Surface Water Drainage Statement

16 Worthing Road, Ferring, BN16 1AZ

Client

Randall & Chisnall Construction Ltd
19 First Avenue
Worthing BN16 1AZ
Ref: 7338A

Consulting Engineers

GTA Civils & Transport Ltd
66a Church Walk
Burgess Hill
West Sussex
RH15 9AS
Tel: 01444 871444

ARUN DISTRICT COUNCIL EP/48/20/DOC

1.0 INTRODUCTION

This statement has been prepared for Randall & Chisnall Construction Ltd in relation to a proposal at 16 Worthing Road, Ferring, BN16 1AZ.

The statement sets out a Surface Water Drainage Strategy in compliance with local and national SuDS policy in order to address Pre-commencement Condition 10 of Application Ref: EP/121/17/PL as approved by Arun District Council.

No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.

2.0 EXISTING AND PROPOSED SITES

This site is a rectangular plot of area 0.11ha situated on the south side of Worthing Road (B2140) – refer to Site Location Plan in Appendix A. The southern boundary backs on to Langmead Recreation Ground and bounding the site to the east and west are neighbouring properties of the same road.

The site contains a single detached residential dwelling with associated garage.

Topography: the site is fairly flat with boundary levels in the region of +10.00m AOD, although the front garden and driveway are set lower at minimum +9.500m AOD – refer to Topographical Survey in Appendix B.

Geology: from the Geotechnical Assessment Report No. R18-12714 by Ashdown Site Investigation, borehole logs to maximum depths of 3m recorded a geology of River Terrace Deposits over White Chalk – refer to borehole logs in Appendix C.

Existing drainage: is unknown but is assumed to discharge to the public sewer in Worthing Road, which according to Southern Water's records is a foul sewer of diameter 225mm – refer to sewer records in Appendix D. There are no surface water sewers close to the site.

Proposed site: the proposal is to construct a block of 6No flats in replacement of the existing structures – refer to Appendix E.

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3.0 SURFACE WATER DRAINAGE STRATEGY

As part of the Geotechnical Assessment by Ashdown Site Investigation, falling head soakage tests were undertaken on the 24 January 2018, the results of which are contained in Appendix C. The results of the infiltration tests indicate that the River Terrace Deposits and White Chalk Subgroup possess moderate infiltration characteristics. The lowest infiltration rate recorded in the River Terrace Deposits was 8.6 x 10^{-5} m/s, and this figure has been used to inform the drainage strategy design.

The Site Drainage Plan is contained in Appendix F and shows all surface water runoff draining to ground via a porous sub-base located under the parking area to the front of the proposed flats. The parking area itself is shown surfaced in permeable paving.

Surface water from the roofs and hardstanding areas (other than the parking) are piped into the porous sub-base via distribution blocks i.e. cellular crates, which allow drained runoff to diffuse efficiently through the sub-base medium.

Micro Drainage results – refer to Appendix G – show that a volume of 13.4m.cu of infiltration storage is required to drain the runoff from the proposed roofs and hardstanding areas following a 1 in 100 storm with +40% climate change allowance. The Site Drainage plan in Appendix F shows an infiltration storage volume of 14.7m.cu under the 189m.sq area of permeable paving provided by 260mm depth of 30% voids' sub-base (189 x 0.260 x 0.3=14.7).

Pollution control: before draining to ground, all surface water runoff will pass through and be filtered by the sub-base medium under car park, the which will comprise 10-63mm open-graded crushed rock.

Groundwater: monitoring results from November to March by Ashdown Site Investigation are contained in Appendix C. The maximum level recorded was at 1m below ground level in window sampler WS1 which is at ground level +9.63m AOD. Maximum groundwater level to AOD is therefore +8.63m. The base level of the infiltration sub-base is set at +9.63m (reference Site Drainage plan, Appendix F), which is 1m above the highest recorded groundwater level (9.63 – 8.63 = 1.00).

