

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

Drainage Information for Proposed Replacement Dwellings

Revision P4

For;
Mr & Mrs Ohlson

Site Address

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

Issued

1st September 2025

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
P2	27/06/2025	For DOC Approval	Philip Wainwright, <i>CEng, MStructE</i>	30/06/2025
P3	29/08/2025	For DOC Approval	Philip Wainwright, <i>CEng, MStructE</i>	01/09/2025
P4	17/10/2025	For DOC Approval	Philip Wainwright, <i>CEng, MStructE</i>	17/10/2025

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 – The discharge location is moved from the local ditch to the main recognised watercourse with the new foul treatment plant location moved to within 10m of the existing location and now 16m+ from the dwelling. There are no changes in catchment areas, calculations etc, just the location of the treatment plant, length of trenching & drains extended across the agricultural field and the final discharge location changed.

Additional information is added to this pack that addresses the planning comments.

Only drawing 61 is updated. Drawings 62 & 63 remain unchanged as these are typical details only.

P3 – This revision covers the inclusion of site specific rainfall data, thus removing the ‘estimation’ concern. The rainfall data was purchased as a point data from the UK Centre for Ecology & Hydrology. This links in with the UKSuds design software. At the time of inputting the new area data in a different arrangement, it was noted that the catchment area was previously misrepresented. The correct positively drained area(s) are now included, which requires a larger volume. It is also noted that the UKSuds software only allows for 90% geocellular crates, whereas most standard crates are 95% free area.

A new drawing (64) has also been created, which shows the full route across the adjoining field. This also confirms the location of the chambers and flow control chambers in the field adjacent to the proposed dwelling are within the boundary of ownership.

We can also confirm that the new foul treatment discharge location meets the necessary EA binding rules. It is also added that this project is a ‘replacement’ dwelling, where the existing Klargestar from 2018 discharges to a ditch, which does not meet the EA binding rules as it is seasonally dry. Thus the change in discharge location from revision P2 onwards.

The location of the outfall is 160m+ away from the site and 10m lower than the new dwelling. The location of the outfall is not expected to flood in the 1-in-100 year event. For further site flooding, refer to the project specific FRA.

P4 – The attenuation tank volume size notes have been corrected only. Only drawing 61 has been updated with the corrected noted clouded. Section C has had the description updated, which cross references to the drawing values.

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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 ditch, which routes to the south & east where it connects up with a flowing stream/watercourse that connects to 'Shell Brook' and ultimately the River Ouse. The existing local ditch does not meet EA binding rule 19, as the ditch is seasonally dry. The ditch that serves the main watercourse does meet the EA binding rules for private dwelling foul treatment plant discharges.

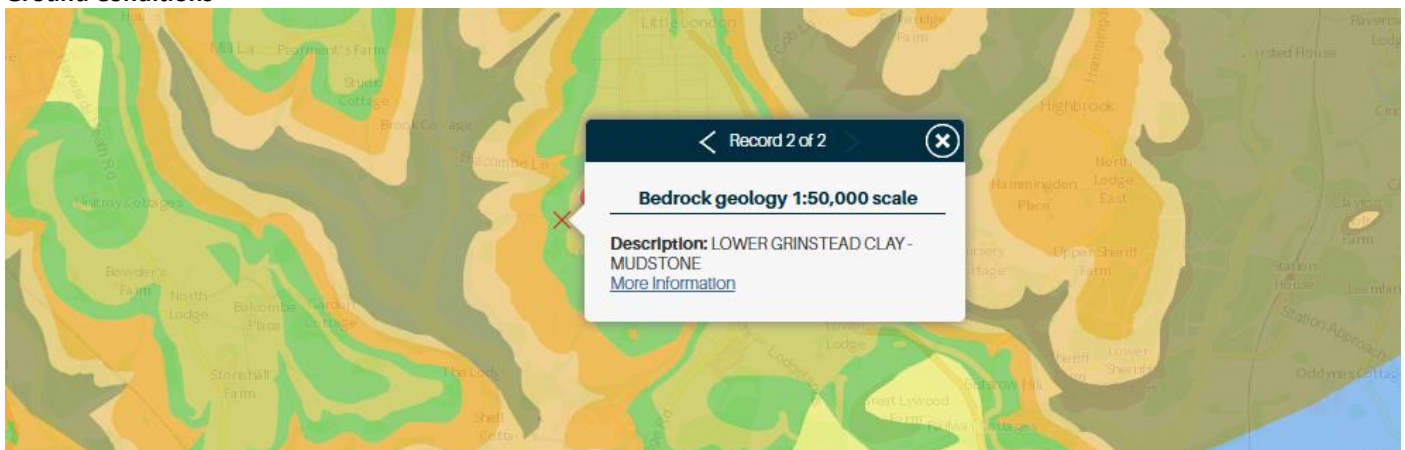
The existing foul drainage arrangement comprises a foul treatment plant (installed in 2018) which routes approx. 85m across the agricultural field with the effluent discharging to the wet ditch. The existing RWP's could not be traced as the existing building as demolished prior to our appointment and site visit. There are no public sewers in the local area.

The new foul drainage comprises a new Klargester located within the front landscaped area (7m+ away from new dwelling & adjacent to parking area, with a new drain routed across (below) the agricultural field with an outfall to the main watercourse. 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.

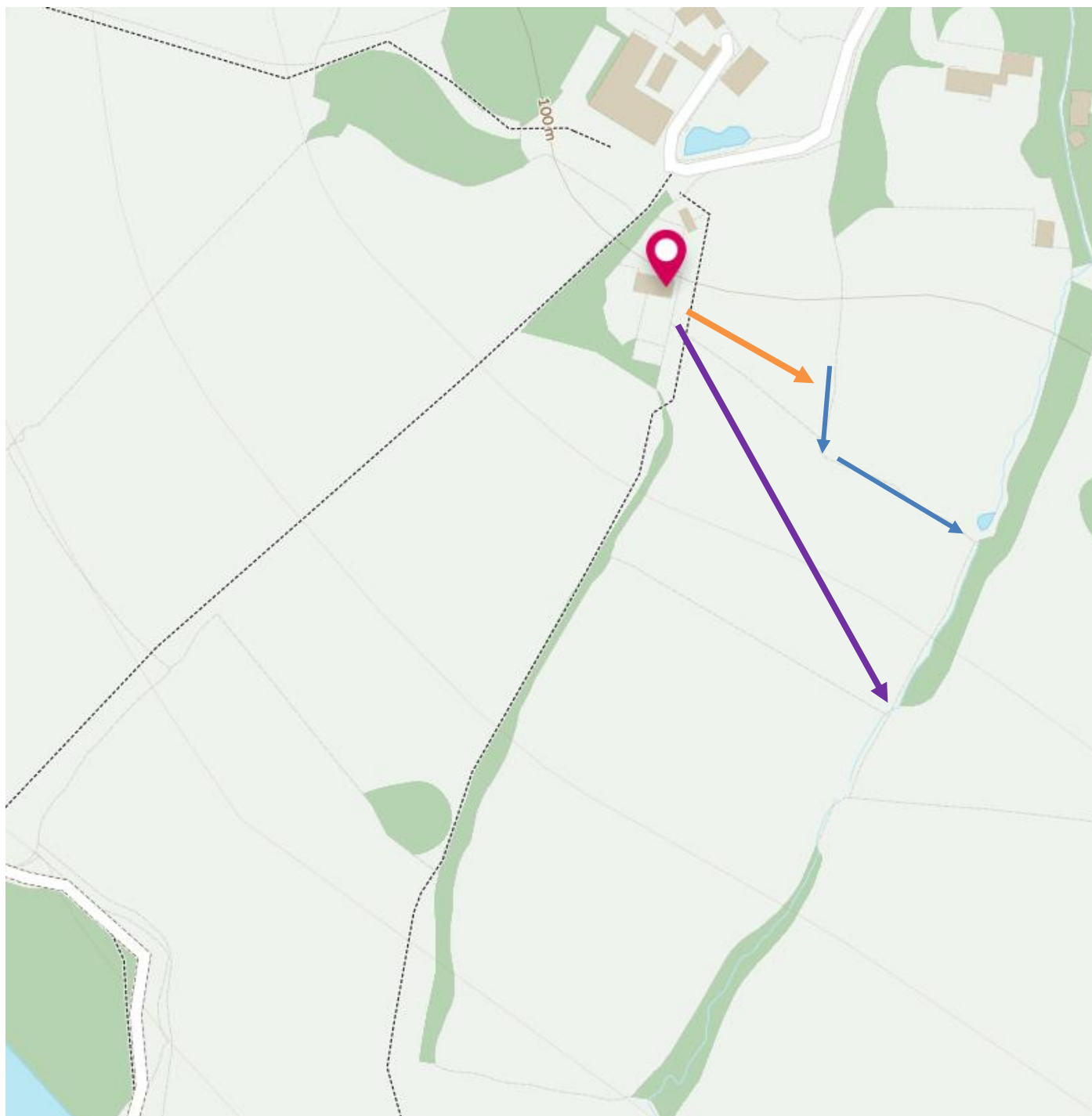
This matches the BRE365 soakage test results provided for plot #2 Townhouse Farm, which is the adjacent site.

