPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH 'SEWERS FOR ADOPTION' 7TH EDITION AND THE RELEVANT COUNCIL DESIGN GUIDE.
- ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 80 UNLESS OTHERWISE STATED ON THE DRAWING.
- ALL PRIVATE FOUL WATER SEWERS TO BE LAID AT 1 IN 40 AT THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
- ALL PRIVATE SEWER PIPES TO BE 110 DIAMETER UNLESS OTHERWISE STATED ON THE DRAWING.
- EXISTING SEWER PIPE(S), WHERE APPLICABLE TO BE RE-USED TO BE SURVEYED AND LEVELLED PRIOR TO THE COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
- CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY. (ALL APPROVALS TO BE BY OTHERS)
- ALL SEWER PIPE AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.
- ALL SVP'S TO HAVE TELESCOPIC PIPES BETWEEN GF & IL OF PIPE.

RAINWATER / STORM ATTENUATION DESIGN

EXISTING CATCHMENT AREA(S)
EXISTING ANNEX/BUNGALOW & HARDSTANDING = 78.51m²

EXISTING DESIGN RAINFALL (WALLINGFORD PROCEDURE):
1 IN 2 YEAR = 0.7 l/s
1 IN 100 YEAR = 1.5 l/s

PROPOSED CATCHMENT AREA
PROPOSED MAIN DWELLING ROOF = 511.9m²
PROPOSED OUTBUILDING(S) = 222.6m²
PROPOSED REAR PATIO(S) = 421.6m²
PROPOSED SHED = 13.5m²
PROPOSED TOTAL CATCHMENT AREA = 1175m² (0.1175ha)
PROPOSED RIVERSIDE SITE AREA = 6378.4m² (0.63784ha)

REQUIRED ATTENUATION VOLUME TO LIMIT FLOW RATES TO 1.0 l/s IS = 109.0m³

PROPOSED SIZE IS 24m LONG x 6m WIDE x 0.8m DEEP & LOCATED WHERE THE GROUND LEVEL IS ABOVE 10.70m. THIS PROVIDES 109.44m³ OF EFFECTIVE STORAGE WITH 95% FREE AREA CRATES.

DESIGN VARIABLES INC 45% GLOBAL WARMING FACTOR FOR A 6-HOUR STORM & a 1-IN-100 YEAR EVENT

THE EXISTING FLOW RATES IGNORE THE HARDSTANDING AND PATIO AREAS. THE NEW DEVELOPMENT WILL UTILISE PERMEABLE FINISHES THROUGHOUT THE FRONT/UPPER DRIVEWAY AND FOOTPATH AREAS.

THE POOL DRAINAGE WILL BE BY THE SPECIALIST POOL SUPPLIER. THIS WILL BE VIA A HOLDING TANK FOR ANY BACK WASH. THIS TANK HOLDS THE CHLORINATED WATER FOR THE REQUIRED LENGTH OF TIME (~10 DAYS) SUCH THAT THE CHLORINE EVAPORATES AND POTABLE WATER IS LEFT, WHICH CAN BE DISCHARGED VIA THE MAINS DRAINS, OR TO THE WATERCOURSE VIA THE STORMWATER DRAINS. THIS AMOUNTS TO <1m³ EVERY 2 WEEKS, THUS VERY NOMINAL.

FOUL DRAINAGE DESIGN

THE NEW FOUL DRAINS FOR THE DWELLING IS TO ROUTE TO NEW INDEPENDENT FOUL TREATMENT PLANT. THIS THEN DISCHARGE THE CLEAN EFFLUENT TO THE WATERCOURSE/RIVER NETWORK AT THE BOTTOM OF THE SITE VIA A NEW INDEPENDENT HEADWALL INSTALLATION, OR AS REQUIRED TO MEET THE EA BINDING RULES.

