

AMBIENTAL

ENVIRONMENTAL ASSESSMENT

Discharge of Condition Package

The Green House Sussex Ltd, Lake Lane, Barnham,
West Sussex, PO22 0AD

Our Ref: 5877_DowsettMayhew_Lake Lane

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Document Issue Record

Project type: Discharge of conditions Package

Prepared for: The Green House Sussex Ltd,

Reference: 5877_DowsettMayhew_Lake Lane

Site Location: The Green House Sussex Ltd, Lake Lane, Barnham, West Sussex, PO22 0AD

Proposed Development: It is understood that the application is for temporary rural workers accommodation and to secure up to 11 mobile home units and service room on land at The Green House Sussex Ltd, Pollards House, Lake Lane, Barnham, West Sussex, PO22 0AD

Consultant		Date	Signature
Author	Mark Naumann	21.12.2020	
Document Check			
Authorisation			
Amendments* (revision A)	Bojidar Boiadjev	08.09.2021	

*Amendments made after communication with LLFA 24/08/2021.

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Contact Us:

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Sussex Innovation Centre,
Science Park Square,
Brighton, BN1 9SB

1. Introduction

1.1 Ambiental have been appointed by The Green House Sussex Ltd to produce discharge of condition information to support the proposed development of Permanent siting of temporary seasonal horticultural worker accommodation (8 mobile homes & 3 retrospective mobile homes), hardstanding & service building.

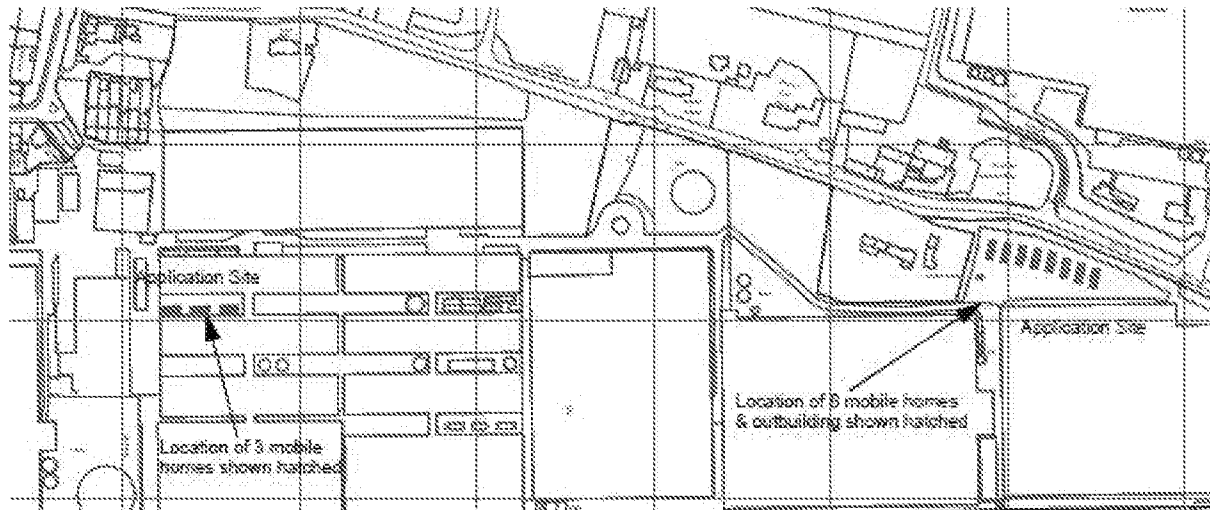


Figure 1: Site location plan extract showing location of 8 new units

1.2 The redline boundary for the 8 unit site totals approximately 0.3 ha. The site is shown to be largely soft landscaped as can be seen in Figure 3. The site borders large nursery buildings to the south and a residential building to the east. Directly north of the site is Lake Lane.

1.3 The redline boundary for the 3 unit site totals approximately 0.058 ha. The site is shown to be largely soft landscaped. The site is situated between large nursery buildings to the north and south.

1.4 The purpose of this information pack is to provide detailed information to allow discharge of planning conditions 5 and 6 below.

- 5 Development shall not commence, other than works of site survey and investigation, until full details of the proposed surface water drainage scheme have been submitted to and approved in writing by the Local Planning Authority. The design should follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations, and the recommendations of the SuDS Manual produced by CIRIA. Winter groundwater monitoring to establish highest annual ground water levels and winter Percolation testing to BRE 365, or similar approved, will be required to support the design of any Infiltration drainage. No building / No part of the extended building shall be occupied until the complete surface water drainage system serving the property has been implemented in accordance with the agreed details and the details so agreed shall be maintained in good working order in perpetuity.

- 6 The development shall not proceed until details have been submitted to and approved in writing by the Local Planning Authority for any proposals: to discharge flows to watercourses; or for the culverting, diversion, infilling or obstruction of any watercourse on or adjacent to the site. Any discharge to a watercourse must be at a rate no greater than the pre-development run-off values. No construction is permitted, which will restrict current and future land owners from undertaking their riparian maintenance responsibilities in respect to any watercourse or culvert on or adjacent to the site.

2. Amendments to suit LLFA objection

2.1 On 13.06.2021, the LLFA provided the following response to the previous proposals:

Condition 5

1. *The applicant has completed summer infiltration testing which indicate infiltration is not viable.*
2. *No winter groundwater monitoring results have been provided, this information must be supplied to evidence that groundwater will not get into the surface water drainage system.*
3. *The proposal is for an unlined system to be pumped. This could in winter result in groundwater being pumped.*
4. *Pumping is not supported, it is not a sustainable solution. Pumps also fail and can result in increased flood risk both on and off site. The applicant must submit a revised gravity scheme.*
5. *The proposals are to pump surface water to the on site reservoir. The statement claims that no surface water will be discharged off site. No evidence has been submitted to evidence that either the existing surface water drainage network or reservoir have the capacity to accept these additional flows. The reservoir must also have an overflow to somewhere for water to be discharged in times of exceptional rainfall when irrigation demands are less, i.e. the winter. Therefore the statements provided are not supported by ourselves.*

Condition 6

It is not possible for us to recommend discharge of this condition at this time with the strategy presented. A fully revised surface water drainage design is required, which may involve a gravity outfall to watercourse.

Given the above points and the current proposals failures to meet policy requirements we recommend that this application is refused.

2.2 Following the above objection, a telephone conversation was held between Bojidar Boiadjev (Ambiental) and Laura Gibbons (Arun DC LLFA team). The following points were discussed during the conversation:

- The proposed permeable gravel could be lined with an impermeable geomembrane. This would alleviate the need for further groundwater monitoring for the purposes of surface water drainage design as the attenuation storage would be tanked preventing surface water flows into the ground and groundwater flows into the surface water network.
- A surface water connection into the nearby watercourse to the north of the site was discussed as an alternative to the previously proposed pumped connection into the reservoir to the east of the site.

- 2.3 An email received sent from Laura Gibbons (Arun DC) to Bojidar Boiadjiev (Ambiental) on 24.08.2021 states:

I have considered this further and I do not believe that the benefit gained from water reuse is sufficient to outweigh the negatives of pumping in this instance. Therefore, please look into forming a gravity solution to the watercourse.

- 2.4 As such, the following two amendments are now proposed to form the updated surface water drainage strategy of the site:

- The permeable gravel is proposed to be lined with an impermeable geomembrane.
- The surface water connection from the site is proposed to be a gravity connection to the open watercourse north of the site.

The drawings provided in Appendix I demonstrate the updated proposals.

3. Design Philosophy

3.1 The proposed design has been developed in line with the Ambiental drainage strategy submitted at planning Document Ref: 5877 SWDS. These drawings should be read in conjunction with this report. Amendments to the proposals have been made in accordance with Section 2 of this report.

Surface water

3.2 Shallow infiltration testing undertaken by Your Environment June 2021 show negligible infiltration at a depth of 600mm.

3.3 For the proposed new 8 units given the tested low infiltration for the storm runoff the paving is proposed to be used as a storage medium and lined with an impermeable geomembrane. Runoff is to be drained via a 25mm orifice flow control and discharged at a controlled rate into the ditch north of the site. An orifice of a 25mm size is deemed the lowest practical size considering that lower sizes would be prone to blockages.

3.4 The 3 unit area drains to ground. The units have been in place for some time already and the client has reported no flooding issues as a result. The units are bounded on 3 sides by large glasshouses.

3.5 The existing greenhouse storm system drains runoff via gravity to the reservoir located at the eastern end of the clients land. This water is then re-used as irrigation water inside the greenhouses.

3.6 A summary of pre- and post-development drained areas are detailed below:

Existing 8 units site area: 3000m²

Proposed 8 units site hard area: 328m² (caravan roof and utility room)

Existing 3 units site area: 558m²

Proposed 3 units site hard area: 98.4m² (caravan roofs only)

(Note: the development proposals will form all external paths and hard standing areas of permeable paving and laid to fall towards the grassed/landscaped areas)

Runoff Rates

3.7 Table 1 below summarises the greenfield runoff targets, existing runoff rates and proposed runoff rates for the development.

Surface Water Discharge Rates Summary					
	Area (ha)	Discharge Rates (l/s) – Critical			
		1 year	2 year/Q _{BAR}	30 year	100 year
Greenfield Rates 8 unit Site	0.3	1.35	1.58	3.65	5.06
Greenfield Rates 8 unit Site (proposed drained areas)	0.0328	0.148	0.173	0.399	0.553
Greenfield Rates 3 unit Site	0.0558	0.25	0.29	0.68	0.94
Greenfield Rates 3 unit Site (proposed drained areas)	0.0098	0.044	0.052	0.12	0.17

Proposed (Max) 8 unit Site Runoff Rates* (+40% CC)	0.0328	0.7	-	0.8	0.9
Proposed (Max) 3 unit Site Runoff Rates* (+40% CC)	0.0098	0.0	0.0	0.0	0.0
Proposed (Max) Runoff Rates* (+40% CC)		0.7	-	0.8	0.9

*Table 1: Runoff rates; *- 40% climate change allowance and 10% UC allowance added*

3.8 Given Greenfields runoff rates are very low for the existing drained areas, it is considered not practicable to restrict runoff to such low rates given the risk of blockage to the flow controls that would be required to achieve this. Therefore, a scheme offering rainwater harvesting (via water butt) is proposed. See proposed drainage layout in Appendix I.

Foul Water

3.9 For foul water from the 8 unit scheme the client has opted for an offsite connection to the nearest Southern Water gravity manhole. EA 2m liDAR levels have been used to show this connection is feasible.

3.10 Any offsite connection should be agreed with Southern Water prior to commencing construction.

3.11 A private, on site, foul pump station is needed to lift foul drainage from the units over the culverted watercourse on the north boundary. The pump station will need to provide adequate 48hr storage to comply with Building Regulations.

3.12 For the foul for the existing 3 units the client has confirmed that foul drainage from these units is directed to the existing foul underground drainage present in that area of the existing development.

4. Adoption and Maintenance

4.1 All onsite SuDS and drainage systems will be privately maintained. A long-term maintenance regime should be agreed with the site owners before adoption. In addition to a long-term maintenance regime, it is recommended that all drainage elements implemented on site should be inspected following the first rainfall event post-construction and monthly for the first quarter following construction.

4.2 General maintenance of key SuDS components are provided below.

4.3 The property owner will be responsible for the management and maintenance of SuDS devices.

Proposed Schedule of Maintenance for Below Ground Drainage

Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Comments
Foul Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried as necessary
Surface Water Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried as necessary
Gullies/Channels	1 year	1 year	N/A	Cleansing to be carried as necessary
Pumps: Chamber & Alarm	1 year	1 year	N/A	Maintenance in accordance with manufacturer's instructions
Soakaways and catchpits	1 year		N/A	Cleansing to be carried as necessary
Permeable Paving	1 year	'Swept' clean of debris every 2 years.	N/A	Rake and clear gravel of weeds as performance levels reduce.

5. Conclusions

5.1 Ambiental have been appointed by The Green House Sussex Ltd, to undertake a Surface Water Drainage Strategy to advise on the proposed development of up to 8 temporary rural worker accommodation mobile home units and service room on land at The Green House Sussex Ltd, Lake Lane, Barnham, West Sussex, PO22 0AD (Figure 1).

5.2 The purpose of this information pack is to provide detailed information to allow discharge of planning conditions 5 and 6 below.

- 5 Development shall not commence, other than works of site survey and investigation, until full details of the proposed surface water drainage scheme have been submitted to and approved in writing by the Local Planning Authority. The design should follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations, and the recommendations of the SuDS Manual produced by CIRIA. Winter groundwater monitoring to establish highest annual ground water levels and winter Percolation testing to BRE 365, or similar approved, will be required to support the design of any infiltration drainage. No building / No part of the extended building shall be occupied until the complete surface water drainage system serving the property has been implemented in accordance with the agreed details and the details so agreed shall be maintained in good working order in perpetuity.
- 6 The development shall not proceed until details have been submitted to and approved in writing by the Local Planning Authority for any proposals: to discharge flows to watercourses; or for the culverting, diversion, infilling or obstruction of any watercourse on or adjacent to the site. Any discharge to a watercourse must be at a rate no greater than the pre-development run-off values. No construction is permitted, which will restrict current and future land owners from undertaking their riparian maintenance responsibilities in respect to any watercourse or culvert on or adjacent to the site.

5.3 The redline boundary for the 8 unit site totals approximately 0.3 ha. The site is shown to be largely soft landscaped. The site borders large nursery buildings to the south and a residential building to the east. Directly north of the site is Lake Lane.

5.4 The redline boundary for the 3 unit site totals approximately 0.058 ha. The site is shown to be largely soft landscaped. The site is situated between large nursery buildings to the north and south.

