DIXON HURST
CONSULTING CIVIL & STRUCTURAL ENGINEERS

Heversham House,
18-22 Boundary Road,
Hove, East Sussex,
BN3 4EF
Email: hove@dhk.co.uk

Micro Drainage
Soakaway Calculations using
FEH22 Rainfall Data

For

Manor Hall Nursery,
Gardener Street,
Portslade, West Sussex

Date: May 2024
Project No: 56237 Rev 05

from Southern Water

Mr Jethro Sifflet
Dixon Hurst Limited
Heversham House
18-22 Boundary Road
Hove
East Sussex
BN3 4EF

Your ref

Our ref
1504

Date
06 July 2022

Contact

Tel 0330 303 0119

Dear Mr Sifflet,

Application to Connect to the Public Sewerage System - Section 106 Water Industry Act 1991. Location: Manor Hall Nursery, Gardener Street, Southwick, Brighton, West Sussex, BN42 4NR.

We refer to your recent application to connect to the public foul sewer at the above location. We are pleased to advise that your proposal, as shown on your drawing 56237/20 Revision B dated 05/07/2022, is approved by Southern Water. However, approval is subject to some conditions, which are included below.

Means and Mode Only

This review is for the purpose of approval to permit communication to be made to the public sewer, under Section 106 of the Water Industry Act 1991. **It is to the means and mode of construction only.**

What Comes Next?

To progress, select the 'Accept' option on the Get Connected customer dashboard. Or, if you have further questions, please select the 'Query' option. If you do not wish to progress with the application, then please select the ‘Withdraw’ option.

Now you have received our approval, you will now need to arrange with your contractor to carry out your works on site to connect into our sewer.

Once you have done this, please select ‘Ready for Inspection’ on your Get Connected customer dashboard then inform Malcolm Penny our Assistant Adoption Manager for this area on 07922 860784 that your site is ready for inspection. Please give at least two full working days’ notice for a mutually convenient date and time for the inspection of the works to be arranged.

Southern Water Services Ltd, Registered Office: Southern House, Yeoman Road, Worthing BN13 3NX Registered in England No. 2366670

If Your Plans Change

- We reserve the right to immediately disconnect any development under S109 of the WIA 1991 where it has been shown actual connections do not reflect those applied for in the S106 application.

- If there is any change in the intended connection point, then you must provide us with revised drawings and details and obtain our approval for the changes prior to the connection being made.

- Our approval is given based on the information provided in support of this application and the assumption of the final discharge point being to the public foul sewer. If this point of connection changes without our approval, then this approval letter becomes invalid.

Capacity and Planning Conditions

- S106 approval does not confirm that public sewer network capacity is available for the proposed development. The availability of capacity may be assessed through the Pre-Planning Enquiry process.

- This letter should not be considered as approval by Southern Water to the discharge of any relevant Planning Conditions relating to drainage. This is a separate matter which will be reviewed under a consultation from the Planning Authority.

Design Guidance and Health & Safety

- Connections to existing/new Southern Water assets (i.e., manholes) and the arrangement of Southern Water assets (i.e., pipe junctions within manholes) should be in accordance with the new Design and Construction Guidance manual ("the Code") and Southern Water's guidance documentation.

  water.org.uk/sewerage-sector-guidance-approved-documents/

- Please note that surface water must not communicate with the public foul sewers.

- If connection is to be made through land which is under the ownership of other Parties, then you are advised to obtain the Landowners consent before carrying out any works.

- In approving this application, it is assumed that you have obtained any necessary Building Regulations Approvals and will seek, if relevant, a Highway Authority Road Opening License before any works take place.

- We refer you to the Southern Water Health and Safety Advisory that can be viewed in the Developer and Builders section of the Southern Water website as the link below:

  southernwater.co.uk/developing-building/health-and-safety

This approval is given on the basis that you will review this Advisory and take the necessary actions concerning Health and Safety.

Yours sincerely,

[redacted]

Ashley Marshman
Head of Business Channels
Business Channels

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PLANNING

KEY

- SVP — Soil Vent Pipe with Rodding Access
- RWP — Rain Water Pipe with Rodding Access
- SS — Stub Stack with Air Admittance valve
- RE — Rodding Eye
- RG — Oil Trapped Road Gully
- YG — Trapped Yard Gully
- CD — Channel Drain
- SW —Existing Private Surface Water Sewer
- SW —Proposed Private Surface Water Sewer
- FW —Existing Private Foul Water Sewer
- FW —Proposed Private Foul Water Sewer
- FW —Existing Public Foul Water Sewer
- F6 — Foul Manhole
- S6 — Surface Water Manhole
- SW —Proposed Surface Water Soakaway
- SW —Proposed Permeable Paving Access Road
- Ext.FWMH — Existing Public Foul Water Manhole
- Site Boundary

In addition to these notes, reference shall be made to the specification of works and the relevant Architect's and Specialist's drawings and specifications.

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Levels are in metres unless noted otherwise to Ordnance Survey datum.

The Contractor is responsible for the stability of the building whilst the works are in progress.

NOTES

1. THIS DRAWING IS BASED ON DRAWING NO.1216/02 BY HUTCHINSON DESIGN ASSOCIATES.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWING:
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   - 5623/22 DRAINAGE SCHEDULES
3. CONTRACTOR IS TO TAKE NECESSARY PRECAUTIONS TO ENSURE THAT TRENCHES ARE KEPT CLEAR OF GROUND WATER DURING CONSTRUCTION.
4. ALL DRAINAGE WORKS TO BE CARRIED OUT IN ACCORDANCE WITH "SEWERS FOR ADOPTION" 7TH EDITION.
5. ALL NON ADOPTED PRIVATE PIPEWORK TO BE 110ø UPVC UNLESS NOTED OTHERWISE.
6. ALL PIPEWORK THROUGH WALLS TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS.
7. ALL PIPEWORK UNDER ROADS WITH LESS THAN 900MM COVER TO HAVE 150MM CONCRETE SURROUND.
8. MINIMUM GRADIENT TO DRAINS TO BE 1:80 FOR 110ø OR 110ø FW AND 1:100 FOR 110ø SW.
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10. PROVIDE CONCRETE LINTELS OVER OPENINGS WHERE PIPES PASS THROUGH WALLS. ALLOW FOR 150MM CLEARANCE ALL ROUND PIPE.

NEW FW CONNECTION INTO THE PUBLIC SEWER. INVERT LEVEL TO BE CONFIRMED.

Ext.FMH
REF:4502
CL 20.00
IL 19.00(TBC)

Ext.200mm ø FW DRAIN

GARDENER STREET

36/36A

59

SOAKAWAY/INFILTRATION TANK 6
Ess Versa Void Cellular Structure Modules
(500x500x550mm units)
CL 21.60 (TBC)
TOTL 20.60 (TBC)
BOTL 19.10 (TBC)
Tank Size: 3.0x2.0x1.5m dp
Storage = 8.90cu.m
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK 1
Ess Versa Void Cellular Structure Modules
(500x500x550mm units)
CL 21.89 (TBC)
TOTL 20.31 (TBC)
BOTL 18.81 (TBC)
Tank Size: 3.0x2.0x1.5m dp
Storage = 8.60 cu.m
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK 5
Ess Versa Void Cellular Structure Modules
(500x500x550mm units)
CL 21.26 (TBC)
TOTL 20.76 (TBC)
BOTL 19.26 (TBC)
Tank Size: 4.0x1.5x1.5m dp
Storage = 8.60 cu.m
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK 4
Ess Versa Void Cellular Structure Modules
(500x500x550mm units)
CL 21.14 (TBC)
TOTL 20.50 (TBC)
BOTL 19.00(TBC)
Tank Size: 2.0x1.5x1.5m dp
Storage = 4.30 cu.m
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK 2
Ess Versa Void Cellular Structure Modules
(500x500x550mm units)
CL 21.12 (TBC)
TOTL 20.66 (TBC)
BOTL 19.16 (TBC)
Tank Size: 2.5x2.5x1.5m dp
Storage = 8.90 cu.m
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK 3
Ess Versa Void Cellular Structure Modules
(500x500x550mm units)
CL 21.27 (TBC)
TOTL 20.67 (TBC)
BOTL 18.67 (TBC)
Tank Size: 2.8x1.2x2.0m dp
Storage = 6.40 cu.m
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

PERMEABLE PAVING ACCESS ROAD

Plot 1 FFL:+20.99
Plot 2 FFL:+21.22
Plot 3 FFL:+21.37
Plot 4 FFL:+21.36

ALL DIMENSIONS AND LEVELS TO BE CHECKED AND CONFIRMED BY THE ARCHITECT PRIOR TO CONSTRUCTION.

REV	DESCRIPTION	DATE	BY
E	AMENDED SOAKAWAY SA3 SIZE	30/05/24	JS
D	AMENDED SOAKAWAY SA6 SIZE	13/05/24	JS
C	SOAKAWAY SIZES TO FEH RAINFALL	27/03/24	JS
B	BRE365 TEST SOAKAWAY RESULTS	13/09/21	JS
A	AMENDED FLOOR PLANS/DRAINAGE	13/09/21	JS
0	DRAINAGE AMENDED	12/12/19	JS

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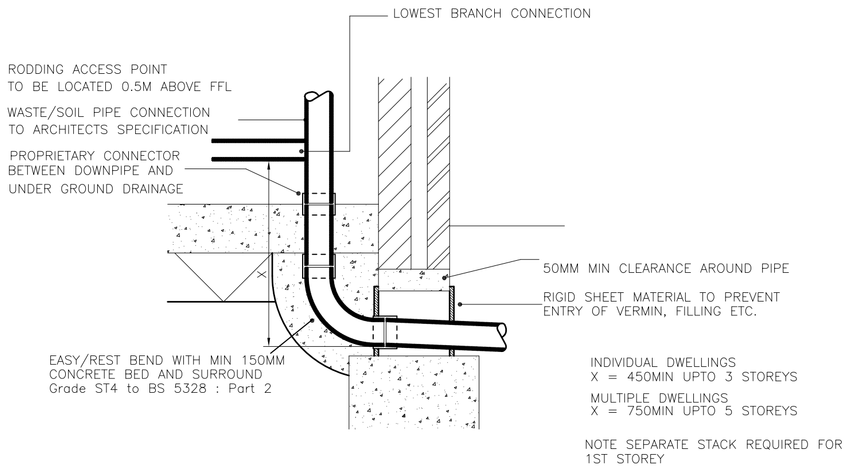
CONTRACT
MANOR HALL NURSERY
GARDENER STREET
PORTSLADE, WEST SUSSEX

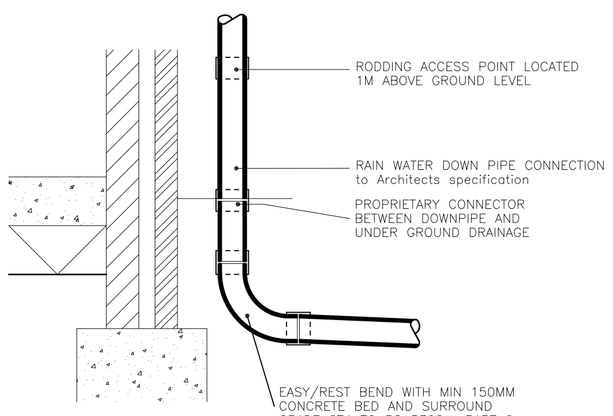
DRAWING
DRAINAGE LAYOUT

DRAWING No.	REV	CHECKED
56237 / 20	E	
SCALE 1:100 @ A1	DATE DEC 19	DRAWN JS / APPROVED
AutoCAD Ref: 56237–10.dwg		

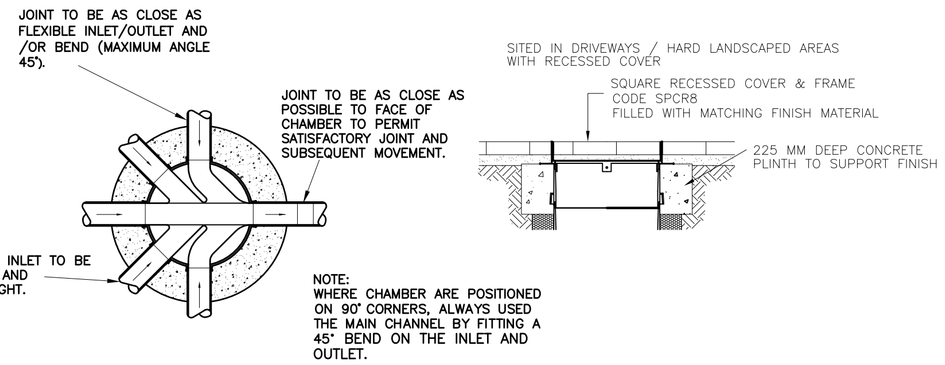
This drawing is produced using Autocad: Only written dimensions are to be respected



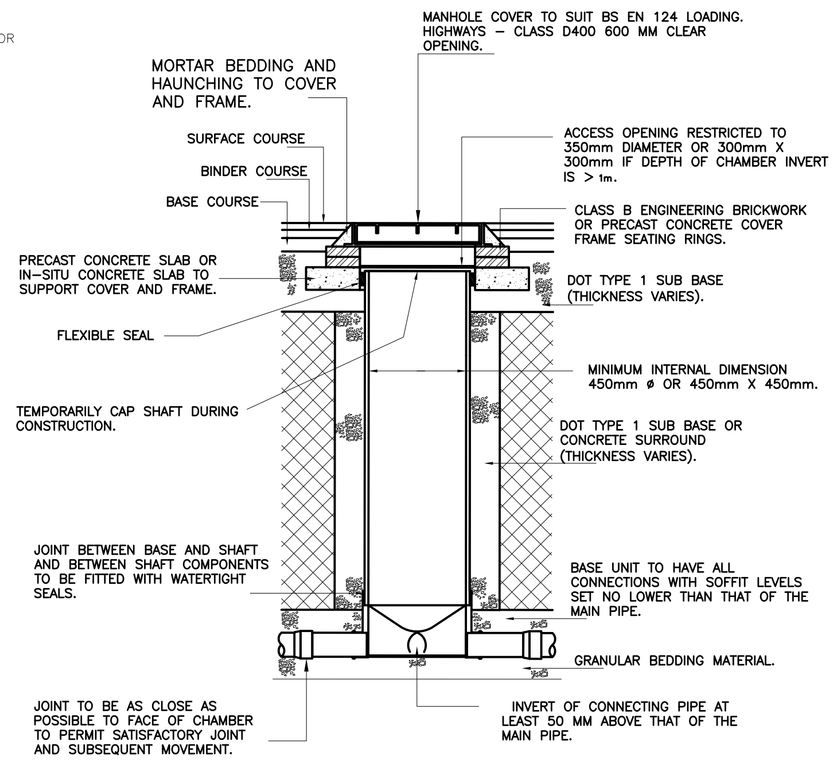
TYPICAL SOIL VENT PIPE DETAILS
SCALE 1:20



TYPICAL RAIN WATER DOWNPIPE DETAIL
SCALE 1:20



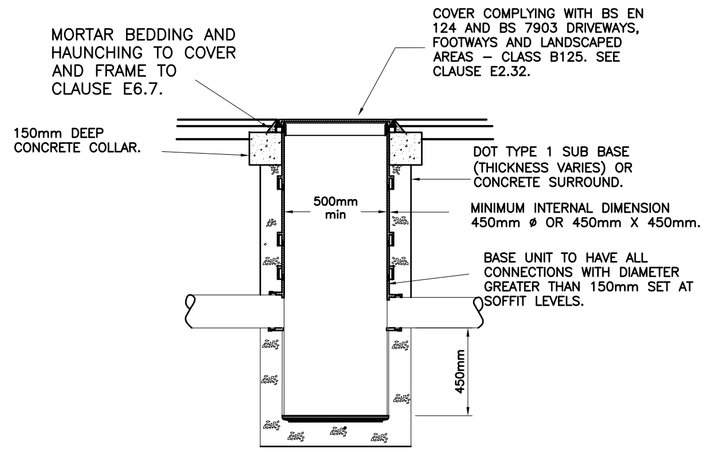
PLAN



SECTION

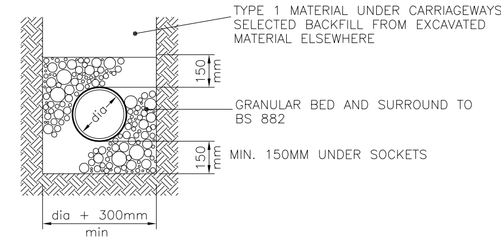
TYPE 3 – 450P POLYPROPYLENE INSPECTION CHAMBER (MAX. DEPTH 3.0M TO PIPE SOFFIT).
SCALE 1:20

NOTE: PLASTIC CHAMBERS AND RING SHALL COMPLY WITH BS EN 13598–1 AND BS EN 13598–2 OR HAVE EQUIVALENT INDEPENDENT APPROVAL.

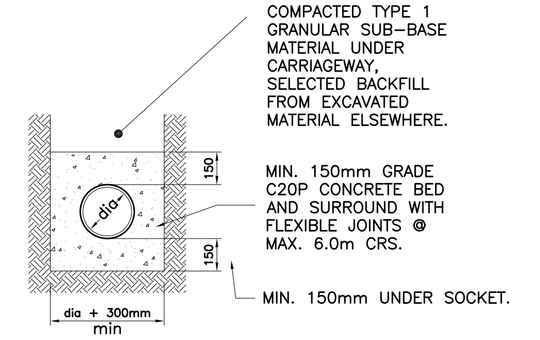


SECTION

TYPE 3A – 500P POLYPROPYLENE SILT TRAP CHAMBER
SCALE 1:20

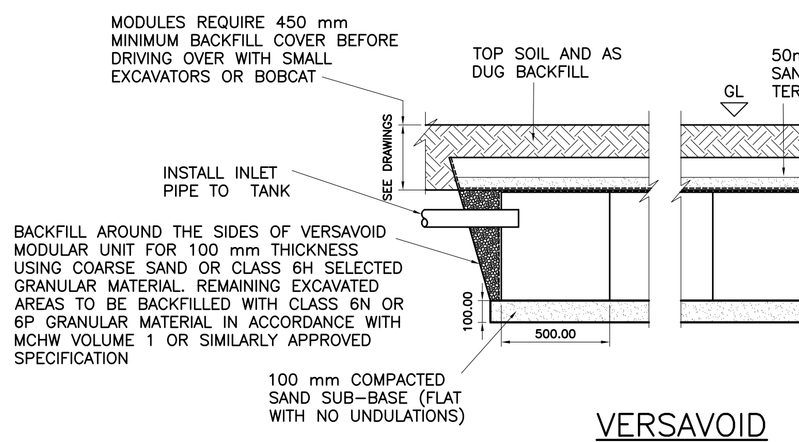


TYPE 'S'
(BEDDING FACTOR – 2.2)
Drainage with more then 1.2m cover

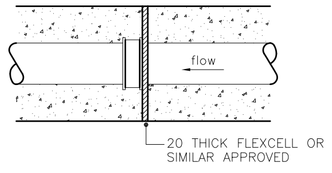


CONCRETE PIPE BEDDING

PIPE BEDDING DETAIL
SCALE 1:20

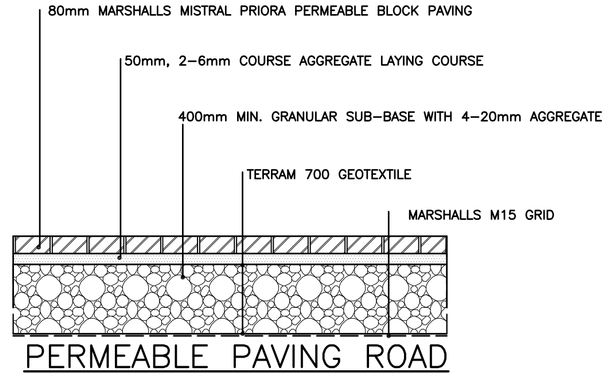


VERSAVOID SOAKAWAY/INFILTRATION TANK UNDER LANDSCAPED AREAS
SCALE 1:20

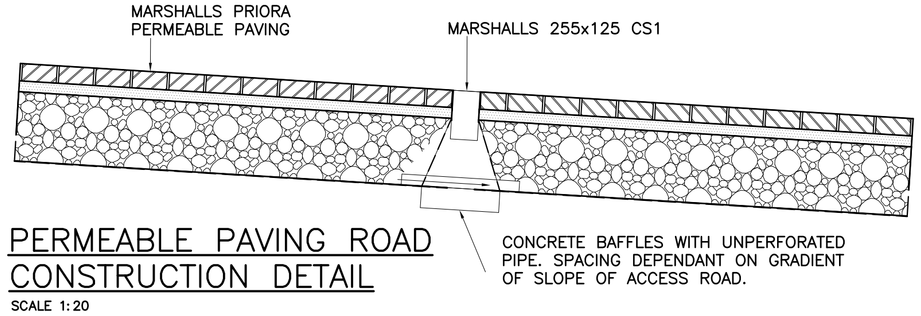


FLEXIBLE JOINT DETAIL
For Sleeved Pipes

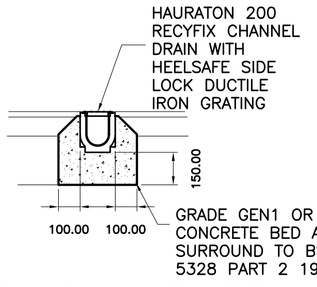
TYPICAL PIPE JOINTING DETAIL
SCALE 1:20



PERMEABLE PAVING ROAD CONSTRUCTION DETAIL
SCALE 1:20



PERMEABLE PAVING ROAD CONSTRUCTION DETAIL
SCALE 1:20



RECYFIX CHANNEL DRAIN (250kN)
SCALE 1:20

TRASH BOXES TO BE USED AT CHANNEL DRAIN DISCHARGE PIPES.

In addition to these notes, reference shall be made to the specification of works and the relevant Architect's and Specialist's drawings and specifications.

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NOTES

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ALL DIMENSIONS AND LEVELS TO BE CHECKED AND CONFIRMED BY THE ARCHITECT PRIOR TO CONSTRUCTION.

REV	DESCRIPTION	DATE	BY
A	SOAKAWAY DEPTH	13/09/21	JS
0	ORIGINAL ISSUE	13/09/21	JS

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CONTRACT
MANOR HALL NURSERY
GARDENER STREET
PORTSLADE, WEST SUSSEX

DRAWING
DRAINAGE LAYOUT

DRAWING No.	REV	CHECKED
56237 / 21	A	
SCALE 1:20 @ A1 / DATE SEPT 21	DRAWN JS	APPROVED
AutoCAD Ref: 56237–10.dwg		

This drawing is produced using Autocad: Only written dimensions are to be respected

PLANNING

FOUL WATER MANHOLE SCHEDULE						
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE	COMMENTS
F1	21.27	20.72	0.55	3	D400	
F2	21.27	20.68	0.59	3	D400	
F3	21.27	20.72	0.55	3	D400	
F4	21.27	20.68	0.59	3	D400	
F5	21.05	20.35	0.70	3	D400	
F6	21.12	20.62	0.50	3	D400	
F7	21.12	20.28	0.84	3	D400	
F8	20.87	20.17	0.70	3	D400	
F9	20.89	20.34	0.55	3	D400	
F10	20.89	20.00	0.89	3	D400	
F11	20.73	19.89	0.84	3	D400	

SURFACE WATER MANHOLE SCHEDULE						
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE	COMMENTS
RE1	21.27	20.68	0.59	RODDING EYE	–	
S1	21.27	20.56	0.70	3A SILT TRAP	B125	DISCHARGE TO SA5, PLOT 4
RE2	21.27	20.68	0.59	RODDING EYE	–	
S2	21.27	20.56	0.70	3A SILT TRAP	B125	DISCHARGE TO SA5, PLOT 4
S3	21.27	20.67	0.60	3A SILT TRAP	B125	DISCHARGE TO SA4, PLOT 3
S4	21.27	20.67	0.6	3A SILT TRAP	B125	DISCHARGE TO SA3, PLOT 3
RE3	21.12	20.57	0.55	RODDING EYE	–	
S5	21.12	20.50	0.62	3	B125	
S6	21.12	20.39	0.73	3	B125	
S7	21.12	20.32	0.80	3A SILT TRAP	B125	DISCHARGE TO SA2, PLOT 2
RE4	20.89	20.34	0.55	RODDING EYE	–	
S8	20.89	20.27	0.62	3	B125	
S9	20.89	20.16	0.73	3	B125	
S10	20.89	20.09	0.80	3A SILT TRAP	B125	DISCHARGE TO SA1, PLOT 1
S11	21.60	21.00	0.6	3A SILT TRAP	B125	DISCHARGE TO SA6,

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PLANNING

ALL DIMENSIONS AND LEVELS TO BE CHECKED AND CONFIRMED BY THE ARCHITECT PRIOR TO CONSTRUCTION.

REV	DESCRIPTION	DATE	BY
A	MANHOLE INVERT LEVELS	13/05/24	JS
0	ORIGINAL ISSUE	13/09/21	JS

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CONTRACT
MANOR HALL NURSERY
GARDENER STREET
PORTSLADE, WEST SUSSEX

DRAWING
DRAINAGE SCHEDULES

DRAWING No.	REV	CHECKED
56237 / 22	A	
SCALE 1:100 @ A1	DATE SEPT 21	DRAWN JS / APPROVED
AutoCAD Ref: 56237–10.dwg		

This drawing is produced using Autocad: Only written dimensions are to be respected

SEWER RECORDS PAGE 1 OF 2



O.S. REF.

TQ2505NW

Drawn by: chowdha

Scale: 1:1250

Title: 264158_Site at Manor Hall Road

Date: 11/10/2017

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy.
The actual positions should be determnined on site.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement
WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement

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N

Southern Water

SEWER RECORDS PAGE 2 OF 2

Node	Cover	Invert	Size	Material	Shape
1402X	16.38	15.53	150	VC	CIRC
1505X	17.73	15.13	200	VC	CIRC
1551X	17.63	15.91	225	VC	CIRC
2401X	17.5	16.1	150	VC	CIRC
2408X	17.05	16.49	150	VC	CIRC
2409X	17.79	16.98	150	VC	CIRC
2410X	17.43	16.43	150	VC	CIRC
2450X	17.65	16.63	150	VC	CIRC
2451X	17.32	16.81	150	VC	CIRC
2501X	18	15.52	200	VC	CIRC
2550X	18.01	16.36	225	VC	CIRC
3501X	18.41	16.03	200	VC	CIRC
3502X	16.53		150	VC	CIRC
3503X			150	VC	CIRC
350DX			150	VC	CIRC
3551X	18.37	16.78	225	VC	CIRC
3552X	18.88	17.29	150	VC	CIRC
3601X			200	VC	CIRC
3603X	19.5	17.49	150	VC	CIRC
3604X			UNK	UNK	UNK
3605X			UNK	UNK	UNK
3606X	19.38	16.97	150	VC	CIRC
3609X	19.5	17.25	150	VC	CIRC
360BX			UNK	UNK	UNK
360DX			UNK	UNK	UNK
361BX			UNK	UNK	UNK
361DX			UNK	UNK	UNK
362BX			UNK	UNK	UNK
362DX			UNK	UNK	UNK
363BX			UNK	UNK	UNK
363DX			UNK	UNK	UNK
364DX			UNK	UNK	UNK
3650X	18.732	17.662	225	UNK	CIRC
3651X	19.5	17.79	150	VC	CIRC
3707X			UNK	VC	CIRC
370BX			UNK	UNK	UNK
371BX			200	VC	CIRC
371DX			200	VC	CIRC
372BX			UNK	UNK	UNK
373BX			UNK	UNK	UNK
373DX			200	VC	CIRC
37CBX			200	VC	CIRC
440DX			UNK	UNK	CIRC
4501X	18.37	15.51	200	VC	CIRC
4502X			200	VC	CIRC
4503X			225	BRC	CIRC
4504X			100	VC	CIRC
4505X			100	VC	CIRC
4506X			100	VC	CIRC
4507X			100	VC	CIRC
450BX			UNK	UNK	UNK
450DX			UNK	UNK	UNK
451BX			200	VC	CIRC
451DX			UNK	UNK	UNK
452BX			UNK	UNK	UNK
452DX			UNK	UNK	UNK
453BX			UNK	UNK	UNK
453DX			150	VC	CIRC
454BX			200	VC	CIRC
454DX			UNK	UNK	UNK
4551X	17.409	16.039	225	UNK	CIRC
4552X	18.33	17.34	150	VC	CIRC
455DX			UNK	UNK	UNK
45ABX			225	BRC	CIRC
45BBX			UNK	UNK	CIRC
45EBX			150	VC	CIRC
4601X			200	VC	CIRC
4602X			200	VC	CIRC
4604X			200	VC	CIRC
4605X			UNK	VC	CIRC
460BX			UNK	UNK	UNK
460DX			UNK	UNK	UNK
460GY			200	VC	CIRC
461BX			UNK	UNK	UNK
461DX			UNK	UNK	UNK
461GX			UNK	UNK	UNK
462BX			UNK	UNK	UNK
462DX			UNK	UNK	UNK
462GX			200	VC	CIRC
463BX			200	VC	CIRC
463DX			UNK	UNK	UNK
463GX			UNK	UNK	UNK
464BX			UNK	UNK	UNK
464DX			UNK	UNK	UNK
464GX			UNK	UNK	UNK
4650X	18.399	17.099	225	UNK	CIRC
465DX			225	UNK	CIRC
466DX			UNK	UNK	UNK
467DX			UNK	UNK	UNK
468DX			UNK	UNK	UNK
46ABX			UNK	UNK	UNK
46AGX			UNK	UNK	UNK
46BBX			UNK	UNK	UNK
46BGX			UNK	UNK	UNK
46CBX			UNK	UNK	UNK
46CGX			200	VC	CIRC
46DBX			UNK	UNK	UNK
46DGX			UNK	UNK	UNK
46EBX			UNK	UNK	UNK
46EGY			200	VC	CIRC
46FBX			UNK	UNK	UNK
46GBX			UNK	UNK	UNK
46HBX			200	VC	CIRC
46JBX			UNK	UNK	UNK
46KBX			UNK	UNK	UNK
46MFX			UNK	UNK	UNK
4702X			200	VC	CIRC
474BX			UNK	UNK	UNK
4752X	18.654	17.324	225	UNK	CIRC
47DHX			UNK	UNK	UNK
47GGX			200	VC	CIRC
47HHX			UNK	UNK	UNK
5401X	16.43	14.81	225	OTHER	CIRC
5402X	16.08		225	BRC	CIRC
540BX			UNK	UNK	CIRC
541BX			UNK	UNK	CIRC
541DX			225	OTHER	CIRC
542BX			UNK	UNK	CIRC
542DX			UNK	UNK	CIRC
543BX			UNK	UNK	CIRC
543DX			UNK	UNK	CIRC
544BX			UNK	UNK	CIRC
544DX			UNK	UNK	CIRC
5450X	16.45	15.13	225	UNK	CIRC
5451X	16.12	14.64	225	UNK	CIRC
545BX			UNK	UNK	CIRC
545DX			225	UNK	CIRC
546BX			UNK	UNK	CIRC
546DX			UNK	UNK	CIRC
547BX			225	UNK	CIRC
547DX			150	VC	CIRC
548BX			UNK	UNK	CIRC
548DX			UNK	UNK	CIRC
549BX			UNK	UNK	CIRC
549DX			UNK	UNK	CIRC
54ABX			UNK	UNK	CIRC
54BBX			UNK	UNK	CIRC
54CBX			UNK	UNK	CIRC
54PBX			UNK	UNK	CIRC
54QBX			UNK	UNK	CIRC
54RBX			UNK	UNK	CIRC
5501X			225	BRC	CIRC *
5501Y			225	BRC	CIRC *
5502X			225	BRC	CIRC
5503X			225	BRC	CIRC
5504Y	15.05		225	VC	CIRC
5505X	14.94		225	VC	CIRC
5506X			150	VC	CIRC
5507X	14.589	10.3	150	VC	CIRC
5508X			150	VC	CIRC
550BX			225	BRC	CIRC
550DY			225	BRC	CIRC
550GX			UNK	UNK	UNK
551BX			UNK	UNK	UNK
551DX			UNK	UNK	UNK
551GX			UNK	UNK	UNK
552BX			UNK	UNK	UNK
552DX			UNK	UNK	UNK
552GX			UNK	UNK	UNK
553BX			UNK	UNK	UNK
553DX			225	BRC	CIRC
553GX			UNK	UNK	UNK
554BX			UNK	UNK	UNK
554DY			225	BRC	CIRC
554GX			UNK	UNK	UNK
5550X	18.744		225	UNK	CIRC
5551X	14.864		450	UNK	CIRC
5552X	14.663	11.093	225	UNK	CIRC
5553X			225	UNK	CIRC
5557Y			OTHER	BRC	CIRC *
5557X			OTHER	BRC	CIRC *
555DX			UNK	UNK	CIRC
556DX			UNK	UNK	CIRC
557DX			UNK	UNK	CIRC
558DX			225	UNK	CIRC
55ABX			225	BRC	CIRC
55BBX			UNK	UNK	UNK
55CBX			UNK	UNK	UNK
55DBX			UNK	UNK	UNK
55EBX			UNK	UNK	UNK
55FBX			225	BRC	CIRC
55GBX			UNK	UNK	UNK
55HBX			UNK	UNK	UNK
55JBX			UNK	UNK	UNK
55KBX			UNK	UNK	UNK
55MFX			UNK	UNK	UNK
5601X	15.79	13.1	225	BRC	CIRC
5602X	15.26		225	VC	CIRC
5603X	15.27	12.63	225	VC	CIRC *
5603Y	15.27		225	VC	CIRC *
5604X			UNK	UNK	CIRC
5605X			UNK	VC	CIRC
5606X			UNK	UNK	CIRC
5607X			UNK	UNK	CIRC
560BX			UNK	UNK	UNK
560FX			UNK	VC	CIRC
560GX			UNK	UNK	UNK
561BX			UNK	UNK	UNK
561DX			UNK	UNK	CIRC
561FX			UNK	VC	CIRC
561GX			UNK	UNK	UNK
562BX			UNK	UNK	CIRC
562DX			UNK	UNK	CIRC
562FX			225	VC	CIRC
562GX			UNK	UNK	UNK
563BX			UNK	UNK	UNK
563DX			225	VC	CIRC
563FX			225	BRC	CIRC
563GX			225	VC	CIRC
564BX			UNK	UNK	UNK
564DX			UNK	UNK	UNK
564FX			UNK	UNK	UNK
564GX			UNK	UNK	CIRC
5650X	14.812	11.622	375	UNK	CIRC
5651X	15.369	13.049	225	UNK	CIRC
5652X			450	UNK	CIRC
565BX			UNK	UNK	UNK
565DX			UNK	UNK	UNK
566BX			UNK	UNK	UNK
566DX			UNK	UNK	UNK
567BX			UNK	UNK	UNK
567DX			UNK	UNK	UNK
568BX			UNK	UNK	UNK
568DX			UNK	UNK	UNK
569BX			UNK	UNK	UNK
569DX			UNK	UNK	UNK
56ABX			UNK	UNK	UNK
56AFX			UNK	UNK	UNK
56AGX			UNK	UNK	UNK
56BBX			225	VC	CIRC
56BFX			UNK	UNK	UNK
56CFX			UNK	UNK	UNK
56DBX			UNK	UNK	CIRC
56DFX			UNK	UNK	UNK
56EFX			UNK	UNK	UNK
56FFX			UNK	UNK	UNK
56GFX			UNK	UNK	UNK
56HFX			UNK	UNK	UNK
56JFX			UNK	UNK	UNK
56KFX			UNK	UNK	UNK
56MFX			225	BRC	CIRC
5705X			UNK	VC	CIRC
5706X			225	VC	CIRC
572DX			UNK	UNK	UNK
573DX			UNK	UNK	UNK
5755X	14.269	12.939	225	UNK	CIRC
575DX			UNK	UNK	UNK
576DX			UNK	UNK	UNK
578DX			UNK	UNK	UNK
579DX			UNK	UNK	UNK
57CBX			225	VC	CIRC
642DX			UNK	UNK	CIRC
643DX			UNK	UNK	CIRC
643GX			UNK	UNK	CIRC
645BX			UNK	UNK	CIRC
649DX			UNK	UNK	CIRC
64FBX			UNK	UNK	CIRC
64JBX			UNK	UNK	CIRC
64KBX			UNK	UNK	CIRC
64MFX			UNK	UNK	CIRC

LINE STYLES / COLOURS

Brown — Foul; Foul Syphon Sewer; Foul Vacuum Main; Foul Rising Main
Red — Combined; Combined Syphon Sewer; Combined Rising Main; Lateral Drain
Orange — Building Over Agreement Area
Dark Blue — Treated Effluent
Purple — Sludge; Sewer Catchment; Section 104 Area
Light Blue — Surface Water; Surface Water Rising Main
Yellow — Private
Green — Access Shaft; Decommissioned

MATERIALS

AK Akatherm
BAC Bonded Asbestos Cement
BRC Brick (Common)
BRE Brick (Engineering)
CC Concrete Box Culvert
CI Cast Iron
CO Concrete (In-Situ)
CP Concrete (Pre-Cast)
CSB Concrete Segments (bolted)
CSU Concrete Segments (unbolted)
DI Ductile Iron
GRC Glass Reinforced Concrete
GRP Glass Reinforced Plastic
MAC Masonry In regular Courses
MAR Masonry In random Courses
PE Polyethylene
PF Pitch Fibre
PP Polypropylene
PVC Polyvinyl Chloride
RPM Reinforced Plastic Matrix
SI Spun Iron
ST Steel
VC Vitrified Clay
XXX Other
ZZZ Unknown

Manhole (SW)
Manhole (F&C)
Lamp hole (SW)
Lamp hole (F&C)
Pumping Station (SW)
Pumping Station (F&C)
Side entry manhole (SW)
Side entry Manhole (F&C)
Blind shaft (SW)
Blind shaft (F&C)
Ejector station (SW)
Ejector station (F&C)
Watertight door (SW)
Watertight door (F&C)
Flushing ch. MH-e (SW)
Flushing ch. MH-e (F&C)
Flushing ch. NO-e (SW)
Flushing ch. NO-e (F&C)
Demarcation Chamber

LEGEND - SEWERS

Washout (SW)
Washout (F&C)
Rodding Eye (SW)
Rodding Eye (F&C)
Gauging point (SW)
Gauging point (F&C)
Intercept chamber (SW)
Intercept chamber (F&C)
Storm Tank (SW)
Storm Tank (F&C)
Vortex chamber (SW)
Vortex chamber (F&C)
Label ellipse
Dummy/S24 manhole
Outfall
Penstock chamber
Damboards
Storm Overflow
Backdrop manhole

Other (s)
Other
Change In sewer (s)
Change In sewer
Reflux valve
Flap valve
Cascade
Anode
Valve
Storm Tank (SW)
Closed Valve
Air Valve
Hatch box (SW)
Hatch box (F&C)
Direction arrow
Emptying valve
Catchpit
Soakaway
Inlet
Balancing Pond

Wastewater treatment works
Marine treatment works
Outfall headworks
Vent
Vent column
Total storage tank
Blank end
Head of Public Sewer
Micro Pumping Station

SHAPES (S)

A Arched
B Barrel
C Circular
E Egg
H Horseshoe
R Rectangular
S Square
T Trapezoidal
U U Shape
X Other

NODE REFERENCING SYSTEM

1st digit: hundred metre easting identifier
2nd digit: hundred metre northing identifier
sewer type identifier
3rd digit: 0-4 = Foul/Combined
5-9 = Surface Water
4th digit: next sequential node

Drawn by:	chowdha
Title:	264158_Site at Manor Hall Road
Date:	11/10/2017

Southern Water



LEGEND - MAINS

- Distribution Main / Communication pipe
- Trunk Main
- RAW — Raw water main
- NP — Non potable
- Abandoned main
- P P — Proposed Main
- FM — Fire main
- Non SWS
- Sluice valve
- Closed valve
- AV — Air valve
- Butterfly valve
- Pressure reducing valve
- Reflux valve
- mv — Motorised valve
- Clockwise closing valve
- Fire Hydrant
- WO — Washout
- WOH — Washout hydrant
- M — Meter
- Capped end
- EP — Emptying plug
- Stopcock
- SP — Leak Noise Correlator Survey Point
- AN — Anode
- TC — Telemetry cable
- AP — Access point / hatchbox

- D — Dialysis machine
- BPT — Break pressure tank
- Change node
- Pumping station
- Booster station
- Insertion Flow Meter Point
- Water tower
- Service reservoir
- Water Supply Works
- Bore hole / Well
- Intake
- Customer site
- Swab insertion point

MATERIALS

Alkathene	AK
Cast Iron	CI
Spun (grey) Iron	SI
Concrete	CO
Ductile Iron	DI
Bonded Asbestos Cement	BAC
Glass reinforced plastic	GRP
Glass reinforced epoxy	GRE
(Unplasticised) Polyvinyl chloride	PVC
Polyethylene	PE
Steel	ST
Concrete segments bolted	CSB
Concrete segments unbolted	CSU
Galvanised iron	GI
Ductile sleeve	DS
Concrete pre-stressed	CPS
High performance polyethelene	HPE
Unknown	??

