



18 June 2026

Bryan Jezeph Consultancy
The Gallery
3 South Street
Titchfield
Hants
PO14 4DL

✉ 54 Common Lane
Titchfield, Hants,
PO14 4BU

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FAO Caroline Jezeph

Ref: 25104

Land at Witt Road, Winterslow, SP5 1PL Foul and Surface Water Drainage Proposals

Dear Sirs

Further to our statement of 16th December 2026 (copy attached) we understand that an ecology/landscape buffer zone has had to be introduced at the foot of the site and that consequently the two proposed dwellings have had to be relocated eastwards (upslope) but are of the same size.

As you may also be aware the land to the south of your application site has put forward a planning application (PL/2026/03223) for which we have designed the drainage. The LPA has consulted the Drainage Engineer on that scheme and he has no objections. The extended topographic survey to the rear of your site has enabled me a holistic view of the exact flood flow pathway behind the collective sites. Flow is constrained in passing out from the back of your site until 110.35m AOD by the ground levels at the NW corner of the adjacent site and will follow the cyan arrows shown on plan ACC25104-01-A (copy attached). The flow capacity at that point (labelled SECTION on the plan) has been assessed to be 1.38 m³/sec at 0.4m deep ie at stage level 110.75m AOD. This is in excess of the previously determined 1%AEP +CC flood flow of 0.211 m³/sec so is of more than adequate existing capacity and the flood level would remain below the 110.8m AOD level derived for EA surface water flood mapping. A copy of the calculation is attached.

We have tweaked the continuity of the channel extension from PL/2022/07116 north of your application site and blended this back to meet the existing terrain levels at the rear of your site.

We have repositioned the soakaways for the revised dwelling locations and have revised the permeable pavement calculation to suit.

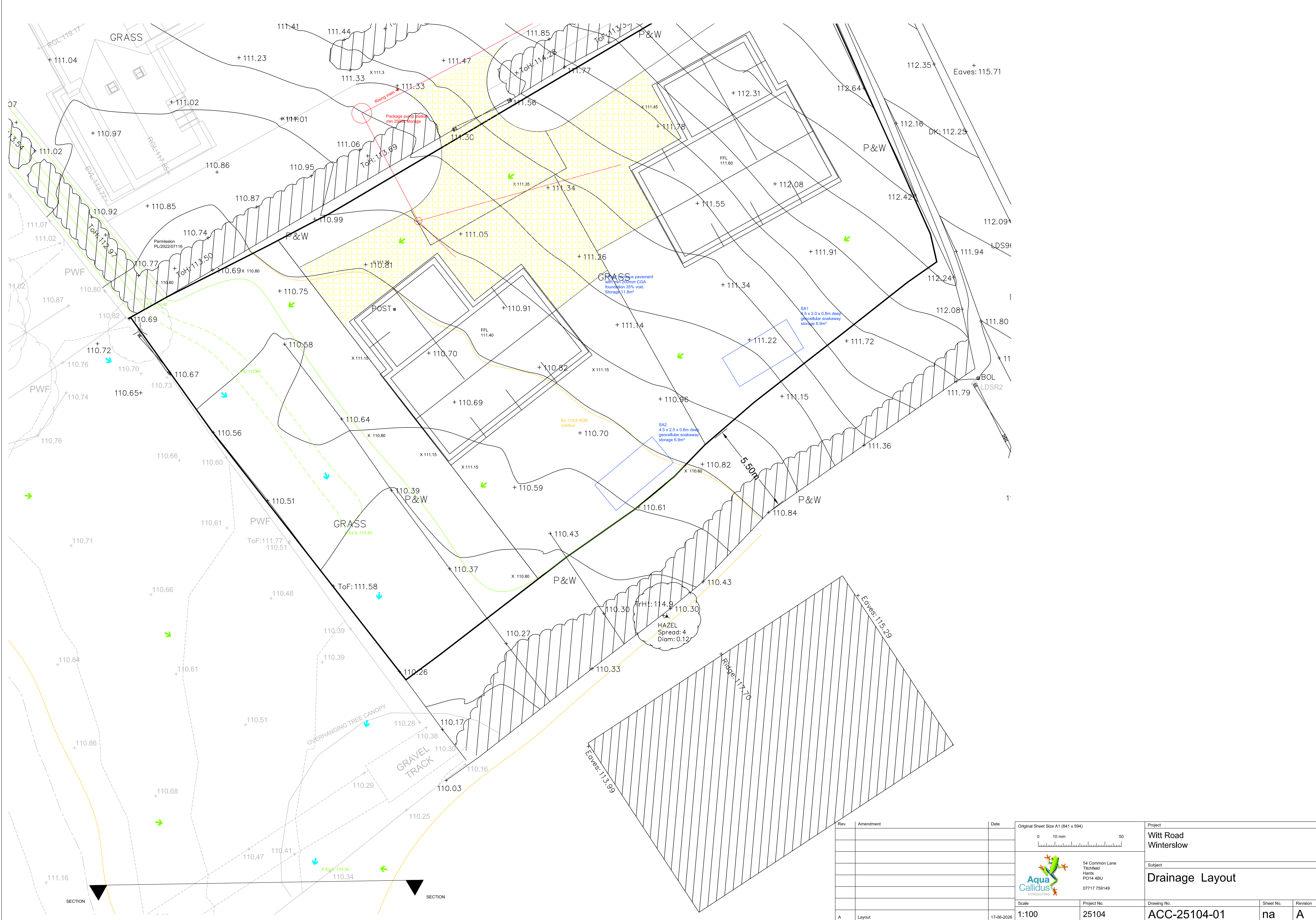
Fundamentally the drainage strategy remains as previously determined and is consistent with PL/2022/07116 (permitted) and PL/2026/03223 (no drainage objections)