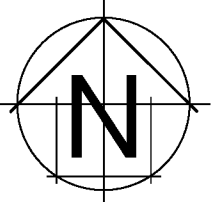
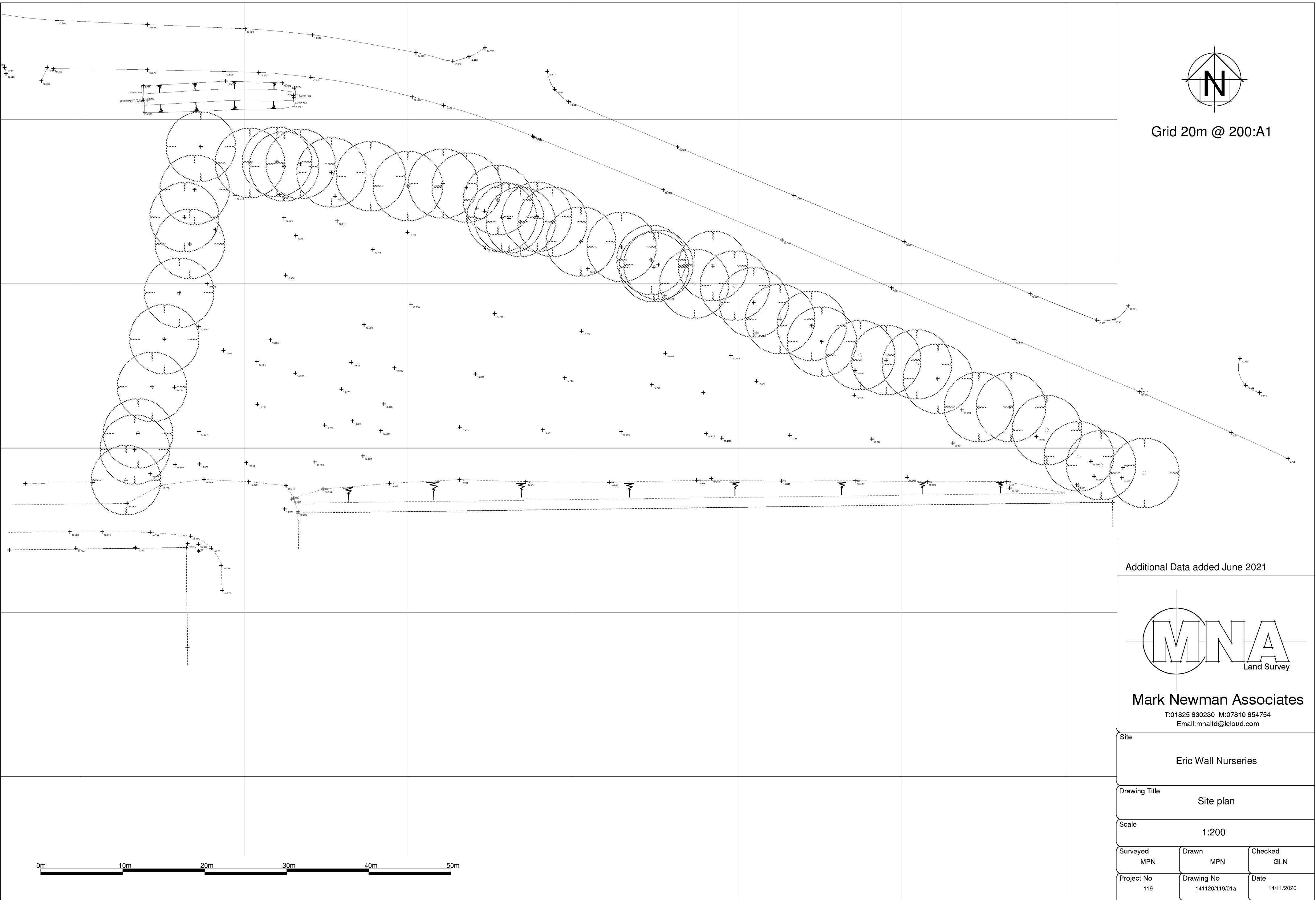
5.5 Soakaway tests were conducted at three locations by Your Environment and showed negligible infiltration into the shallow subsoils. Therefore surface water is to be pumped to the on-site surface water system that serves the greenhouses and drains, by gravity, to the reservoir at the east of the wider site. Water from the reservoir is treated and used for irrigation in the greenhouses.

5.6 For the proposed new 8 units given the tested low infiltration for the storm runoff the paving is proposed to be used as a storage medium and lined with an impermeable geomembrane. Runoff is to be drained via a 25mm orifice flow control and discharged at a controlled rate into the ditch north of the site.

5.7 For foul water from the 8 unit scheme the client has opted for an offsite connection to the nearest Southern Water gravity manhole. EA 2m LiDAR levels have been used to show this connection is feasible.

- 5.8 Any offsite connection should be agreed with Southern Water prior to commencing construction.
- 5.9 The 3 unit area storm runoff drains to ground. The units have been in place for some time already and the client has reported no flooding issues as a result. The units are bounded on 3 sides by large glasshouses.
- 5.10 For the foul for the existing 3 units the client has confirmed that foul drainage from these units is directed to the existing foul underground drainage present in that area of the existing development.
- 5.11 This information pack demonstrates that the development proposals can accommodate the necessary SuDS systems required in order to meet the WSCC and Adur surface water policy requirements and the requirements of planning conditions 5 and 6 above.
- 5.12 The property owner will be responsible for the management and maintenance of SuDS devices.
- 5.13 We can conclude that providing the development adheres to the conditions advised in this report, the said development proposals can be accommodated without increasing flood risk within the locality in accordance with objectives set by Central Government and the EA.

Appendix I – Proposed Drawings



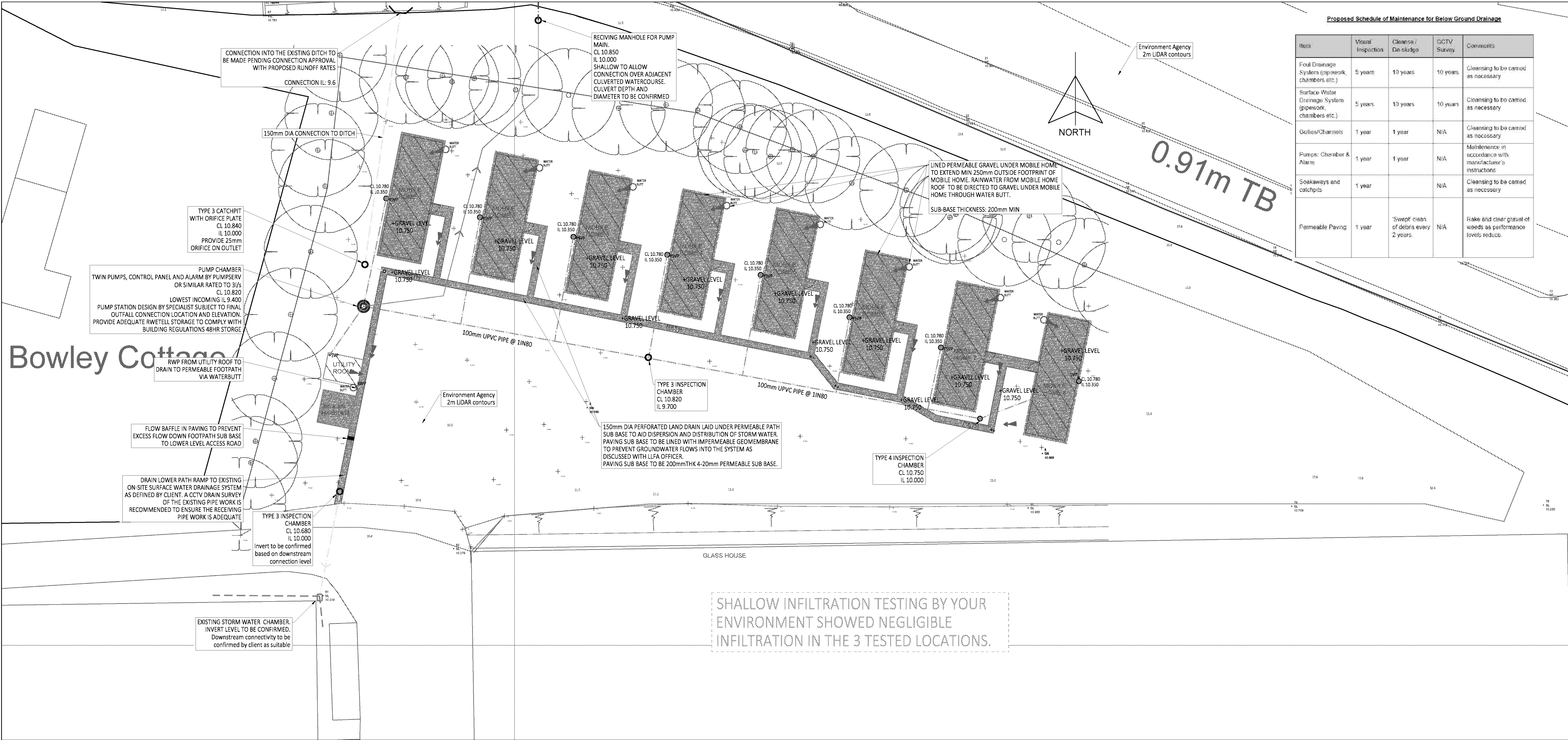
Grid 20m @ 200:A1

Additional Data added June 2021



Mark Newman Associates
T:01825 830230 M:07810 854754
Email: mna1td@icloud.com

Site		
Eric Wall Nurseries		
Drawing Title		
Site plan		
Scale		
1:200		
Surveyed MPN	Drawn MPN	Checked GLN
Project No 119	Drawing No 141120/119/01a	Date 14/11/2020



SHALLOW INFILTRATION TESTING BY YOUR ENVIRONMENT SHOWED NEGLIGIBLE INFILTRATION IN THE 3 TESTED LOCATIONS.

SITE LAYOUT
(1:200)

Design philosophy:

The proposed design has been developed in line with the Ambient drainage strategy submitted at planning Document Ref: 5877 SWDS. These drawings should be read in conjunction with this report. Subsequent amendments were done to the proposals following LLFA objection. See report 5877_DowsettMayhew_Lake Lane DOC_revision-A.

Shallow infiltration testing undertaken by Your Environment June 2021 show negligible infiltration at a depth of 600mm.

Given the tested low infiltration for the storm runoff the paving is proposed to be used as a storage medium and lined with an impermeable geomembrane. Runoff is to be drained via a 25mm orifice flow control and discharged at a controlled rate into the ditch north of the site..

The existing greenhouse storm system drains runoff via gravity to the reservoir located at the eastern end of the clients land. this water is then re-used as irrigation water inside the greenhouses.

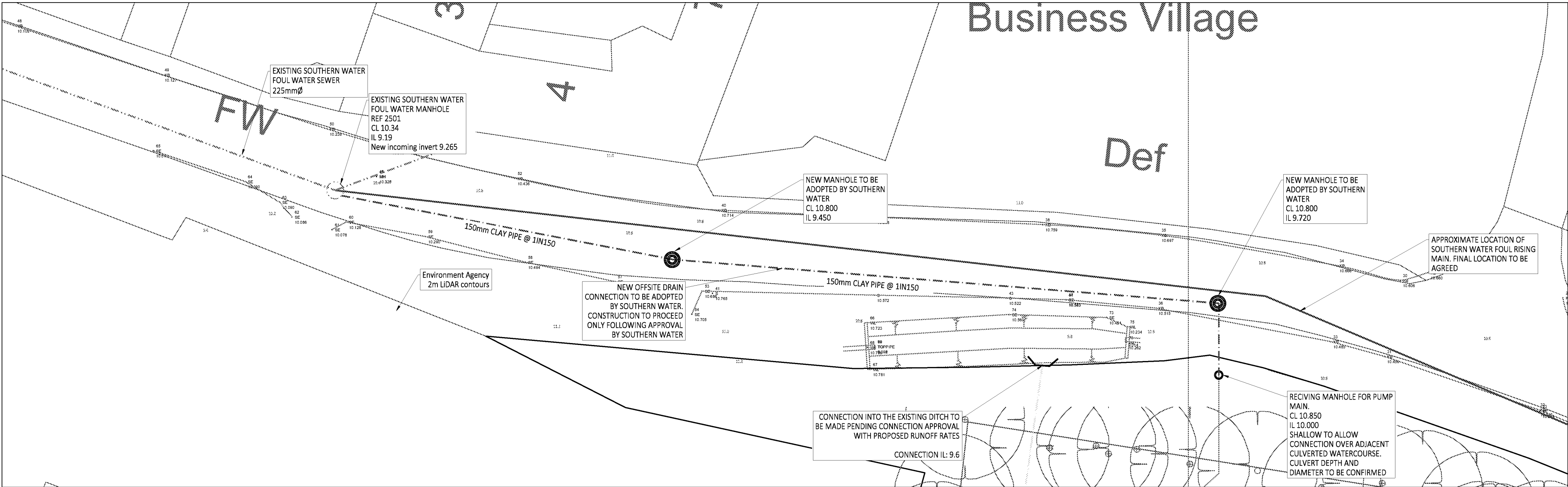
For foul water the client has opted for an offsite connection to the nearest Southern Water gravity manhole. EA 2m iIDAR levels have been used to show this connection is feasible.

Any offsite connection should be agreed with Southern Water prior to commencing construction.

A private, on site, foul pump station is needed to lift foul drainage from the units over the culverted watercourse on the north boundary. The pump station will need to provide adequate 48hr storage to comply with Building Regulations.

The proposed design can be seen to be in line with the strategy as outlined within Ambient report 5877 SWDS.

Maintenance of all on site drainage and SUDS features will be the landowners and operators of the greenhouse site - British Tomato Growers' Association



OFFSITE SEWER CONNECTION
(1:200)

Proposed Schedule of Maintenance for Below Ground Drainage

Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Comments
Post Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried as necessary
Surface Water Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried as necessary
Gullies/Chimneys	1 year	1 year	N/A	Cleansing to be carried as necessary
Pumps; Chamber & Alarm	1 year	1 year	N/A	Maintenance in accordance with manufacturer's instructions
Soakaways and catchpits	1 year		N/A	Cleansing to be carried as necessary
Permeable Paving	1 year	'Sweep' clean of debris every 2 years	N/A	Rake and clear gravel of weeds as performance levels reduce

- GENERAL
a. THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
b. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
c. ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
d. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
e. CDM REGULATIONS 2015. ALL CURRENT DRAWINGS AND SPECIFICATIONS MUST BE READ IN CONJUNCTION WITH THE DESIGNER'S HAZARD RISK AND ENVIRONMENTAL ASSESSMENT RECORD. DESIGN HAS BEEN PRODUCED BASED ON INFORMATION PROVIDED BY THE CLIENT/PRINCIPLE DESIGNER AVAILABLE AT TIME OF ISSUE. CONTRACTOR TO REVIEW DRAWING AND SPECIFICATION IN CONTEXT WITH THE WIDER SITE AND SPECIFIC SITE INVESTIGATION, CONTAMINATION ASSESSMENT, ASBESTOS SURVEY, ENVIRONMENTAL SURVEY, LIDAR SURVEY AND ANY OTHER RELEVANT INFORMATION AND MANAGE RISKS RELATING TO THE WORKS OUTLINED IN THE DRAWINGS AND SPECIFICATION. PRINCIPLE CONTRACTOR TO MAKE DESIGNER AND CLIENT AWARE OF SITE SPECIFIC RISKS THAT MAY AFFECT THE DRAWING AND SPECIFICATION.
f. CDM REGULATIONS 2015. FOR GENERIC MAINTENANCE AND MANAGEMENT RISKS REFER TO CHAPTER 36 OF CIRIA 752 SUDS MANUAL. FOR PROPRIETARY SYSTEMS SEE MANUFACTURERS' MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.
- CONSTRUCTION NOTE
a. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
b. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
c. ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN IN GOOD FAITH AFTER CONSULTATION WITH THE RELEVANT AUTHORITY. HOWEVER ACCURACY IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION WHILST UNDERTAKING THE WORKS.
d. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
e. ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON ANY AMBIENTAL DRAWINGS, THE MANUFACTURERS INSTRUCTIONS MUST BE USED.
f. BELOW GROUND DRAINAGE
a. PIPEWORK TO BE UPVC-D PIPES TO BS 4660 : 2000 AND INSPECTION CHAMBERS TO BS 7158 : 2001.
b. ALL ADAPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION AND THE RELEVANT COUNCIL DESIGN GUIDE.
c. ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
d. ALL PRIVATE FOUL WATER SEWERS TO BE LAID AT 1 IN 40 AT THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
e. ALL PRIVATE FOUL SEWER PIPES TO BE 150MM DIAMETER UNLESS OTHERWISE STATED ON THE DRAWING. ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100MM DIAMETER FROM DOWNPIPES AND 150MM DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
f. ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER. EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELLED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
g. CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
h. ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.
i. MANHOLE COVERS AND FRAMES
a. MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
b. MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

LEGEND

- PRIVATE SURFACE WATER DRAIN
- PERFORATED SURFACE WATER DRAIN
- PUMP CHAMBER
- TYPE 3 CATCH PIT
- TYPE 4 INSPECTION CHAMBER
- RODDING EYE
- RAIN WATER PIPE
- PERMEABLE PAVING
- OVERLAND FLOW
- PRIVATE FOUL WATER DRAIN
- EXISTING FOUL WATER DRAIN
- PUBLIC FOUL WATER SEWER
- TYPE 2 MANHOLE
- TYPE 3 INSPECTION CHAMBER
- TYPE 4 INSPECTION CHAMBER
- SOIL & VENT PIPE

3	08.09.22	MB	Amended to show offsite gravity sewer connection to ditch and lined permeable gravel
4	15.06.21	MN	Amended to show offsite connection and pumped storm water

REV DATE BY CKD APPDDESCRIPTION

PRELIMINARY DRAWING
FOR INFORMATION ONLY, NOT FOR CONSTRUCTION.