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



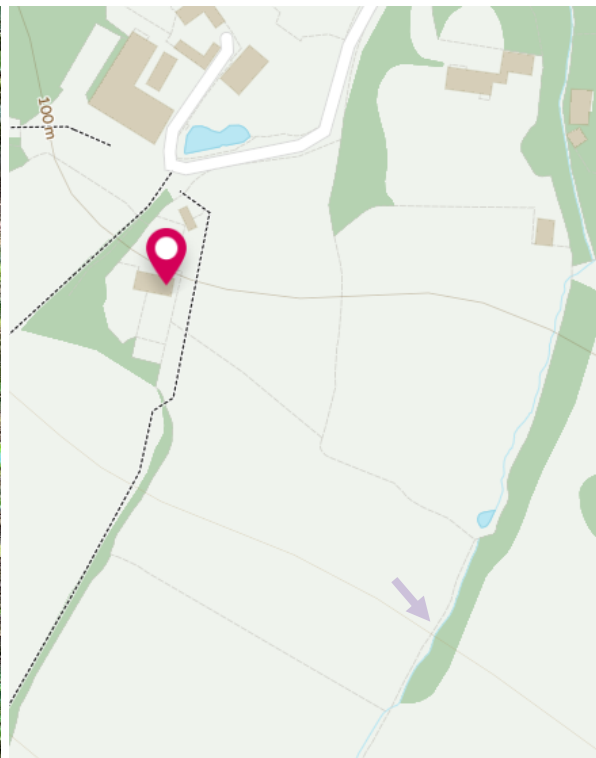
The image above is taken from the Ordnance Survey (OS) website and shows the site location (red drop) with the existing foul treatment plant effluent & drain shown in orange passing over the field in the same ownership. The local ditch network is shown with the 2No blue arrows, however this is seasonally dry, with the main stream/watercourse shown on the OS map with the light blue line & pond. It is therefore proposed that the new foul clean effluent & attenuated and controlled stormwater drains are taken directly to the watercourse, as shown with the purple arrow.

The site levels are approx. 99.8m. The OS (& google earth) level(s) taken at the southern west of the field (purple arrow) eastern are 87m, thus adequate falls across the ~160m+ length.

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



Image 01 - Looking South East from the approx. foul treatment plant location with the previously proposed route shown in orange and the revised route shown in purple



Images 02 & 03 – Showing the 1m+ high embankment at the south-east boundary of the agricultural field. The wet ditch at the base is approx. 1m lower than the field and thus the drain run. The exact location is TBC to suit the path of least resistance through the existing tree line.



Image 04 – The stream running south



Image 05 – Further along the stream heading south/south-west towards the reservoir

Daily Discharge Volume

The attached calculation confirms the site discharges 1.05 litres/day only, which is less than the allowable 5l/day to meet EA binding rule 2.

UNCLASSIFIED

Daily discharge calculator for domestic properties

V1.0 June 2015

Use this calculator to work out how much effluent your septic tank or small sewage treatment plant will discharge a day when it's being used to treat the sewage from one or more houses or flats.

Number of properties	1	← Enter the number of properties which are connected to the plant
Number of bedrooms	5	← Enter the total number of bedrooms for all of the properties and press return
Cubic metres a day	1.05	← This is how much treated sewage your plant will discharge a day

Eg if you have 2 houses sharing a septic tank, one with 3 bedrooms and the other with 4, enter 2 for the number of properties, 7 for the number of bedrooms, and this will give you a result of 1.65 cubic metres a day.

Flooding Events

The images below show the flooding event for the 30 year, 100 year & 1000 year events. There is some localised flooding in the 1in1000 year event to the corner of the boundary, however



1 in 30 year



1 in 100 year



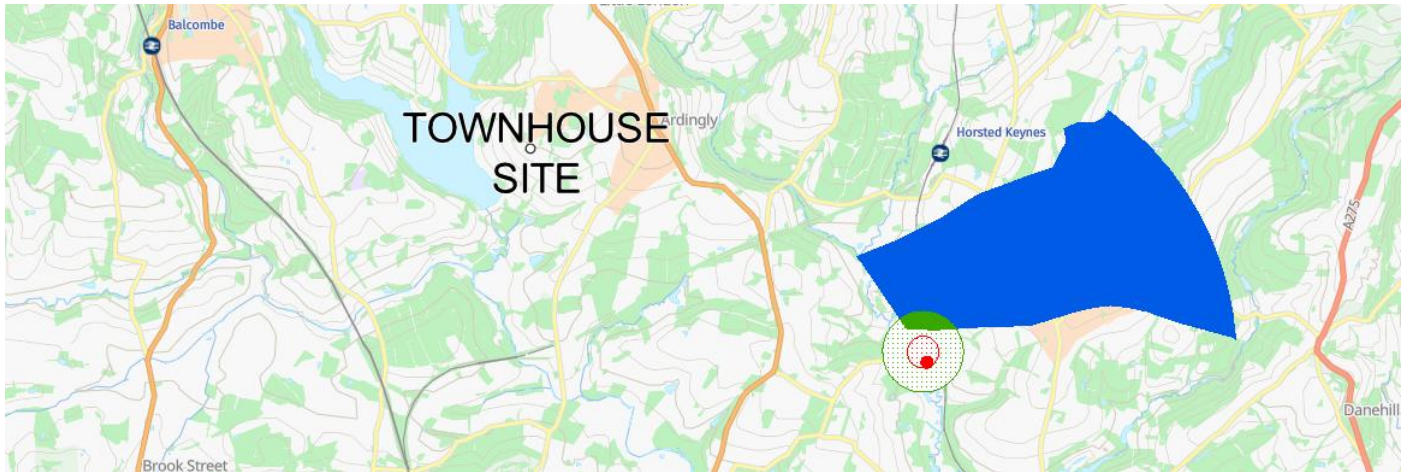
1 in 1000 year

The following pages comprise the EA mapping data, which confirms the site is not located within flood zones 2 or 3 and there is a 'low probability' of flooding.