WARNING: BAC pipes are constructed of Bonded Asbestos Cement

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

Drawn by:	chowdha
Scale:	1:1250
Date:	11/10/2017

O.S.Ref: TQ2505NW

TITLE: 264158_Site at Manor Hall Road

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd. accept no responsibility in the event of inaccuracy. The actual positions of pipes should be determined on site.

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Southern Water

N

Summary of Results for 1 year Return Period (+45%)

Half Drain Time : 1318 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	18.930	0.120	0.0	0.7	O K
30 min Summer	18.966	0.156	0.0	0.9	O K
60 min Summer	19.013	0.203	0.0	1.2	O K
120 min Summer	19.071	0.261	0.0	1.5	O K
180 min Summer	19.111	0.301	0.0	1.7	O K
240 min Summer	19.142	0.332	0.0	1.9	O K
360 min Summer	19.187	0.377	0.0	2.1	O K
480 min Summer	19.219	0.409	0.0	2.3	O K
600 min Summer	19.243	0.433	0.0	2.5	O K
720 min Summer	19.261	0.451	0.0	2.6	O K
960 min Summer	19.278	0.468	0.0	2.7	O K
1440 min Summer	19.303	0.493	0.0	2.8	O K
2160 min Summer	19.323	0.513	0.0	2.9	O K
2880 min Summer	19.332	0.522	0.0	3.0	O K
4320 min Summer	19.346	0.536	0.0	3.1	O K
5760 min Summer	19.347	0.537	0.0	3.1	O K
7200 min Summer	19.340	0.530	0.0	3.0	O K
8640 min Summer	19.331	0.521	0.0	3.0	O K
10080 min Summer	19.321	0.511	0.0	2.9	O K
15 min Winter	18.930	0.120	0.0	0.7	O K
30 min Winter	18.966	0.156	0.0	0.9	O K
60 min Winter	19.013	0.203	0.0	1.2	O K
120 min Winter	19.071	0.261	0.0	1.5	O K
180 min Winter	19.112	0.302	0.0	1.7	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	39.251	27
30 min Summer	25.681	41
60 min Summer	16.803	70
120 min Summer	10.994	130
180 min Summer	8.578	188
240 min Summer	7.193	248
360 min Summer	5.613	366
480 min Summer	4.707	484
600 min Summer	4.106	602
720 min Summer	3.672	720
960 min Summer	3.016	838
1440 min Summer	2.286	1080
2160 min Summer	1.732	1476
2880 min Summer	1.423	1884
4320 min Summer	1.104	2724
5760 min Summer	0.922	3520
7200 min Summer	0.802	4320
8640 min Summer	0.715	5104
10080 min Summer	0.649	5856
15 min Winter	39.251	27
30 min Winter	25.681	41
60 min Winter	16.803	70
120 min Winter	10.994	128
180 min Winter	8.578	186

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Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.142	0.332	0.0	1.9	O K
360 min Winter	19.188	0.378	0.0	2.2	O K
480 min Winter	19.221	0.411	0.0	2.3	O K
600 min Winter	19.245	0.435	0.0	2.5	O K
720 min Winter	19.264	0.454	0.0	2.6	O K
960 min Winter	19.282	0.472	0.0	2.7	O K
1440 min Winter	19.302	0.492	0.0	2.8	O K
2160 min Winter	19.317	0.507	0.0	2.9	O K
2880 min Winter	19.320	0.510	0.0	2.9	O K
4320 min Winter	19.320	0.510	0.0	2.9	O K
5760 min Winter	19.309	0.499	0.0	2.8	O K
7200 min Winter	19.294	0.484	0.0	2.8	O K
8640 min Winter	19.277	0.467	0.0	2.7	O K
10080 min Winter	19.261	0.451	0.0	2.6	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	7.193	242
360 min Winter	5.613	358
480 min Winter	4.707	472
600 min Winter	4.106	586
720 min Winter	3.672	696
960 min Winter	3.016	904
1440 min Winter	2.286	1120
2160 min Winter	1.732	1580
2880 min Winter	1.423	2024
4320 min Winter	1.104	2900
5760 min Winter	0.922	3752
7200 min Winter	0.802	4544
8640 min Winter	0.715	5360
10080 min Winter	0.649	6152

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 20.890

Cellular Storage Structure

Invert Level (m) 18.810 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	21.0
1.500	6.0	21.0			

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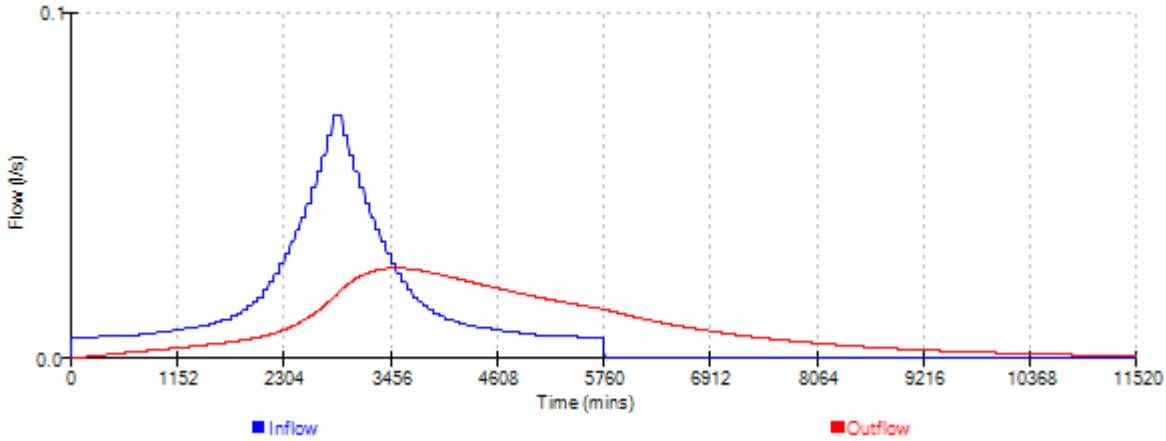
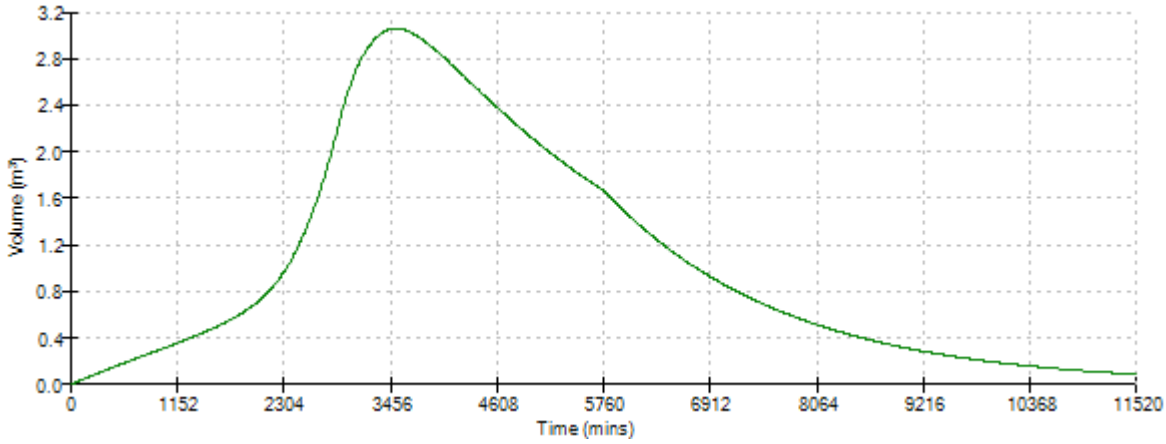
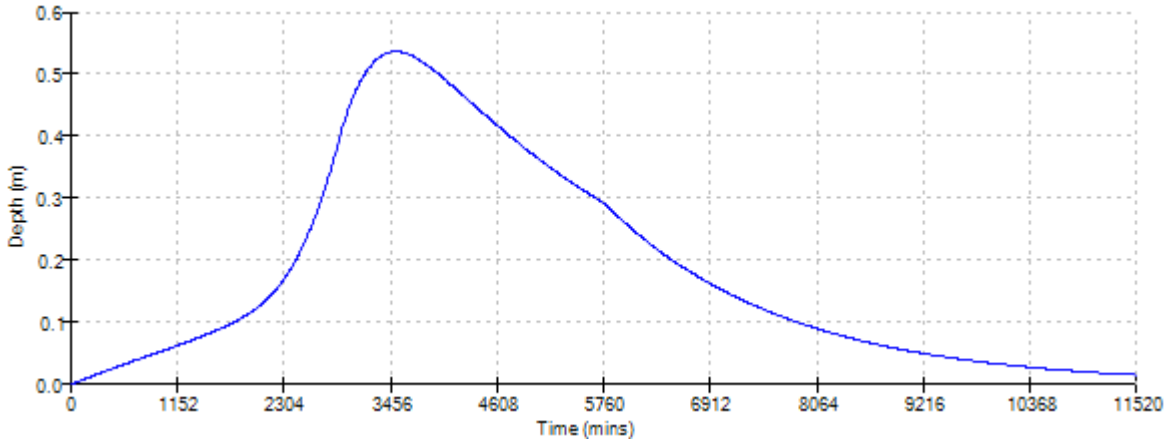
Event: 5760 min Summer







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Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 1317 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.193	0.383	0.0	2.2	O K
30 min Summer	19.280	0.470	0.0	2.7	O K
60 min Summer	19.385	0.575	0.0	3.3	O K
120 min Summer	19.507	0.697	0.0	4.0	O K
180 min Summer	19.585	0.775	0.0	4.4	O K
240 min Summer	19.643	0.833	0.0	4.7	O K
360 min Summer	19.723	0.913	0.0	5.2	O K
480 min Summer	19.776	0.966	0.0	5.5	O K
600 min Summer	19.813	1.003	0.0	5.7	O K
720 min Summer	19.838	1.028	0.0	5.9	O K
960 min Summer	19.851	1.041	0.1	5.9	O K
1440 min Summer	19.866	1.056	0.1	6.0	O K
2160 min Summer	19.872	1.062	0.1	6.1	O K
2880 min Summer	19.864	1.054	0.1	6.0	O K
4320 min Summer	19.854	1.044	0.1	6.0	O K
5760 min Summer	19.828	1.018	0.0	5.8	O K
7200 min Summer	19.797	0.987	0.0	5.6	O K
8640 min Summer	19.764	0.954	0.0	5.4	O K
10080 min Summer	19.733	0.923	0.0	5.3	O K
15 min Winter	19.193	0.383	0.0	2.2	O K
30 min Winter	19.280	0.470	0.0	2.7	O K
60 min Winter	19.385	0.575	0.0	3.3	O K
120 min Winter	19.508	0.698	0.0	4.0	O K
180 min Winter	19.587	0.777	0.0	4.4	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	125.753	27
30 min Summer	77.411	41
60 min Summer	47.652	70
120 min Summer	29.333	130
180 min Summer	22.085	188
240 min Summer	18.057	248
360 min Summer	13.595	366
480 min Summer	11.115	484
600 min Summer	9.508	602
720 min Summer	8.369	720
960 min Summer	6.702	838
1440 min Summer	4.901	1080
2160 min Summer	3.584	1476
2880 min Summer	2.870	1884
4320 min Summer	2.149	2724
5760 min Summer	1.750	3520
7200 min Summer	1.492	4320
8640 min Summer	1.310	5104
10080 min Summer	1.173	5856
15 min Winter	125.753	27
30 min Winter	77.411	41
60 min Winter	47.652	70
120 min Winter	29.333	128
180 min Winter	22.085	186

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Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.644	0.834	0.0	4.8	O K
360 min Winter	19.725	0.915	0.0	5.2	O K
480 min Winter	19.780	0.970	0.0	5.5	O K
600 min Winter	19.818	1.008	0.0	5.7	O K
720 min Winter	19.846	1.036	0.1	5.9	O K
960 min Winter	19.858	1.048	0.1	6.0	O K
1440 min Winter	19.866	1.056	0.1	6.0	O K
2160 min Winter	19.859	1.049	0.1	6.0	O K
2880 min Winter	19.838	1.028	0.0	5.9	O K
4320 min Winter	19.803	0.993	0.0	5.7	O K
5760 min Winter	19.757	0.947	0.0	5.4	O K
7200 min Winter	19.710	0.900	0.0	5.1	O K
8640 min Winter	19.666	0.856	0.0	4.9	O K
10080 min Winter	19.624	0.814	0.0	4.6	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	18.057	242
360 min Winter	13.595	358
480 min Winter	11.115	472
600 min Winter	9.508	586
720 min Winter	8.369	696
960 min Winter	6.702	904
1440 min Winter	4.901	1120
2160 min Winter	3.584	1580
2880 min Winter	2.870	2024
4320 min Winter	2.149	2900
5760 min Winter	1.750	3752
7200 min Winter	1.492	4544
8640 min Winter	1.310	5360
10080 min Winter	1.173	6152

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 20.890

Cellular Storage Structure

Invert Level (m) 18.810 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	21.0
1.500	6.0	21.0			

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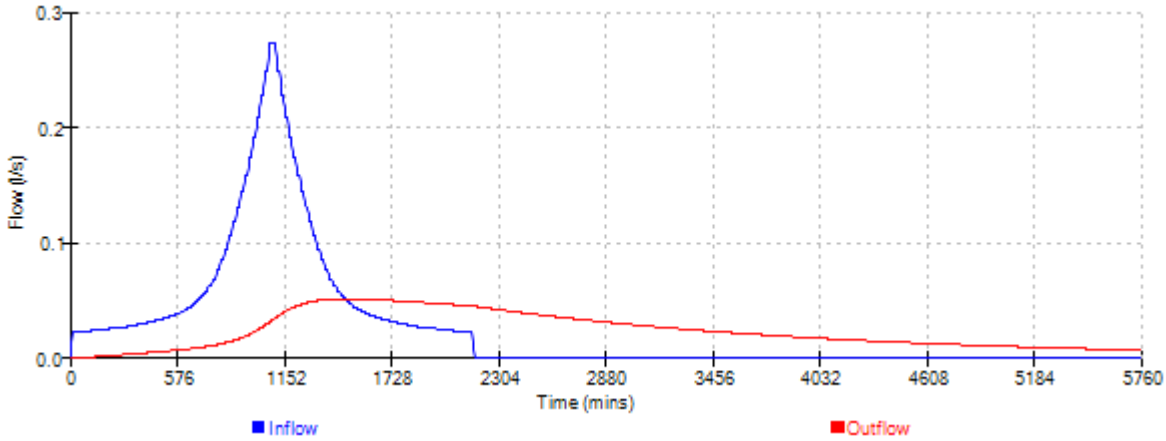
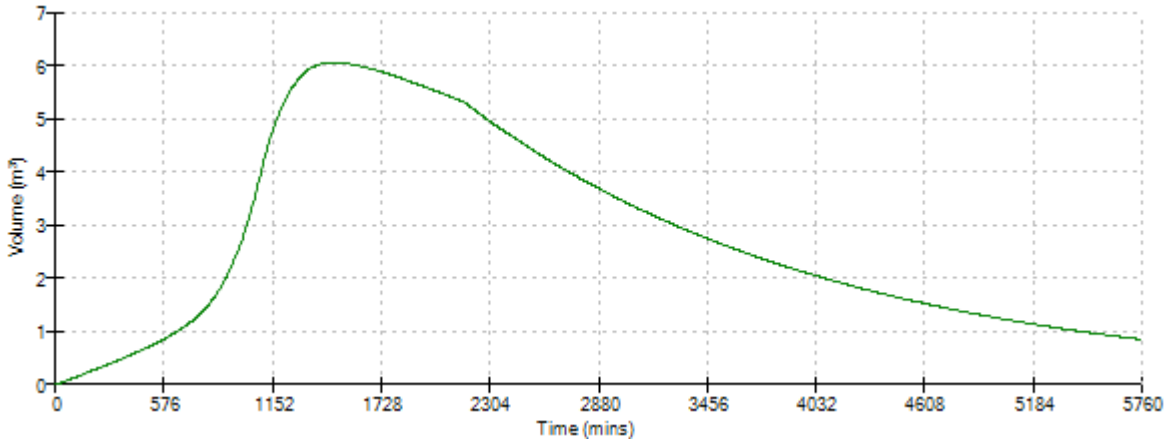
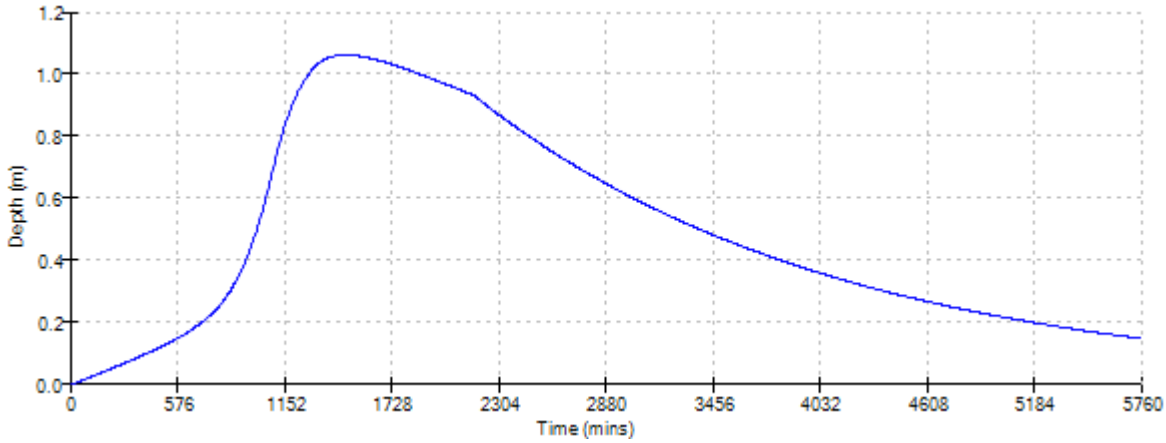
Event: 2160 min Summer







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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 1319 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.393	0.583	0.0	3.3	O K
30 min Summer	19.509	0.699	0.0	4.0	O K
60 min Summer	19.646	0.836	0.0	4.8	O K
120 min Summer	19.802	0.992	0.0	5.7	O K
180 min Summer	19.899	1.089	0.1	6.2	O K
240 min Summer	19.969	1.159	0.1	6.6	O K
360 min Summer	20.064	1.254	0.1	7.1	O K
480 min Summer	20.125	1.315	0.1	7.5	O K
600 min Summer	20.166	1.356	0.1	7.7	O K
720 min Summer	20.192	1.382	0.1	7.9	O K
960 min Summer	20.196	1.386	0.1	7.9	O K
1440 min Summer	20.199	1.389	0.1	7.9	O K
2160 min Summer	20.189	1.379	0.1	7.9	O K
2880 min Summer	20.166	1.356	0.1	7.7	O K
4320 min Summer	20.136	1.326	0.1	7.6	O K
5760 min Summer	20.092	1.282	0.1	7.3	O K
7200 min Summer	20.044	1.234	0.1	7.0	O K
8640 min Summer	19.996	1.186	0.1	6.8	O K
10080 min Summer	19.951	1.141	0.1	6.5	O K
15 min Winter	19.393	0.583	0.0	3.3	O K
30 min Winter	19.509	0.699	0.0	4.0	O K
60 min Winter	19.646	0.836	0.0	4.8	O K
120 min Winter	19.803	0.993	0.0	5.7	O K
180 min Winter	19.901	1.091	0.1	6.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	191.068	27
30 min Summer	115.067	41
60 min Summer	69.298	70
120 min Summer	41.733	130
180 min Summer	31.021	188
240 min Summer	25.133	248
360 min Summer	18.682	366
480 min Summer	15.136	484
600 min Summer	12.856	602
720 min Summer	11.251	720
960 min Summer	8.929	838
1440 min Summer	6.446	1080
2160 min Summer	4.653	1476
2880 min Summer	3.693	1884
4320 min Summer	2.729	2724
5760 min Summer	2.203	3520
7200 min Summer	1.865	4320
8640 min Summer	1.628	5104
10080 min Summer	1.451	5856
15 min Winter	191.068	27
30 min Winter	115.067	41
60 min Winter	69.298	70
120 min Winter	41.733	128
180 min Winter	31.021	186

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.971	1.161	0.1	6.6	O K
360 min Winter	20.068	1.258	0.1	7.2	O K
480 min Winter	20.131	1.321	0.1	7.5	O K
600 min Winter	20.173	1.363	0.1	7.8	O K
720 min Winter	20.202	1.392	0.1	7.9	O K
960 min Winter	20.206	1.396	0.1	8.0	O K
1440 min Winter	20.198	1.388	0.1	7.9	O K
2160 min Winter	20.173	1.363	0.1	7.8	O K
2880 min Winter	20.133	1.323	0.1	7.5	O K
4320 min Winter	20.072	1.262	0.1	7.2	O K
5760 min Winter	20.003	1.193	0.1	6.8	O K
7200 min Winter	19.935	1.125	0.1	6.4	O K
8640 min Winter	19.873	1.063	0.1	6.1	O K
10080 min Winter	19.817	1.007	0.0	5.7	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	25.133	242
360 min Winter	18.682	358
480 min Winter	15.136	472
600 min Winter	12.856	586
720 min Winter	11.251	696
960 min Winter	8.929	904
1440 min Winter	6.446	1120
2160 min Winter	4.653	1580
2880 min Winter	3.693	2024
4320 min Winter	2.729	2900
5760 min Winter	2.203	3752
7200 min Winter	1.865	4544
8640 min Winter	1.628	5360
10080 min Winter	1.451	6152

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 20.890

Cellular Storage Structure

Invert Level (m) 18.810 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	21.0
1.500	6.0	21.0			

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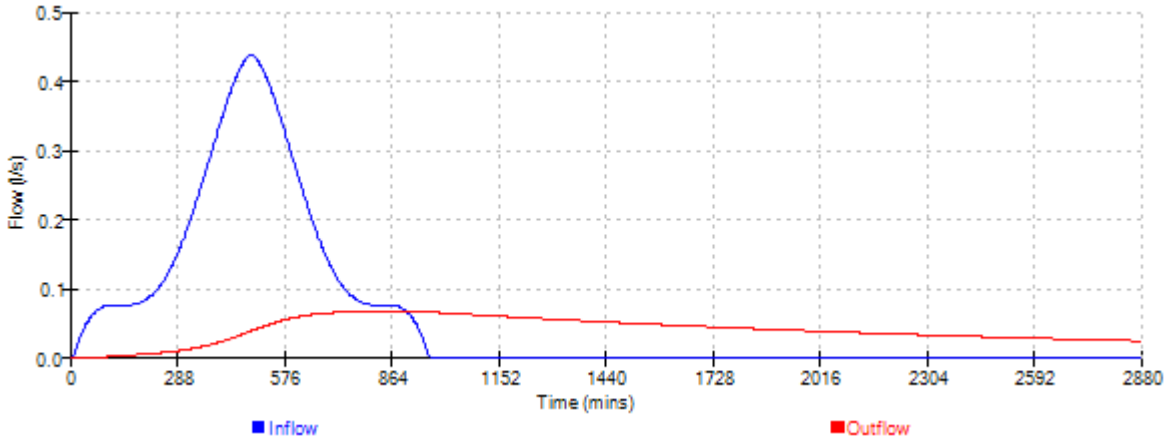
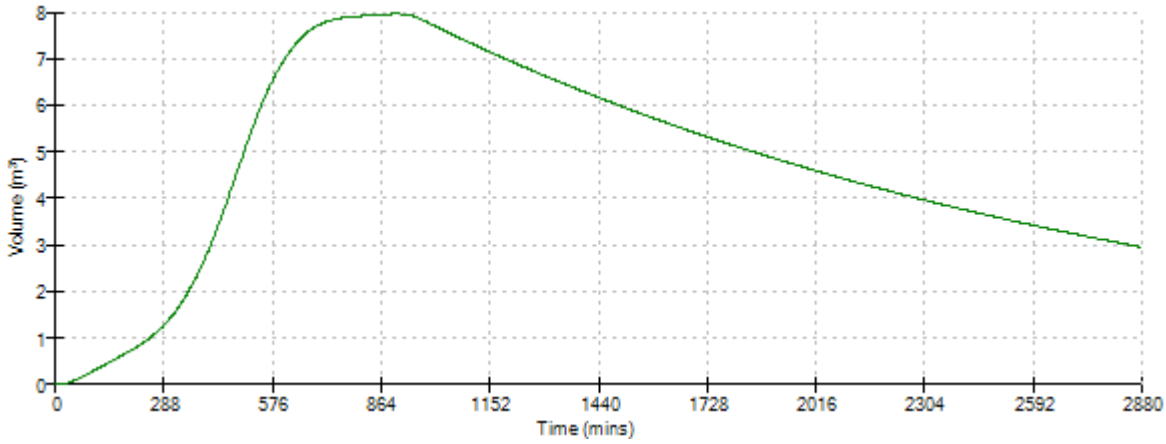
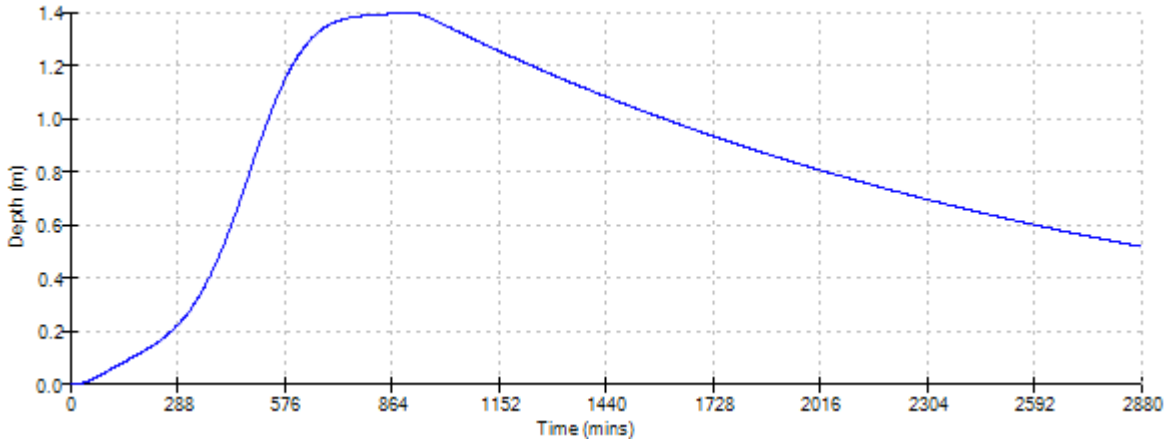
Event: 960 min Winter







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Summary of Results for 1 year Return Period (+45%)

Half Drain Time : 1356 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.275	0.115	0.0	0.7	O K
30 min Summer	19.310	0.150	0.0	0.9	O K
60 min Summer	19.355	0.195	0.0	1.2	O K
120 min Summer	19.411	0.251	0.0	1.5	O K
180 min Summer	19.449	0.289	0.0	1.7	O K
240 min Summer	19.479	0.319	0.0	1.9	O K
360 min Summer	19.523	0.363	0.0	2.2	O K
480 min Summer	19.554	0.394	0.0	2.3	O K
600 min Summer	19.578	0.418	0.0	2.5	O K
720 min Summer	19.596	0.436	0.0	2.6	O K
960 min Summer	19.612	0.452	0.0	2.7	O K
1440 min Summer	19.636	0.476	0.0	2.8	O K
2160 min Summer	19.656	0.496	0.0	3.0	O K
2880 min Summer	19.666	0.506	0.0	3.0	O K
4320 min Summer	19.681	0.521	0.0	3.1	O K
5760 min Summer	19.682	0.522	0.0	3.1	O K
7200 min Summer	19.677	0.517	0.0	3.1	O K
8640 min Summer	19.669	0.509	0.0	3.0	O K
10080 min Summer	19.659	0.499	0.0	3.0	O K
15 min Winter	19.275	0.115	0.0	0.7	O K
30 min Winter	19.310	0.150	0.0	0.9	O K
60 min Winter	19.355	0.195	0.0	1.2	O K
120 min Winter	19.411	0.251	0.0	1.5	O K
180 min Winter	19.450	0.290	0.0	1.7	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	39.251	27
30 min Summer	25.681	41
60 min Summer	16.803	70
120 min Summer	10.994	130
180 min Summer	8.578	188
240 min Summer	7.193	248
360 min Summer	5.613	366
480 min Summer	4.707	484
600 min Summer	4.106	602
720 min Summer	3.672	720
960 min Summer	3.016	860
1440 min Summer	2.286	1090
2160 min Summer	1.732	1488
2880 min Summer	1.423	1904
4320 min Summer	1.104	2724
5760 min Summer	0.922	3520
7200 min Summer	0.802	4328
8640 min Summer	0.715	5104
10080 min Summer	0.649	5856
15 min Winter	39.251	27
30 min Winter	25.681	41
60 min Winter	16.803	70
120 min Winter	10.994	128
180 min Winter	8.578	186

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Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.480	0.320	0.0	1.9	O K
360 min Winter	19.524	0.364	0.0	2.2	O K
480 min Winter	19.555	0.395	0.0	2.4	O K
600 min Winter	19.580	0.420	0.0	2.5	O K
720 min Winter	19.598	0.438	0.0	2.6	O K
960 min Winter	19.616	0.456	0.0	2.7	O K
1440 min Winter	19.636	0.476	0.0	2.8	O K
2160 min Winter	19.651	0.491	0.0	2.9	O K
2880 min Winter	19.655	0.495	0.0	2.9	O K
4320 min Winter	19.657	0.497	0.0	3.0	O K
5760 min Winter	19.648	0.488	0.0	2.9	O K
7200 min Winter	19.633	0.473	0.0	2.8	O K
8640 min Winter	19.618	0.458	0.0	2.7	O K
10080 min Winter	19.603	0.443	0.0	2.6	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	7.193	244
360 min Winter	5.613	358
480 min Winter	4.707	474
600 min Winter	4.106	586
720 min Winter	3.672	696
960 min Winter	3.016	908
1440 min Winter	2.286	1130
2160 min Winter	1.732	1584
2880 min Winter	1.423	2048
4320 min Winter	1.104	2904
5760 min Winter	0.922	3752
7200 min Winter	0.802	4608
8640 min Winter	0.715	5368
10080 min Winter	0.649	6160

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.120

Cellular Storage Structure

Invert Level (m) 19.160 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.3	6.3	1.600	0.0	21.3
1.500	6.3	21.3			

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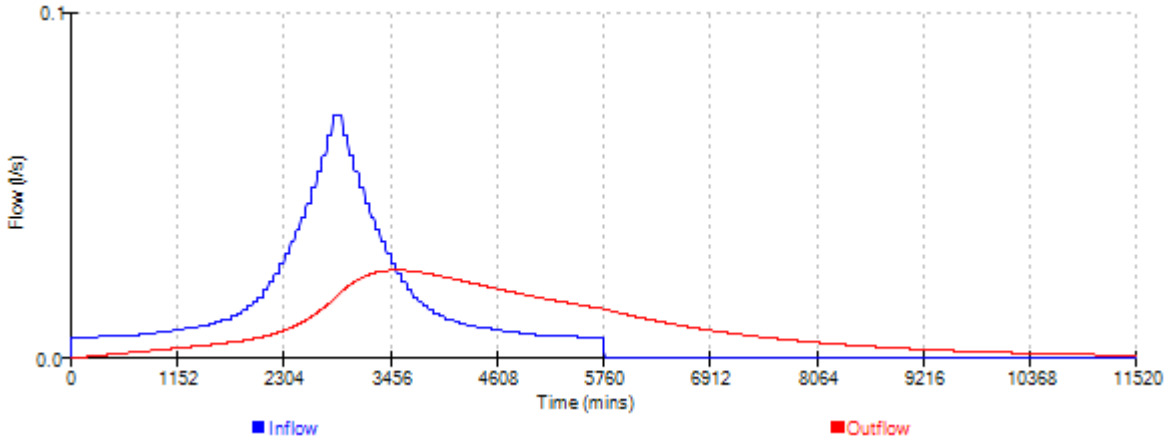
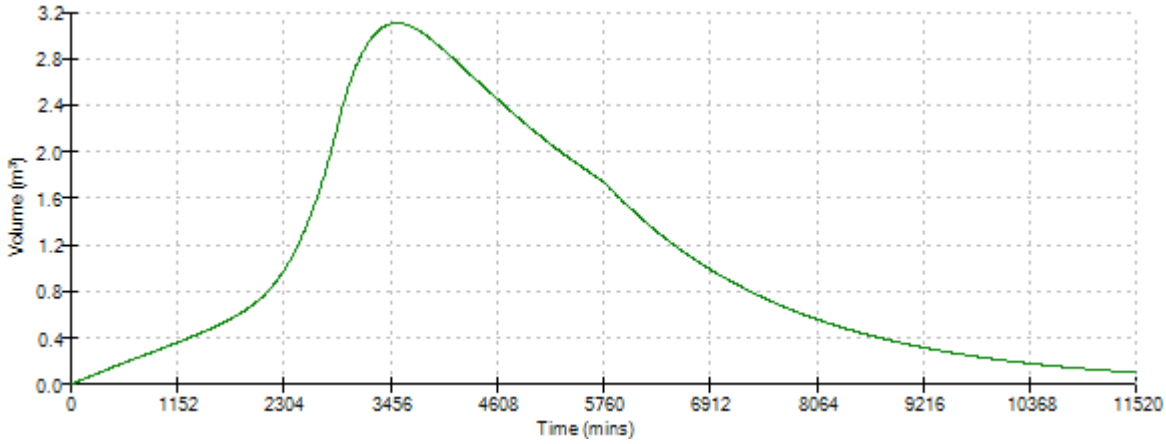
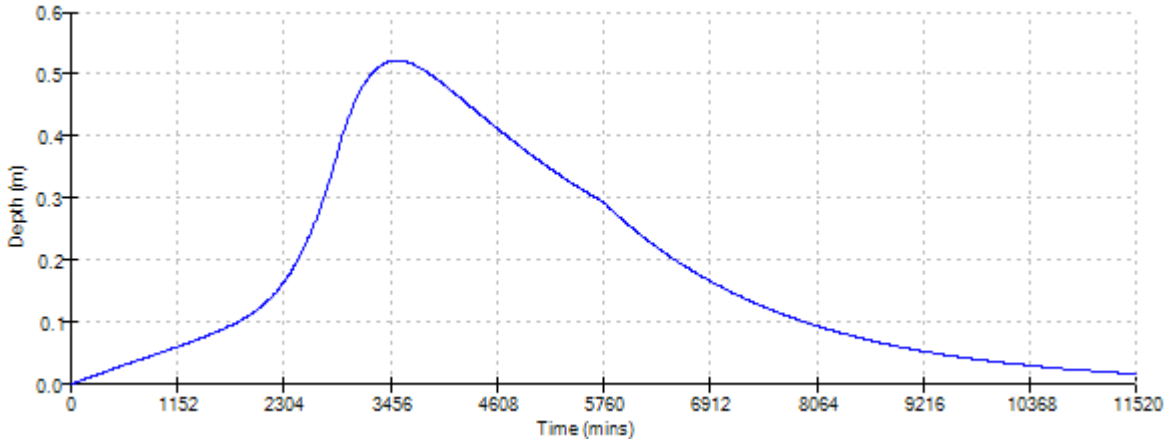
Event: 5760 min Summer







