

Haberdashers' Aske's Boys' School: New Pre-Preparatory School

Planning Condition Report

Prepared by:
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Kirsty Burwood MEng CE-st MICE
28833DateRevisionNotes/Amendments/Issue PurposeAugust, 20211To discharge planning conditions 13 and 14
To discharge planning conditions 13 and 14

Introduction

This statement has been compiled to discharge the drainage planning condition for the proposed development of a new Pre-Preparatory school for boys, associate hardstanding and formalising the Butterfly Lane car park extension, ref: 20/1200/LBC. This report should be read in conjunction with the drainage layout drawing which has been appended to the rear of this document.

Planning Conditions

Condition 13

The development permitted by this planning permission shall be carried out in accordance with the approved surface water drainage assessment carried out by Price & Myers Consulting Engineers job number 28833 Revision 4, dated November 2020 and the LLFA Comments Response revision 1 dated November 2020, and the following mitigation measures:

- 1. Limiting the surface water run-off generated by the critical storm events so that it will not exceed the surface water run-off rate of 6 l/s during the 1 in 100 year event plus 40% of climate change event.
- Providing storage to ensure no increase in surface water run-off volumes for all rainfall events up to and including the 1 in 100 year + climate change event providing a minimum of 595 m³ (or such storage volume agreed with the LLFA) of storage volume in permeable paving.
- *3. Discharge of surface water from the private network to the ditch north of the site via existing culvert under Butterfly Lane.*

The mitigation measures shall be fully implemented prior to occupation and subsequently in accordance with the timing / phasing arrangements embodied within the scheme, or within any other period as may subsequently be agreed, in writing, by the local planning authority.

Condition 14

No development shall take place until a detailed surface water drainage scheme for the site based on the approved drainage strategy and sustainable drainage principles, has been submitted to and approved in writing by the local planning authority. The drainage strategy should demonstrate the surface water run-off generated up to and including 1 in 100 year + climate change critical storm will not exceed the run-off from the undeveloped site following the corresponding rainfall event. The scheme shall subsequently be implemented in accordance with the approved details before the development is completed.

- 1. Full condition survey of the piped section of the outfall and full details of any required remediation activities.
- 2. Detailed engineered drawings of the proposed SuDS features including cross section drawings, their size, volume, depth and any inlet and outlet features including any connecting pipe runs.
- *3.* Full post-development network calculations for all storm events up to and including the 1 in 100 year + 40% climate change event. Also to include half drain down times for all attenuation features.
- 4. Final detailed management plan to include arrangements for adoption and any other arrangements to secure the operation of the scheme throughout its lifetime.

Surface Water Run-off

The original Flood Risk Assessment and SuDS Strategy set out the proposed discharge rates from the development, referenced in Table 1.

Storm Event	Existing Run-off (0.903ha hardstanding) (I/sec)	Greenfield Run-off Rates (0.968 hardstanding) (I/sec)	Proposed Flow Rate for Pre-Prep, Associated Hardstanding and car park (0.968ha hardstanding) (I/sec)	Percentage Reduction
Qbar	-	5.91	6.0	-
1 in 1 year	83.39	5.02	6.0	93%
1 in 30 year	204.82	13.59	6.0	97%
1 in 100 year	266.45	18.85	6.0	98%

Table 1: Existing and Proposed Discharge Rates

The proposed site works are split into two different areas. The discharge rate from Butterfly Lane car park is proposed to be restricted to 2 l/sec by a Hydrobrake flow control. The Pre-Preparatory school and surrounding hardstanding is proposed to be restricted to 4 l/sec via a pumping chamber due to connection levels. The total proposed surface water run-off from the development will equate to 6 l/sec.

Surface Water Attenuation Volume

Permeable paving and green roofs are proposed in the development. The green roofs cannot be included in the attenuation calculations due to the sloping nature of the proposed roof. The surface water is proposed to be attenuated in the permeable paving subbase. The surface water drainage is divided into two separate networks.

Butterfly Lane Car Park

The car park is to be attenuated within the Cellweb subbase (full extent of Cellweb TBC). The required depth of subbase to provide sufficient storage is 225mm deep.

Attenuation provided = A x 30% x d where, A = area of car park 30% = void ratio of granular subbase d = depth of subbase

Attenuation provided = 1602m² x 30% x 0.225m = 108m³

Pre-Preparatory School and Associated Hardstanding

The school building and associated hardstanding is proposed to be attenuated within the permeable paving build up in the granular subbase. The required depth of subbase to provide sufficient storage is 430mm deep in all areas apart from the Sports England tracks which have 300mm deep subbase.

Attenuation provided = A x 30% x d where, A = area of permeable paving 30% = void ratio of granular subbase d = depth of subbase Attenuation provided (Sports England facilities) = 1505m² x 30% x 0.430m = 194m³

Attenuation provided (remaining areas) = 4508m² x 30% x 0.300m = 405m³

Total Attenuation Provided:

108m³ (car park) + 194m³ (Sports England facilities) + 405m³ (remaining area) = 707m³ (total)

Discharge Route and CCTV Survey

The car park and Pre-Prep surface water discharges at restricted rates into the existing pond network. This ultimately discharges into the surface water culvert underneath Butterfly Lane and into the ditch in Aldenham Estate's land.

A full CCTV survey of the culvert and outfall was carried out and a remedial works schedule was produced by the surveyor. The suggested remedial works will be carried out to ensure outfall is working at its full capacity. Details have been appended to the report.

SuDS Detailed Drawings

The previously proposed swale has been omitted due to its depth and impact on the existing tree root protection zones. Due to the depth, the swale would have to be at least 9m wide to meet the 1 in 3 side slopes requirement and this would damage the existing tree roots, therefore a piped connection to the existing swale has been proposed instead.

The outfall into the existing swale will be via a brick headwall to match the existing headwalls into the ponds.

Drainage strategy drawings and details can be found appended to this report.

Surface Water Calculations

Full calculations for the car park and Pre-Prep drainage networks have been carried out in Microdrainage and have been attached. The modelling shows that there is no flooding for the 1 in 30 year storm event and only small amounts (totalling 0.88m³) for the 1 in 100 year storm event. There is flooding for the 1 in 100 year + 40% climate change allowance storm event which will follow the exceedance route paths in the attached plan.

The half drain time is not easily modelled in Microdrainage for attenuation features so a calculation has been done below to provide a half drain time for the overall attenuation volume:

Volume of permeable paving attenuation = 707m³ Half of volume of permeable paving attenuation = 353.5m³ Total discharge rate = 6l/s

Therefore, half drain time of permeable paving = (353.5 x 1000) / 6 = 58917 secs = 16hrs 22mins

The drain down time is less than 24 hours, therefore, the half drain time is deemed acceptable.

SuDS Maintenance Strategy

The successful implementation and operation of a SuDS system depends on a robust and clear maintenance strategy being implemented. The following measures should form part of the site's proposed management plan. The SuDS will be maintained by the school's existing maintenance team and will form part of the overall maintenance regime for the site.

SuDS	Maintenance						
Element	Activity	Typical Frequency					
	Monitoring / Inspections	Required ActionInspect all components including soilsubstrate, vegetation, drains, irrigationsystems, membranes and roof structure forproper operation, integrity of waterproofingand structural stabilityInspect soil substrate for evidence oferosion channels and identify any sedimentsourcesInspect drain inlets to ensure unrestrictedrunoff from the drainage layer to theconveyance or roof drain systemInspect underside of roof for evidence of	Annually and after severe storms				
ofs	Regular Maintenance	leakageRemove debris and litter to preventclogging of inlet drains and interferencewith plant growthDuring establishment i.e. year one, replacedead plants as required	Half yearly and annually or as required Monthly -but usually responsibility of manufacturer				
Green Roofs		Post establishment, replace dead plants where > 5% of coverage	Annually in autumn				
Gr		Remove fallen leaves and debris from deciduous plant foliage Remove nuisance and invasive vegetation, including weeds Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and not allowed to accumulate	Half yearly or as required				
	Remedial Actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required				

SuDS	Maintenance							
Element	Activity	Required Action	Typical Frequency					
	Monitoring /	Initial inspection	Monthly for three					
	Inspections		months after installation					
		Inspect for evidence of poor operation	Three-monthly, 48 hours					
		and/or weed growth – if required, take	after large storms in first					
		remedial action	six months					
		Inspect silt accumulation rates and	Annually					
		establish appropriate brushing frequencies						
		Monitor inspection chambers	Annually					
ß	Regular	Brushing and vacuuming -standard	Once a year after					
viv	Maintenance	cosmetic sweep over whole surface	autumn leaf fall					
D a		Rubbish and litter removal	As required					
Permeable Paving	Remedial	Remediate any landscaping which through	As required					
Jea	Actions	vegetation maintenance or soil slip, has						
ern		been raised to within 50mm of the level of						
₽.		the paving.						
		Remedial work to any depressions, rutting						
		and cracked or broken blocks considered						
		detrimental to the structural performance						
		or a hazard to users, and replace lost						
		jointing material						
		Rehabilitation of surface and upper	Every 10 to 15 years or					
		substructure by remedial sweeping	as required					

Table 2: SuDS Maintenance Strategy

Attachments

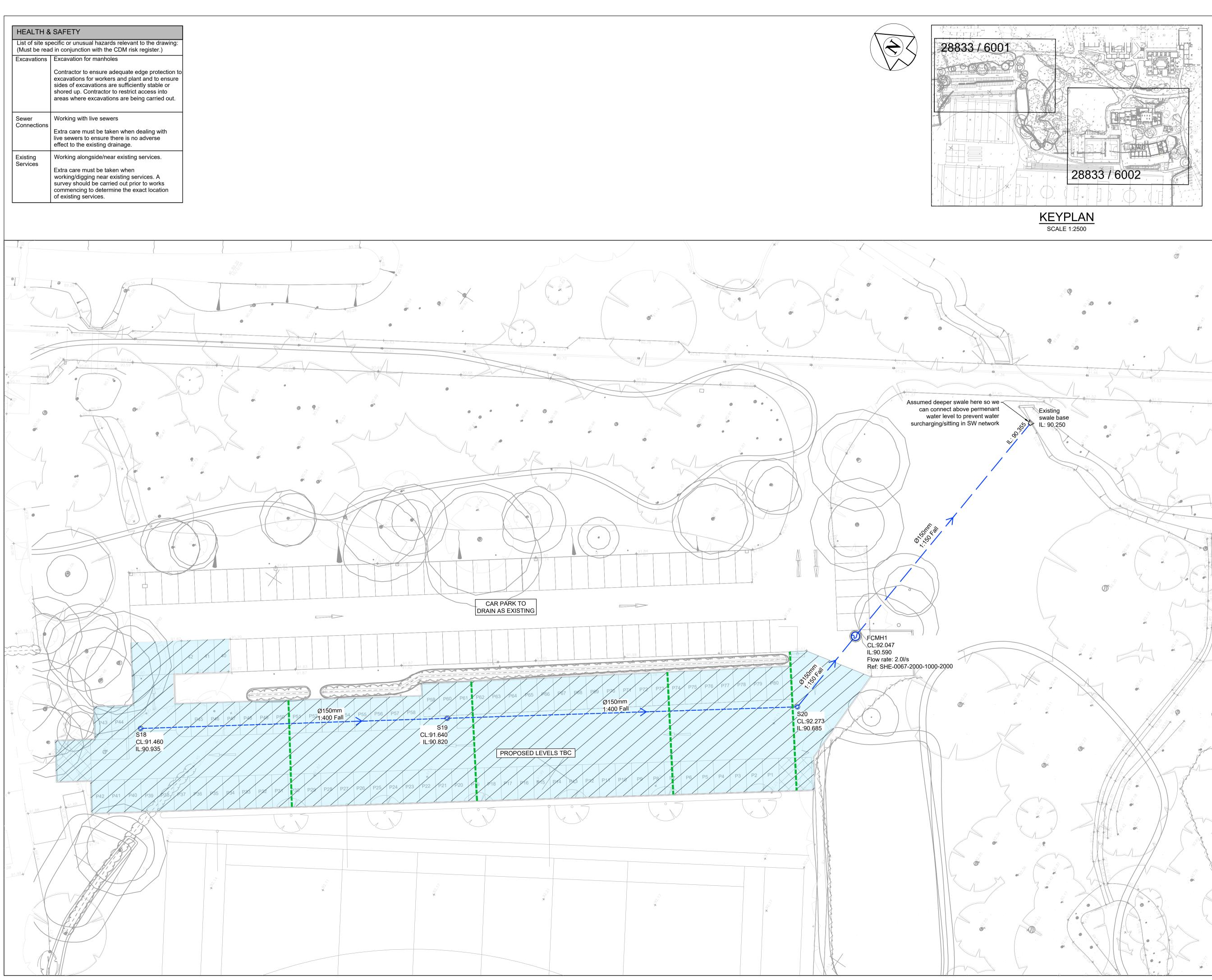
Drawings:

Below Ground Drainage Layout Sheet 1 (28833-6001_P08) Below Ground Drainage Layout Sheet 2 (28833-6002_P10) External Works Build-ups Sheet 1 (28833-7100_P07) External Works Build-ups Sheet 2 (28833-7101_P01) Exceedance Route Plan (28833-SK6001_4)

Calculations: Microdrainage calculations (Car Park and Pre-Prep building)

Reports: CCTV survey and remedial works required

HEALTH &	SAFETY
	ecific or unusual hazards relevant to the drawing: d in conjunction with the CDM risk register.)
Excavations	Excavation for manholes Contractor to ensure adequate edge protection to excavations for workers and plant and to ensure sides of excavations are sufficiently stable or shored up. Contractor to restrict access into areas where excavations are being carried out.
Sewer Connections	Working with live sewers Extra care must be taken when dealing with live sewers to ensure there is no adverse effect to the existing drainage.
Existing Services	Working alongside/near existing services. Extra care must be taken when working/digging near existing services. A survey should be carried out prior to works commencing to determine the exact location of existing services.



NOTES :

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- Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check that this drawing has been printed to the intended scale this bar should be 50mm long @ A1 or 25mm long @ A3.
- 3. Health & Safety : All specific drawing notes are to be read in conjunction with the project "Information Pack" and "Site Rules".
- 4. For general notes refer to Drawing No. 28833 / GN01

DRAINAGE LEGEN	1D
New SW Drain Perforated Pipe Step in sub-base to accomodate change in levels	
DRAINAGE KEY	
S1	Surface Water Manhole Chamber
FCMH1	Flow Control Chamber (SW only)
⊄	Headwall
	Permeable paving - Cellweb or similar approved
ABBREVIATIONS	
IL - Invert CL - Cover	

P08	17.08.21	DLa	BB	Issued for Information
P07	10.04.21	DLa	BB	Stage 4 Issue
P06	19.02.21	DLa	BB	Draft Stage 4 Issue
P05	29.01.21	DLa	BB	Issued for Planning
P04	20.11.20	DLa	BB	Issued for Planning
P03	23.07.20	DLa	BB	Issued for Planning
P02	02.06.20	DLa	BB	Issued for Planning
P01	22.05.20	DLa	BB	Issued for Comment
Rev	Date	Drawn	Eng	Amendment

HABERDASHERS' PRE-PREPARATORY SCHOOL FOR BOYS

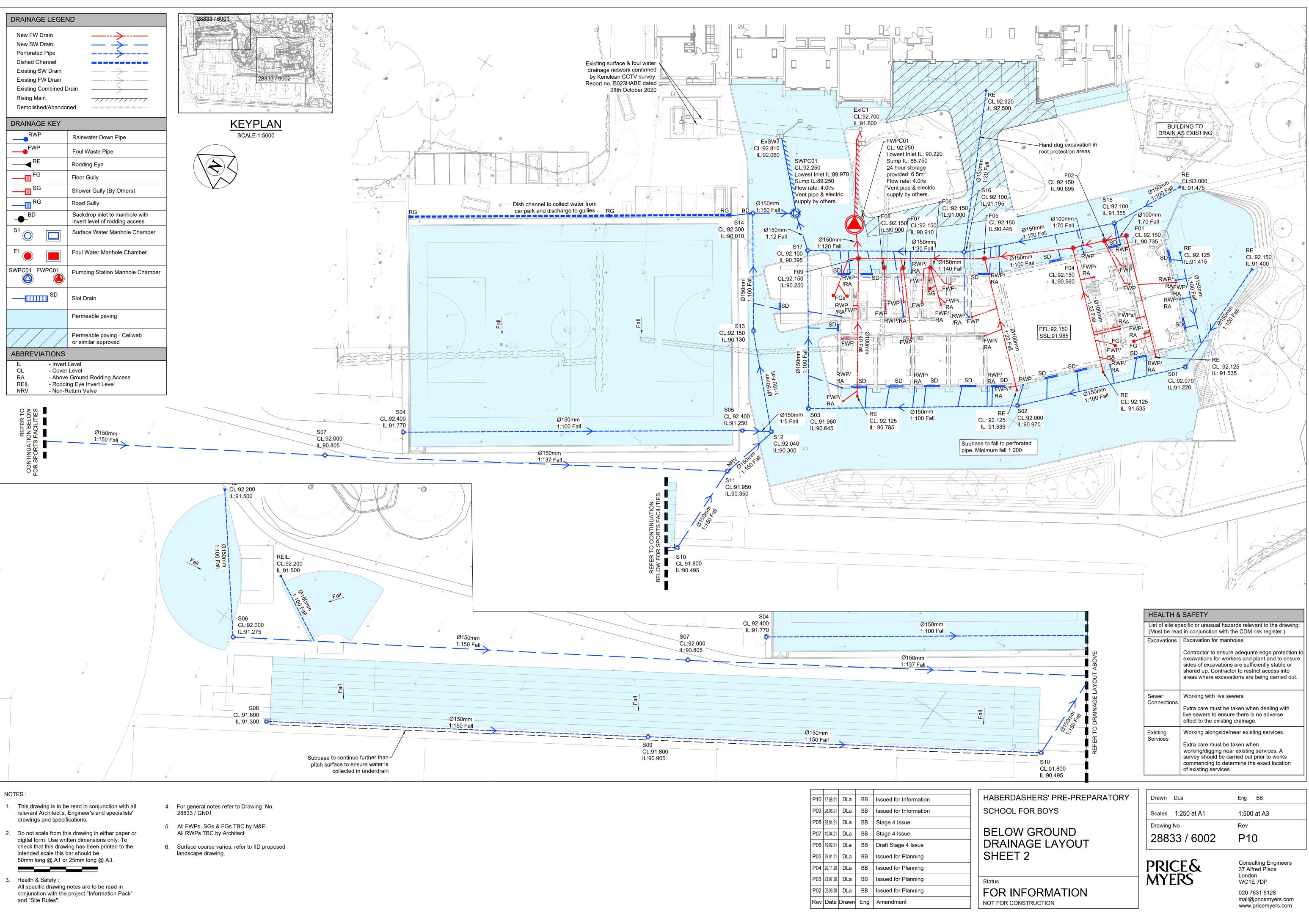
BELOW GROUND DRAINAGE LAYOUT SHEET 1

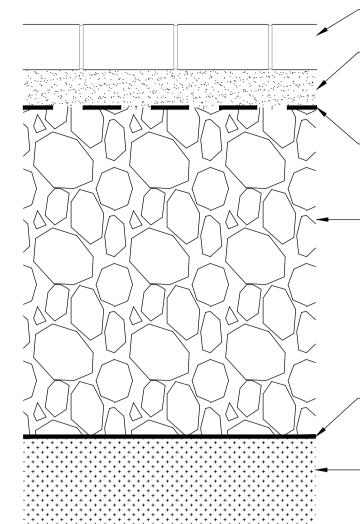
Status FOR INFORMATION NOT FOR CONSTRUCTION