MEMBER KEY:

- FW PROPOSED FOUL WATER DRAIN
- SW PROPOSED SURFACE WATER DRAIN
- SW PROPOSED CLEAN EFFLUENT DRAIN FROM FOUL TREATMENT PLANT
- LAND DRAIN TO REVERSE FACE OF RC RETAINING WALL TO DISCHARGE DIRECT TO WATERCOURSE
- ACO/CHANNEL DRAIN
- FW-IC-01 PROPOSED FOUL WATER INSPECTION CHAMBER / FOUL TREATMENT PLANT
- SW-IC-01 PROPOSED SURFACE WATER INSPECTION CHAMBER / SILT TRAP / FLOW CONTROL DEVICE
- PROPOSED SURFACE WATER ATTENUATION TANK
- DENOTES ARE OF PERMEABLE PAVING AROUND DWELLING - BODPAVE, FORMPAVE, OR SIMILAR
- DENOTES AREA OF PERMEABLE ROADS AND HARDSTANDING FOR VEHICLE TRAFFIC - BODPAVE, FORMPAVE, OR SIMILAR
- DENOTES ARE OF NON-PERMEABLE INDIAN PAVING, OR SIMILAR TO REAR PATIO(S) (421.6m²)
- DENOTES ROOF CATCHMENT AREAS (748m²)
- SVP SOIL AND VENT PIPE
- RWP RAINWATER PIPE
- N/A + LEVELS

revP7
SUPERSEDED



CREATIVE
STRUCTURES

Client
SOUTHERN ROCK PROPERTY

Project
RIVERSIDE
TWINEHAM, RH17 5NN

Title
SITE DRAINAGE PLAN

ISSUED FOR PLANNING DOC

Date 09.07.2024 Checked 09.07.2024

Sheet 23-040

Scale AS SHOWN AT A1 Engineer PW

Status PLANNING

Project Number 23-040
Drawing Number 51
Revision P7

REV	DESCRIPTION	DATE	BY
B1	DOC / BUILDING REGS	25.07.2023	PW
B2	RIVERSIDE ATTENUATION INCREASED TO SUIT 45% CC	27.09.2023	PW
P6	RIVERSIDE ATTENUATION INCREASED TO SUIT LARGER VOC ROOF & REAR PATIO CATCHMENT AREAS	09.07.2024	PW
P7	OUTBUILDINGS ADDED & LANDSCAPING LEVELS UPDATED (ATTENUATION REQ INCREASES FROM 102.2m ³ TO 109m ³). TANK LOCATION RELOCATED TO HIGHER GROUND LEVEL(S)	13.12.2024	PW

NOTES:-

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COORDINATION HIGHLIGHT

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STABILITY REQUIREMENT HIGHLIGHT

WHERE THE GREEN HIGHLIGHT SYMBOL IS PLACED ON A DRAWING THIS REFERS TO THIS ELEMENT OF THE DESIGN BEING CRITICAL TO THE STABILITY STRATEGY

