

PLOT 1, TOWNHOUSE FARM – REPLACEMENT DWELLING DRAINAGE – FOR PLANNING DOC

Drainage Information for Proposed Replacement Dwelling

Revision P1

For;
Mr & Mrs Ohlson

Site Address

Plot 1, Townhouse Farm,
Church Lane,
Ardingly,
RH17 6UR

Issued

17th December 2024

Our Reference

24-080



CREATIVE
STRUCTURES

DOCUMENT ISSUE REGISTER

Job	PLOT 1, TOWNHOUSE FARM – REPLACEMENT DWELLING			
Document	DRAINAGE – FOR PLANNING DOC			
Issue	Date	Description	By	Checked
P1	16/12/2024	For DOC Approval	Philip Wainwright, <i>CEng, MStructE</i>	17/12/2024

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.

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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 Plot 1, Townhouse Farm comprise the demolition of the existing dwelling and the associated outbuildings and the construction of a new dwelling and detached garage with notable landscaping on a sloping site.

The existing site comprises a sloping site with a ditch to the west and an agricultural field to the east & south. The field to the east is within the same ownership. This eastern agricultural field is flanked by a wet ditch, which routes to the south & east where it connects up with a flowing stream/watercourse.

The existing foul drainage arrangement comprises a foul treatment plant / Klargestertank which routes approx. 70m across the agricultural field with the effluent discharging to the wet ditch. The existing RWP's could not be traced as the existing building was demolished prior to our appointment and site visit. There are no public sewers in the local area.

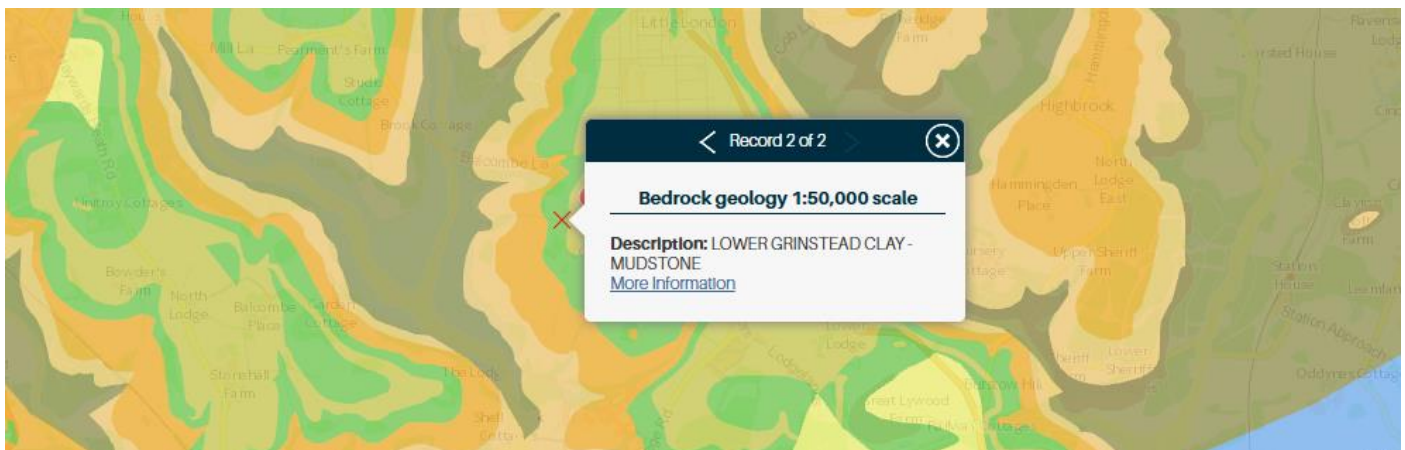
The new foul drainage comprises a replacement Klargestertank, with a new drain routed across (below) the agricultural field with an outfall to the existing wet ditch. The new stormwater drainage proposal for the dwelling comprises typical RWP's that route to an attenuation tank with controlled flows to the wet ditch via drains routing across (below) the agricultural field. The flows are controlled to 1.0 l/s,

A formal site investigation (geotechnical) survey was undertaken by LandScience on 21st November 2024, with a return visit for water monitoring and the falling head test on 27th November 2024. The results were unfavourable with the falling head test taking 270min to fall 1.16m within the standpipe.

We are awaiting the formal report, however they have noted that alternative drainage is advised as soakaways are not feasible on the site.