	
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Scales 1:250 at A1	1:500 at A3
Drawing No	Rev
28833 / 600 ⁻	1 P08



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Minimum 60mm permeable paving block to Landscape Architect specifications 50mm Laying Coarse (6.3 - 2mm grit) in accordance with Table A.2 contained

in BS EN 7533-13:2009. Same material to be used in paving joints

Separation Geotextile to be used if fine grit used in laying course. Please refer to manufacturer guidance

430mm Coarse graded crushed material (4/20mm) in accordance with BS EN 7533-13:2009

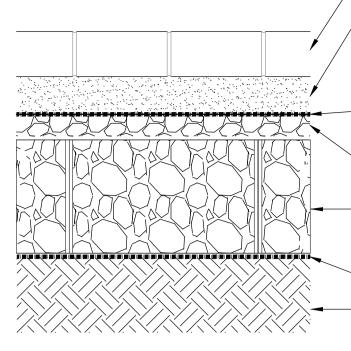
Impermeable membrane in accordance with BS 7533-13:2009

150mm Capping layer, Type 6F2 material, in accordance with MCHW Volume 1 Series 600.

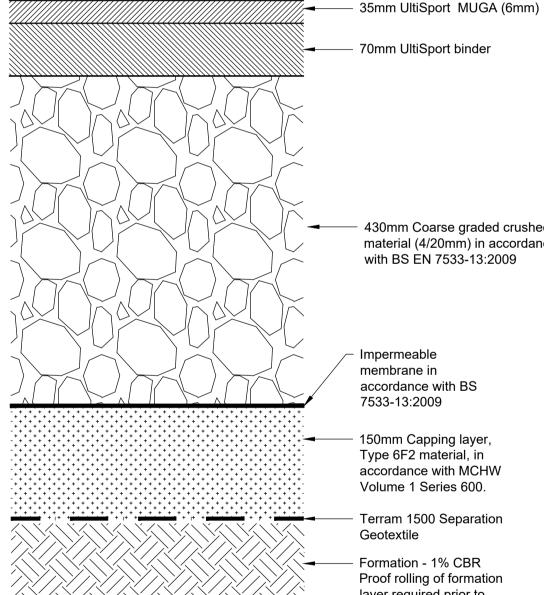
Terram 1500 Separation Geotextile

 Formation - 1% CBR Proof rolling of formation layer required prior to build up construction

S1A - PERMEABLE BLOCK PAVING - CATEGORY A (PEDESTRIAN LOADING)



S1B - PERMEABLE BLOCK PAVING CELLWEB ROOT PROTECTION SYSTEM (PEDESTRIAN LOADING)



- 430mm Coarse graded crushed material (4/20mm) in accordance with BS EN 7533-13:2009

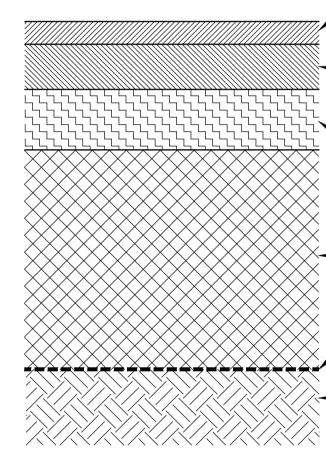
Impermeable membrane in accordance with BS 7533-13:2009

150mm Capping layer, Type 6F2 material, in accordance with MCHW Volume 1 Series 600.

Terram 1500 Separation Geotextile

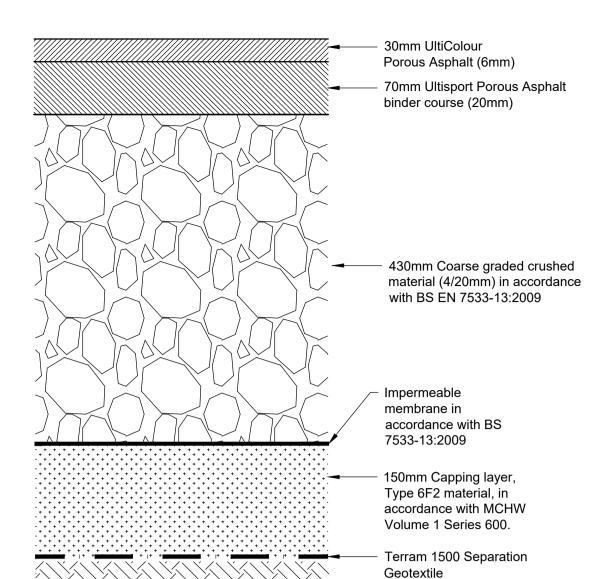
Formation - 1% CBR Proof rolling of formation layer required prior to build up construction

S2C - PERMEABLE SPORT SPECIFIC ASPHALT (PEDESTRIAN LOADING)



S3 - IMPERMEABLE ASPHALT SHARED PARKING & ASSOCIATED ACCESS AREAS (HAVING FREQUENT USE BY COMMERCIAL VEHICLES)

- Minimum 60mm permeable paving block to Landscape Architect specifications
- 50mm Laying Coarse (6.3 2mm grit) in accordance with Table A.2 contained in BS EN 7533-13:2009. Same material to be used in paving joints
- Treetex T300 Geotextile Separation Fabric
- 25mm Layer of 20mm clean angular stone overfill
- Cellweb TRP 200mm with clean angular stone type 4/20 or 20/40
- Treetex T300 Geotextile Separation Fabric
- Formation 1% CBR Proof rolling of formation layer required prior to build up construction



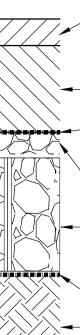
– Formation - 1% CBR Proof rolling of formation layer required prior to build up construction

S2B - PERMEABLE ASPHALT CAR PARK

CELLWEB ROOT PROTECTION SYSTEM (LOADING TO NOT EXCEED 3.5 TONNE VEHICLES AS PER MANUFACTURER'S REQUIREMENTS)

S2A - COLOURED PERMEABLE ASPHALT (PEDESTRIAN LOADING)

- 30mm Ulitdrive 10mm dense - Surface course pen 40/60 in accordance with BS EN13108-1:2016 70mm - AC 20mm dense -Binder course - pen 100/150 in accordance with BS EN13108-1:2016
- 80mm AC 32mm dense-Base course - pen 100/150 in accordance with BS EN13108-1:2016
- 290mm granular sub-base material Type 1 in accordance with Tensar geogrid calculations
- Triax Geogrid (ref. 1B53R) (Design in accordance with Tensar geogrid calculations)
- Formation 1% CBR Proof rolling of formation layer required prior to build up construction



- 35mm Ultidrive porous asphalt (10mm)

—115mm UltiSuDs porous asphalt (10mm) - Treetex T300 Geotextile Separation Fabric

- 25mm Layer of 20mm clean angular stone overfill

- Cellweb TRP 200mm with clean angular stone type 4/20 or 20/40

Treetex T300 Geotextile Separation Fabric Formation - 1% CBR Proof rolling of formation layer required prior to build up construction

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- 3. Health & Safety All specific drawing notes are to be read in conjunction with the project "Information Pack" and "Site Rules".
- 4. For general notes refer to Drawing No. 28833 / GN01
- 5. CBR value taken from CBR tests carried out as part of the Ground Investigation by Johnson, Poole and Bloomer Consultants, report reference UB238/MAK/JCB/GF, dated: December 2020.
- 6. All material within 450mm of finished surface to be non frost susceptible.
- 7. Surface course, binder course and base course in accordance with BS EN 13108.
- 8. Sub-base material in accordance with MCHW Volume 1 Series 800.
- 9. Capping materials in accordance with MCHW Volume 1 Series 600.
- 10. Road formation to be checked for soft spots. Soft spots to be removed and replaced with Type 1 material or Type 6F2 capping material.
- 11. All build up number references relate to IID Architect's drawing 1498-IID-XX-00-DR-A-1114 P2 and P&M external works layout 28833-7001 and 7002

P07	10.04.21	DLa	BB	Stage 4 Issue
P06	19.02.21	DLa	BB	Draft Stage 4 Issue
P05	25.11.20	DLa	BB	Issued for Planning
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P03	18.09.20	DLa	BB	Issued for Stage 3
P02	23.07.20	DLa	BB	Issued for Planning
P01	02.06.20	DLa	BB	Issued for Planning
Rev	Date	Drawn	Eng	Amendment

HABERDASHERS' PRE-PREPARATORY SCHOOL FOR BOYS

EXTERNAL WORKS BUILD-UPS

Status STAGE 4

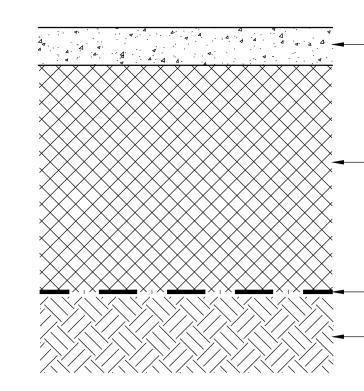
NOT FOR CONSTRUCTION

Drawn DLa Eng BB Scales 1:5 at A1 UNO Drawing No 28833 / 7100 P07

1:10 at A3 UNO Rev



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— 50mm layer of Breedon Golden Amber Gravel (in accordance with Landscape Architect specification)

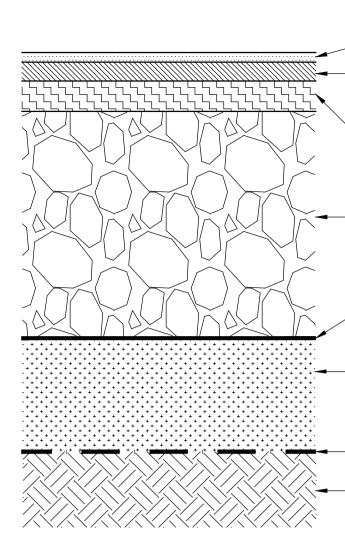
300mm granular sub-base material Type 1 to clause 803, table 8/2 MCHW volume 1 series 800. Refer

to NHBC external works guidance

Terram 1000 Separation Geotextile

- Formation - 1% CBR Proof rolling of formation layer required prior to build up construction

S4 - COMPACTED GRAVEL PATH (PEDESTRIAN LOADING)



13mm thick Polymeric surfacing 25mm depth Wearing course

40mm depth Base layer

300mm Coarse graded crushed material (4/20mm) in accordance with BS EN 7533-13:2009

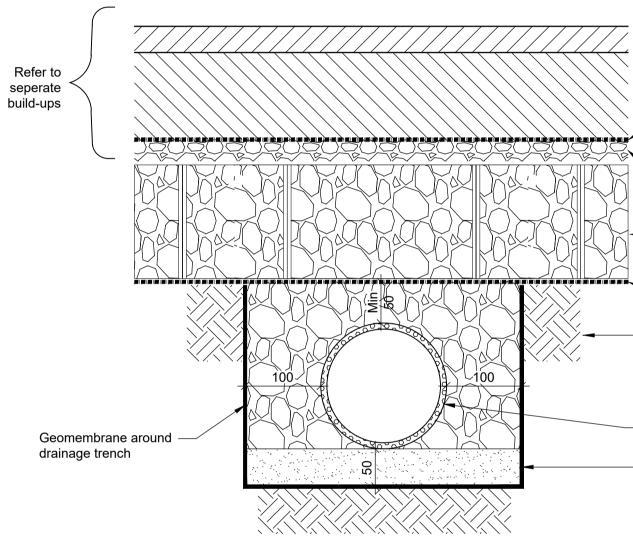
Impermeable membrane in accordance with BS 7533-13:2009

- 150mm Capping layer, Type 6F2 material, in accordance with MCHW Volume 1 Series 600.

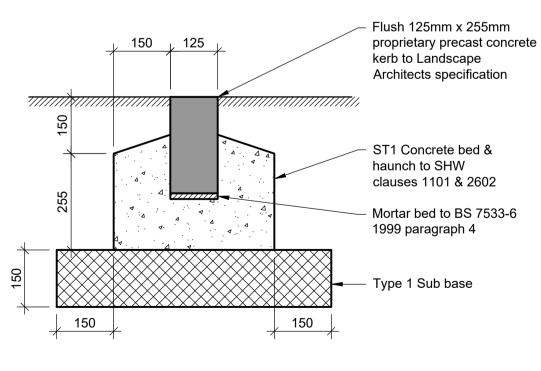
Terram 1500 Separation Geotextile

- Formation - 1% CBR Proof rolling of formation layer required prior to build up construction

S6 - TARTAN SPORTS PITCH

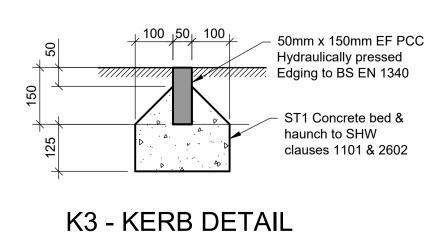


UNDERDRAIN PIPE TO S1B & S2B -PERMEABLE ASPHALT CAR PARK CELLWEB ROOT PROTECTION SYSTEM



K1 & K2- KERB DETAIL SCALE 1:10

SCALE 1:10



Treetex T300 Geotextile Separation Fabric

- 25mm Layer of 20mm clean angular stone overfill

— Cellweb TRP 200mm with clean angular stone type 4/20 or 20/40

Treetex T300 Geotextile Separation Fabric

Formation - 1% CBR Proof rolling of formation layer required prior to build up construction

150Ø Perforated pipe

Type A granular bedding material





(10mm nominal aggregate size machine laid porous macadam)

(20mm nominal aggregate size of porous macadam)

\//\//\//\//\//\//\//\//

S9 - YORKSTONE SETTS

- CATEGORY A

(PEDESTRIAN LOADING)

Yorkstone setts to Landscape Architect specifications

40mm of sand bedding in accordance with BS 7533-7:2010, C.1

Separation Geotextile to be used if fine grit used in laying course. Please refer to manufacturer guidance

Surface and

Binder course

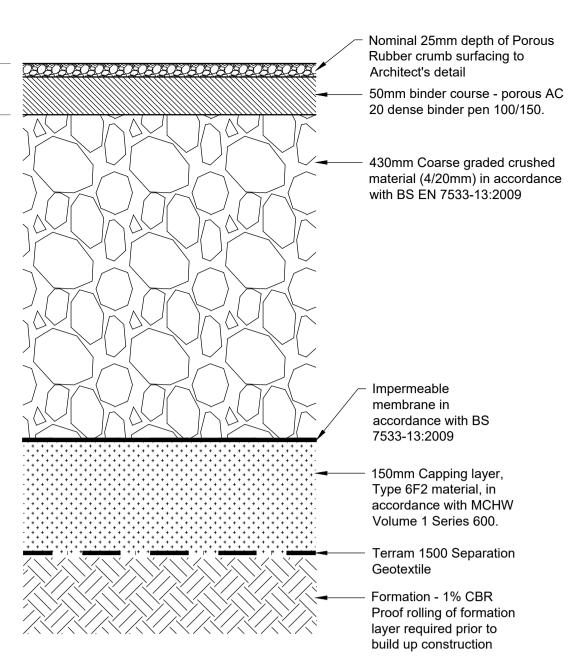
specification TBC

300mm granular sub-base material Type 1 to clause 803, table 8/2 MCHW volume 1 series 800. Refer to NHBC external works guidance