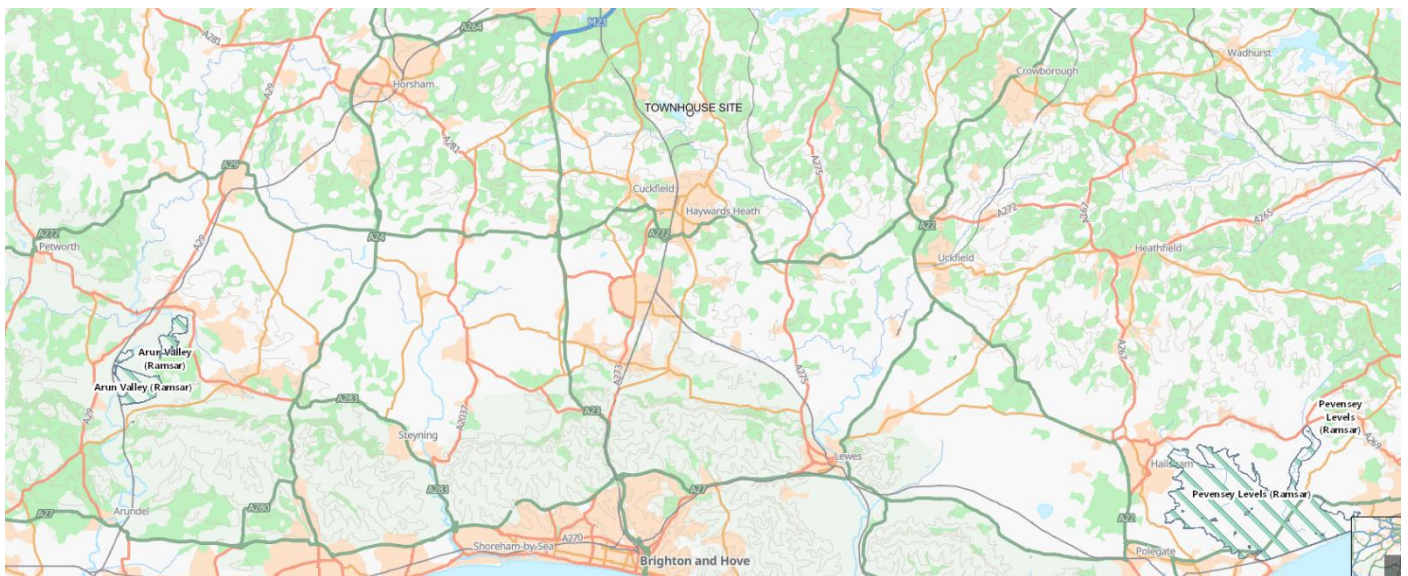
The proposed (revised) discharge location meets all of the EAs binding rules.

Magic Map Data (EA / GOV.UK)