Second Issue: 02 June 2020

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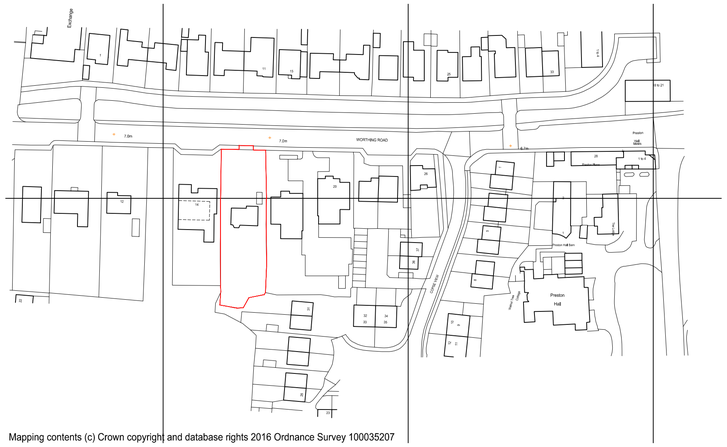
APPENDIX A – SITE LOCATION PLAN

ARUN DISTRICT COUNCIL EP/48/20/DOC



Mapping contents (c) Crown copyright and database rights 2016 Ordnance Survey 100035207

Location Plan as existing - 1:1250 @ A1

0 20 40 60 80 100
Metres

scale bar - 1:1250 @ A1

Block Plan As Proposed - 1:500 @ A1

scale bar - 1:500 @ A1

NOTES

- DO NOT SCALE OFF THIS DRAWING EXCEPT FOR PLANNING PURPOSES
- CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED
- ALL GOODS MATERIALS AND WORKMANSHIP MUST CONFORM WITH CURRENT BUILDING REGULATIONS, BRITISH STANDARDS AND CODES OF PRACTICE
- COPYRIGHT OF THIS DRAWING IS RETAINED BY THE ARCHITECT AND IT MUST NOT BE REPRODUCED WITHOUT WRITTEN CONSENT

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CLIENT
Randall & Chisnall Construction Ltd

JOB TITLE
Proposed Development
16 Worthing Road
East Preston
Littlehampton
BN16 1AZ

DRAWING TITLE
Location & Block Plans

PLANNING SSUE

DATE	SCALE	DRAWN BY
Aug '17	as indicated	ec
		CHECKED BY mf

JOB NO.	DRAWING NO.	REVISION
1681	2.06	

ARUN DISTRICT COUNCIL EPH9201/DOC

APPENDIX B – TOPOGRAPHICAL SURVEY

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TOPOGRAPHICAL SURVEY

OVERLAID WITH OS MAP

0m1 2 3 45m 10m 20m

SCALE 1:200

NOTES

DO NOT SCALE OFF THIS DRAWING
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LEGEND

BANKING (Top / Bottom)
BUSHES & HEDGES
MARSH
TREES — 3T / 0.2 / 6 (No of trees / Size of trees / Height of Tree)
NOTE:- SPREADS AND HEIGHTS ARE INDICATIVE ONLY
GATES (Wide / Double)
RETAINING WALL (Wide)
SLOPING MASONRY
FENCE
WALL (Width drawn to scale) 0.25m
BUILDING
OPEN SIDED BUILDING
GLASS ROOFED
CONTOURS 25.50
OVERHEAD WIRES

ABBREVIATIONS (WHERE APPLICABLE)

AIR VALVE	AV	MANHOLE	MH
BED LEVEL	BL	MARKER	MKR
BELISHA BEACON	BB	NOTICE BOARD	NB
BOLLARD	B	NAME PLATE	NP
BRITISH TELECOM BOX	BTB	OVERHEAD WIRES	OHW
BRITISH TELECOM MANHOLE	BTMH	PARKING METER	PM
BRICKWORK	BKWK	RIDGE LEVEL	RID
BUS STOP	BS	ROAD SIGN	RS
CABLE TV	CATV	RODDING EYE	RE
COVER LEVEL	CL	RETAINING WALL	RTW
CABLE MARKER	CM	SLUICE VALVE	SV
CONCRETE POST	CP	STOP COCK	SC
DOWN PIPE	DP	SOFFIT LEVEL	SOF
DROP KERB	DK	SPOT LEVEL	SL
EAVES LEVEL	EA	STRUCTURAL SLAB LEVEL	SSL
ELECTRICITY CABLE PIT	ELCP	STATION	STN
ELECTRICITY CONTROL BOX	ECB	TREE STUMP	ST
ELECTRICITY POLE	EP	TELEGRAPH POLE	TP
EARTH ROD	ER	TELEPHONE CALL BOX	TCB
FIRE HYDRANT	FH	TOP OF KERB	TK
FLOWER BED	FB	TURNSTILE	TS
FOOTPATH	FP	TRAFFIC LIGHT	TL
FLOOR LEVEL	FL	TOP OF WALL	TW
FLAG STAFF	FS	UNDERGROUND	UG
GAS VALVE	GV	UNABLE TO LIFT	UTL
GATE STOP	GS	UNABLE TO SURVEY	UTS
GULLY	G	VENT PIPE	VP
GULLY OUTLET	GO	WATER LEVEL	WL
INSPECTION COVER	IC	WATER METER	WM
INVERT LEVEL	IL	WASH OUT	WO
LAMP POST	LP	WASTE PIPE	WP
LETTER BOX	LB	WATER VALVE	WV