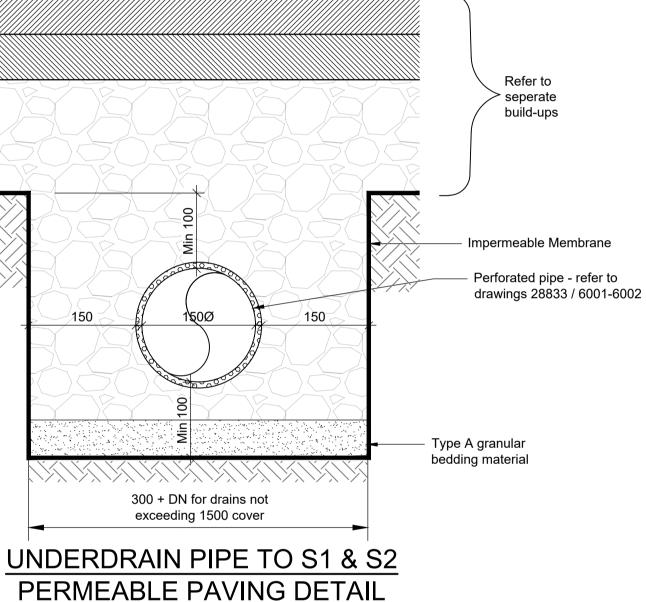
Terram 1000 Separation Geotextile

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– Formation - 1% CBR Proof rolling of formation layer required prior to build up construction



S10 - RUBBER CRUMB BUILD-UP (PEDESTRIAN LOADING) Build up to Manufacturer's specification



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P01	10.04.21	DLa	BB	Stage 4 Issue
Rev	Date	Drawn	Eng	Amendment

HABERDASHERS' PRE-PREPARATORY SCHOOL FOR BOYS

EXTERNAL WORKS BUILD-UPS SHEET 2

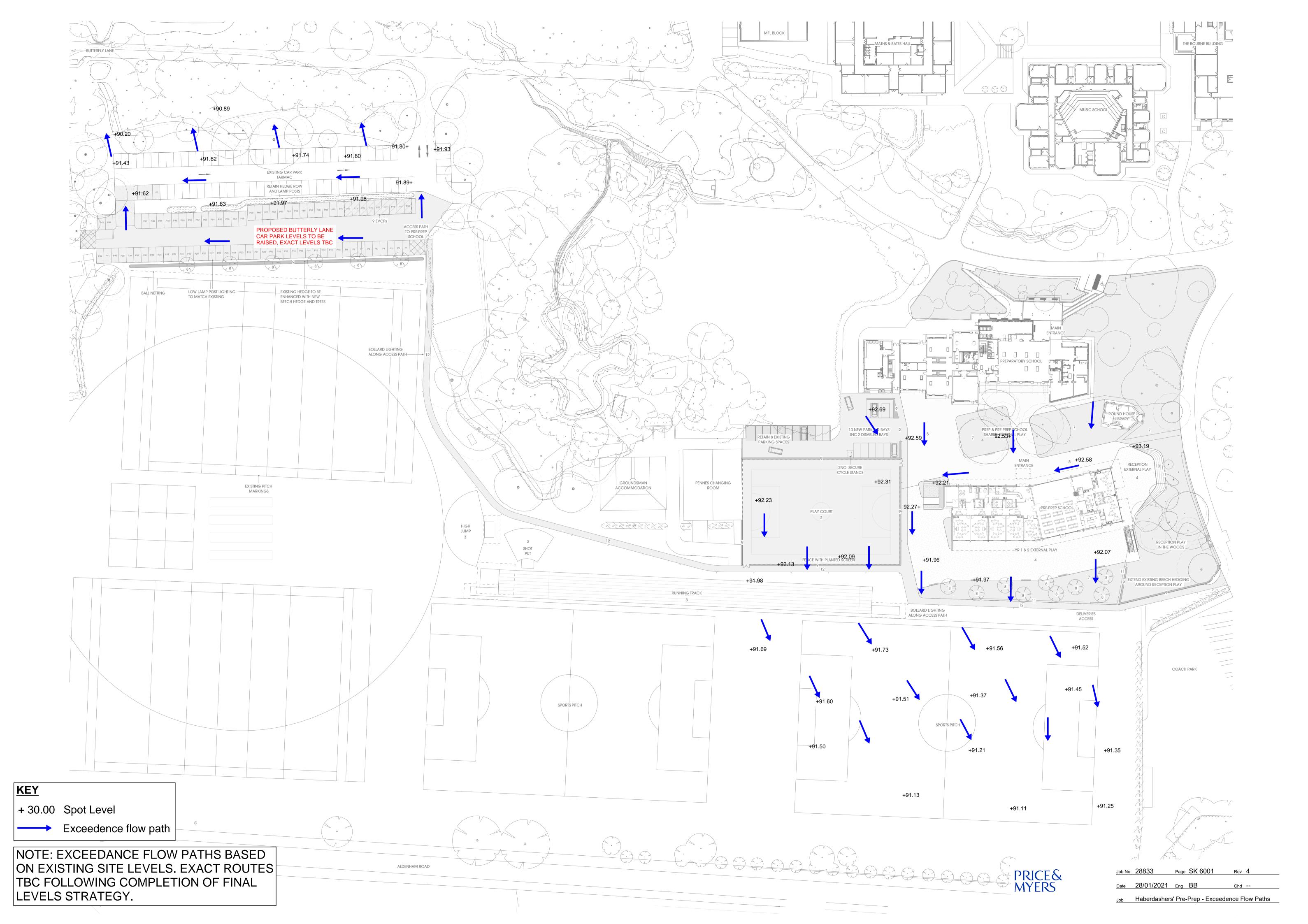
Status STAGE 4

NOT FOR CONSTRUCTION

Drawn DLa	Eng BB
Scales 1:5 at A1 UNO	1:10 at A3 UNO
Drawing No	Rev
28833 / 7101	P01



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Price & Myers	Page 1
37 Alfred Place	
London	
WC1E 7DP	Micro
Date 17/08/2021 14:39	Designed by tempuser
File Full model.MDX	Checked by
Innovyze	Network 2018.1.1
STORM SEWER DESIGN	by the Modified Rational Method
Design	<u>Criteria for Storm</u>
Pipe Sizes STA	NDARD Manhole Sizes STANDARD
FSR Rainfall	. Model - England and Wales
Return Period (years)	100 PIMP (%) 100 20.100 Add Flow / Climate Change (%) 0
	0.425 Minimum Backdrop Height (m) 0.200
Maximum Rainfall (mm/hr)	± 5 ()
	30 Min Design Depth for Optimisation (m) 1.200 0.000 Min Vel for Auto Design only (m/s) 1.00
Volumetric Runoff Coeff.	
Design	ed with Level Soffits
Time Are	a Diagram for Storm
Time Area	Time Area Time Area
(mins) (ha)	(mins) (ha) (mins) (ha)
0-4 0.144	4-8 0.599 8-12 0.025
Total Area	Contributing (ha) = 0.769
Total Pi	pe Volume $(m^3) = 10.674$
Network D	esign Table for Storm
« - Indica	tes pipe capacity < flow
PN Length Fall Slope I.Area T. (m) (m) (1:X) (ha) (mi	E. Base k HYD DIA Section Type Auto ns) Flow (l/s) (mm) SECT (mm) Design
	.00 0.0 0.600 o 150 Pipe/Conduit 🔒
s1.001 23.964 0.160 150.0 0.023 0	.00 0.0 0.600 o 150 Pipe/Conduit 💣
s2.000 25.255 1.105 22.9 0.045 4	.00 0.0 0.600 o 150 Pipe/Conduit 🔒
Netwo	ork Results Table
PN Rain T.C. US/IL E I.2 (mm/hr) (mins) (m) (ha	· · · · · · · · · · · · · · · · · · ·
	.0170.00.00.02.5545.12.3.0400.00.00.00.8214.55.4
S2.000 50.00 4.20 92.350 0	.045 0.0 0.0 0.0 2.12 37.4 6.1
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London										1	
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Date 17	/08/20	21 14	:39		De	signed by	temp	user			cio
File Fu	ll mod	el.MI	X			ecked by	-				ainag
Innovyz	e					twork 201	8 1 1				
111110 1 1 2						<u>eworn 201</u>	0.1.1				
			N	letwor}	k Desi	gn Table	for S	torm			
			_								
PN	Length	Fall	Slope	I.Area	T.E.	Base	k	HYD	DIA	Section Type	Auto
	(m)	(m)	(1:X)	(ha)	(mins)	Flow (l/s)	(mm)	SECT	(mm)		Design
S1.002	24.499	0.750	32.7	0.032	0.00	0.0	0.600	0	150	Pipe/Conduit	6
~~ ~~~	10 500	0 1 0 0	100.0	0 004	4 00	0.0	0 600		150		-
	18.583 28.153			0.024 0.063	4.00		0.600	0		Pipe/Conduit Pipe/Conduit	<u>ð</u>
	28.153			0.063	0.00		0.600	0		Pipe/Conduit Pipe/Conduit	ď
	24.776		99.1	0.037	0.00		0.600	0		Pipe/Conduit Pipe/Conduit	0
55.005	24.770	0.230	<i>JJ</i> .1	0.000	0.00	0.0	0.000	0	150	Tipe/conduic	•
S1.003	6.143	0.400	15.4	0.047	0.00	0.0	0.600	0	150	Pipe/Conduit	0
S4.000	19.592	0.800	24.5	0.075	4.00	0.0	0.600	0	150	Pipe/Conduit	0
S5.000	52.217	0.520	100.4	0.175	4.00	0.0	0.600	0	150	Pipe/Conduit	•
S5.001	5.226	0.900	5.8	0.000	0.00	0.0	0.600	0		Pipe/Conduit	
	12.705			0.023	4.00		0.600	0		Pipe/Conduit	ð
ac 0.01	58.463	0.390	149.9	0.012	0.00	0.0	0.600	0	150	Pipe/Conduit	6
S6.001	<pre>co ooo</pre>	0 450	140.2	0.000	0.00	0.0	0.600	0	150	Pipe/Conduit	
S6.001 S6.002	63.092	0.100									
S6.002	59.677			0.000	4.00	0.0	0.600	0	150	Pipe/Conduit	a
s6.002 s7.000		0.398	150.0	0.000	4.00		0.600	0		Pipe/Conduit Pipe/Conduit	0

<u>Network Results Table</u>

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (1/s)	Flow (l/s)	
S1.002	50.00	4.80	91.195	0.117	0.0	0.0	0.0	1.77	31.2	15.9	
S3.000	50.00		91.400	0.024	0.0	0.0	0.0	0.99		3.3	
S3.001	50.00		91.220	0.087	0.0	0.0	0.0	0.95	16.7	11.8	
S3.002	50.00		90.970	0.124	0.0	0.0	0.0	0.94	16.6«	16.8	
S3.003	50.00	5.77	90.645	0.177	0.0	0.0	0.0	1.01	17.8«	24.0	
S1.003	50.00	5.81	90.395	0.341	0.0	0.0	0.0	2.58	45.7«	46.2	
S4.000	50.00	4.16	91.800	0.075	0.0	0.0	0.0	2.04	36.1	10.2	
S5.000	50.00	4.87	91.770	0.175	0.0	0.0	0.0	1.00	17.7«	23.7	
S5.001	50.00	4.89	91.250	0.175	0.0	0.0	0.0	4.21	74.4	23.7	
S6.000	50.00		91.275	0.023	0.0	0.0	0.0	0.82	14.5	3.1	
S6.001	50.00	5.45	91.190	0.035	0.0	0.0	0.0	0.82	14.5	4.7	
S6.002	50.00	6.69	90.800	0.035	0.0	0.0	0.0	0.85	15.0	4.7	
S7.000	50.00		91.300	0.000	0.0	0.0	0.0	0.82		0.0	
S7.001	50.00	6.46	90.902	0.055	0.0	0.0	0.0	0.82	14.5	7.4	
S7.002	50.00	6.75	90.495	0.116	0.0	0.0	0.0	0.82	14.4«	15.7	
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<u>Network Design Table for Storm</u>

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)		Base Flow (1/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S6.003	9.273	0.062	149.6	0.000	0.00	0.0	0.600	0	150	Pipe/Conduit	•
S5.002 S5.003	15.997 18.441	0.107 0.123		0.000 0.026	0.00		0.600 0.600	0 0		Pipe/Conduit Pipe/Conduit	•
S4.001	6.685	0.045	150.0	0.000	0.00	0.0	0.600	0	150	Pipe/Conduit	۵
S1.004	11.932	-2.115	-5.6	0.000	0.00	0.0	0.600	0	150	Pipe/Conduit	•

<u>Network Results Table</u>

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)		Σ Base Flow (l/s)		Add Flow (l/s)	Vel (m/s)		Flow (1/s)	
S6.003	50.00	6.94	90.350	0.151	0.0	0.0	0.0	0.82	14.5«	20.4	
S5.002 S5.003	50.00 50.00		90.288 90.087	0.326 0.352	0.0	0.0	0.0		14.5« 14.5«		
S4.001	50.00	7.78	90.040	0.428	0.0	0.0	0.0	0.82	14.5«	57.9	
S1.004	50.00	9.92	89.995	0.769	0.0	0.0	0.0	0.09	1.6«	104.1	

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<u>Area Summary for Storm</u>

Pipe	PIMP		PIMP	Gross	Imp.	Pipe Total
Number	туре	Name	(%)	Area (ha)	Area (ha)	(ha)
1.000	User	-	100	0.017	0.017	0.017
1.001	User	-	100	0.023	0.023	0.023
2.000	User	-	100	0.045	0.045	0.045
1.002	User	-	100	0.032	0.032	0.032
3.000	User	-	100	0.024	0.024	0.024
3.001	User	-	100	0.063	0.063	0.063
3.002	User	-	100	0.037	0.037	0.037
3.003	User	-	100	0.053	0.053	0.053
1.003	User	-	100	0.047	0.047	0.047
4.000	User	-	100	0.075	0.075	0.075
5.000	-	-	100	0.175	0.175	0.175
5.001	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.023	0.023	0.023
6.001	-	-	100	0.012	0.012	0.012
6.002	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.000	0.000	0.000
7.001	-	-	100	0.055	0.055	0.055
7.002	-	-	100	0.061	0.061	0.061
6.003	-	-	100	0.000	0.000	0.000
5.002	-	-	100	0.000	0.000	0.000
5.003	User	-	100	0.026	0.026	0.026
4.001	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.769	0.769	0.769

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Ріре Туре	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	МН Туре
S1.000	SRE4	150	0.500	0.595	Unclassified	300	0	0.500	Unclassified
S1.001	SS15	150	0.595	0.755	Unclassified	450	0	0.595	Unclassified
S2.000	SRE5	150	0.500	0.705	Unclassified	450	0	0.500	Unclassified
S1.002	SS16	150	0.755	1.505	Unclassified	450	0	0.755	Unclassified
S3.000	SRE3	150	0.550	0.700	Unclassified	300	0	0.550	Unclassified
S3.001	SS01	150	0.700	0.880	Unclassified	450	0	0.700	Unclassified
S3.002	SS02	150	0.880	1.155	Unclassified	450	0	0.880	Unclassified
S3.003	SS03	150	1.205	1.555	Unclassified	450	0	1.205	Unclassified
S1.003	SS17	150	1.555	2.105	Unclassified	450	0	1.555	Unclassified
S4.000	SDC	150	0.350	1.150	Unclassified	300	0	0.350	Unclassified
S5.000	SS04	150	0.480	1.000	Unclassified	450	0	0.480	Unclassified
S5.001	SS05	150	1.000	1.540	Unclassified	450	0	1.000	Unclassified
S6.000	SS06	150	0.575	0.660	Unclassified	1200	0	0.575	Unclassified
S6.001	SJCT	150	0.660	1.050	Unclassified	1200	0	0.660	Unclassified
S6.002	SS07	150	1.050	1.450	Unclassified	1200	0	1.050	Unclassified
S7.000	SS08	150	0.350	0.748	Unclassified	1200	0	0.350	Unclassified
S7.001	SS09	150	0.748	1.155	Unclassified	1200	0	0.748	Unclassified
S7.002	SS10	150	1.155	1.401	Unclassified	1200	0	1.155	Unclassified
S6.003	SS11	150	1.450	1.602	Unclassified	1200	0	1.450	Unclassified
S5.002	SS12	150	1.602	1.819	Unclassified	450	0	1.602	Unclassified
S5.003	SS13	150	1.913	2.186	Unclassified	450	0	1.913	Unclassified
S4.001	SS14	150	2.105	2.110	Unclassified	450	0	2.110	Unclassified
S1.004	SSWPC1	150	0.550	2.105	Unclassified	1200	0	2.105	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name			Min I. Level (m)	,	W (mm)
S1.004	S	92.810	92.110	92.060	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow 0.000	
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage 2.000	
Hot Start (mins)	0	Inlet Coeffiecient 0.800	
Hot Start Level (mm)	0	Flow per Person per Day (1/per/day) 0.000	
Manhole Headloss Coeff (Global)	0.500	Run Time (mins) 60	
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins) 1	

Number of Input Hydrographs 0 Number of Storage Structures 15 Number of Online Controls 2 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

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Rainfall Model Return Period (years) Region Engla	ic Rainfall Details FSR Profile Type Su 100 Cv (Summer) 0 and and Wales Cv (Winter) 0 20.100 Storm Duration (mins) 0.425	.750 .840