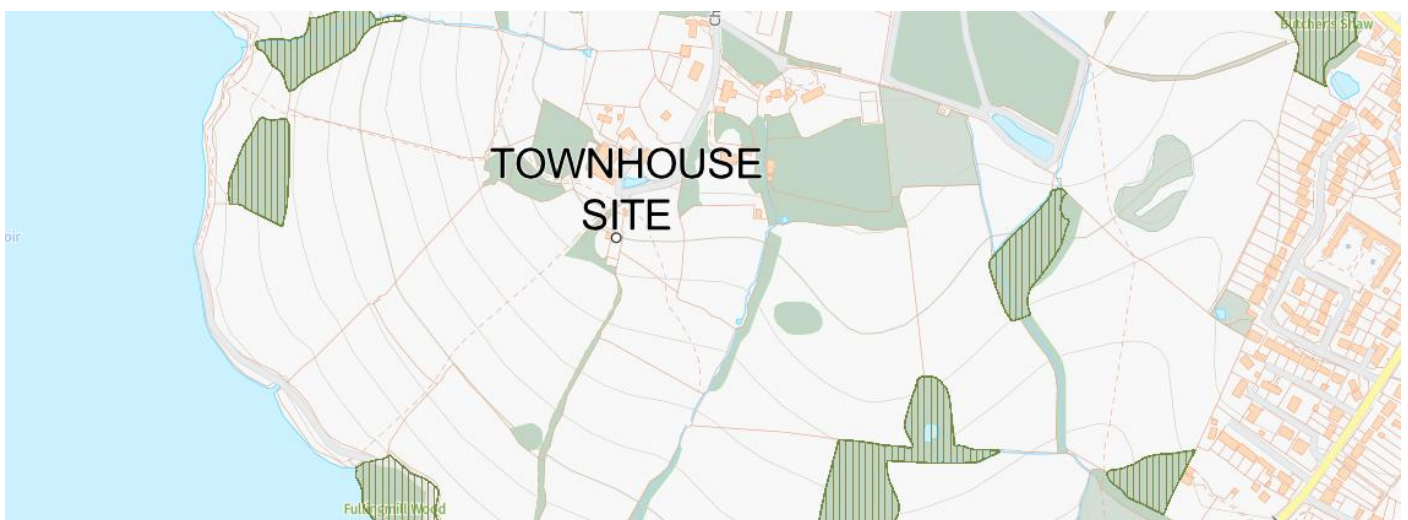
The site is not located within a SPZ



The site is not located within a RAMSAR zone



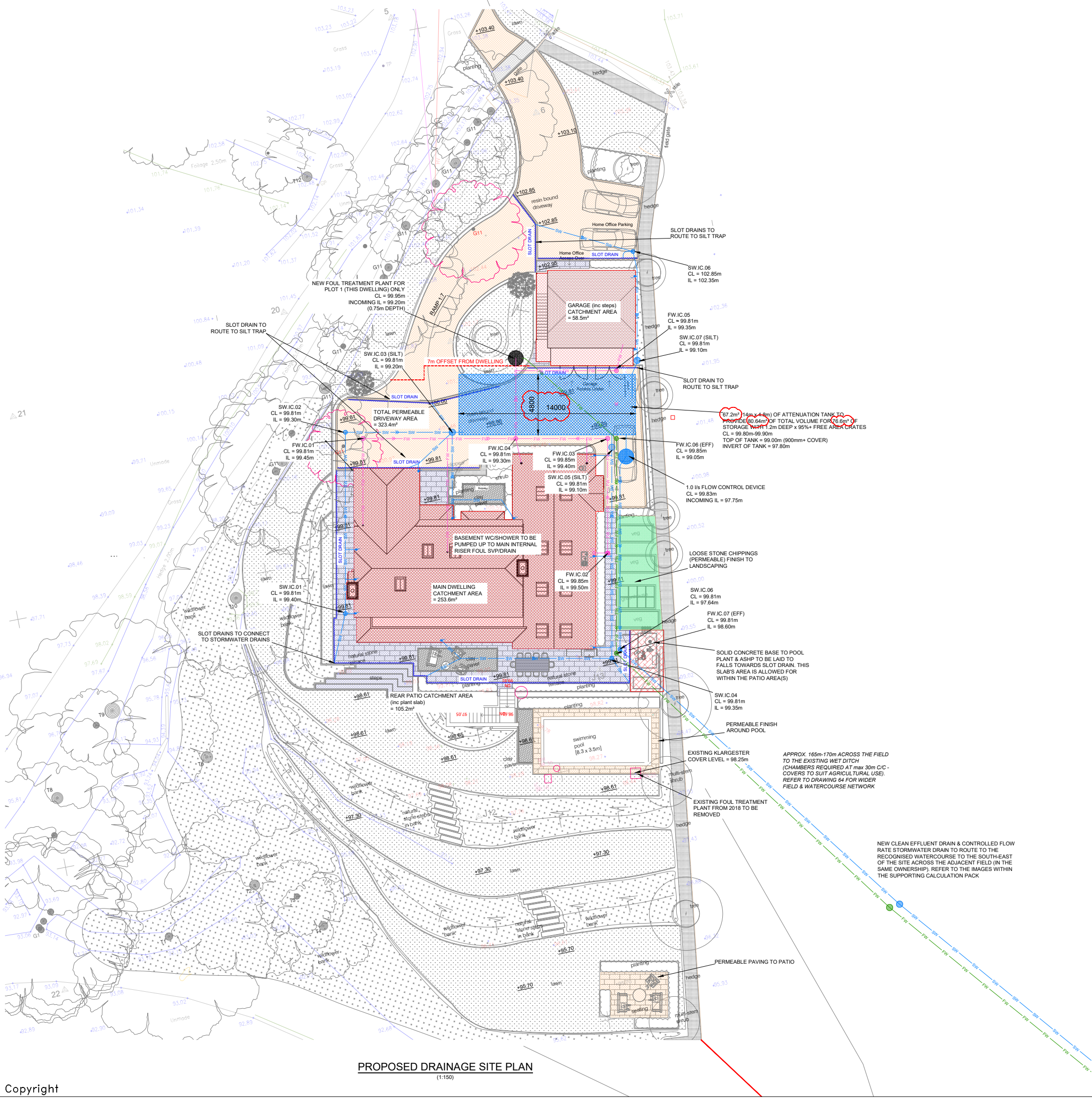
The site is not located within nor close to Ancient Woodland



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
- 24-080-64 **WIDER SITE DRAINAGE PLAN**



PROPOSED DRAINAGE SITE PLAN
(1:150)

SITE NOTES/OBSERVATIONS

THE SITE IS LOCATED WITHIN THE CLUCKFIELD 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/TREAM. NOTE THAT THE EXISTING LOCAL DITCH DUES NOT MEET EA BINDING RULE 19 AS IT IS SEASONALLY DRY. IT DOES SATISFY EVERY OTHER EA BINDING RULE.

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 LANDSCAPE 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.

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

THE PROPOSED DRAINAGE IS TO COMPRISE:

FOUL WATER

THE NEW FOUL DRAINAGE COMPRISES A NEW KLARGESTER LOCATED WITHIN THE FRONT LANDSCAPED AREA (7m AWAY FROM NEW DWELLING & ADJACENT TO PARKING AREA WITH A NEW DRAIN ROUTED ACROSS (BELOW) THE AGRICULTURAL FIELD WITH AN OUTFALL TO THE MAIN WATERCOURSE. THE NEW STORMWATER DRAINAGE PROPOSAL FOR THE DWELLING COMPRISES TYPICAL RWPS 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. NOTE THAT THIS IS DIFFERENT TO THE EXISTING OUTFALL, WHICH DID NOT MEET EA BINDING RULE 19.

THE DESIGN NOW MEETS THE NECESSARY EA BINDING RULES.

STORMWATER

THE NEW STORMWATER IS TO BE ATTENUATED WITH A CONTROLLED OUTFALL TO THE SAME MAIN WATERCOURSE DITCH AS THE FOUL DRAIN. NOTE THAT THIS IS DIFFERENT TO THE EXISTING OUTFALL, WHICH DID NOT MEET EA BINDING RULE 19.

RAINWATER / STORM ATTENUATION DESIGN

PROPOSED CATCHMENT AREA
PROPOSED MAIN DWELLING ROOF = 253.6m²
PROPOSED GARAGE (inc STEPS) = 58.5m²
PROPOSED REAR PATIO (inc PLANT SLAB) = 421.6m²
30% OF PERMEABLE DRIVEWAY AREA ALLOWED = 97.0m²
PROPOSED TOTAL CATCHMENT AREA = 830.7m² (0.08307ha)
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 1.0 l/s IS = 74.0m³

PROPOSED SIZE IS 14m LONG x 4.8m WIDE x 1.2m DEEP. THIS PROVIDES 76.61m³ OF STORAGE VOLUME 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.

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)
- +95.61 EXISTING CHANGED LEVELS WITHIN THE LANDSCAPING (TAKEN FROM LANDSCAPING PLAN)
- +96.02 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 'H', 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:-

- THIS DRAWING IS NOT TO BE SCALED, WORK FROM GIVEN DIMENSIONS ONLY.
- 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
P2	NEW FOUL TREATMENT PLANT MOVED WITHIN 10m OF EXISTING WITH SURFACE WATER ROUTE TO FOLLOW FOUL ROUTE	30.06.2025	PW
P3	RELOCATED FOUL PLANT, ATTENUATION UPDATED TO SUIT RAINFALL DATA & CORRECTED AREA(S). NOTES ADDED FOR DRG 64	01.09.2025	PW
P4	TANK VOLUMES CORRECTED	17.10.2025	PW

FOR PLANNING DOC



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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