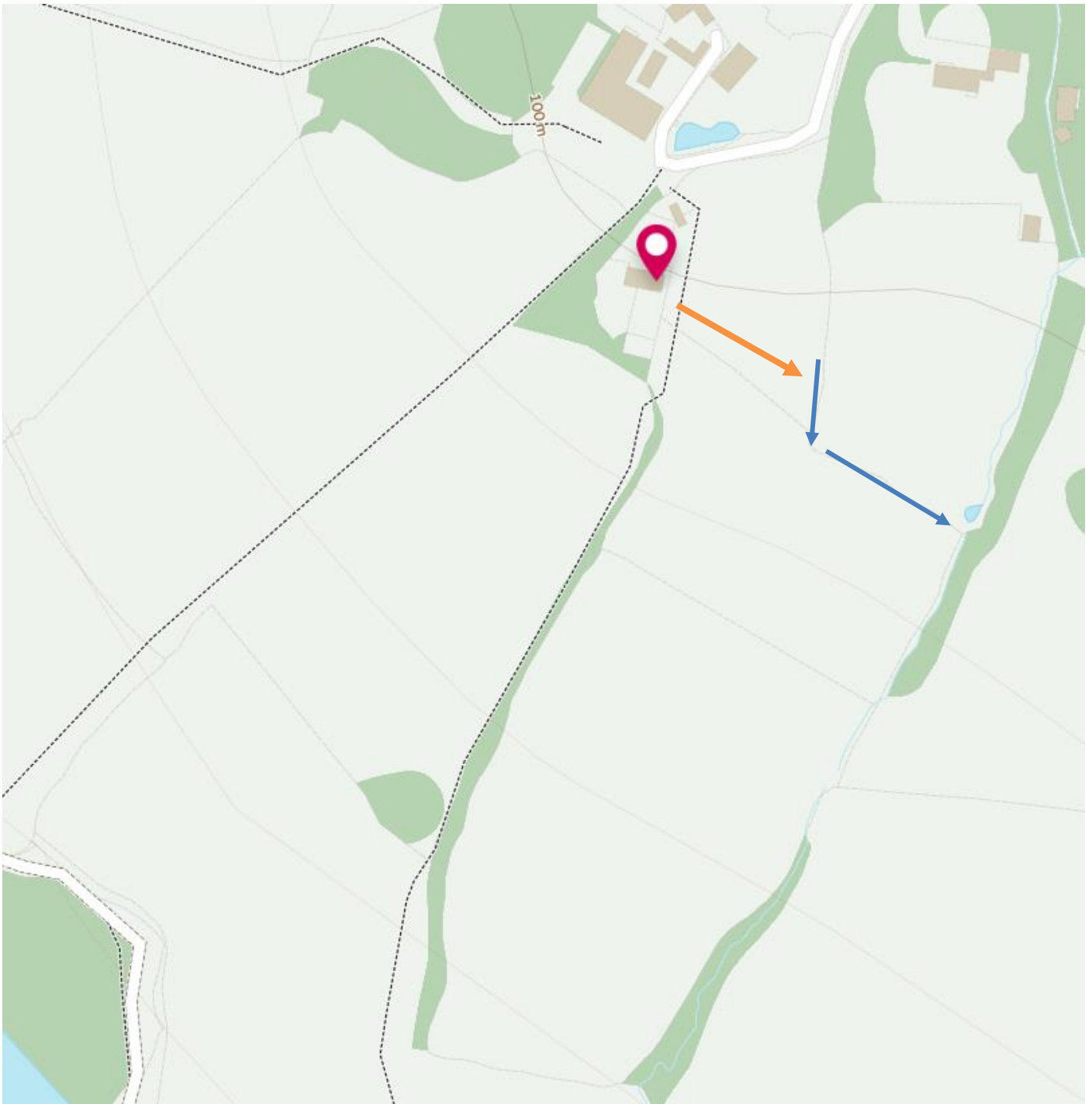
This matches the BRE365 soakage test results provided for plot #2, which is the adjacent site.

Ground Conditions



The above figure is taken from the British Geological Survey website and shows that the site lies within the Lower Grinstead Clay Formation.

Watercourse Network



The image above is taken from the Ordnance Survey (OS) website and shows the site location (red drop) with the existing Klargester & proposed new foul clean effluent & attenuated and controlled stormwater drain shown in orange passing over the field in the same ownership. The wet ditch network is shown with the 2No blue arrows, with the main stream/watercourse shown on the OS map with the light blue line & pond.

The site levels are approx. 99.8m. The OS (& google earth) level(s) taken at the eastern boundary of the agricultural field are 93m, thus adequate falls across the ~75m length (requires ~1000mm of falls to achieve 1:80).

See photos on the following pages – These are to be read in conjunction with plan drawing 24-080-61



Image 01 - Looking west from the wet ditch location across the agricultural field
(in the same ownership) to the site (where the trees are)



Image 02 – Showing the wet ditch to the eastern boundary of the client's agricultural field,
which the new clean effluent and the attenuated controlled stormwater flows are to discharge to



Image 03 – The stream running south



Image 04 – Further along the stream heading south/south-west towards the reservoir

SECTION B

DRAWINGS

- 24-080-61 PROPOSED SITE DRAINAGE PLAN
- 24-080-62 PROPOSED DRAINAGE DETAILS – SHEET 1 of 2
- 24-080-63 PROPOSED DRAINAGE DETAILS – SHEET 2 of 2

SITE NOTES/OBSERVATIONS

THE SITE IS LOCATED WITHIN THE CUCKFIELD STONE BEDS WITH THE LOWER GRINSTEAD CLAY FORMATION FORMING THE WIDER AREA.

THERE ARE NO PUBLIC SEWERS WITHIN THE AREA.

THE EXISTING DWELLING WAS SERVED BY AN EXISTING KLARGESTER, WITH THE EFFLUENT DISCHARGING TO A WET DITCH TO THE EAST OF THE ADJACENT FIELD (WITHIN THE SAME OWNERSHIP), WHICH ROUTES SOUTH & EAST BEFORE JOINING A RECOGNISED WATERCOURSE/STREAM.

THE EXISTING STORMWATER FLOWS COULD NOT BE CONFIRMED DURING VISIT OF 29th OCTOBER AS THE EXISTING DWELLING HAD BEEN DEMOLISHED.