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	Pump Manho						
		ole: SSWE		N: S1.004	, Volume		
		ole: SSWE	PC1, DS/PN	1: S1.004 L (m) 89.99	, Volume	(m³): 2.	7
	Pump Manho Flow (1/s)	Depth (m)	PC1, DS/PM Invert Level Flow (1/s)	V: S1.004 L (m) 89.99	, Volume	(m ³): 2.	<u>7</u> Flow (1/s)
Depth (m)	<u>Pump Manho</u> Flow (1/s) 4.0000	Depth (m)	<u>PC1, DS/PP</u> Invert Level Flow (1/s) 4.0000	<u>1: S1.004</u> L (m) 89.99 Depth (m)	, Volume 5 Flow (1/s) 4.0000	(m ³): 2. Depth (m) 2.500	<u>7</u> Flow (1/s) 4.0000
Depth (m) 0.100	<u>Pump Manho</u> Flow (1/s) 4.0000 4.0000	Depth (m) 0.900 1.000 1.100	2C1, DS/PM Invert Level Flow (1/s) 4.0000 4.0000 4.0000	N: S1.004 L (m) 89.99 Depth (m) 1.700 1.800 1.900	, Volume 5 Flow (l/s) 4.0000 4.0000 4.0000	(m ³): 2. Depth (m) 2.500 2.600	<u>7</u> Flow (1/s) 4.0000 4.0000
Depth (m) 0.100 0.200 0.300 0.400	<u>Pump Manho</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000	Depth (m) 0.900 1.000 1.100 1.200	PC1, DS/PM Invert Level Flow (1/s) 4.0000 4.0000 4.0000 4.0000	N: S1.004 L (m) 89.99 Depth (m) 1.700 1.800 1.900 2.000	, Volume 5 Flow (1/s) 4.0000 4.0000 4.0000 4.0000	(m ³): 2. Depth (m) 2.500 2.600 2.700 2.800	<u>7</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000
Depth (m) 0.100 0.200 0.300 0.400 0.500	<u>Pump Manho</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000	Depth (m) 0.900 1.000 1.100 1.200 1.300	PC1, DS/PP Invert Level Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000	N: S1.004 L (m) 89.99 Depth (m) 1.700 1.800 1.900 2.000 2.100	<pre>, Volume 5 Flow (1/s)</pre>	(m ³): 2. Depth (m) 2.500 2.600 2.700 2.800 2.900	<u>7</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000
Depth (m) 0.100 0.200 0.300 0.400 0.500 0.600	<u>Pump Manho</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000	Depth (m) 0.900 1.000 1.100 1.200 1.300 1.400	PC1, DS/PP Invert Level Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000	N: S1.004 L (m) 89.99 Depth (m) 1.700 1.800 1.900 2.000 2.100 2.200	<pre>, Volume 5 Flow (l/s)</pre>	(m ³): 2. Depth (m) 2.500 2.600 2.700 2.800 2.900	<u>7</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000
Depth (m) 0.100 0.200 0.300 0.400 0.500	<u>Pump Manho</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000	Depth (m) 0.900 1.000 1.100 1.200 1.300 1.400	PC1, DS/PP Invert Level Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000	N: S1.004 L (m) 89.99 Depth (m) 1.700 1.800 1.900 2.000 2.100 2.200	<pre>, Volume 5 Flow (l/s)</pre>	(m ³): 2. Depth (m) 2.500 2.600 2.700 2.800 2.900	<u>7</u> Flow (1/s) 4.0000 4.0000 4.0000 4.0000 4.0000

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<u>Storage S</u>	Structur	es f	<u>or Storm</u>	
<u>Porous</u> Car Park M	Manhole:	SRE	4, DS/PN: S1.000	
Infiltration Coefficient Base	(m/hr) 0 0	0000	Width (m)	26.1
Membrane Percolation (n	,	1000	Length (m)	
Max Percolation	(l/s)	72.5	Slope (1:X)	
Safety E	Factor	2.0	Depression Storage (mm)	5
	rosity			3
Invert Leve	el (m) 92	.270	Cap Volume Depth (m)	0.430
<u>Porous Car Park M</u>	Manhole:	SS1	5, DS/PN: S1.001	
Infiltration Coefficient Base	(m/hr) 0.0	0000	Width (m)	26.1
Membrane Percolation (m	nm/hr)	1000	Length (m)	10.0
Max Percolation		72.5	Slope (1:X)	200.0
Safety E	Factor	2.0	Depression Storage (mm)	5
Por Invert Leve	cosity		Evaporation (mm/day) Cap Volume Depth (m)	3
THALF FAR	91 (III) 91	• 570	cap volume Depch (m)	0.430
<u>Porous Car Park M</u>	Manhole:	SRE	5, DS/PN: S2.000	
Infiltration Coefficient Base	(m/hr) 0.0	0000	Width (m)	26.1
Membrane Percolation (m	. ,	1000	Length (m)	
Max Percolation	(l/s)	72.5	Slope (1:X)	
Safety B	actor : cosity	2.0	Depression Storage (mm) Evaporation (mm/day)	5
Invert Leve			Cap Volume Depth (m)	-
<u>Porous Car Park M</u>	Manhole:	SS1	6, DS/PN: S1.002	
Infiltration Coefficient Base			Width (m)	26.1
Membrane Percolation (m	. ,	1000	Length (m)	10.0
Max Percolation	,	72.5	Slope (1:X)	
Safety B		2.0	Depression Storage (mm) Evaporation (mm/day)	5 3
Invert Leve	-	.570	Cap Volume Depth (m)	0.430
<u>Porous Car Park M</u>	Manhole:	SRE	3, DS/PN: S3.000	
	(m /h m) 0 0	0000	572-July ()	
Infiltration Coefficient Base (Membrane Percolation (m		10000	Width (m) Length (m)	26.1 10.0
Max Percolation	. ,	72.5	Slope (1:X)	
Safety E			Depression Storage (mm)	5
	-	0.30	Evaporation (mm/day)	3
Invert Leve	e⊥ (m) 91	.470	Cap Volume Depth (m)	0.430
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Porous Car Park	Manhole: SS01, DS/PN: S3.001	
Infiltration Coefficient Base	(m/hr) 0.00000 Width	(m) 26.1
Membrane Percolation (mm/hr) 1000 Length	(m) 10.0
Max Percolation		:X) 200.0
	Factor 2.0 Depression Storage (r rosity 0.30 Evaporation (mm/da	
	el (m) 91.470 Cap Volume Depth	
	· · · · · ·	
Porous Car Park	Manhole: SS02, DS/PN: S3.002	
Infiltration Coefficient Base	(m/hr) 0.00000 Width	(m) 26.1
Membrane Percolation (mm/hr) 1000 Length	(m) 10.0
Max Percolation	(1/s) 72.5 Slope (1	:X) 200.0
Safety	Factor 2.0 Depression Storage (r	mm) 5
	rosity 0.30 Evaporation (mm/da	
Invert Lev	el (m) 91.470 Cap Volume Depth	(m) 0.430
Porous Car Park	Manhole: SS03, DS/PN: S3.003	
Infiltration Coefficient Base	(m/hr) 0 00000 Width	(m) 26.1
Membrane Percolation ((m) 20.0
Max Percolation	-	:X) 200.0
Safety		
	rosity 0.30 Evaporation (mm/da el (m) 91.470 Cap Volume Depth	-
		(11) 0.430
Porous Car Park	Manhole: SS17, DS/PN: S1.003	
Infiltration Coefficient Base	(m/hr) 0.00000 Width	(m) 26.1
Membrane Percolation (mm/hr) 1000 Length	(m) 10.0
Max Percolation		:X) 200.0
Safety		
Invert Lev	rosity 0.30 Evaporation (mm/da el (m) 91.570 Cap Volume Depth	
		(, 0.100
Porous Car Park	Manhole: SS04, DS/PN: S5.000	
Infiltration Coefficient Base	(m/hr) 0.00000 Width	(m) 35.0
Membrane Percolation (
Max Percolation	(1/s) 486.1 Slope (1	:X) 200.0
Safety	Factor 2.0 Depression Storage (r	mm) 5
	rosity 0.30 Evaporation (mm/da	-
Invert Lev	el (m) 91.860 Cap Volume Depth	(m) 0.430
Porous Car Park	Manhole: SS06, DS/PN: S6.000	
Infiltration Coefficient Ba	se (m/hr) 0.00000 Porosity	0.30
Membrane Percolatio	· · · · · ·	
Max Percolat		23.0
	ty Factor 2.0 Length (m)	10.0
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Innovyze	Network 2018.1.1	
Porous Car Park I	anhole: SS06, DS/PN: S6.0	<u>00</u>
	 200.0 Evaporation (mm/day) 5 Cap Volume Depth (m) 0. 	3
Depression Storage (m) 5 cap volume Depth (m) 0.	500
Porous Car Park I	anhole: SJCT, DS/PN: S6.0	01
Infiltration Coefficient Base		lth (m) 10.0
Membrane Percolation (. ,	(1.X) 200 0
Max Percolation	(17S) 51.9 Stope actor 2.0 Depression Storag	e (1:X) 200.0 re (mm) 5
-	osity 0.30 Evaporation (m	
	l (m) 91.620 Cap Volume Dep	
Porous Car Park I	anhole: SS09, DS/PN: S7.0	01
Infiltration Coefficient Base		1 (m) 10 0
Membrane Percolation (lth (m) 10.0 rth (m) 55.0
Max Percolation	-	(1:X) 300.0
Safety	actor 2.0 Depression Storag	re (mm) 5
Po	osity 0.30 Evaporation (m	m/day) 3
Invert Lev	l (m) 91.420 Cap Volume Dep	th (m) 0.300
Porous Car Park 1	anhole: SS10, DS/PN: S7.0	02
Infiltration Coefficient Base	m/br) 0 00000 Wid	lth (m) 10.0
Membrane Percolation (th (m) 61.0
Max Percolation		(1:X) 300.0
Safety	1 3	
	osity 0.30 Evaporation (m	1 ·
Invert Lev	1 (m) 90.495 Cap Volume Dep	th (m) 0.300
Porous Car Park 1	anhole: SS13, DS/PN: S5.0	<u>03</u>
Infiltration Coefficient Base	m/hr) 0.00000 Wid	lth (m) 22.0
Membrane Percolation (th (m) 10.0
Max Percolation	-	(1:X) 200.0
Safety		
	osity 0.30 Evaporation (m	-
Invert Lev	1 (m) 91.570 Cap Volume Dep	oth (m) 0.430
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<u>l year R</u>	<u>etur</u>	<u>n Pe</u>	riod S	Summary	-	<u>itical</u> or Stor		ts by Maxim	uum Level	(Rank 1)				
		Hot Headlo wage Numbe Nur	Hot St Start Dss Coel per heo er of In mber of	cart (mi Level (ff (Glok ctare (1 nput Hyd Online	tor 1.00 .ns) mm) oal) 0.50 ./s) 0.00 drographs Controls	0 0 Flow p 00 3 0 Numbe 3 2 Numbe	tional MADD Fa er Pers r of St r of T:	Flow - % of T actor * 10m³/h Inlet Coe son per Day (1 corage Structu ime/Area Diagr eal Time Contr	a Storage : ffiecient /per/day) res 15 ams 0	2.000 0.800				
				S	ynthetic	Rainfal	l Detai	<u>ls</u>						
			Rainfa	ll Mode				Ratio R 0.424	1					
				-	-			(Summer) 0.750						
			M5	-60 (mm)	21.0	00 Cv	(Winter) 0.840)					
	Ma	rgin	for Flc	od Risk	Warning	(mm)			0.0					
					ysis Tim DTS S DVD S nertia S	tatus tatus	5 Secon	d Increment (E	Extended) ON ON ON					
			ation(s		15	5, 30, 60	, 120,	180, 240, 360	, 960, 1440)				
	Retu:			(years) ange (%)					1, 30, 100 0, 0, 0					
	S/MH				Climate	First		First (Y)		Overflow				
PN N	Name	st	corm	reriod	Change	Surch	arge	Flood	Overflow	Act.				
	SRE4		Winter	1	+0%									
	SS15		Winter	1	+0%	1/15	Winter							
	SRE5 SS16		Winter Winter	1 1	+0% +0%	1/15	Summer							
	SRE3		Winter	1	+0%		Winter							
	SS01		Winter	1	+0%	,	Summer							
S3.002	SS02	240	Winter	1	+0%	1/15	Summer							
	SS03		Winter	1	+0%		Summer							
	SS17		Winter	1	+0%		Summer	100/15						
S4.000	SDC		Summer	1	+0%			100/15 Summer						
	SS04 SS05		Winter Winter	1 1	+0% +0%		Summer Summer							
	SS05		Winter	1		100/480								
	SJCT		Winter	1		30/1440								
	SS07	30	Winter	1	+0%	30/480								
	SS08		Winter	1		100/360								
\$7.001	SS09	30	Winter	1	+0읭	30/15	Summer							
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				<u>for</u>	Storm				
		Water	Surcharged	Flooded			Pipe		
	US/MH	Level	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
S1.000	SDE/	92.167	-0.133	0.000	0.02		1.0	OK	
S1.000 S1.001		92.107	-0.133	0.000	0.02			SURCHARGED	
S1.001 S2.000		91.769	-0.731	0.000	0.00		0.0	OK	
S1.002		91.608	0.263	0.000	0.07			SURCHARGED	
S3.000		91.571	0.021	0.000	0.14			SURCHARGED	
S3.001	SS01	91.572	0.202	0.000	0.22		3.5	SURCHARGED	
S3.002		91.574	0.454	0.000	0.23		3.7	SURCHARGED	
S3.003		91.582	0.787	0.000	0.24			SURCHARGED	
S1.003		91.605	1.060	0.000	0.15			SURCHARGED	
S4.000		91.862	-0.088	0.000	0.36		12.1	OK	3
S5.000		91.881	-0.039	0.000	0.77		13.3	OK	
S5.001 S6.000		91.723 91.302	0.323	0.000	0.18 0.07		10.6	SURCHARGED OK	
S6.000		91.302	-0.123		0.07		1.0	OK	
S6.001		90.834	-0.116		0.12		1.6	OK	
S7.000		91.300	-0.150	0.000	0.00		0.0	OK	
S7.001		90.965	-0.087	0.000	0.30		4.3	OK	

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<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
s7.002	SS10	720 Winter	1	+0%	1/120 Winter				90.720
S6.003	SS11	720 Winter	1	+0%	1/15 Summer				90.720
S5.002	SS12	60 Winter	1	+0%	1/15 Summer				91.705
S5.003	SS13	60 Winter	1	+0%	1/15 Summer				91.665
S4.001	SS14	120 Winter	1	+0%	1/15 Summer				91.641
S1.004	SSWPC1	120 Winter	1	+0%	1/15 Summer				91.623

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<u>30 yea</u>	ar Ret	urn Pe	rioc	<u>d Summa</u>	-	<u>Critica</u> for Sto		ults by Max	aimum Leve	el (Rank
		Hot S Hot S Headloss ewage pe Number Number	lot St tart Coei er heo of In er of	cart (mi Level (ff (Glok ctare (1 nput Hyd Online	tor 1.00 mm) pal) 0.50 /s) 0.00 drographs Controls	0 0 Flow p 00 0 Numbe 2 Numbe	tional MADD Fa per Pers er of St er of T	Flow - % of T actor * 10m³/h Inlet Coe son per Day (1 torage Structu ime/Area Diagr eal Time Contr	a Storage 2 ffiecient C /per/day) C res 15 ams 0	.000
		R		ll Mode Regio	n Englan	d and Wa	FSR les Cv	Ratio R 0.42 (Summer) 0.75	0	
			М5	-60 (mm)	21.	000 Cv	(Winter) 0.84	0	
	Ma	argin fo	r Flc	od Risk	Warning	(mm)			0.0	
				Anal	ysis Tim	estep 2.	5 Secon	d Increment (1	Extended)	
					DTS S				ON	
				т	DVD S				ON	
				T	nertia S	tatus			ON	
		Devet		ofile(s)			100		and Winter	
		Durati	Lon (s) (mins)	15	5, 30, 60), 120,	180, 240, 360 720	, 480, 600, , 960, 1440	
	Retu	rn Perio. Climat		(years) ange (%)					1, 30, 100 0, 0, 0	
	US/MH	a 1			Climate	First		First (Y)	First (Z)	
PN	Name	Stor	m	Period	Change	Surch	arge	Flood	Overflow	Act.
S1.000	SRE4	15 Wi		30	+0%					
S1.001		240 Wi		30	+0%	1/15	Winter			
\$2.000 \$1.002		1440 Wi 240 Wi		30 30	+0% +0%	1/15	Summer			
s1.002 s3.000	SSI6 SRE3			30	+0%		Winter			
s3.000	SKE5 SS01	360 Wi		30	+0%		Summer			
s3.002	SS02	360 Wi		30	+0%	, -	Summer			
s3.003	SS03	240 Wi	nter	30	+0%	1/15	Summer			
S1.003	SS17	180 Wi		30	+0읭		Summer			
S4.000	SDC	15 Wi		30	+0%			100/15 Summer	<u>-</u>	
S5.000	SS04	60 Wi		30	+0%		Summer			
s5.001	SS05	120 Wi		30	+0%		Summer			
\$6.000 \$6.001		1440 Wi 1440 Wi		30 30		100/480 30/1440				
S6.001 S6.002		1440 Wi 1440 Wi		30 30	+0% +0%	30/1440 30/480				
s7.000		1440 Wi 1440 Wi		30		100/360				
s7.000		1440 Wi		30	+0%		Summer			
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<u>0 year R</u>	eturr	n Perio	od Summar	y of Cr	itical	Result	s by	Maximum I	Level (Ran)
				<u>1) fo</u>	<u>r Stor</u>	<u>rm</u>			
		Water	Surcharged	Flooded			Pipe		
	US/MH	Level	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
S1 000	CDE/	92.196	-0.104	0 000	0.16		6.5	OK	
S1.000 S1.001		92.196	-0.104	0.000	0.16			SURCHARGED	
S1.001 S2.000		91.758 91.932	-0.568		0.00		0.0	OK	
S2.000 S1.002		91.932 91.756	-0.568	0.000	0.00			SURCHARGED	
S1.002 S3.000		91.735	0.411	0.000	0.00			SURCHARGED	
S3.000 S3.001		91.735 91.735	0.185	0.000	0.08			SURCHARGED	
S3.001 S3.002		91.735 91.736	0.365	0.000	0.12			SURCHARGED	
S3.002 S3.003		91.736 91.738	0.010	0.000	0.15			SURCHARGED	
S3.003 S1.003		91.738 91.757	1.212	0.000	0.24			SURCHARGED	
S1.003		92.160	0.210	0.000	0.14			SURCHARGED	3
S4.000 S5.000		91.992	0.210	0.000	0.71			SURCHARGED	5
S5.000		91.992	0.072	0.000	0.17			SURCHARGED	
S5.001 S6.000		91.367	-0.058	0.000	0.20		2.6	OK	
S6.000		91.368	0.028	0.000	0.20			SURCHARGED	
S6.001		91.369	0.020	0.000	0.20			SURCHARGED	
S7.000		91.305	-0.078	0.000	0.20		0.1	OK	
S7.000		91.372	0.320	0.000	0.01			SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Stor		Climate Change	First Surch	• •	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
s7.002	SS10	1440 Wi	nter 30	+0%	1/120	Winter				91.372
S6.003	SS11	1440 Wi	nter 30	+0읭	1/15	Summer				91.371
S5.002	SS12	120 Wi	nter 30	+0읭	1/15	Summer				91.869
S5.003	SS13	120 Wi	nter 30	+0읭	1/15	Summer				91.837
S4.001	SS14	15 Su	mmer 30	+0읭	1/15	Summer				91.807
S1.004	SSWPC1	180 Wi	nter 30	+0%	1/15	Summer				91.784