Status FOR PLANNING DOC ONLY

Project Number	Drawing Number	Revision
24-009	61	P4

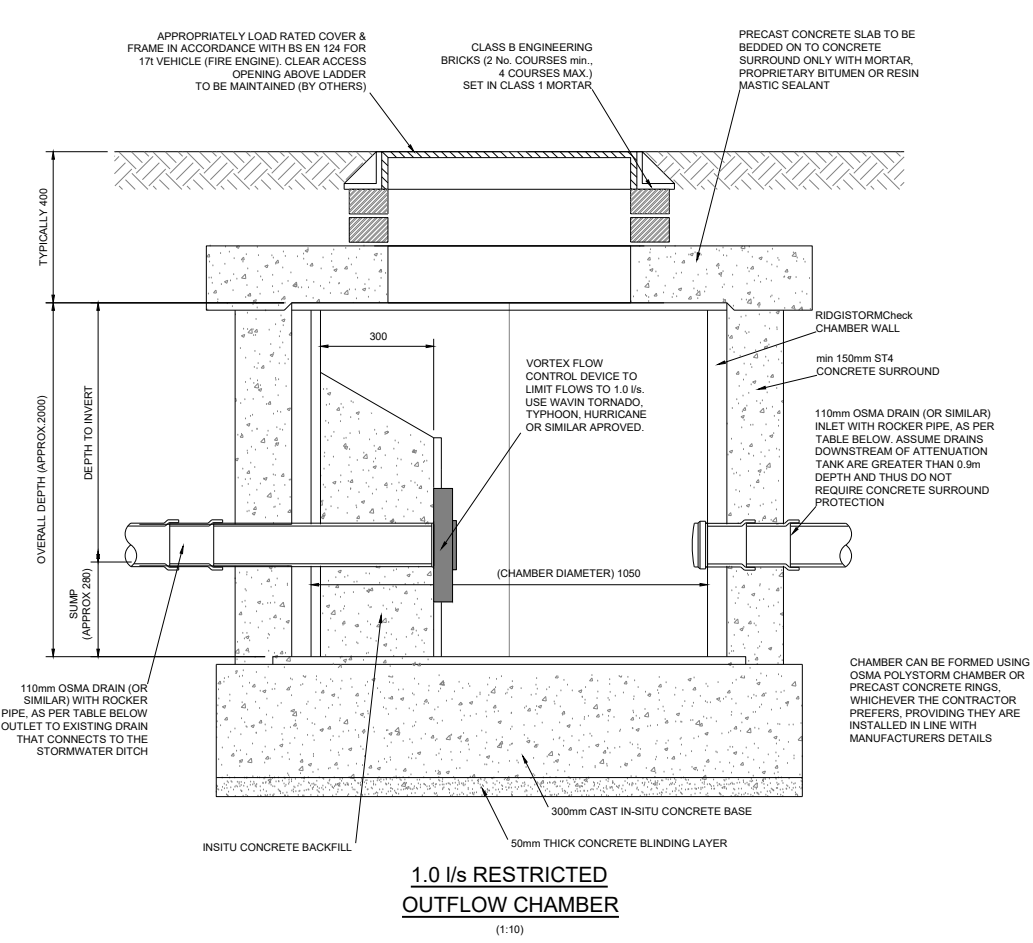


FIGURE C.5
TYPICAL DETAIL OF OUTFALL TO WATERCOURSE/DITCH (IF REQ)
Suitable for outfall pipes of less than 350 mm

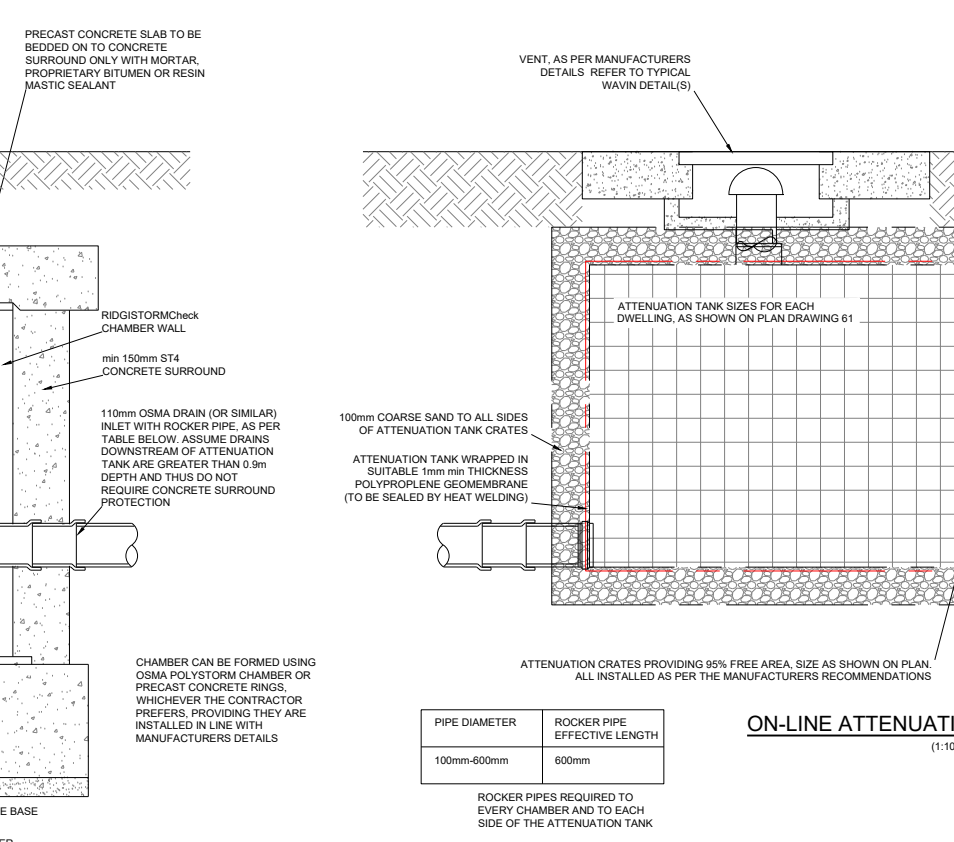
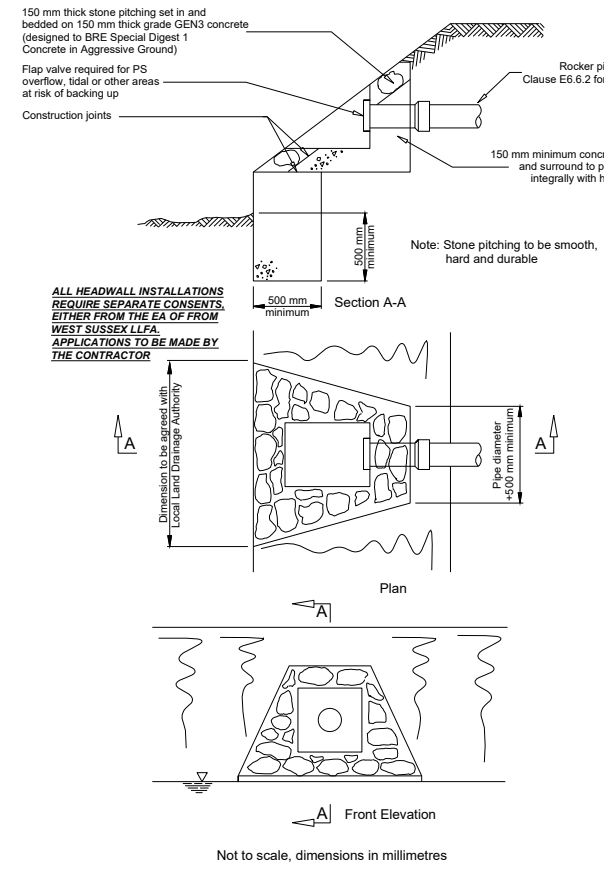
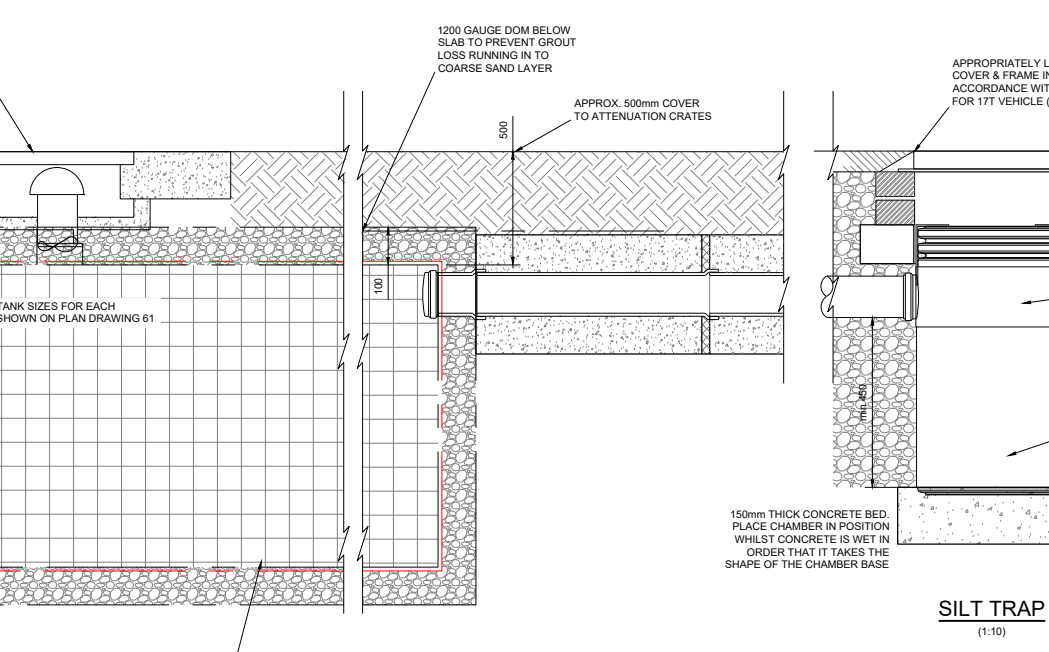
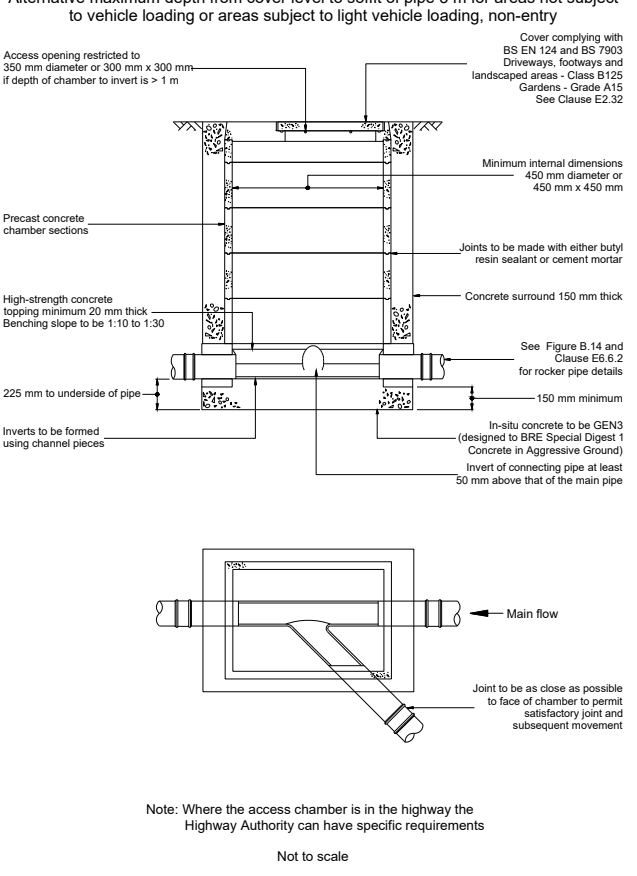