Client

The Green House Sussex Ltd

AMBIENTAL
ENVIRONMENTAL ASSESSMENT

a company of Royal HaskoningDHV

Project

The Green House Sussex Ltd | Pollards House
Lake Lane | Barnham | PO22 0AD

Drawing

SEASONAL WORKERS ACCOMODATION
FOUL AND STORM DRAINAGE

Drawn by: MN

Date: MAY 21

Drawing No.

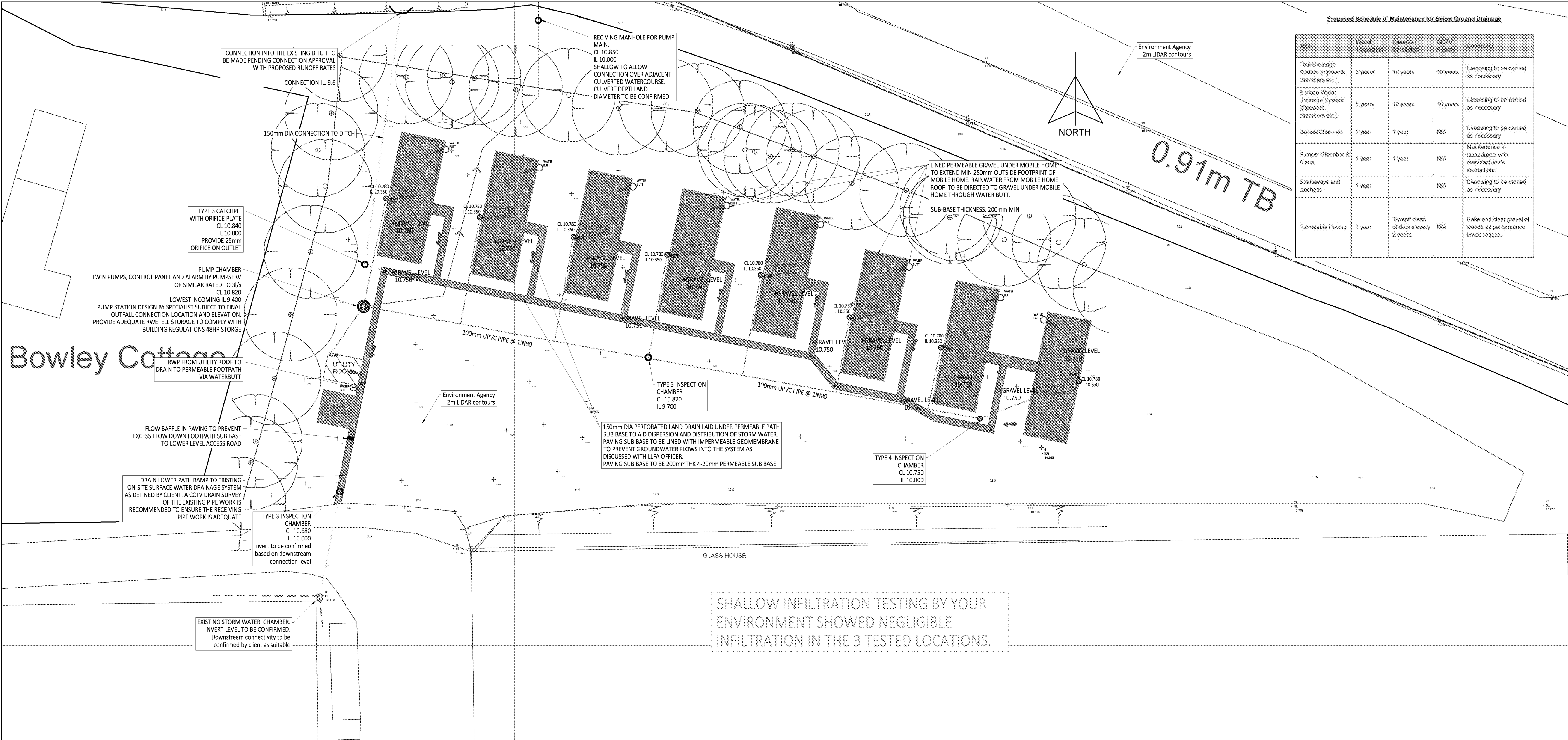
6215 - DR10

Revision

8

Drawing Scale: 1:200 @ A1

0 2m 4m 6m 8m 10m



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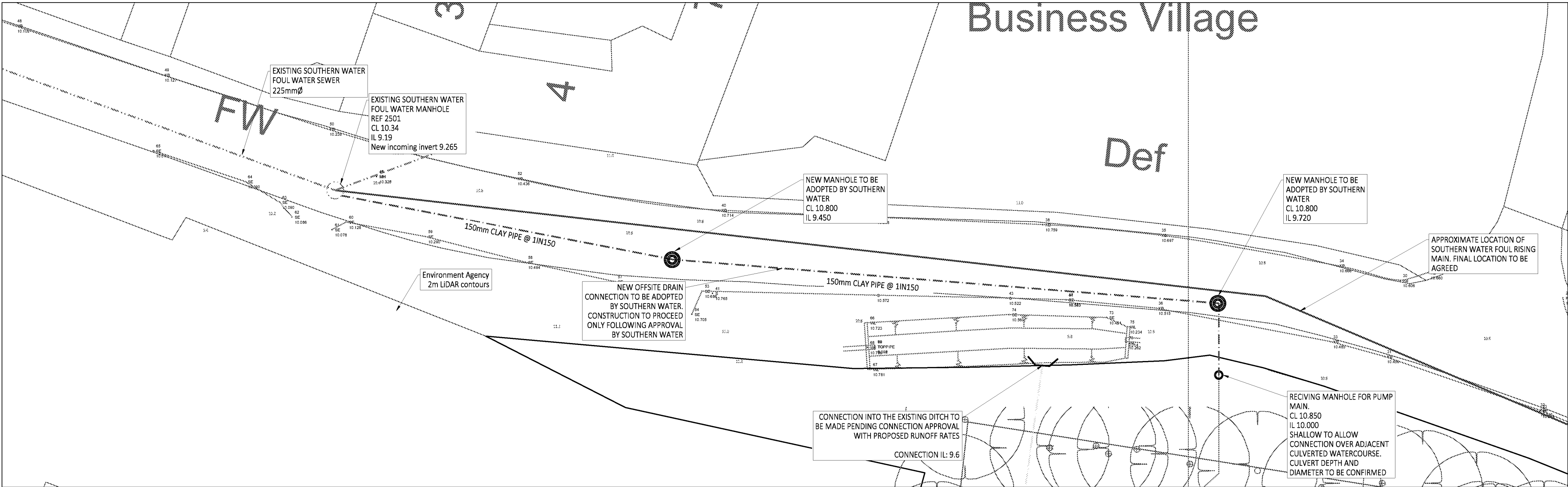
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OFFSITE SEWER CONNECTION
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e. CDM REGULATIONS 2015. ALL CURRENT DRAWINGS AND SPECIFICATIONS MUST BE READ IN CONJUNCTION WITH THE DESIGNER'S HAZARD RISK AND ENVIRONMENTAL ASSESSMENT RECORD. DESIGN HAS BEEN PRODUCED BASED ON INFORMATION PROVIDED BY THE CLIENT/PRINCIPLE DESIGNER AVAILABLE AT TIME OF ISSUE. CONTRACTOR TO REVIEW DRAWING AND SPECIFICATION IN CONTEXT WITH THE WIDER SITE AND SPECIFIC SITE INVESTIGATION, CONTAMINATION ASSESSMENT, ASBESTOS SURVEY, ENVIRONMENTAL SURVEY, LIDAR SURVEY AND ANY OTHER RELEVANT INFORMATION AND MANAGE RISKS RELATING TO THE WORKS OUTLINED IN THE DRAWINGS AND SPECIFICATION. PRINCIPLE CONTRACTOR TO MAKE DESIGNER AND CLIENT AWARE OF SITE SPECIFIC RISKS THAT MAY AFFECT THE DRAWING AND SPECIFICATION.
f. CDM REGULATIONS 2015. FOR GENERIC MAINTENANCE AND MANAGEMENT RISKS REFER TO CHAPTER 36 OF CIRIA 752 SUDS MANUAL. FOR PROPRIETARY SYSTEMS SEE MANUFACTURERS' MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.
- CONSTRUCTION NOTE
a. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
b. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
c. ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN IN GOOD FAITH AFTER CONSULTATION WITH THE RELEVANT AUTHORITY. HOWEVER ACCURACY IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION WHILST UNDERTAKING THE WORKS.
d. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
e. ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON ANY AMBIENTAL DRAWINGS, THE MANUFACTURERS INSTRUCTIONS MUST BE USED.
f. BELOW GROUND DRAINAGE
a. PIPEWORK TO BE UPVC-D PIPES TO BS 4660 : 2000 AND INSPECTION CHAMBERS TO BS 7158 : 2001.
b. ALL ADAPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION AND THE RELEVANT COUNCIL DESIGN GUIDE.
c. ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
d. ALL PRIVATE FOUL WATER SEWERS TO BE LAID AT 1 IN 40 AT THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
e. ALL PRIVATE FOUL SEWER PIPES TO BE 150MM DIAMETER UNLESS OTHERWISE STATED ON THE DRAWING. ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100MM DIAMETER FROM DOWNPIPES AND 150MM DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
f. ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER. EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELLED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
g. CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
h. ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.
- MANHOLE COVERS AND FRAMES
a. MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
b. MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

LEGEND

- PRIVATE SURFACE WATER DRAIN
- PERFORATED SURFACE WATER DRAIN
- PUMP CHAMBER
- TYPE 3 CATCH PIT
- TYPE 4 INSPECTION CHAMBER
- RODDING EYE
- RAIN WATER PIPE
- PERMEABLE PAVING
- OVERLAND FLOW
- PRIVATE FOUL WATER DRAIN
- EXISTING FOUL WATER DRAIN
- PUBLIC FOUL WATER SEWER
- TYPE 2 MANHOLE
- TYPE 3 INSPECTION CHAMBER
- TYPE 4 INSPECTION CHAMBER
- SOIL & VENT PIPE

3	08.09.22	MB	Amended to show offsite gravity sewer connection to ditch and lined permeable gravel
4	15.06.21	MN	Amended to show offsite connection and pumped storm water

REV	DATE	BY	CKD APPDDESCRIPTION
-----	------	----	---------------------

PRELIMINARY DRAWING
FOR INFORMATION ONLY, NOT FOR CONSTRUCTION.

Client

The Green House Sussex Ltd

AMBIENTAL
ENVIRONMENTAL ASSESSMENT

a company of Royal HaskoningDHV

Project

The Green House Sussex Ltd | Pollards House
Lake Lane | Barnham | PO22 0AD

Drawing

SEASONAL WORKERS ACCOMODATION
FOUL AND STORM DRAINAGE

Drawn by: MN

Date: MAY 21

Drawing No.

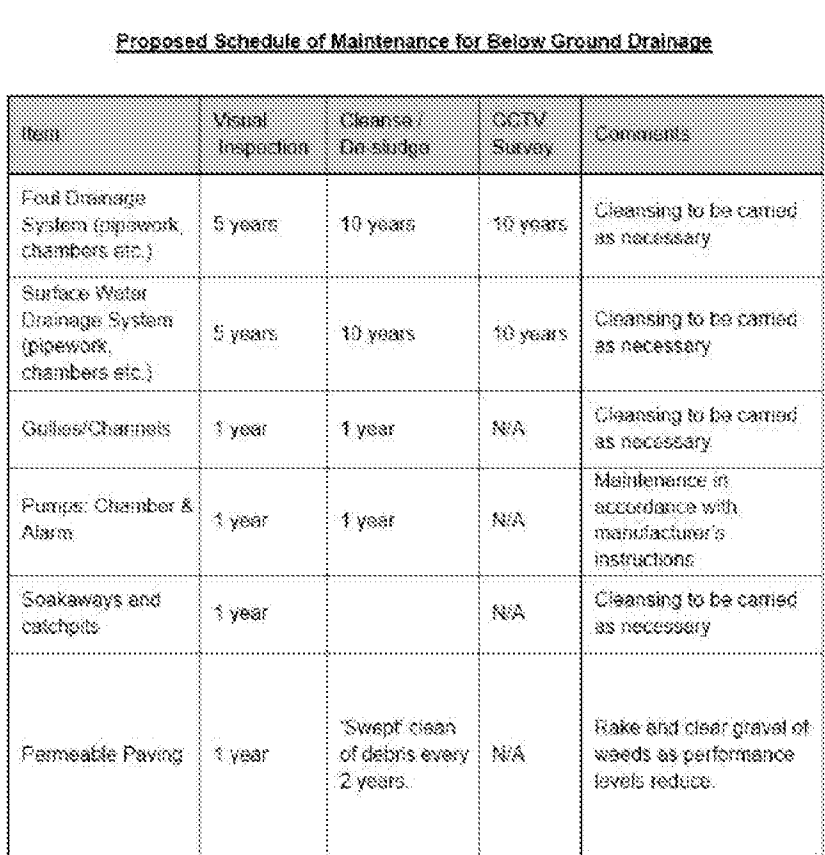
6215 - DR10

Revision

8

Drawing Scale: 1:200 @ A1

0 2m 4m 6m 8m 10m



NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH OF ROCKER PIPE (m)
150 TO 600	0.6
>600 TO 750	1.0
>750	1.2

DETAIL
(COVER < 600mm)
(1:20)

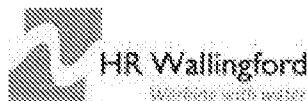
ALL BACKFILLING AND REINSTATEMENT WITHIN ROADS AND STREETS TO BE IN ACCORDANCE WITH THE HIGHWAY AUTHORITY AND HAUC SPECIFICATION.