Yours Sincerely,

Aqua Callidus Consulting Ltd

Andy Traves

Enc. ACC25104-01-A
Channel capacity assessment at 'SECTION'
Revised pervious pavement calculation
Statement 25104 16/12/2025



Rev.	Amendment	Date	Original Sheet Size A1 (841 x 594)	Project		
			0 10 mm 50	Witt Road Winterslow		
				Subject		
				Drainage Layout		
			Scale	Project No.	Drawing No.	Sheet No.
			1:100	25104	ACC-25104-01	na
A	Layout	17-06-2026				A

Date: 17/06/2026

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Project No 25104
Project Witt road
Channel ref Existing at "SECTION"

Trapezoidal channel

Channel depth (m) 0.40
Bed width (m) 0.50
Bank to bank width (m) 17.50
Gradient (S_0) 0.0015
Channel nature Floodplain high grass pasture
Manning N value min = 0.030 Norm = 0.035 max = 0.050

Depth (m)	Area (m ²)	contact perimeter (m)	S_0	n min			n norm			n max		
				Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)	Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)	Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)
0.10	0.26	4.75	0.002	0.030	0.05	0.19	0.035	0.04	0.16	0.050	0.03	0.11
0.20	0.95	9.01	0.002	0.030	0.27	0.29	0.035	0.23	0.25	0.050	0.16	0.17
0.30	2.06	13.26	0.002	0.030	0.77	0.37	0.035	0.66	0.32	0.050	0.46	0.22
0.40	3.60	17.52	0.002	0.030	1.61	0.45	0.035	1.38	0.38	0.050	0.97	0.27
0.50	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.60	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.70	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.80	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.90	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.00	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.10	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.20	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.30	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.40	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.50	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.60	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.70	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.80	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.90	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.00	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.10	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.20	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.30	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.40	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.50	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.60	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.70	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.80	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.90	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
3.00	N/A	N/A	0.002	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.40	3.60	17.52	0.002	0.030	1.61	0.45	0.035	1.38	0.38	0.050	0.97	0.27
				Q_{max}			Q_{max}			Q_{max}		
				1.61			1.38			0.97		

Project No.: 25104

Project Title: Witt rd

Drainage blanket/CGA pavement or 2D planar infiltration (R156)

Site Location: Winterslow

Catchment ID: Drive

 $r = 0.36$ (range 0.12 to 0.45)

Drained Area = 170 m²

Infiltration Area = 170 m²

Design storm 1 in = 100 year

Runoff volume uplift = 45 % for climate change

Urban Creep allowance = 10 % uplift to Drained Area

Site Considerations

Where determined, what is the depth to highest seasonal groundwater level (GWL) from surface:

5.00 m

Is the infiltration far enough from drainage mounds/fields or other soakaways etc to avoid impact?

Yes

What Source Protection Zone (SPZ) is the proposed soakaway located in?

None

What is known and proposed about potential contaminated ground on the site?

EA/LPA accept infiltration

Technical Assessment

Consequence of failure = 1-No inconvenience

Measured Soil Filtration Rate = 4.05E-05 m/s

Design Soil Filtration Rate = 2.70E-05 m/s

Storage media thickness = 0.200 m

Effective net porosity = 35 %

Depth of cover over media = 0.15 m

Storm Duration	5 min	10 min	15 min	30 min	1 hr	2 hr	4 hr	6 hr	10 hr	24 hr
(secs)	300	600	900	1800	3600	7200	14400	21600	36000	86400
$r = 0.36$ Value Z1	0.36	0.51	0.62	0.79	1.00	1.22	1.48	1.67	1.90	2.42
Rainfall M5 (mm)	7.2	10.2	12.4	15.8	20.0	24.4	29.6	33.4	38.0	48.4
M100/M5 gf Value Z2	1.84	1.91	1.95	2.00	2.03	2.01	1.97	1.94	1.91	1.82
Rainfall M100 (mm)	13.3	19.5	24.2	31.5	40.6	49.1	58.4	64.9	72.4	88.2
With CC & UC uplift (mm)	20.6	30.2	37.4	48.9	62.9	76.1	90.5	100.6	112.3	136.7
RUNOFF (m ³)	3.50	5.14	6.37	8.31	10.70	12.94	15.39	17.10	19.08	23.25
Infilt capacity (m ³)	1.38	2.75	4.13	8.26	16.52	33.05	66.10	99.14	165.24	396.58
INFILTRATED (m ³)	1.38	2.75	4.13	8.26	10.70	12.94	15.39	17.10	19.08	23.25
Req'd STORAGE (m ³)	2.12	2.39	2.24	0.05	0.00	0.00	0.00	0.00	0.00	0.00
	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass

TOTAL STORAGE AVAILABLE 11.90 m³

Time to drain full to half full = 0.1 hours

Overall Assessment

Media base elevation above seasonal high GWL

4.65 m meets GP3

Will the soakaway drain from full to half full in 24 hours or less?

Yes pass

Does the soakaway provide sufficient storage?