FIGURE B.19
TYPICAL INSPECTION CHAMBER DETAIL - TYPE 3
(Rigid material detail - AGRICULTURAL FIELD)



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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 - 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

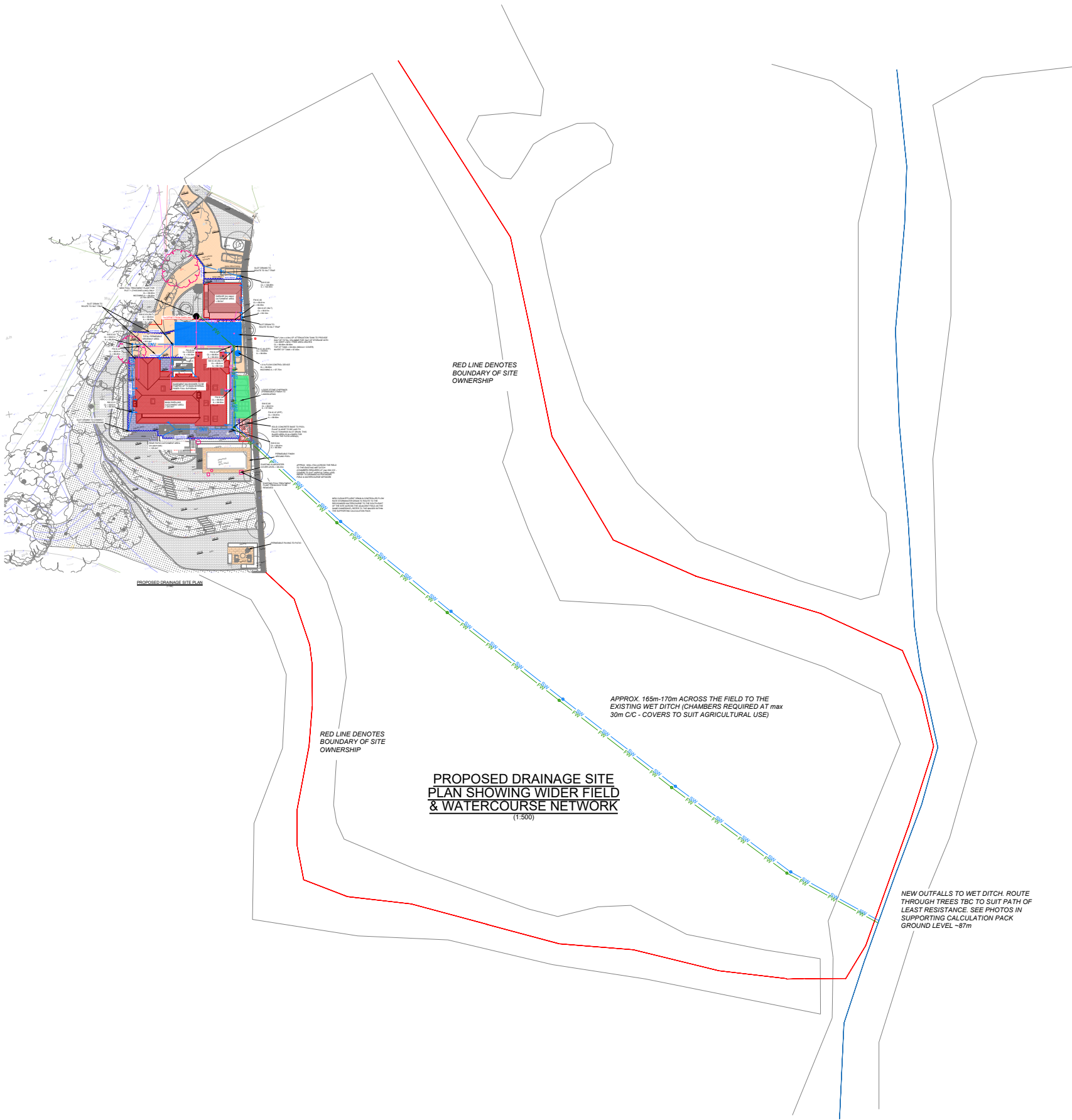
FOR PLANNING DOC



CREATIVE STRUCTURES

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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	
Status FOR PLANNING DOC ONLY		
Project Number 24-009	Drawing Number 63	Revision P1



- NOTES:-**
- THIS DRAWING IS NOT TO BE SCALED, WORK FROM GIVEN DIMENSIONS ONLY.
 - 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.
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REV	DESCRIPTION	DATE	BY
P1	FOR PLANNING DOC ONLY	01.09.2025	PW

FOR PLANNING DOC



**CREATIVE
STRUCTURES**

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Client
MR & MRS OHLSON

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

Title
**PROPOSED DRAINAGE LAYOUT
WIDER SITE PERSPECTIVE**

Date 07.08.2025 Checked 01.09.2025

Drawing Sheet Size A1

Scale 1:500 Engineer PW

Status FOR PLANNING DOC ONLY

Project Number	Drawing Number	Revision
24-009	64	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	= 830.7m² (0.08307ha)
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 = 74.0m³

Proposed size is 14m long x 4.8m wide x 1.2m deep. This provides 76.61m³ of 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.