		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(l/s)	(l/s)	Status	Exceeded
S7.002	SS10	0.727	0.000	0.30		4.0	SURCHARGED	
S6.003	SS11	0.871	0.000	0.31		4.0	SURCHARGED	
S5.002	SS12	1.431	0.000	0.74		9.9	SURCHARGED	
S5.003	SS13	1.600	0.000	0.60		8.1	SURCHARGED	
S4.001	SS14	1.617	0.000	1.25		15.4	SURCHARGED	
S1.004	SSWPC1	1.639	0.000	0.76		4.0	SURCHARGED	
	\$7.002 \$6.003 \$5.002 \$5.003 \$4.001	PN Name \$7.002 \$\$10 \$6.003 \$\$11 \$5.002 \$\$12 \$5.003 \$\$13 \$4.001 \$\$14	US/MH Depth PN Name (m) \$7.002 S\$10 0.727 \$6.003 S\$11 0.871 \$5.002 S\$12 1.431 \$5.003 S\$13 1.600 \$4.001 \$\$14 1.617	PN Name (m) (m³) S7.002 SS10 0.727 0.000 S6.003 SS11 0.871 0.000 S5.002 SS12 1.431 0.000 S5.003 SS13 1.600 0.000 S4.001 SS14 1.617 0.000	US/MH Depth Volume Flow / Cap. FN Name 0.727 0.000 0.30 S7.002 SS10 0.727 0.000 0.30 S6.003 SS11 0.871 0.000 0.31 S5.002 SS12 1.431 0.000 0.74 S5.003 SS13 1.600 0.000 0.60 S4.001 SS14 1.617 0.000 1.25	US/MH PN Depth (m) Volume (m ³) Flow / Cap. Overflow (1/s) \$7.002 S\$10 0.727 0.000 0.30 \$6.003 S\$11 0.871 0.000 0.31 \$5.002 S\$12 1.431 0.000 0.74 \$5.003 S\$13 1.600 0.000 0.60 \$4.001 \$\$14 1.617 0.000 1.25	US/MH Depth Volume Flow / Cap. Overflow Flow PN Name (m) (m³) Cap. (1/s) (1/s) \$7.002 S\$10 0.727 0.000 0.30 4.0 \$6.003 S\$11 0.871 0.000 0.31 4.0 \$5.002 S\$12 1.431 0.000 0.74 9.9 \$5.003 S\$13 1.600 0.000 0.60 8.1 \$4.001 \$\$14 1.617 0.000 1.25 15.4	US/MH PN Depth (m) Volume (m ³) Flow / Cap. Overflow (1/s) Flow (1/s) Flow Status \$7.002 S\$10 0.727 0.000 0.30 4.0 SURCHARGED \$6.003 S\$11 0.871 0.000 0.31 4.0 SURCHARGED \$5.002 S\$12 1.431 0.000 0.74 9.9 SURCHARGED \$5.003 S\$13 1.600 0.000 0.60 8.1 SURCHARGED \$4.001 S\$14 1.617 0.000 1.25 15.4 SURCHARGED

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London WC1E 7DP Date 17/08/2021 14:39 File Full model.MDX Innovyze Network 2018.1.1 <u>100 year Return Period Summary of Critical Results by Maximum Level</u> <u>1) for Storm</u> <u>Simulation Criteria</u> Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.0 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.0 Hot Start Level (mm) 0 Inlet Coefficient 0.8 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.0	<u>l (Rank</u>							
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<u>100 year Return Period Summary of Critical Results by Maximum Level</u> <u>1) for Storm</u> <u>Simulation Criteria</u> Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.0 Hot Start (mins) 0 MADD Factor * 10m ³ /ha Storage 2.0 Hot Start Level (mm) 0 Inlet Coefficient 0.8 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.0	000							
<u>1) for Storm</u> <u>Simulation Criteria</u> Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.0 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.0 Hot Start Level (mm) 0 Inlet Coefficcient 0.8 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.0	000							
Areal Reduction Factor 1.000 Hot Start (mins)Additional Flow - % of Total Flow 0.0 MADD Factor * 10m³/ha Storage 2.0 Inlet Coefficient 0.8 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.0								
Number of Input Hydrographs 0 Number of Storage Structures 15 Number of Online Controls 2 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0								
NUMBER OF OFFITTHE CONTROLS O NUMBER OF REAL TIME CONTROLS O								
Synthetic Rainfall Details								
Rainfall Model FSR Ratio R 0.424 Region England and Wales Cv (Summer) 0.750								
M5-60 (mm) 21.000 Cv (Winter) 0.840								
Margin for Flood Risk Warning (mm) 0.0								
Analysis Timestep 2.5 Second Increment (Extended)								
DTS Status ON								
DVD Status ON								
Inertia Status ON								
Profile(s) Summer and Winter								
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,								
720, 960, 1440 Return Period(s) (years) 1, 30, 100								
Climate Change (%) 0, 0, 0								
US/MH Return Climate First (X) First (Y) First (Z) Or								
PN Name Storm Period Change Surcharge Flood Overflow	Act.							
S1.000 SRE4 15 Winter 100 +0%								
S1.001 SS15 360 Winter 100 +0% 1/15 Winter								
S2.000 SRE5 1440 Winter 100 +0%								
S1.002 SS16 360 Winter 100 +0% 1/15 Summer S3.000 SRE3 480 Winter 100 +0% 1/120 Winter								
S3.000 SRES 480 Winter 100 +0% 1/120 Winter S3.001 SS01 480 Winter 100 +0% 1/15 Summer								
S3.002 SS02 480 Winter 100 +0% 1/15 Summer								
S3.003 SS03 360 Winter 100 +0% 1/15 Summer								
S1.003 SS17 360 Winter 100 +0% 1/15 Summer								
S4.000 SDC 15 Winter 100 +0% 30/15 Summer 100/15 Summer								
S5.000 SS04 60 Winter 100 +0% 30/15 Summer								
S5.001 SS05 120 Winter 100 +0% 1/15 Summer S6.000 SS06 1440 Winter 100 +0% 100/480 Winter								
S6.001 SJCT 1440 Winter 100 +0% 100/480 Winter								
S6.002 SS07 1440 Winter 100 +0% 30/480 Winter								
S7.000 SS08 1440 Winter 100 +0% 100/360 Winter								
S7.001 SS09 1440 Winter 100 +0% 30/15 Summer								

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		Water	Surcharged	Flooded			Pipe		
	US/MH	Level	Depth		Flow /	Overflow	Flow		Level
PN	Name	(m)	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
S1.000		92.196	-0.104		0.21		8.5	OK	
S1.001		91.837	0.332	0.000	0.07			SURCHARGED	
S2.000		92.046	-0.454		0.00		0.0	OK	
S1.002		91.835	0.490	0.000	0.06 0.03			SURCHARGED SURCHARGED	
S3.000		91.824	0.274	0.000					
S3.001		91.825	0.455	0.000	0.09			SURCHARGED	
S3.002 S3.003		91.824 91.825	0.704 1.030	0.000 0.000	0.12			SURCHARGED SURCHARGED	
S3.003 S1.003		91.825	1.030	0.000	0.17			SURCHARGED	
S1.003 S4.000		92.301	0.351	0.888	0.10		27.2	FLOOD	3
S5.000		92.032	0.112	0.000	0.30			SURCHARGED	5
S5.000		92.032	0.544	0.000	0.17			SURCHARGED	
S5.001 S6.000		91.547	0.122	0.000	0.22			SURCHARGED	
S6.000		91.548	0.208	0.000	0.22			SURCHARGED	
S6.001		91.548	0.598	0.000	0.22			SURCHARGED	
S7.000		91.547	0.097	0.000	0.01			SURCHARGED	
S7.001		91.547	0.495	0.000	0.11			SURCHARGED	
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100 year Return Period Summary of Critical Results by Maximum Level (Rank <u>1) for Storm</u>

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
s7.002	SS10	1440 Winte:	r 100	+0%	1/120 Winter				91.548
S6.003	SS11	1440 Winte:	r 100	+0%	1/15 Summer				91.548
S5.002	SS12	120 Winte:	r 100	+0읭	1/15 Summer				91.930
S5.003	SS13	120 Winte:	r 100	+0%	1/15 Summer				91.901
S4.001	SS14	240 Winte:	r 100	+0읭	1/15 Summer				91.872
S1.004	SSWPC1	240 Winte:	r 100	+0읭	1/15 Summer				91.860

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (1/s)	Pipe Flow (l/s)	Status	Level Exceeded
s7.002	SS10	0.903	0.000	0.30		4.0	SURCHARGED	
S6.003	SS11	1.048	0.000	0.31		4.0	SURCHARGED	
S5.002	SS12	1.492	0.000	0.74		9.9	SURCHARGED	
S5.003	SS13	1.664	0.000	0.60		8.1	SURCHARGED	
S4.001	SS14	1.682	0.000	0.95		11.7	SURCHARGED	
S1.004	SSWPC1	1.715	0.000	0.76		4.0	SURCHARGED	

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<u>100 year R</u> e	<u>eturn Peri</u>	<u>od Summ</u>		<u>Critical Re</u> for Storm	sults by Max	<u>kimum Lev</u>	<u>el (Rank</u>	
	Hot Hot Star Headloss Co Sewage per h Number of Number o	Start (mi t Level (eff (Glok ectare (1 Input Hyd f Online	tor 1.00 .ns) mm) oal) 0.50 ./s) 0.00 drographs Controls	0 Flow per Pers	actor * 10m³/ha Inlet Coes son per Day (1, torage Structus ime/Area Diagra	a Storage 2 ffiecient 0 /per/day) 0 res 15 ams 0	.000 .800	
	Number of	OIIIIne	CONTROLS	U NUMBER OF R	eal fime contro	515 0		
Synthetic Rainfall Details								
Rainfall Model FSR Ratio R 0.424								
Region England and Wales Cv (Summer) 0.750 M5-60 (mm) 21.000 Cv (Winter) 0.840								
	1	10 00 (11111)	21.000 CV	(WINCEI) 0.040			
1	Margin for F	lood Risk	Warning	(mm)		0.0		
		Anal		estep 2.5 Secon	d Increment (E	xtended)		
			DTS S			ON		
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		T	nertia S	latus		ON		
		rofile(s)		20 00 100		and Winter		
	Duration (s) (mins)	15	5, 30, 60, 120,		, 480, 600, , 960, 1440		
Ret	urn Period(s) (years)	1		, 20,	100		
	Climate C	hange (%)	1			40		
US/MI PN Name			Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	
S1.000 SRE4	4 15 Winte	r 100	+40%					
\$1.001 SS1			+40%	100/15 Summer				
	5 1440 Winte		+40%					
S1.002 SS1			+40%					
	2 GOO Minto	r 100	+40%	100/15 Summer				
S3.000 SRE		100	1 / ^ ^	100/15 0				
S3.000 SRE S3.001 SS0	1 600 Winte		+40% +40%					
S3.000 SRE	1 600 Winte 2 600 Winte	r 100	+40% +40% +40%					
S3.000 SRE S3.001 SS0 S3.002 SS0	1 600 Winte 2 600 Winte 3 600 Winte	r 100 r 100	+40%	100/15 Summer 100/15 Summer				
S3.000 SRE S3.001 SS0 S3.002 SS0 S3.003 SS0	1 600 Winte 2 600 Winte 3 600 Winte 7 600 Winte	r 100 r 100 r 100	+40% +40%	100/15 Summer 100/15 Summer 100/15 Summer	100/15 Summer			
S3.000 SRE S3.001 SSO S3.002 SSO S3.003 SSO S1.003 SS1 S4.000 SDO S5.000 SSO	1 600 Winte 2 600 Winte 3 600 Winte 7 600 Winte C 15 Winte 4 60 Winte	r 100 r 100 r 100 r 100 r 100 r 100	+40% +40% +40% +40% +40%	100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	100/15 Summer			
\$3.000 \$RE \$3.001 \$S01 \$3.002 \$S01 \$3.003 \$S01 \$1.003 \$S11 \$4.000 \$D0 \$5.000 \$S02 \$5.001 \$S02	1 600 Winte 2 600 Winte 3 600 Winte 7 600 Winte C 15 Winte 4 60 Winte 5 120 Winte	r 100 r 100 r 100 r 100 r 100 r 100	+40% +40% +40% +40% +40%	100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	100/15 Summer			
\$3.000 \$RE \$3.001 \$S01 \$3.002 \$S01 \$3.003 \$S01 \$1.003 \$S11 \$4.000 \$D0 \$5.000 \$S01 \$5.001 \$S02 \$5.001 \$S03 \$6.000 \$S01	1 600 Winte 2 600 Winte 3 600 Winte 7 600 Winte C 15 Winte 4 60 Winte 5 120 Winte 6 1440 Winte	r 100 r 100 r 100 r 100 r 100 r 100 r 100	+40% +40% +40% +40% +40% +40%	100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	100/15 Summer			
\$3.000 \$RE \$3.001 \$S01 \$3.002 \$S01 \$3.003 \$S01 \$1.003 \$S11 \$4.000 \$D0 \$5.000 \$S02 \$5.001 \$S03 \$6.001 \$S02 \$6.001 \$JC1	1 600 Winte 2 600 Winte 3 600 Winte 7 600 Winte C 15 Winte 4 60 Winte 5 120 Winte 6 1440 Winte 7 1440 Winte	r 100 r 100 r 100 r 100 r 100 r 100 r 100 r 100 r 100	+40% +40% +40% +40% +40% +40% +40%	100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/12 Winter 100/60 Winter	100/15 Summer			
S3.000 SRE: S3.001 SS02 S3.002 SS02 S3.003 SS02 S1.003 SS12 S4.000 SD0 S5.000 SS02 S5.001 SS02 S6.000 SS02 S6.001 SJC2 S6.002 SS02	1 600 Winte 2 600 Winte 3 600 Winte 7 600 Winte C 15 Winte 4 60 Winte 5 120 Winte 6 1440 Winte	r 100 r 100 r 100 r 100 r 100 r 100 r 100 r 100 r 100 r 100	+40% +40% +40% +40% +40% +40%	100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/12 Winter 100/60 Winter 100/15 Summer	100/15 Summer			
S3.000 SRE: S3.001 SS02 S3.002 SS02 S3.003 SS02 S1.003 SS12 S4.000 SD0 S5.000 SS02 S5.001 SS02 S6.000 SS02 S6.001 SJC2 S6.002 SS02 S7.000 SS02	1 600 Winte 2 600 Winte 3 600 Winte 7 600 Winte 15 Winte 4 60 Winte 5 120 Winte 6 1440 Winte 7 1440 Winte	r 100 r 100	+40% +40% +40% +40% +40% +40% +40% +40%	100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/12 Winter 100/60 Winter 100/15 Summer 100/15 Summer	100/15 Summer			