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Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 1378 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.528	0.368	0.0	2.2	O K
30 min Summer	19.611	0.451	0.0	2.7	O K
60 min Summer	19.711	0.551	0.0	3.3	O K
120 min Summer	19.829	0.669	0.0	4.0	O K
180 min Summer	19.904	0.744	0.0	4.4	O K
240 min Summer	19.960	0.800	0.0	4.8	O K
360 min Summer	20.037	0.877	0.0	5.2	O K
480 min Summer	20.089	0.929	0.0	5.5	O K
600 min Summer	20.126	0.966	0.0	5.7	O K
720 min Summer	20.151	0.991	0.0	5.9	O K
960 min Summer	20.164	1.004	0.0	6.0	O K
1440 min Summer	20.179	1.019	0.0	6.1	O K
2160 min Summer	20.186	1.026	0.1	6.1	O K
2880 min Summer	20.180	1.020	0.0	6.1	O K
4320 min Summer	20.173	1.013	0.0	6.0	O K
5760 min Summer	20.150	0.990	0.0	5.9	O K
7200 min Summer	20.122	0.962	0.0	5.7	O K
8640 min Summer	20.092	0.932	0.0	5.5	O K
10080 min Summer	20.062	0.902	0.0	5.4	O K
15 min Winter	19.528	0.368	0.0	2.2	O K
30 min Winter	19.611	0.451	0.0	2.7	O K
60 min Winter	19.711	0.551	0.0	3.3	O K
120 min Winter	19.829	0.669	0.0	4.0	O K
180 min Winter	19.905	0.745	0.0	4.4	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	125.753	27
30 min Summer	77.411	41
60 min Summer	47.652	70
120 min Summer	29.333	130
180 min Summer	22.085	188
240 min Summer	18.057	248
360 min Summer	13.595	366
480 min Summer	11.115	484
600 min Summer	9.508	602
720 min Summer	8.369	720
960 min Summer	6.702	860
1440 min Summer	4.901	1090
2160 min Summer	3.584	1488
2880 min Summer	2.870	1904
4320 min Summer	2.149	2724
5760 min Summer	1.750	3520
7200 min Summer	1.492	4328
8640 min Summer	1.310	5104
10080 min Summer	1.173	5856
15 min Winter	125.753	27
30 min Winter	77.411	41
60 min Winter	47.652	70
120 min Winter	29.333	128
180 min Winter	22.085	186

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Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.961	0.801	0.0	4.8	O K
360 min Winter	20.040	0.880	0.0	5.2	O K
480 min Winter	20.093	0.933	0.0	5.6	O K
600 min Winter	20.131	0.971	0.0	5.8	O K
720 min Winter	20.158	0.998	0.0	5.9	O K
960 min Winter	20.172	1.012	0.0	6.0	O K
1440 min Winter	20.179	1.019	0.0	6.1	O K
2160 min Winter	20.176	1.016	0.0	6.0	O K
2880 min Winter	20.157	0.997	0.0	5.9	O K
4320 min Winter	20.127	0.967	0.0	5.8	O K
5760 min Winter	20.085	0.925	0.0	5.5	O K
7200 min Winter	20.041	0.881	0.0	5.2	O K
8640 min Winter	19.999	0.839	0.0	5.0	O K
10080 min Winter	19.959	0.799	0.0	4.8	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	18.057	244
360 min Winter	13.595	358
480 min Winter	11.115	474
600 min Winter	9.508	586
720 min Winter	8.369	696
960 min Winter	6.702	908
1440 min Winter	4.901	1130
2160 min Winter	3.584	1584
2880 min Winter	2.870	2048
4320 min Winter	2.149	2904
5760 min Winter	1.750	3752
7200 min Winter	1.492	4608
8640 min Winter	1.310	5368
10080 min Winter	1.173	6160

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.120

Cellular Storage Structure

Invert Level (m) 19.160 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.3	6.3	1.600	0.0	21.3
1.500	6.3	21.3			

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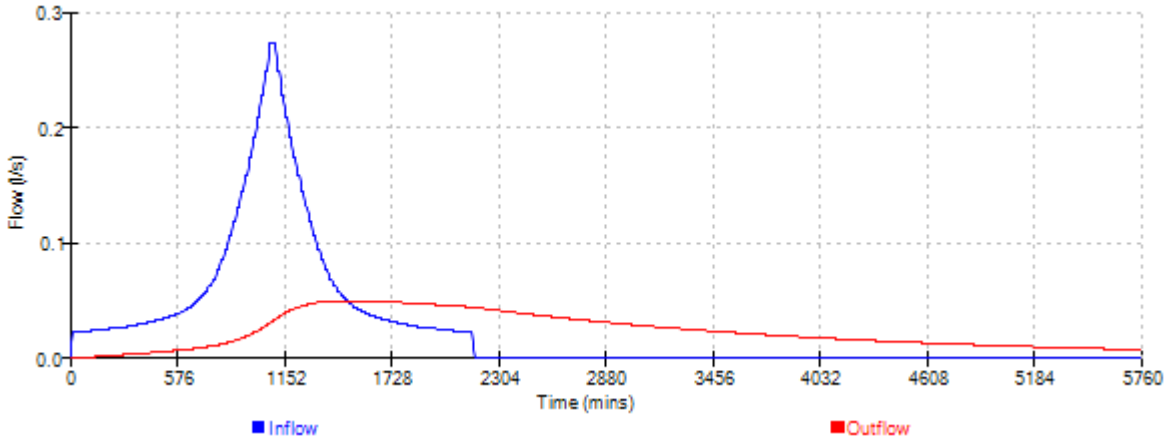
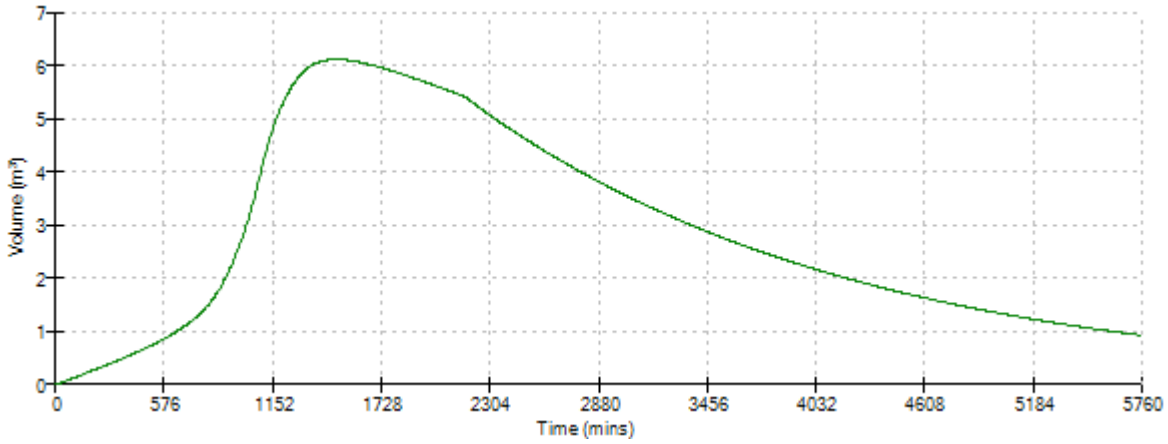
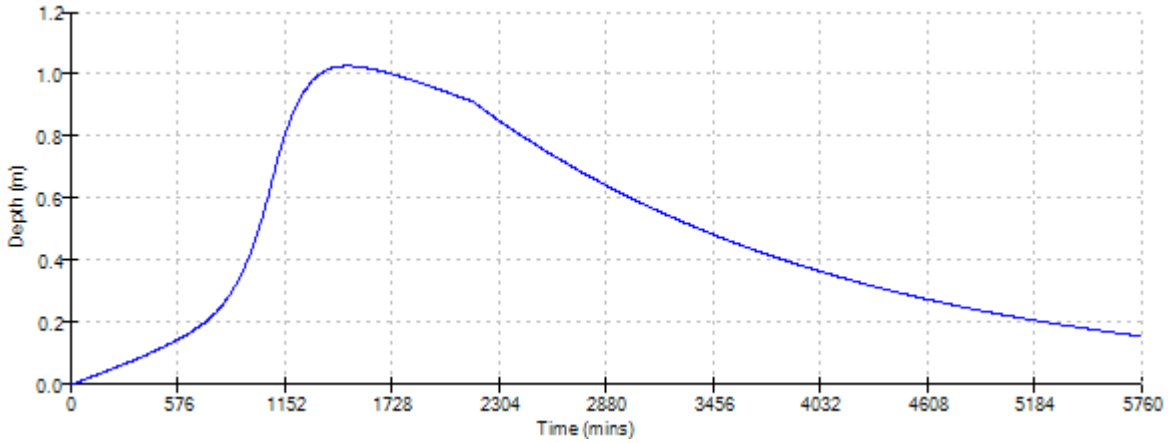
Event: 2160 min Summer







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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 1363 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.719	0.559	0.0	3.3	O K
30 min Summer	19.830	0.670	0.0	4.0	O K
60 min Summer	19.961	0.801	0.0	4.8	O K
120 min Summer	20.111	0.951	0.0	5.7	O K
180 min Summer	20.205	1.045	0.1	6.2	O K
240 min Summer	20.272	1.112	0.1	6.6	O K
360 min Summer	20.365	1.205	0.1	7.2	O K
480 min Summer	20.424	1.264	0.1	7.5	O K
600 min Summer	20.465	1.305	0.1	7.8	O K
720 min Summer	20.492	1.332	0.1	7.9	O K
960 min Summer	20.496	1.336	0.1	8.0	O K
1440 min Summer	20.500	1.340	0.1	8.0	O K
2160 min Summer	20.491	1.331	0.1	7.9	O K
2880 min Summer	20.471	1.311	0.1	7.8	O K
4320 min Summer	20.447	1.287	0.1	7.7	O K
5760 min Summer	20.406	1.246	0.1	7.4	O K
7200 min Summer	20.362	1.202	0.1	7.2	O K
8640 min Summer	20.317	1.157	0.1	6.9	O K
10080 min Summer	20.275	1.115	0.1	6.6	O K
15 min Winter	19.719	0.559	0.0	3.3	O K
30 min Winter	19.830	0.670	0.0	4.0	O K
60 min Winter	19.961	0.801	0.0	4.8	O K
120 min Winter	20.112	0.952	0.0	5.7	O K
180 min Winter	20.206	1.046	0.1	6.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	191.068	27
30 min Summer	115.067	41
60 min Summer	69.298	70
120 min Summer	41.733	130
180 min Summer	31.021	188
240 min Summer	25.133	248
360 min Summer	18.682	366
480 min Summer	15.136	484
600 min Summer	12.856	602
720 min Summer	11.251	720
960 min Summer	8.929	860
1440 min Summer	6.446	1092
2160 min Summer	4.653	1488
2880 min Summer	3.693	1904
4320 min Summer	2.729	2724
5760 min Summer	2.203	3520
7200 min Summer	1.865	4328
8640 min Summer	1.628	5104
10080 min Summer	1.451	5856
15 min Winter	191.068	27
30 min Winter	115.067	41
60 min Winter	69.298	70
120 min Winter	41.733	128
180 min Winter	31.021	186

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	20.274	1.114	0.1	6.6	O K
360 min Winter	20.368	1.208	0.1	7.2	O K
480 min Winter	20.429	1.269	0.1	7.6	O K
600 min Winter	20.471	1.311	0.1	7.8	O K
720 min Winter	20.501	1.341	0.1	8.0	O K
960 min Winter	20.507	1.347	0.1	8.0	O K
1440 min Winter	20.500	1.340	0.1	8.0	O K
2160 min Winter	20.478	1.318	0.1	7.9	O K
2880 min Winter	20.442	1.282	0.1	7.6	O K
4320 min Winter	20.387	1.227	0.1	7.3	O K
5760 min Winter	20.323	1.163	0.1	6.9	O K
7200 min Winter	20.260	1.100	0.1	6.6	O K
8640 min Winter	20.202	1.042	0.1	6.2	O K
10080 min Winter	20.148	0.988	0.0	5.9	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	25.133	244
360 min Winter	18.682	358
480 min Winter	15.136	474
600 min Winter	12.856	586
720 min Winter	11.251	696
960 min Winter	8.929	908
1440 min Winter	6.446	1130
2160 min Winter	4.653	1588
2880 min Winter	3.693	2048
4320 min Winter	2.729	2904
5760 min Winter	2.203	3752
7200 min Winter	1.865	4608
8640 min Winter	1.628	5368
10080 min Winter	1.451	6160

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.120

Cellular Storage Structure

Invert Level (m) 19.160 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.3	6.3	1.600	0.0	21.3
1.500	6.3	21.3			

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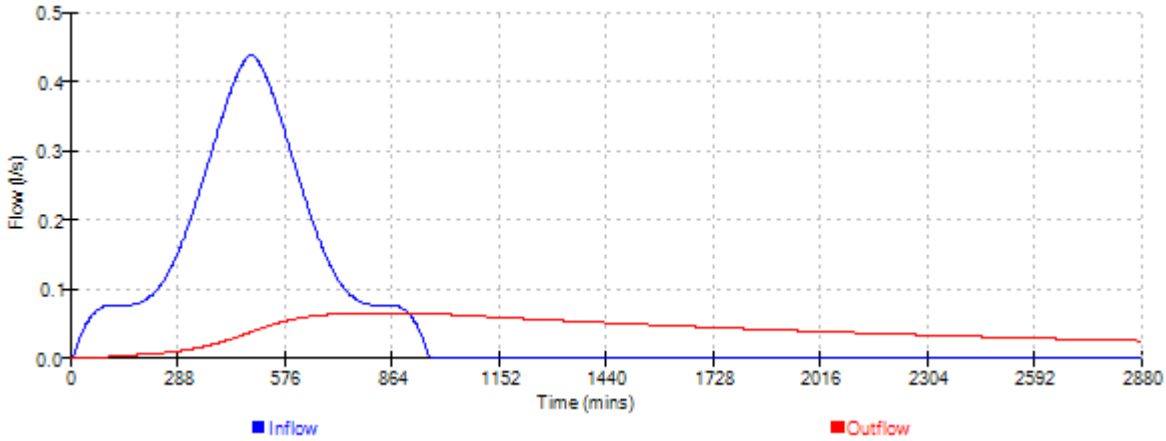
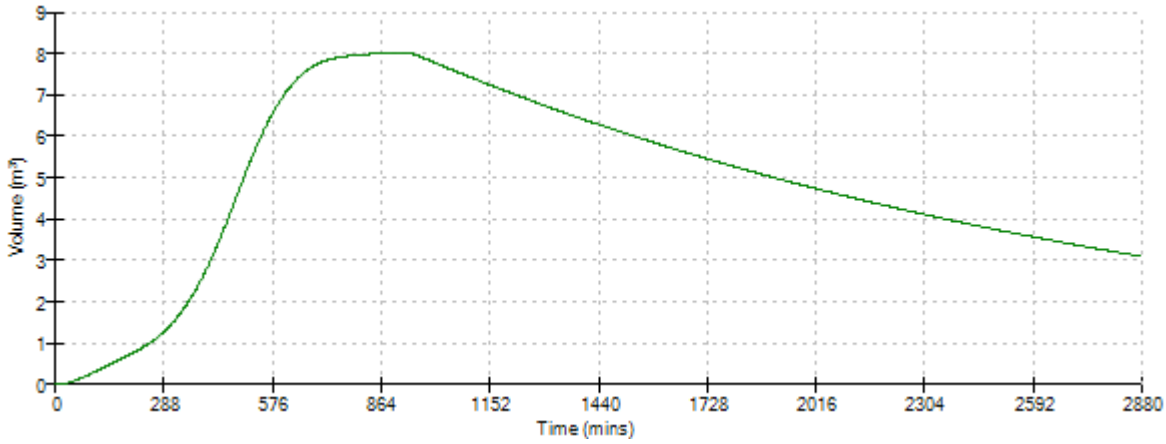
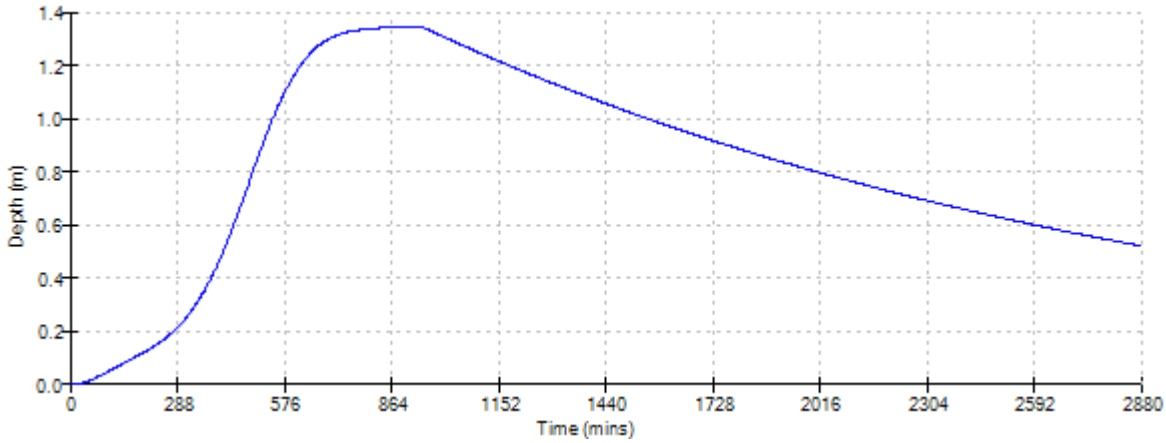
Event: 960 min Winter







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Summary of Results for 1 year Return Period (+45%)

Half Drain Time : 916 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	18.822	0.152	0.0	0.5	O K
30 min Summer	18.868	0.198	0.0	0.6	O K
60 min Summer	18.926	0.256	0.0	0.8	O K
120 min Summer	18.998	0.328	0.0	1.0	O K
180 min Summer	19.046	0.376	0.0	1.2	O K
240 min Summer	19.082	0.412	0.0	1.3	O K
360 min Summer	19.132	0.462	0.0	1.5	O K
480 min Summer	19.165	0.495	0.0	1.6	O K
600 min Summer	19.188	0.518	0.0	1.7	O K
720 min Summer	19.208	0.538	0.0	1.7	O K
960 min Summer	19.227	0.557	0.0	1.8	O K
1440 min Summer	19.251	0.581	0.0	1.9	O K
2160 min Summer	19.265	0.595	0.0	1.9	O K
2880 min Summer	19.267	0.597	0.0	1.9	O K
4320 min Summer	19.266	0.596	0.0	1.9	O K
5760 min Summer	19.253	0.583	0.0	1.9	O K
7200 min Summer	19.237	0.567	0.0	1.8	O K
8640 min Summer	19.219	0.549	0.0	1.8	O K
10080 min Summer	19.202	0.532	0.0	1.7	O K
15 min Winter	18.822	0.152	0.0	0.5	O K
30 min Winter	18.868	0.198	0.0	0.6	O K
60 min Winter	18.926	0.256	0.0	0.8	O K
120 min Winter	18.999	0.329	0.0	1.1	O K
180 min Winter	19.047	0.377	0.0	1.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	39.251	27
30 min Summer	25.681	41
60 min Summer	16.803	70
120 min Summer	10.994	128
180 min Summer	8.578	188
240 min Summer	7.193	246
360 min Summer	5.613	364
480 min Summer	4.707	482
600 min Summer	4.106	564
720 min Summer	3.672	614
960 min Summer	3.016	732
1440 min Summer	2.286	996
2160 min Summer	1.732	1408
2880 min Summer	1.423	1820
4320 min Summer	1.104	2632
5760 min Summer	0.922	3408
7200 min Summer	0.802	4184
8640 min Summer	0.715	4936
10080 min Summer	0.649	5664
15 min Winter	39.251	26
30 min Winter	25.681	41
60 min Winter	16.803	70
120 min Winter	10.994	126
180 min Winter	8.578	184

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Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.083	0.413	0.0	1.3	O K
360 min Winter	19.134	0.464	0.0	1.5	O K
480 min Winter	19.168	0.498	0.0	1.6	O K
600 min Winter	19.193	0.523	0.0	1.7	O K
720 min Winter	19.210	0.540	0.0	1.7	O K
960 min Winter	19.227	0.557	0.0	1.8	O K
1440 min Winter	19.246	0.576	0.0	1.8	O K
2160 min Winter	19.249	0.579	0.0	1.9	O K
2880 min Winter	19.239	0.569	0.0	1.8	O K
4320 min Winter	19.221	0.551	0.0	1.8	O K
5760 min Winter	19.196	0.526	0.0	1.7	O K
7200 min Winter	19.169	0.499	0.0	1.6	O K
8640 min Winter	19.144	0.474	0.0	1.5	O K
10080 min Winter	19.121	0.451	0.0	1.4	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	7.193	242
360 min Winter	5.613	356
480 min Winter	4.707	466
600 min Winter	4.106	574
720 min Winter	3.672	672
960 min Winter	3.016	756
1440 min Winter	2.286	1062
2160 min Winter	1.732	1516
2880 min Winter	1.423	1940
4320 min Winter	1.104	2776
5760 min Winter	0.922	3584
7200 min Winter	0.802	4392
8640 min Winter	0.715	5184
10080 min Winter	0.649	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.005

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.270

Cellular Storage Structure

Invert Level (m) 18.670 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	3.4	3.4	2.100	0.0	19.4
2.000	3.4	19.4			

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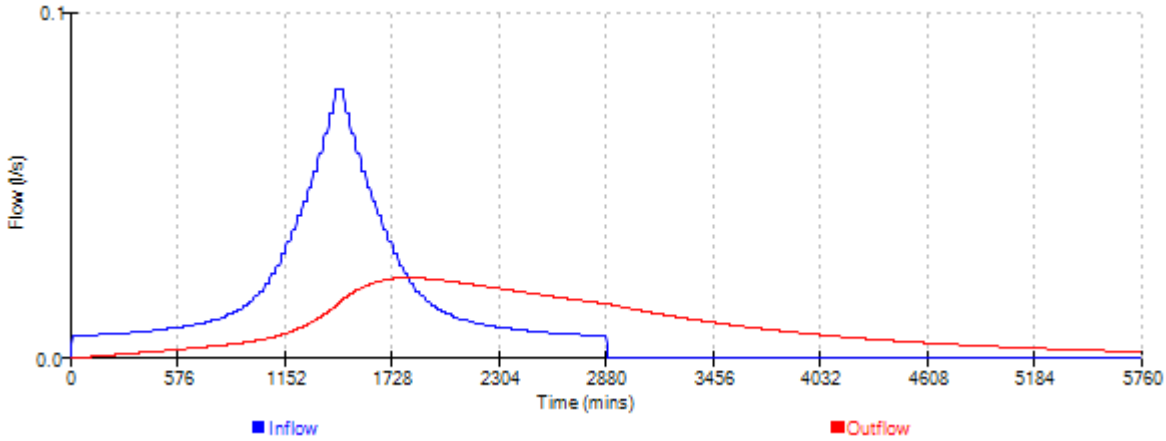
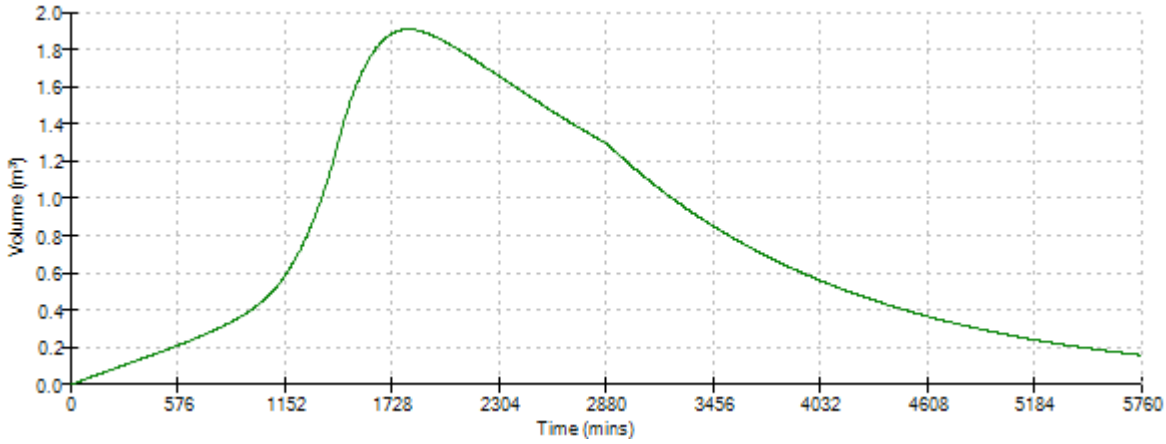
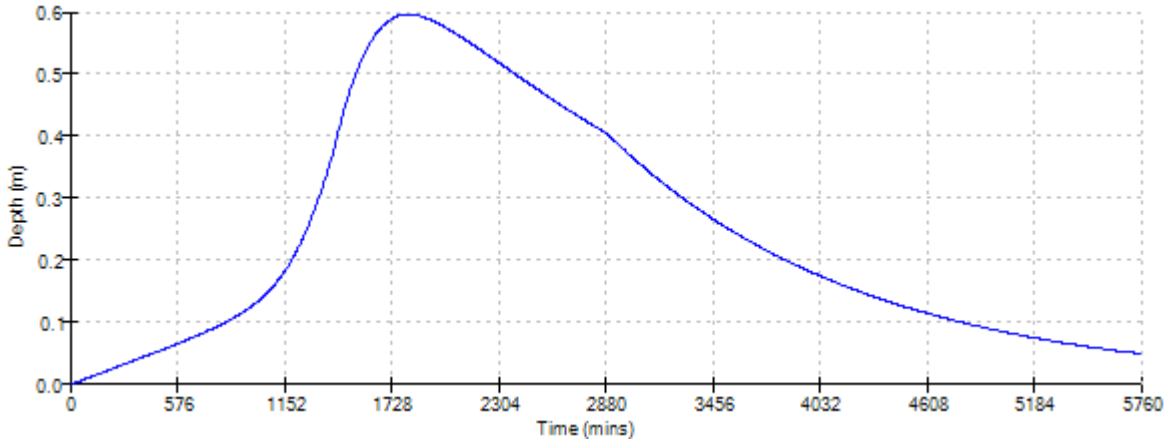
Event: 2880 min Summer







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Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 924 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.157	0.487	0.0	1.6	O K
30 min Summer	19.266	0.596	0.0	1.9	O K
60 min Summer	19.396	0.726	0.0	2.3	O K
120 min Summer	19.544	0.874	0.0	2.8	O K
180 min Summer	19.637	0.967	0.0	3.1	O K
240 min Summer	19.701	1.031	0.0	3.3	O K
360 min Summer	19.787	1.117	0.0	3.6	O K
480 min Summer	19.837	1.167	0.0	3.7	O K
600 min Summer	19.868	1.198	0.0	3.8	O K
720 min Summer	19.893	1.223	0.0	3.9	O K
960 min Summer	19.906	1.236	0.0	4.0	O K
1440 min Summer	19.914	1.244	0.0	4.0	O K
2160 min Summer	19.900	1.230	0.0	3.9	O K
2880 min Summer	19.872	1.202	0.0	3.8	O K
4320 min Summer	19.829	1.159	0.0	3.7	O K
5760 min Summer	19.776	1.106	0.0	3.5	O K
7200 min Summer	19.724	1.054	0.0	3.4	O K
8640 min Summer	19.675	1.005	0.0	3.2	O K
10080 min Summer	19.630	0.960	0.0	3.1	O K
15 min Winter	19.157	0.487	0.0	1.6	O K
30 min Winter	19.266	0.596	0.0	1.9	O K
60 min Winter	19.396	0.726	0.0	2.3	O K
120 min Winter	19.546	0.876	0.0	2.8	O K
180 min Winter	19.639	0.969	0.0	3.1	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	125.753	27
30 min Summer	77.411	41
60 min Summer	47.652	70
120 min Summer	29.333	128
180 min Summer	22.085	188
240 min Summer	18.057	246
360 min Summer	13.595	364
480 min Summer	11.115	482
600 min Summer	9.508	566
720 min Summer	8.369	614
960 min Summer	6.702	732
1440 min Summer	4.901	996
2160 min Summer	3.584	1408
2880 min Summer	2.870	1820
4320 min Summer	2.149	2636
5760 min Summer	1.750	3408
7200 min Summer	1.492	4184
8640 min Summer	1.310	4936
10080 min Summer	1.173	5664
15 min Winter	125.753	26
30 min Winter	77.411	41
60 min Winter	47.652	70
120 min Winter	29.333	126
180 min Winter	22.085	184

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Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.705	1.035	0.0	3.3	O K
360 min Winter	19.792	1.122	0.0	3.6	O K
480 min Winter	19.845	1.175	0.0	3.8	O K
600 min Winter	19.878	1.208	0.0	3.9	O K
720 min Winter	19.899	1.229	0.0	3.9	O K
960 min Winter	19.906	1.236	0.0	4.0	O K
1440 min Winter	19.902	1.232	0.0	3.9	O K
2160 min Winter	19.866	1.196	0.0	3.8	O K
2880 min Winter	19.817	1.147	0.0	3.7	O K
4320 min Winter	19.742	1.072	0.0	3.4	O K
5760 min Winter	19.667	0.997	0.0	3.2	O K
7200 min Winter	19.598	0.928	0.0	3.0	O K
8640 min Winter	19.538	0.868	0.0	2.8	O K
10080 min Winter	19.485	0.815	0.0	2.6	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	18.057	242
360 min Winter	13.595	356
480 min Winter	11.115	466
600 min Winter	9.508	574
720 min Winter	8.369	672
960 min Winter	6.702	756
1440 min Winter	4.901	1062
2160 min Winter	3.584	1516
2880 min Winter	2.870	1940
4320 min Winter	2.149	2776
5760 min Winter	1.750	3584
7200 min Winter	1.492	4392
8640 min Winter	1.310	5184
10080 min Winter	1.173	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.005

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.270

Cellular Storage Structure

Invert Level (m) 18.670 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	3.4	3.4	2.100	0.0	19.4
2.000	3.4	19.4			

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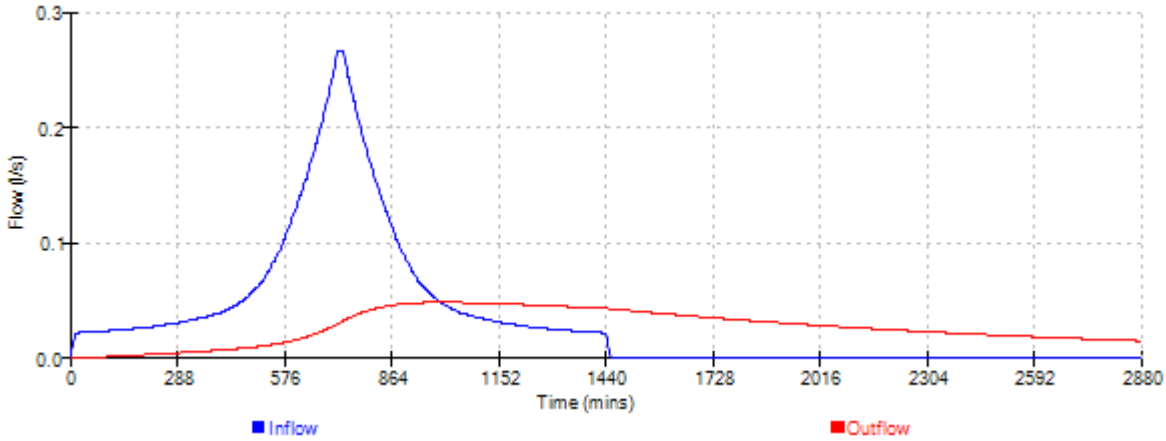
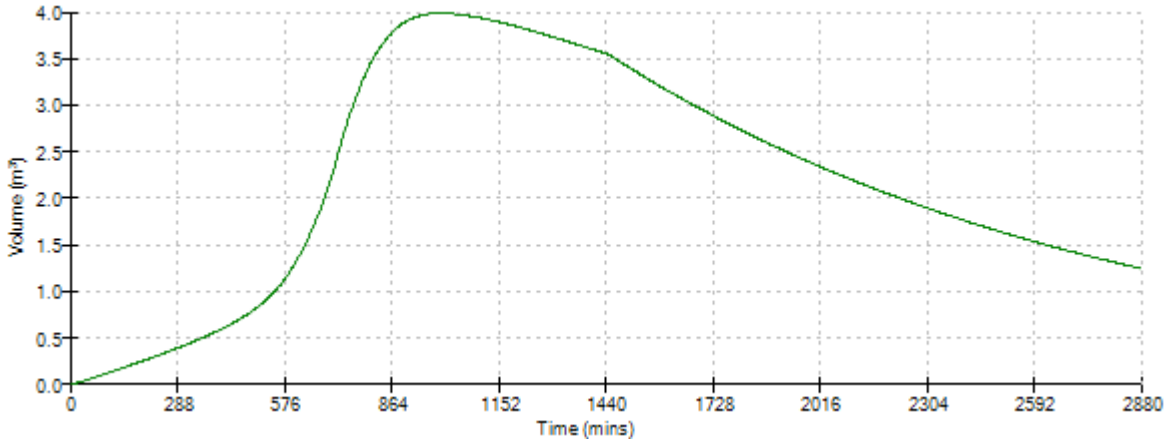
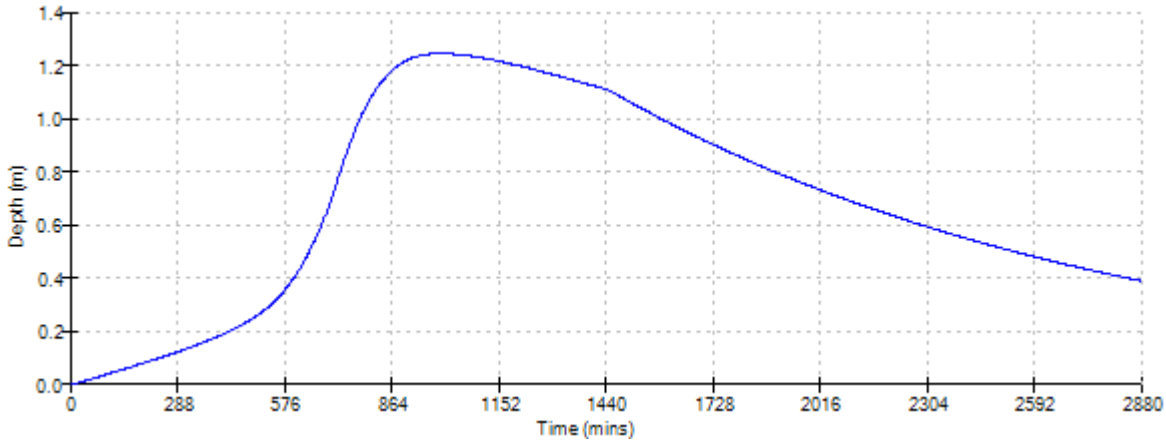
Event: 1440 min Summer