A FORMAL SITE INVESTIGATION (GEOTECHNICAL) SURVEY WAS UNDERTAKEN BY LANDSCIENCE ON 21st NOVEMBER 2024, WITH A RETURN VISIT FOR WATER MONITORING AND THE FALLING HEAD TEST ON 27th NOVEMBER 2024. THE RESULTS WERE UNFAVOURABLE WITH THE FALLING HEAD TEST TAKING 270min TO FALL 1.16m WITHIN THE STANDPIPE.

WE ARE AWAITING THE FORMAL REPORT, HOWEVER THEY HAVE NOTED THAT ALTERNATIVE DRAINAGE IS ADVISED AS SOAKAWAYS ARE NOT FEASIBLE ON THE SITE.

THIS MATCHES THE BRE365 SOAKAGE TEST RESULTS PROVIDED FOR PLOT #2, WHICH IS THE ADJACENT SITE.

THE PROPOSED DRAINAGE IS TO COMPRISE:
FOUL WATER
A NEW KLARGESTER TO SERVE THE NEW DWELLING, WITH THE SAME OUTFALL FOR THE CLEAN EFFLUENT TO THE SAME WET DITCH AS THE EXISTING (SEE IMAGES).

STORMWATER
THE NEW STORMWATER IS TO BE ATTENUATED WITH A CONTROLLED OUTFALL TO THE SAME WET DITCH AS THE EXISTING KLARGESTER.

RAINWATER / STORM ATTENUATION DESIGN

PROPOSED CATCHMENT AREA	= 253.6m ²
PROPOSED MAIN DWELLING ROOF	= 58.5m ²
PROPOSED GARAGE (inc STEPS)	= 421.6m ²
PROPOSED REAR PATIO (inc PLANT SLAB)	= 97.0m ² **
30% OF PERMEABLE DRIVEWAY AREA ALLOWED	= 514.3m ² (0.1175ha)
PROPOSED TOTAL CATCHMENT AREA	= 356.4m² (0.3564ha)

**PERMEABLE DRIVEWAY AREA = 323.4m², WITH 30% ALLOWED FOR WITHIN ATTENUATION CALCULATIONS OWING TO SLOPED DRIVEWAY.

REQUIRED ATTENUATION VOLUME TO LIMIT FLOW RATES TO 1.0% IS = 37.0m³

PROPOSED SIZE IS 13m LONG x 2.5m WIDE x 1.2m DEEP. THIS PROVIDES 37.05m³ 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 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 STORMWATER DRAINS TO THE WATERCOURSE OR BY A SMALL BUT SLOW DRAINING SOAKAWAY THIS AMOUNTS TO <1m³ EVERY 2 WEEKS, THUS VERY MINIMAL.

FOUL DRAINAGE DESIGN

THE NEW FOUL DRAINS FOR THE DWELLING IS TO ROUTE TO NEW INDEPENDENT FOUL TREATMENT PLANT / KLARGESTER. THIS WILL THEN DISCHARGE THE CLEAN EFFLUENT TO THE WATERCOURSE NETWORK TO THE SOUTH-EAST OF THE SITE, ACROSS THE ADJACENT FIELD (IN THE SAME OWNERSHIP).

MEMBER KEY:

	FW	PROPOSED FOUL WATER DRAIN
	SW	PROPOSED SURFACE WATER DRAIN
	SW	PROPOSED CLEAN EFFLUENT DRAIN FROM FOUL TREATMENT PLANT
		ACO SLOT/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 AREA OF PERMEABLE NATURAL STONE CHIPPINGS TO GARDEN AREA
		DENOTES AREA OF PERMEABLE FOR VEHICLE TRAFFIC RESIN BOUND GRAVEL
		DENOTES AREA OF NON-PERMEABLE STONE PAVING TO REAR PATIOS & FRONT ENTRANCE/STEPS
		DENOTES ROOF CATCHMENT AREAS (DWELLING & GARAGE)
	SVP	SOIL AND VENT PIPE
	RWP	RAINWATER PIPE
	+98.61	PROPOSED NEW LEVELS (TAKEN FROM LANDSCAPING PLAN)
	98.61	EXISTING CHANGED LEVELS WITHIN THE LANDSCAPING (TAKEN FROM LANDSCAPING PLAN)
	98.02	EXISTING RETAINED LEVELS WITHIN THE LANDSCAPING (TAKEN FROM LANDSCAPING PLAN)

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 Y, BS EN 752:2017 AND TO THE SATISFACTION OF THE BUILDING CONTROL OFFICER
- ALL ADAPTABLE 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. ALL RWP AND SVP'S TO HAVE RODDING EYES.

NOTES:-

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- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICE ENGINEERS AND SPECIALISTS DRAWINGS.
- ANY DISCREPANCIES OR VARIATIONS ARE TO BE REPORTED IMMEDIATELY TO ENGINEER FOR CLARIFICATION BEFORE THE AFFECTED WORK COMMENCES.
- ALL DIMENSIONS ARE TO BE CHECKED ON SITE. ANY DISCREPANCIES TO BE REPORTED TO ENGINEER IMMEDIATELY BEFORE THE AFFECTED WORK COMMENCES.
- ALL PROPRIETARY PRODUCTS ARE TO BE USED IN ACCORDANCE WITH THE MANUFACTURERS DETAILS AND SPECIFICATIONS.
- THE CONTRACTOR IS TO ENSURE THAT TEMPORARY LOADS PLACED ONTO THE NEW STRUCTURES SHALL BE LESS THAN THE LOADS FOR WHICH IT HAS BEEN DESIGNED.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
- THESE DRAWINGS CONSTITUTE A FULL DESIGN FOR BUILDING CONTROL APPROVAL. THEY ARE NOT CONSTRUCTION STAGE DRAWINGS UNTIL BUILDING CONTROL HAVE APPROVED THE DESIGN(S).
- FOR THE FULL COMPREHENSIVE GENERAL NOTES SEE GENERAL NOTES DRAWING 100.