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<u>)0 year 1</u>	Retur	n Peri	od Summar	y of Ci	ritica	<u>l Result</u>	<u>ts by</u>	Maximum	Level (Ra
				<u>1) fo</u>	<u>r Stor</u>	<u>rm</u>			
		Water	Surcharged	Flooded			Pipe		
	US/MH		Depth		Flow /	Overflow	-		Level
PN	Name	(m)	(m)	(m ³)	Cap.	(1/s)	(1/s)	Status	Exceeded
		. ,	. ,	. ,	- - ·	<i>、、、、、、</i>	、 , , , ,		
S1.000	SRE4	92.205	-0.095	0.000	0.29		11.9	OK	
S1.001	SS15	91.986	0.481		0.06		0.8	SURCHARGED	
S2.000	SRE5	92.364	-0.136	0.000	0.02		0.7	OK	
S1.002	SS16	91.986	0.641	0.000	0.05		1.4	SURCHARGED	
S3.000	SRE3	92.002	0.452	0.000	0.03		0.4	SURCHARGED	
S3.001	SS01	92.001	0.631	0.000	0.07		1.2	SURCHARGED	
S3.002	SS02	91.997	0.877	0.000	0.09		1.5	SURCHARGED	
S3.003	SS03	91.991	1.196	0.000	0.13		2.3	SURCHARGED	
S1.003	SS17	91.984	1.439	0.000	0.10		3.7	SURCHARGED	
S4.000	SDC	92.305	0.355	5.060	0.80		27.3	FLOOD	6
S5.000	SS04	92.092	0.172	0.000	0.70		12.2	SURCHARGED	
S5.001	SS05	92.036	0.636	0.000	0.16		9.8	SURCHARGED	
S6.000	SS06	91.754	0.329	0.000	0.22		2.9	SURCHARGED	
S6.001	SJCT	91.754	0.414	0.000	0.22		3.1	SURCHARGED	
S6.002	SS07	91.754	0.804	0.000	0.21		3.2	SURCHARGED	
S7.000	SS08	91.752	0.302	0.000	0.01		0.1	SURCHARGED	
s7.001	SS09	91.752	0.700	0.000	0.11		1.6	SURCHARGED	
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100 year Return Period Summary of Critical Results by Maximum Level (Rank <u>1) for Storm</u>

										Water
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level
PN	Name	St	torm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)
S7.002	SS10	1440	Winter	100	+40%	100/15 Summe	er			91.754
S6.003	SS11	1440	Winter	100	+40%	100/15 Summe	er			91.754
S5.002	SS12	120	Winter	100	+40%	100/15 Summe	er			92.024
S5.003	SS13	120	Winter	100	+40%	100/15 Summe	er			92.002
S4.001	SS14	480	Winter	100	+40%	100/15 Summe	er			92.009
S1.004	SSWPC1	480	Winter	100	+40%	100/15 Summe	er			92.009

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (1/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.002	SS10	1.109	0.000	0.30		3.9	SURCHARGED	
S6.003	SS11	1.254	0.000	0.31		4.0	SURCHARGED	
S5.002	SS12	1.586	0.000	0.72		9.7	SURCHARGED	
S5.003	SS13	1.765	0.000	0.57		7.8	SURCHARGED	
S4.001	SS14	1.819	0.000	0.84		10.3	SURCHARGED	
S1.004	SSWPC1	1.864	0.000	0.76		4.0	SURCHARGED	

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37 Alfred Place									
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STORM SEWER DESIG	N by the Modified Rational Metho	od							
Desigr	<u>Criteria for Car Park</u>								
Pipe Sizes	STANDARD Manhole Sizes STANDARD								
FSR Rainfall Model - England and Wales Return Period (years) 100 PIMP (%) 100 M5-60 (mm) 20.000 Add Flow / Climate Change (%) 0 Ratio R 0.415 Minimum Backdrop Height (m) 0.200 Maximum Rainfall (mm/hr) 50 Maximum Backdrop Height (m) 1.500 Maximum Time of Concentration (mins) 30 Min Design Depth for Optimisation (m) 1.200 Foul Sewage (1/s/ha) 0.000 Min Vel for Auto Design only (m/s) 1.00 Volumetric Runoff Coeff. 0.750 Min Slope for Optimisation (1:X) 500 Designed with Level Soffits									
Designed with Level Soffits									
Time Area Diagram for Car Park									
	Time Area Time Area Time Area (mins) (ha) (mins) (ha) (mins) (ha)								
0-4 0.	055 4-8 0.140 8-12 0.005								
Total A	ea Contributing (ha) = 0.199								
Total	Pipe Volume (m³) = 2.636								
<u>Network</u>	Design Table for Car Park								
« - Inc	icates pipe capacity < flow								
PN Length Fall Slope I.Area (m) (m) (1:X) (ha)	T.E. Base k HYD DIA Sect: (mins) Flow (1/s) (mm) SECT (mm)	ion Type Auto Design							
s1.000 21.272 0.053 401.4 0.059	4.00 0.0 0.600 o 150 Pipe,	/Conduit 🔒							
s1.001 21.272 0.053 401.4 0.034	0.00 0.0 0.600 o 150 Pipe,	/Conduit 🎍							
s1.002 27.868 0.070 398.1 0.038	0.00 0.0 0.600 o 150 Pipe,	/Conduit 🤮							
\$1.003 27.868 0.070 398.1 0.039 \$1.004 13.113 0.087 150.7 0.028	0.00 0.0 0.600 o 150 Pipe, 0.00 0.0 0.600 o 150 Pipe,								
	_ · ·	•							
<u>Ne</u>	work Results Table								
PN Rain T.C. US/IL Σ (mm/hr) (mins) (m)	I.Area Σ Base Foul Add Flow Vel (ha) Flow (l/s) (l/s) (l/s) (m/s)	Cap Flow (l/s) (l/s)							
s1.000 50.00 4.72 90.935	0.059 0.0 0.0 0.0 0.50	8.8 8.0							
S1.001 50.00 5.43 90.882 S1.002 50.00 6.36 90.829	0.093 0.0 0.0 0.0 0.50								
\$1.002 50.00 6.36 90.829 \$1.003 50.00 7.30 90.759	0.1310.00.00.00.500.1710.00.00.00.50								
s1.004 50.00 7.56 90.689		14.4« 27.0							
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Innovyze					N	etwor	k 2018	3.1.1						
			Ne	etworł	<u>Desi</u>	<u>yn Tak</u>	ole fo	or Car	: Par	k				
PN L	ength (m)			a I.Are (ha)	a T.E. (mins		ase (l/s)					on Type	e Auto Design	
S1.005 3	7.788	0.252	150.0	0.00	0.0	0	0.0	0.600	0	150	Pipe/	'Conduit	:	
				1	Networl	c Resi	ults I	<u>able</u>						
PN				US/IL (m)	Σ I.Are (ha)		Base 7 (l/s)					Cap (1/s)	Flow (l/s)	
S1.005	50	.00	8.33	90.602	0.19	99	0.0	0.0		0.0	0.82	14.5«	27.0	

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<u>Area Summary for Car Park</u>

Pipe Number		PIMP Name		Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.059	0.059	0.059
1.001	User	-	100	0.034	0.034	0.034
1.002	User	-	100	0.038	0.038	0.038
1.003	User	-	100	0.039	0.039	0.039
1.004	User	-	100	0.028	0.028	0.028
1.005	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.199	0.199	0.199

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			Network	Classif	ications fo	r Cai	r Parl	ς	
PN	USMH		Min Cover			MH		MH Ring	МН Туре
	Name	Dia (mm)	Depth (m)	Depth (m)		Dia (mm)		Depth (m)	
S1.000	S1	150	0.375	0.513	Unclassified	1200	0	0.375	Unclassified
S1.001			0.513		Unclassified				Junction
S1.002			0.661		Unclassified		0	0.661	Unclassified
S1.003 S1.004	-	150 150	1.051 1.295		Unclassified Unclassified		0	1 / 3/	Junction Unclassified
S1.004			0.230		Unclassified				Unclassified
		Fre	e Flowin	ng Outfa	<u>ll Details</u>	for	Car P	<u>ark</u>	
		Outfa	all Outf	all C. Le	vel I. Level	Min	D,	LW	
		Pipe N	umber Na	me (m)	(m)	I. Lev (m)	vel (mr	n) (mm)	
		S	1.005	S 90.	730 90.350	90.3	350	0 0	
			<u>Simula</u>	tion Cr:	iteria for	Car 1	Park		
	Ar ole Hea ul Sewa	eal Red Hot Hot Sta dloss (ge per imber o		ctor 1.000 ins) ((mm) (bal) 0.500 l/s) 0.000 ydrographs) MADD)) Flow per Pe	Factor rson p Outp Storag	* 10m Inlet er Day Run ut Int ge Stru	³ /ha Sto Coeffiec (1/per/ Time (m erval (m	lins) 60 lins) 1 5
	1	Number	of Offline	e Controls	0 Number of	Real 7	Fime Co	ontrols	0
			<u>Syn</u>	thetic H	Rainfall De	tails	<u>5</u>		
	Returr	n Perio	all Model d (years) Region 5-60 (mm) Ratio R	England a	FSR 100 nd Wales 20.100 Stor 0.425		Cv (Su Cv (Wi	e Type S mmmer) .nter) (mins)	0.750 0.840

0.2001.71.4002.13.5003.37.5004.0.3001.81.6002.34.0003.58.0004.0.4001.71.8002.44.5003.78.5005.0.5001.62.0002.55.0003.99.0005.	Alfred Pl	S						Page	5
CLE 7DP Designed by tempuser Checked by Yile Full model.MDX Network 2018.1.1 Designed by tempuser Designed by tempuser Checked by Network 2018.1.1 Designed by tempuser Designed by tempuser Unite Controls for Car Park Mydro-Brake® Optimum Manhole: SFCMH1, DS/PN: S1.005, Volume (m³): 1. Unit Reference MD-SHE-0064-2000-1200-2000 Design Head (m) 1.200 Design Flow (1/s) 2.0 Flush-Flo ^m Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 100 Suggested Manhole Diameter (mm) 100 Suggested Manhole Diameter (mm) 1200 Control Points Head (m) Flow (1/s) Control Points Head (m) Flow Design Point (Calculated) 1.200 2.0 Kick-Flo® 0.573 The hydrological calculations have been based on the Head/Discharge relationship for 1 Popth (m) Flow (1/s) Pepth (m) Flow (1/s) Pepth (m) Flow (1/s) Pepth (m) Flow (1/s) Pepth (m) Flow (1/s) Pepth (m) Flow (1/s) 0.00 0.100 1.5 1.200 2.0 3.000 3.00 7		ace							
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Tile Full model.MDX Checked by nnovyze Network 2018.1.1 Online Controls for Car Park Hydro-Brake® Optimum Manhole: SFCMH1, DS/PN: S1.005, Volume (m³): 1. Unit Reference MD-SHE-0064-2000-1200-2000 Design Head (m) 1.200 Design Head (m) 1.200 Design Flow (1/s) 2.0 Flush-Flo ^m Calculated Objective Minimise upstream storage Application Sump Available Yes Diameter (mm) 64 Invert Level (m) 90.602 Minimum Outlet Pipe Diameter (mm) 100 Suggested Manhole Diameter (mm) 1200 Control Points Head (m) Flow (1/s) Control Points Head (m) Flow resign Point (Calculated) 1.200 2.0 Kick-Flo® 0.573 The hydrological calculations have been based on the Head/Discharge relationship for Hydro-Brake@ Optimum as specified. Should another type of control device other than Hydro-Brake@ Optimum as specified. Should another type of control device other than Hydro-Brake@ Optimum as specified. Should another type of storal device other than Hydro-Brake@ Optimum be utilised then these storage routing calculations will be invalidated Depth (m) Flow (1/s) Pepth (m) Flow (1/s)	te 17/08/2	2021 17:3	37	Desid	ned by tem	npuser			U
Innovyze Network 2018.1.1 Online Controls for Car Park Metwork 2018.1.1 Online Controls for Car Park Metwork 2018.1.1 Unit Reference MD-SHE-0064-2000-1200-2000 Design Head (m) 1.200 Design Head (m) 1.200 Design Flow (1/s) Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 100 Suggested Manhole Diameter (mm) 100	e Full mo	del.MDX			_	-		Uldi	Idlj
Hydro-Brake@ Optimum Manhole: SFCMH1, DS/PN: \$1.005, Volume (m³): 1. Unit Reference MD-SHE-0064-2000-1200-2000 Design Head (m) 1.200 Design Flow (1/s) 2.0 Flush-Flo ^m Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 64 Invert Level (m) 90.602 Minimum Outlet Fipe Diameter (mm) 100 Suggested Manhole Diameter (mm) 1200 Control Points Head (m) Flow (1/s) Control Points Head (m) Flow Pesign Point (Calculated) 1.200 2.0 Kick-Flo@ 0.573 Flush-Flo ^m 0.282 1.8 Mean Flow over Head Range - The hydrological calculations have been based on the Head/Discharge relationship for Hydro-Brake@ Optimum@ be utilised then these storage routing calculations will be invalidated 0.100 1.5 1.200 2.0 3.000 3.0 7.000 4. 0.100 1.5 1.200 2.0 3.000 3.3 7.500 4. 0.100 1.5 1.200	novyze				—	. 1			
Unit Reference MD-SHE-0064-2000-1200-2000 Design Flead (m) 1.200 Design Flow (1/s) 2.0 Flush-Flo ^{man} Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 64 Invert Level (m) 90.602 Minimum Outlet Pipe Diameter (mm) 100 Suggested Manhole Diameter (mm) 1200 Control Points Head (m) Flow (1/s) Control Points Head (m) Flow (1/s) Design Point (Calculated) 1.200 2.0 Kick-Flo@ 0.573 Flush-Flo ^{man} 0.282 1.8 Mean Flow over Head Range - The hydrological calculations have been based on the Head/Discharge relationship for shydro-Brake@ Optimum@ be utilised then these storage routing calculations will be invalidated Depth (m) Flow (1/s) Depth (m) Flow (1/s) Depth (m) Flow (1/s) 0.100 1.5 1.200 2.0 3.000 3.0 7.000 4. 0.100 1.5 1.200 2.0 3.000 3.0 7.000 4. </td <td></td> <td></td> <td><u>Onli</u></td> <td>ne Control</td> <td>ls for Car</td> <td>Park</td> <td></td> <td></td> <td></td>			<u>Onli</u>	ne Control	ls for Car	Park			
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0.3001.81.6002.34.0003.58.0004.0.4001.71.8002.44.5003.78.5005.0.5001.62.0002.55.0003.99.0005.0.6001.52.2002.65.5004.09.5005.0.8001.72.4002.76.0004.29.5005.	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m) F	'low (l/s) [epth (m)	Flow (1	/s)
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0.5001.62.0002.55.0003.99.0005.0.6001.52.2002.65.5004.09.5005.0.8001.72.4002.76.0004.2	0.100	1.5 1.7	1.200	2.0 2.1	3.000 3.500	3.0 3.3	7.000	Flow (l	4.5 4.7
0.6001.52.2002.65.5004.09.5005.0.8001.72.4002.76.0004.2	0.100 0.200 0.300	1.5 1.7 1.8	1.200 1.400 1.600) 2.0 2.1 2.3	3.000 3.500 4.000	3.0 3.3 3.5	7.000 7.500 8.000	Flow (1	4.5 4.7 4.8
	0.100 0.200 0.300 0.400	1.5 1.7 1.8 1.7	1.200 1.400 1.600 1.800) 2.0 2.1 2.3 2.4	3.000 3.500 4.000 4.500	3.0 3.3 3.5 3.7	7.000 7.500 8.000 8.500		4.5 4.7
1.000 1.8 2.600 2.8 6.500 4.4	0.100 0.200 0.300 0.400 0.500 0.600	1.5 1.7 1.8 1.7 1.6 1.5	1.200 1.400 1.600 1.800 2.000 2.200	2.0 2.1 2.3 2.4 2.5 2.6	3.000 3.500 4.000 4.500 5.000 5.500	3.0 3.3 3.5 3.7 3.9 4.0	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0
	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
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	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
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	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
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	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1
©1982-2018 Innovyze	0.100 0.200 0.300 0.400 0.500 0.600 0.800	1.5 1.7 1.8 1.7 1.6 1.5 1.7	1.200 1.400 1.600 1.800 2.000 2.200 2.400	2.0 2.1 2.3 2.4 2.5 2.6 2.7	3.000 3.500 4.000 4.500 5.000 5.500 6.000	3.0 3.3 3.5 3.7 3.9 4.0 4.2	7.000 7.500 8.000 8.500 9.000		4.5 4.7 4.8 5.0 5.1

Price & Myers			Page 6
37 Alfred Place			
London			
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Date 17/08/2021 17:37	Designed b	v tempuser	- Micro
	Checked by		Drainage
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тшоууге	Network 20	10.1.1	
<u>Storage St</u>	ructures fo	or Car Park	
<u>Porous Car Park</u>	Manhole: S	1, DS/PN: S1.000	
Infiltration Coefficient Base ((m/hr) 0.0000) Width (m)	28.0
Membrane Percolation (m		-)- ()	
Max Percolation		1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	
		Depression Storage (mm)	
	cosity 0.3 el (m) 91.07		3
Invert Leve	el (m) 91.073	5 Cap Volume Depth (m)	0.225
<u>Porous Car Park M</u>	Manhole: SJ	CT, DS/PN: S1.001	
Infiltration Coefficient Base ((m/hr) 0.0000) Width (m)	16.2
Membrane Percolation (m	,		
Max Percolation	(1/s) 94.	-	
Safety H	Factor 2.) Depression Storage (mm)	5
Por	cosity 0.3) Evaporation (mm/day)	3
Invert Leve	el (m) 91.16) Cap Volume Depth (m)	0.225
Porous Car Park	Manhole: S	2, DS/PN: S1.002	
Infiltration Coefficient Base ((m/br) = 0.0000) Width (m)	13.6
Membrane Percolation (m	,		
Max Percolation	. ,	-	
		Depression Storage (mm)	5
Por	cosity 0.3	D Evaporation (mm/day)	3
Invert Leve	el (m) 91.25	5 Cap Volume Depth (m)	0.225
<u>Porous Car Park Ma</u>	anhole: Sjc	t 2, DS/PN: S1.003	
Infiltration Coefficient Base ((m/br) 0 0000) Width (m)	14.0
Membrane Percolation (m			28.0
Max Percolation	, ,		
Safety E) Depression Storage (mm)	5
Por	cosity 0.3		3
Invert Leve	el (m) 91.57	5 Cap Volume Depth (m)	0.225
Porous Car Park	Manhole: S	3, DS/PN: S1.004	
Infiltration Coefficient Base ((m/hr) 0 0000) Width (m)	21.5
Membrane Percolation (m	(, , ,		13.0
Max Percolation	. ,		
Safety E	Factor 2.	D Depression Storage (mm)	5
	cosity 0.3		3
Invert Leve	el (m) 91.88	3 Cap Volume Depth (m)	0.225
~***	0 0010 -		
©1983	2-2018 Inno	ovyze	