- GENERAL**
- a. THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY CONFIRMED ON SITE.
- b. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
- c. ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE CLIENT/PRINCIPLE DESIGNER.
- d. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
- e. COM REGULATIONS 2015: ALL CURRENT DRAWINGS AND SPECIFICATIONS ARE TO BE IN CONJUNCTION WITH THE COUNTRY'S HAZARD RISK AND ENVIRONMENT ASSESSMENT RECORD. DESIGN HAS BEEN PRODUCED BASED ON INFORMATION PROVIDED BY THE CLIENT/PRINCIPLE DESIGNER AVAILABLE AT TIME OF ISSUE. CONTRACTOR TO REVIEW DRAWING AND REPORT TO CONTRACTOR TO THE CLIENT/PRINCIPLE DESIGNER FOR INVESTIGATION, CONTAMINATION ASSESSMENT, ASBESTOS SURVEY, ENVIRONMENTAL SURVEY, UO SURVEY AND ANY OTHER RELEVANT INFORMATION AND MANAGE RISKS RELATING TO THE WORKS OUTLINED IN DRAWING AND SPECIFICATION. CONTRACTOR TO MAKE AWARENESS OF DESIGNER AND CLIENT AWARE OF SITE SPECIFIC RISKS THAT MAY AFFECT THE DRAWING AND SPECIFICATION.
- f. COM REGULATIONS 2015: FOR GENERIC MAINTENANCE AND MANAGEMENT OF RISK - SEE PART 6 OF CDM 2015, TSDS MANUAL, FOR MORE PROPRIETARY SYSTEMS SEE MANUFACTURER'S MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.
2. **CONSTRUCTION NOTE**
- a. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE ERECTION, USE AND STABILISATION OF BUILDINGS AT ALL TIMES.
- b. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
- c. ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN FOR REFERENCE PURPOSES ONLY. THE CONTRACTOR MUST OBTAIN AUTHORITY, HOWEVER ACQUAINT IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION TO ANY CHANGING TRENDS.
- d. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
- e. ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON ANY AMBIENTAL DRAWINGS, THE MANUFACTURERS INSTRUCTIONS MUST BE USED.
3. **BELOW GROUND DRAINAGE**
- a. PIPEWORK TO BE UPVC/PV pipes To BS 4680 - 2000 AND INSPECTION CHAMBERS TO BS 7158 - 2001.
- b. ALL BELOW GROUND DRAINAGE IS TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION AND THE RELEVANT COUNCIL DESIGN GUIDE.
- c. ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 400 UNLESS OTHERWISE STATED ON THE DRAWING.
- d. ALL PRIVATE Foul WATER SEWERS TO BE LAID AT 1 IN 40 OR THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
- e. ALL PRIVATE Foul WATER PIPES TO BE 150MM DIAMETER UNLESS OTHERWISE STATED ON THE DRAWING.
- f. ALL PRIVATE SURFACE WATER PIPES TO BE 100MM DIAMETER FROM DOWNPIPS AND 150MM DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
- g. ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER. EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELLED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND RE-SURFICED IF NECESSARY.
- h. CONDUITS FOR AN ALTERNATE SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
- i. ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.
4. **MANHOLE COVERS AND FRAMES**
- a. MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTPATHS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
- b. MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3

	PRIVATE SURFACE WATER DRAIN PERFORATED SURFACE WATER DRAIN PUMP CHAMBER TYPE 3 CATCH PIT TYPE 4 INSPECTION CHAMBER RODDING EYE RAIN WATER PIPE PERMEABLE PAVING OVERLAND FLOW PRIVATE FOUL WATER DRAIN EXISTING FOUL WATER DRAIN PUBLIC FOUL WATER SEWER TYPE 2 MANHOLE TYPE 3 INSPECTION CHAMBER TYPE 4 INSPECTION CHAMBER SOIL & VENT PIPE
---	--

CD:09.21		M/N		—		Anexed to show/ind permit/egre/	
REV	DATE	BY	CKD	APPDESCRIPTION			
PRELIMINARY DRAWING FOR INFORMATION ONLY, NOT FOR CONSTRUCTION.							
Client							
The Green House Sussex Ltd							
AMBIENTAL ENVIRONMENTAL ASSESSMENT							
a company of Royal Haskoning DHV							
Project							
The Green House Sussex Ltd Pollards House Lake Lane Barnham PO22 0AD							
Drawing							
SEASONAL WORKERS ACCOMMODATION FOUL AND STORM DRAINAGE							
Drawn by: MN				Date: MAY 21			
Drawing No.							Revision
6215 - DR10							A
Drawing Scale: 1:20 @ A1 0 200 400 600 800 1000mm							

Appendix II – Calculations



Greenfield runoff rate estimation for sites

Greenfield runoff tool

Calculated by: mark naumann
 Site name: 3 units
 Site location: Eric Wall Nurseries, Lake Lane

Site Details

Latitude: 50.83203° N
 Longitude: 0.62585° W
 Reference: 4150525815
 Date: Dec 22 2020 14:43

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):

1

Methodology

Q_{BAR} estimation method:

Calculate from SPR and SAAR

SPR estimation method:

Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	2	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	756	756
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

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

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

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

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

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

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	1.99	5.28
1 in 1 year (l/s):	1.7	4.49
1 in 30 years (l/s):	4.59	12.15
1 in 100 year (l/s):	6.36	16.85
1 in 200 years (l/s):	7.46	19.76

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.



Greenfield runoff rate estimation for sites

Greenfield runoff tool

Calculated by: mark naumann
 Site name: 8 units
 Site location: Eric Wall Nurseries, Lake Lane

Site Details

Latitude: 50.83209° N
 Longitude: 0.61943° W
 Reference: 1359599751
 Date: Dec 22 2020 14:41

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): .3

Methodology

Q_{BAR} estimation method: Calculate from SPR and SAAR
 SPR estimation method: Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	2	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	756	756
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

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

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

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

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

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

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	0.6	1.58
1 in 1 year (l/s):	0.51	1.35
1 in 30 years (l/s):	1.38	3.65
1 in 100 year (l/s):	1.91	5.06
1 in 200 years (l/s):	2.24	5.93

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

AEA - Arbi ental							Page 1	
Science Park Square Brighton East Sussex			Polards Nursery 8 unit 1yr+40%					
Date 15/06/2021			Designed by bb					
File 5877 Proposed Storage 8...			Checked by					
XP Solutions			Source Control 2018.1					
<u>Summary of Results for 1 year Return Period (+40%)</u>								
Half Drain Time : 47 minutes.								
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max √ Outflow (l/s)	Max Volume (mE)	Status	
15 min Summer	10.306	0.006		0.0	0.7	0.7	0.9	O K
30 min Summer	10.311	0.011		0.0	0.7	0.7	1.7	O K
60 min Summer	10.317	0.017		0.0	0.7	0.7	2.5	O K
120 min Summer	10.321	0.021		0.0	0.7	0.7	3.2	O K
180 min Summer	10.323	0.023		0.0	0.7	0.7	3.5	O K
240 min Summer	10.324	0.024		0.0	0.7	0.7	3.6	O K
360 min Summer	10.322	0.022		0.0	0.7	0.7	3.3	O K
480 min Summer	10.319	0.019		0.0	0.7	0.7	2.9	O K
600 min Summer	10.316	0.016		0.0	0.7	0.7	2.4	O K
720 min Summer	10.313	0.013		0.0	0.7	0.7	2.0	O K
960 min Summer	10.308	0.008		0.0	0.7	0.7	1.2	O K
1440 min Summer	10.302	0.002		0.0	0.7	0.7	0.3	O K
2160 min Summer	10.300	0.000		0.0	0.6	0.6	0.0	O K
2880 min Summer	10.300	0.000		0.0	0.5	0.5	0.0	O K
4320 min Summer	10.300	0.000		0.0	0.4	0.4	0.0	O K
5760 min Summer	10.300	0.000		0.0	0.3	0.3	0.0	O K
7200 min Summer	10.300	0.000		0.0	0.3	0.3	0.0	O K
8640 min Summer	10.300	0.000		0.0	0.2	0.2	0.0	O K
10080 min Summer	10.300	0.000		0.0	0.2	0.2	0.0	O K
15 min Winter	10.308	0.008		0.0	0.7	0.7	1.3	O K
Storm Event		Rain (mm/hr)	Flooded Volume (mE)	Discharge Volume (mE)	Time-Peak (mins)			
15 min Summer		39.328	0.0	1.2	17			
30 min Summer		26.237	0.0	2.4	31			
60 min Summer		17.117	0.0	3.8	52			
120 min Summer		10.972	0.0	5.6	86			
180 min Summer		8.427	0.0	6.8	122			
240 min Summer		6.984	0.0	7.7	156			
360 min Summer		5.310	0.0	9.0	224			
480 min Summer		4.366	0.0	10.0	290			
600 min Summer		3.751	0.0	10.9	352			
720 min Summer		3.314	0.0	11.6	414			
960 min Summer		2.726	0.0	12.8	532			
1440 min Summer		2.072	0.0	14.7	752			
2160 min Summer		1.572	0.0	16.5	0			
2880 min Summer		1.293	0.0	17.8	0			
4320 min Summer		0.983	0.0	19.5	0			
5760 min Summer		0.810	0.0	20.7	0			
7200 min Summer		0.695	0.0	21.3	0			
8640 min Summer		0.613	0.0	21.6	0			
10080 min Summer		0.551	0.0	21.7	0			
15 min Winter		39.328	0.0	1.6	17			
©1982- 2018 Innovyze								

AEA - Arbi ental							Page 2
Science Park Square Brighton East Sussex			Polards Nursery 8 unit 1yr+40%				
Date 15/06/2021			Designed by bb				
File 5877 Proposed Storage 8...			Checked by				
XP Sol utions			Source Control 2018.1				
Summary of Results for 1 year Return Period (+40%)							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max √ Outflow (l/s)	Max Volume (mE)	St at us
30 min W nter	10.315	0.015	0.0	0.7	0.7	2.3	O K
60 min W nter	10.321	0.021	0.0	0.7	0.7	3.2	O K
120 min W nter	10.325	0.025	0.0	0.7	0.7	3.8	O K
180 min W nter	10.327	0.027	0.0	0.7	0.7	4.0	O K
240 min W nter	10.326	0.026	0.0	0.7	0.7	4.0	O K
360 min W nter	10.323	0.023	0.0	0.7	0.7	3.4	O K
480 min W nter	10.318	0.018	0.0	0.7	0.7	2.6	O K
600 min W nter	10.313	0.013	0.0	0.7	0.7	1.9	O K
720 min W nter	10.309	0.009	0.0	0.7	0.7	1.3	O K
960 min W nter	10.302	0.002	0.0	0.7	0.7	0.3	O K
1440 min W nter	10.300	0.000	0.0	0.6	0.6	0.0	O K
2160 min W nter	10.300	0.000	0.0	0.4	0.4	0.0	O K
2880 min W nter	10.300	0.000	0.0	0.4	0.4	0.0	O K
4320 min W nter	10.300	0.000	0.0	0.3	0.3	0.0	O K
5760 min W nter	10.300	0.000	0.0	0.2	0.2	0.0	O K
7200 min W nter	10.300	0.000	0.0	0.2	0.2	0.0	O K
8640 min W nter	10.300	0.000	0.0	0.2	0.2	0.0	O K
10080 min W nter	10.300	0.000	0.0	0.1	0.1	0.0	O K
Storm Event	Rain (mm/hr)		Flooded Volume (mE)	Di scharge Volume (mE)	Ti me-Peak (mi ns)		
30 min W nter	26.237		0.0	3.0	31		
60 min W nter	17.117		0.0	4.6	58		
120 min W nter	10.972		0.0	6.5	94		
180 min W nter	8.427		0.0	7.9	132		
240 min W nter	6.984		0.0	9.0	170		
360 min W nter	5.310		0.0	10.4	242		
480 min W nter	4.366		0.0	11.6	308		
600 min W nter	3.751		0.0	12.5	372		
720 min W nter	3.314		0.0	13.4	430		
960 min W nter	2.726		0.0	14.8	530		
1440 min W nter	2.072		0.0	16.9	0		
2160 min W nter	1.572		0.0	19.1	0		
2880 min W nter	1.293		0.0	20.6	0		
4320 min W nter	0.983		0.0	22.8	0		
5760 min W nter	0.810		0.0	24.3	0		
7200 min W nter	0.695		0.0	25.2	0		
8640 min W nter	0.613		0.0	25.8	0		
10080 min W nter	0.551		0.0	26.2	0		
ø1982- 2018 Innovyze							

AEA - Ambient		Page 3
Science Park Square Brighton East Sussex	Polards Nursery 8 unit 1yr+40%	
Date 15/06/2021 File 5877 Proposed Storage 8...	Designed by bb Checked by	
XP Solutions Source Control 2018.1		

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.200	Shortest Storm (mins)	15
Ratio R	0.338	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.050

Time (mins)	Area
From To:	(ha)
0 4	0.050

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AEA - Ambient		Page 4
Science Park Square Brighton East Sussex	Polards Nursery 8 unit 1yr+40%	
Date 15/06/2021 File 5877 Proposed Storage 8...	Designed by bb Checked by	
XP Solutions Source Control 2018.1		

Model Details

Storage is Online Cover Level (m) 10.750

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	50.0
Max Percolation (l/s)	138.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	10.300	Cap Volume Depth (m)	0.400