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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 927 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.409	0.739	0.0	2.4	O K
30 min Summer	19.555	0.885	0.0	2.8	O K
60 min Summer	19.725	1.055	0.0	3.4	O K
120 min Summer	19.913	1.243	0.0	4.0	O K
180 min Summer	20.026	1.356	0.1	4.3	O K
240 min Summer	20.104	1.434	0.1	4.6	O K
360 min Summer	20.203	1.533	0.1	4.9	O K
480 min Summer	20.257	1.587	0.1	5.1	O K
600 min Summer	20.288	1.618	0.1	5.2	O K
720 min Summer	20.312	1.642	0.1	5.3	O K
960 min Summer	20.315	1.645	0.1	5.3	O K
1440 min Summer	20.305	1.635	0.1	5.2	O K
2160 min Summer	20.266	1.596	0.1	5.1	O K
2880 min Summer	20.215	1.545	0.1	5.0	O K
4320 min Summer	20.141	1.471	0.1	4.7	O K
5760 min Summer	20.062	1.392	0.1	4.5	O K
7200 min Summer	19.987	1.317	0.1	4.2	O K
8640 min Summer	19.919	1.249	0.0	4.0	O K
10080 min Summer	19.857	1.187	0.0	3.8	O K
15 min Winter	19.409	0.739	0.0	2.4	O K
30 min Winter	19.556	0.886	0.0	2.8	O K
60 min Winter	19.725	1.055	0.0	3.4	O K
120 min Winter	19.915	1.245	0.0	4.0	O K
180 min Winter	20.029	1.359	0.1	4.4	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	191.068	27
30 min Summer	115.067	41
60 min Summer	69.298	70
120 min Summer	41.733	128
180 min Summer	31.021	188
240 min Summer	25.133	246
360 min Summer	18.682	364
480 min Summer	15.136	482
600 min Summer	12.856	566
720 min Summer	11.251	614
960 min Summer	8.929	734
1440 min Summer	6.446	996
2160 min Summer	4.653	1408
2880 min Summer	3.693	1820
4320 min Summer	2.729	2636
5760 min Summer	2.203	3408
7200 min Summer	1.865	4184
8640 min Summer	1.628	4936
10080 min Summer	1.451	5664
15 min Winter	191.068	26
30 min Winter	115.067	41
60 min Winter	69.298	70
120 min Winter	41.733	126
180 min Winter	31.021	184

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	20.108	1.438	0.1	4.6	O K
360 min Winter	20.210	1.540	0.1	4.9	O K
480 min Winter	20.268	1.598	0.1	5.1	O K
600 min Winter	20.302	1.632	0.1	5.2	O K
720 min Winter	20.321	1.651	0.1	5.3	O K
960 min Winter	20.315	1.645	0.1	5.3	O K
1440 min Winter	20.289	1.619	0.1	5.2	O K
2160 min Winter	20.221	1.551	0.1	5.0	O K
2880 min Winter	20.145	1.475	0.1	4.7	O K
4320 min Winter	20.031	1.361	0.1	4.4	O K
5760 min Winter	19.924	1.254	0.0	4.0	O K
7200 min Winter	19.830	1.160	0.0	3.7	O K
8640 min Winter	19.749	1.079	0.0	3.5	O K
10080 min Winter	19.678	1.008	0.0	3.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	25.133	242
360 min Winter	18.682	356
480 min Winter	15.136	466
600 min Winter	12.856	574
720 min Winter	11.251	672
960 min Winter	8.929	758
1440 min Winter	6.446	1062
2160 min Winter	4.653	1516
2880 min Winter	3.693	1940
4320 min Winter	2.729	2776
5760 min Winter	2.203	3584
7200 min Winter	1.865	4400
8640 min Winter	1.628	5184
10080 min Winter	1.451	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.005

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.270

Cellular Storage Structure

Invert Level (m) 18.670 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	3.4	3.4	2.100	0.0	19.4
2.000	3.4	19.4			

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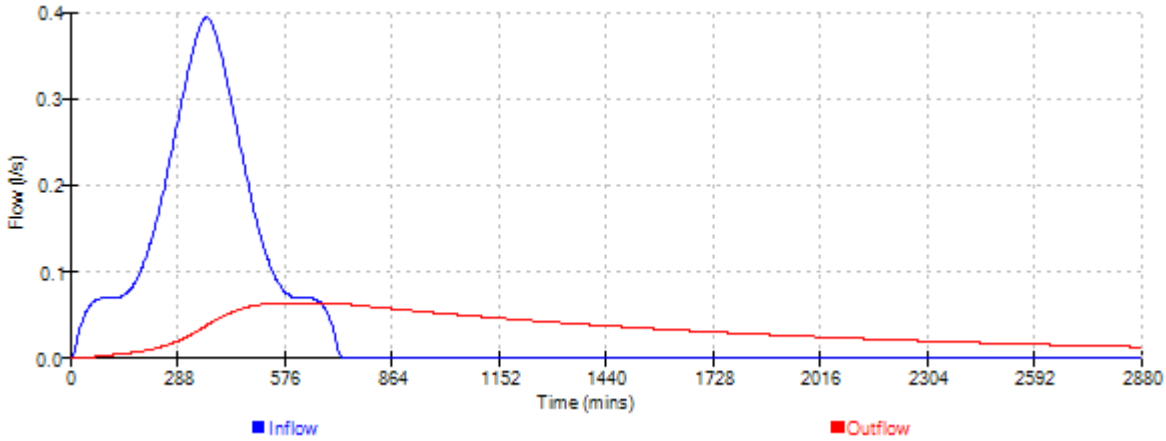
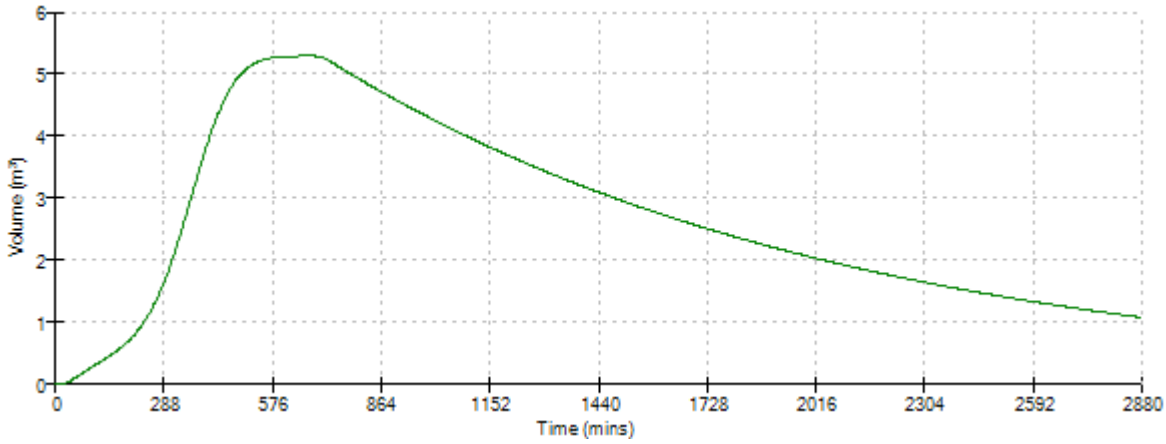
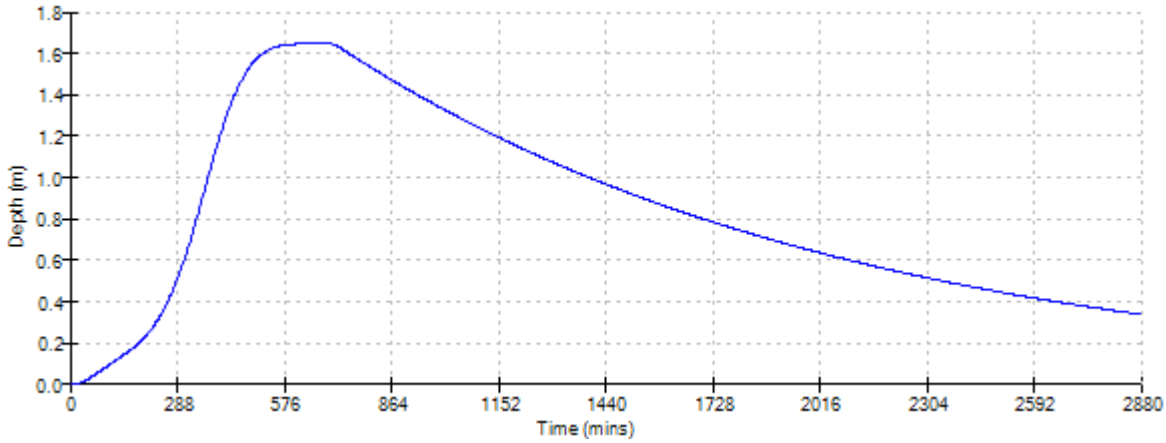
Event: 720 min Winter







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Summary of Results for 1 year Return Period (+45%)

Half Drain Time : 933 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.136	0.136	0.0	0.4	O K
30 min Summer	19.178	0.178	0.0	0.5	O K
60 min Summer	19.230	0.230	0.0	0.7	O K
120 min Summer	19.295	0.295	0.0	0.8	O K
180 min Summer	19.338	0.338	0.0	1.0	O K
240 min Summer	19.370	0.370	0.0	1.1	O K
360 min Summer	19.415	0.415	0.0	1.2	O K
480 min Summer	19.446	0.446	0.0	1.3	O K
600 min Summer	19.467	0.467	0.0	1.3	O K
720 min Summer	19.484	0.484	0.0	1.4	O K
960 min Summer	19.502	0.502	0.0	1.4	O K
1440 min Summer	19.524	0.524	0.0	1.5	O K
2160 min Summer	19.538	0.538	0.0	1.5	O K
2880 min Summer	19.539	0.539	0.0	1.5	O K
4320 min Summer	19.540	0.540	0.0	1.5	O K
5760 min Summer	19.529	0.529	0.0	1.5	O K
7200 min Summer	19.515	0.515	0.0	1.5	O K
8640 min Summer	19.499	0.499	0.0	1.4	O K
10080 min Summer	19.483	0.483	0.0	1.4	O K
15 min Winter	19.136	0.136	0.0	0.4	O K
30 min Winter	19.178	0.178	0.0	0.5	O K
60 min Winter	19.230	0.230	0.0	0.7	O K
120 min Winter	19.295	0.295	0.0	0.8	O K
180 min Winter	19.339	0.339	0.0	1.0	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	39.251	27
30 min Summer	25.681	41
60 min Summer	16.803	70
120 min Summer	10.994	128
180 min Summer	8.578	188
240 min Summer	7.193	246
360 min Summer	5.613	364
480 min Summer	4.707	482
600 min Summer	4.106	572
720 min Summer	3.672	618
960 min Summer	3.016	740
1440 min Summer	2.286	998
2160 min Summer	1.732	1408
2880 min Summer	1.423	1820
4320 min Summer	1.104	2636
5760 min Summer	0.922	3408
7200 min Summer	0.802	4184
8640 min Summer	0.715	4936
10080 min Summer	0.649	5744
15 min Winter	39.251	26
30 min Winter	25.681	41
60 min Winter	16.803	70
120 min Winter	10.994	126
180 min Winter	8.578	184

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Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.371	0.371	0.0	1.1	O K
360 min Winter	19.417	0.417	0.0	1.2	O K
480 min Winter	19.449	0.449	0.0	1.3	O K
600 min Winter	19.471	0.471	0.0	1.3	O K
720 min Winter	19.487	0.487	0.0	1.4	O K
960 min Winter	19.502	0.502	0.0	1.4	O K
1440 min Winter	19.520	0.520	0.0	1.5	O K
2160 min Winter	19.523	0.523	0.0	1.5	O K
2880 min Winter	19.515	0.515	0.0	1.5	O K
4320 min Winter	19.500	0.500	0.0	1.4	O K
5760 min Winter	19.477	0.477	0.0	1.4	O K
7200 min Winter	19.454	0.454	0.0	1.3	O K
8640 min Winter	19.432	0.432	0.0	1.2	O K
10080 min Winter	19.411	0.411	0.0	1.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	7.193	242
360 min Winter	5.613	356
480 min Winter	4.707	468
600 min Winter	4.106	574
720 min Winter	3.672	674
960 min Winter	3.016	760
1440 min Winter	2.286	1066
2160 min Winter	1.732	1516
2880 min Winter	1.423	1956
4320 min Winter	1.104	2780
5760 min Winter	0.922	3592
7200 min Winter	0.802	4400
8640 min Winter	0.715	5184
10080 min Winter	0.649	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.004

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.001	4-8	0.001	8-12	0.001

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Model Details

Storage is Online Cover Level (m) 21.140

Cellular Storage Structure

Invert Level (m) 19.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	3.0	3.0	1.600	0.0	13.5
1.500	3.0	13.5			

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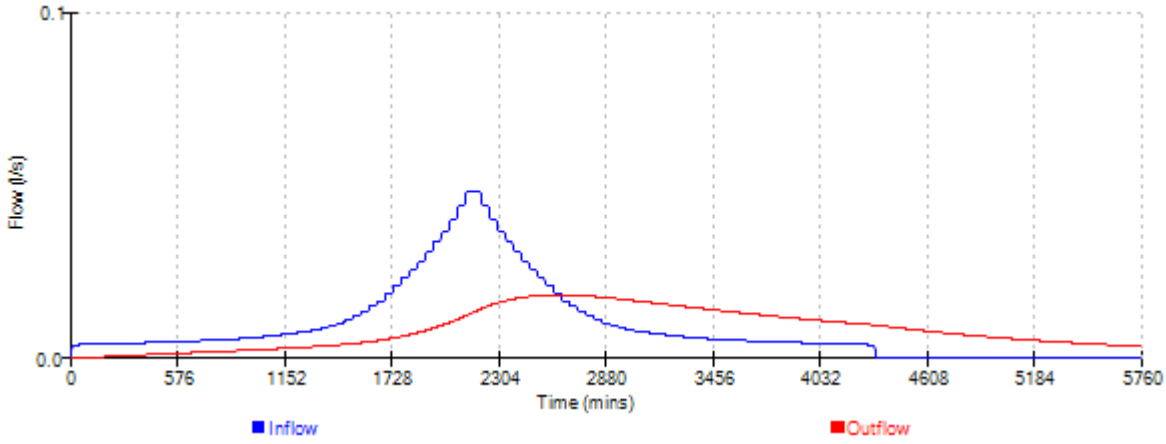
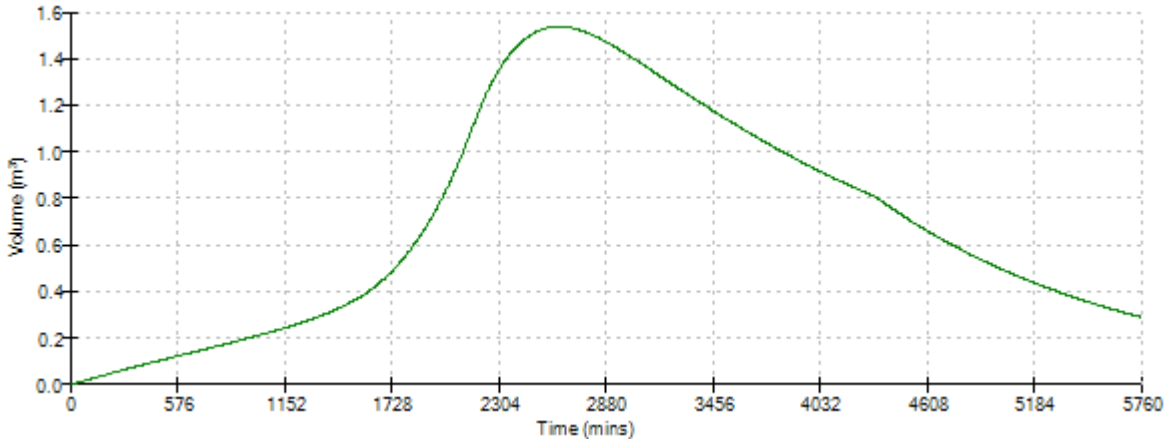
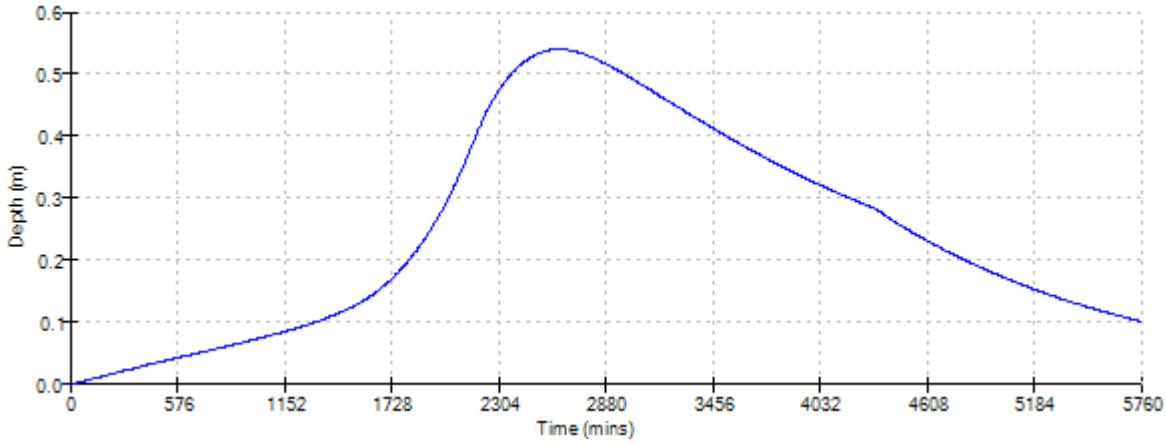
Event: 4320 min Summer







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Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 944 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.437	0.437	0.0	1.2	O K
30 min Summer	19.535	0.535	0.0	1.5	O K
60 min Summer	19.652	0.652	0.0	1.9	O K
120 min Summer	19.786	0.786	0.0	2.2	O K
180 min Summer	19.870	0.870	0.0	2.5	O K
240 min Summer	19.929	0.929	0.0	2.6	O K
360 min Summer	20.006	1.006	0.0	2.9	O K
480 min Summer	20.053	1.053	0.0	3.0	O K
600 min Summer	20.081	1.081	0.0	3.1	O K
720 min Summer	20.104	1.104	0.0	3.1	O K
960 min Summer	20.116	1.116	0.0	3.2	O K
1440 min Summer	20.124	1.124	0.0	3.2	O K
2160 min Summer	20.113	1.113	0.0	3.2	O K
2880 min Summer	20.088	1.088	0.0	3.1	O K
4320 min Summer	20.051	1.051	0.0	3.0	O K
5760 min Summer	20.004	1.004	0.0	2.9	O K
7200 min Summer	19.958	0.958	0.0	2.7	O K
8640 min Summer	19.914	0.914	0.0	2.6	O K
10080 min Summer	19.873	0.873	0.0	2.5	O K
15 min Winter	19.437	0.437	0.0	1.2	O K
30 min Winter	19.535	0.535	0.0	1.5	O K
60 min Winter	19.652	0.652	0.0	1.9	O K
120 min Winter	19.787	0.787	0.0	2.2	O K
180 min Winter	19.872	0.872	0.0	2.5	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	125.753	27
30 min Summer	77.411	41
60 min Summer	47.652	70
120 min Summer	29.333	128
180 min Summer	22.085	188
240 min Summer	18.057	246
360 min Summer	13.595	364
480 min Summer	11.115	482
600 min Summer	9.508	572
720 min Summer	8.369	618
960 min Summer	6.702	740
1440 min Summer	4.901	998
2160 min Summer	3.584	1408
2880 min Summer	2.870	1820
4320 min Summer	2.149	2636
5760 min Summer	1.750	3408
7200 min Summer	1.492	4184
8640 min Summer	1.310	4936
10080 min Summer	1.173	5744
15 min Winter	125.753	26
30 min Winter	77.411	41
60 min Winter	47.652	70
120 min Winter	29.333	126
180 min Winter	22.085	184

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Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.931	0.931	0.0	2.7	O K
360 min Winter	20.011	1.011	0.0	2.9	O K
480 min Winter	20.060	1.060	0.0	3.0	O K
600 min Winter	20.091	1.091	0.0	3.1	O K
720 min Winter	20.110	1.110	0.0	3.2	O K
960 min Winter	20.116	1.116	0.0	3.2	O K
1440 min Winter	20.114	1.114	0.0	3.2	O K
2160 min Winter	20.082	1.082	0.0	3.1	O K
2880 min Winter	20.040	1.040	0.0	3.0	O K
4320 min Winter	19.973	0.973	0.0	2.8	O K
5760 min Winter	19.906	0.906	0.0	2.6	O K
7200 min Winter	19.845	0.845	0.0	2.4	O K
8640 min Winter	19.791	0.791	0.0	2.3	O K
10080 min Winter	19.743	0.743	0.0	2.1	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	18.057	242
360 min Winter	13.595	356
480 min Winter	11.115	468
600 min Winter	9.508	574
720 min Winter	8.369	674
960 min Winter	6.702	760
1440 min Winter	4.901	1066
2160 min Winter	3.584	1516
2880 min Winter	2.870	1956
4320 min Winter	2.149	2780
5760 min Winter	1.750	3592
7200 min Winter	1.492	4400
8640 min Winter	1.310	5184
10080 min Winter	1.173	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.004

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.001	4-8	0.001	8-12	0.001

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Model Details

Storage is Online Cover Level (m) 21.140

Cellular Storage Structure

Invert Level (m) 19.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	3.0	3.0	1.600	0.0	13.5
1.500	3.0	13.5			

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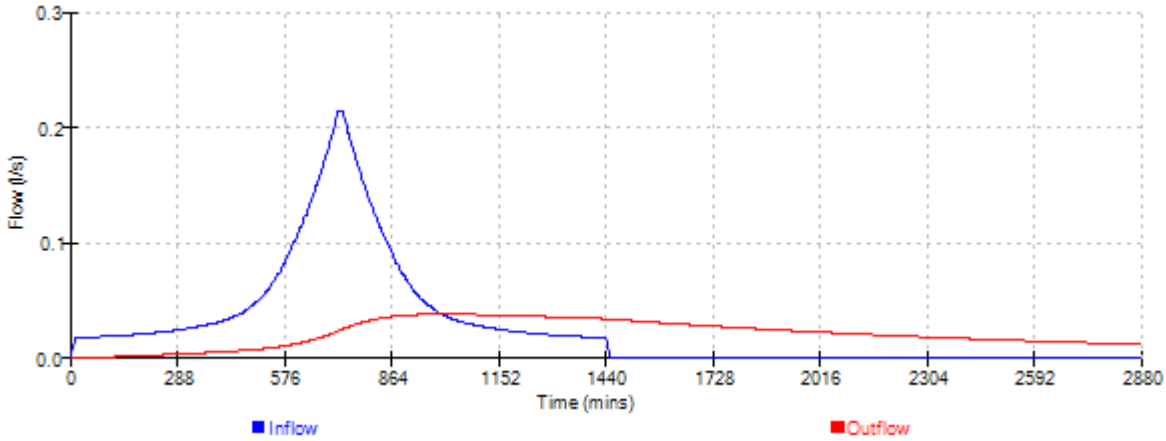
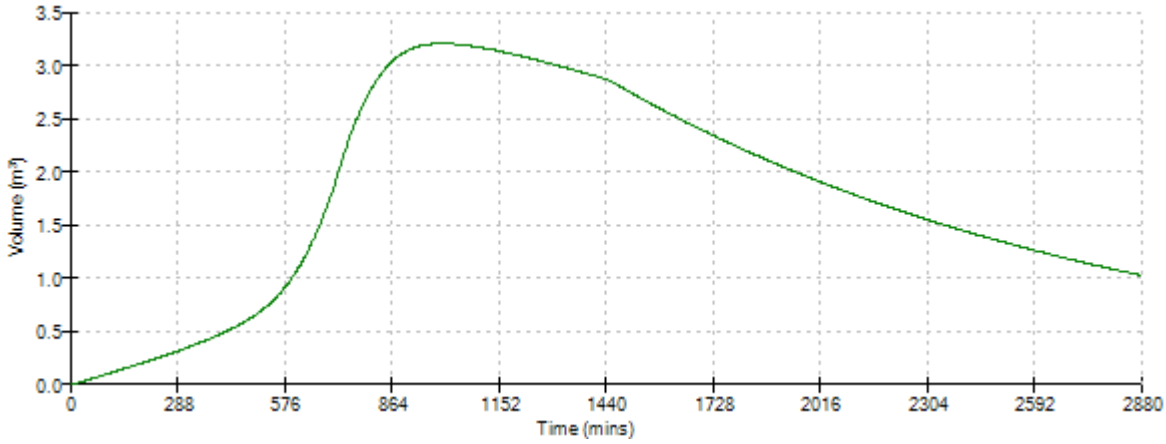
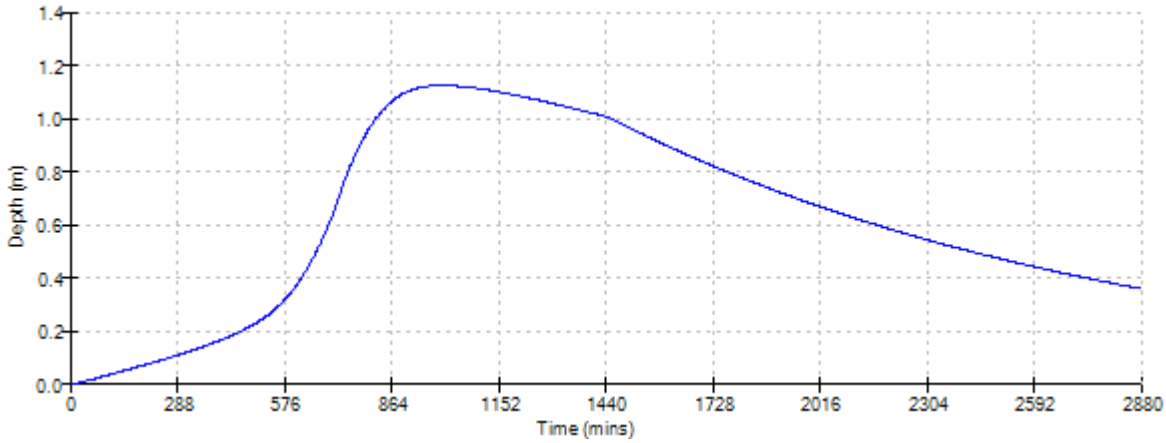
Event: 1440 min Summer







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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 947 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.664	0.664	0.0	1.9	O K
30 min Summer	19.796	0.796	0.0	2.3	O K
60 min Summer	19.948	0.948	0.0	2.7	O K
120 min Summer	20.119	1.119	0.0	3.2	O K
180 min Summer	20.222	1.222	0.0	3.5	O K
240 min Summer	20.293	1.293	0.0	3.7	O K
360 min Summer	20.383	1.383	0.0	3.9	O K
480 min Summer	20.433	1.433	0.0	4.1	O K
600 min Summer	20.462	1.462	0.0	4.2	O K
720 min Summer	20.484	1.484	0.1	4.2	O K
960 min Summer	20.486	1.486	0.1	4.2	O K
1440 min Summer	20.479	1.479	0.1	4.2	O K
2160 min Summer	20.445	1.445	0.0	4.1	O K
2880 min Summer	20.400	1.400	0.0	4.0	O K
4320 min Summer	20.335	1.335	0.0	3.8	O K
5760 min Summer	20.264	1.264	0.0	3.6	O K
7200 min Summer	20.197	1.197	0.0	3.4	O K
8640 min Summer	20.136	1.136	0.0	3.2	O K
10080 min Summer	20.080	1.080	0.0	3.1	O K
15 min Winter	19.664	0.664	0.0	1.9	O K
30 min Winter	19.796	0.796	0.0	2.3	O K
60 min Winter	19.949	0.949	0.0	2.7	O K
120 min Winter	20.120	1.120	0.0	3.2	O K
180 min Winter	20.224	1.224	0.0	3.5	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	191.068	27
30 min Summer	115.067	41
60 min Summer	69.298	70
120 min Summer	41.733	128
180 min Summer	31.021	188
240 min Summer	25.133	246
360 min Summer	18.682	364
480 min Summer	15.136	482
600 min Summer	12.856	572
720 min Summer	11.251	618
960 min Summer	8.929	740
1440 min Summer	6.446	998
2160 min Summer	4.653	1408
2880 min Summer	3.693	1820
4320 min Summer	2.729	2636
5760 min Summer	2.203	3408
7200 min Summer	1.865	4184
8640 min Summer	1.628	4936
10080 min Summer	1.451	5744
15 min Winter	191.068	26
30 min Winter	115.067	41
60 min Winter	69.298	70
120 min Winter	41.733	126
180 min Winter	31.021	184

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	20.296	1.296	0.0	3.7	O K
360 min Winter	20.389	1.389	0.0	4.0	O K
480 min Winter	20.443	1.443	0.0	4.1	O K
600 min Winter	20.475	1.475	0.1	4.2	O K
720 min Winter	20.493	1.493	0.1	4.3	O K
960 min Winter	20.487	1.487	0.1	4.2	O K
1440 min Winter	20.465	1.465	0.0	4.2	O K
2160 min Winter	20.406	1.406	0.0	4.0	O K
2880 min Winter	20.338	1.338	0.0	3.8	O K
4320 min Winter	20.236	1.236	0.0	3.5	O K
5760 min Winter	20.141	1.141	0.0	3.3	O K
7200 min Winter	20.056	1.056	0.0	3.0	O K
8640 min Winter	19.983	0.983	0.0	2.8	O K
10080 min Winter	19.919	0.919	0.0	2.6	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	25.133	242
360 min Winter	18.682	356
480 min Winter	15.136	468
600 min Winter	12.856	574
720 min Winter	11.251	674
960 min Winter	8.929	760
1440 min Winter	6.446	1066
2160 min Winter	4.653	1516
2880 min Winter	3.693	1956
4320 min Winter	2.729	2780
5760 min Winter	2.203	3592
7200 min Winter	1.865	4400
8640 min Winter	1.628	5184
10080 min Winter	1.451	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.004

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.001	4-8	0.001	8-12	0.001

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Model Details

Storage is Online Cover Level (m) 21.140

Cellular Storage Structure

Invert Level (m) 19.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	3.0	3.0	1.600	0.0	13.5
1.500	3.0	13.5			

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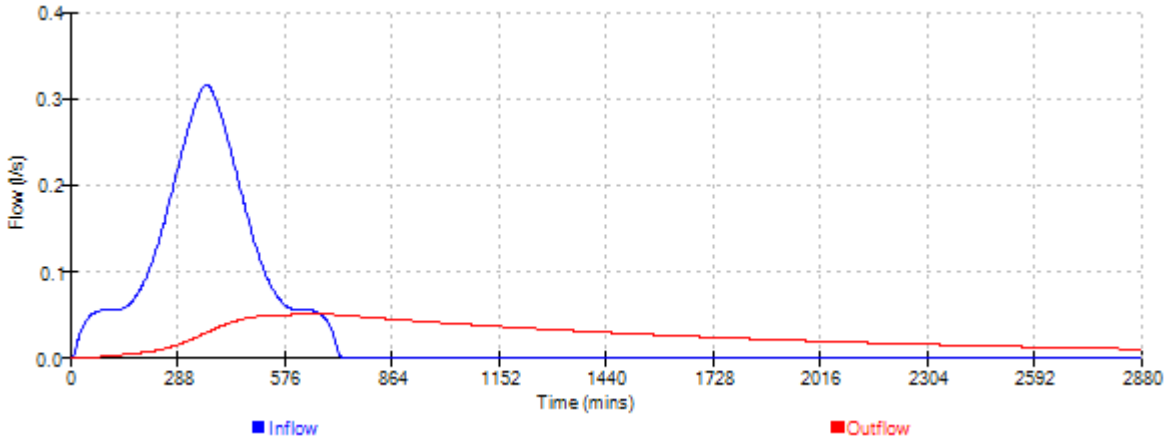
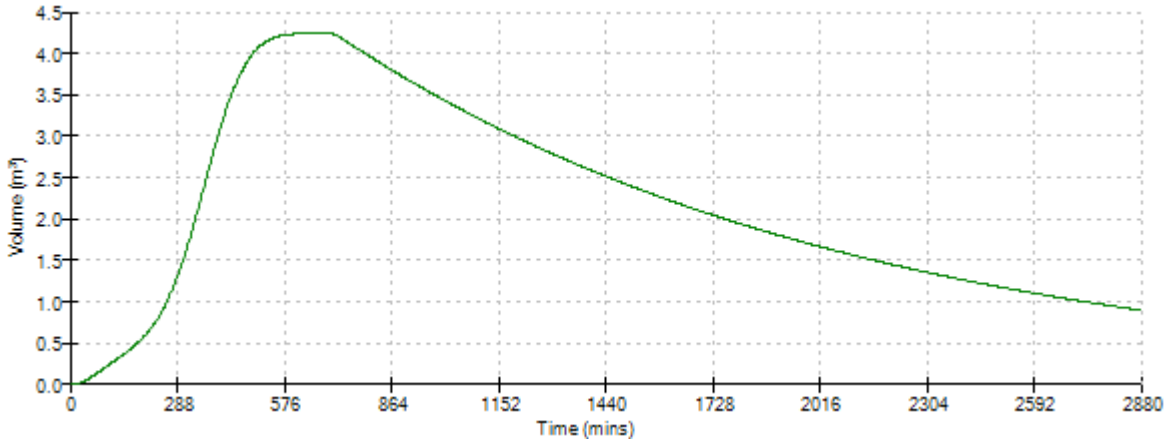
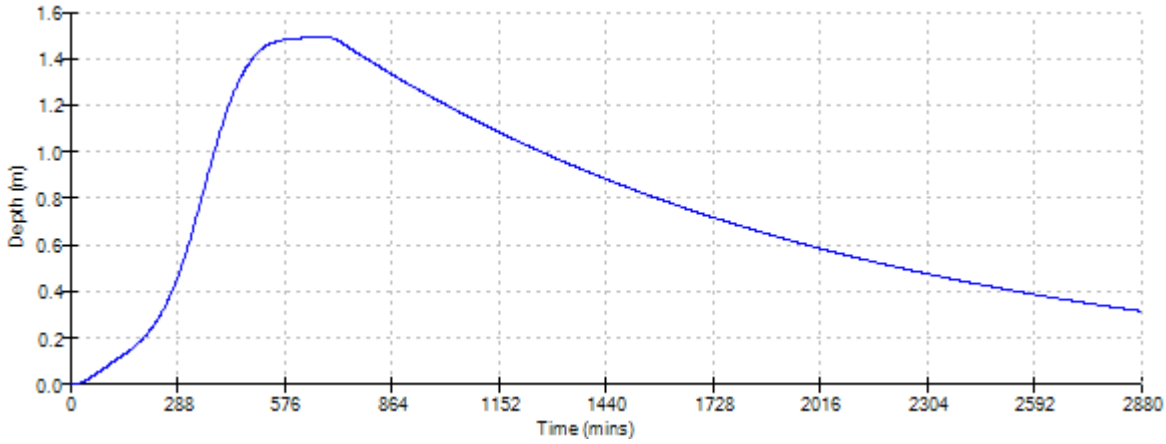
Event: 720 min Winter







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Summary of Results for 1 year Return Period (+45%)

Half Drain Time : 840 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.379	0.119	0.0	0.7	O K
30 min Summer	19.415	0.155	0.0	0.9	O K
60 min Summer	19.461	0.201	0.0	1.1	O K
120 min Summer	19.516	0.256	0.0	1.5	O K
180 min Summer	19.553	0.293	0.0	1.7	O K
240 min Summer	19.580	0.320	0.0	1.8	O K
360 min Summer	19.618	0.358	0.0	2.0	O K
480 min Summer	19.642	0.382	0.0	2.2	O K
600 min Summer	19.660	0.400	0.0	2.3	O K
720 min Summer	19.675	0.415	0.0	2.4	O K
960 min Summer	19.689	0.429	0.0	2.4	O K
1440 min Summer	19.707	0.447	0.0	2.5	O K
2160 min Summer	19.715	0.455	0.0	2.6	O K
2880 min Summer	19.714	0.454	0.0	2.6	O K
4320 min Summer	19.710	0.450	0.0	2.6	O K
5760 min Summer	19.697	0.437	0.0	2.5	O K
7200 min Summer	19.683	0.423	0.0	2.4	O K
8640 min Summer	19.669	0.409	0.0	2.3	O K
10080 min Summer	19.655	0.395	0.0	2.3	O K
15 min Winter	19.379	0.119	0.0	0.7	O K
30 min Winter	19.415	0.155	0.0	0.9	O K
60 min Winter	19.461	0.201	0.0	1.1	O K
120 min Winter	19.517	0.257	0.0	1.5	O K
180 min Winter	19.554	0.294	0.0	1.7	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	39.251	27
30 min Summer	25.681	41
60 min Summer	16.803	70
120 min Summer	10.994	128
180 min Summer	8.578	188
240 min Summer	7.193	246
360 min Summer	5.613	362
480 min Summer	4.707	480
600 min Summer	4.106	530
720 min Summer	3.672	590
960 min Summer	3.016	712
1440 min Summer	2.286	982
2160 min Summer	1.732	1388
2880 min Summer	1.423	1796
4320 min Summer	1.104	2600
5760 min Summer	0.922	3400
7200 min Summer	0.802	4176
8640 min Summer	0.715	4928
10080 min Summer	0.649	5648
15 min Winter	39.251	26
30 min Winter	25.681	41
60 min Winter	16.803	70
120 min Winter	10.994	126
180 min Winter	8.578	184