BUILDING

ACCESS HATCH	AH	WINDOW CILL LEVEL	WCL
ARCH HEAD HEIGHT	AHH	WINDOW HEAD LEVEL	WHL
ARCH HEAD LEVEL	AHL	SKYLIGHT	SL
ARCH SPRINGER HEIGHT	ASH	SOIL AND VENT PIPE	SVP
ARCH SPRINGER LEVEL	ASL	THRESHOLD LEVEL	THL
BEAM	BE	WASH BASIN	WB
BEAM HEIGHT	BH	WATER TANK	WT
BEAM HEAD LEVEL	BHL		
BEAM SOFFIT LEVEL	BSL		
COLUMN	Col		
CILL TO HEAD	C-H		
CEILING LEVEL	CL		
DOOR HEAD	DH		
DOOR HEAD LEVEL	DHL		
FIRE ALARM	FA		
FLOOR TO CILL	F-C		
FALSE CEILING	FC		
FLOOR TO CEILING HEIGHT	F-CH		
FINISHED FLOOR LEVEL	FFL		
HOSE REEL	HR		
ROOF LEVEL	RL		
RADIATOR	Rad		
RAIN WATER PIPE	RWP		

FENCES

BARBED WIRE FENCE	BWF
CORRUGATED IRON FENCE	CIF
CLOSE BOARD FENCE	CBF
CHAIN LINK FENCE	CLF
CHESTNUT PALING FENCE	CPF
FENCE POST	FPO
INTERWOVEN FENCE	IWF
IRON RAILING FENCE	IRF
LARCH LAP FENCE	LLF
MISCELLANEOUS FENCING	Misc.F
PALISADE FENCE	PF
POST AND CHAIN FENCE	PCF
POST AND RAIL FENCE	PRF
POST AND WIRE	PWF
TUBULAR STEEL RAIL	TSRF
WIRE MESH FENCE	WMF
(Concrete Post/Steel Post/Timber Post)	(CP/SP/TP)

Note:
Survey is based on arbitrary height datum of +10.00 metres Stn A

REV	DATE	BY	AMENDMENT

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CLIENT
Randall & Chisnall Construction Ltd