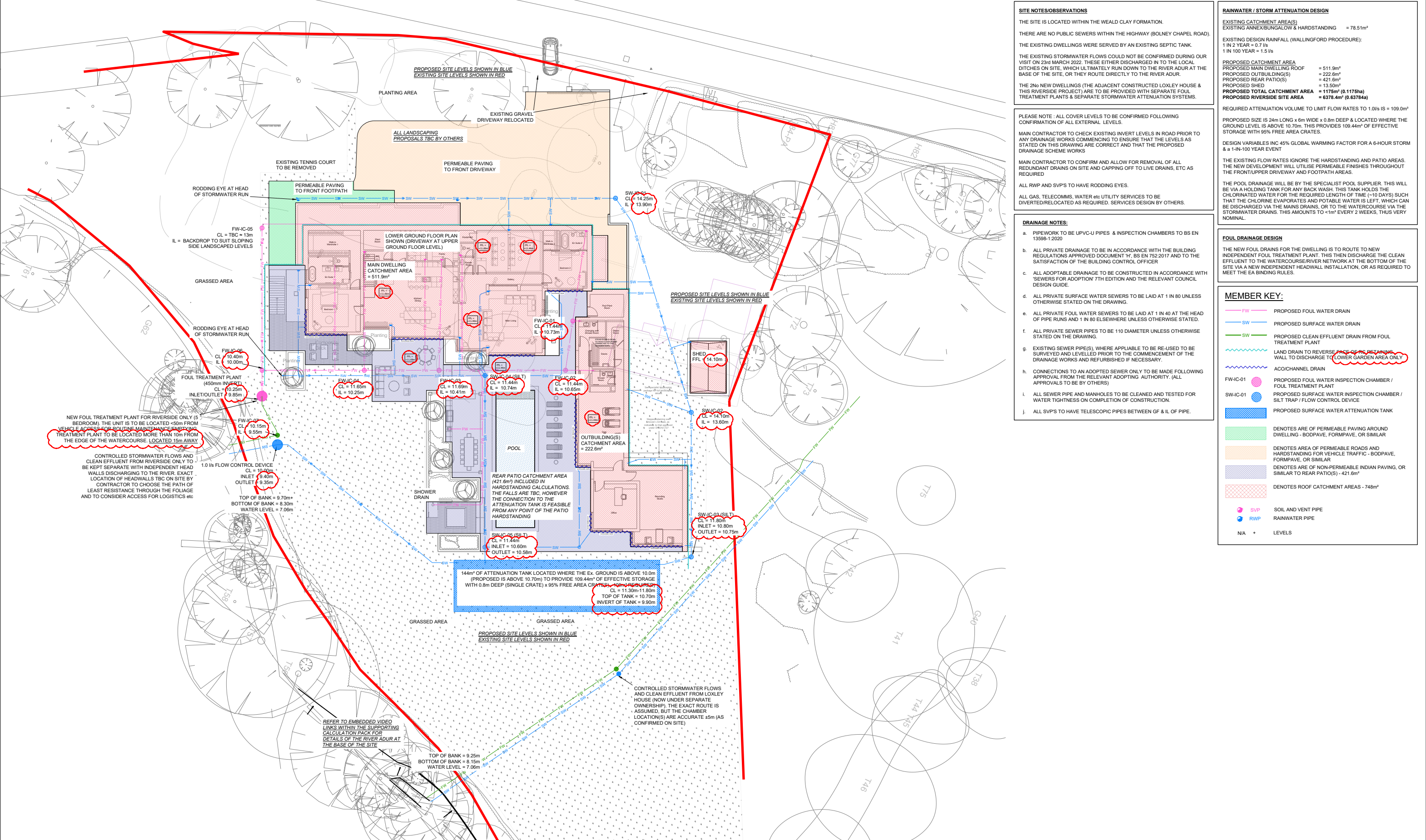
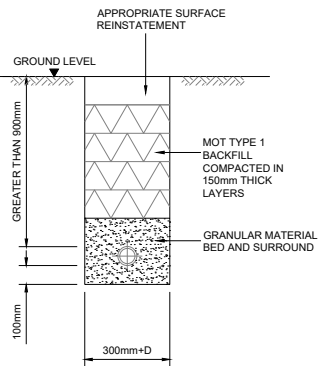
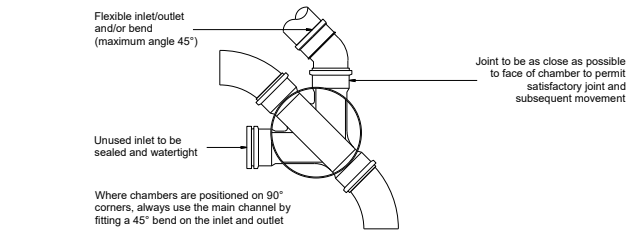
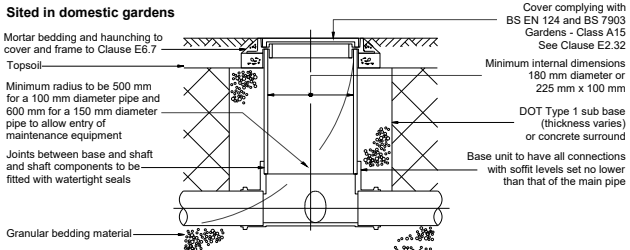
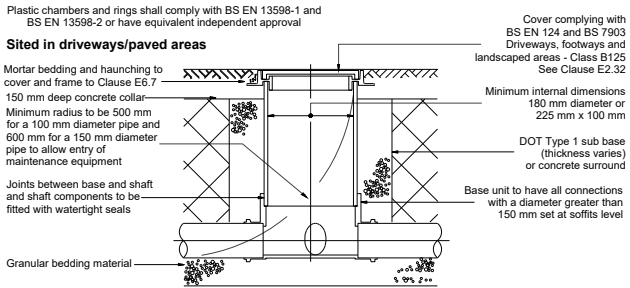
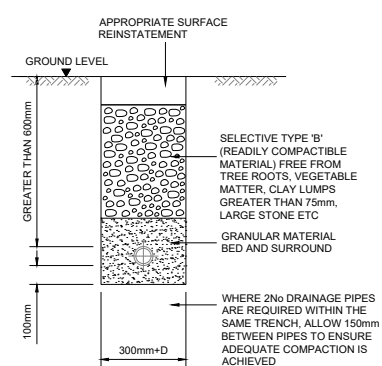