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Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.581	0.321	0.0	1.8	O K
360 min Winter	19.620	0.360	0.0	2.1	O K
480 min Winter	19.645	0.385	0.0	2.2	O K
600 min Winter	19.663	0.403	0.0	2.3	O K
720 min Winter	19.675	0.415	0.0	2.4	O K
960 min Winter	19.689	0.429	0.0	2.4	O K
1440 min Winter	19.700	0.440	0.0	2.5	O K
2160 min Winter	19.700	0.440	0.0	2.5	O K
2880 min Winter	19.690	0.430	0.0	2.5	O K
4320 min Winter	19.672	0.412	0.0	2.4	O K
5760 min Winter	19.650	0.390	0.0	2.2	O K
7200 min Winter	19.629	0.369	0.0	2.1	O K
8640 min Winter	19.609	0.349	0.0	2.0	O K
10080 min Winter	19.591	0.331	0.0	1.9	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	7.193	240
360 min Winter	5.613	354
480 min Winter	4.707	464
600 min Winter	4.106	568
720 min Winter	3.672	648
960 min Winter	3.016	742
1440 min Winter	2.286	1048
2160 min Winter	1.732	1496
2880 min Winter	1.423	1932
4320 min Winter	1.104	2768
5760 min Winter	0.922	3568
7200 min Winter	0.802	4328
8640 min Winter	0.715	5104
10080 min Winter	0.649	5856

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.260

Cellular Storage Structure

Invert Level (m) 19.260 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.05000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	22.5
1.500	6.0	22.5			

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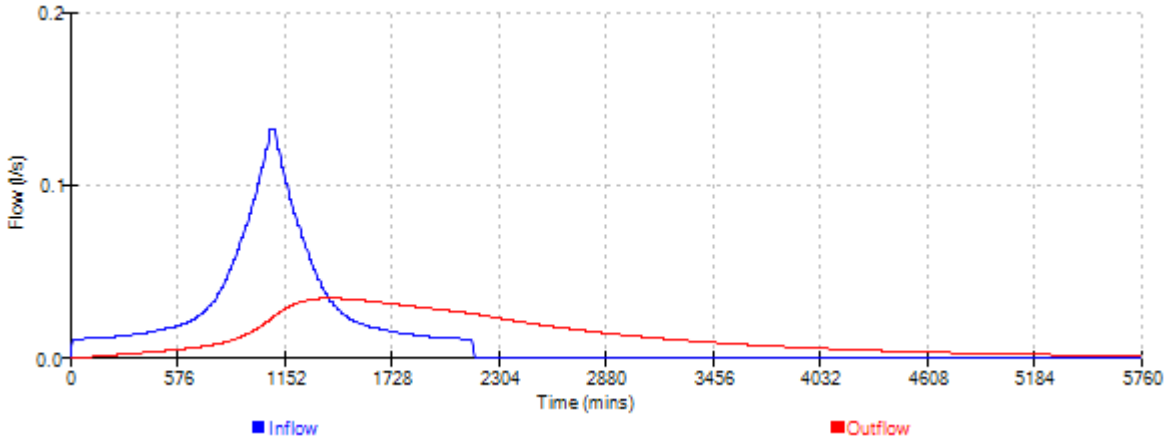
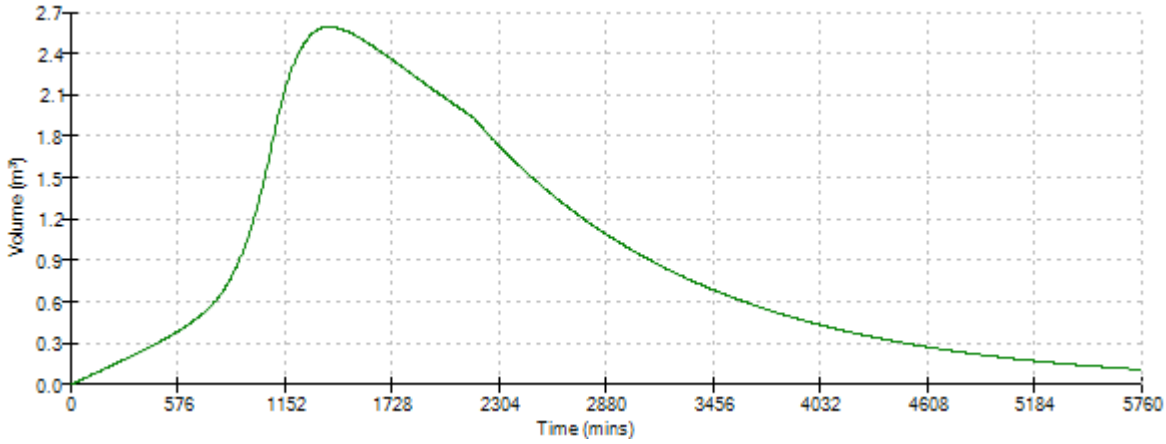
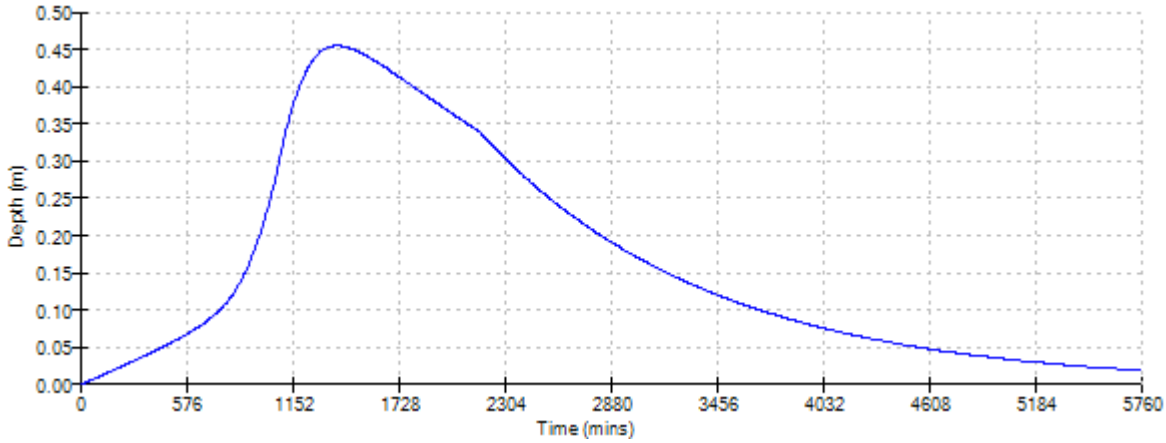
Event: 2160 min Summer







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Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 842 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.642	0.382	0.0	2.2	O K
30 min Summer	19.728	0.468	0.0	2.7	O K
60 min Summer	19.829	0.569	0.0	3.2	O K
120 min Summer	19.944	0.684	0.1	3.9	O K
180 min Summer	20.015	0.755	0.1	4.3	O K
240 min Summer	20.064	0.804	0.1	4.6	O K
360 min Summer	20.127	0.867	0.1	4.9	O K
480 min Summer	20.163	0.903	0.1	5.1	O K
600 min Summer	20.186	0.926	0.1	5.3	O K
720 min Summer	20.205	0.945	0.1	5.4	O K
960 min Summer	20.214	0.954	0.1	5.4	O K
1440 min Summer	20.217	0.957	0.1	5.5	O K
2160 min Summer	20.201	0.941	0.1	5.4	O K
2880 min Summer	20.175	0.915	0.1	5.2	O K
4320 min Summer	20.135	0.875	0.1	5.0	O K
5760 min Summer	20.090	0.830	0.1	4.7	O K
7200 min Summer	20.047	0.787	0.1	4.5	O K
8640 min Summer	20.008	0.748	0.1	4.3	O K
10080 min Summer	19.973	0.713	0.1	4.1	O K
15 min Winter	19.642	0.382	0.0	2.2	O K
30 min Winter	19.728	0.468	0.0	2.7	O K
60 min Winter	19.829	0.569	0.0	3.2	O K
120 min Winter	19.945	0.685	0.1	3.9	O K
180 min Winter	20.017	0.757	0.1	4.3	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	125.753	27
30 min Summer	77.411	41
60 min Summer	47.652	70
120 min Summer	29.333	128
180 min Summer	22.085	188
240 min Summer	18.057	246
360 min Summer	13.595	362
480 min Summer	11.115	480
600 min Summer	9.508	530
720 min Summer	8.369	590
960 min Summer	6.702	712
1440 min Summer	4.901	982
2160 min Summer	3.584	1388
2880 min Summer	2.870	1796
4320 min Summer	2.149	2600
5760 min Summer	1.750	3400
7200 min Summer	1.492	4176
8640 min Summer	1.310	4928
10080 min Summer	1.173	5648
15 min Winter	125.753	26
30 min Winter	77.411	41
60 min Winter	47.652	70
120 min Winter	29.333	126
180 min Winter	22.085	184

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Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	20.067	0.807	0.1	4.6	O K
360 min Winter	20.132	0.872	0.1	5.0	O K
480 min Winter	20.170	0.910	0.1	5.2	O K
600 min Winter	20.193	0.933	0.1	5.3	O K
720 min Winter	20.207	0.947	0.1	5.4	O K
960 min Winter	20.213	0.953	0.1	5.4	O K
1440 min Winter	20.204	0.944	0.1	5.4	O K
2160 min Winter	20.170	0.910	0.1	5.2	O K
2880 min Winter	20.127	0.867	0.1	4.9	O K
4320 min Winter	20.063	0.803	0.1	4.6	O K
5760 min Winter	20.001	0.741	0.1	4.2	O K
7200 min Winter	19.947	0.687	0.1	3.9	O K
8640 min Winter	19.899	0.639	0.0	3.6	O K
10080 min Winter	19.858	0.598	0.0	3.4	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	18.057	240
360 min Winter	13.595	354
480 min Winter	11.115	464
600 min Winter	9.508	568
720 min Winter	8.369	648
960 min Winter	6.702	742
1440 min Winter	4.901	1048
2160 min Winter	3.584	1496
2880 min Winter	2.870	1932
4320 min Winter	2.149	2768
5760 min Winter	1.750	3568
7200 min Winter	1.492	4328
8640 min Winter	1.310	5104
10080 min Winter	1.173	5856

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.260

Cellular Storage Structure

Invert Level (m) 19.260 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.05000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	22.5
1.500	6.0	22.5			

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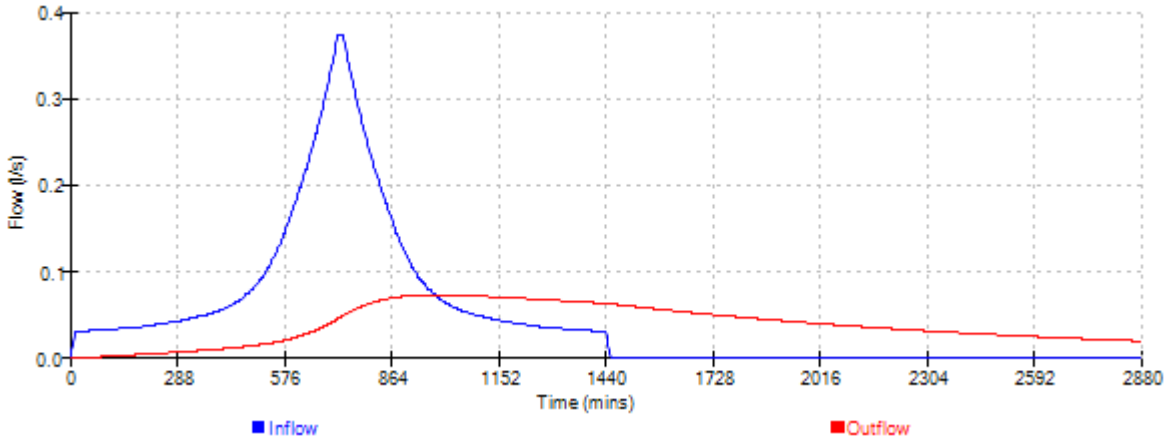
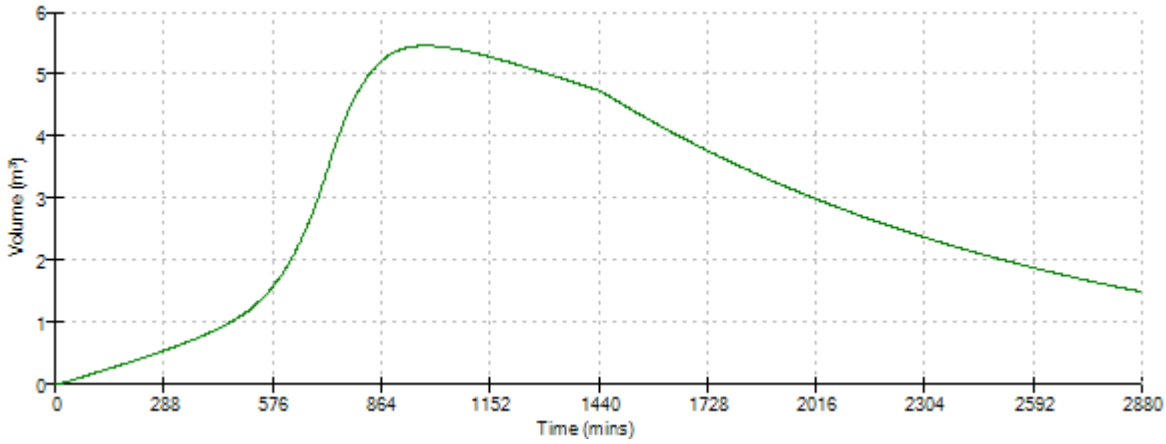
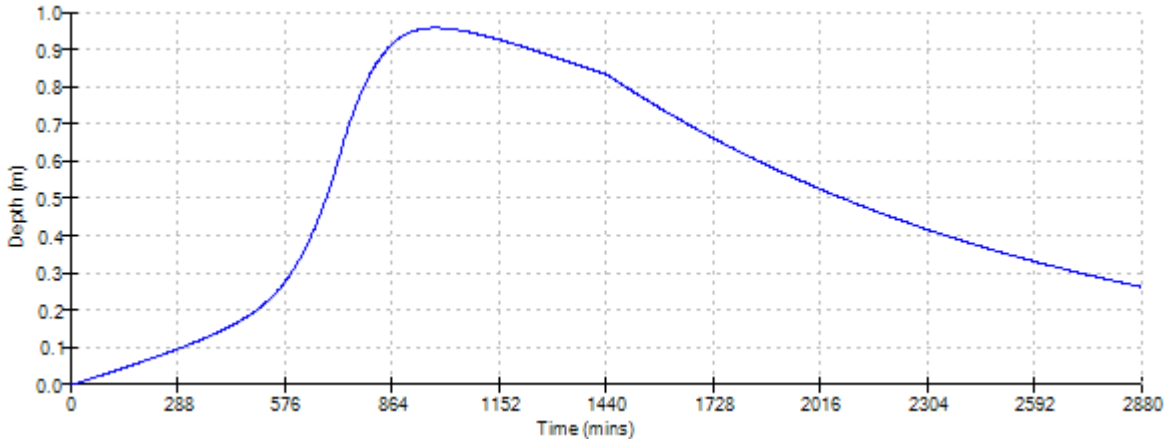
Event: 1440 min Summer







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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 843 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.840	0.580	0.0	3.3	O K
30 min Summer	19.955	0.695	0.1	4.0	O K
60 min Summer	20.087	0.827	0.1	4.7	O K
120 min Summer	20.233	0.973	0.1	5.5	O K
180 min Summer	20.320	1.060	0.1	6.0	O K
240 min Summer	20.379	1.119	0.1	6.4	O K
360 min Summer	20.452	1.192	0.1	6.8	O K
480 min Summer	20.489	1.229	0.1	7.0	O K
600 min Summer	20.512	1.252	0.1	7.1	O K
720 min Summer	20.530	1.270	0.1	7.2	O K
960 min Summer	20.531	1.271	0.1	7.2	O K
1440 min Summer	20.519	1.259	0.1	7.2	O K
2160 min Summer	20.482	1.222	0.1	7.0	O K
2880 min Summer	20.437	1.177	0.1	6.7	O K
4320 min Summer	20.372	1.112	0.1	6.3	O K
5760 min Summer	20.305	1.045	0.1	6.0	O K
7200 min Summer	20.244	0.984	0.1	5.6	O K
8640 min Summer	20.190	0.930	0.1	5.3	O K
10080 min Summer	20.142	0.882	0.1	5.0	O K
15 min Winter	19.840	0.580	0.0	3.3	O K
30 min Winter	19.955	0.695	0.1	4.0	O K
60 min Winter	20.088	0.828	0.1	4.7	O K
120 min Winter	20.235	0.975	0.1	5.6	O K
180 min Winter	20.323	1.063	0.1	6.1	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	191.068	27
30 min Summer	115.067	41
60 min Summer	69.298	70
120 min Summer	41.733	128
180 min Summer	31.021	188
240 min Summer	25.133	246
360 min Summer	18.682	362
480 min Summer	15.136	480
600 min Summer	12.856	530
720 min Summer	11.251	590
960 min Summer	8.929	712
1440 min Summer	6.446	982
2160 min Summer	4.653	1388
2880 min Summer	3.693	1796
4320 min Summer	2.729	2600
5760 min Summer	2.203	3400
7200 min Summer	1.865	4176
8640 min Summer	1.628	4928
10080 min Summer	1.451	5648
15 min Winter	191.068	26
30 min Winter	115.067	41
60 min Winter	69.298	70
120 min Winter	41.733	126
180 min Winter	31.021	184

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	20.383	1.123	0.1	6.4	O K
360 min Winter	20.458	1.198	0.1	6.8	O K
480 min Winter	20.499	1.239	0.1	7.1	O K
600 min Winter	20.521	1.261	0.1	7.2	O K
720 min Winter	20.533	1.273	0.1	7.3	O K
960 min Winter	20.529	1.269	0.1	7.2	O K
1440 min Winter	20.502	1.242	0.1	7.1	O K
2160 min Winter	20.441	1.181	0.1	6.7	O K
2880 min Winter	20.376	1.116	0.1	6.4	O K
4320 min Winter	20.280	1.020	0.1	5.8	O K
5760 min Winter	20.193	0.933	0.1	5.3	O K
7200 min Winter	20.118	0.858	0.1	4.9	O K
8640 min Winter	20.054	0.794	0.1	4.5	O K
10080 min Winter	20.000	0.740	0.1	4.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	25.133	240
360 min Winter	18.682	354
480 min Winter	15.136	464
600 min Winter	12.856	568
720 min Winter	11.251	648
960 min Winter	8.929	742
1440 min Winter	6.446	1048
2160 min Winter	4.653	1496
2880 min Winter	3.693	1932
4320 min Winter	2.729	2768
5760 min Winter	2.203	3568
7200 min Winter	1.865	4328
8640 min Winter	1.628	5104
10080 min Winter	1.451	5856

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.007

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Model Details

Storage is Online Cover Level (m) 21.260

Cellular Storage Structure

Invert Level (m) 19.260 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.05000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	22.5
1.500	6.0	22.5			

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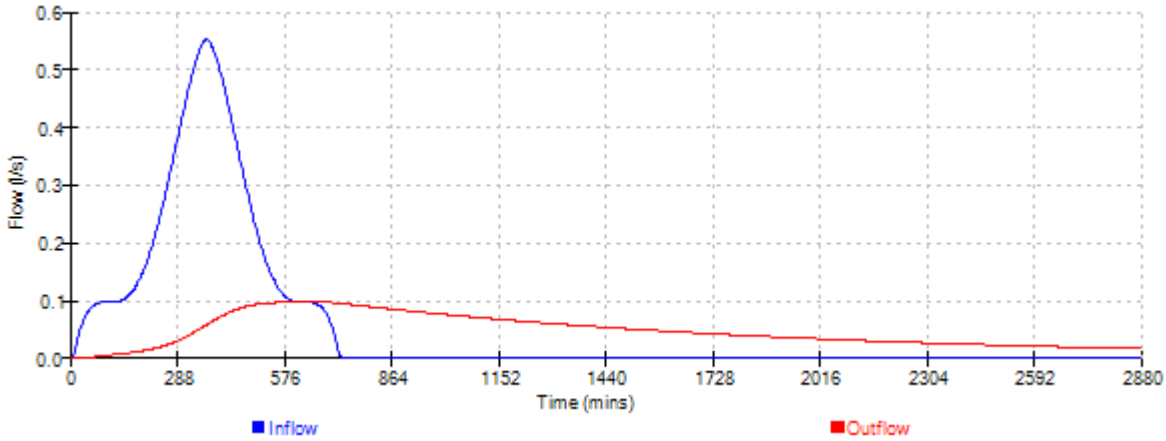
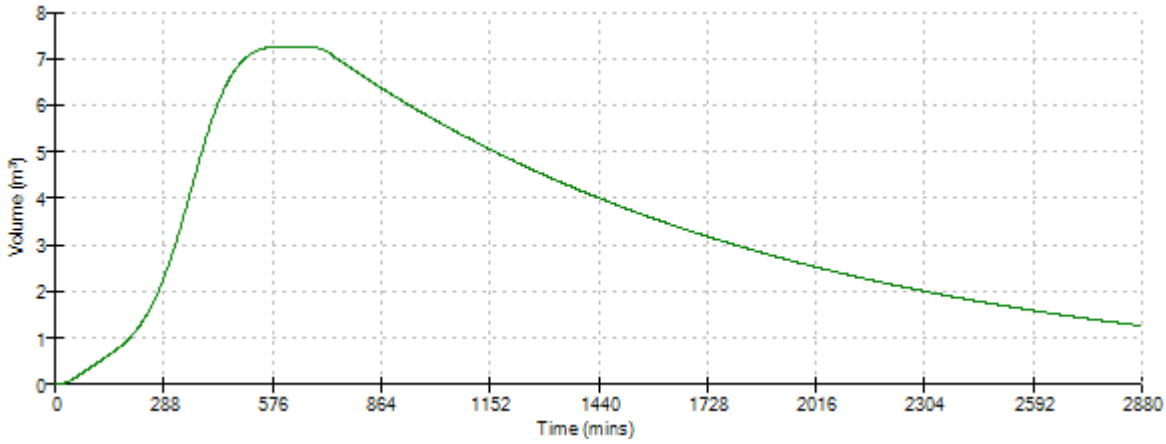
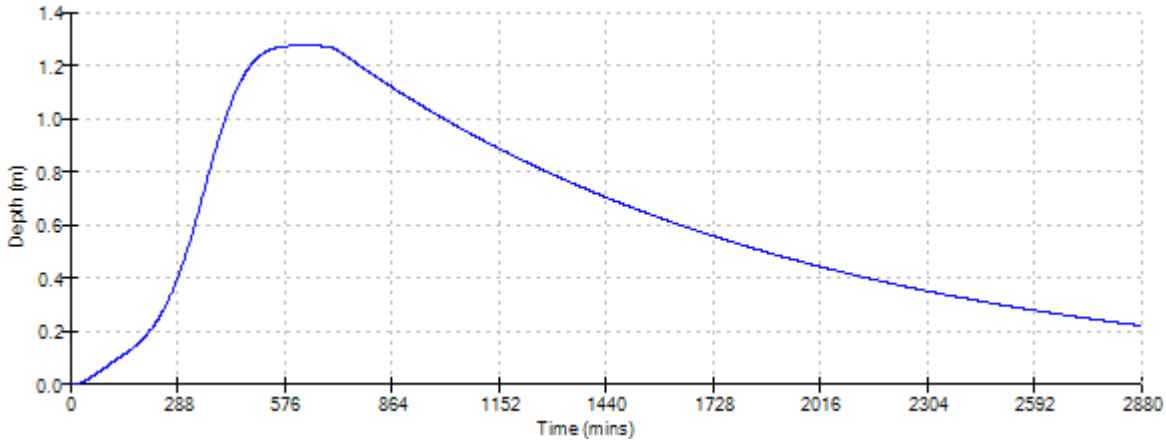
Event: 720 min Winter







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Summary of Results for 1 year Return Period (+45%)

Half Drain Time : 917 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.236	0.136	0.0	0.8	O K
30 min Summer	19.278	0.178	0.0	1.0	O K
60 min Summer	19.330	0.230	0.0	1.3	O K
120 min Summer	19.394	0.294	0.0	1.7	O K
180 min Summer	19.437	0.337	0.0	1.9	O K
240 min Summer	19.469	0.369	0.0	2.1	O K
360 min Summer	19.514	0.414	0.0	2.4	O K
480 min Summer	19.544	0.444	0.0	2.5	O K
600 min Summer	19.565	0.465	0.0	2.7	O K
720 min Summer	19.583	0.483	0.0	2.8	O K
960 min Summer	19.600	0.500	0.0	2.9	O K
1440 min Summer	19.622	0.522	0.0	3.0	O K
2160 min Summer	19.635	0.535	0.0	3.0	O K
2880 min Summer	19.636	0.536	0.0	3.1	O K
4320 min Summer	19.635	0.535	0.0	3.1	O K
5760 min Summer	19.624	0.524	0.0	3.0	O K
7200 min Summer	19.609	0.509	0.0	2.9	O K
8640 min Summer	19.593	0.493	0.0	2.8	O K
10080 min Summer	19.578	0.478	0.0	2.7	O K
15 min Winter	19.236	0.136	0.0	0.8	O K
30 min Winter	19.278	0.178	0.0	1.0	O K
60 min Winter	19.330	0.230	0.0	1.3	O K
120 min Winter	19.395	0.295	0.0	1.7	O K
180 min Winter	19.438	0.338	0.0	1.9	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	39.251	27
30 min Summer	25.681	41
60 min Summer	16.803	70
120 min Summer	10.994	128
180 min Summer	8.578	188
240 min Summer	7.193	246
360 min Summer	5.613	364
480 min Summer	4.707	482
600 min Summer	4.106	566
720 min Summer	3.672	614
960 min Summer	3.016	732
1440 min Summer	2.286	996
2160 min Summer	1.732	1408
2880 min Summer	1.423	1820
4320 min Summer	1.104	2632
5760 min Summer	0.922	3408
7200 min Summer	0.802	4184
8640 min Summer	0.715	4936
10080 min Summer	0.649	5664
15 min Winter	39.251	26
30 min Winter	25.681	41
60 min Winter	16.803	70
120 min Winter	10.994	126
180 min Winter	8.578	184

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Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	19.470	0.370	0.0	2.1	O K
360 min Winter	19.516	0.416	0.0	2.4	O K
480 min Winter	19.547	0.447	0.0	2.5	O K
600 min Winter	19.569	0.469	0.0	2.7	O K
720 min Winter	19.585	0.485	0.0	2.8	O K
960 min Winter	19.600	0.500	0.0	2.9	O K
1440 min Winter	19.617	0.517	0.0	2.9	O K
2160 min Winter	19.620	0.520	0.0	3.0	O K
2880 min Winter	19.611	0.511	0.0	2.9	O K
4320 min Winter	19.595	0.495	0.0	2.8	O K
5760 min Winter	19.572	0.472	0.0	2.7	O K
7200 min Winter	19.548	0.448	0.0	2.6	O K
8640 min Winter	19.526	0.426	0.0	2.4	O K
10080 min Winter	19.505	0.405	0.0	2.3	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	7.193	242
360 min Winter	5.613	356
480 min Winter	4.707	466
600 min Winter	4.106	574
720 min Winter	3.672	672
960 min Winter	3.016	756
1440 min Winter	2.286	1062
2160 min Winter	1.732	1516
2880 min Winter	1.423	1940
4320 min Winter	1.104	2776
5760 min Winter	0.922	3584
7200 min Winter	0.802	4392
8640 min Winter	0.715	5184
10080 min Winter	0.649	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.008

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.003	4-8	0.003	8-12	0.003

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Model Details

Storage is Online Cover Level (m) 21.600

Cellular Storage Structure

Invert Level (m) 19.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.05000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	21.0
1.500	6.0	21.0			

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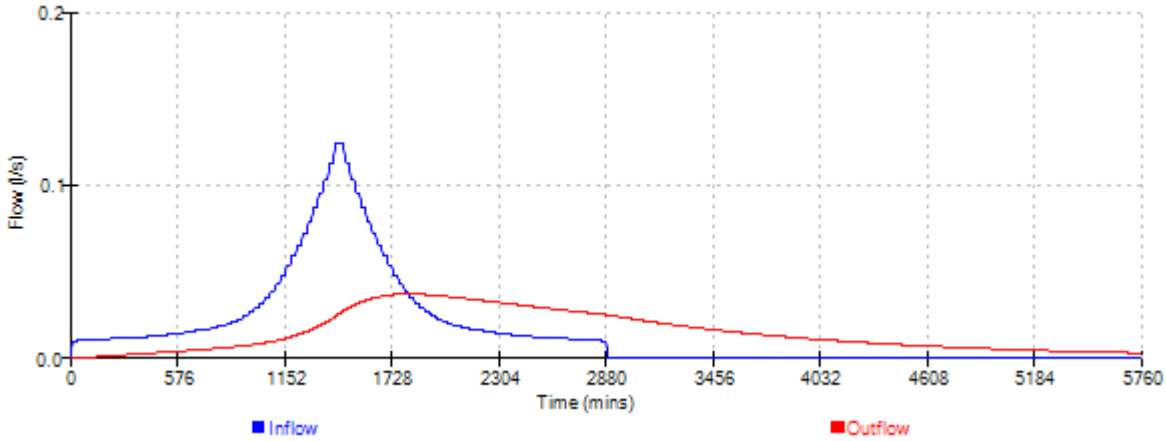
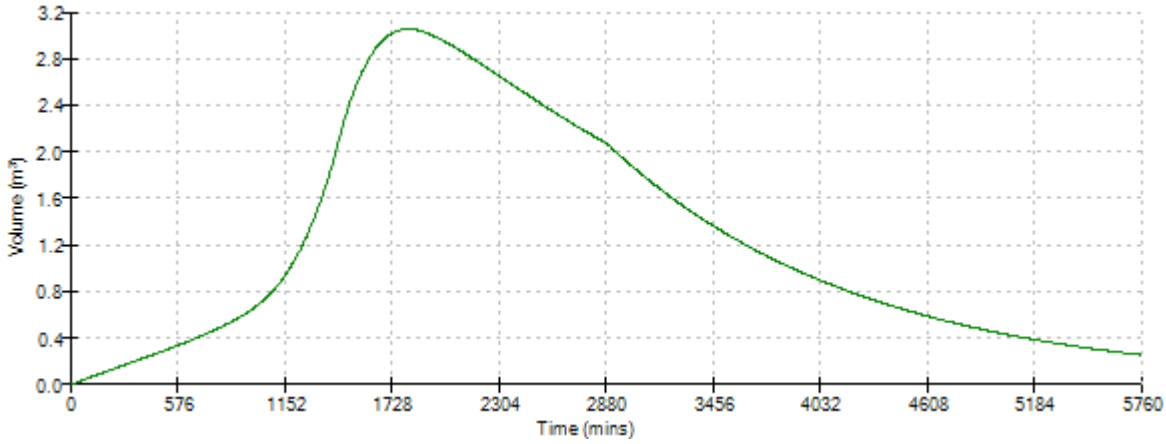
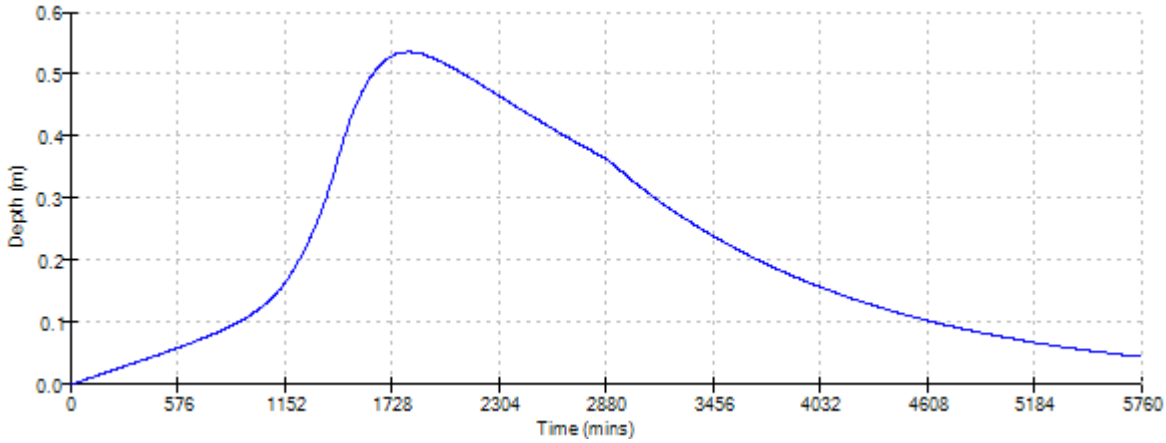
Event: 2880 min Summer







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Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 923 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.537	0.437	0.0	2.5	O K
30 min Summer	19.635	0.535	0.0	3.1	O K
60 min Summer	19.752	0.652	0.0	3.7	O K
120 min Summer	19.886	0.786	0.1	4.5	O K
180 min Summer	19.969	0.869	0.1	5.0	O K
240 min Summer	20.027	0.927	0.1	5.3	O K
360 min Summer	20.104	1.004	0.1	5.7	O K
480 min Summer	20.149	1.049	0.1	6.0	O K
600 min Summer	20.177	1.077	0.1	6.1	O K
720 min Summer	20.200	1.100	0.1	6.3	O K
960 min Summer	20.211	1.111	0.1	6.3	O K
1440 min Summer	20.219	1.119	0.1	6.4	O K
2160 min Summer	20.206	1.106	0.1	6.3	O K
2880 min Summer	20.181	1.081	0.1	6.2	O K
4320 min Summer	20.142	1.042	0.1	5.9	O K
5760 min Summer	20.094	0.994	0.1	5.7	O K
7200 min Summer	20.047	0.947	0.1	5.4	O K
8640 min Summer	20.004	0.904	0.1	5.2	O K
10080 min Summer	19.963	0.863	0.1	4.9	O K
15 min Winter	19.537	0.437	0.0	2.5	O K
30 min Winter	19.635	0.535	0.0	3.1	O K
60 min Winter	19.752	0.652	0.0	3.7	O K
120 min Winter	19.887	0.787	0.1	4.5	O K
180 min Winter	19.971	0.871	0.1	5.0	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	125.753	27
30 min Summer	77.411	41
60 min Summer	47.652	70
120 min Summer	29.333	128
180 min Summer	22.085	188
240 min Summer	18.057	246
360 min Summer	13.595	364
480 min Summer	11.115	482
600 min Summer	9.508	566
720 min Summer	8.369	614
960 min Summer	6.702	732
1440 min Summer	4.901	996
2160 min Summer	3.584	1408
2880 min Summer	2.870	1820
4320 min Summer	2.149	2632
5760 min Summer	1.750	3408
7200 min Summer	1.492	4184
8640 min Summer	1.310	4936
10080 min Summer	1.173	5664
15 min Winter	125.753	26
30 min Winter	77.411	41
60 min Winter	47.652	70
120 min Winter	29.333	126
180 min Winter	22.085	184

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Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	20.030	0.930	0.1	5.3	O K
360 min Winter	20.108	1.008	0.1	5.7	O K
480 min Winter	20.156	1.056	0.1	6.0	O K
600 min Winter	20.186	1.086	0.1	6.2	O K
720 min Winter	20.205	1.105	0.1	6.3	O K
960 min Winter	20.211	1.111	0.1	6.3	O K
1440 min Winter	20.208	1.108	0.1	6.3	O K
2160 min Winter	20.175	1.075	0.1	6.1	O K
2880 min Winter	20.131	1.031	0.1	5.9	O K
4320 min Winter	20.064	0.964	0.1	5.5	O K
5760 min Winter	19.996	0.896	0.1	5.1	O K
7200 min Winter	19.934	0.834	0.1	4.8	O K
8640 min Winter	19.880	0.780	0.1	4.4	O K
10080 min Winter	19.832	0.732	0.1	4.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	18.057	242
360 min Winter	13.595	356
480 min Winter	11.115	466
600 min Winter	9.508	574
720 min Winter	8.369	672
960 min Winter	6.702	756
1440 min Winter	4.901	1062
2160 min Winter	3.584	1516
2880 min Winter	2.870	1940
4320 min Winter	2.149	2776
5760 min Winter	1.750	3584
7200 min Winter	1.492	4392
8640 min Winter	1.310	5184
10080 min Winter	1.173	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.008