Yes pass

16 December 2025

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FAO Caroline Jezeph

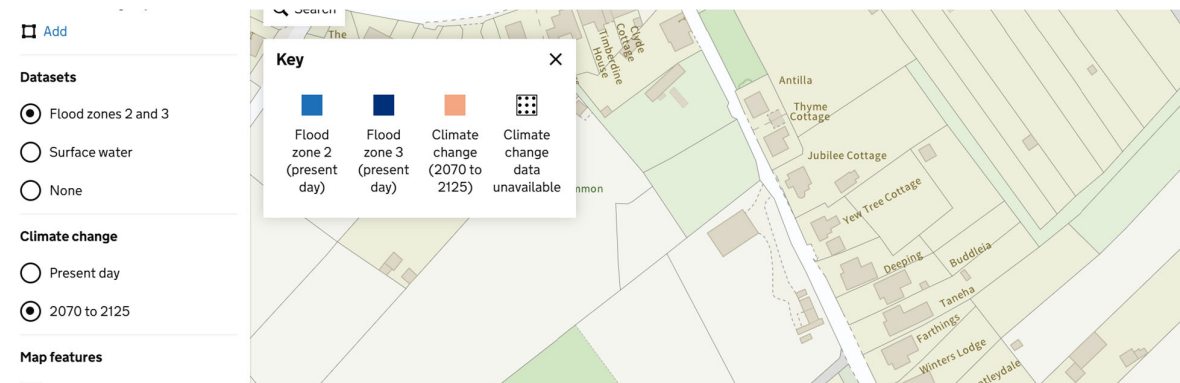
Ref: 25104

Land at Witt Road, Winterslow, SP5 1PL Foul and Surface Water Drainage Proposals

Dear Sirs

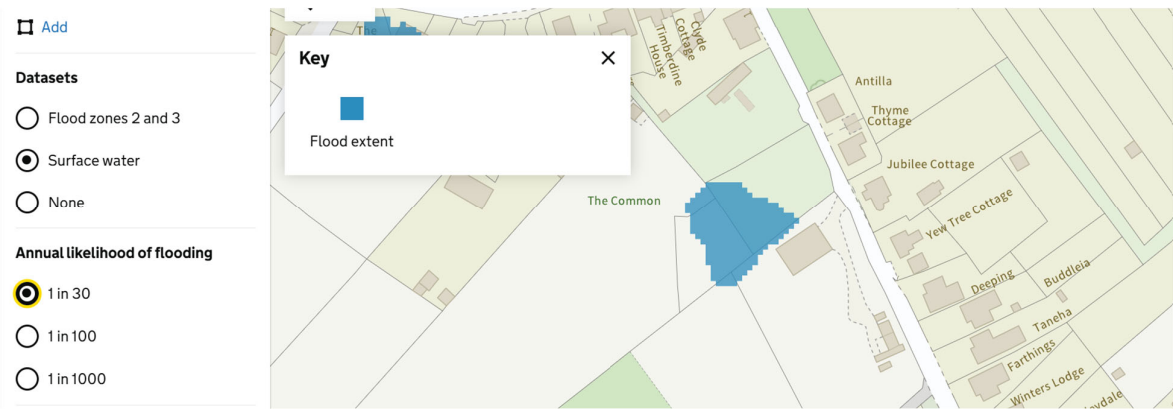
Further to your instructions we have reviewed the flood risk in relation to an outline planning application for 2 dwellings in Witt Road, Winterslow.