WARNING IDENTIFICATION

PARTICULAR ATTENTION TO BE PAID WHERE THE HAZARD SYMBOL IS PLACED ON A DRAWING. THIS SYMBOL HIGHLIGHTS A PARTICULAR CONCERN IN RELATION TO THE DESIGN, SITE WORKING OR WHERE THE CONTRACTORS ATTENTION IS REQUIRED.

MEASURES TO MITIGATE RISK SHOULD BE CONSIDERED AT ALL STAGES OF DESIGN DEVELOPMENT AND CONSTRUCTION.

COORDINATION HIGHLIGHT

WHERE THE BLUE HIGHLIGHT SYMBOL IS PLACED ON A DRAWING PARTICULAR ATTENTION IS REQUIRED WITH REGARD TO COORDINATION.

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

REV	DESCRIPTION	DATE	BY
P1	FOR PLANNING DOC ONLY	17.12.2024	PW

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t: 01273 359 990

e: info@csidestructures.co.uk

w: www.csidestructures.co.uk

Client
MR & MRS OHLSON

Project
**PLOT 1, TOWNHOUSE FARM
CHURCH LN, ARDINGLY, RH17 6UR**

Title
PROPOSED DRAINAGE LAYOUT

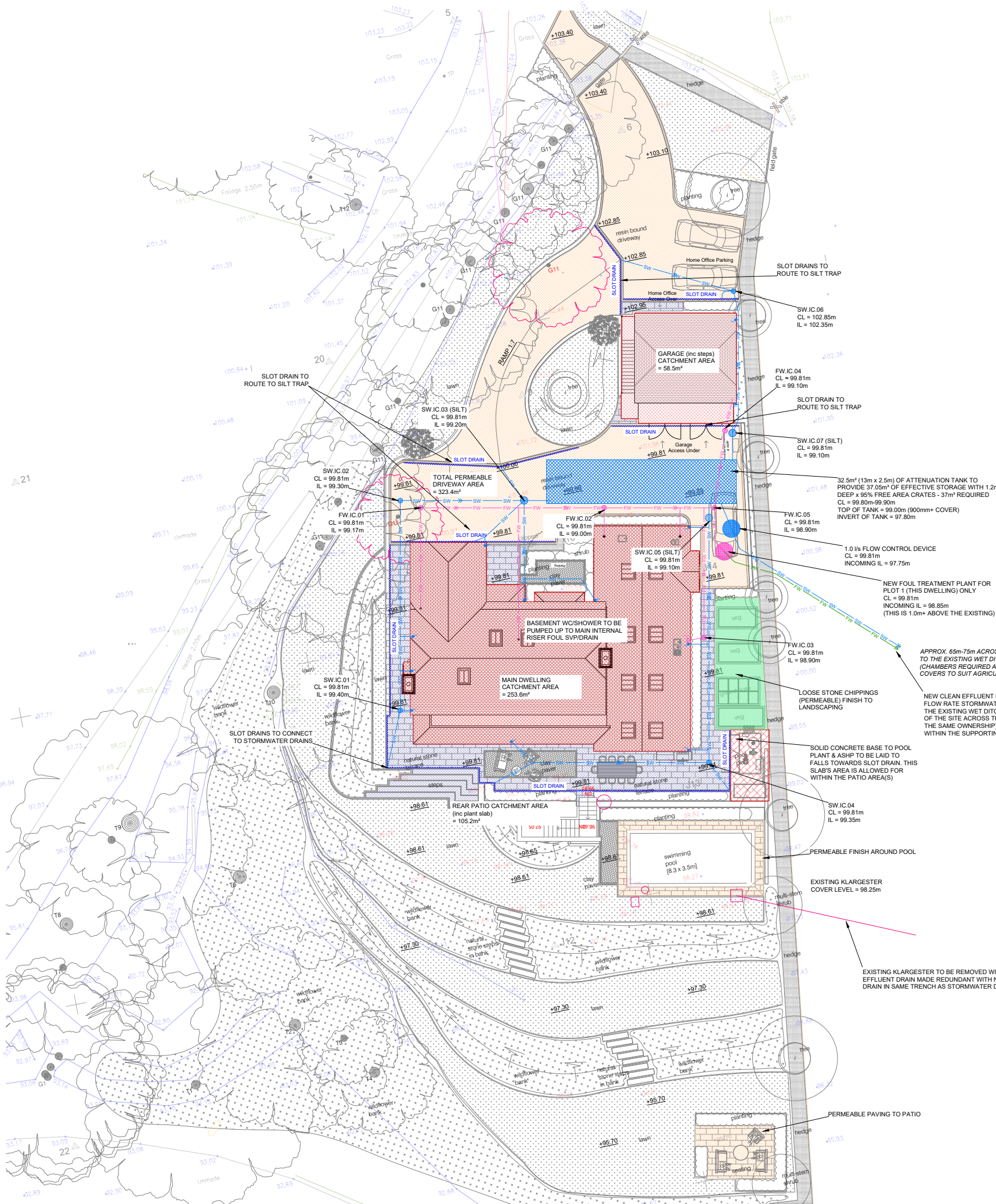
Date 15.12.2024 Checked 17.12.2024

Drawing Sheet Size A1

Scale 1:150 Engineer PW

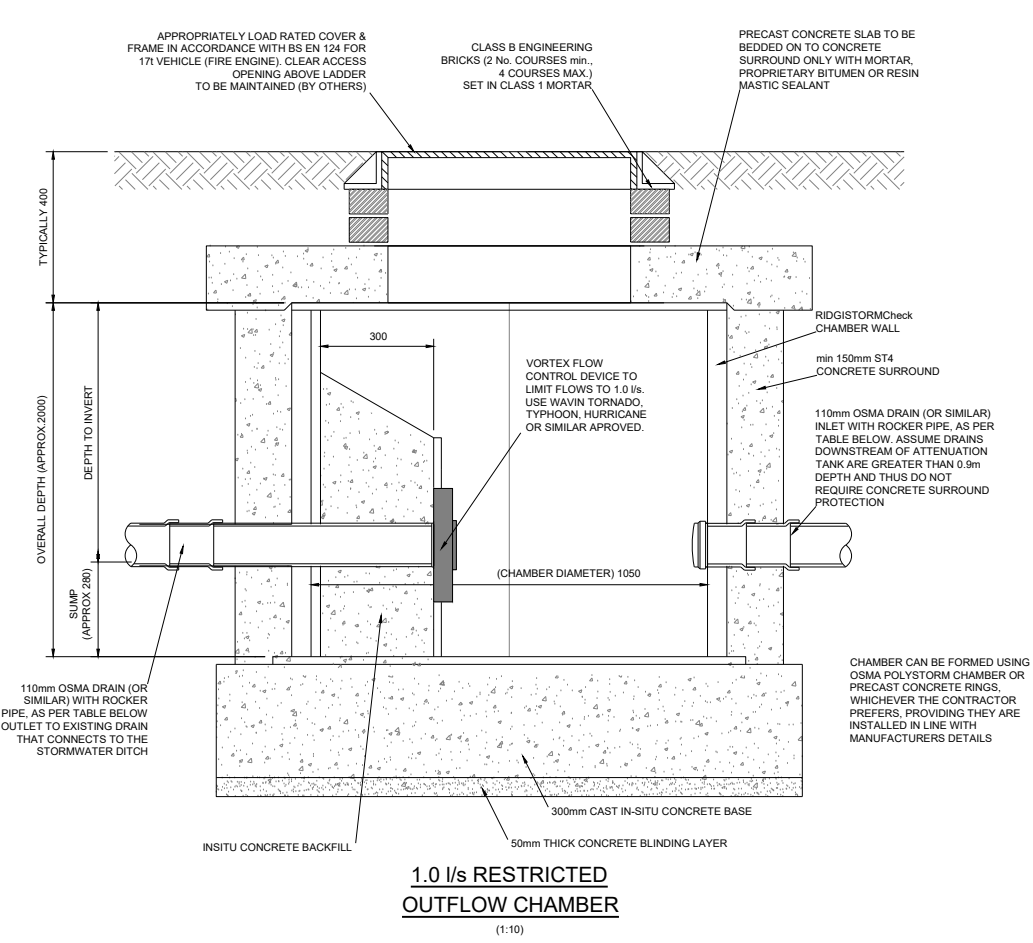
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24-009	61	P1



PROPOSED DRAINAGE SITE PLAN

(1:150)



1.0 l/s RESTRICTED OUTFLOW CHAMBER
(1:10)