JOB TITLE
16 Worthing Road
East Preston
West Sussex
BN16 1AZ

DRAWING TITLE
Topographical Survey

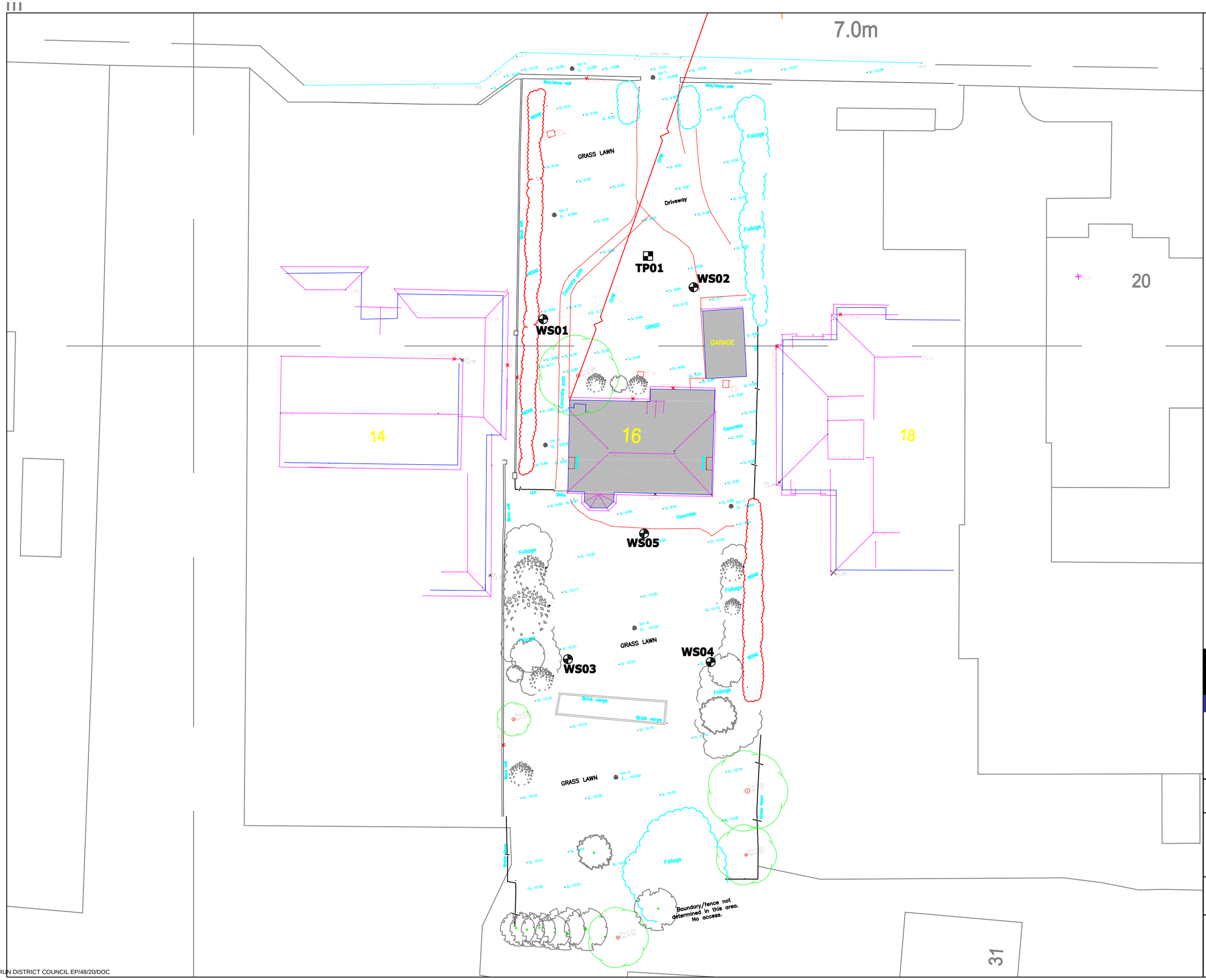
DATE	SCALE	DRAWN BY	CHECKED BY
31.03.17	1:200 @ A1	DJ	MF

JOB NO.	DRAWING NO.	REVISION
1681	1.01	

ARUN DISTRICT COUNCIL EPF4600/BRC

APPENDIX C – EXTRACTS FROM GEOTECHINCAL ASSESSMENT REPORT

ARUN DISTRICT COUNCIL EP/48/20/DOC



ASHDOWN SITE INVESTIGATION
L•I•M•I•T•E•D

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DRAWN BY:	DATE:	SCALE (at A3):
TSH	Jan 2018	1:250

SITE:
16 Worthing Road
East Preston
West Sussex

REPORT REF.:	FIGURE NO.:
R18-12714	2

DRAWING TITLE:
Site Plan

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

Table 4. Calculated Infiltration Rates

Exploratory Hole	Test Response Zone Depth (m)		Stratum	Infiltration Rate (f) (m/sec)	Driving Head of Water (m)
	Top	Bottom			
TP01 – Test 1	0.41	0.85	River Terrace Deposits	3.4×10^{-4}	-
TP01 – Test 2	0.40	0.85	River Terrace Deposits	2.1×10^{-4}	-
TP01 – Test 3	0.40	0.85	River Terrace Deposits	8.6×10^{-5}	-
WS02 – Test 1	2.00	3.00	White Chalk Subgroup	1.1×10^{-5}	1.0
WS02 – Test 2	2.00	3.00	White Chalk Subgroup	1.1×10^{-5}	1.0

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

The results from the infiltration tests indicate that the near surface River Terrace Deposits and White Chalk Subgroup soils possess moderate infiltration characteristics. However, it is noted that chalk deposits were not encountered within the upper 3m of the majority of the site and the fine grained River Terrace Deposits may possess poorer infiltration rates due to their high fines content (clay and silt). It would therefore be prudent to undertaken larger scale testing at the proposed soakaway locations in order to establish the soil infiltration rate that may be achievable at these locations. The results from the infiltration tests should be provided to engineers responsible for the design of the drainage system.