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.003	4-8	0.003	8-12	0.003

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Model Details

Storage is Online Cover Level (m) 21.600

Cellular Storage Structure

Invert Level (m) 19.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.05000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	21.0
1.500	6.0	21.0			

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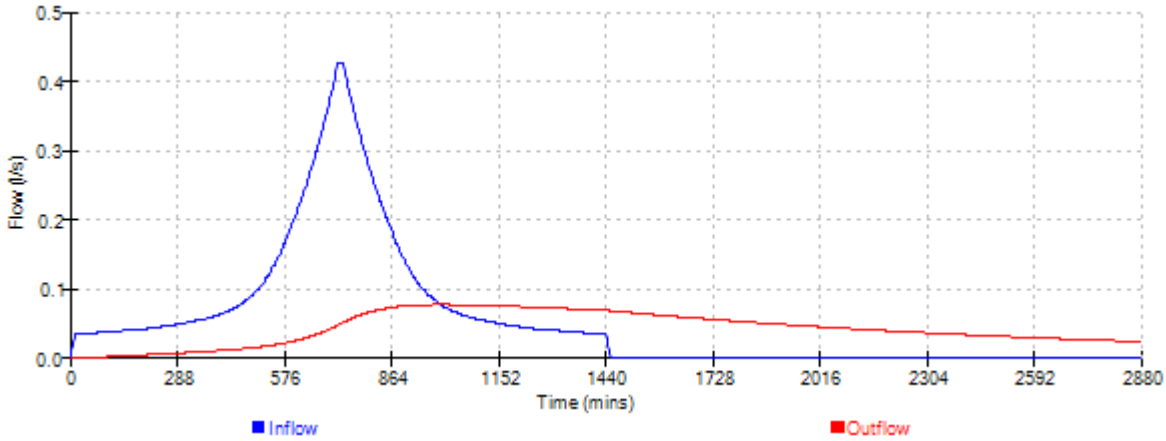
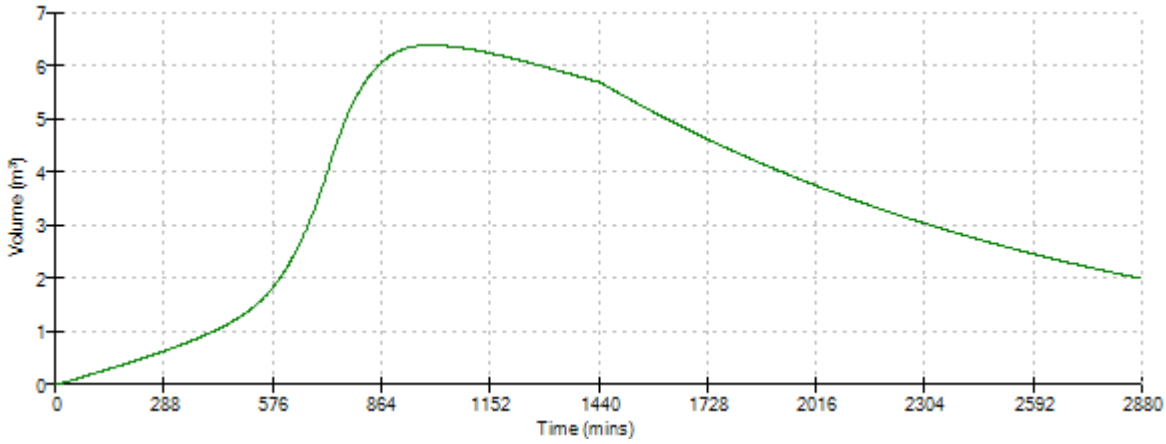
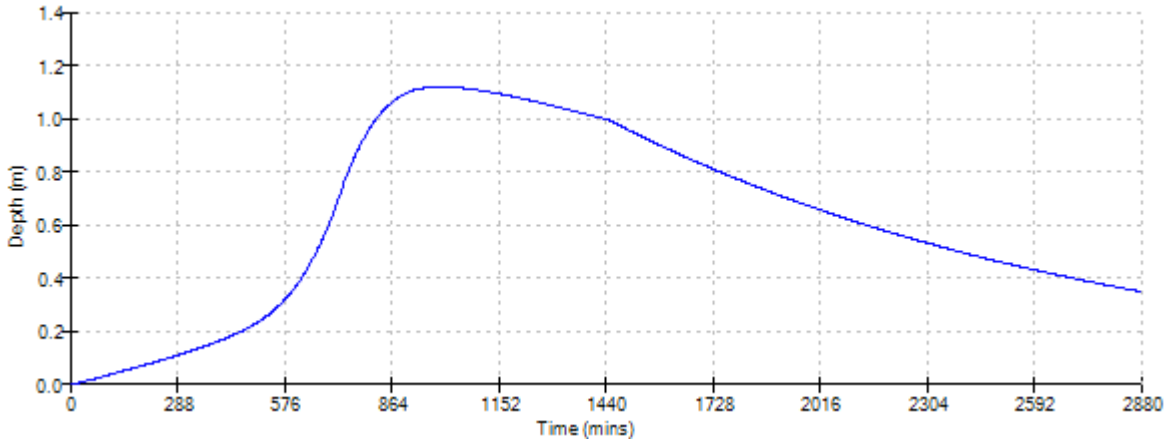
Event: 1440 min Summer







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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 925 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	19.764	0.664	0.0	3.8	O K
30 min Summer	19.895	0.795	0.1	4.5	O K
60 min Summer	20.048	0.948	0.1	5.4	O K
120 min Summer	20.218	1.118	0.1	6.4	O K
180 min Summer	20.320	1.220	0.1	7.0	O K
240 min Summer	20.390	1.290	0.1	7.4	O K
360 min Summer	20.479	1.379	0.1	7.9	O K
480 min Summer	20.529	1.429	0.1	8.1	O K
600 min Summer	20.556	1.456	0.1	8.3	O K
720 min Summer	20.578	1.478	0.1	8.4	O K
960 min Summer	20.580	1.480	0.1	8.4	O K
1440 min Summer	20.572	1.472	0.1	8.4	O K
2160 min Summer	20.536	1.436	0.1	8.2	O K
2880 min Summer	20.490	1.390	0.1	7.9	O K
4320 min Summer	20.423	1.323	0.1	7.5	O K
5760 min Summer	20.352	1.252	0.1	7.1	O K
7200 min Summer	20.284	1.184	0.1	6.8	O K
8640 min Summer	20.223	1.123	0.1	6.4	O K
10080 min Summer	20.168	1.068	0.1	6.1	O K
15 min Winter	19.764	0.664	0.0	3.8	O K
30 min Winter	19.896	0.796	0.1	4.5	O K
60 min Winter	20.048	0.948	0.1	5.4	O K
120 min Winter	20.219	1.119	0.1	6.4	O K
180 min Winter	20.323	1.223	0.1	7.0	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	191.068	27
30 min Summer	115.067	41
60 min Summer	69.298	70
120 min Summer	41.733	128
180 min Summer	31.021	188
240 min Summer	25.133	246
360 min Summer	18.682	364
480 min Summer	15.136	482
600 min Summer	12.856	566
720 min Summer	11.251	614
960 min Summer	8.929	732
1440 min Summer	6.446	996
2160 min Summer	4.653	1408
2880 min Summer	3.693	1820
4320 min Summer	2.729	2632
5760 min Summer	2.203	3408
7200 min Summer	1.865	4184
8640 min Summer	1.628	4936
10080 min Summer	1.451	5664
15 min Winter	191.068	26
30 min Winter	115.067	41
60 min Winter	69.298	70
120 min Winter	41.733	126
180 min Winter	31.021	184

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	20.394	1.294	0.1	7.4	O K
360 min Winter	20.486	1.386	0.1	7.9	O K
480 min Winter	20.538	1.438	0.1	8.2	O K
600 min Winter	20.569	1.469	0.1	8.4	O K
720 min Winter	20.586	1.486	0.1	8.5	O K
960 min Winter	20.581	1.481	0.1	8.4	O K
1440 min Winter	20.557	1.457	0.1	8.3	O K
2160 min Winter	20.496	1.396	0.1	8.0	O K
2880 min Winter	20.427	1.327	0.1	7.6	O K
4320 min Winter	20.324	1.224	0.1	7.0	O K
5760 min Winter	20.228	1.128	0.1	6.4	O K
7200 min Winter	20.143	1.043	0.1	5.9	O K
8640 min Winter	20.069	0.969	0.1	5.5	O K
10080 min Winter	20.006	0.906	0.1	5.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
240 min Winter	25.133	242
360 min Winter	18.682	356
480 min Winter	15.136	466
600 min Winter	12.856	574
720 min Winter	11.251	672
960 min Winter	8.929	756
1440 min Winter	6.446	1062
2160 min Winter	4.653	1516
2880 min Winter	3.693	1940
4320 min Winter	2.729	2776
5760 min Winter	2.203	3584
7200 min Winter	1.865	4392
8640 min Winter	1.628	5184
10080 min Winter	1.451	5952

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 525450 105550 TQ 25450 05550
C (1km)	-0.026
D1 (1km)	0.388
D2 (1km)	0.316
D3 (1km)	0.374
E (1km)	0.308
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.008

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.003	4-8	0.003	8-12	0.003

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Model Details

Storage is Online Cover Level (m) 21.600

Cellular Storage Structure

Invert Level (m) 19.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.05000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	6.0	6.0	1.600	0.0	21.0
1.500	6.0	21.0			

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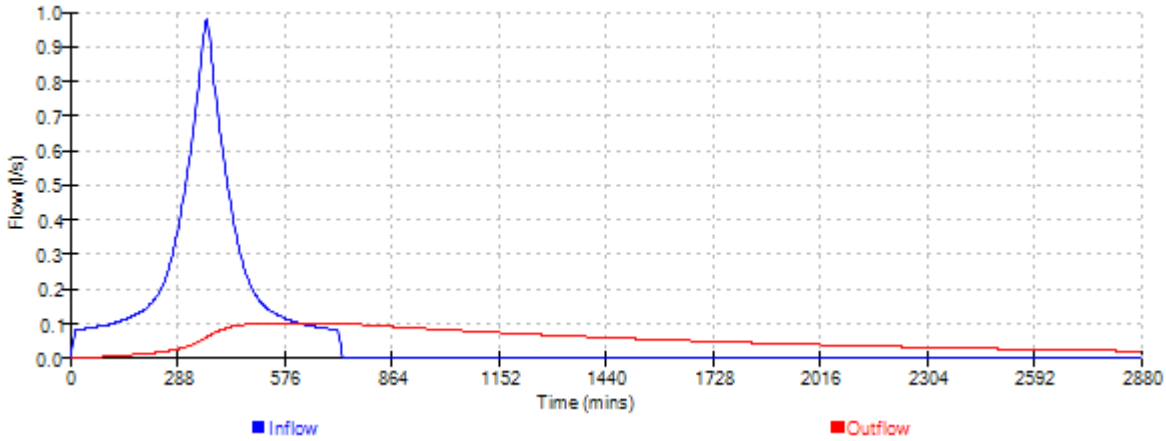
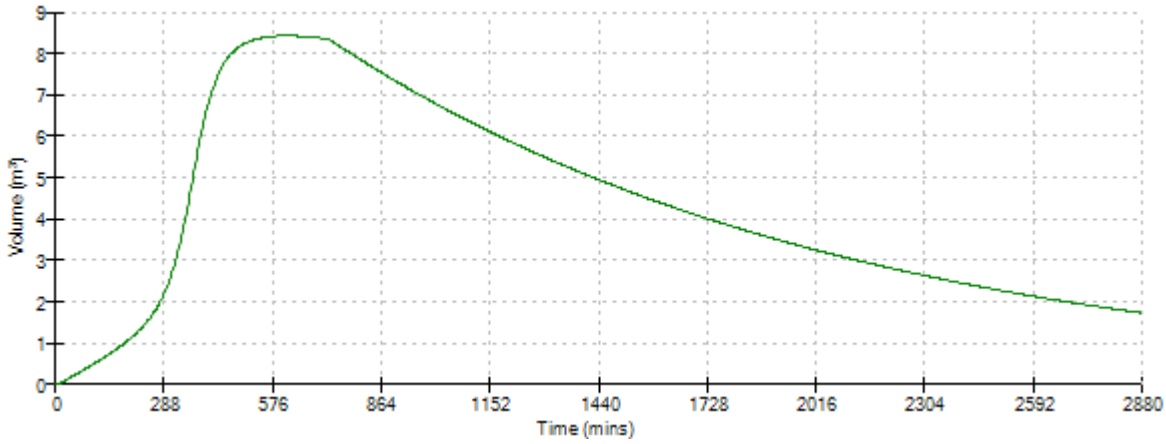
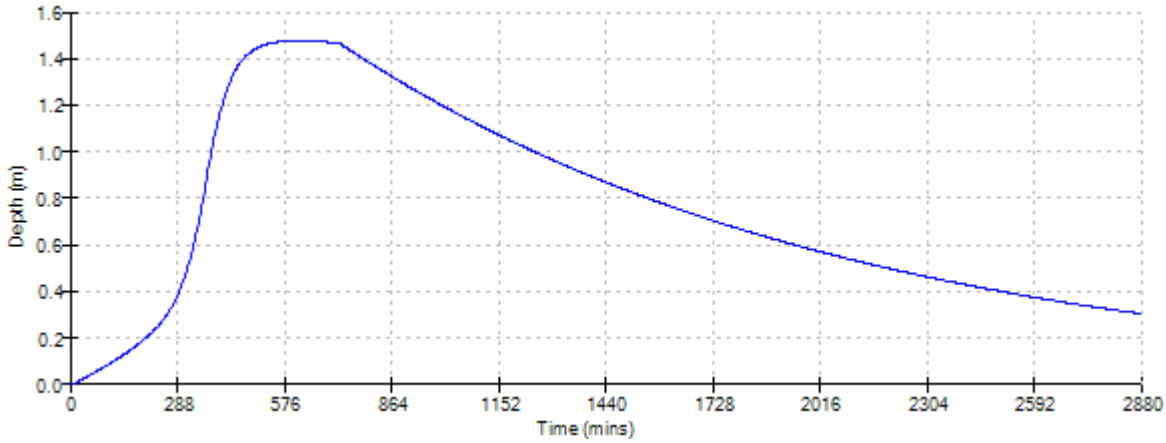
Event: 720 min Summer







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Manor Hall Nursery
Gardener Street
Southwick
West Sussex

In Situ Infiltration Test Report

Report Beneficiary:
Bailey Brothers Ltd
Sangsuri
The Street
Albourne
Hassocks
West Sussex
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1. INTRODUCTION

Ashdown Site Investigation Ltd was requested to undertake in situ infiltration testing and groundwater monitoring at Manor Hall Nursery, Gardener Street, Southwick to assist others with the design of a sustainable drainage system (SuDS) for the proposed development at the site. The proposed drainage layout in shown on Figure 2 of this report.

The specific objectives of the works were to:
a) Investigate the shallow ground and groundwater conditions at the agreed test locations; and
b) Undertake in situ soakage testing and provide infiltration rates to assist others in undertaking design of SuDS.

The initial scope of the works covered by this report, and the terms and conditions under which they were undertaken, were set out within the offer letter Q11346, dated 18th October 2021. The instruction to proceed was received from the client.

Previous ground investigation works have been carried out at the site by Ashdown Site Investigation Ltd, the findings of which were provided in a Geotechnical Assessment Report[1].

[1] Ashdown Site Investigation Project No. P14170 Report No. R13905, dated 11th November 2019.

2. SITE CONTEXT

2.1 Site Location

The site comprises an irregular shaped plot of land located at the western end of Gardener Street, Southwick, West Sussex, and is centred on the approximate Ordnance Survey national grid reference TQ 2541 0557. A site location plan and site plan are presented as Figure 1 and Figure 2, respectively.

2.2 Geological and Hydrogeological Information

2.2.1 Expected Geology and Aquifer Designation

The stratigraphic succession that may be expected to underlie the site is presented in the following table.

Table 1. Expected Strata and Aquifer Designation

Type	Stratum	Aquifer Designation
Superficial	River Terrace Deposits	Secondary B Aquifer
	Head	Secondary Undifferentiated Aquifer
Bedrock	White Chalk Subgroup	Principal Aquifer

The River Terrace Deposits in this area were formerly denoted as the Brickearth and comprise brown sandy (fine) silt or clay largely originating from the solution weathering of the previously existing chalk. The material will have been reworked by water flow to produce some lateral variability in the grain size of the soil (sand and gravel) and can be expected to contain a variable content of flint.

The superficial Head, shown in the vicinity of the site, is a polymict deposit generally comprising clay and sandy clay with variable amounts of gravel and cobbles. The lithology of the Head reflects the nature of the parent solid strata; the gravel and cobble fraction comprising chalk and flint. The material is likely to have been disturbed by intense frost action in a periglacial environment. It is usually poorly sorted but may be stratified where it has been subject to solifluction and/or hillwash and soil creep. It may form infill to solution features within the chalk.

The White Chalk Subgroup comprises a weak, white chalk locally with flint bands together with scattered nodular flints. It may be expected to have a deeply convoluted upper surface as a result of solution weathering. The presence of natural cavities in the chalk is very rare and solution features, if present, can be expected to be infilled with Quaternary deposits such as the River Terrace Deposits. The infill material may be significantly weaker than the surrounding chalk. Solution features can comprise pipes extending to several metres deep into the chalk or conical depressions and basin shaped structures.

2.2.2 Groundwater Source Protection Zones

The site does not lie within an Environment Agency Source Protection Zone.

3. SITE WORKS

The site works comprised the excavation of a series of mechanically dug trial pits, designated TP101 to TP106, to depths of between 1.90m and 2.35m below ground level. In addition, two boreholes, denoted WS101 and WS102, were drilled using dynamic sampling techniques to depths of 5.00m and 3.80m below ground level, respectively. The intrusive work was carried out between 18th November and 26th November 2021. The exploratory hole locations are shown on Figure 2.

Falling head soakage tests were undertaken in trial pits TP101 to TP106 in accordance with BRE guidance[2]. The pits were backfilled with free draining materials with a standpipe constructed in each test cell. Dataloggers were installed in the standpipes to monitoring the fall in water levels over the test period. Each pit was filled with water on three separate occasions.

Groundwater monitoring standpipes, together with dataloggers, were installed to the full depth of boreholes WS101 and WS102. Descriptions of the installations are shown on the exploratory hole records in the appendices. The results of the groundwater monitoring will follow on completion of the monitoring period at the end of May 2022.

Descriptions of the strata encountered and comments on groundwater conditions are shown in the exploratory hole records given in the appendices, together with notes to assist in their interpretation.

[2] Section 3.2.3 of Building Research Establishment (BRE) Digest 365, 2016.

4. GROUND CONDITIONS

4.1 Stratigraphy

The ground conditions encountered during the recent site works are discussed below and are similar to those encountered during the previous phase of works.

4.1.1 Surface Covering

Each of the exploratory holes was excavated through a surface cover of topsoil some 200mm to 300mm in thickness.

4.1.2 River Terrace Deposits

Underlying the surfacing, the investigation progressed into undisturbed brown slightly gravelly slightly sandy clay deposits which persisted to depths of between 1.20m and 1.75m below ground level.

These soils are considered to represent the River Terrace Deposits indicated on the published geological map.

4.1.3 Head

Beneath the River Terrace Deposits, the exploratory holes encountered generally gravelly sandy silt and/or sandy silty gravel of chalk soils with subordinate horizons of gravelly slightly sandy clay soils noted at depth

These soils, considered to be representative of the Head soils indicated to be present in the vicinity of the site on the published geology map, continued to the full depth of the investigation.

4.2 Stability

Each of the exploratory holes was recorded to remain stable during the course of drilling / excavation.

4.3 Groundwater Conditions

Groundwater was not encountered within the exploratory holes during the short period of the intrusive works.

The results of the long-term monitoring programme will be issued under separate cover.

5. STORMWATER INFILTRATION SYSTEMS

In-situ infiltration testing[3] was carried out in trial pits TP101 to TP106. For each test the soil infiltration rate (f) was calculated by dividing the volume of water lost between 75% and 25% of the initial test depth by the sum of the average surface area of the sides of the trial pit in contact with the water during the test monitoring period, and its base area. This figure was then divided by the test duration (time taken for the water level to fall between 75% and 25% of the initial test depth) to give the soil infiltration rate in metres per second.

The infiltration rates derived from the tests are summarised in the following table.

Table 2. Calculated Infiltration Rates

Exploratory Hole	Base Depth of Trial Pit (m)	Stratum	Infiltration Rate (f) (m/sec)		
			Test 1	Test 2	Test 3
TP101	2.30	River Terrace Deposits & Head	1.0×10^{-5}	9.8×10^{-6}	9.6×10^{-6}
TP102	1.90	River Terrace Deposits & Head	1.9×10^{-5}	1.5×10^{-5}	1.7×10^{-5}
TP103	1.90	River Terrace Deposits & Head	1.5×10^{-5}	1.3×10^{-5}	1.3×10^{-5}
TP104	1.90	River Terrace Deposits & Head	1.9×10^{-5}	1.7×10^{-5}	1.7×10^{-5}
TP105	2.35	River Terrace Deposits & Head	6.2×10^{-6}	6.8×10^{-6}	5.9×10^{-6}
TP106	2.25	River Terrace Deposits & Head	1.3×10^{-5}	1.2×10^{-5}	1.3×10^{-5}

The value 'f' is equivalent to the soil infiltration coefficient 'q' quoted in the Construction Industry Research and Information Association (CIRIA) Report 156.

The results from the infiltration tests indicate that the River Terrace Deposits & Head soils possess moderate infiltration characteristics. The results from the infiltration tests should be provided to engineers responsible for the design of the drainage system.

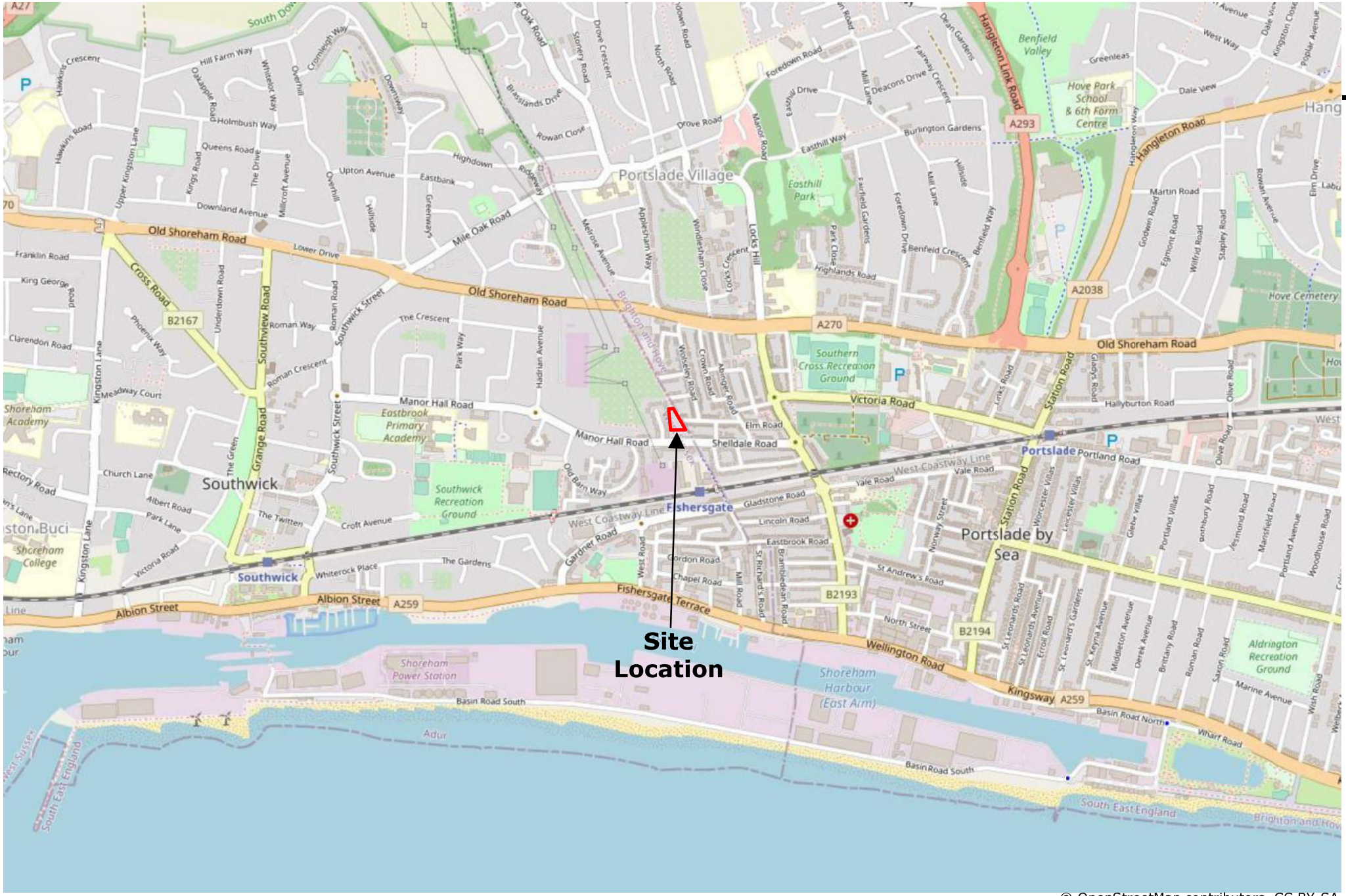
To comply with building regulations[4], point discharging infiltration systems (conventional ring or trench soakaways) are required to be constructed a minimum of 5.0m away from proposed or existing buildings.

Ashdown Site Investigation Ltd.

[3] Conducted in general accordance with the requirements of BRE 365, Soakaway Design.
[4] The Building Regulations 2010; Part H; Drainage and Waste Disposal

FIGURES AND APPENDICES

Figure 1 Site Location Plan
Figure 2 Proposed Site Plan Showing Exploratory Hole Locations
Exploratory Hole Notes
Exploratory Hole Records
Trial Pit Falling Head Soakage Test Results



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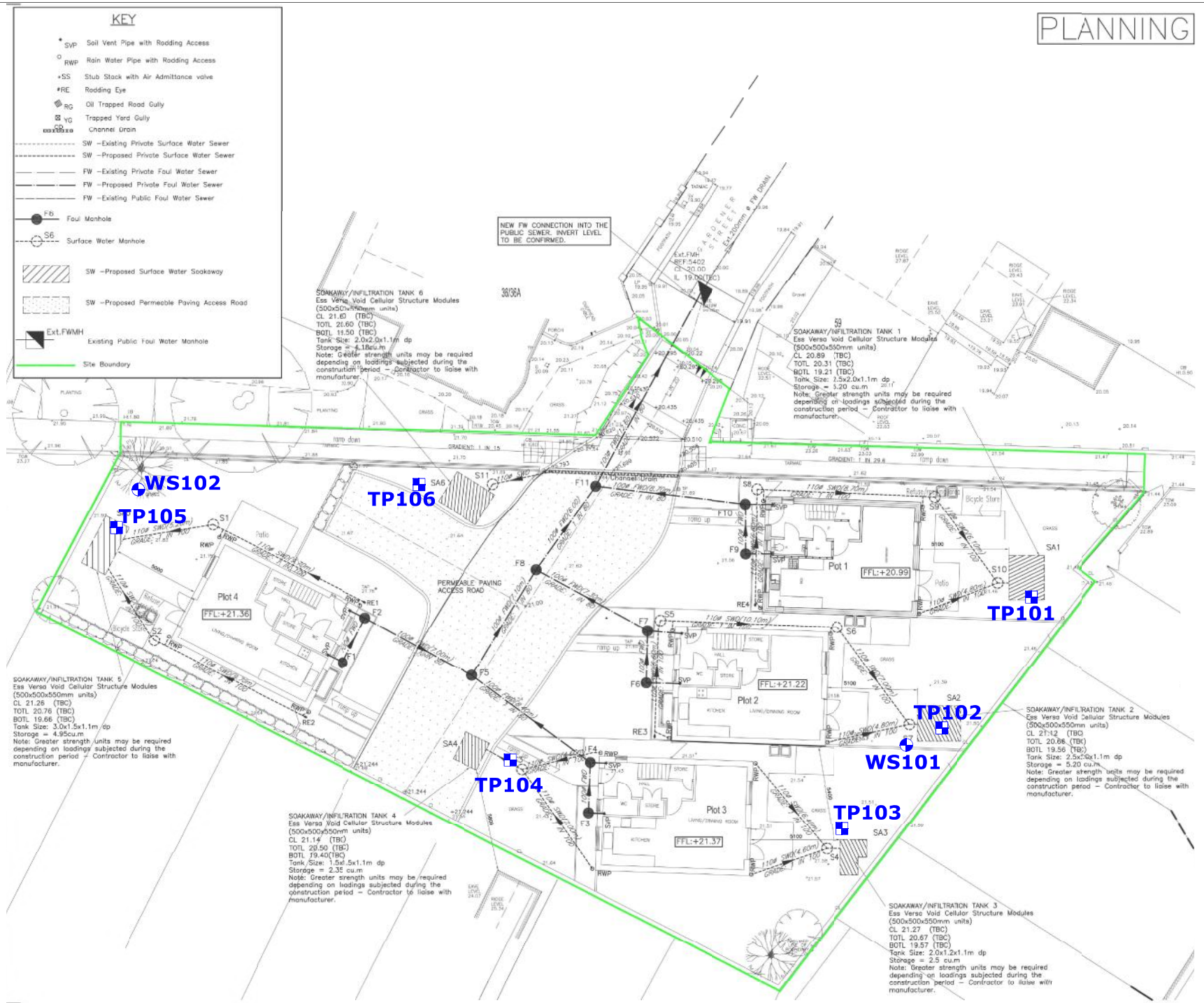
ASHDOWN SITE INVESTIGATION LIMITED	Site Location Plan	Site Name	Figure No.	Project Reference
		Manor Hall Nursery, Gardener Street, Southwick	1	P15411



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Site:

Manor Hall Nursery
Gardener Street
Southwick

Report Ref:

P15411

Figure No.

2

Drawing Title

Proposed Site Plan Showing Exploratory Hole Locations

Scale

NTS

NOTES FOR THE INTERPRETATION OF EXPLORATORY HOLE RECORDS

1 Symbols and abbreviations

Samples

U 'Undisturbed' Sample: - 100mm diameter by 450mm long. The number of blows to drive in the sampling tube is shown after the test index letter in the SPT column.
U_o Sample not obtained
U* Full penetration of sample not obtained
Pi Piston Sample: 'Undisturbed' sample 100mm diameter by 600mm long.
D Disturbed Sample
R Root Sample
B Bulk Disturbed Sample
W Water Sample
J Jar Sample (sample taken in amber glass jar fitted with gas tight lid)
T Tub Sample
Vi Vial Sample

In situ Testing

S Standard penetration test (SPT): Using the split spoon sampler.

C Standard Penetration Test (SPT): using a solid cone instead of the sampler - conducted usually in coarse grained soils or weak rocks.

V Shear Vane Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.

H Hand penetrometer Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.

P Perth Penetrometer Test: Number of blows for 300mm penetration shown under Vane/Pen Test and N Value column.

Excavation Method

CP Cable Percussion Borehole
WLS Dynamic Sampler Borehole using windowless sampler tubes
WS Dynamic Sampler Borehole using window sampler tubes
TP Trial Pit excavated using mechanic excavator
HDP Trial Pit excavated using hand tools

2 Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1) and Part 2 Principles of classification (BS EN 14688-2) as well as the BS5930 code of Practice for Ground Investigations.

3 Rock Description

Description and classification of rocks has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of rock, Part 1 Identification and classification (BS EN ISO 14689-1) as well as the BS5930 code of Practice for Ground Investigations. TCR – Total Core Recovery, SCR – Solid Core Recovery, RQD – Rock Quality Designation, NI – Non Intact, If – indicative fracture spacing (min/ave/max), FI – Fracture Index.

4 Chalk Description

Chalk description is based on BS EN ISO 14688, BS EN ISO 14689 and BS5930. The classification of chalk generally follows the guidance offered by the Construction Industry Research and Information Association (CIRIA) C574, 'Engineering in Chalk'. This is based on assessment of chalk density, discontinuity and aperture spacing, and the proportion of intact chalk to silt of chalk.

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 18/11/2021

End Date: 18/11/2021

Borehole Number: **WS101**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Topsoil.
	D	0.50					0.30	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse flint. (River Terrace Deposits)
	D	1.50					1.20	Off white gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse chalk and flint. (Head)
	D	3.50					3.10	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse flint. (Head)
							4.00	Off white gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse chalk and flint. (Head)
							5.00	End of borehole at 5.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: Standpipe installed to 5.00m depth; 5.00m to 3.00m slotted pipe with gravel surround; 3.00m to ground level plain pipe with bentonite seal; completed with end cap and security cover concreted flush with ground surface.

Excavation Method: WLS

Borehole Diameter: Various

Made By: BA

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 18/11/2021

End Date: 18/11/2021

Borehole Number: **WS102**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Topsoil.
	D	0.50					0.30	Brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint. (River Terrace Deposits)
								becoming gravelly below 1.00m depth.
	D	1.70					1.60	Off white and grey silty subangular to subrounded fine to coarse GRAVEL of flint and chalk. (Head)
	D	3.50					3.10	Brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint. (Head)
							3.80	End of borehole at 3.80m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: No further progress below 3.80m depth - too hard/ dense.
Standpipe installed to 3.80m depth; 3.80m to 2.80m slotted pipe with gravel surround; 2.80m to ground level plain pipe with bentonite seal; completed with end cap and security cover concreted flush with ground surface.

Excavation Method: WLS

Borehole Diameter: Various

Made By: BA

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 22/11/2021

End Date: 22/11/2021

Trial Pit Number: **TP101**

Samples and In Situ Testing				Legend	Depth/ Reduced Level	Stratum Description
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result			
					0.00	Topsoil.
					0.30	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse flint. (River Terrace Deposits)
D	1.00					
					1.60	Off white gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse flint and chalk. (Head)
D	2.00					
					2.30	End of trial pit at 2.30m

Remarks

Groundwater: Trial pit dry on completion.

Stability: Trial pit stable on completion.

Notes: n/a

Excavation Method: TP

Pit Length: 2.50m

Pit Width: 0.50m

Made By: BA

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 22/11/2021

End Date: 22/11/2021

Trial Pit Number: **TP102**

Samples and In Situ Testing				Legend	Depth/ Reduced Level	Stratum Description
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result			
					0.00	Topsoil.
					0.30	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subroudned fine to coarse flint. (River Terrace Deposits)
D	1.00					
					1.75	Off white gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse flint and chalk. (Head)
D	1.90				1.90	End of trial pit at 1.90m

Remarks

Groundwater: Trial pit dry on completion.

Stability: Trial pit stable on completion.

Notes: n/a

Excavation Method:	TP
Pit Length:	2.00m
Pit Width:	0.50m
Made By:	BA

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 22/11/2021

End Date: 22/11/2021

Trial Pit Number: **TP103**

Samples and In Situ Testing				Legend	Depth/ Reduced Level	Stratum Description
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result			
					0.00	Topsoil.
					0.20	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subroudned fine to coarse flint. (River Terrace Deposits)
D	1.00					
					1.75	Off white gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse flint and chalk. (Head)
D	1.90				1.90	End of trial pit at 1.90m

Remarks

Groundwater: Trial pit dry on completion.

Stability: Trial pit stable on completion.

Notes: n/a

Excavation Method: TP

Pit Length: 1.80m

Pit Width: 0.50m

Made By: BA

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 22/11/2021

End Date: 22/11/2021

Trial Pit Number: **TP104**

Samples and In Situ Testing				Legend	Depth/ Reduced Level	Stratum Description
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result			
					0.00	Topsoil.
					0.20	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subroudned fine to coarse flint. (River Terrace Deposits)
D	1.00					
					1.25	Off white gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse flint and chalk. (Head)
D	1.80					
					1.90	End of trial pit at 1.90m

Remarks

Groundwater: Trial pit dry on completion.

Stability: Trial pit stable on completion.

Notes: n/a

Excavation Method: TP

Pit Length: 1.75m

Pit Width: 0.45m

Made By: BA

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 22/11/2021

End Date: 22/11/2021

Trial Pit Number: **TP105**

Samples and In Situ Testing				Legend	Depth/ Reduced Level	Stratum Description
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result			
					0.00	Topsoil.
					0.20	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subroudned fine to coarse flint. (River Terrace Deposits)
					1.70	Off white gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse flint and chalk. (Head)
					2.35	End of trial pit at 2.35m

Remarks

Groundwater: Trial pit dry on completion.

Stability: Trial pit stable on completion.

Notes: n/a

Excavation Method: TP

Pit Length: 2.00m

Pit Width: 0.55m

Made By: BA

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Site Name: Manor Hall Nursery, Gardener Street, Southwick

Job Number: P15411

Start Date: 22/11/2021

End Date: 22/11/2021

Trial Pit Number: **TP106**

Samples and In Situ Testing				Legend	Depth/ Reduced Level	Stratum Description
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result			
					0.00	Topsoil.
					0.20	Brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subroudned fine to coarse flint. (River Terrace Deposits)
D	1.00					
					1.60	Off white sandy silty subangular to subrounded fine to coarse GRAVEL of flint and chalk. (Head)
D	2.00					
					2.25	End of trial pit at 2.25m

Remarks

Groundwater: Trial pit dry on completion.