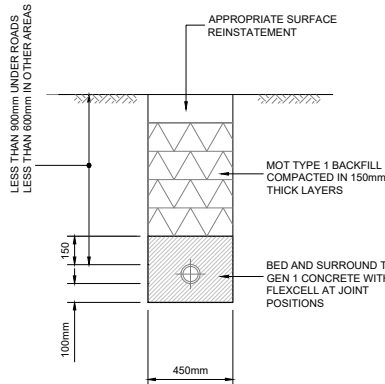
FIGURE B.21
TYPICAL INSPECTION CHAMBER DETAIL - TYPE 4 (Flexible material detail)
Maximum depth from cover level to soffit of pipe 2 m, non-entry



GRANULAR BEDDING
DETAIL (UNDER ROADS
AND SURFACED AREAS)
(1:20)



GRANULAR BEDDING DETAIL
(UNDER GARDEN & FIELDS)
(1:20)



CONCRETE
BEDDING DETAIL
(1:20)

FIGURE B.20
ALTERNATIVE BASE LAYOUTS
FOR CHAMBERS

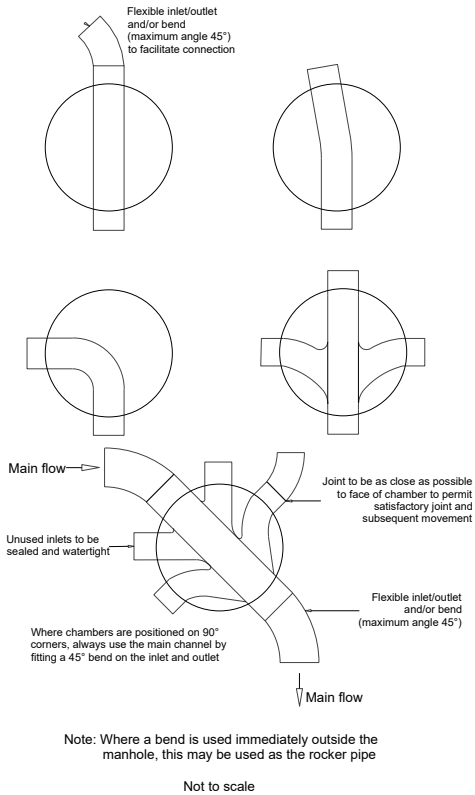
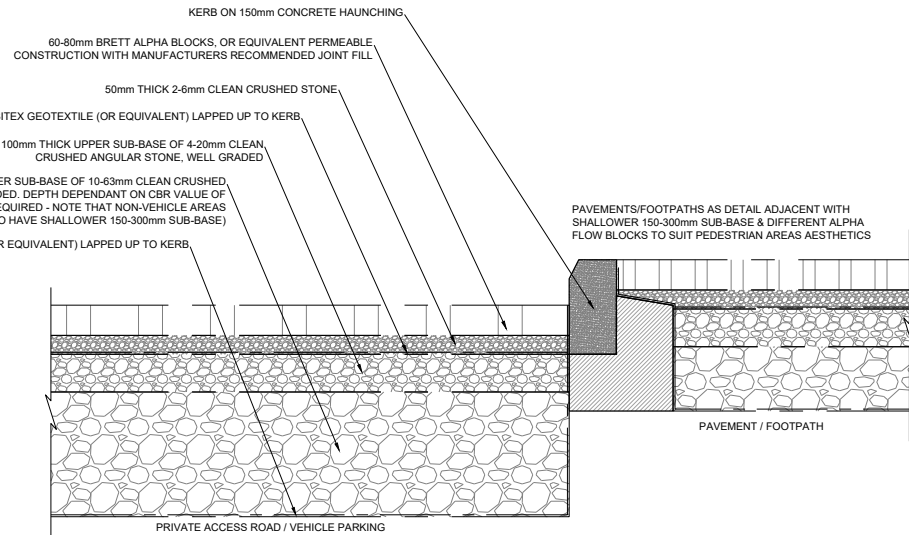
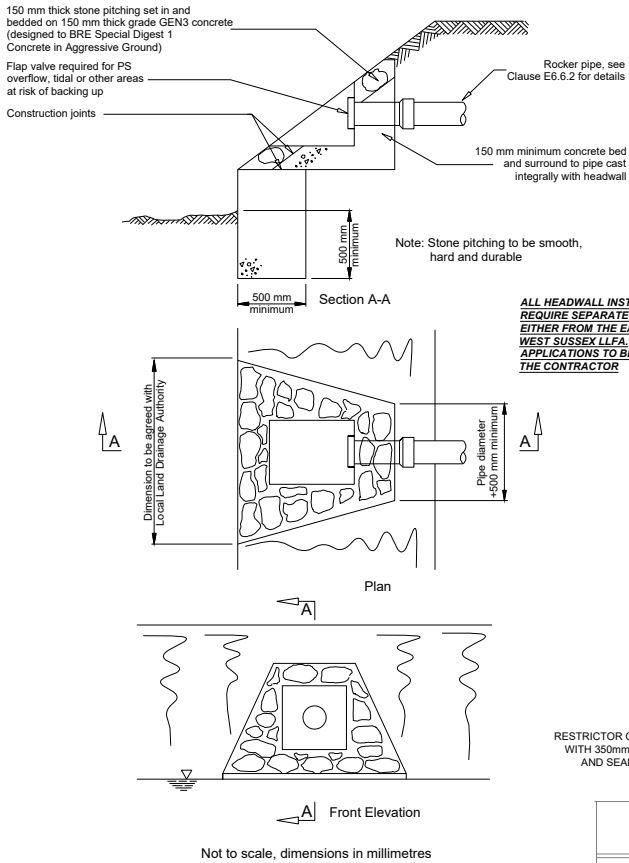
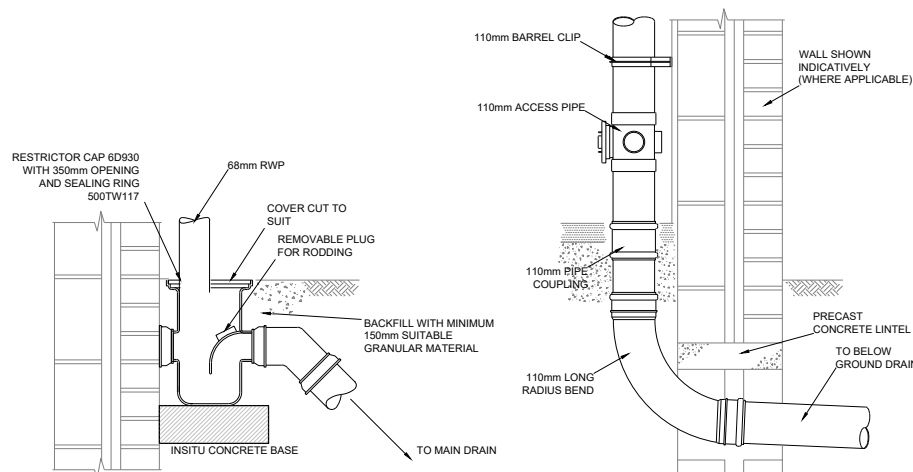


FIGURE C.5
TYPICAL DETAIL OF OUTFALL TO WATERCOURSE/DITCH
Suitable for outfall pipes of less than 350 mm

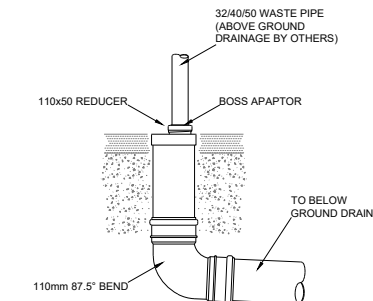


TYPICAL POROUS PAVING DETAIL
(REQUIRES IN-SITU CBR TESTING TO DETERMINE SUB-BASE THICKNESS)
(1:10)