To minimise the risk of subsidence, point discharging infiltration systems (conventional ring or trench soakaways) should be constructed a minimum of 10m away from proposed or existing buildings. Where dissolution features are known to be prevalent, point discharging infiltration systems should preferably be avoided, but where this is not practical the guidance recommends that they should be sited at least 20m away from any foundations.

In the event that discharge to ground via infiltration systems is proposed, it is recommended that designers of the system provide for the prevention of pollution of groundwater. In this regard attention is drawn to guidance provided within BRE 365 and by the Environment Agency which requires a contamination risk assessment to be carried out in order to assess the potential risk to groundwater. Further works would be required in order to undertake a groundwater contamination risk assessment of the site. Appropriate consideration should also be given to whether there is a need for inclusion of interceptors and oil separators. The Local Authority and/or relevant water company should be consulted in relation to consent for discharge of water from rooftops, areas of hardstanding and roadways to drains.

Ashdown Site Investigation Ltd.
February 2018

ARUN DISTRICT COUNCIL EP/48/20/DOC

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Tel: 01273 483119

Site Name: 16 Worthing Road, East Preston, West Sussex

Job Number: R18-12714

Start Date: 24/01/2018

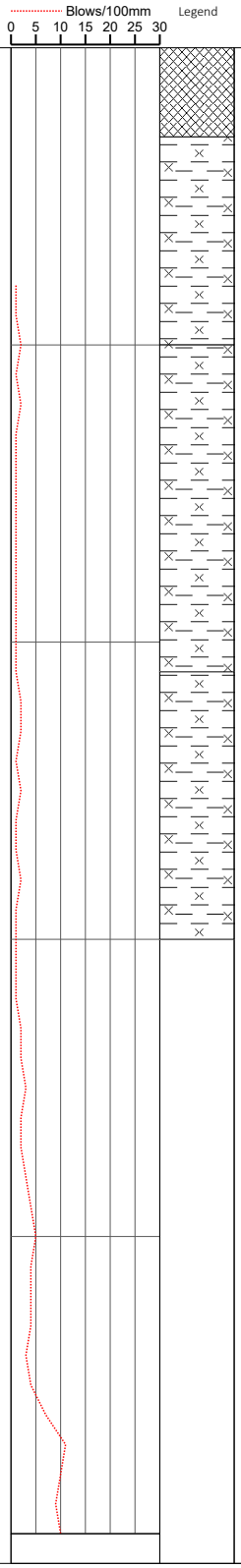
End Date: 24/01/2018

Borehole Number: **WS01**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Legend	Depth	Stratum Description
						0.00	Topsoil over, MADE GROUND: Light brown slightly gravelly silty clay. Gravel is subangular to subrounded fine to medium brick, concrete, flint and chalk.
	D	0.20				0.30	Firm light orange brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium flint. (River Terrace Deposits)
	D	0.60					
	H	0.70		60			
	U	0.80	1.00				
	V	1.00		90		1.00	Stiff light orange brown mottled light grey and dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium flint and ironstone. (River Terrace Deposits)
	D	1.50					
	H	1.50		50			becoming firm below 1.50m depth.
	H	1.60		40			
	U	1.80	2.00				
	V	2.00		60		2.10	Firm light grey mottled light orange brown slightly gravelly silty CLAY. Sand is fine. Gravel is subangular to rounded fine to medium flint. (River Terrace Deposits)
	H	2.30		40			
	D	2.50					
	H	2.60		40			
	U	2.80	3.00				
						3.00	End of borehole at 3.00m

Samples and In Situ Testing

Dynamic Probe



Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: ML

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Tel: 01273 483119

Site Name: 16 Worthing Road, East Preston, West Sussex

Job Number: R18-12714

Start Date: 24/01/2018

End Date: 24/01/2018

Borehole Number: **WS02**

Standpipe	Samples and In Situ Testing: Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe: Blows/100mm (0 5 10 15 20 25 30)	Legend	Depth	Stratum Description
							0.00	Topsoil over, MADE GROUND: Light brown gravelly silty clay. Gravel is angular to subrounded fine chalk, flint and concrete.
							0.40	Firm light brown mottled light grey slightly gravelly silty CLAY. Gravel is subangular to rounded fine to medium flint and ironstone. (River Terrace Deposits)
	H	0.50		40				
	D	0.80						
	V	1.00		90				
	H	1.30		60				
	D	1.50						
	H	1.80		60				
							1.90	Stiff light yellow grey sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subangular to rounded fine to medium flint and chalk. (River Terrace Deposits)
	D	2.10						
							2.30	Structureless low density off white mottled light orange brown CHALK recovered as gravel and silt. (White Chalk Subgroup, Grade C or better)
	D	2.80						
							3.00	End of borehole at 3.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: ML