Stability: Trial pit stable on completion.

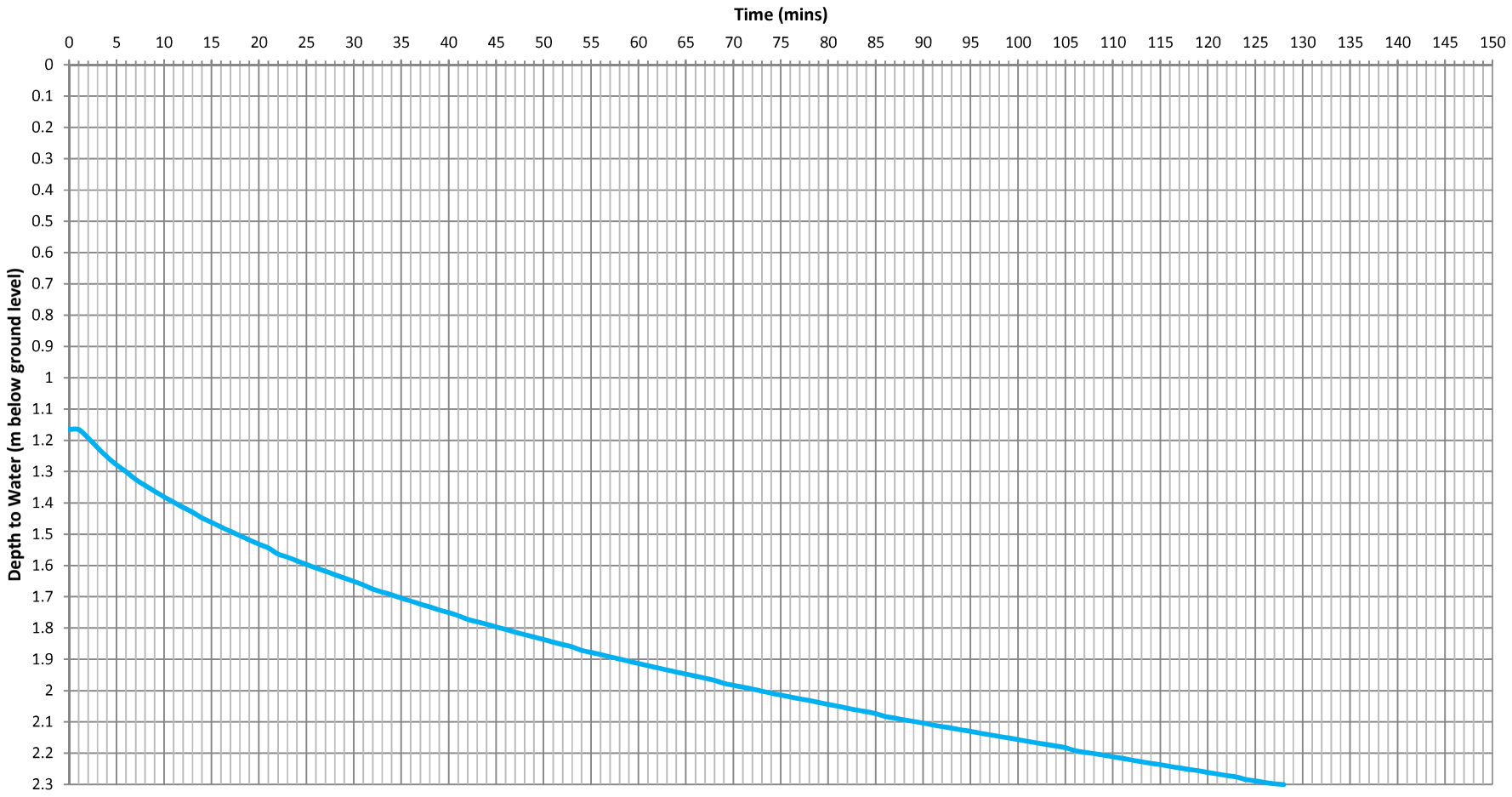
Notes: n/a

Excavation Method:	TP
Pit Length:	1.90m
Pit Width:	0.50m
Made By:	BA

Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

Trial Pit Falling Head Soakage Test Results - TP101 (Test 1)



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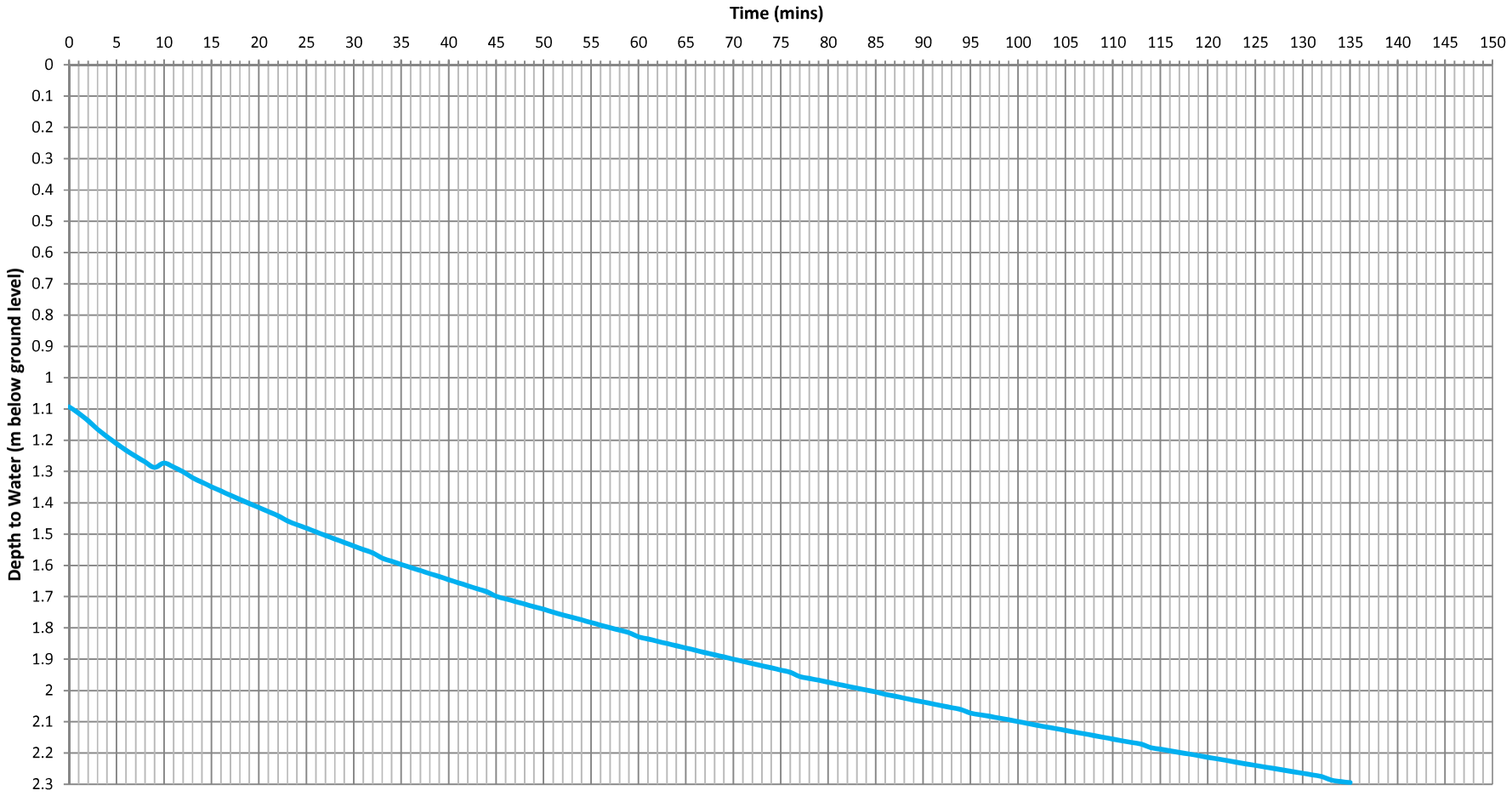
Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

Trial Pit Falling Head Soakage Test Results - TP101 (Test 2)



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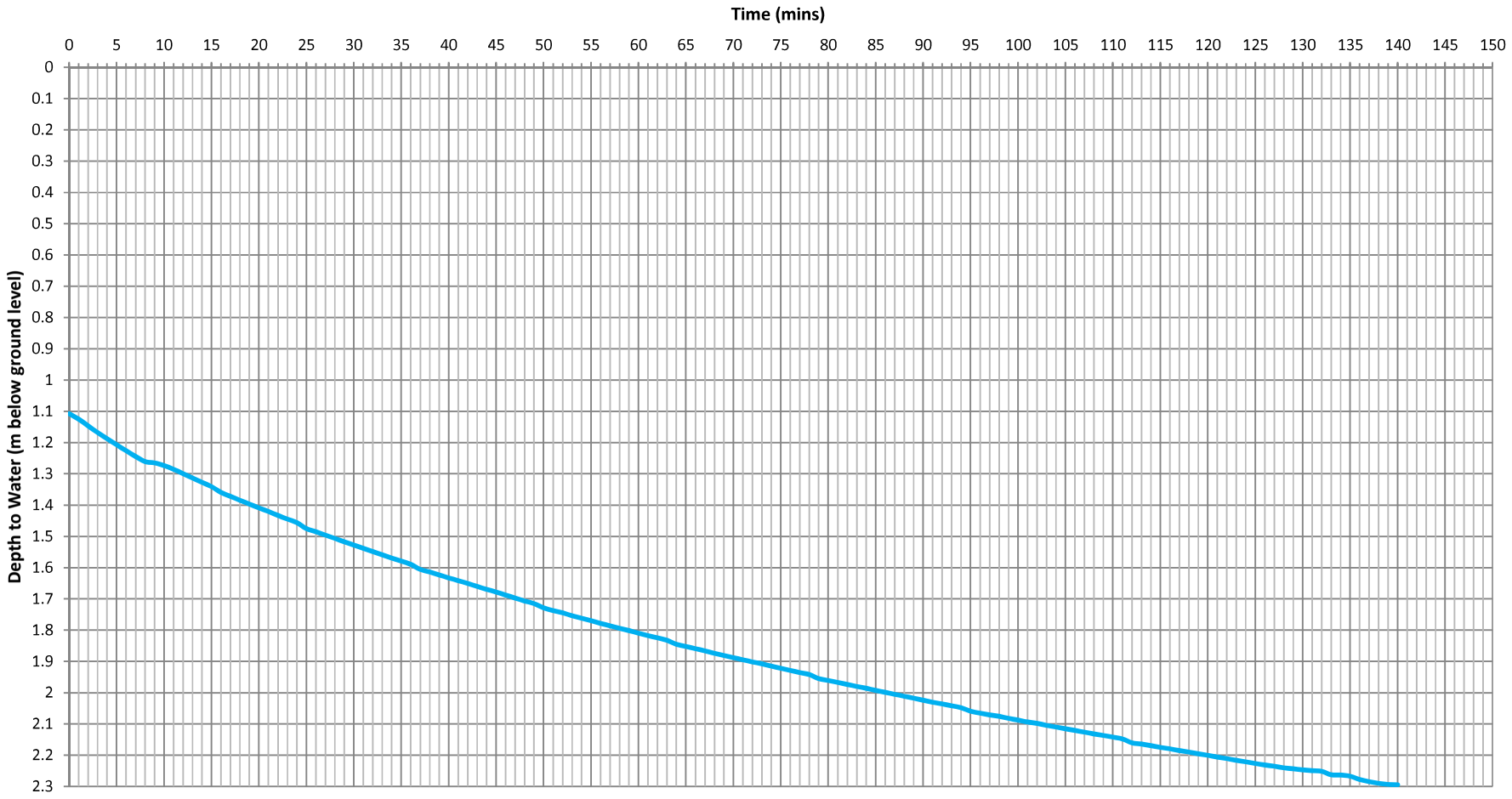
Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

Trial Pit Falling Head Soakage Test Results - TP101 (Test 3)



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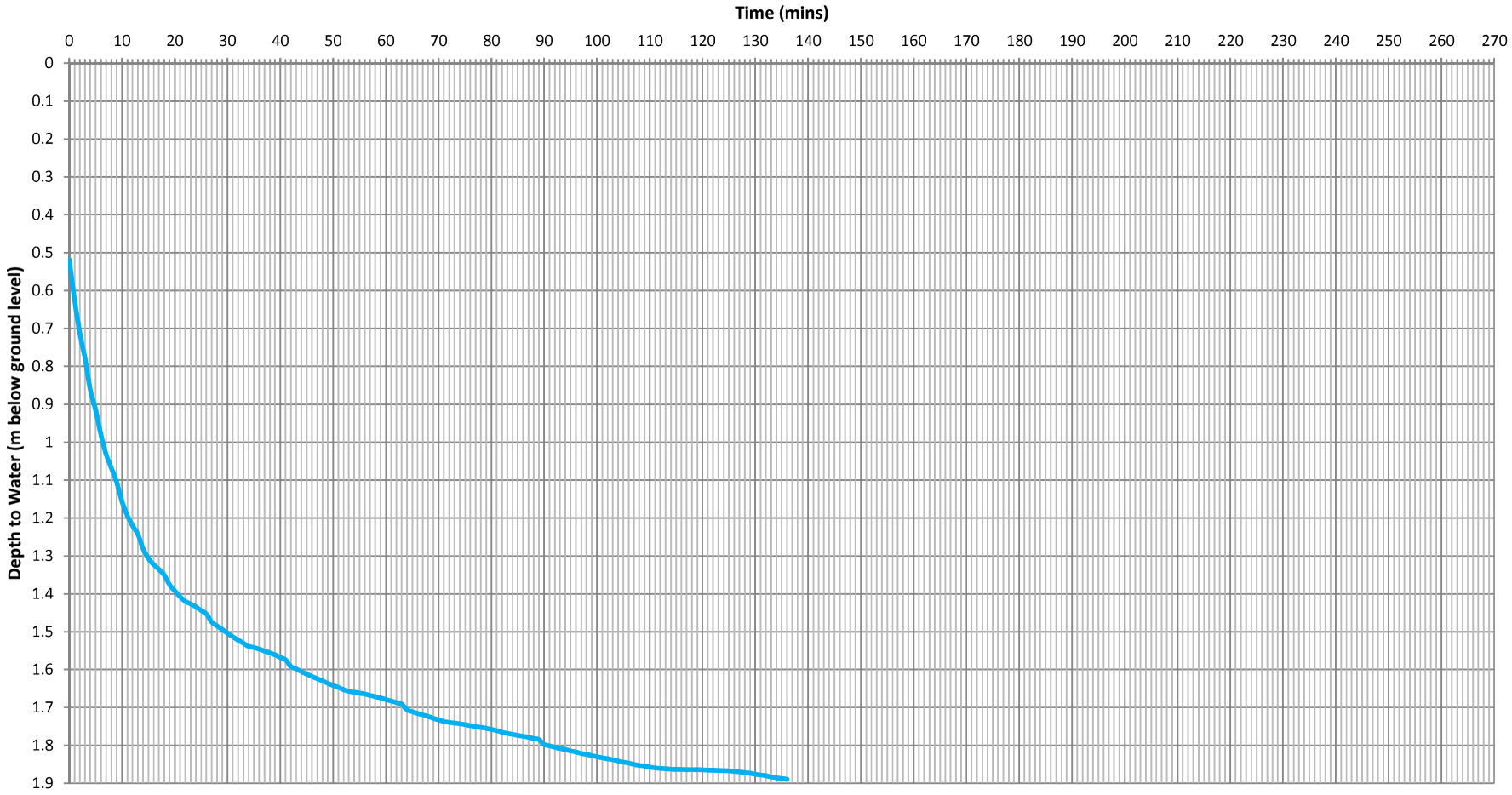
Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

Trial Pit Falling Head Soakage Test Results - TP102 (Test 1)



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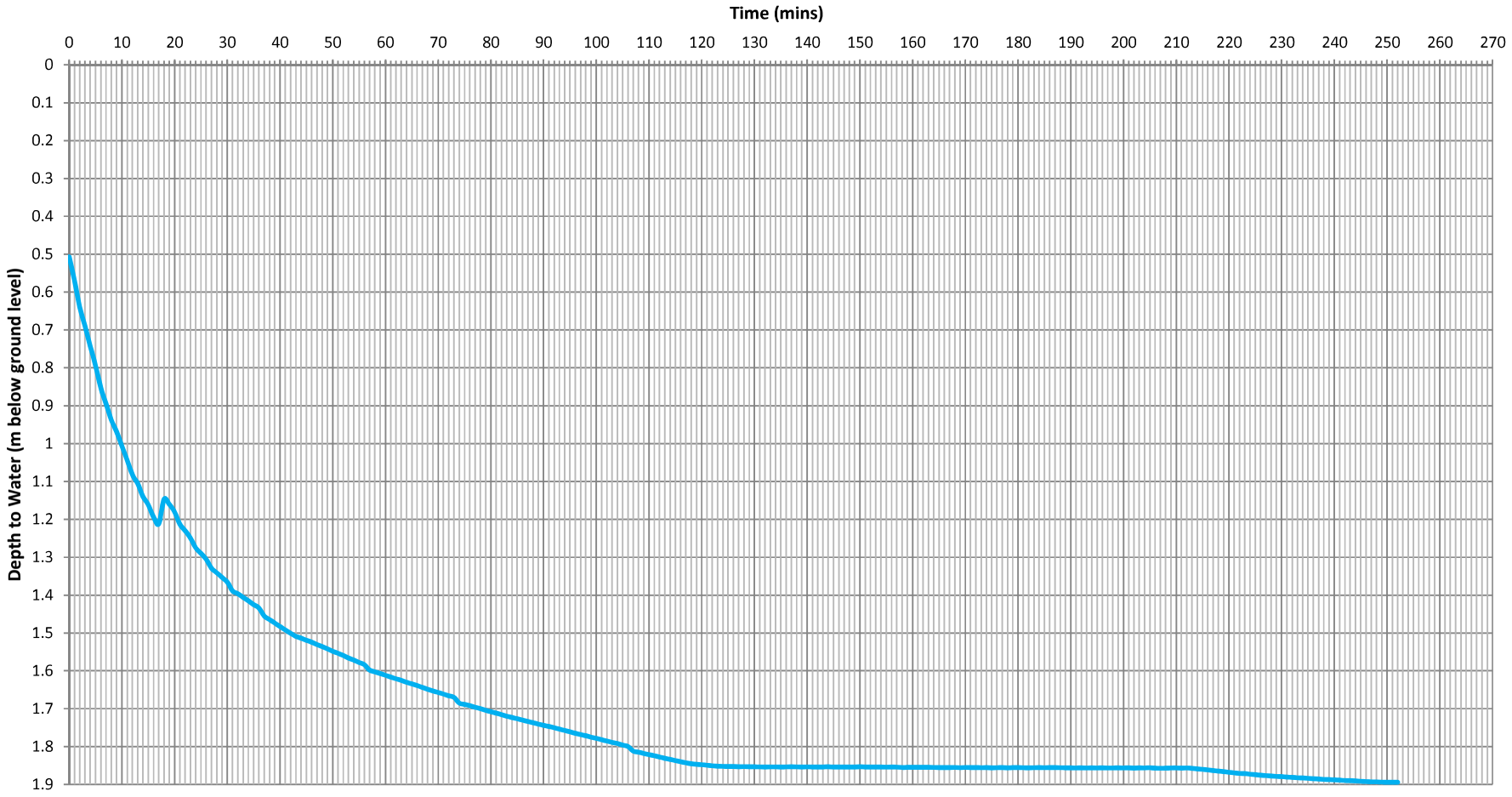
Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

Trial Pit Falling Head Soakage Test Results - TP102 (Test 2)



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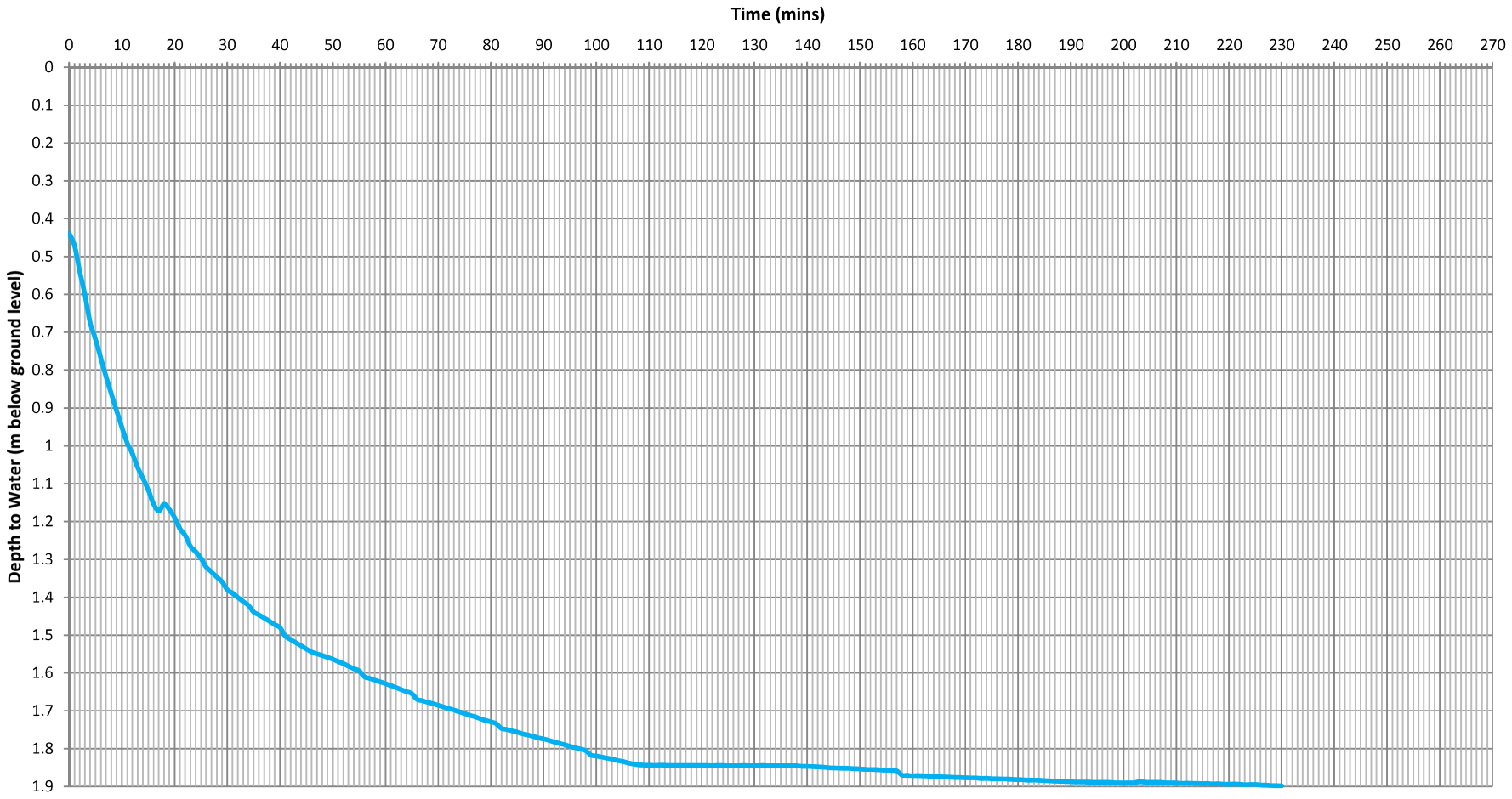
Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

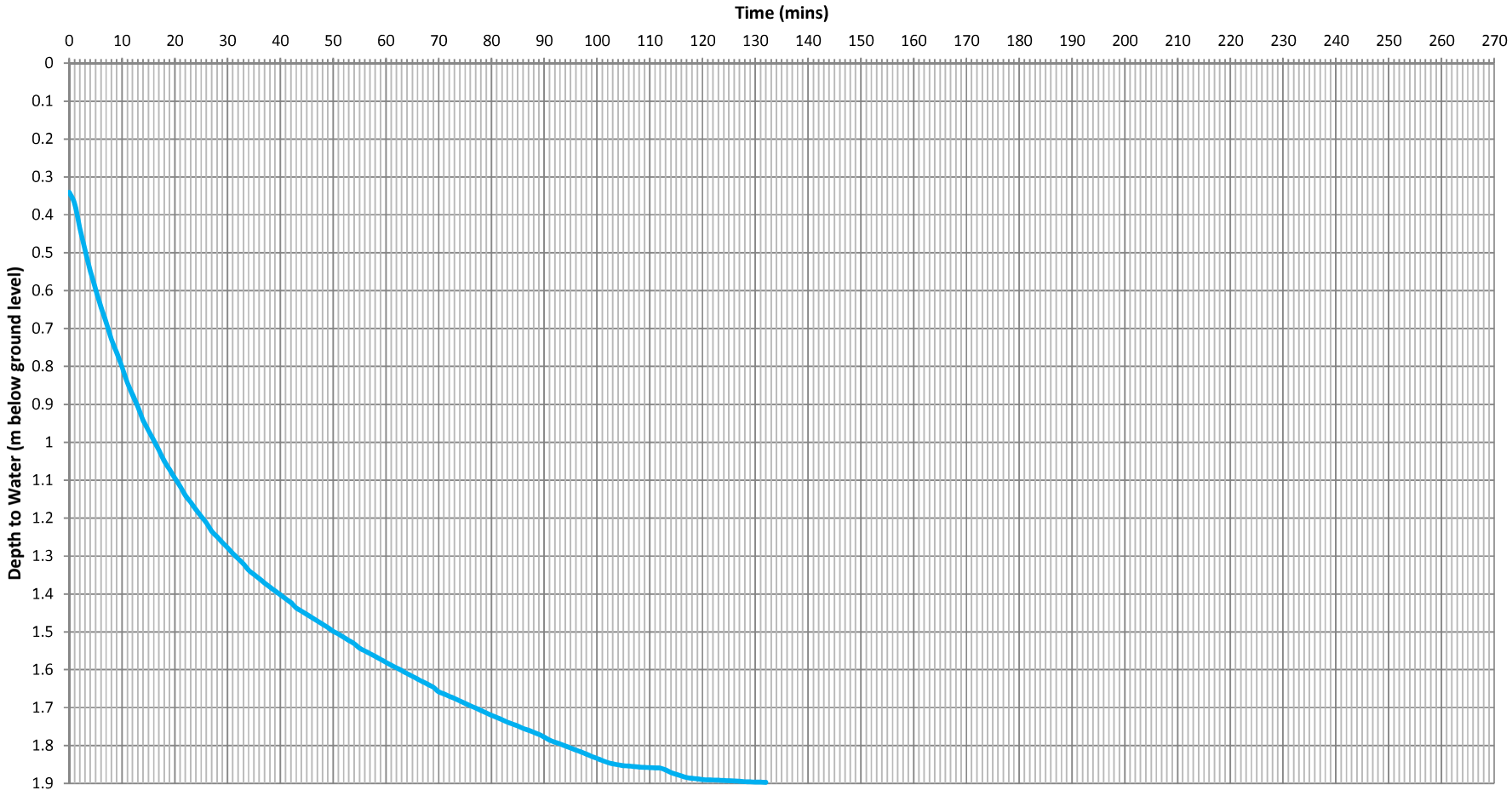
Trial Pit Falling Head Soakage Test Results - TP102 (Test 3)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

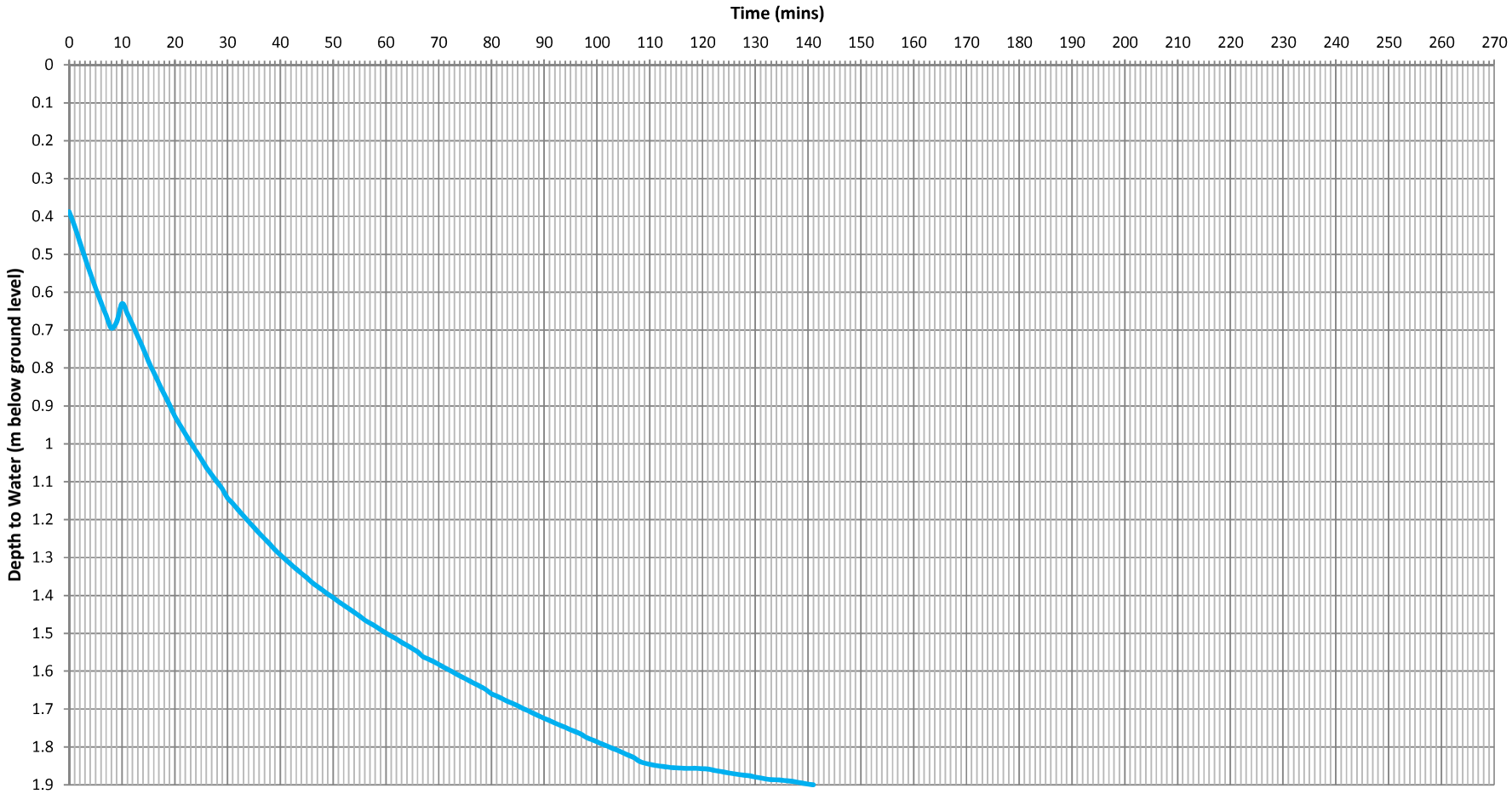
Trial Pit Falling Head Soakage Test Results - TP103 (Test 1)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

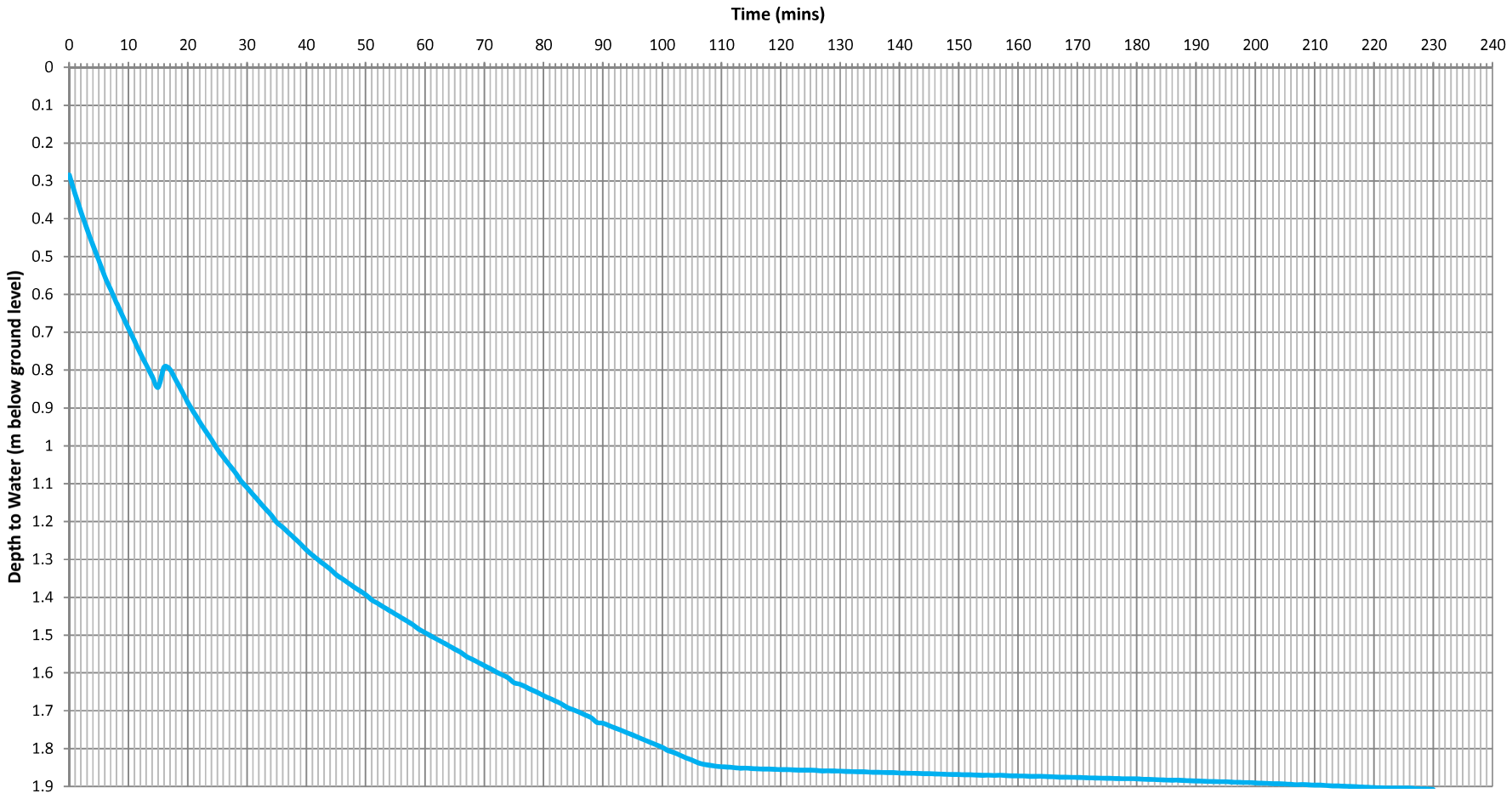
Trial Pit Falling Head Soakage Test Results - TP103 (Test 2)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