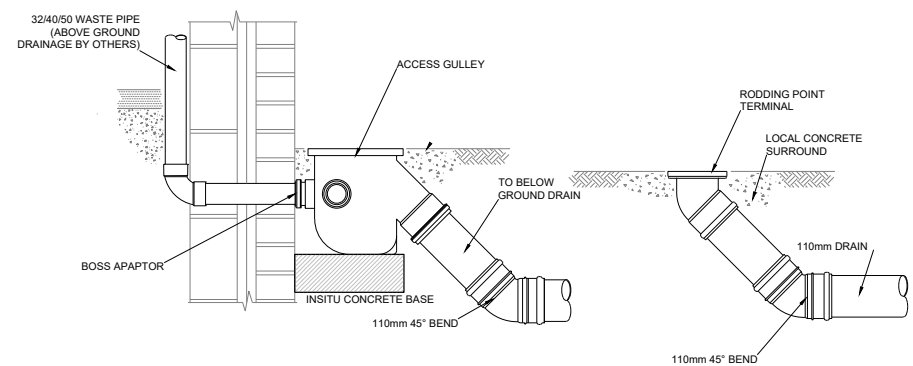


TYPICAL 68mm RWP CONNECTION
TO 110mm PVCu DRAIN VIA
RODABLE BOTTLE GULLEY
(1:10)

TYPICAL DETAIL
AT BASE OF SVP
(1:10)

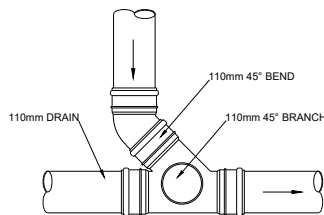


TYPICAL SOIL/ STACK/STUB
WASTE CONNECTION TO DRAIN
(1:10)



TYPICAL BACK
INLET CONNECTION
TO ACCESS GULLEY
(1:10)

TYPICAL HEAD OF DRAIN
RODDING POINT
(1:10)



TYPICAL 110mm
BRANCH CONNECTION
(1:10)



Client
SOUTHERN ROCK PROPERTY

Project
RIVERSIDE
TWINEHAM, RH17 5NN

Title
TYPICAL DRAINAGE DETAILS
SHEET 1 of 2

ISSUED FOR PLANNING DOC

Date JULY 2023 Checked 25/07/2023

Sheet 23-040

Scale AS SHOWN AT A1 Engineer PW

Status PLANNING

Project Number Drawing Number Revision
23-040 51 P6

REV	DESCRIPTION	DATE	BY
B1	DOC / BUILDING REGS	25.07.2023	PW
P6	CLIENT UPDATED ONLY	09.07.2024	PW

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STABILITY REQUIREMENT HIGHLIGHT

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SECTION C

CALCULATIONS

Rainwater / storm attenuation design

The replacement dwelling is to route to a new attenuation tank, which is to outfall to the river Adur network with a controlled 1 litre/sec flow.

Existing catchment area(s)

Existing east hookers (main dwelling)	= 303.42m ²
Existing annex/bungalow & hardstanding	= 78.51m ²
Existing total	= 381.93m ²

Existing design rainfall (Wallingford procedure):

1 in 2 year = 0.7 l/s

1 in 100 year = 1.5 l/s

Existing site Qbar = 7.37 l/s

Proposed catchment areas – Riverside only

Proposed Main Dwelling Roof	= 511.9m ²
Proposed Rear Patio(s)	= 421.6m ²
Proposed Outbuildings	= 222.6m ²
Proposed Shed	= 13.50m ²
Proposed Total Catchment Area	= 1175.0m ² (0.1175ha)
Proposed Riverside Site Area	= 6378.4m ² (0.63784a)

Required attenuation to limit flow rates to 1.0l/s is 109m³

Required Tank size(s):

Proposed size is 24m long x 6m wide x 0.8m deep & located where the ground level is above 10.70m. This provides 109.44m³ of effective storage with 95% free area crates