Orifice Outflow Control

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 10.000

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AEA - Arbi ental						Page 1		
Science Park Square Brighton East Sussex			Polards Nursery 8 unit 30yr+40%					
Date 15/06/2021 File 5877 Proposed Storage 8...			Designed by bb Checked by					
XP Sol utions			Source Control 2018.1					
<u>Summary of Results for 30 year Return Period (+40%)</u>								
Half Drain Time : 168 minutes.								
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max √ Outflow (l/s)	Max Volume (mE)	Status	
15 min Summer	10.340	0.040		0.0	0.7	0.7	6.0	O K
30 min Summer	10.357	0.057		0.0	0.8	0.8	8.6	O K
60 min Summer	10.374	0.074		0.0	0.8	0.8	11.0	O K
120 min Summer	10.385	0.085		0.0	0.8	0.8	12.8	O K
180 min Summer	10.388	0.088		0.0	0.8	0.8	13.2	O K
240 min Summer	10.388	0.088		0.0	0.8	0.8	13.2	O K
360 min Summer	10.385	0.085		0.0	0.8	0.8	12.8	O K
480 min Summer	10.381	0.081		0.0	0.8	0.8	12.2	O K
600 min Summer	10.377	0.077		0.0	0.8	0.8	11.6	O K
720 min Summer	10.373	0.073		0.0	0.8	0.8	11.0	O K
960 min Summer	10.365	0.065		0.0	0.8	0.8	9.7	O K
1440 min Summer	10.349	0.049		0.0	0.8	0.8	7.3	O K
2160 min Summer	10.329	0.029		0.0	0.7	0.7	4.3	O K
2880 min Summer	10.315	0.015		0.0	0.7	0.7	2.2	O K
4320 min Summer	10.301	0.001		0.0	0.7	0.7	0.1	O K
5760 min Summer	10.300	0.000		0.0	0.6	0.6	0.0	O K
7200 min Summer	10.300	0.000		0.0	0.5	0.5	0.0	O K
8640 min Summer	10.300	0.000		0.0	0.4	0.4	0.0	O K
10080 min Summer	10.300	0.000		0.0	0.4	0.4	0.0	O K
15 min Winter	10.347	0.047		0.0	0.8	0.8	7.1	O K
Storm Event		Rain (mm/hr)	Flooded Volume (mE)	Discharge Volume (mE)	Time-Peak (mins)			
15 min Summer		96.304	0.0	6.4	18			
30 min Summer		64.476	0.0	9.5	33			
60 min Summer		41.374	0.0	12.9	62			
120 min Summer		25.769	0.0	16.6	120			
180 min Summer		19.307	0.0	19.0	154			
240 min Summer		15.646	0.0	20.6	186			
360 min Summer		11.624	0.0	23.2	252			
480 min Summer		9.405	0.0	25.1	322			
600 min Summer		7.974	0.0	26.7	392			
720 min Summer		6.966	0.0	28.0	458			
960 min Summer		5.623	0.0	30.2	594			
1440 min Summer		4.153	0.0	33.3	852			
2160 min Summer		3.062	0.0	36.5	1212			
2880 min Summer		2.464	0.0	38.8	1556			
4320 min Summer		1.813	0.0	41.9	2204			
5760 min Summer		1.456	0.0	43.9	0			
7200 min Summer		1.230	0.0	45.3	0			
8640 min Summer		1.071	0.0	46.3	0			
10080 min Summer		0.953	0.0	47.0	0			
15 min Winter		96.304	0.0	7.5	18			
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AEA - Arbi ental							Page 2
Science Park Square Brighton East Sussex			Polards Nursery 8 unit 30yr+40%				
Date 15/06/2021			Designed by bb				
File 5877 Proposed Storage 8...			Checked by				
XP Sol utions			Source Control 2018.1				
<u>Summary of Results for 30 year Return Period (+40%)</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max √ Outflow (l/s)	Max Volume (mE)	St at us
30 mi n W nter	10.367	0.067	0.0	0.8	0.8	10.0	O K
60 mi n W nter	10.386	0.086	0.0	0.8	0.8	12.8	O K
120 mi n W nter	10.400	0.100	0.0	0.8	0.8	15.0	O K
180 mi n W nter	10.404	0.104	0.0	0.8	0.8	15.5	O K
240 mi n W nter	10.403	0.103	0.0	0.8	0.8	15.5	O K
360 mi n W nter	10.400	0.100	0.0	0.8	0.8	15.0	O K
480 mi n W nter	10.394	0.094	0.0	0.8	0.8	14.1	O K
600 mi n W nter	10.387	0.087	0.0	0.8	0.8	13.1	O K
720 mi n W nter	10.381	0.081	0.0	0.8	0.8	12.1	O K
960 mi n W nter	10.367	0.067	0.0	0.8	0.8	10.0	O K
1440 mi n W nter	10.342	0.042	0.0	0.7	0.7	6.4	O K
2160 mi n W nter	10.315	0.015	0.0	0.7	0.7	2.2	O K
2880 mi n W nter	10.300	0.000	0.0	0.7	0.7	0.0	O K
4320 mi n W nter	10.300	0.000	0.0	0.5	0.5	0.0	O K
5760 mi n W nter	10.300	0.000	0.0	0.4	0.4	0.0	O K
7200 mi n W nter	10.300	0.000	0.0	0.3	0.3	0.0	O K
8640 mi n W nter	10.300	0.000	0.0	0.3	0.3	0.0	O K
10080 mi n W nter	10.300	0.000	0.0	0.3	0.3	0.0	O K
Storm Event	Rai n (mm/ hr)	Fl ooded Vol ume (mE)	Di scharge Vol ume (mE)	Ti me- Peak (mi ns)			
30 mi n W nter	64.476	0.0	10.9	32			
60 mi n W nter	41.374	0.0	14.8	60			
120 mi n W nter	25.769	0.0	18.9	118			
180 mi n W nter	19.307	0.0	21.5	172			
240 mi n W nter	15.646	0.0	23.4	198			
360 mi n W nter	11.624	0.0	26.4	274			
480 mi n W nter	9.405	0.0	28.5	350			
600 mi n W nter	7.974	0.0	30.3	426			
720 mi n W nter	6.966	0.0	31.8	498			
960 mi n W nter	5.623	0.0	34.2	638			
1440 mi n W nter	4.153	0.0	37.8	898			
2160 mi n W nter	3.062	0.0	41.5	1252			
2880 mi n W nter	2.464	0.0	44.2	1496			
4320 mi n W nter	1.813	0.0	47.9	0			
5760 mi n W nter	1.456	0.0	50.3	0			
7200 mi n W nter	1.230	0.0	52.1	0			
8640 mi n W nter	1.071	0.0	53.4	0			
10080 mi n W nter	0.953	0.0	54.5	0			
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AEA - Ambient		Page 3
Science Park Square Brighton East Sussex	Polards Nursery 8 unit 30yr+40%	
Date 15/06/2021 File 5877 Proposed Storage 8...	Designed by bb Checked by	
XP Solutions Source Control 2018.1		

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.200	Shortest Storm (mins)	15
Ratio R	0.338	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.050

Time (mins)	Area
From To:	(ha)
0 4	0.050

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AEA - Ambient		Page 4
Science Park Square Brighton East Sussex	Polards Nursery 8 unit 30yr+40%	
Date 15/06/2021 File 5877 Proposed Storage 8...	Designed by bb Checked by	
XP Solutions Source Control 2018.1		

Model Details

Storage is Online Cover Level (m) 10.750

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	50.0
Max Percolation (l/s)	138.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	10.300	Cap Volume Depth (m)	0.400

Orifice Outflow Control

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 10.000

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AEA - Arbi ental							Page 1
Science Park Square Brighton East Sussex			Polards Nursery 8 unit 100yr+40%				
Date 15/06/2021			Designed by bb				
File 5877 Proposed Storage 8...			Checked by				
XP Sol utions			Source Control 2018.1				
<u>Summary of Results for 100 year Return Period (+40%)</u>							
Half Drain Time : 240 minutes.							
St or m Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max √ Outflow (l/s)	Max Volume (mE)	St at us
15 mi n Summer	10.357	0.057	0.0	0.8	0.8	8.6	O K
30 mi n Summer	10.382	0.082	0.0	0.8	0.8	12.3	O K
60 mi n Summer	10.405	0.105	0.0	0.8	0.8	15.8	O K
120 mi n Summer	10.423	0.123	0.0	0.8	0.8	18.4	O K
180 mi n Summer	10.428	0.128	0.0	0.8	0.8	19.1	O K
240 mi n Summer	10.427	0.127	0.0	0.8	0.8	19.1	O K
360 mi n Summer	10.424	0.124	0.0	0.8	0.8	18.6	O K
480 mi n Summer	10.420	0.120	0.0	0.8	0.8	17.9	O K
600 mi n Summer	10.415	0.115	0.0	0.8	0.8	17.2	O K
720 mi n Summer	10.410	0.110	0.0	0.8	0.8	16.5	O K
960 mi n Summer	10.401	0.101	0.0	0.8	0.8	15.1	O K
1440 mi n Summer	10.382	0.082	0.0	0.8	0.8	12.3	O K
2160 mi n Summer	10.357	0.057	0.0	0.8	0.8	8.6	O K
2880 mi n Summer	10.337	0.037	0.0	0.7	0.7	5.6	O K
4320 mi n Summer	10.311	0.011	0.0	0.7	0.7	1.7	O K
5760 mi n Summer	10.300	0.000	0.0	0.7	0.7	0.0	O K
7200 mi n Summer	10.300	0.000	0.0	0.6	0.6	0.0	O K
8640 mi n Summer	10.300	0.000	0.0	0.5	0.5	0.0	O K
10080 mi n Summer	10.300	0.000	0.0	0.4	0.4	0.0	O K
15 mi n W nt er	10.367	0.067	0.0	0.8	0.8	10.0	O K
St or m Event	Rai n (mm/ hr)	Fl ooded Vol ume (mE)	Di scharge Vol ume (mE)	Time- Peak (mi ns)			
15 mi n Summer	124.544	0.0	9.1	18			
30 mi n Summer	84.215	0.0	13.2	33			
60 mi n Summer	54.368	0.0	17.7	62			
120 mi n Summer	33.870	0.0	22.7	122			
180 mi n Summer	25.280	0.0	25.7	180			
240 mi n Summer	20.382	0.0	27.7	206			
360 mi n Summer	15.043	0.0	30.9	270			
480 mi n Summer	12.112	0.0	33.3	336			
600 mi n Summer	10.228	0.0	35.2	406			
720 mi n Summer	8.904	0.0	36.7	474			
960 mi n Summer	7.147	0.0	39.3	608			
1440 mi n Summer	5.233	0.0	43.0	880			
2160 mi n Summer	3.822	0.0	46.8	1256			
2880 mi n Summer	3.054	0.0	49.4	1616			
4320 mi n Summer	2.222	0.0	52.9	2292			
5760 mi n Summer	1.771	0.0	55.3	2936			
7200 mi n Summer	1.486	0.0	56.9	0			
8640 mi n Summer	1.288	0.0	58.1	0			
10080 mi n Summer	1.142	0.0	58.9	0			
15 mi n W nt er	124.544	0.0	10.5	18			
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AEA - Arbi ental							Page 2	
Science Park Square Brighton East Sussex			Polards Nursery 8 unit 100yr+40%					
Date 15/06/2021			Designed by bb					
File 5877 Proposed Storage 8...			Checked by					
XP Sol utions			Source Control 2018.1					
<u>Summary of Results for 100 year Return Period (+40%)</u>								
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max √ Outflow (l/s)	Max Volume (mE)	Status	
30 min Wnter	10.394	0.094		0.0	0.8	0.8	14.1	O K
60 min Wnter	10.421	0.121		0.0	0.8	0.8	18.1	O K
120 min Wnter	10.443	0.143		0.0	0.9	0.9	21.4	O K
180 min Wnter	10.450	0.150		0.0	0.9	0.9	22.4	O K
240 min Wnter	10.450	0.150		0.0	0.9	0.9	22.5	O K
360 min Wnter	10.446	0.146		0.0	0.9	0.9	21.9	O K
480 min Wnter	10.440	0.140		0.0	0.9	0.9	21.0	O K
600 min Wnter	10.433	0.133		0.0	0.8	0.8	19.9	O K
720 min Wnter	10.426	0.126		0.0	0.8	0.8	18.8	O K
960 min Wnter	10.411	0.111		0.0	0.8	0.8	16.6	O K
1440 min Wnter	10.382	0.082		0.0	0.8	0.8	12.3	O K
2160 min Wnter	10.346	0.046		0.0	0.8	0.8	6.9	O K
2880 min Wnter	10.319	0.019		0.0	0.7	0.7	2.8	O K
4320 min Wnter	10.300	0.000		0.0	0.6	0.6	0.0	O K
5760 min Wnter	10.300	0.000		0.0	0.5	0.5	0.0	O K
7200 min Wnter	10.300	0.000		0.0	0.4	0.4	0.0	O K
8640 min Wnter	10.300	0.000		0.0	0.4	0.4	0.0	O K
10080 min Wnter	10.300	0.000		0.0	0.3	0.3	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (mE)	Discharge Volume (mE)	Time-Peak (mins)				
30 min Wnter	84.215	0.0	15.1	32				
60 min Wnter	54.368	0.0	20.2	62				
120 min Wnter	33.870	0.0	25.8	118				
180 min Wnter	25.280	0.0	29.0	174				
240 min Wnter	20.382	0.0	31.4	228				
360 min Wnter	15.043	0.0	35.0	286				
480 min Wnter	12.112	0.0	37.6	364				
600 min Wnter	10.228	0.0	39.7	440				
720 min Wnter	8.904	0.0	41.5	516				
960 min Wnter	7.147	0.0	44.4	664				
1440 min Wnter	5.233	0.0	48.6	938				
2160 min Wnter	3.822	0.0	53.0	1320				
2880 min Wnter	3.054	0.0	56.0	1648				
4320 min Wnter	2.222	0.0	60.3	0				
5760 min Wnter	1.771	0.0	63.0	0				
7200 min Wnter	1.486	0.0	65.0	0				
8640 min Wnter	1.288	0.0	66.6	0				
10080 min Wnter	1.142	0.0	67.7	0				

AEA - Ambient		Page 3
Science Park Square Brighton East Sussex	Polards Nursery 8 unit 100yr+40%	
Date 15/06/2021 File 5877 Proposed Storage 8...	Designed by bb Checked by	
XP Solutions Source Control 2018.1		

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.200	Shortest Storm (mins)	15
Ratio R	0.338	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.050

Time (mins)	Area
From To:	(ha)
0 4	0.050

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AEA - Ambient		Page 4																								
Science Park Square Brighton East Sussex	Polards Nursery 8 unit 100yr+40%																									
Date 15/06/2021	Designed by bb																									
File 5877 Proposed Storage 8...	Checked by																									
XP Solutions		Source Control 2018.1																								
<u>Model Details</u> Storage is Online Cover Level (m) 10.750 <u>Porous Car Park Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.00000</td> <td>Width (m)</td> <td>10.0</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1000</td> <td>Length (m)</td> <td>50.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>138.9</td> <td>Slope (1:X)</td> <td>0.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Depression Storage (mm)</td> <td>5</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Evaporation (mm/day)</td> <td>3</td> </tr> <tr> <td>Invert Level (m)</td> <td>10.300</td> <td>Cap Volume Depth (m)</td> <td>0.400</td> </tr> </table> <u>Orifice Outflow Control</u> Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 10.000			Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0	Membrane Percolation (mm/hr)	1000	Length (m)	50.0	Max Percolation (l/s)	138.9	Slope (1:X)	0.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	10.300	Cap Volume Depth (m)	0.400
Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0																							
Membrane Percolation (mm/hr)	1000	Length (m)	50.0																							
Max Percolation (l/s)	138.9	Slope (1:X)	0.0																							
Safety Factor	2.0	Depression Storage (mm)	5																							
Porosity	0.30	Evaporation (mm/day)	3																							
Invert Level (m)	10.300	Cap Volume Depth (m)	0.400																							
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Appendix IV – Shallow Infiltration test results

Our Ref: YEX2188

04th June 2021

For the attention of Ambiental, C/O The Green House Sussex Ltd

**Ref: The Green House Sussex Ltd, Pollards Lane, Lake Lane, Barnham, West Sussex,
PO22 0AD**

We thank you for your request to undertake permeability testing at the above mentioned site and take pleasure in enclosing the results of this work. The investigation was undertaken on the 01st June 2021 in accordance with your instruction to proceed. This letter describes the work undertaken, presents the data obtained and discusses the results of the tests.