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37 Alfred Pl	ace								
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	e Full model.MDX Checked by								
	uci inda				x 2018	1 1			
Innovyze			110	ELWOIR	2010	• - •			
<u>1 year Retur</u>	n Peric	od Summar	-	ritica r Car		ults by	Maximum	Level (H	Rank 1)
			<u>Simul</u>	ation	Criteria	<u>a</u>			
							% of Total		
		t Start (m art Level		0	MADD		10m³/ha Sto let Coeffie		
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		M5-60 (mm	-			Cv (Winte			
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		11101	-	Status	2.0 000			ON ON	
			DVD	Status				ON	
]	Inertia	Status				ON	
		Profile(s	,				Summer and		
	Duratic	on(s) (mins) 1	5, 30,	60, 12	0, 180, 2	40, 360, 480		
Retu	rn Period	l(s) (years)				-	30, 1440	
		Change (%					-), 0, 0	
									Water
US/MH PN Name	Storm		Climate Change		t (X) harge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)
	240 Win			1/30					91.141
S1.001 SJCT				1/30					91.153
\$1.002 \$2 \$1.003 \$jct 2				1/30 1/15					91.184 91.203
s1.003 sjet 2 s1.004 s3				1/15					91.203 91.201
S1.005 SFCMH1	. 60 Win	ter 1	+0 %	1/15	Summer				91.195
	s	urcharged	Flooded			Pipe			
	US/MH	Depth		Flow /	Overfl	ow Flow		Level	
PN	Name	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded	L
S1.000	S1	0.056	0.000	0.20		16	SURCHARGED		
S1.000	SJCT	0.030	0.000	0.20			SURCHARGED*		
S1.002	S2	0.205	0.000	0.94		7.9	SURCHARGED		
	0-1-0-	0.294	0.000	0.87		7.6	SURCHARGED*		
S1.003	-								
S1.003 S1.004	SJCL Z S3	0.362	0.000	0.36			SURCHARGED		

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37 Alfr	red Pl	ace							
ondon									
C1E 71)P								Micco
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nnovyz						2018.1	1		
11110 1 1 2					00001	2010.1	• ±		
year	Retur	n Per:	iod Summaı		<u>ritica</u> r Car		ts by	Maximum	Level (Rank 1
	PN	US/MH Name	Surcharged Depth (m)		Flow /	Overflow (1/s)		Status	Level Exceeded
	s1.005	SFCMH1	0.443	0.000	0.12		1.6	SURCHARGED)

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7 Alf:	red Pla	ace								
ondon										
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<u>30 ye</u> a	<u>ar Ret</u>	urn Pe	riod Sum			<u>ical R</u> ar Parł		by Maximu	m Level	(Rank
		H Hot S	ot Start (i tart Level	actor 1.0 mins) (mm)	A 000 0 0	MADD	al Flow - Factor * In	% of Total 10m³/ha St let Coeffie	orage 2.0 cient 0.8	00
1412			r hectare			w per P	erson per	Day (l/per	/day) 0.0	00
		Numbe	er of Onlir	ne Contro	ls 1 Nu	umber of	Time/Are	Structures ea Diagrams ne Controls	0	
				<u>Syntheti</u>	<u>c Rain</u> f					
		R	ainfall Moc		nd and		Ratio Cv (Summe:			
			-	m)			Cv (Winte:			
	Ма	rgin fo	r Flood Ris		-	0.5.0			0.0	
			Ana	-	mestep Status	2.5 Sec	cond incre	ement (Exter	ndea) ON	
					Status				ON	
				Inertia	Status				ON	
		Dunati	Profile(,	15 20	CO 10	0 100 0	Summer and		
		Durati	.on(s) (min	.5)	15, 30,	6U , 12	0, 180, 2	40, 360, 48 720, 96		
	Retu		od(s) (year ce Change (30, 100 0, 0, 0	
										Water
PN	US/MH Name	Stor		n Climate d Change		t (X) harge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)
S1.000		240 Wi			\$ 1/30					91.284
S1.001		240 Wi 30 Wi			\$ 1/30 \$ 1/20					91.282
S1.002	S2 Sjct 2	••••			h 1/30 h 1/15					91.336 91.594
S1.003	-				s 1/15					91.700
S1.005	SFCMH1	15 Wi	nter 3	0 +0%	\$ 1/15	Summer				91.700
			Surcharged	Flooded			Pipe			
		US/MH	Depth		Flow /	Overfl	ow Flow		Level	
	PN	Name	(m)	(m³)	Cap.	(l/s)	(l/s)	Status	Exceede	đ
	s1.000	S1	0.199	0.000	0.23		1.9	SURCHARGEI	۲.	
	S1.000 S1.001	SI SJCT	0.199		0.23			SURCHARGED		
			0.357		0.91		7.6	SURCHARGEI		
	S1.002	S2								
	S1.002 S1.003		0.685	0.000	1.29		11.3	SURCHARGED*	ŧ	
					1.29 0.70		11.3 9.2	SURCHARGED [*] SURCHARGEI		

	& Myer								Page 10
7 Alf	red Pl	ace							
ondon									
C1E 7	DP								Micro
ate 1	7/08/2	021 1	7:37	D	esigne	ed by te	mpuse	r	— Micro Drainago
ile F	ull mc	del.MI	XC	C	hecked	l by			Diamacj
nnovy	ze			N	etwork	2018.1	.1		
20 110	ar Dot		ariad Cum		Criti	anl Dog		ou Mouimur	n Level (Rank
<u>30 ye</u>	ar kei	urn P	erioa Sum			<u>r Park</u>	uits i	<u>oy Maximur</u>	<u>ILEVEI (RAIIK</u>
			Guuchausad	TI a a da d			Dime		
	PN	US/MH Name	Surcharged Depth (m)		Flow /	Overflow (l/s)		Status	Level Exceeded
	S1.005	SFCMH1	0.948	0.000	0.13		1.9	SURCHARGED	
				©1982-	-2018	Innovyze	<u> </u>		

rice	& Myer	5								Pag	e 11
7 Alf:	red Pla	ace									
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ate 1	7/08/2	021 17	:37		De	esigne	ed by	tempuse	r		
ile F	ull mo	del.MD	Х			necke	-	-			ainag
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	-										
<u>100 ye</u>	ear Ret	urn Pe	<u>≩riod S</u>	<u>umm</u>			<u>ical F</u> r Par}		by Maxim	um Level	L (Ran
				-	-		<u>Criteri</u>				
			eduction ot Start						% of Total 10m³/ha St		
			tart Lev				11100		let Coeffie	2	
M	anhole H	leadloss	Coeff (Glob	al) 0.5	00 Flo	w per P	erson per	Day (l/per	/day) 0.0	000
	Foul Se	wage pe	r hectar	e (l	/s) 0.0	00					
		Numbe	er of Onl	line	Control	.s 1 Nu	umber of	Time/Ar	Structures ea Diagrams me Controls	0	
		Nullber	. 01 0111						le concrors	0	
		Ra	ainfall N			- Kalil	<u>FSR</u>	Ratio	R 0.424		
			Re	egior	n Englar	nd and	Wales C	Cv (Summe	r) 0.750		
			M5-60	(mm)		2	21.000 0	Cv (Winte	r) 0.840		
	Ма	rain fo	m Elood I	Diak	Marain	~ (mm)				0 0	
	Ма	rgin io:	r Flood I			-	2.5 Sec	cond Incr	ement (Exte	0.0 nded)	
					-	Status				ON	
					DVD S	Status				ON	
				II	nertia S	Status				ON	
			Profil	• •					Summer and		
		Durati	.on(s) (m	nins)	1	5, 30,	60, 12	0, 180, 2	40, 360, 48		
	Potu	n Porio	od(s) (ye	() and (50, 1440 30, 100	
	Retui		e Change						⊥,	0, 0, 0	
			2								
	US/MH		Ret	urn	Climate	Firs	t (X)	First (Y)	First (Z)	Overflow	Water Level
PN	Name	Stor	m Per	iod	Change	Surc	harge	Flood	Overflow	Act.	(m)
s1.000) S1	240 Wi	nter	100	+0%	1/30	Winter				91.353
S1.001		360 Wi		100		1/30					91.351
S1.002				100		1/30					91.375
01 003	3 Sjct 2			100		1/15					91.624
		15 Wi 15 Wi		100 100		1/15 1/15					91.858 91.858
S1.004		TO MT	liter	100	+0%	1/13	Summer				91.030
) SFCMHI							Pipe			
S1.004) SFCMHI		Surcharg	ed F	looded			- -			
S1.004) SFCMHI	US/MH	Surcharg Depth			Flow /	Overfl	ow Flow		Level	
S1.004	PN		-			Flow / Cap.	Overfl (1/s)		Status	Level Exceede	d
S1.004	PN	US/MH Name	Depth (m)	7	Jolume (m³)	Cap.	(1/s)	(1/s)		Exceede	d
S1.004	PN S1.000	US/MH Name S1	Depth (m) 0.2	1 68	/olume (m³) 0.000	Cap.	(1/s)	(1/s) 1.8	SURCHARGE	Exceede	d
S1.004	PN	US/MH Name	Depth (m)	68 19	Jolume (m³)	Cap.	(l/s)	(1/s) 1.8		Exceeded	đ
S1.004	PN S1.000 S1.001	US/MH Name S1 SJCT S2	Depth (m) 0.2 0.3	68 19 96	Volume (m ³) 0.000 0.000	Cap. 0.22 0.21	(l/s)	(1/s) 1.8 1.8 8.2	SURCHARGE SURCHARGED	Exceeded D *	đ
S1.004	PN S1.000 S1.001 S1.002	US/MH Name S1 SJCT S2	Depth (m) 0.2 0.3 0.3	68 19 96 15	Jolume (m ³) 0.000 0.000 0.000	Cap. 0.22 0.21 0.98	(l/s)	(1/s) 1.8 1.8 8.2	SURCHARGE SURCHARGED SURCHARGE	Exceeded D * D	đ

	& Myer								Page	12
7 Alf	red Pl	ace								
ondon										
C1E 7	DP								Micc	
ate 1	7/08/2	021 1	7:37	D	esigne	ed by te	mpuse	r	— Micr Drair	
ile F	ull mc	del.MI	XC	С	hecked	l by			Didii	Idy
nnovy	ze					2018.1	.1			
L00 ye	ear Re	turn P	eriod Sum				sults	<u>by Maximu</u>	ım Level	(Ranl
				<u>1)</u> :	for Ca	<u>r Park</u>				
			Surcharged	Flooded			Pipe			
		US/MH	Depth			Overflow	Flow		Level	
	PN	Name	(m)	(m³)	Cap.	(l/s)	(l/s)	Status	Exceeded	
	s1.005	SFCMH1	1.106	0.000	0.14		2.0	SURCHARGED	1	
				@1000	2010	Innovyze	<u></u>			

rice & Mye	ers								Page 7
7 Alfred B	lace								
ondon									
IC1E 7DP									Micco
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innovyze				Net	work 2	018.1.1			
<u>100 year R</u>	<u>eturn P</u>	<u>eriod</u>	Summa	=	<u>Critica</u> r Car F		ts by	<u>Maximum L</u>	evel (Rank
					<u>tion Crit</u>				
				tor 1.000 ns) (f Total Flow 3/ha Storage	
				mm) (IIDD I dette		Coeffiecient	
Manhole						r Person		(l/per/day)	
Foul	Sewage pe	er hecta	are (l	/s) 0.000)				
	Numb	er of C	Online	Controls	1 Numbe	r of Stora r of Time r of Real	/Area Di	lagrams O	
			S	ynthetic	Rainfall	Details			
	R	ainfall				SR Ra	tio R 0.	.424	
			Region	n England	and Wale	es Cv (Su	mmer) 0.	.750	
		M5-6	50 (mm)		21.00	00 Cv (Wi	nter) 0.	.840	
	Nonain Fo		l Diele	Menerine	(0.0	
	Margin fo	01 E1000		-		Second Ti	ncrement	U.U (Extended)	
				DTS St				ON	
				DVD St	atus			ON	Ī
			Ir	nertia St	atus			ON	Ī
							-		
	Durat	Prof ion(s)	ile(s) (mins)		, 30, 60,	120, 180	, 240,	mer and Wint 360, 480, 60	00,
5	- ·	1 () (,					720, 960, 14	
Ret	climat	od(s) (te Chan						-	40
	CIIIId		.ge (8)						10
US/1 PN Nam				Climate Change	First Surchai		irst (Y) Flood) First (Overflo	Z) Overflow
	e 300 S1 360 Wi		100	-		mmer 100,			
	SI 300 WI CT 600 Wi		100		100/15 St 100/15 St	,	⊥∠V W⊥II		
	S2 360 Wi		100		100/15 Si				
S1.003 Sjct	2 30 Wi	Inter	100	+40%	100/15 Si	mmer			
	S3 15 Wi		100		100/15 Sı				
S1.005 SFCM	H1 15 Sı	ummer	100	+40%	100/15 Sı	ummer			
	Wat	er Sur	charge	d Floode	d		Pipe		
υ	S/MH Le	vel 1	Depth	Volume	e Flow /	Overflow	Flow		Level
PN 1	lame (n	1)	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
S1.000	S1 91.	477	0.39	2 16.69	8 0.48		3.9	FLOOD	12
S1.000 S1.001	SI 91. SJCT 91.		0.39					SURCHARGED*	⊥∠
	S2 91.		0.51					SURCHARGED	
S1.001 S1.002	02 71.							SURCHARGED*	
		658	0.74	9 0.00	0 1.14		10.0		
S1.002			0.74 1.06				14.4	SURCHARGED	

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7 Alfred	Place	9							
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ate 17/0	8/2021	17:34	1	Desi	gned k	oy tempu	ser		
ile Full	model	.MDX		Chec	ked by	7			Micro Drainag
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100 year	<u>Retur</u>	n Peri	od Summar	<u>y of C</u> 1) for			<u>ts by</u>	<u>Maximum I</u>	level (Ran)
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)		Flow /	Overflow (1/s)			Level Exceeded
01 005	CECMU1	01 020	1.177	0 000				CUDCUADCED	
51.005	SFCMHI	91.929	1.1//	0.000	0.15		2.0	SURCHARGED	
			@1	982-20	10 т. -				





Project

Project Name:	VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657
Project Status:	Complete
Project Date:	02/08/2021
Lanes Division:	East Anglia





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Section: 3; CP01 > L3 (CP01X)	3
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Lanes Group plc 11 Chester Road,, Eaton Socon, St Neots Tel. 01480 262000

cctvsupport@lanesfordrains.co.uk

Project Information

Project Name VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657

Project Date 02/08/2021

Client

Company:	VolkerFitzpatrick Limited
Contact:	Lanes Slough
Department:	Slough Trading Estate
Street:	686 Stirling Road
Town or City:	Slough
County:	Berkshire
Post Code:	SL1 4ST

Site

Company:	VolkerFitzpatrick Limited
Street:	Butterfly Lane
Town or City:	Elstree
County:	Borehamwood
Post Code:	WD6 3AF

Contractor

Company:	Lanes Group plc
Description:	East Anglia Depot
Contact:	Gavin Potts
Department:	Regional Manager
Street:	11 Chester Road,
Town or City:	Eaton Socon, St Neots
County:	Cambridgeshire
Post Code:	PE198YT
Phone:	01480 262000
Email:	eastangliaops@lanesfordrains.co.uk







Project Information

Project Name VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657 Project Date 02/08/2021

Project Summary

Dear Customer,

As requested, we have recently carried out a drainage CCTV survey at the site location and our full and detailed findings are contained in the attached CCTV report which you can review at your leisure.

We have identified the need for further works and will provide a quotation which will highlight the areas of concern, the most appropriate remedial technique and all associated costings.