The site is at low risk of tidal and fluvial flooding

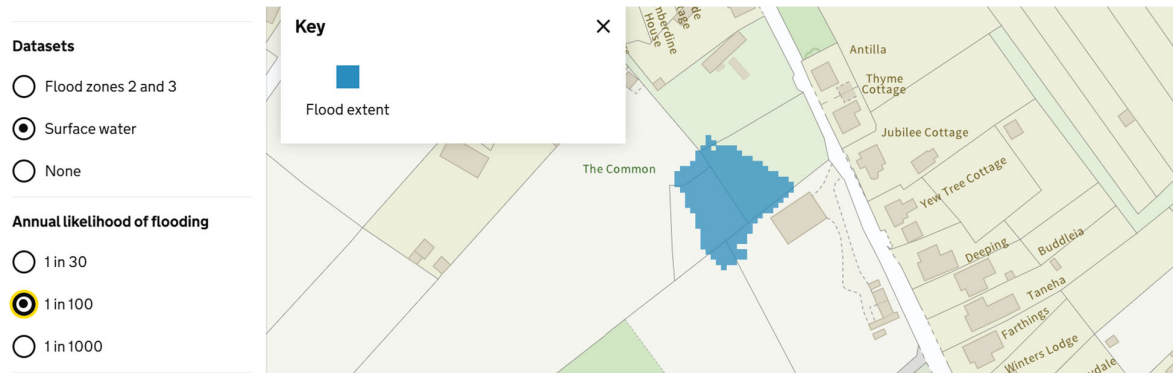


Tidal/fluvial flood risk <0.1%AEP

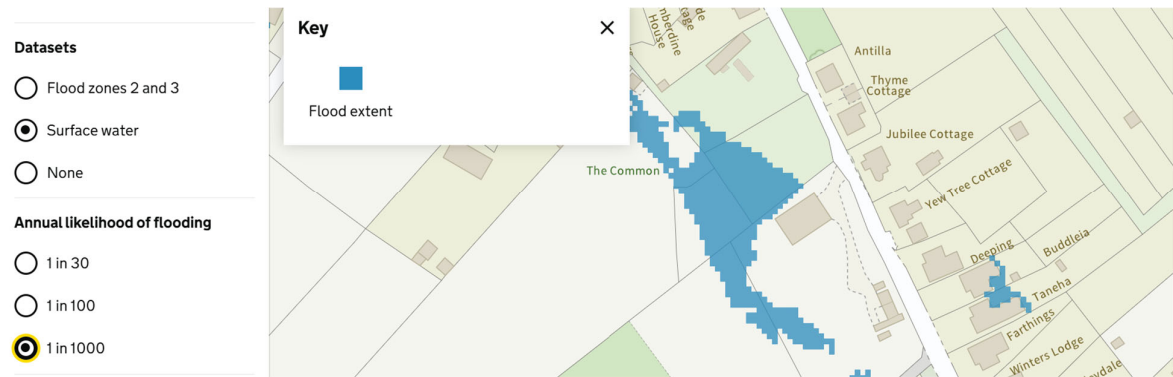
The current EA surface water flood mapping indicates surface water flood risk to the southern corner of the site:



Surface water 3.3%AEP

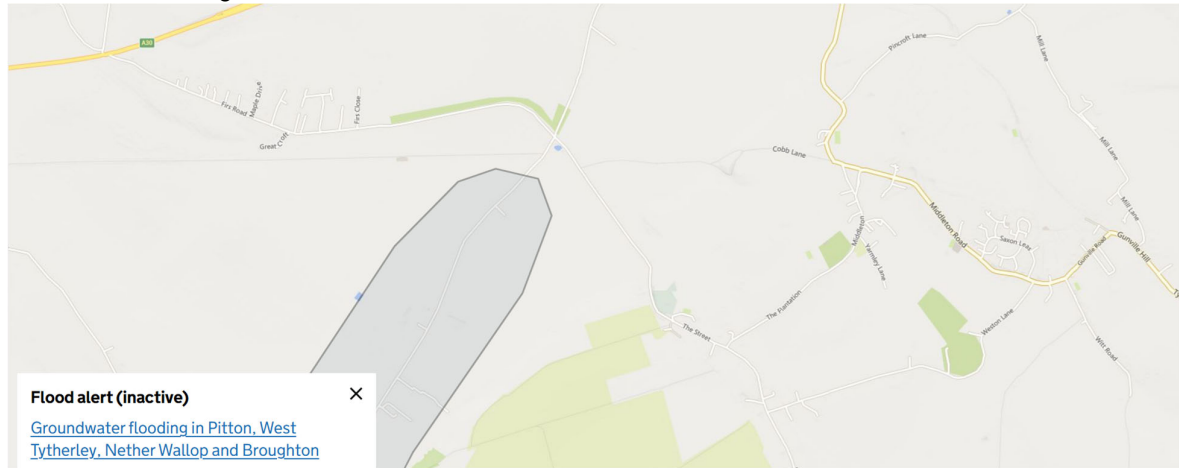


Surface water 1%AEP



Surface water 0.1%AEP

The site is not in a groundwater flood risk area:



We have previously looked at the site immediately to the north. The western boundary to the site is located at the base of a dry valley (bourne). Surface water flows can occur along the valley base from exceptional rainfall events. The catchment for this comprises Chalk downland to the north of the site totalling some 122 Ha, the catchment boundary is indicated on the attached plan. The catchment comprises 75% open farm land and 25% residential properties. An examination of aerial photography indicates a low density of housing with about 60% softscape and some 40% hardscape. The effective catchment is therefore:

Softscape	75% + (0.6 x 25%)	=90%
Hardscape	0.4 x 25%	=10%

Catchment flow rates have been determined using UKsuds IH124 toolkit. The default Surface Percentage Runoff (SPR) for the catchment is 0.1 and SOIL value 0.15. The associated default flow rate is 67.2 l/sec for 1 in 100 years (1% AEP). For 0.1%AEP the region 7 growth curve factor is 5.19 and associated default 0.1%AEP flow rate 109.3 l/sec.

To take account of the urban component of the catchment the effective SPR needs to be considered:

Softscape	90% x 0.1	=0.09
Hardscape	10% x 1.0 (100%runoff)	=0.10
	Effective SPR	=0.19
	Effective SOIL	=0.218

Flow modification factor $(0.218/0.15)^{2.17} = 2.25$

Modified 1% AEP flow	67.2 x 2.25	=151 l/sec
Modified 0.1%AEP flow	109.3 x 2.25	=246 l/sec

Modified 1%AEP + 40% Climate change flow =211 l/sec

The existing 'channel' profile and valley gradient have been determined from Kents Oak Ltd topographic survey LDS/13800-TP1 and has been used to determine the 'channel' flow capacity for various depths on the attached existing channel assessment. This indicates that a depth of 0.1m on the valley floor would occur from a flow rate of 1,040 l/sec (1.04 m³/sec) hence for either 1%AEP+CC or 0.1%AEP events flow depth would be substantially less than 0.1m.

At present there is no formal channel at the base of the valley. A second assessment has been made for provision of a straight earth channel 0.5m wide at the base, 0.4m deep and with side slopes of 1:2 along the western site boundary in the location shown on drawing ACC25104-01, forming an extension of that provided on the site immediately to the north. This shows that at a depth of 0.2m in the channel a flow rate

of 180 l/sec would be supported and at 0.3m depth a flow rate of 420 l/sec would be supported, and when full (0.4m deep) a flow rate of 780 l/sec would be supported. A channel of this size is more than adequate to support 1%AEP+CC or 0.1% AEP flows.