Geology

An examination of the available British Geological Survey data of the area for the site has been examined and indicates that the site has superficial drift deposits composed of River Terrace Deposits (sand, silt and clay), and bedrock deposits recorded as the London Clay Formation (clay, silt and sand).

Fieldworks

The programme of this investigation included the excavation of three trial pits. The locations of the soakaway tests were selected by YourEnvironment.

During this work, the soils encountered were logged in general accordance with BS 5930: 1990, as amended in 2007, and full descriptions are given on the borehole records, which are also appended to this letter.

Soakaway Tests

During the soakaway tests the water failed to achieve a fall from 75% to 25% of the effective depth of the storage volume in all three trial pits. The results obtained from the soakaway tests are summarised below:

Table 1: Soakaway Test Results

WS	Soakage Area Dimensions (m)	Depth (m)	Soil Description (Base of TP)	Infiltration Rate (m/sec)	Drainage Characteristics
TP01 test 1	0.90 x 0.60	0.60	MADE GROUND. Orangish brown gravelly, clayey SAND. Sand is fine - medium. Gravel is medium - coarse, angular of brick and concrete fragments and mixed lithology.	N/ A	Practically Impermeable
TP02 test 1	1.00 x 0.60	0.60	Orangish brown sandy CLAY. Sand is fine - medium.	N/ A	Practically Impermeable
TP03 test 1	0.80 x 0.60	0.60	Orangish brown sandy CLAY. Sand is fine - medium.	N/ A	Practically Impermeable

Discussion

The soils encountered beneath the site were found to be predominantly CLAY. The soakage rates obtained during the investigation were found to be practically impermeable. Given the data from the test, it is considered that soakaways are not suitable for this site.

References

Building Research Establishment (BRE) Digest 365, *Soakaway Design*, September 1991.

British Standards Institution (1999) BS5930: *Code of practice for site investigations*, B.S.I., London.

British Standards Institution (2007), Amendment No 1, BS5930: *Code of practice for site investigations*, B.S.I., London.

We trust that this information is of interest and should you have any other requirements do not hesitate to contact us.

For and on behalf of

YourEnvironment

Yours Faithfully,

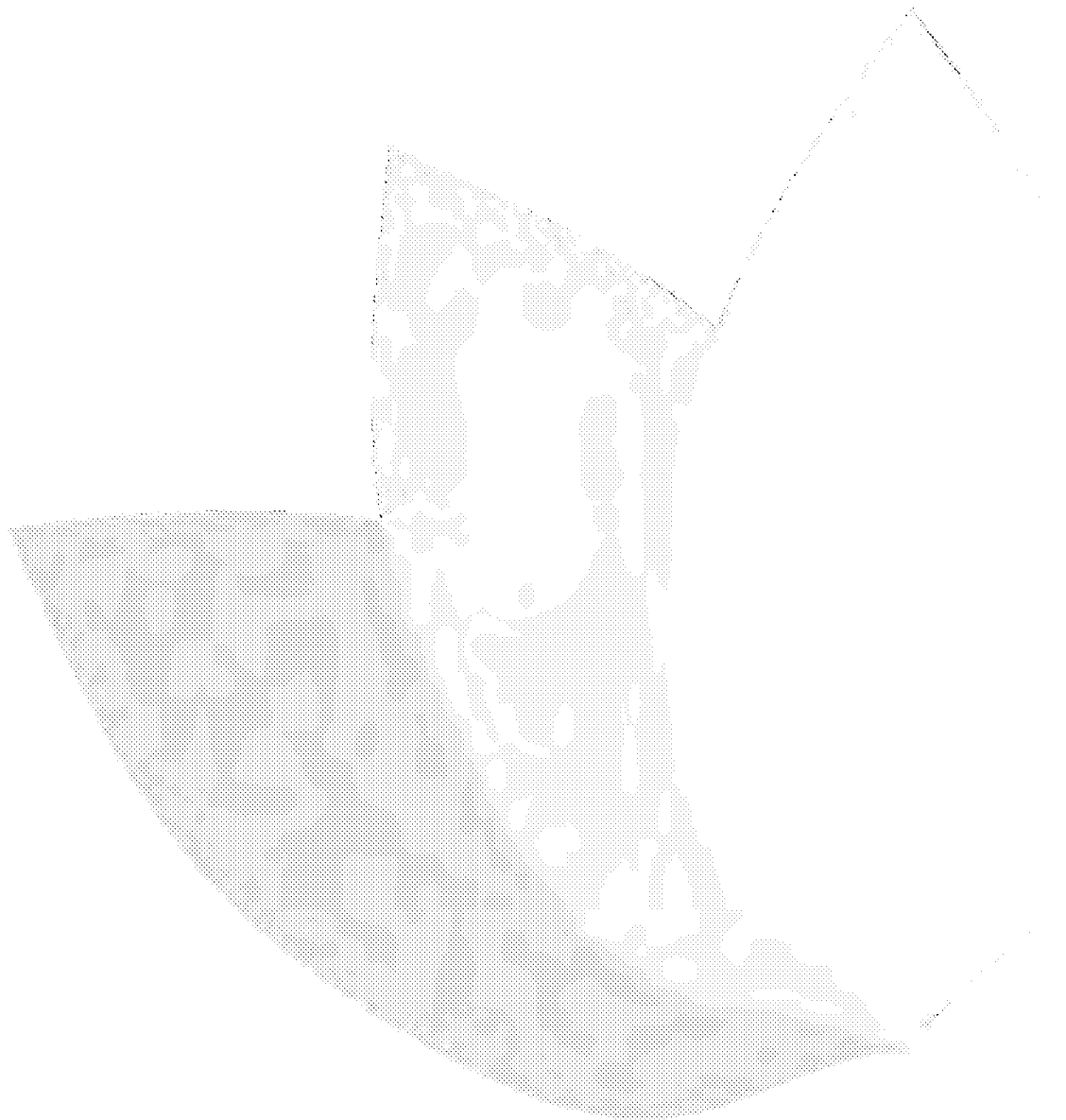


Nick Hammond

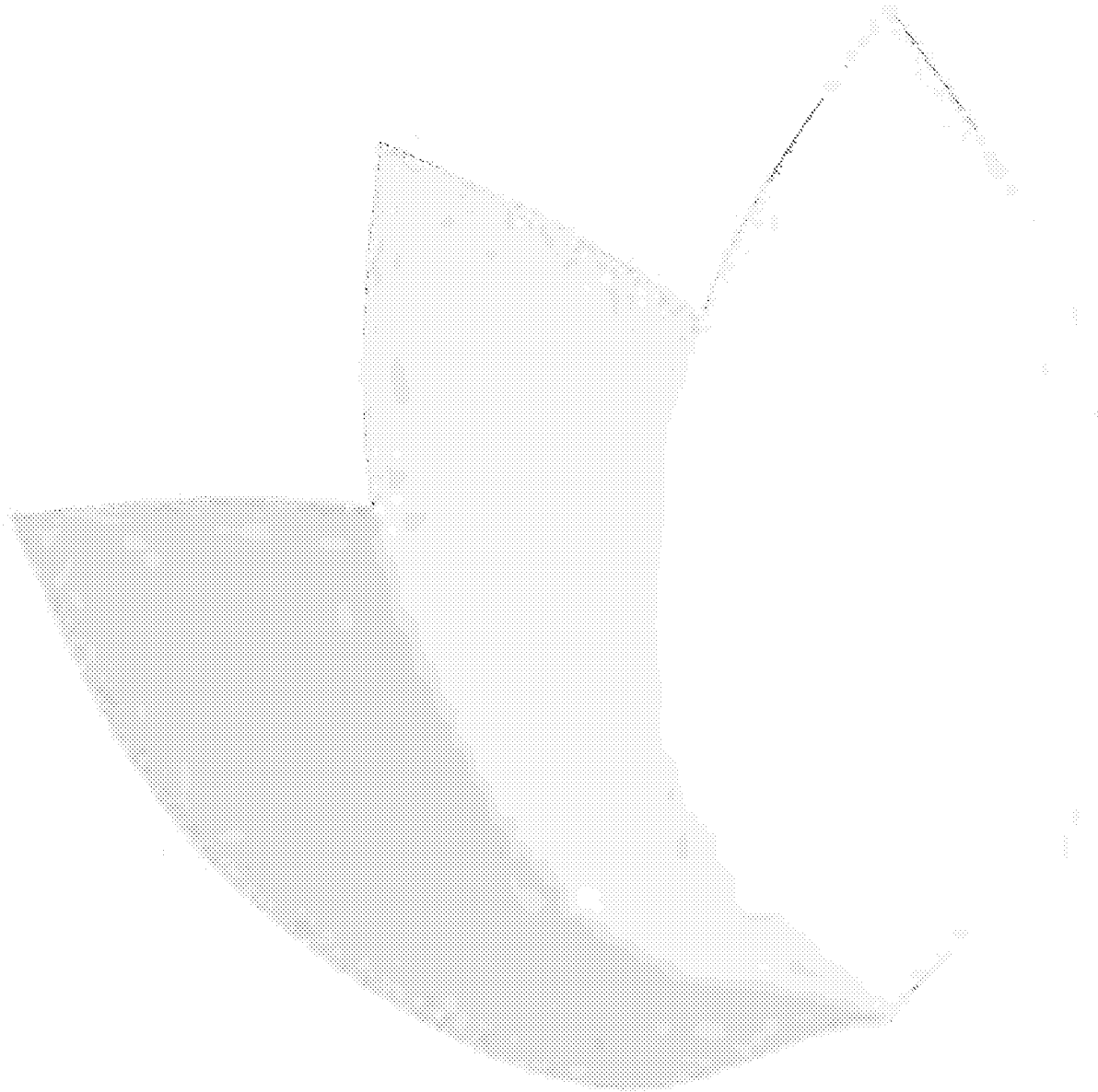
Geo-Environmental Engineer

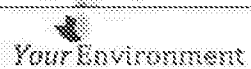
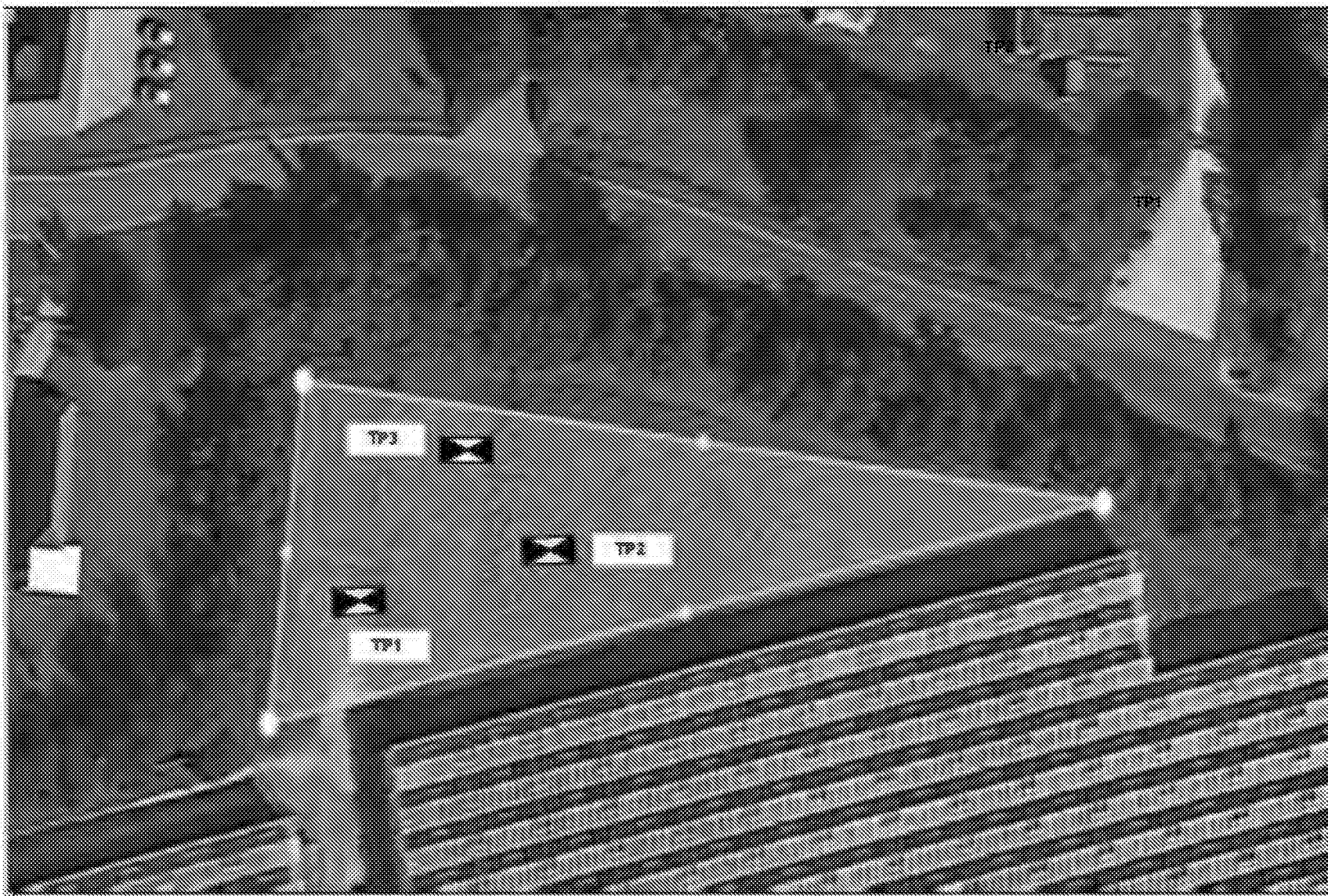
Enc.