Site specific rainfall data has been purchased, to accurately predict the required attenuation. This updated calculation and rainfall data is appended overleaf.

SUPPORTING CALCULATIONS

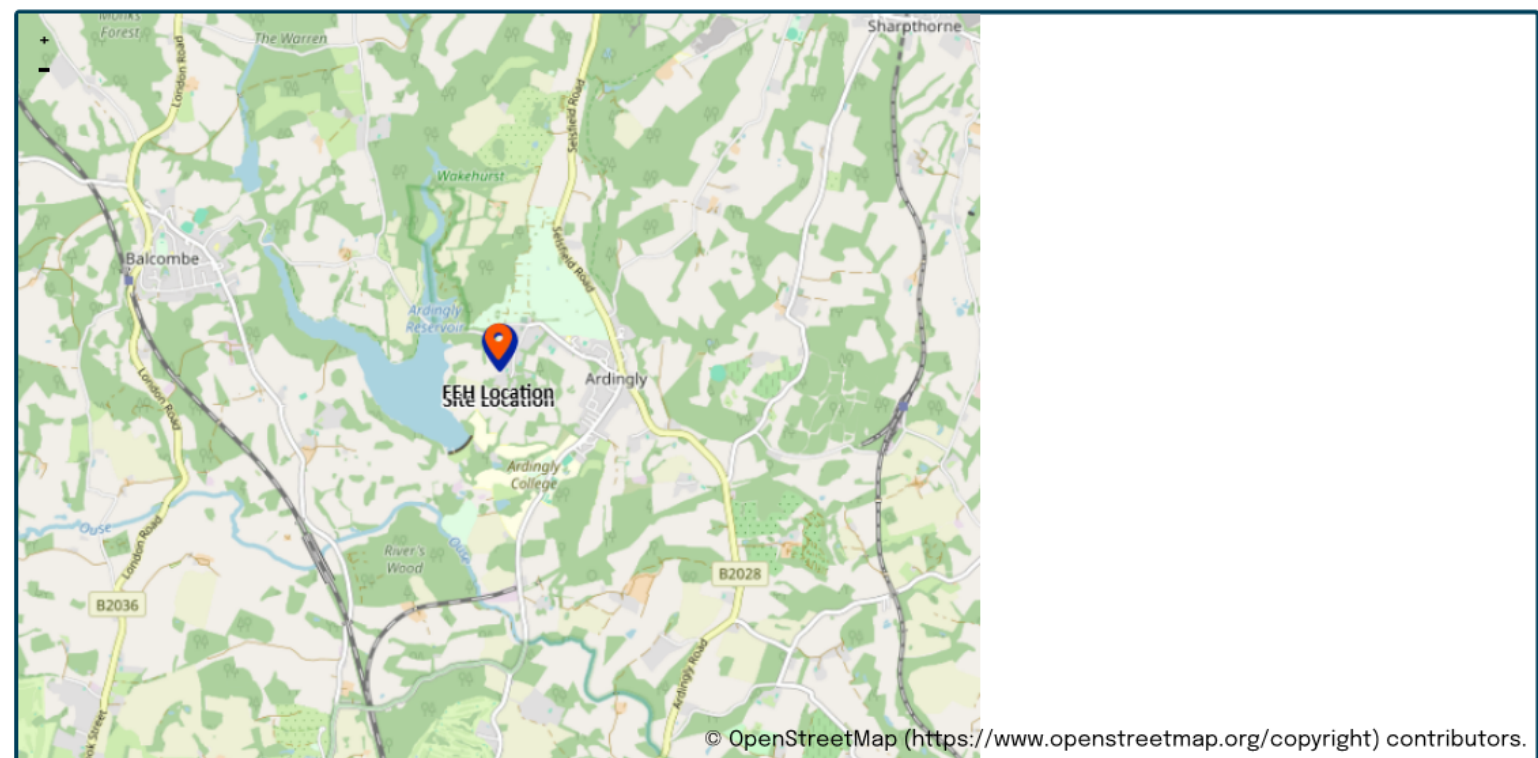
- PROPOSED ATTENUATION TO LIMIT FLOWS TO 1l/s

Project details

Date	08/08/2025
Calculated by	Phil W
Reference	24-080
Model version	2.1.2

Location

Site name	Townhouse Farm
Site location	Ardingly



Site easting (British National Grid)	533780
Site northing (British National Grid)	129274

Site areas

Total site area (ha)

0.35644

ha

Roof area

Total roof area (ha)

0.03121

ha

Contributing roof area (ha)

0.03121

ha

Non-contributing roof area (ha)

0

ha

Paved area

Total paved area (ha)

0.0745

ha

Contributing paved area (ha)

0.05186

ha

Non-contributing paved area (ha)

0.02264

ha

Grass / vegetated area

Total grass / vegetated area (ha)

0.25069

ha

Contributing grass / vegetated area (ha)

0

ha

Non-contributing grass / vegetated area (ha)

0.25069

ha

Total area

Total contributing area (ha)

0.08307

ha

Contributing areas with urban creep allowance

Urban creep allowance factor

+0% (no creep)

Storage design parameters

Storage base shape

Rectangular / square

Storage base length to width ratio

3:1

Storage design depth (m)

1.2

m

Storage side slope (1 in x)

Vertical sided

Storage voids ratio (%)

90% (e.g. geocellular crate systems)

Storage volume design return period (years)

1:100 years

Discharge flow rate from the site

Method

Type of site

Previously developed

Specify the method

User specified

User specified discharge

Flow rate (user specified) (l/s)

1.0l/s

Final discharge rate

Runoff calculation method

User specified

Design flow rate (l/s)

1l/s

Blockage risk

Specify the method

Flow rate

Minimum discharge flow rate to prevent blockage

1l/s

My value

Design orifice diameter (mm)

20mm

Flow rate of orifice (l/s)

0.91l/s

Calculated value

20

Rainfall and runoff

Rainfall input type

FEH22 CSV file

FEH_Point_Rainfall_FEH22_AM_533779_129276.csv

Distance from FEH location to site (km)

0km

Climate change allowance factor

145%

Specify the runoff method from grass / vegetated areas

Fixed percentage - based on rainfall event depth and SPR

My value

How should SPR be derived?