Provision of such a channel would contain the design flood flows and safeguard the land beyond the channel from flooding. A smaller channel width would also be capable of supporting the design flow eg wider base but short vertical masonry channel walls etc.

The only flood risk within the site is surface water. National Planning Policy Guidance was recently changed, particularly NPPG 7-027-202208025 revision 17-09-2025 relating to NPPF paragraph 175 Sequential Test. The NPPG states that *"Where a site specific FRA demonstrates clearly that the proposed layout, design and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risk identified e.g. by environment agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied."*

Looking at the EA 0.1%AEP low surface water flood risk extents this appears to correlate to the 110.8m AOD contour on the site topographic survey. The proposed minimum FFL of 111.4m AOD would avoid the surface water flood risk.

NPPG-7-027-202208025 revision 17-09-2025 is met, the proposed development would be safe and application of the sequential test is not required.

Drainage

A BGS infiltration SUDS georeport has been obtained and is attached. This demonstrates a high permeability Chalk bedrock at the site and a groundwater level indicated to be more than 5m below ground level throughout the year. The site is therefore highly compatible with infiltration SUDS and soakaways would inherently work. An outline design illustration is shown on ACC25104-01 and the calculations attached.

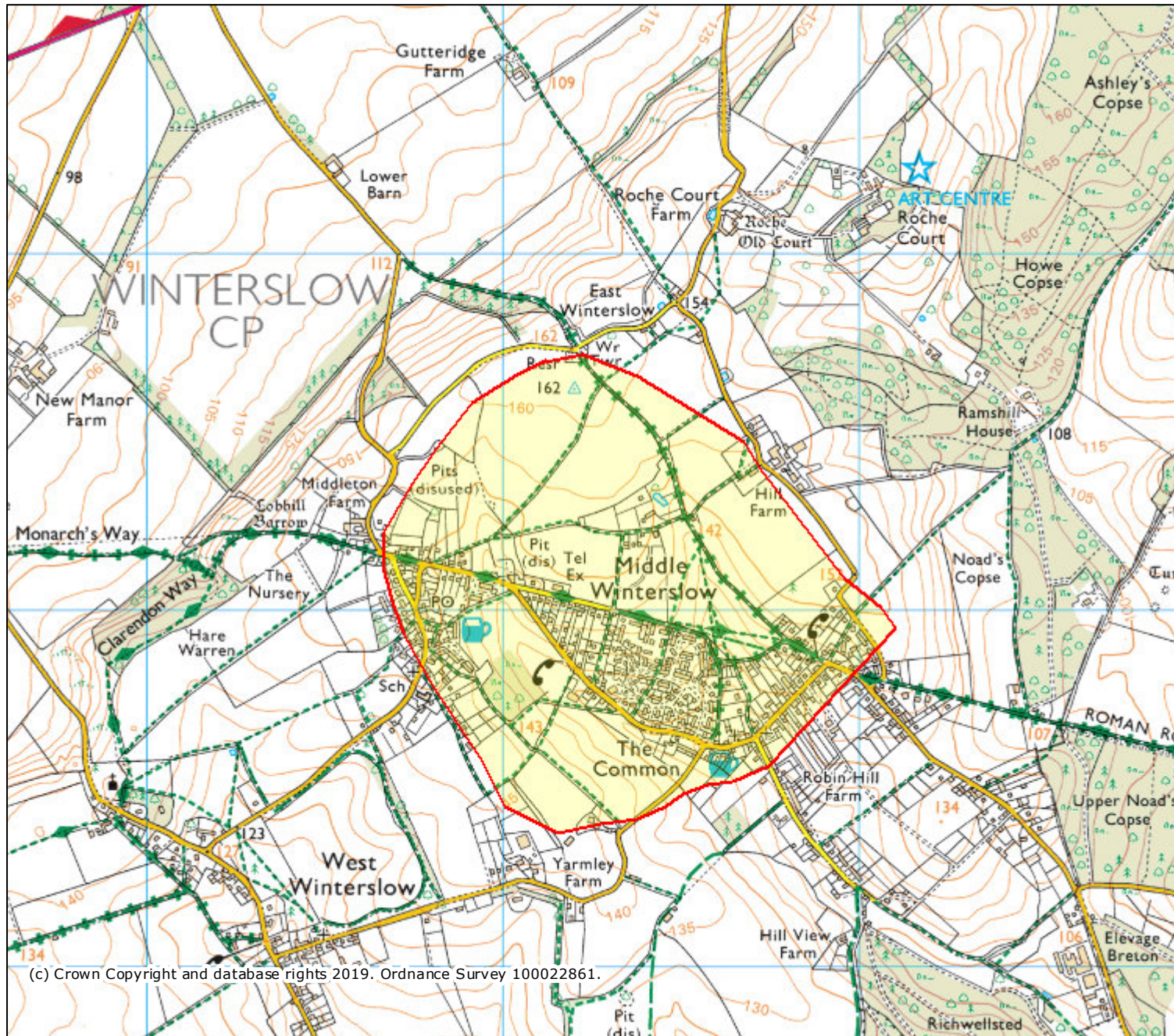
There is a public Foul Water (FW) sewer located in Witt Road adjacent the site. This is operated by Southern Water. Since 1st April 2018 water companies now charge a fixed infrastructure charge per plot which all developers must pay. If network upgrades are required Southern Water deliver these using the monies collected from infrastructure charges they collect. Southern Water also changed their FW network flow modelling on 1st April 2018. It is proposed to connect to the foul drainage network of the adjacent site to effect discharge to the public sewer. The outline arrangement for the site and existing foul drainage to the existing site is shown on ACC25104-01

Yours Sincerely,

Aqua Callidus Consulting Ltd

Andy Traves

Enc. BGS suds infiltration georeport
Catchment schematic
UKsuds IH124 base assessment
Kents Oak Ltd survey drawing LDS/13800-TP1
Channel capacity assessments (existing and 'proposed')
ACC25104-01
Illustrative soakaway calculation



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Projection = OSGB36

xmin = 421500

ymin = 131900

xmax = 427000

ymax = 134600

Map produced by MAGIC on 12 July, 2019.