Appendix A: Site Investigation Plan
Appendix B: Trial Pit Logs
Appendix C: Soakaway Test Results
Appendix D: Photographs



APPENDIX A: Site Investigation Plan

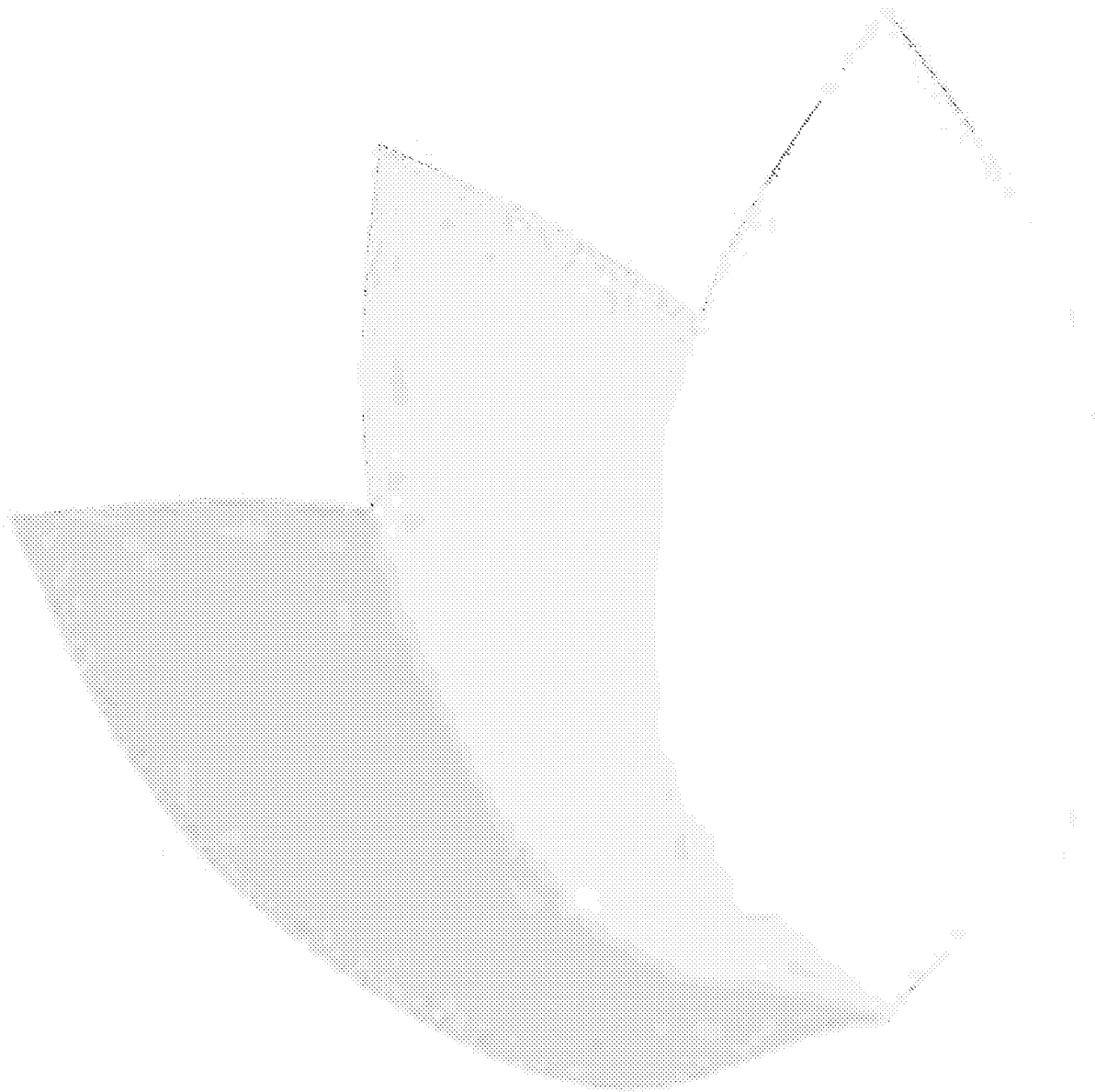




Ground Investigation Location Plan - Not to Scale

Your Environment Chilgrove Business Centre, Chilgrove, Nr Chichester, PO18 9HU Tel: 01243 787150 Email: info@yourenvironment.org	Site Name: Eric Wall Nurseries, Barnham	Client: Ambiantal	Date: Jun-21	Job No: YEX2188
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APPENDIX B: Trial Pit Logs



Location The Green House Sussex Ltd, Pollards House, Barnham, PO22 0AD
Date June 1, 2021
Project Reference YEX2188

Water level data

Completion: Depth NA m
Elevation NA m

Width 0.6 m
Length 0.9 m
Depth 0.6 m

24 hour: Depth m
Elevation m

Method (Trial pit, window etc) Trial Pit - Machine Excavation

Stratum depth (m)		Sample Depth		Sample Type	GW	Install Details	LITHOLOGY
From	To	From	To				
0.00							MADE GROUND. Orangish brown gravelly, clayey SAND. Sand is fine - medium. Gravel is medium - coarse, angular of brick and concrete fragments and mixed lithology.
	0.60						

End of TP1

Remarks:

Location The Green House Sussex Ltd, Pollards House, Barnham, PO22 0AD
Date June 1, 2021
Project Reference YEX2188

Water level data

Completion: Depth NA m
Elevation NA m

24 hour: Depth m
Elevation m

Width 0.6 m
Length 1.0 m
Depth 0.6 m

Method (Trial pit, window etc) Trial Pit - Machine Excavation

Stratum depth (m)		Sample Depth		Sample Type	GW	Install Details	LITHOLOGY
From	To	From m	To m				
0.00							MADE GROUND. Orangish brown gravelly, clayey SAND. Sand is fine - medium. Gravel is medium - coarse, angular of brick and concret fragments and mixed lithology.
0.50	0.50					NONE	Orangish brown sandy CLAY. Sand is fine - medium.
0.60							End of TP2

Remarks:

Location The Green House Sussex Ltd, Pollards House, Barnham, PO22 0AD
Date June 1, 2021
Project Reference YEX2188

Water level data

Completion: Depth NA m
Elevation NA m

Width 0.6 m
Length 0.8 m
Depth 0.6 m

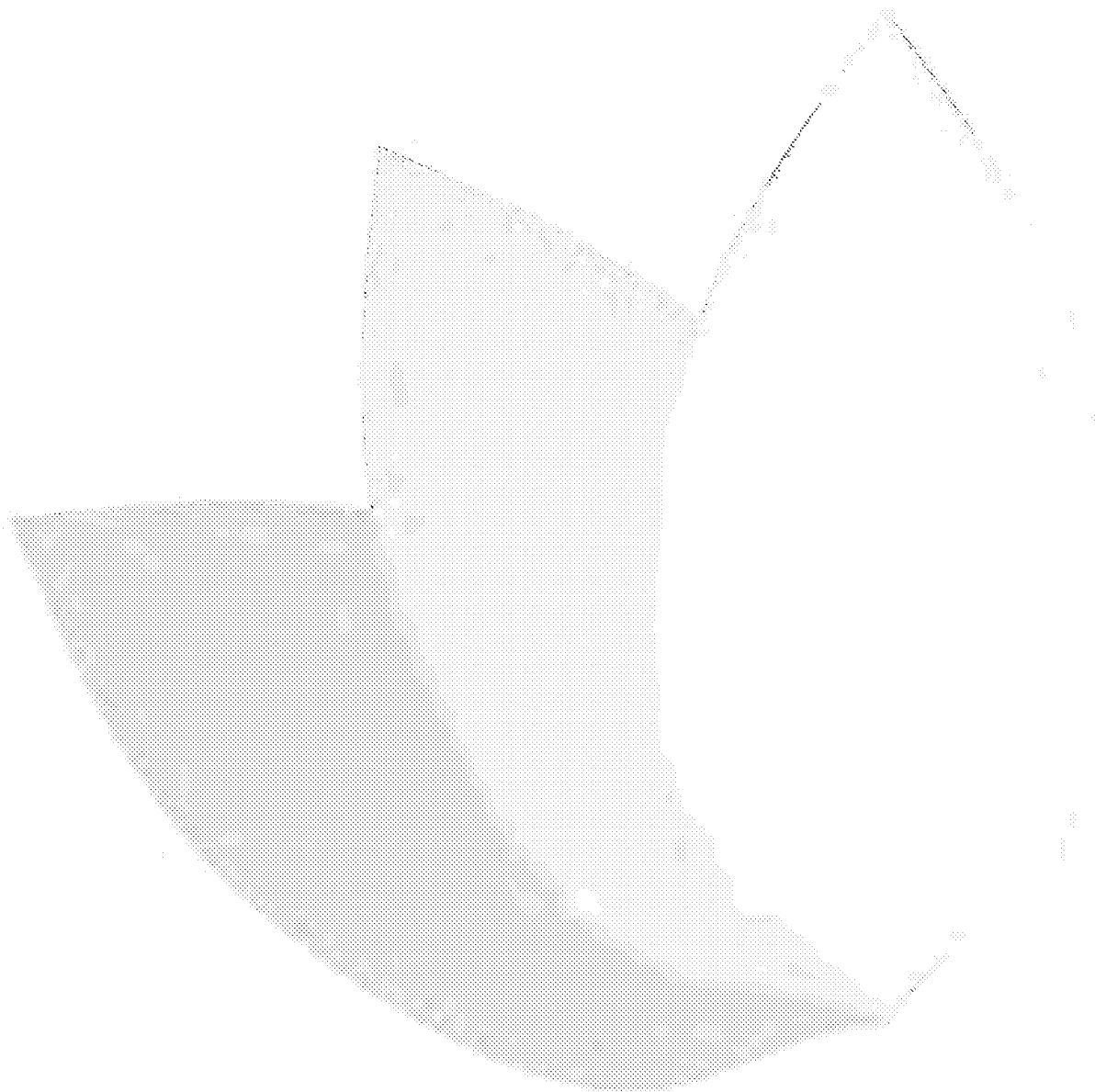
24 hour: Depth m
Elevation m

Method (Trial pit, window etc) Trial Pit - Machine Excavation

Stratum depth (m)		Sample Depth		Sample Type	GW	Install Details	LITHOLOGY
From	To	From m	To m				
0.00							MADE GROUND. Orangish brown gravelly, clayey SAND. Sand is fine - medium. Gravel is medium - coarse, angular of brick and concrete fragments and mixed lithology.
0.2	0.20					NONE	Orangish brown sandy CLAY. Sand is fine - medium.
	0.60						
							End of TP3

Remarks:

APPENDIX C: Soakaway Test Results

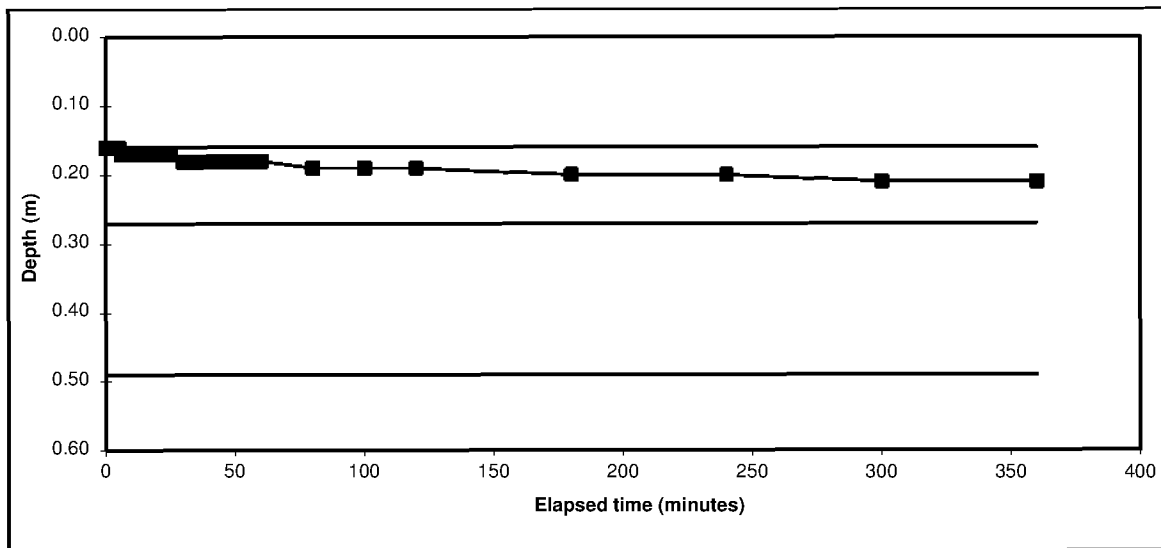


Your Environment

Soakaway Test

Trial Pit No:	TP1	Test No:	1	Date:	01/06/2021
Length (m):	0.900	Datum Height:	0.00 m agl		
Width (m):	0.60	Granular infill:	None		
Depth (m):	0.60	Porosity of infill:	1	(assumed)	

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.160	30	0.180
1	0.160	35	0.180
2	0.160	40	0.180
3	0.160	45	0.180
4	0.160	50	0.180
5	0.160	55	0.180
6	0.170	60	0.180
7	0.170	80	0.190
8	0.170	100	0.190
9	0.170	120	0.190
10	0.170	180	0.200
15	0.170	240	0.200
20	0.170	300	0.210
25	0.170	360	0.210



Start water depth for analysis (mbgl)	0.16		
75%effective depth (mbgl):	0.27	Elapsed time (mins):	#N/ A
50%effective depth (mbgl):	0.38		
25%effective depth (mbgl):	0.49	Elapsed time (mins):	#N/ A
Base of soakage zone (mbgl):	0.60		
Volume outflow between 75%and 25%effective depth (m³):			
Mean surface area of outflow (m²):			1.20
(side area at 50%effective depth + base area)			
Time for outflow between 75%and 25%effective depth (mins):			

Soil infiltration rate (m/s):	Test incomplete as 25%effective depth not achieved. Unable to reliably determine soil infiltration rate.
Remarks Results processed following BRE 365 (2007).	