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Site Name: 16 Worthing Road, East Preston, West Sussex

Job Number: R18-12714

Start Date: 24/01/2018

End Date: 24/01/2018

Borehole Number: **WS03**

Standpipe	Samples and In Situ Testing: Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe (Blows/100mm)	Legend	Depth	Stratum Description
	D	0.10					0.00	Topsoil.
							0.30	Firm light orange brown mottled light grey and dark brown slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subangular fine to medium ironstone. (River Terrace Deposits)
	D	0.60						
	H	0.60		40				
	H	0.90		60				
	V	1.00		80				
	H	1.20		50				
	D	1.40						
	H	1.70		25				
	V	2.00		50				
	H	2.30		40				
	D	2.60						
	H	2.60		90				
	D	2.90						
	V	3.00		120			3.00	End of borehole at 3.00m

Dynamic Probe scale: 0 5 10 15 20 25 30

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: ML

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Site Name: 16 Worthing Road, East Preston, West Sussex

Job Number: R18-12714

Start Date: 24/01/2018

End Date: 24/01/2018

Borehole Number: **WS04**

Standpipe	Samples and In Situ Testing: Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe: Blows/100mm (0 5 10 15 20 25 30)	Legend	Depth	Stratum Description
							0.00	Topsoil.
							0.25	Soft light orange brown silty CLAY with frequent rootlets. (River Terrace Deposits - Undifferentiated)
	D	0.30						
	H	0.40		<25				
	H	0.70		35				
	D	0.80						
	V	1.00		90			1.00	Firm light orange brown mottled light grey slightly gravelly silty CLAY. Gravel is subangular fine ironstone. (River Terrace Deposits - Undifferentiated)
	H	1.30		40				becoming slightly sandy below 1.10m depth. Sand is fine.
	H	1.80		40				
	V	2.00		60				
	D	2.10						
	H	2.20		60				
	H	2.70		75				becoming stiff below 2.70m depth.
	D	2.80						
	V	3.00		80			3.00	End of borehole at 3.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: ML

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Tel: 01273 483119

Site Name: 16 Worthing Road, East Preston, West Sussex

Job Number: R18-12714

Start Date: 24/01/2018

End Date: 24/01/2018

Borehole Number: **WS05**

Standpipe	Sample/ Test Type	Samples and In Situ Testing: Depth From (m)	Depth To (m)	Test Result	Dynamic Probe: Blows/100mm (0 5 10 15 20 25 30)	Legend	Depth	Stratum Description
							0.00	Topsoil over, MADE GROUND: Dark brown slightly gravelly silty clay. Gravel is subangular to subrounded fine to medium brick, concrete, chalk and flint.
	D	0.30					0.40	Soft light brown mottled light grey and dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine ironstone. (River Terrace Deposits - Undifferentiated)
	H	0.60		25				
	D	0.70						
	V	1.00		90				becoming stiff at 1.00m depth.
	H	1.30		50				becoming firm below 1.30m depth.
	H	1.60		50				
	U	1.80	2.00					
	V	2.00		60			2.00	Firm light orange brown mottled light grey silty CLAY. (River Terrace Deposits - Undifferentiated)
	H	2.30		40				
	D	2.40						
	H	2.70		50				
	U	2.80	3.00					
	V	3.00		60			3.00	End of borehole at 3.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: ML

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Tel: 01273 483119

Site Name: 16 Worthing Road, East Preston, West Sussex

Job Number: R18-12714

Start Date: 24/01/2018

End Date: 24/01/2018

Trial Pit Number: **TP01**

Samples and In Situ Testing: Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Legend	Depth/ Reduced Level	Stratum Description
					0.00	Topsoil over, MADE GROUND: Light grey brown slightly gravelly silty clay. Gravel is subangular to subrounded fine to medium brick, concrete, flint, slag and chalk.
D	0.30				0.40	Stiff light orange brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium flint and chalk. (River Terrace Deposits - Undifferentiated)
D	0.70					
V	0.80		120		0.85	End of trial pit at 0.85m

Remarks

Groundwater: Trial pit dry on completion.

Stability: Trial pit stable on completion.