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Calculated by:

Site name:

Site location:

Site coordinates

Latitude:

Longitude:

This is an estimation of the greenfield runoff rate limits that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments", W5-074/A/TR1/1 rev. E (2012) and the SuDS Manual, C753 (Ciria, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Reference:

Date:

Methodology

IH124

Site characteristics

Total site area (ha)	122
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Methodology

Qbar estimation method	Calculate from SPR and SAAR
SPR estimation method	Calculate from SOIL type

	Default	Edited
SOIL type	1	1
HOST class	---	---
SPR/SPRHOST	0.1	0.1

Hydrological characteristics

	Default	Edited
SAAR (mm)	779	779
Hydrological region	7	7
Growth curve factor: 1 year	0.85	0.85
Growth curve factor: 30 year	2.3	2.3
Growth curve factor: 100 year	3.19	3.19

Notes:

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

Normally limiting discharge rates which are less than 2.0 l/s/ha are set at 2.0 l/s/ha.

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

(3) Is $SPR/SPRHOST \leq 0.3$?

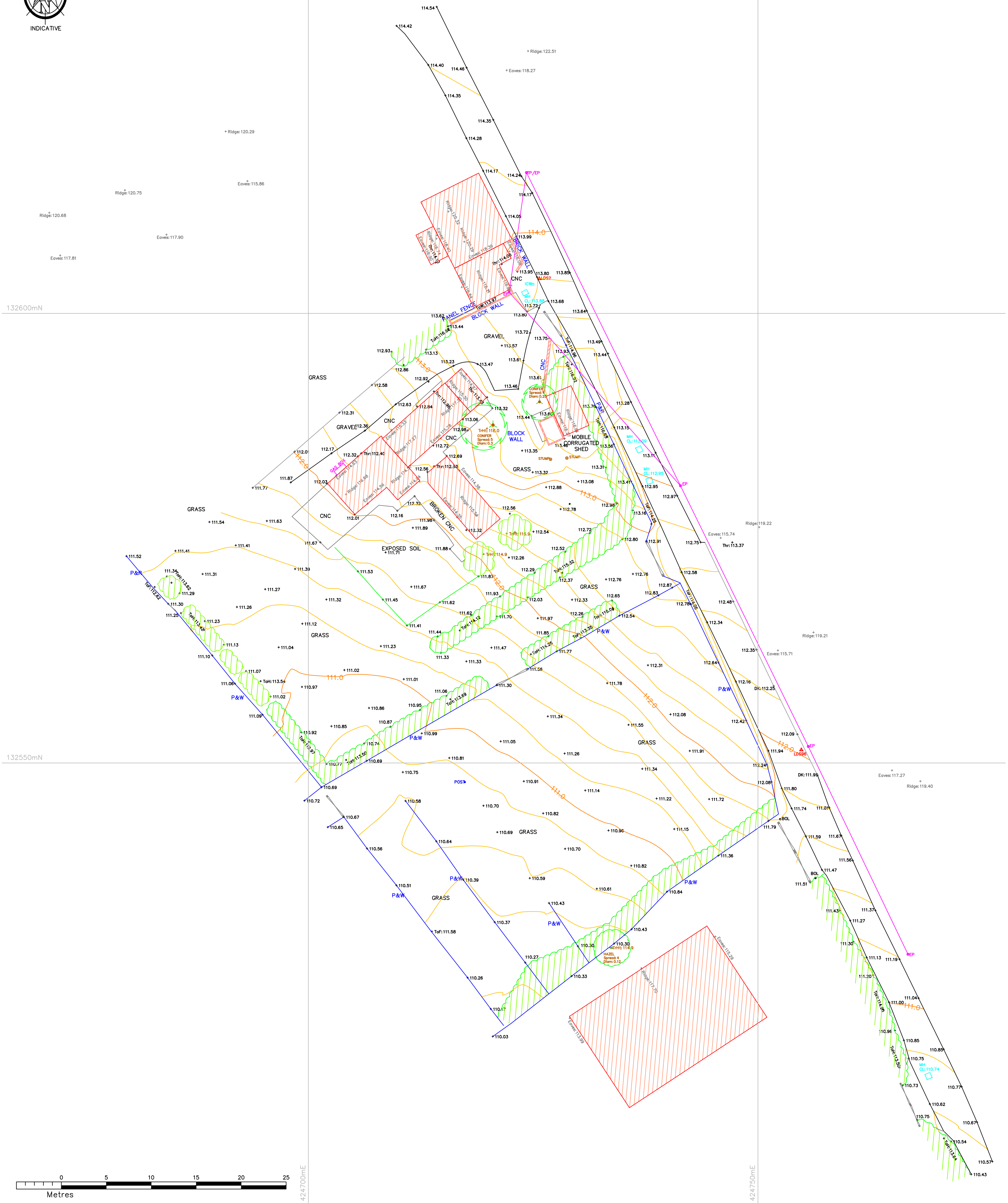
Where groundwater levels are low enough the use of soakaways to avoid discharge offsite may be a requirement for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Qbar (l/s)	21.06	21.06
1 in 1 year (l/s)	17.9	17.9
1 in 30 years (l/s)	48.43	48.43
1 in 100 years (l/s)	67.17	67.17



CO-ORDINATE SCHEDULE: 13800				
STATION	EASTING	NORTHING	HEIGHT	REMARKS
LDS02	424725.676	132603.871	113.810	PK SURVEY
LDS96	424754.824	132551.457	112.050	PK SURVEY NAIL



Land Development Services Ltd. own the copyright of this drawing. Their written consent must be obtained before this drawing is copied, forwarded to any third parties, or used for any purpose other than the one for which it was supplied.