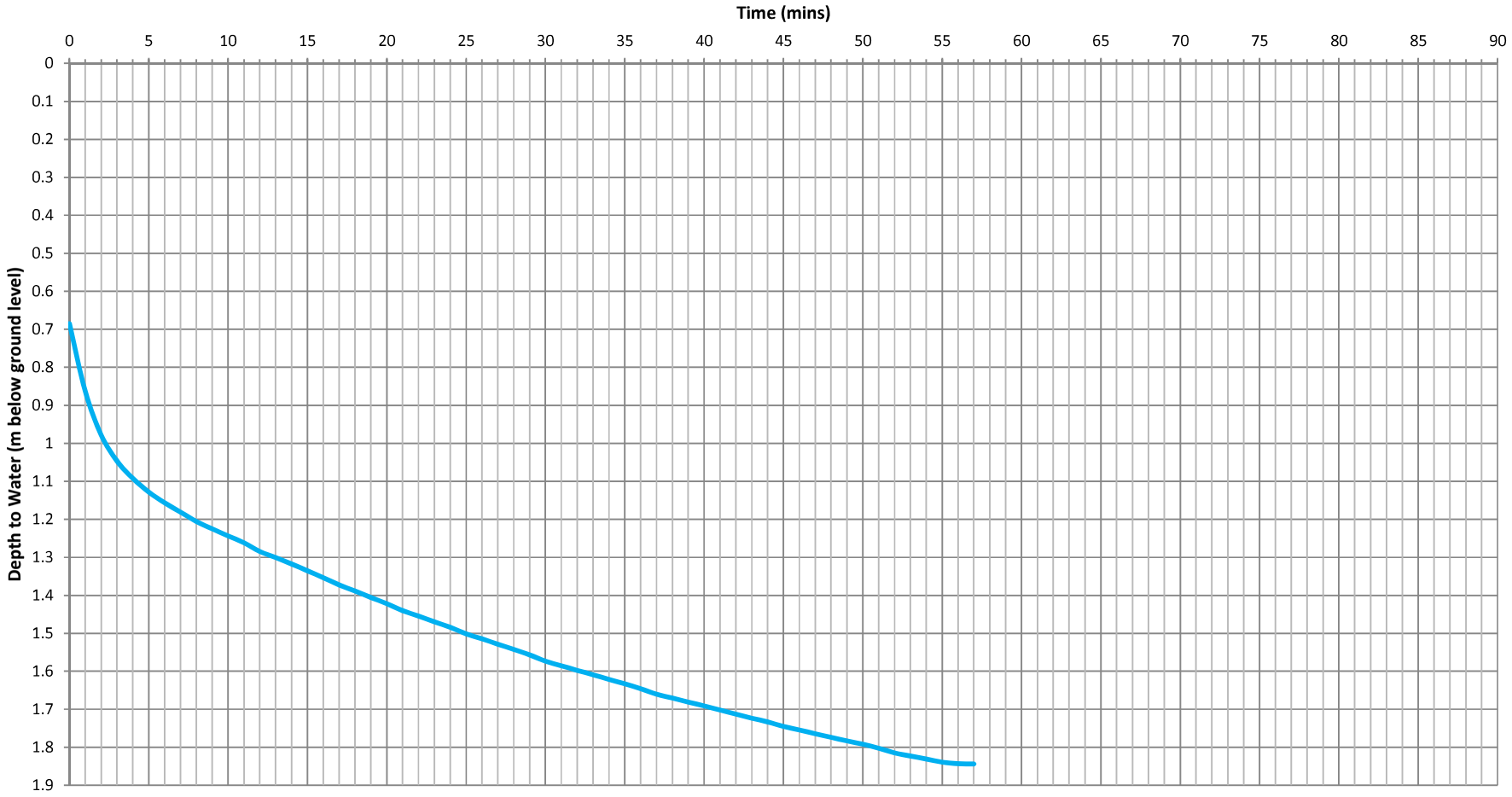
Trial Pit Falling Head Soakage Test Results - TP103 (Test 3)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

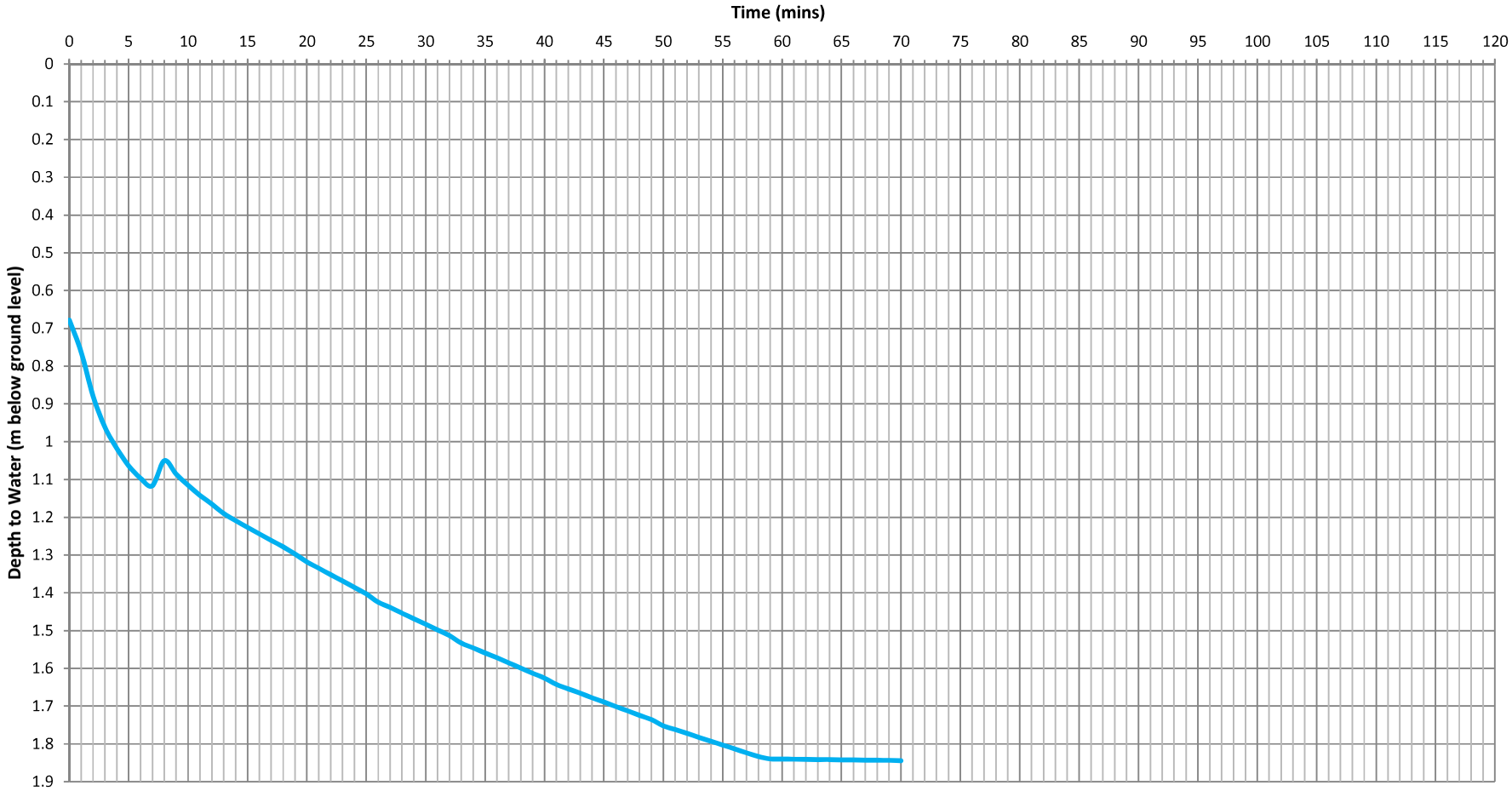
Trial Pit Falling Head Soakage Test Results - TP104 (Test 1)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

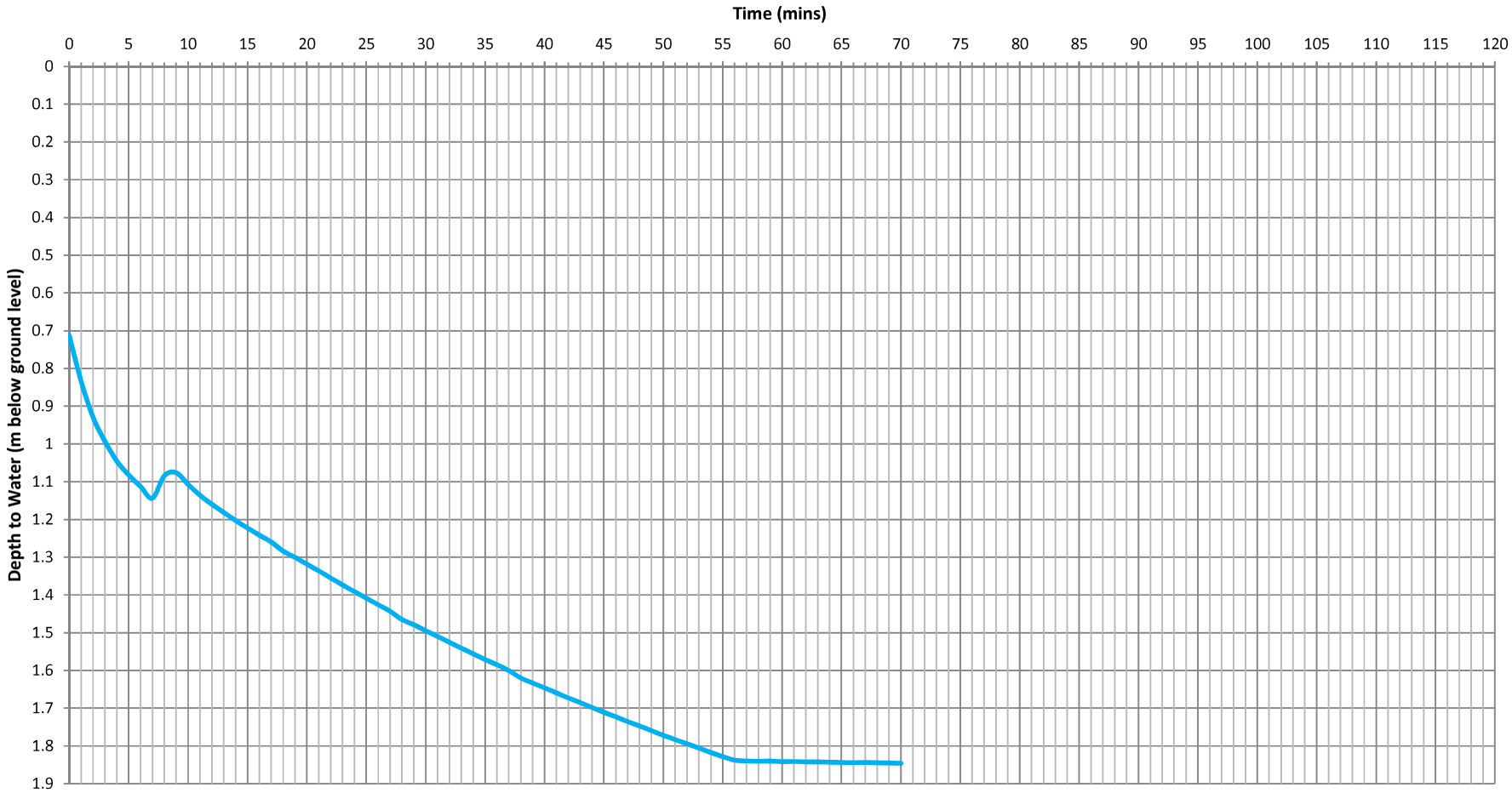
Trial Pit Falling Head Soakage Test Results - TP104 (Test 2)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

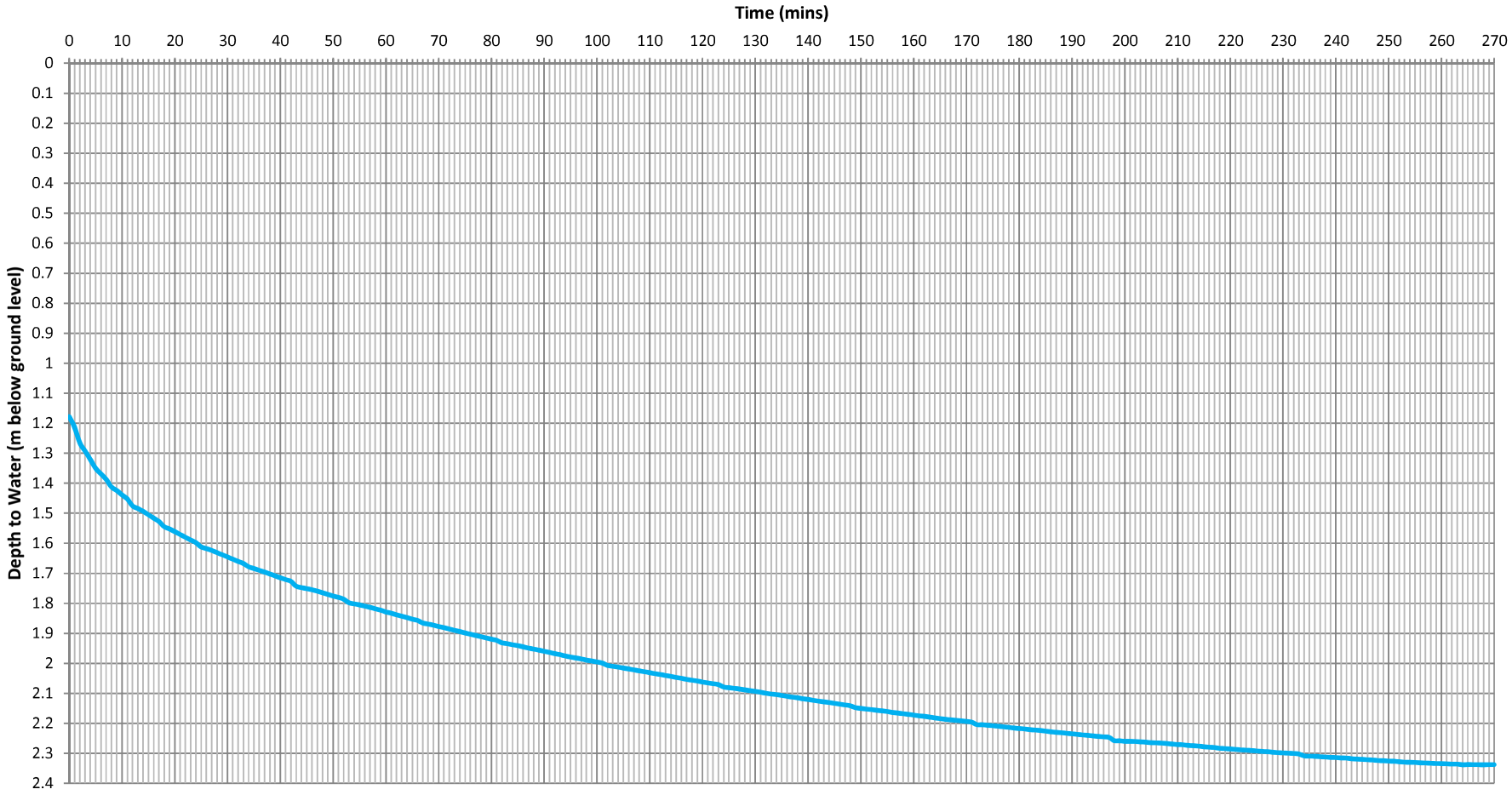
Trial Pit Falling Head Soakage Test Results - TP104 (Test 3)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

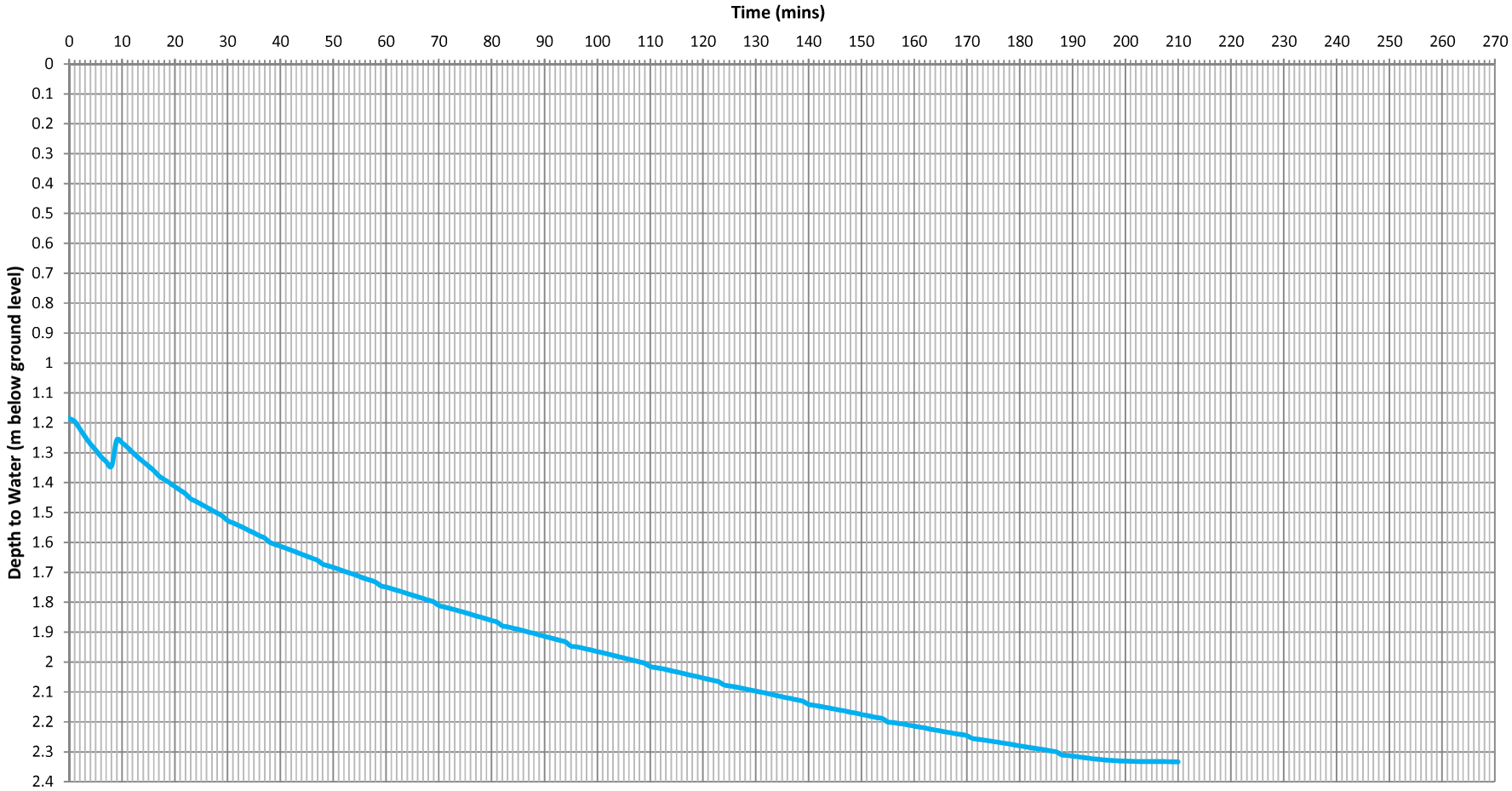
Trial Pit Falling Head Soakage Test Results - TP105 (Test 1)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

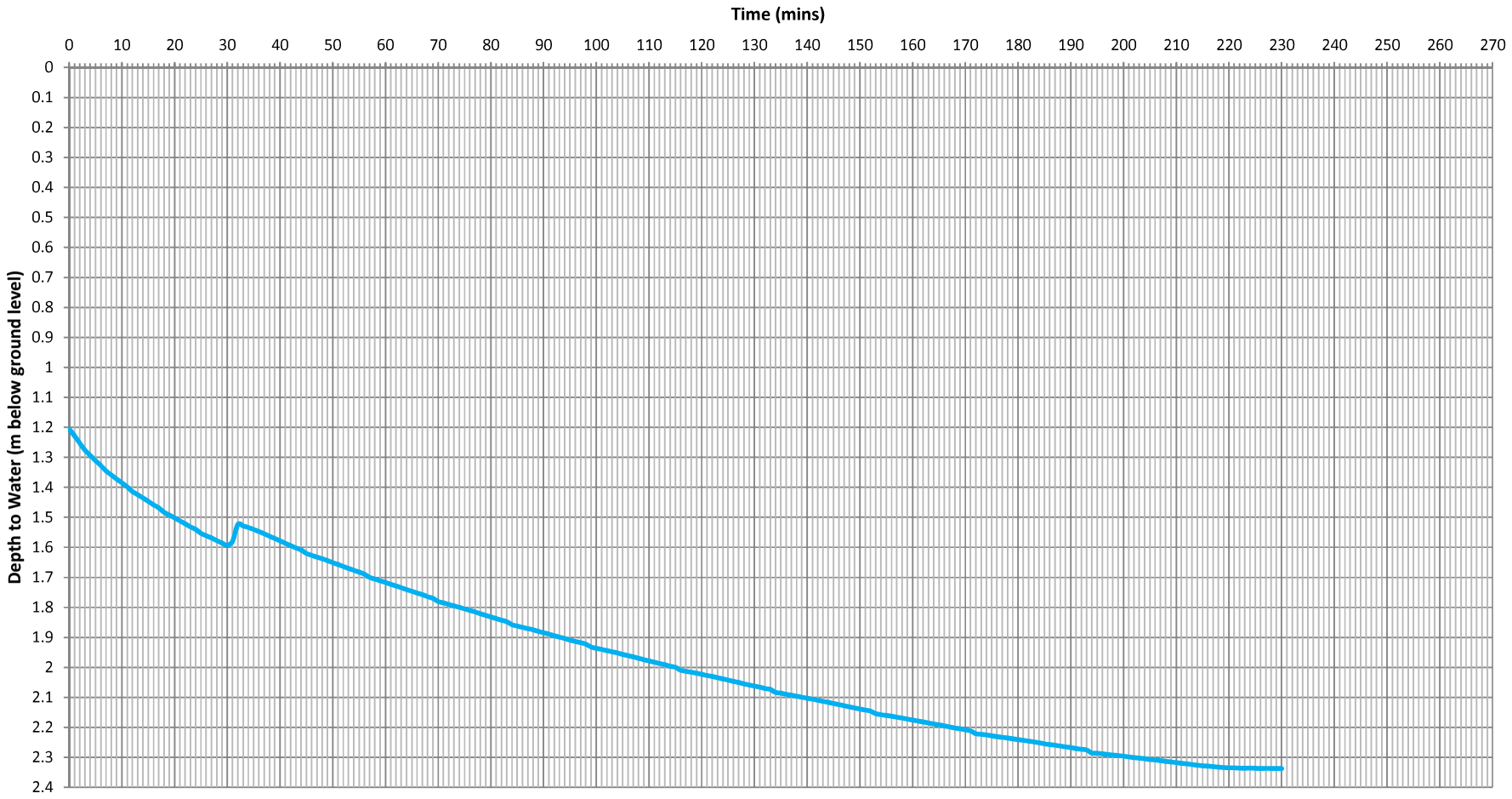
Trial Pit Falling Head Soakage Test Results - TP105 (Test 2)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

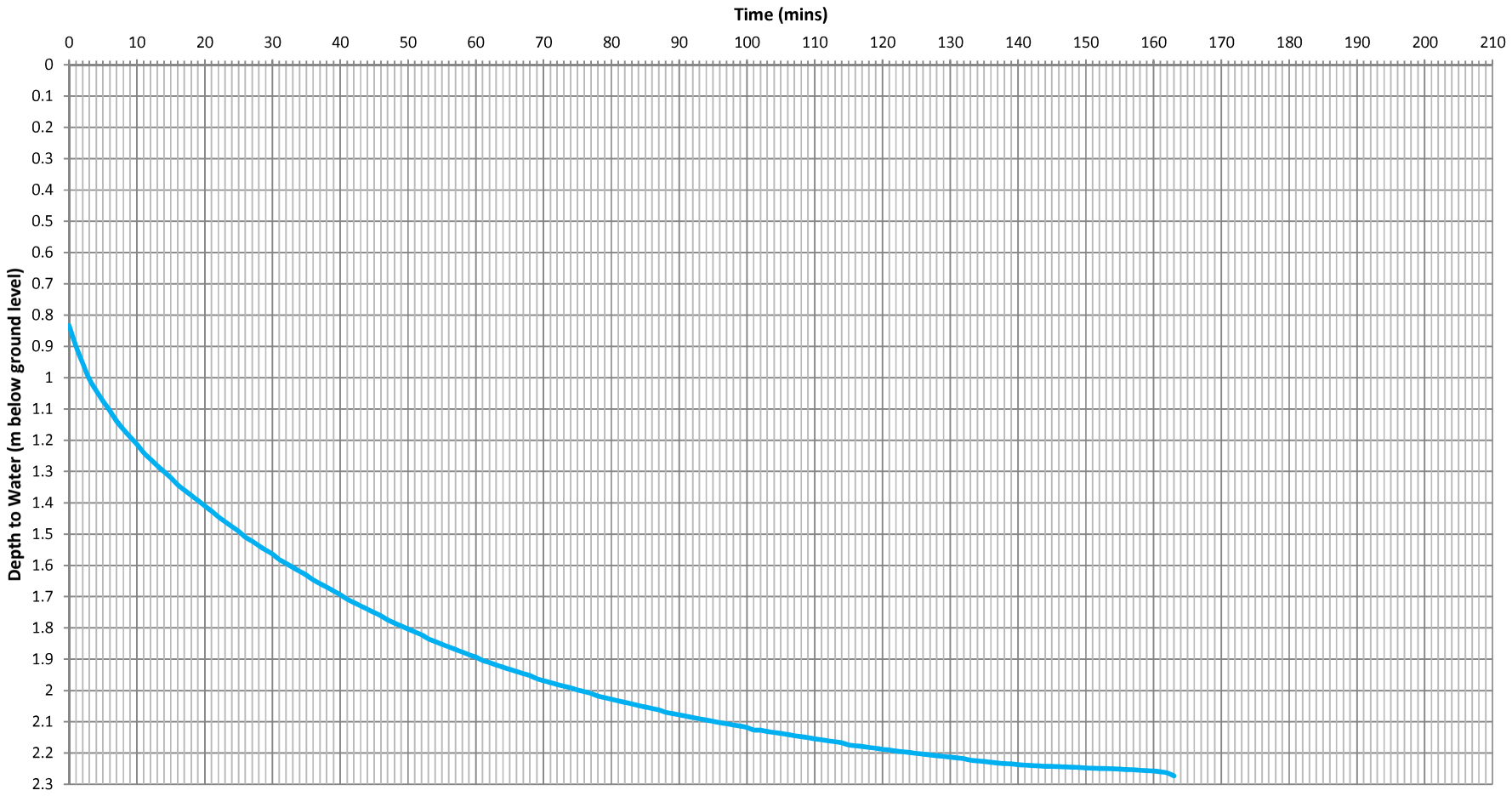
Trial Pit Falling Head Soakage Test Results - TP105 (Test 3)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

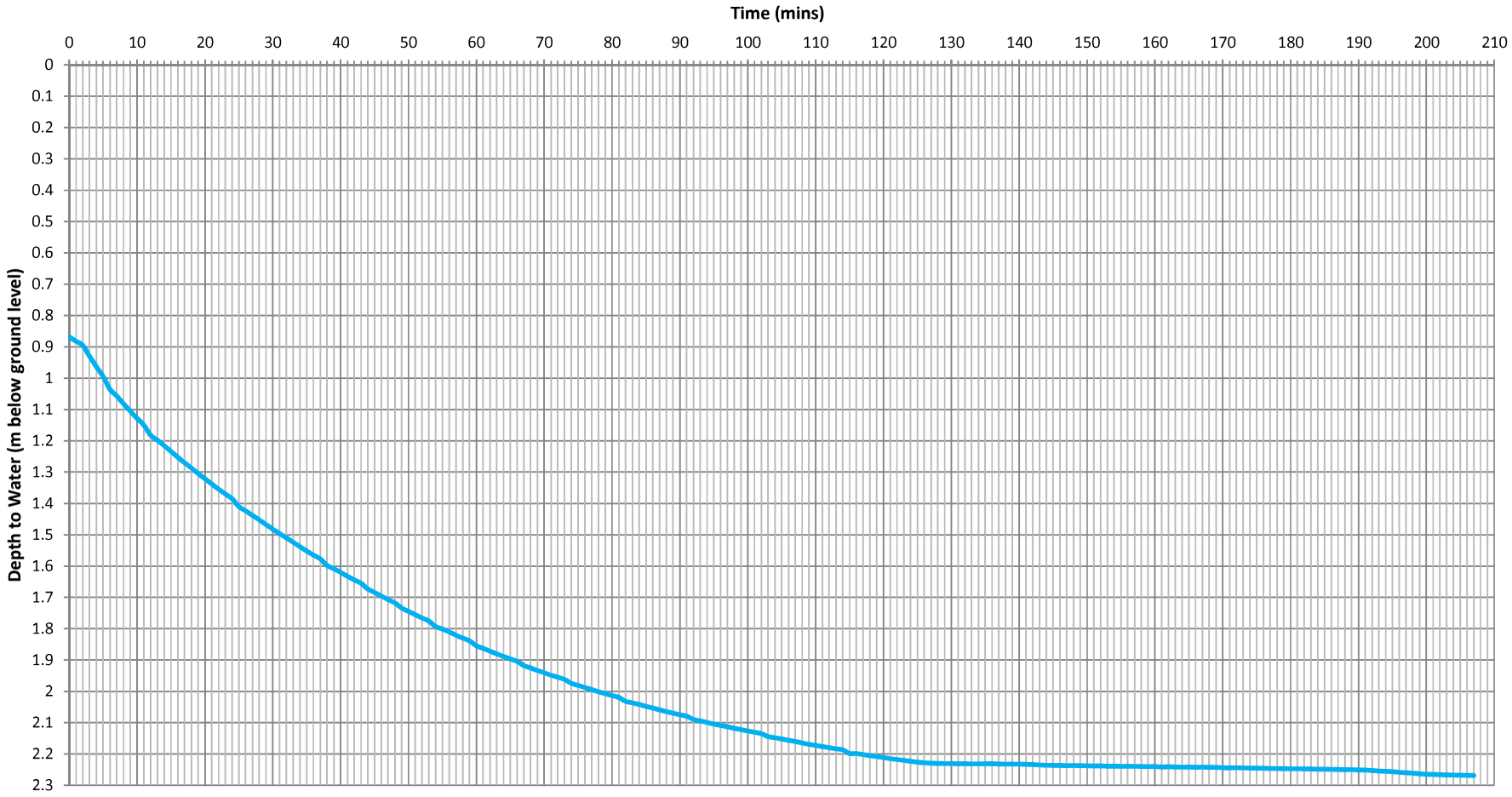
Trial Pit Falling Head Soakage Test Results - TP106 (Test 1)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

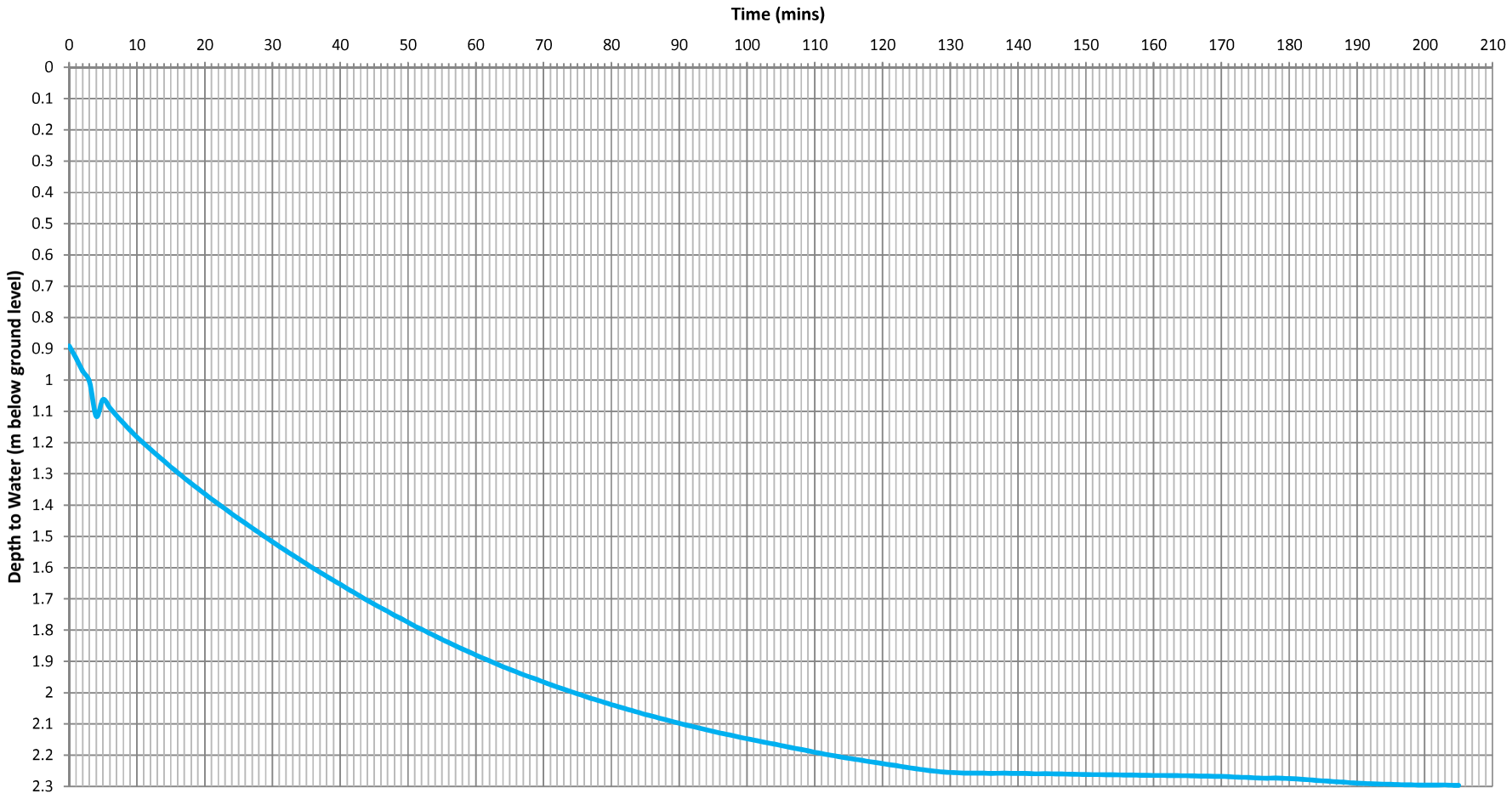
Trial Pit Falling Head Soakage Test Results - TP106 (Test 2)



Ashdown Site Investigation Limted

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No.P15411

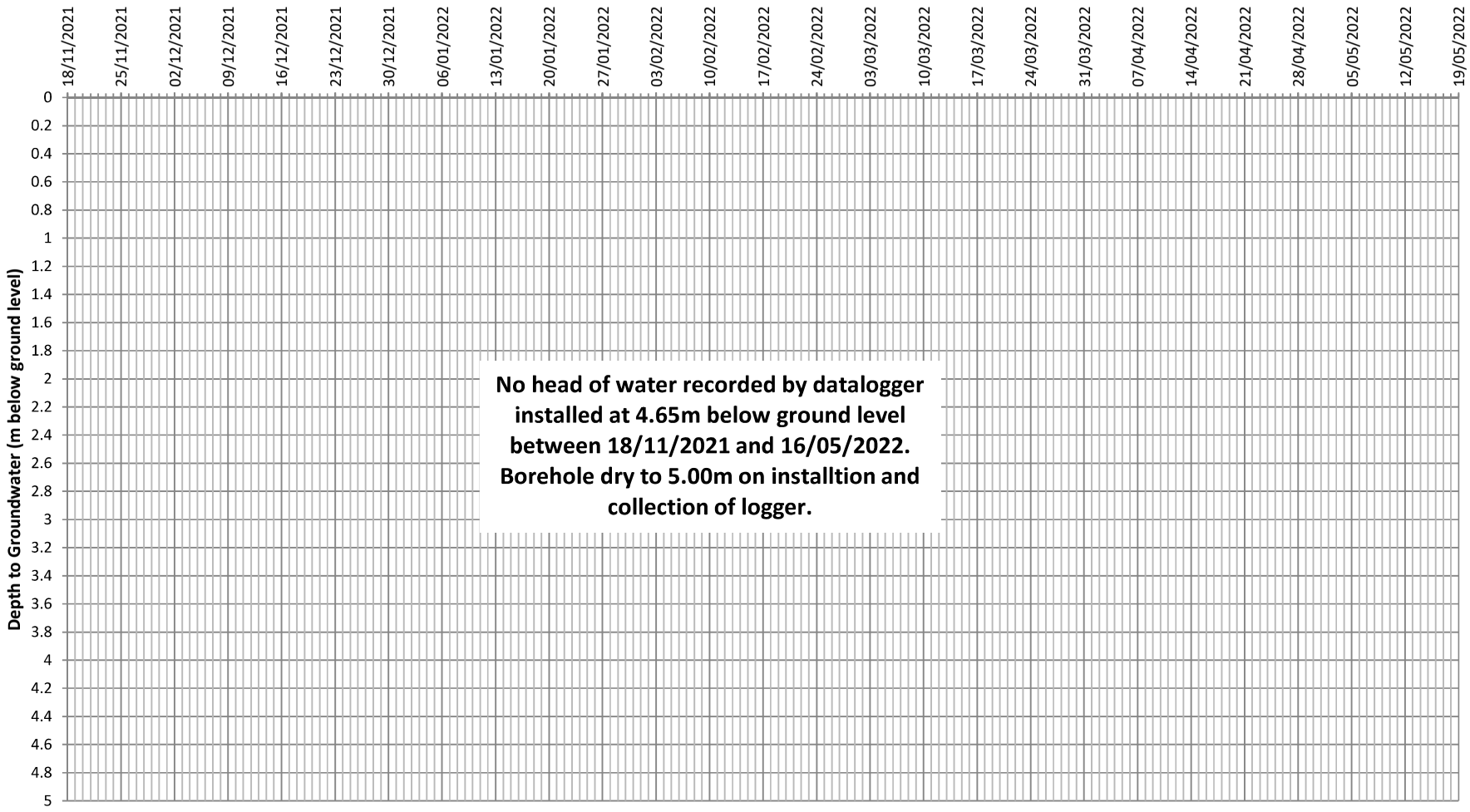
Trial Pit Falling Head Soakage Test Results - TP106 (Test 3)



Ashdown Site Investigation Limited

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No. P15411

Groundwater Monitoring Results - WS101



Ashdown Site Investigation Limited

Site: Manor Hall Nursery, Gardener Street, Southwick	Project No. P15411

Groundwater Monitoring Results - WS102