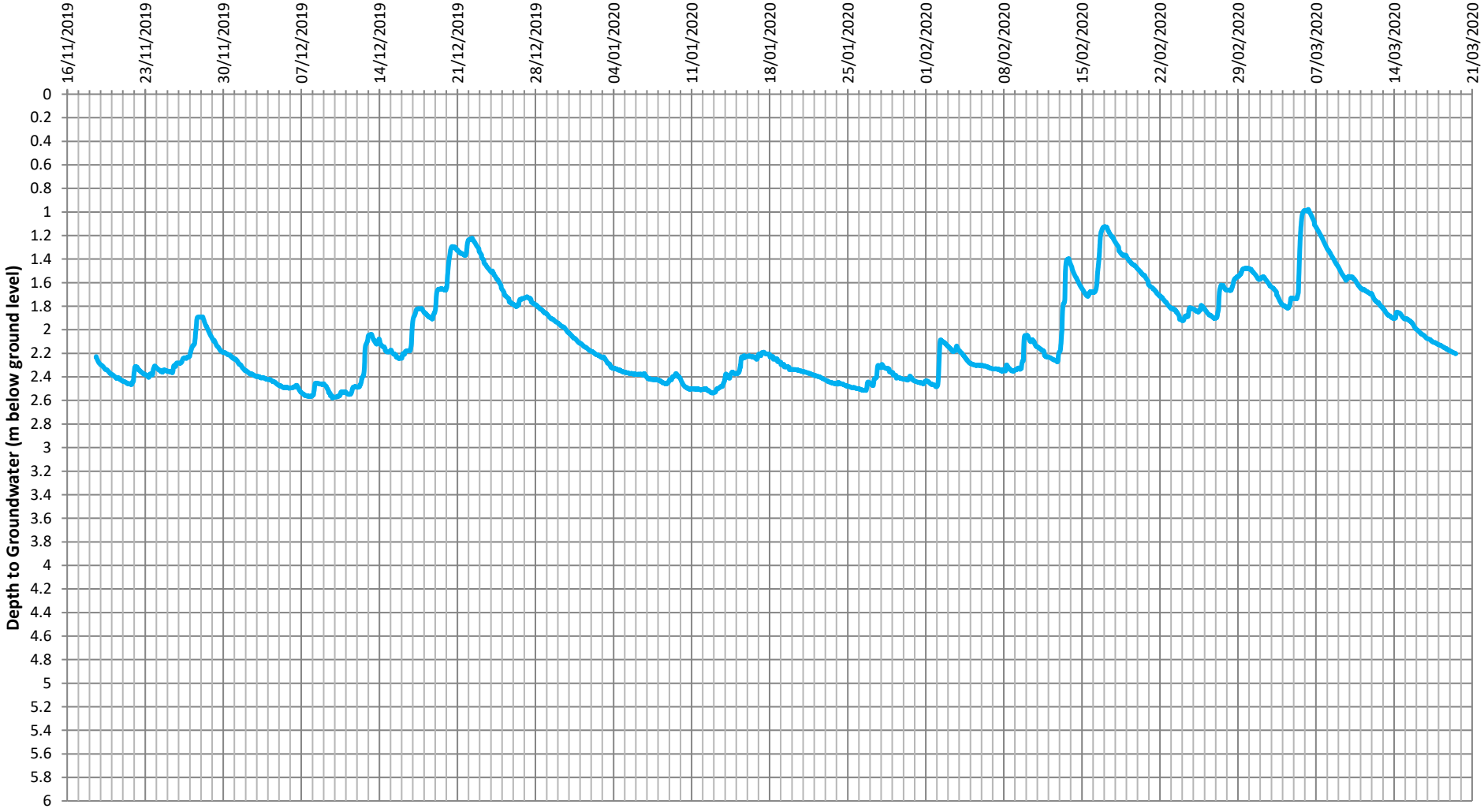
Notes: n/a

Excavation Method:	HDP
Pit Length:	0.30m
Pit Width:	0.30m
Made By:	ML

Ashdown Site Investigation Limted

Site: 16 Worthing Road, East Preston, West Sussex	Report No. P14285

Groundwater Monitoring Results - WS1



APPENDIX D – SEWER RECORDS SOUTHERN WATER

ARUN DISTRICT COUNCIL EP/48/20/DOC

SEWER RECORDS PAGE 1 OF 2

102938

O.S. REF. TQ0602NE	Drawn by: ahmadr	The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determnined on site. WARNING: BAC pipes are constructed of Bonded Asbestos Cement WARNING: Unknown (UNK) materials may Include Bonded Asbestos Cement	N
	Scale: 1:1250		
Title: 331309_16 Worthing Road Ferrin	Date: 14/03/2019	Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 298530.	Southern Water