This survey has been carried out to an accuracy consistent with a presentation scale of 1:250; therefore interrogated dimensions will be within the tolerance associated with this scale. The same accuracies implied by the plotting scale are equally applicable to digital data supplied for CAD.

Boundaries shown are not necessarily legal boundaries.

All levels, heights, measurements and dimensions are in metres unless otherwise stated.

Eaves levels are taken at the bottom of the lowest roof tile. Where underside of fascia or other features are surveyed these are recorded as such.

All below-ground features (including drainage, voids and services) have been identified from above ground and therefore all details relating to these (such as sizes, depth, pipe positions and alignments, description etc.) will be approximate only. Underground services have not been traced, but any visible surface features have been located. No allowance has been made for any sub-surface manholes or other chambers or voids below ground level. While every effort is made to identify all visible above-ground features, it should be noted that there may be features obscured at the time of survey.

Spot heights at edges of roads are road/gutter levels, not top of kerb unless otherwise stated.

Trees have been drawn diagrammatically (i.e. circular) showing average canopy spread, however their true shape in plan will be different. Every effort has been taken to identify species, but no responsibility can be taken for the accuracy of this information.

[illegible]

AU	Arch-Conditioning Unit
ACH	Arch Head Height
AV	Air Vent
BB	Beltina Beacon
BOL	Bolton
CALV	Cable Cover
CCV	CCV Sectional Camera
CH	CH to Heald Level
CL	Clamp
CLG	Cladding Height
CNC	Crank
CK	Drop Kerb
DPC	Drain Proof Course
ED	Electricity
ER	Earthing Rod
FB	Flooded
FL	Flow to CH Level
PFL	Finished Floor Level
HL	Head Light
FL	Fire Light
FS	Foglight
GL	Ground Level
GO	Gate Post
GP	Grip
GV	Gully
HC	Inspection Cover
IB	BT Cover
ICE	Electricity Cover
IC-Q	IC-Q
IC-TL	Traffic Light Cover
ICW	Water
ICW	Water
LP	inverted Lamp Post
LP	Lamp Post
LP	Lamp Post
MHW	Manhole – Four Water
MHSW	Manhole – Surface Water
MS	Manhole
MS	Mile Stone

OSM	OS Bench Mark
RE	Roading Eye
RD	Road Side
RMP	Railworker Pipe
SC	Slop Catch
SP	Sign Post
SPH	Spring Point of Arch
SV	Slop View
SF	Salt & Fat
TH	Threshold Level
T	Travelling Lorry
To	Top of Feature (eg. Face/Rock)
TR	Telephone Pole
Trt	Tree Height (to datum)
Tr	Tree Shrub
U..	Unknown Species
UTL	Bottom of Feature (eg. Beam)
WP	Waste up to lift
WV	Waste Water
W	Waste Pipe
	Water Valve
	F - T C - G - S -
AF	Angle Iron Fence
BWF	Barbed Wire Fence
CBF	Cornish Fence
CGF	Corrugated Sheet Fence
CLF	Chain Link Fence
R	Rodding
LF	Larch to Fence
OPF	Open Board Fence
RF	Rail to Road Fence
RoF	Road to Road Fence
PWF	Recycling Fence
SPW	Sign Post/Wire
CPW/PP	Cnc Post/Steel Post/Timber

Overhead Wire 

Drainage information (pipe diameter & flow direction) 

Tactile Paving 

Trees 

City Slopes: Arrow indicates direction of downward slope 

Client:	
KENTS OAK LTD.	
Drawing Title:	
TOPOGRAPHIC SURVEY	
Project:	
LAND ADJ. 1 WITT ROAD WINTERSLOW	
The horizontal & vertical control of this survey is based on Ordnance Survey grid as translated from GPS co-ordinates using the OSN202 and OSGM02 transformation as supplied by OS. We have applied a scale factor to maintain true ground distances. Vertical values may differ from existing OS benchmarks in the vicinity which should be disregarded. All levels should be taken from LDS	
Survey station	Drawing No:
1: 250	LDS / 13800- TP1
Plotted on A	©Land Development Services Ltd.