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

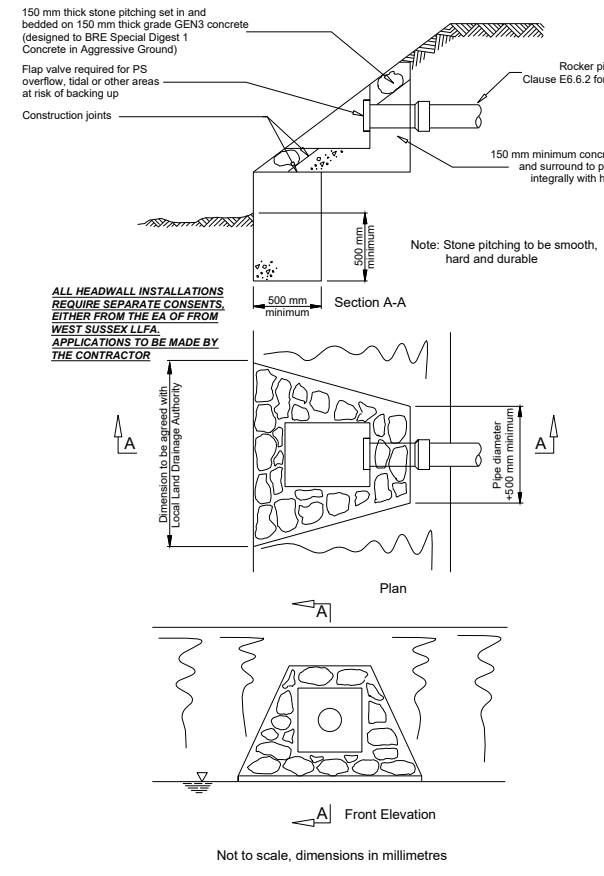
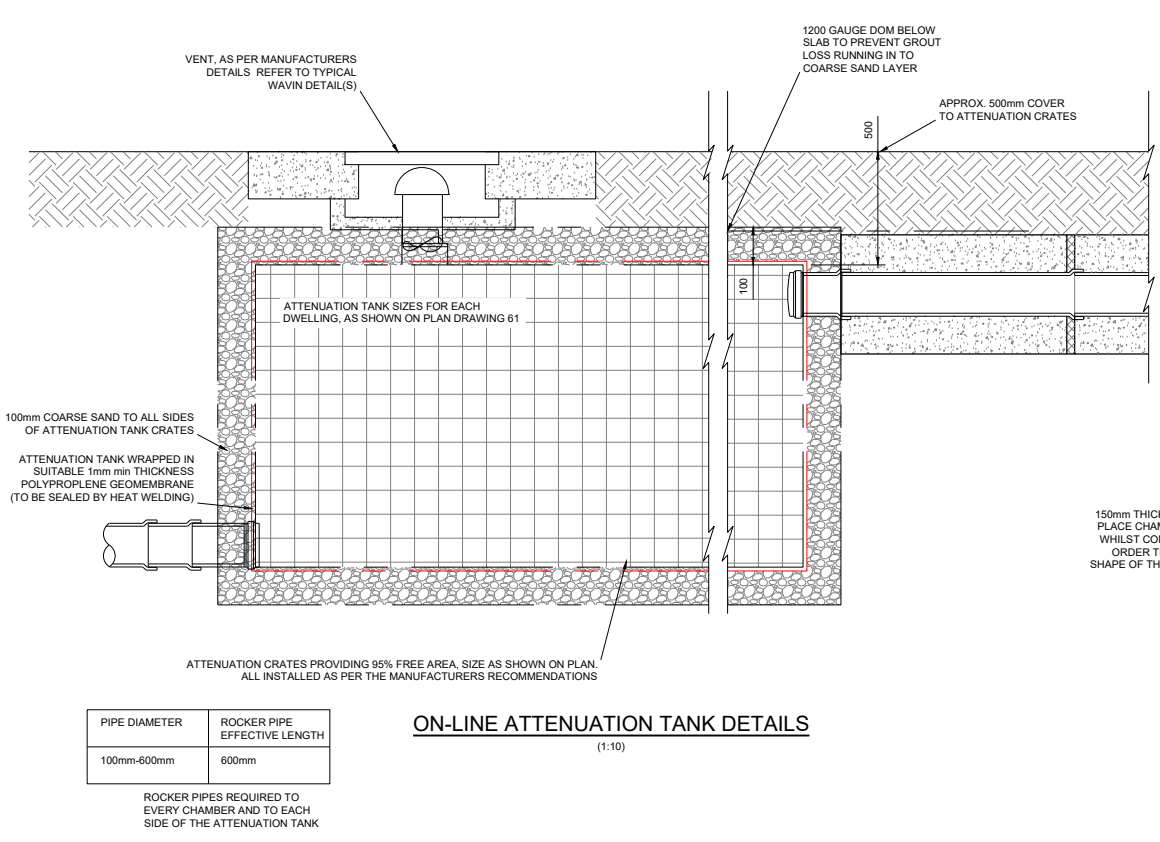
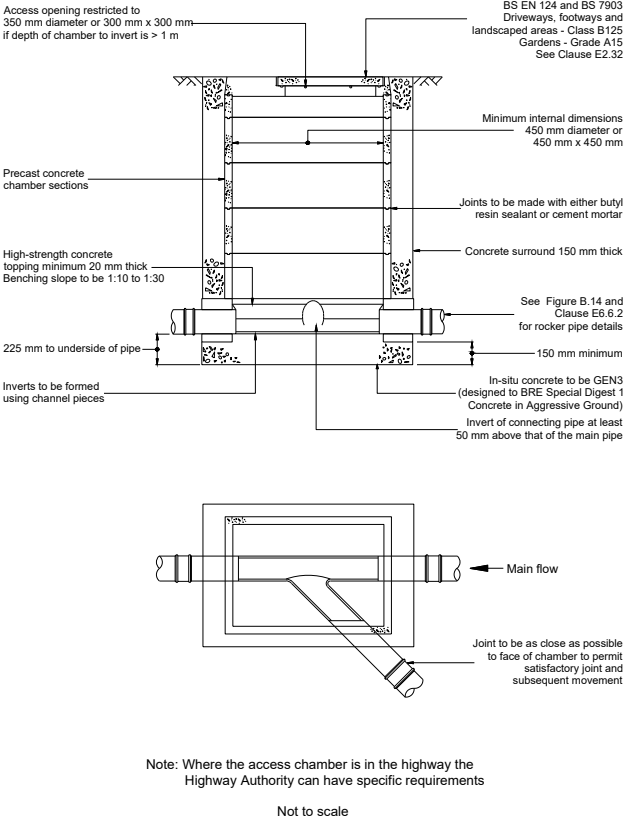
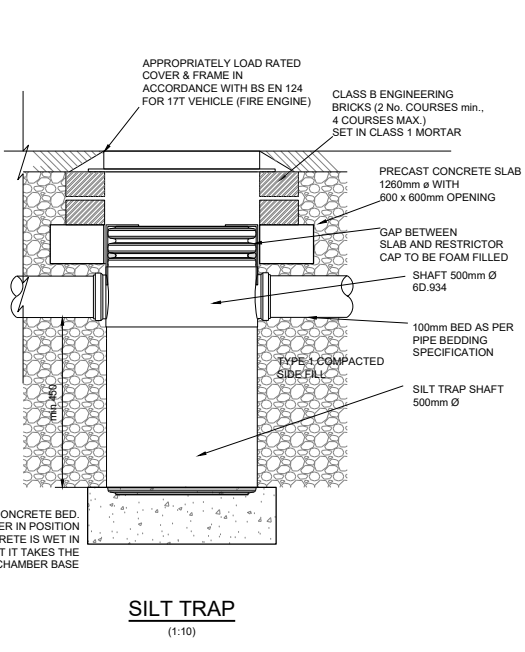