WRAP soil type

WRAP soil type

4

SPR

0.47

Map value

4

Model results

- **Maximum discharge flow rate:** 0.9 (l/s)
- **Outflow orifice diameter:** 20 (mm)
- **Storage base length:** 14 (m)
- **Storage base width:** 4.8 (m)
- **Storage base area:** 69 (m²)
- **Storage total volume:** 82 (m³)
- **Storage total water volume:** 74 (m³)
- **Storm return periods run:** 1, 2, 10, 30, 100, 200 (years)
- **Storm durations run:** 15, 30, 60, 120, 180, 240, 360, 540, 720, 900, 1080, 1440, 1800, 2160, 2880, 3600, 4320, 5040, 5760 (minutes)

Return Period (years)	Critical Duration (minutes)	Peak Flow Rate (l/s)	Max Depth (m)	Max water volume (m³)	Max storage volume (m³)
1	900	0.5	0.37	23	26
2	720	0.5	0.44	27	30
10	720	0.7	0.71	44	49
30	720	0.8	0.91	56	62
100	1440	0.9	1.20	74	82
200	1440	1.0	1.40	88	98

Please note runoff estimation and storage volume estimation are subject to uncertainty. Storage volume results are therefore reported to the nearest 1 m³ value, unless storage volumes are less than 10 m³, in which case, storage volumes are provided to 1 decimal place.

Disclaimer

This report was produced using the surface water storage volume design tool (2.1.2) developed by HR Wallingford and available at uksuds.com (<https://www.uknuts.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uknuts.com/terms-conditions>). The outputs from this tool have been used to estimate surface water storage volumes for the whole site based on a limiting discharge rate from the site. 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, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

HR Wallingford are not responsible for any rainfall data shared that is subject to licensing terms imposed by UK Centre for Ecology & Hydrology's Flood Estimation Handbook web service (<https://fehweb.ceh.ac.uk/Home/Terms> (<https://fehweb.ceh.ac.uk/Home/Terms>)).

Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
15	0.25	8.50	11.34	22.27	29.17	36.69	41.21
30	0.5	11.21	14.96	29.55	38.99	49.73	56.26
60	1	14.39	19.14	37.82	50.20	64.38	73.02
120	2	21.21	26.45	47.01	60.26	75.60	85.20
180	3	25.62	31.18	52.85	66.77	83.04	93.38
240	4	28.90	34.68	57.16	71.66	88.80	99.89
360	6	33.67	39.73	63.39	78.91	97.72	110.59
540	9	38.45	44.86	69.96	86.65	108.13	122.99
720	12	41.98	48.68	74.91	92.66	116.51	133.11
900	15	44.86	51.78	78.89	97.72	123.53	141.96
1080	18	47.36	54.48	82.40	102.20	129.82	149.90
1440	24	51.80	59.23	88.73	110.23	141.39	163.92
1800	30	55.65	63.35	94.06	117.06	151.16	175.33
2160	36	59.13	67.08	98.82	123.08	159.53	184.89
2880	48	65.49	73.85	107.26	133.46	173.35	200.29
3600	60	71.52	80.20	114.91	142.27	184.14	212.06
4320	72	77.21	86.17	121.97	150.16	193.34	221.95
5040	84	82.70	91.90	128.64	157.41	201.43	230.52
5760	96	88.05	97.47	134.99	164.17	208.73	238.15

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
15	0.25	5.86	7.82	15.36	20.12	25.30	28.42
30	0.5	7.73	10.32	20.38	26.89	34.30	38.80
60	1	9.92	13.20	26.08	34.62	44.40	50.36
120	2	14.63	18.24	32.42	41.56	52.14	58.76
180	3	17.67	21.50	36.45	46.05	57.27	64.40
240	4	19.93	23.92	39.42	49.42	61.24	68.89
360	6	23.22	27.40	43.72	54.42	67.39	76.27
540	9	26.52	30.94	48.25	59.76	74.57	84.82
720	12	28.96	33.57	51.66	63.90	80.35	91.80
900	15	30.94	35.71	54.41	67.39	85.19	97.90
1080	18	32.66	37.57	56.83	70.48	89.53	103.38
1440	24	35.72	40.85	61.19	76.02	97.51	113.05
1800	30	38.38	43.69	64.87	80.73	104.25	120.92
2160	36	40.78	46.26	68.15	84.88	110.02	127.51

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
2880	48	45.17	50.93	73.97	92.04	119.55	138.13
3600	60	49.33	55.31	79.25	98.12	126.99	146.25
4320	72	53.25	59.43	84.12	103.56	133.34	153.07
5040	84	57.03	63.38	88.72	108.56	138.92	158.98
5760	96	60.72	67.22	93.10	113.22	143.95	164.24

SECTION D

MAINTENANCE SCHEDULE

The following maintenance procedures are provided on the GOV.UK (EA) website. These are to be added to the building's O&M manual(s).

Rule 4: do not cause pollution of surface water or groundwater

The following is the GOV.UK guidance on avoiding pollution.

Check for pollution

You must check the area where you release sewage once a month for signs of pollution.

If you release sewage into the ground, check for:

- sewage smells
- signs that your sewage isn't draining properly (for example, pools of water in the area where you release sewage)

If you release sewage into water, check for:

- sewage smells
- overflowing sludge
- signs of white scum or foam on the water around the area where you release sewage

Contact the Environment Agency incident line if you see signs of pollution.

Environment incident hotline

Telephone (24 hour service) 0800 80 70 60

You must correct any problems you find after your monthly check – ask your maintenance company for help if required.

Keep records

You must keep records of work done to empty, maintain or repair your septic tank or sewage treatment plant, such as invoices, bills or receipts.

You must also keep a written record of any:

- accidents you've had with your equipment or incidents that could have led to an accident
- problems you've had with your equipment, how you dealt with them and what you're doing to prevent the same problems happening again
- complaints you've received about your equipment and how you resolved them.

Rule 11: get your treatment system regularly maintained

The following maintenance procedures are provided on the GOV.UK (EA) website. These have been added to the drawing and will be added to the building's O&M manual(s).

You should have your treatment system regularly maintained in line with the manufacturer's instructions. If these are not available, ask your local maintenance company for advice.

You must have your treatment system repaired or replaced if it's not in good working order. For example, this could be if it has:

- leaks
- cracks in tank walls or pipes
- blocked pipes
- signs that the waste water is not draining properly, like pools of water around the drainage point
- sewage smells
- a failed motor
- a failed pump
- a failed electrical supply

Anyone who carries out maintenance on your system must be competent. Competent people include those on British Water's list of accredited service engineers.

If you change your treatment system, check if it's now classed as a new discharge. To do this, see the section 'Work out which rules apply to you'.

Rule 12: get your treatment system regularly emptied

You must get the sludge that builds up in your sewage treatment plant removed (desludged) before it goes beyond the maximum capacity. You should do this at least once a year or in line with the manufacturer's instructions.

The company you use to dispose of your waste sludge must be a registered waste carrier. You can find this out by either:

- asking the company to confirm this when you arrange to have your tank emptied
- asking the tanker driver for a copy of the company's waste carrier's certificate

Rule 13: if you sell your property, tell the new owner about the sewage treatment system

If you sell your property, you must tell the new operator (the owner or person responsible for the sewage treatment plant) in writing that a sewage discharge is in place.

Include:

- a description of the treatment plant and drainage system
- the location of the main parts of the treatment plant, drainage system and discharge point
- details of any changes made to the treatment plant and drainage system
- details of how the treatment plant should be maintained and the maintenance manual, if you have one
- maintenance records, if you have them

Rule 14: if you stop using your treatment system, make sure it's decommissioned properly

You must remove anything that could cause pollution (for example, remaining sludge) when you stop using a septic tank or sewage treatment plant.

This does not apply if you only stop using the equipment temporarily. For example, if your property is empty.