Date: 19/07/2019

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Project No 1972
Project Witt Road
Channel ref existing flood flow 'channel'

Trapezoidal channel

Channel depth (m) 0.40
Bed width (m) 11.00
Bank to bank width (m) 31.00
Gradient (S_0) 0.0200
Channel nature Floodplain high grass pasture
Manning N value min = 0.030 Norm = 0.035 max = 0.050

Depth (m)	Area (m ²)	contact perimeter (m)	S_0	n min			n norm			n max		
				Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)	Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)	Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)
0.10	1.35	16.00	0.020	0.030	1.21	0.90	0.035	1.04	0.77	0.050	0.73	0.54
0.20	3.20	21.01	0.020	0.030	4.28	1.34	0.035	3.66	1.15	0.050	2.57	0.80
0.30	5.55	26.01	0.020	0.030	9.29	1.67	0.035	7.97	1.44	0.050	5.58	1.00
0.40	8.40	31.02	0.020	0.030	16.50	1.96	0.035	14.15	1.68	0.050	9.90	1.18
0.50	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.60	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.70	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.80	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.90	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.00	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.10	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.20	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.30	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.40	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.50	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.60	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.70	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.80	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.90	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.00	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.10	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.20	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.30	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.40	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.50	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.60	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.70	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.80	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.90	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
3.00	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
				Q_{max}			Q_{max}			Q_{max}		
				16.50			14.15			9.90		

Date: 19/07/2019

t: 07717 759149
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Project No 1972
Project Witt Road
Channel ref new channel

Trapezoidal channel

Channel depth (m) 0.40
Bed width (m) 0.50
Bank to bank width (m) 2.10
Gradient (S_0) 0.0200
Channel nature Floodplain high grass pasture
Manning N value min = 0.030 Norm = 0.035 max = 0.050

Depth (m)	Area (m ²)	contact perimeter (m)	S_0	n min			n norm			n max		
				Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)	Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)	Manning n	Flow capacity (m ³ /sec)	Flow velocity (m/sec)
0.10	0.07	0.95	0.020	0.030	0.06	0.82	0.035	0.05	0.71	0.050	0.03	0.49
0.20	0.18	1.39	0.020	0.030	0.22	1.20	0.035	0.18	1.03	0.050	0.13	0.72
0.30	0.33	1.84	0.020	0.030	0.49	1.49	0.035	0.42	1.28	0.050	0.29	0.89
0.40	0.52	2.29	0.020	0.030	0.91	1.75	0.035	0.78	1.50	0.050	0.54	1.05
0.50	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.60	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.70	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.80	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
0.90	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.00	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.10	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.20	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.30	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.40	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.50	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.60	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.70	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.80	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
1.90	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.00	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.10	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.20	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.30	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.40	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.50	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.60	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.70	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.80	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
2.90	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A
3.00	N/A	N/A	0.020	0.030	N/A	N/A	0.035	N/A	N/A	0.050	N/A	N/A

Q_{max}

0.91

Q_{max}

0.78

Q_{max}

0.54

Date: 16/12/2025

Project No.: 25104
Project Title: Witt Road

Stone Filled or Geocellular Soakaway Assessment to BRE Digest 365 (2016)

Site Location: Avon
 $r = 0.35$ (range 0.12 to 0.45)
 Drained Area = 100 m²
 Design storm 1 in = 100 year
 Runoff volume uplift = 45 % for climate change & urban creep

Catchment ID: SA1 & Sa2
 Urban Creep: 10 %

Site Considerations

Where determined, what is the depth to highest seasonal groundwater level (GWL) from surface 3.00 m
 How far is or will it be to the closest building to the proposed soakaway edge? 5.00 m
 Is the soakaway far enough from drainage mounds/fields or other soakaways etc to avoid impact? Yes
 What Source Protection Zone (SPZ) is the proposed soakaway located in? None
 What is known and proposed about potential contaminated ground on the site? EA/LPA accept infiltration
 What usage forms the soakaway catchment? Roof water only

Technical Assessment

Pit Length $L_x = 4.50$ m
 Pit Length $L_y = 2.00$ m
 Depth surface GL to pipe IL = 0.70 m
 Depth pipe IL to base = 0.80 m
 (min 30%) % Void in fill = 95 %

TOTAL STORAGE AVAILABLE 6.87 m³
 Effective soakage area $a_{50} = 5.20$ m²
 Time to drain full to half full = 2.8 hours

Soil Filtration Rate = 4.05E-05 m/s M5-60 Rainfall = 20 mm

Storm Duration	5 min	10 min	15 min	30 min	1 hr	2 hr	4 hr	6 hr	10 hr	24 hr
(secs)	300	600	900	1800	3600	7200	14400	21600	36000	86400
$r = 0.35$ Value Z1	0.36	0.51	0.62	0.79	1.00	1.22	1.50	1.69	1.95	2.48
Rainfall M5 (mm)	7.1	10.1	12.3	15.7	20.0	24.5	29.9	33.8	38.9	49.6
M100/M5 gf Value Z2	1.84	1.91	1.95	2.00	2.03	2.01	1.97	1.94	1.90	1.81
Rainfall M100 (mm)	13.1	19.4	24.0	31.4	40.6	49.2	59.0	65.6	73.9	89.9
With climate uplift (mm)	19.0	28.1	34.8	45.5	58.9	71.4	85.5	95.1	107.2	130.4
RUNOFF (m ³)	2.09	3.09	3.83	5.01	6.48	7.85	9.41	10.46	11.79	14.34
No soakage depth (m)	0.24	0.36	0.45	0.58	0.75	0.80	0.80	0.80	0.80	0.80
SOAKAGE (m ³)	0.02	0.06	0.11	0.28	0.71	1.52	3.03	4.55	7.58	18.20
Req'd STORAGE (m ³)	2.07	3.03	3.72	4.73	5.76	6.33	6.37	5.91	4.21	0.00
	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass

Overall Assessment

Soakaway base elevation above seasonal high GWL 1.50 m pass
 Will the soakaway drain from full to half full in 24 hours or less? Yes pass
 Does the soakaway provide sufficient storage? Yes pass