FIGURE B.19
TYPICAL INSPECTION CHAMBER DETAIL - TYPE 3
(Rigid material detail - AGRICULTURAL FIELD)
Alternative maximum depth from cover level to soffit of pipe 3 m for areas not subject to vehicle loading or areas subject to light vehicle loading, non-entry



ON-LINE ATTENUATION TANK DETAILS
(1:10)



MAINTENANCE SCHEDULE - AS TAKEN FROM SUDS MANUAL, TABLE 21.3 FOR DOMESTIC FLOW CONTROL DEVICE (THIS INFORMATION IS TO BE WRITTEN IN TO THE O&M MANUAL)

MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY	PERSON RESPONSIBLE FOR UNDERTAKING OR COMMISSIONING SUITABLE PROFESSIONAL
	INSPECT AND IDENTIFY ANY AREAS THAT ARE NOT OPERATING CORRECTLY. IF REQUIRE, TAKE REMEDIAL ACTION	MONTHLY FOR 3 MONTHS, THEN ANNUALLY	CLIENT / END USER / BUILDING OWNER
REGULAR MAINTENANCE (ATTENUATION TANKS & FLOW CONTROL DEVICE/CHAMBER)	REMOVE DEBRIS FROM THE CATCHMENT SURFACE (WHERE IT MAY CAUSE RISKS TO PERFORMANCE)	MONTHLY	CLIENT / END USER / BUILDING OWNER
	FOR SYSTEMS WHERE RAINFALL INFILTRATES IN TO THE TANK FROM ABOVE, CHECK SURFACE OF FILTER FOR BLOCKAGE BY SEDIMENT, ALGAE OR OTHER MATTER, REMOVE AND REPLACE SURFACE INFILTRATION MEDIUM AS NECESSARY	ANNUALLY	CLIENT / END USER / BUILDING OWNER
REMEDIAL ACTIONS (ALL SUDS PARTS)	REPAIR / REHABILITATE INLETS, OUTLETS, OVERFLOW AND VENTS	AS REQUIRED	CLIENT / END USER / BUILDING OWNER
REMEDIAL ACTIONS (FLOW CONTROL DEVICE)	REMOVE BLOCKAGES TO THE FLOW CONTROL DEVICE, AS REQUIRED BY FOLLOWING THE MAINTENANCE INSTRUCTIONS RELATING TO THAT PARTICULAR DEVICE, i.e. FOR TORNADO STYLE DEVICE, OPEN DOOR USING STAINLESS STEEL ROPE PROVIDED, FOR TYPHOON STYLE DEVICE PULL OUT UP-STAND PIPE TO ACTIVATE DRAIN DOWN, AND FOR HURRICANE STYLE DEVICE, USE THE LIFTING ROD TO DRAIN DOWN AND CLEAR BLOCKAGE(S).	AS REQUIRED	CLIENT / END USER / BUILDING OWNER
MONITORING	INSPECT / CHECK ALL INLETS, OUTLETS, VENTS AND OVERFLOWS TO ENSURE THAT THEY ARE IN GOOD CONDITION AND OPERATING AS DESIGNED	ANNUALLY	CLIENT / END USER / BUILDING OWNER
	SURVEY INSIDE OF TANK FOR SEDIMENT BUILD-UP AND REMOVE, IF NECESSARY	EVERY 5 YEARS, OR AS REQUIRED	CLIENT / END USER / BUILDING OWNER

MAINTENANCE SCHEDULE - AS TAKEN FROM SUDS MANUA C753, APPENDIX B, BOX-B2 FOR PERVIOUS PAVEMENTS

MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY	PERSON RESPONSIBLE FOR UNDERTAKING OR COMMISSIONING SUITABLE PROFESSIONAL
REGULAR MAINTENANCE	CLEANING BRUSH REGULARLY AND REMOVE SWEEPINGS FROM ALL HARD SURFACE	MONTHLY	SITE OWNER (MAINTENANCE CONTRACT)
OCCASIONAL TANKS	BRUSH AND VACUUM PERMEABLE PAVING SURFACE ONCE A YEAR TO PREVENT SILT BLOCKAGE AND ENHANCE DESIGN LIFE	ANNUALLY	SITE OWNER (MAINTENANCE CONTRACT)
REMEDIAL WORK	MONITOR EFFECTIVENESS OF PERMEABLE PAVEMENT, AND WHEN WATER DOES NOT INFILTRATE IMMEDIATELY ADVISE THE CLIENT OF POSSIBLE NEED FOR REINSTATEMENT OF TOP LAYERS OR SPECIALIST CLEANING.	AS REQUIRED	SITE OWNER (MAINTENANCE CONTRACT)
	RECENT EXPERIENCE SUGGESTS THAT WET WASHING AND SUCTION CLEANING WILL SUBSTANTIALLY REINSTATE PAVEMENT TO 90% EFFICIENCY		