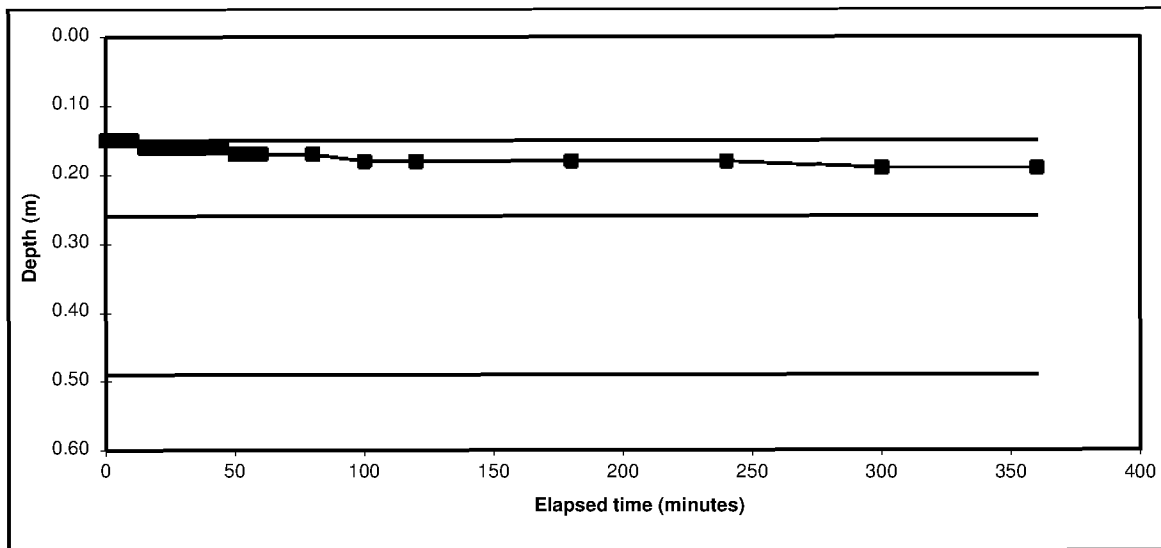
Client: Ambiantal	Site: Eric Wall Nuseries	TP1
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Your Environment

Soakaway Test

Trial Pit No:	TP2	Test No:	1	Date:	01/06/2021
Length (m):	1.000	Datum Height:	0.00 m agl		
Width (m):	0.60	Granular infill:	None		
Depth (m):	0.60	Porosity of infill:	1	(assumed)	

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.150	30	0.160
1	0.150	35	0.160
2	0.150	40	0.160
3	0.150	45	0.160
4	0.150	50	0.170
5	0.150	55	0.170
6	0.150	60	0.170
7	0.150	80	0.170
8	0.150	100	0.180
9	0.150	120	0.180
10	0.150	180	0.180
15	0.160	240	0.180
20	0.160	300	0.190
25	0.160	360	0.190



Start water depth for analysis (mbgl)	0.15		
75%effective depth (mbgl):	0.26	Elapsed time (mins):	#N/ A
50%effective depth (mbgl):	0.38		
25%effective depth (mbgl):	0.49	Elapsed time (mins):	#N/ A
Base of soakage zone (mbgl):	0.60		
Volume outflow between 75%and 25%effective depth (m³):			
Mean surface area of outflow (m²):			1.30
(side area at 50%effective depth + base area)			
Time for outflow between 75%and 25%effective depth (mins):			

Soil infiltration rate (m/s):	Test incomplete as 25%effective depth not achieved. Unable to reliably determine soil infiltration rate.
Remarks Results processed following BRE 365 (2007).	

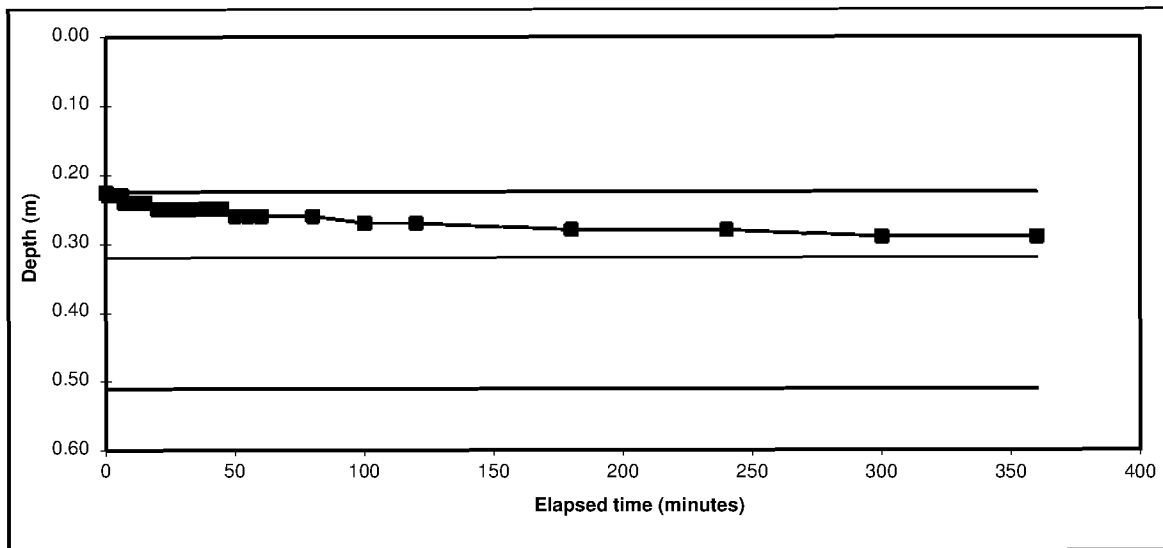
Client:	Ambiental	TP2
Site:	Eric Wall Nuseries	

Your Environment

Soakaway Test

Trial Pit No:	TP3	Test No:	1	Date:	01/06/2021
Length (m):	0.800	Datum Height:	0.00 m agl		
Width (m):	0.60	Granular infill:	None		
Depth (m):	0.60	Porosity of infill:	1	(assumed)	

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.225	30	0.250
1	0.230	35	0.250
2	0.230	40	0.250
3	0.230	45	0.250
4	0.230	50	0.260
5	0.230	55	0.260
6	0.230	60	0.260
7	0.240	80	0.260
8	0.240	100	0.270
9	0.240	120	0.270
10	0.240	180	0.280
15	0.240	240	0.280
20	0.250	300	0.290
25	0.250	360	0.290

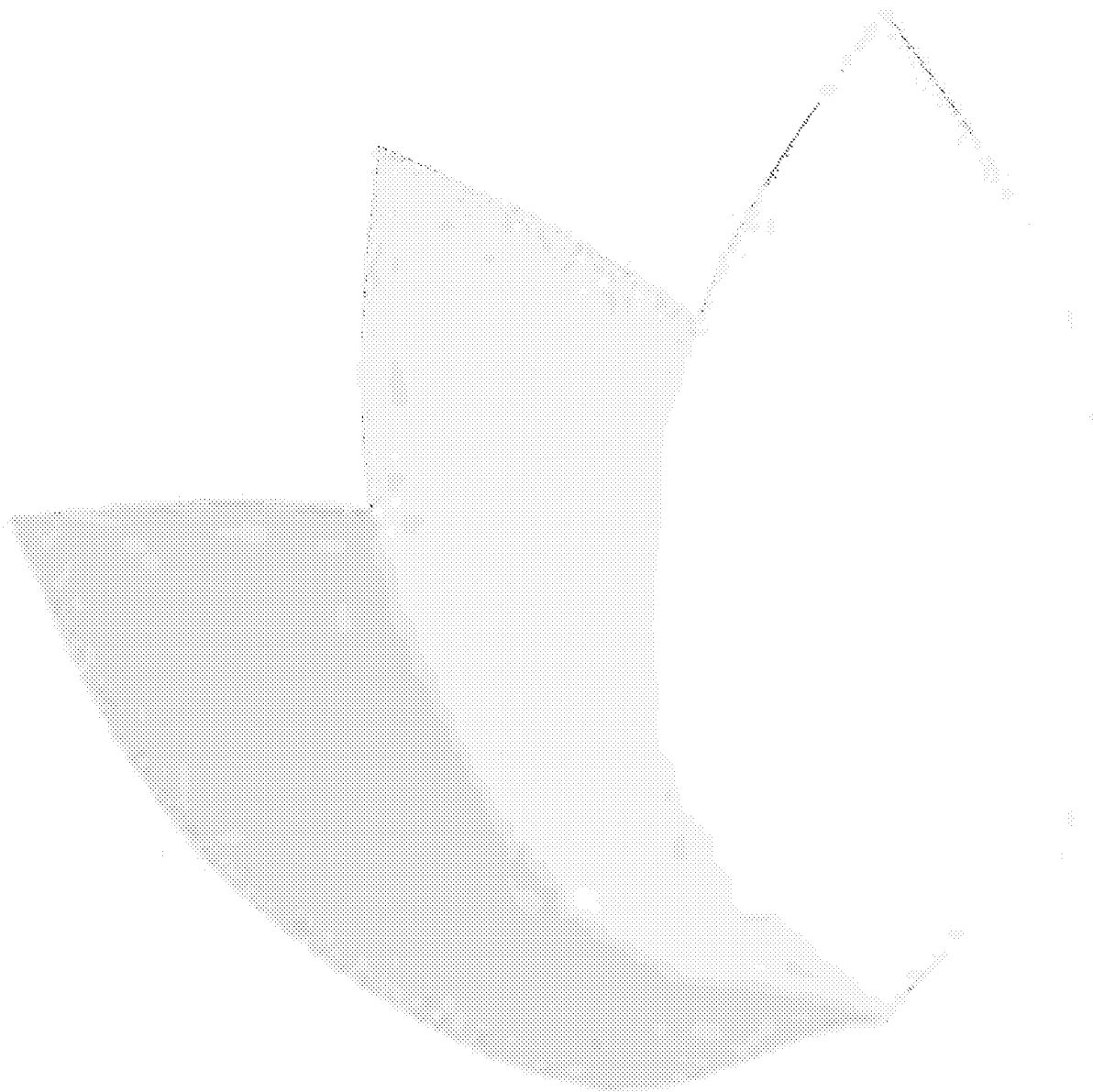


Start water depth for analysis (mbgl)	0.23		
75%effective depth (mbgl):	0.32	Elapsed time (mins):	#N/ A
50%effective depth (mbgl):	0.41		
25%effective depth (mbgl):	0.51	Elapsed time (mins):	#N/ A
Base of soakage zone (mbgl):	0.60		
Volume outflow between 75%and 25%effective depth (m³):			
Mean surface area of outflow (m²):			1.01
(side area at 50%effective depth + base area)			
Time for outflow between 75%and 25%effective depth (mins):			

Soil infiltration rate (m/s):	Test incomplete as 25%effective depth not achieved. Unable to reliably determine soil infiltration rate.
Remarks Results processed following BRE 365 (2007).	

Client:	Ambiental	TP3
Site:	Eric Wall Nuseries	

APPENDIX D: Photographs

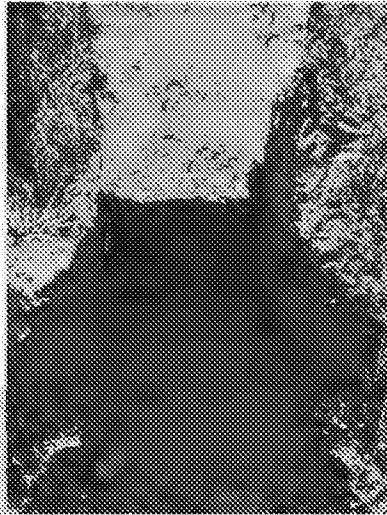


Site: Eric Wall Nurseries

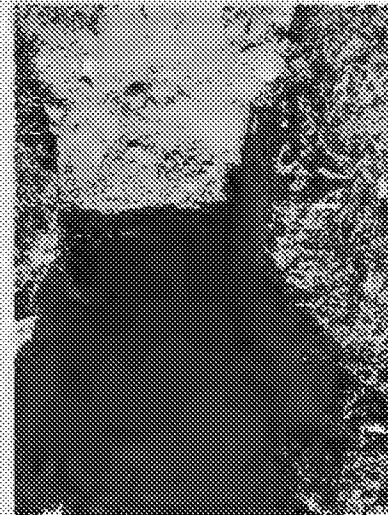
Client: Ambiental

Job Reference: YEX2188, Dated: June 2021

A.



B.




Your Environment

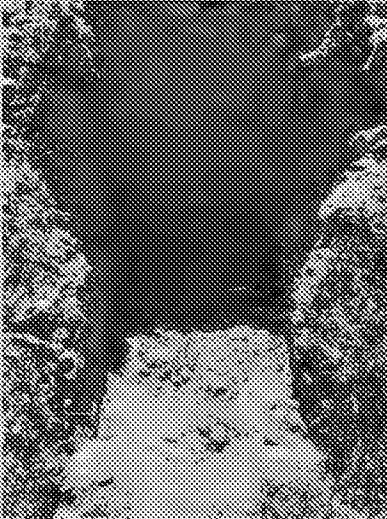
A. TP1

B. TP1

C. TP1

D. TP1

C.



D.

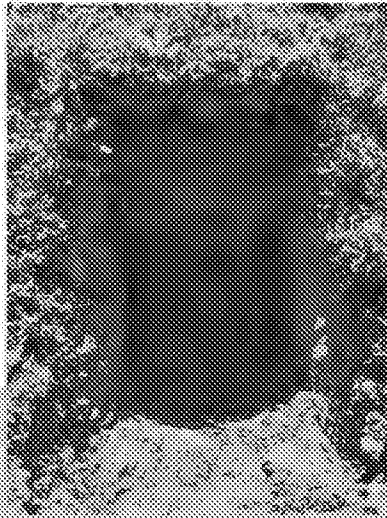


Site: Eric Wall Nurseries

Client: Ambiental

Job Reference: YEX2188, Dated: June 2021

E.



F.



Your Environment

E. TP2

F. TP2

G. TP2

H. TP2

G.



H.



Your Environment

Site: Eric Wall Nurseries

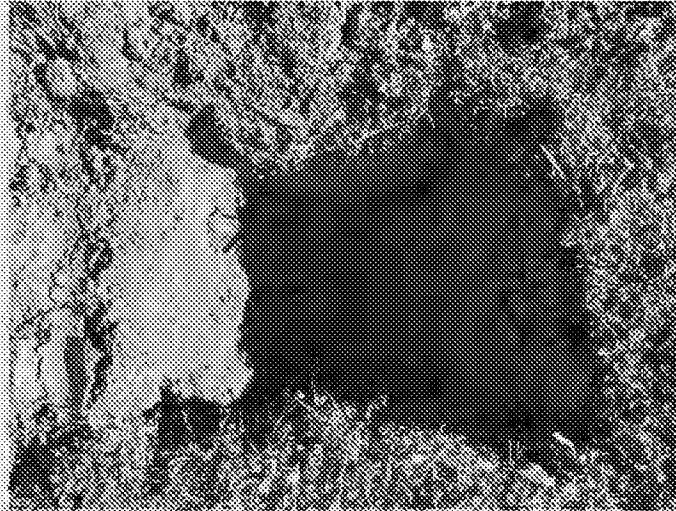
Client: Ambiental

Job Reference: YEX2188, Dated: June 2021

I.



J.




*Your*Environment

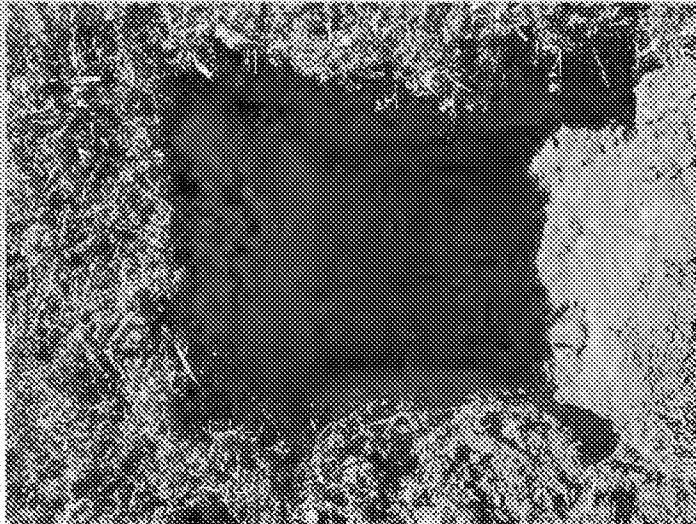
I. TP3

J. TP3

K. TP3

L. TP3

K.



L.