We would like to take this opportunity to thank you for using Lanes Group plc and I hope we can be of service to you again soon. Please visit our website for full details of all services we can provide, follow us on social media or even share details of your customer experience with us:

www.lanesgroup.co.uk

If you require any technical assistance understanding the findings of the CCTV report then please contact us at:

Cctvsupport@lanesfordrains.co.uk

Kind regards, Lanes Group plc



Project Information

Project Name

VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657

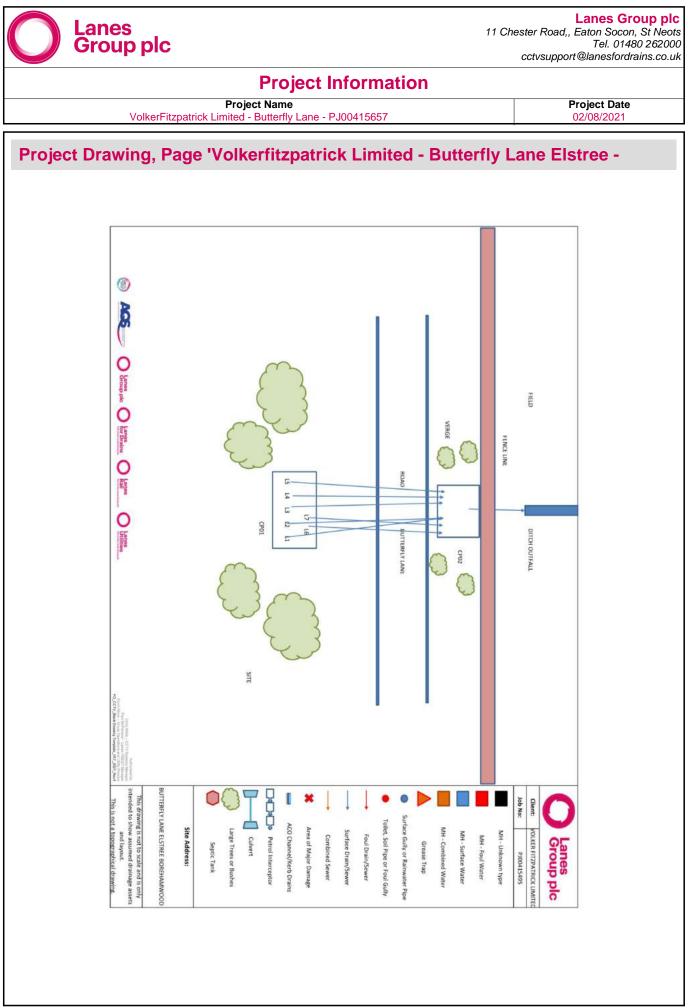
Project Date 02/08/2021

Project Notes

CCTV reveals issues in pipe work

Section 4: 25% Hard/compact debris

Section 5: 20% Coarse debris





Project Pictures

Project Name VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657

Project Date 02/08/2021



Lanes Group plc

210730_1035A-Survey



210730_1035B-Survey



Section Profile

Project Name

VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657

Project Date 02/08/2021

Circular, 0 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Pipe Material	Total Length	Inspected Length
10	Outfall	Outfall	02/08/2021	Butterfly Lane		0.00 m	0.00 m
9	Ditch	Ditch	02/08/2021	Butterfly Lane		0.00 m	0.00 m

Total: 2 Inspections x Circular 0 mm = 0.00 m Total Length and 0.00 m Inspected Length

Circular, 100 mm

ltem No.	Upstream Node	Downstream Node	Date	Road	Pipe Material	Total Length	Inspected Length
6	CP-01	L-06	02/08/2021	Butterfly Lane	Polyvinyl chloride	10.48 m	10.48 m
7	CP-01	L-07	02/08/2021	Butterfly Lane	Polyvinyl chloride	10.21 m	10.21 m

Total: 2 Inspections x Circular 100 mm = 20.69 m Total Length and 20.69 m Inspected Length

Circular, 150 mm

ltem No.	Upstream Node	Downstream Node	Date	Road	Pipe Material	Total Length	Inspected Length
1	CP01	L1	30/07/2021	Butterfly Lane	Polyvinyl chloride	10.44 m	10.44 m
2	CP01	L2	30/07/2021	Butterfly Lane	Polyvinyl chloride	12.04 m	12.04 m
3	CP01	L3	30/07/2021	Butterfly Lane	Polyvinyl chloride	12.08 m	12.08 m
4	CP01	L4	30/07/2021	Butterfly Lane	Polyvinyl chloride	11.57 m	11.57 m
5	CP-01	L-05	02/08/2021	Butterfly Lane	Polyvinyl chloride	11.08 m	11.08 m

Total: 5 Inspections x Circular 150 mm = 57.21 m Total Length and 57.21 m Inspected Length

Circular, 300 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Pipe Material	Total Length	Inspected Length
8	CP02	Downstream	30/07/2021	Butterfly Lane	Concrete	9.23 m	9.23 m

Total: 1 Inspection x Circular 300 mm = 9.23 m Total Length and 9.23 m Inspected Length Total: 10 Inspections = 87.13 m Total Length and 87.13 m Inspected Length

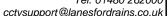


Section Summary

Project Name VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657 Project Date 02/08/2021

Number of sections	10
Total length of sections	87.13 m
Total length of inspected sections	87.13 m
Total length of abandoned inspections	0.00 m
Number of abandoned inspections	1
Number of section inspection photos	19
Number of section inspection videos	10
Number of section inspection scans	0
Number of section inclination measurements	0

PLR:			CP01X	Upstream Node:	CP01	
Inspec	tion Direct	tion:	Downstream	Downstream Node:	L1	
Inspected Length: 10.44 m			10.44 m	Dia/Height:	150 mm	
Total Length:			10.44 m	Pipe Material:	Polyvinyl chloride	
No.	m+	Code	Observation			
1	0.00	СР	Start node, catchpit, reference: CP01			
2	0.00	WL	Water level, 20% of the vertical dimension	n		
3	10.44	CPF	Finish node, catchpit, reference: L1, Read	ched CP02		
PLR:			CP01X	Upstream Node:	CP01	
Inspection Direction:		tion:	Downstream	Downstream Node:	L2	
Inspected Length:		h:	12.04 m	Dia/Height:	150 mm	
Total Length:			12.04 m	Pipe Material:	Polyvinyl chloride	
No.	m+	Code	Observation			
1	0.00	СР	Start node, catchpit, reference: CP01			
2	0.00	WL	Water level, 10% of the vertical dimension			
3	9.80	WL	Water level, 20% of the vertical dimension			
4	11.69	CUW	Loss of vision, camera under water			
5	12.04	CPF	Finish node, catchpit, reference: L2, Read	ched CP02		
PLR:			CP01X	Upstream Node:	CP01	
Inspec	tion Direct	tion:	Downstream	Downstream Node:	L3	
Inspec	ted Lengtl	h:	12.08 m	Dia/Height:	150 mm	
Total Length:			12.08 m	Pipe Material:	Polyvinyl chloride	
No.	m+	Code	Observation			
1	0.00	СР	Start node, catchpit, reference: CP01			
2	0.00	WL	Water level, 20% of the vertical dimension	n		
3	0.20	DEE	Attached deposits, encrustation from 2 o'	clock to 10 o'clock, 10% cr	oss-sectional area loss	
	ı					



Section Summary

Lanes Group plc

			Section	n Summary					
		V	Project Name olkerFitzpatrick Limited - Butterfly Lane -	· PJ00415657	Project Date 02/08/2021				
No.	m+	Code	Observation						
4	10.00	WL	Water level, 40% of the vertical dimen	Water level, 40% of the vertical dimension					
5	10.68	CUW	Loss of vision, camera under water						
6	12.08	CPF	Finish node, catchpit, reference: L3, R	Finish node, catchpit, reference: L3, Reached CP02					
PLR:			CP01X	Upstream Node:	CP01				
Inspec	tion Direc	tion:	Downstream	Downstream Node:	L4				
Inspec	ted Lengt	h:	11.57 m	Dia/Height:	150 mm				
Total Length: 11.57 m Pipe Material: Polyvinyl chlor					Polyvinyl chloride				
No.	m+	Code	Observation						
1	0.00	СР	Start node, catchpit, reference: CP01						
2	0.00	WL	Water level, 10% of the vertical dimen	sion					
3	10.74	WL	Water level, 30% of the vertical dimen	sion					
4	11.26	DECJ	Settled deposits, hard or compacted a	t joint, 25% cross-sectional are	ea loss				
5	11.57	CPF	Finish node, catchpit, reference: L4, R	eached CP02					
PLR:			CP-01X	Upstream Node:	CP-01				
Inspec	tion Direc	tion:	Downstream	Downstream Node:	L-05				
Inspec	ted Lengt	h:	11.08 m	Dia/Height:	150 mm				
Total I	_ength:		11.08 m	Pipe Material:	Polyvinyl chloride				
No.	m+	Code	Observation	Observation					
1	0.00	CP	Start node, catchpit, reference: CP-01						
2	0.00	WL	Water level, 10% of the vertical dimension						
3	1.18	WL	Water level, 5% of the vertical dimens	ion					
4	4.18	DER	Settled deposits, coarse, 20% cross-s	ectional area loss					
5	5.87	DER	Settled deposits, coarse, 20% cross-settled deposits, 20% cross-settled deposits, 20% cross-settled de	ectional area loss, start					
6	11.08	DER	Settled deposits, coarse, 20% cross-s	ectional area loss, finish					
7	11.08	SA	Survey abandoned, Unable to pass de	ebris					
PLR:			CP-01X	Upstream Node:	CP-01				
Inspec	tion Direc	tion:	Downstream	Downstream Node:	L-06				
Inspec	ted Lengt	h:	10.48 m	Dia/Height:	100 mm				
Total I	_ength:		10.48 m	Pipe Material:	Polyvinyl chloride				
No.	m+	Code	Observation						
1	0.00	CP	Start node, catchpit, reference: CP-01						
2	0.00	WL	Water level, 0% of the vertical dimens	ion					
3	9.02	DES	Settled deposits, fine, 5% cross-section	nal area loss, start					
4	10.48	DES	Settled deposits, fine, 5% cross-section	nal area loss, finish					
5	10.48	LHF	Finish node, lamphole, reference: L-06	3					
PLR:			CP-01X	Upstream Node:	CP-01				
Inspec	tion Direc	tion:	Downstream	Downstream Node:	L-07				
-	ted Lengt	h:	10.21 m	Dia/Height:	100 mm				
	_ength:		10.21 m	Pipe Material:	Polyvinyl chloride				
No.	m+	Code	Observation						
1	0.00	CP	Start node, catchpit, reference: CP-01						
2	0.00	WL	Water level, 0% of the vertical dimens	ion					



Section Summary

Project Name						
VolkerFitzpatrick Limited - Butterfly Lane - PJ00415657						

Project Date 02/08/2021

No.	m+	Code	Observation			
3	10.21	LHF	Finish node, lamphole, reference: L-07			
PLR:	tion Diroc	tion	CP02X Downstream	Upstream Node: Downstream Node:	CP02 Downstream	
Inspection Direction: Inspected Length:			9.23 m	Dia/Height:	300 mm	
Total Length:			9.23 m	Pipe Material:	Concrete	
No.	m+	Code	Observation			
1	0.00	CP	Start node, catchpit, reference: CP02			
2	0.00	WL	Water level, 20% of the vertical dimension			
3	9.23	OFF	Finish node, outfall, reference: Downstream, Reached ditch			
5						
PLR:			DitchX	Upstream Node:	Ditch	
Inspection Direction:			0	Downstream Node:	Ditch	
Inspected Length:			0.00 m	Dia/Height:		
Total Length:			1	Pipe Material:		
No.	m+	Code	Observation			
1	0.00	REM	General remark, Look see of ditch area			
PLR:			OutfallX	Upstream Node:	Outfall	
	tion Direct	tion:	0	Downstream Node:	Outfall	
Inspected Length:			0.00 m	Dia/Height:		
Total Length:				Pipe Material:		
No.	m+	Code	Observation			
1 0.00 REM			General remark, Look see of outfall area			



1, 00:00:01, 0.00 m Start node, catchpit, reference: CP01

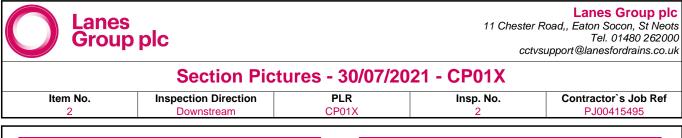
09:48:50 30-JUL-202

0.00m

2, 00:00:37, 10.44 m Finish node, catchpit, reference: L1, Reached CP02

09:49:34 30-JUL 2021

10.44m

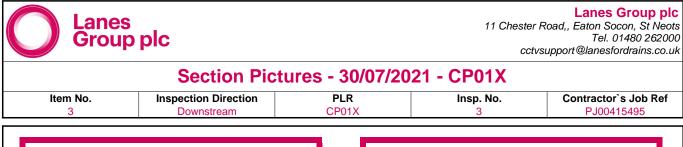




1, 00:00:01, 0.00 m Start node, catchpit, reference: CP01



2, 00:01:24, 12.04 m Finish node, catchpit, reference: L2, Reached CP02

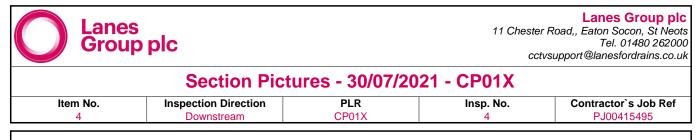




1, 0.00 m Start node, catchpit, reference: CP01



2, 00:01:13, 12.08 m Finish node, catchpit, reference: L3, Reached CP02





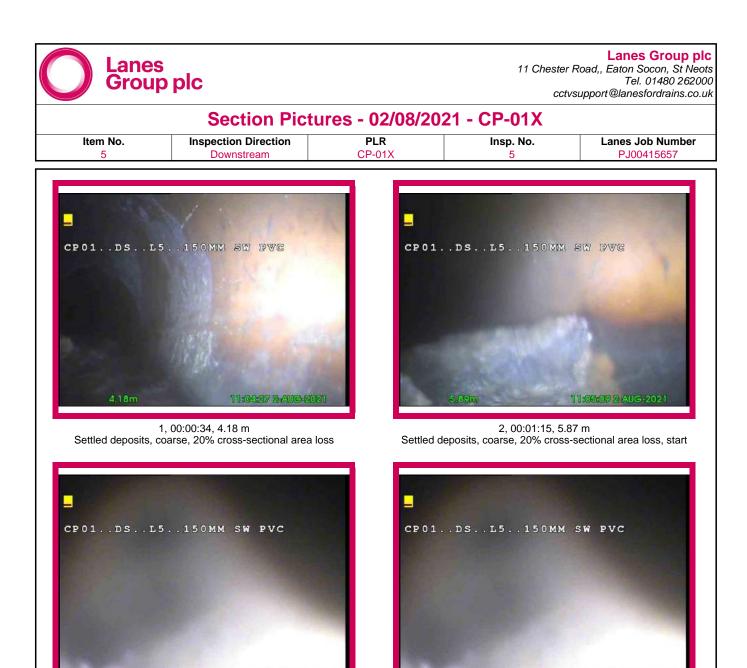
1, 00:00:01, 0.00 m Start node, catchpit, reference: CP01



2, 00:00:58, 11.26 m Settled deposits, hard or compacted at joint, 25% cross-sectional area loss



3, 00:02:23, 11.57 m Finish node, catchpit, reference: L4, Reached CP02



11.08m 11:06:18 2:4UG-2021

3, 00:02:25, 11.08 m Settled deposits, coarse, 20% cross-sectional area loss, finish

4, 00:02:25, 11.08 m Survey abandoned, Unable to pass debris

11:06:18 2-AUG-2021

11.08m



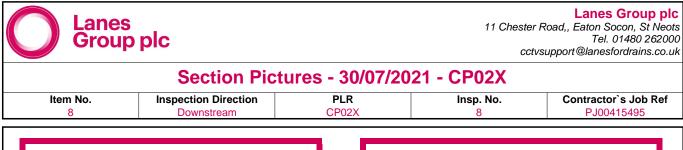
1, 00:00:00, 0.00 m Start node, catchpit, reference: CP-01

2, 00:00:33, 10.48 m Finish node, lamphole, reference: L-06



1, 00:00:00, 0.00 m Start node, catchpit, reference: CP-01

2, 00:00:41, 10.21 m Finish node, lamphole, reference: L-07





1, 00:00:01, 0.00 m Start node, catchpit, reference: CP02



2, 00:01:25, 9.23 m Finish node, outfall, reference: Downstream, Reached ditch



West London

686 Stirling Road Slough Trading Estate Slough. SL1 4ST Tel: 0333 344 9099 Email: sloughops@lanesgroup.co.uk

VOLKER FITZPATRICK LIMITED RIVERPOINT HOUSE LONDON ROAD RIVERHEAD SEVENOAKS Kent TN13 2DN

Quote Reference SL7672 Date 4/8/2021

Dear Ms Wasielewska,

RE: VOLKERFITZPATRICK LIMITED, Butterfly Lane, , Elstree, WD6 3AF

Thank you for your recent enquiry regarding works for the above mentioned site. I now have the pleasure in detailing my quotation and pricing schedule for your consideration.

Scope of works

Following our first visit on 2nd August to undertake a CCTV survey please see our recommendations for remedial works to take place.

To supply a 2800 gallon Jet / Vacuumation unit complete with two fully trained engineers. This unit has the ability to high-pressure water jet at a rate of 96 gallons per minute and has a vacuum capability of 850 CFM.

This is to remove all settled deposits in the lines.

We reserve the right to amend our quotation accordingly.

• Should high levels of toxic gas be located (as per gas monitors) during the course of the works then the programme may need to be extended.

• Parking and access are to be made available for the duration of the works

Cancellation Fee - If reserved units are cancelled within 48hrs before the agreed commencement date, then a cancellation fee of 50% of the value of the day's work may well apply.

Any waste arising from the cleansing works that requires removal from the site will be vacuumed and disposed of at a registered transfer station. We are unable to confirm waste costs at this time as volume and type of waste are currently unknown.



West London

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Indicative waste costs are detailed below

Sewage of waste - £75 per 1000 gallons or part there of

Solid/Silt Waste - £125 per tonne or part there of

hazardous Waste - Cost + 20%

Consignment note for hazardous waste - £65

Wash out for hazardous waste - £150

All prices are based on normal working hours (08.00hrs to 16.30hrs) Monday to Friday, weekend and out of hours work will be charged at an additional 30%.

The working areas will be guarded using signs, cones and barriers, as required.

Quote does not include for any traffic management costs if required

Conditions

• Subject to Lanes Group PLC standard terms and conditions which are attached. The terms and conditions can also be found on our website <u>www.lanesfordrains.co.uk</u>



West London

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We trust this meets with your approval and await your official instruction before proceeding with the works. In the meantime should you require any further assistance or additional information please do not hesitate to contact me.

Yours faithfully,

Oliver Sandrove Area Development Manager - West London Tel 0333 344 9099 Option 2 Oliver.Sandrove@lanesgroup.co.uk

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