MAINTENANCE SCHEDULE - AS TAKEN FROM SUDS MANUA C753, APPENDIX B, BOX-B2 FOR INLETS, OUTLETS & INSPECTION CHAMBERS

MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY	PERSON RESPONSIBLE FOR UNDERTAKING OR COMMISSIONING SUITABLE PROFESSIONAL
REGULAR MAINTENANCE	INLETS, OUTLETS AND SURFACE CONTROL STRUCTURES INSPECT SURFACE STRUCTURES, REMOVING OBSTRUCTIONS AND SILT AS NECESSARY. CHECK THERE IS NO PHYSICAL DAMAGE.	MONTHLY (OR AS REQUIRED)	SITE OWNER (MAINTENANCE CONTRACT)
	STRIM VEGETATION 1m MIN. SURROUND TO STRUCTURES AND KEEP HARD APRONS FREE FROM SILT AND DEBRIS	MONTHLY	SITE OWNER (MAINTENANCE CONTRACT)
	INSPECTION CHAMBERS AND BELOW-GROUND CONTROL CHAMBERS REMOVE COVER AND INSPECT, ENSURING THAT WATER IS FLOWING FREELY AND THAT THE EXIT ROUTE FOR WATER IS UNOBSTRUCTED. REMOVE DEBRIS AND SILT. UNDERTAKE INSPECTION AFTER LEAF FALL IN AUTUMN	ANNUALLY	SITE OWNER (MAINTENANCE CONTRACT)
OCCASIONAL TANKS	CHECK TOPSOIL LEVELS ARE 20mm ABOVE EDGES OF BASKETS AND CHAMBERS TO AVOID MOWER DAMAGE	ANNUALLY (OR AS REQUIRED)	SITE OWNER (MAINTENANCE CONTRACT)
REMEDIAL WORK	REPAIR PHYSICAL DAMAGE IF NECESSARY	AS REQUIRED	SITE OWNER (MAINTENANCE CONTRACT)

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CREATIVE STRUCTURES

t: 01273 359 990
e: info@csidestructures.co.uk
w: www.csidestructures.co.uk

Client MR & MRS OHLSON		
Project PLOT 1, TOWNHOUSE FARM CHURCH LN, ARDINGLY, RH17 6UR		
Title DRAINAGE DETAILS SHEET 2 of 2		
Date 15.12.2024	Checked 17.12.2024	
Drawing Sheet Size A1		
Scale 1:20, 1:10		Engineer PW
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Project Number 24-009	Drawing Number 63	Revision P1

SECTION C

CALCULATIONS

RAINWATER / STORM ATTENUATION DESIGN

Proposed Catchment Area	
Proposed Main Dwelling Roof	= 253.6m ²
Proposed Garage (Inc Steps)	= 58.5m ²
Proposed Rear Patio (Inc Plant Slab)	= 421.6m ²
30% Of Permeable Driveway Area Allowed	= 97.0m ² **
Proposed Total Catchment Area	= 514.3m² (0.1175ha)
Total Redline Site Boundary Area	= 3564.4m² (0.3564ha)

***permeable driveway area = 323.4m², with 30% allowed for within attenuation calculations owing to sloped driveway.*

Required attenuation volume to limit flow rates to 1.0l/s is = 37.0m³

Proposed size is 13m long x 2.5m wide x 1.2m deep. This provides 37.05m³ 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 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 stormwater drains to the watercourse or by a small but slow draining soakaway this amounts to <1m³ every 2 weeks, thus very nominal.

SUPPORTING CALCULATIONS

- PROPOSED ATTENUATION TO LIMIT FLOWS TO 1l/s



Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:

PHILIP WAINWRIGHT

Site name:

1 TOWNHOUSE

Site location:

ARDINGLY

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):

0.35644

Significant public open space (ha):

0.3050099

Area positively drained (ha):

0.05143009999999998

Impermeable area (ha):

0.05143

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):

0.05

Net impermable area for storage volume design (ha):

0.05

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.

Site Details

Latitude:

51.04720° N

Longitude:

0.09289° W

Reference:

525845281

Date:

Dec 17 2024 15:49

Methodology

esti

IH124

Q_{BAR} estimation method:

Calculate from SPR and SAAR

SPR estimation method:

Calculate from SOIL type

Soil characteristics

SOIL type:

Default

4

Edited

4

SPR:

0.47

0.47

Hydrological characteristics

Rainfall 100 yrs 6 hrs:

Default

--

Edited

70

Rainfall 100 yrs 12 hrs:

--

103.32

FEH / FSR conversion factor:

1.23

1.23

SAAR (mm):

849

849

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

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):	2.16	2.16
Q _{BAR} for net site area (l/s):	0.31	0.31

Site discharge rates

1 in 1 year (l/s):

Default

1

Edited

1

1 in 30 years (l/s):

1

1

1 in 100 year (l/s):

1

1

Estimated storage volumes

Attenuation storage 1/100 years (m³):

Default

37

Edited

37

Long term storage 1/100 years (m³):

0

0

Total storage 1/100 years (m³):

37

37

This report was produced using the storage estimation tool developed by HRWallingford and available at www.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://www.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.