Design variables inc 45% global warming factor for a 6-hour storm

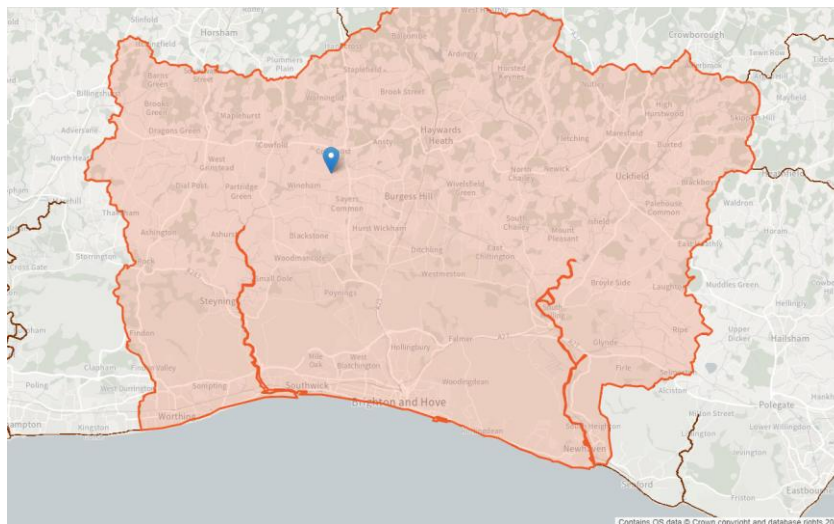
The existing flow rates ignore the hardstanding and patio areas. The new development will utilise permeable paving to the front area and impermeable but attenuated rear patio areas.

The pool drainage will be by the specialist pool supplier. This will be via a holding tank for any back wash. This tank holds the chlorinated water for the required length of time (~10 days) such that the chlorine evaporates, and potable water is left, which can be discharged via the mains drains, or to the watercourse via the stormwater drains. This amounts to <1m³ every 2 weeks, thus very nominal.

SUPPORTING CALCULATIONS

- PROPOSED ATTENUATION TO LIMIT FLOWS TO 1l/s

IN LINE WITH LATEST GOV.UK PEAK RAINFALL INTENSITY, THE PROPOSED ATTENUATION HAS BEEN INCREASED TO SUIT THE 45% CLIMATE CHANGE FACTOR & THE LARGER CATCHMENT AREAS. THIS RESULTS IN AN INCREASE FROM 102.2m³ TO 109m³



3.3% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	35%
2070s	20%	40%

1% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	45%
2070s	25%	45%

*Use '2050s' for development with a lifetime up to 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

This map contains information generated by Met Office Hadley Centre (2019) UKCP Local Projections on a 5km grid over the UK for 1980-2080. Centre for Environmental Data Analysis, 2022

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Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:

PHILIP WAINWRIGHT

Site name:

RIVERSIDE

Site location:

TWINEHAM

This is an estimation of the storage volume requirements that are needed 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). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site characteristics

Total site area (ha):

0.63784

Significant public open space (ha):

0.5203399

Area positively drained (ha):

0.1175001

Impermeable area (ha):

0.1175

Percentage of drained area that is impermeable (%):

100

Impervious area drained via infiltration (ha):

0

Return period for infiltration system design (year):

10

Impervious area drained to rainwater harvesting (ha):

0

Return period for rainwater harvesting system (year):

10

Compliance factor for rainwater harvesting system (%):

66

Net site area for storage volume design (ha):

0.12

Net impermable area for storage volume design (ha):

0.12

Pervious area contribution to runoff (%):

30

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Methodology

esti

IH124

Q_{BAR} estimation method:

Calculate from SPR and SAAR

SPR estimation method:

Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
SPR:	0.47	0.47

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	70
Rainfall 100 yrs 12 hrs:	--	106.68
FEH / FSR conversion factor:	1.27	1.27
SAAR (mm):	803	803
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.3	0.3
Hydological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 10 year:	1.62	1.62
Growth curve factor 30 year:	2.3	2.3

Site Details

Latitude:

50.96981° N

Longitude:

0.2131° W

Reference:

2268878330

Date:

Dec 13 2024 13:37

Design criteria

Climate change allowance factor:

1.45

Urban creep allowance factor:

1.1

Volume control approach:

Use long term storage

Interception rainfall depth (mm):

5

Minimum flow rate (l/s):

1

Growth curve factor 100 years:	3.19	3.19
Q _{BAR} for total site area (l/s):	3.62	3.62
Q _{BAR} for net site area (l/s):	0.67	0.67

Site discharge rates

	Default	Edited
1 in 1 year (l/s):	1	1
1 in 30 years (l/s):	1.5	1.5
1 in 100 year (l/s):	2.1	2.1

Estimated storage volumes

	Default	Edited
Attenuation storage 1/100 years (m³):	96	96
Long term storage 1/100 years (m³):	14	14
Total storage 1/100 years (m³):	109	109

This report was produced using the storage estimation tool developed by HRWallingford and available at [www.uksuds.com](http://uksuds.com). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.