ARUN DISTRICT COUNCIL EP/48/20/DOC

SEWER RECORDS PAGE 2 OF 2

Node	Cover	Invert	Size	Material	Shape
4602X	8.24	5.5	175	VC	CIRC
4701X	7.62	4.97	175	VC	CIRC
4702X	7.97	5.3	175	VC	CIRC
4703X	7.86	5.52	150	VC	CIRC
4801X	6.95	3.02	200	VC	CIRC
4802X	6.83	3.91	150	VC	CIRC
4901X	5.77	3.58	175	VC	CIRC
5801X	7.18	4.98	150	VC	CIRC
5802X	7.37	2.75	200	VC	CIRC
6701X	7.72	5.87	150	VC	CIRC
6801X	7.36	5.78	150	VC	CIRC
6802X	7.1	2.37	200	VC	CIRC
7701X	7.51	5.3	150	VC	CIRC
7702X	7.58	4.63	150	VC	CIRC
7801X	7.49	6.99	150	VC	CIRC
7802X	6.98	2.27	200	VC	CIRC
7803X	6.44	1.96	225	VC	CIRC
7903X	7.23	5.661	150	VC	CIRC
7904X	7.19	5.484	150	VC	CIRC
7905X	7.23	5.402	150	VC	CIRC
8701X	6.54	4.24	150	VC	CIRC
8801X	6.42	1.76	225	VC	CIRC
8804X	6.35	5.07	150	VC	CIRC
8805X	6.5		225	CP	CIRC
8806X	7.03		OTHER	BRC	CIRC
8807X	7.23	1.16	225	CP	CIRC
8902X	7.33	5.23	150	VC	CIRC
8903X	6.81	5.077	150	VC	CIRC

Node	Cover	Invert	Size	Material	Shape

Node	Cover	Invert	Size	Material	Shape

Node	Cover	Invert	Size	Material	Shape

LEGEND - SEWERS

LINE STYLES / COLOURS

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

MATERIALS

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

- Manhole (SW)
- Manhole (F&C)
- LH: Lamp hole (SW)
- LH: Lamp hole (F&C)
- Pumping Station (SW)
- Pumping Station (F&C)
- SE: Side entry manhole (SW)
- SE: Side entry Manhole (F&C)
- BS: Blind shaft (SW)
- BS: Blind shaft (F&C)
- EJ: Ejector station (SW)
- EJ: Ejector station (F&C)
- WD: Watertight door (SW)
- WD: Watertight door (F&C)
- FC: Flushing ch. Man-e (SW)
- FC: Flushing ch. Man-e (F&C)
- FC: Flushing ch. No-e (SW)
- FC: Flushing ch. No-e (F&C)
- DC: Demarcation Chamber
- WO: Washout (SW)
- WO: Washout (F&C)
- RE: Rodding Eye (SW)
- RE: Rodding Eye (F&C)
- GP: Gauging point (SW)
- GP: Gauging point (F&C)
- IC: Intercept chamber (SW)
- IC: Intercept chamber (F&C)
- ST: Storm Tank (SW)
- ST: Storm Tank (F&C)
- VC: Vortex chamber (SW)
- VC: Vortex chamber (F&C)
- Label ellipse
- Dummy/S24 manhole
- Outfall
- PK: Penstock chamber
- DB: Damboards
- SO: Storm Overflow
- Backdrop manhole
- Other (s)
- Other
- Change in sewer (s)
- Change in sewer
- Reflux valve
- Flap valve
- Cascade
- AN: Anode
- Valve
- Closed Valve
- Air Valve
- HB: Hatch box (SW)
- HB: Hatch box (F&C)
- Direction arrow
- EM: Emptying valve
- CP: Catchpit
- S: Soakaway
- Inlet
- BP: Balancing Pond
- WTW: Wastewater treatment works
- MTW: Marine treatment works
- Outfall headworks
- VT: Vent
- VE: Vent column
- TS: Tidal storage tank
- Blank end
- Head of Public Sewer
- MPS: Micro Pumping Station

SHAPES (S)

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

NODE REFERENCING SYSTEM

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

Drawn by:	ahmadr
Title:	331309_16 Worthing Road Ferrin
Date:	14/03/2019

Southern Water

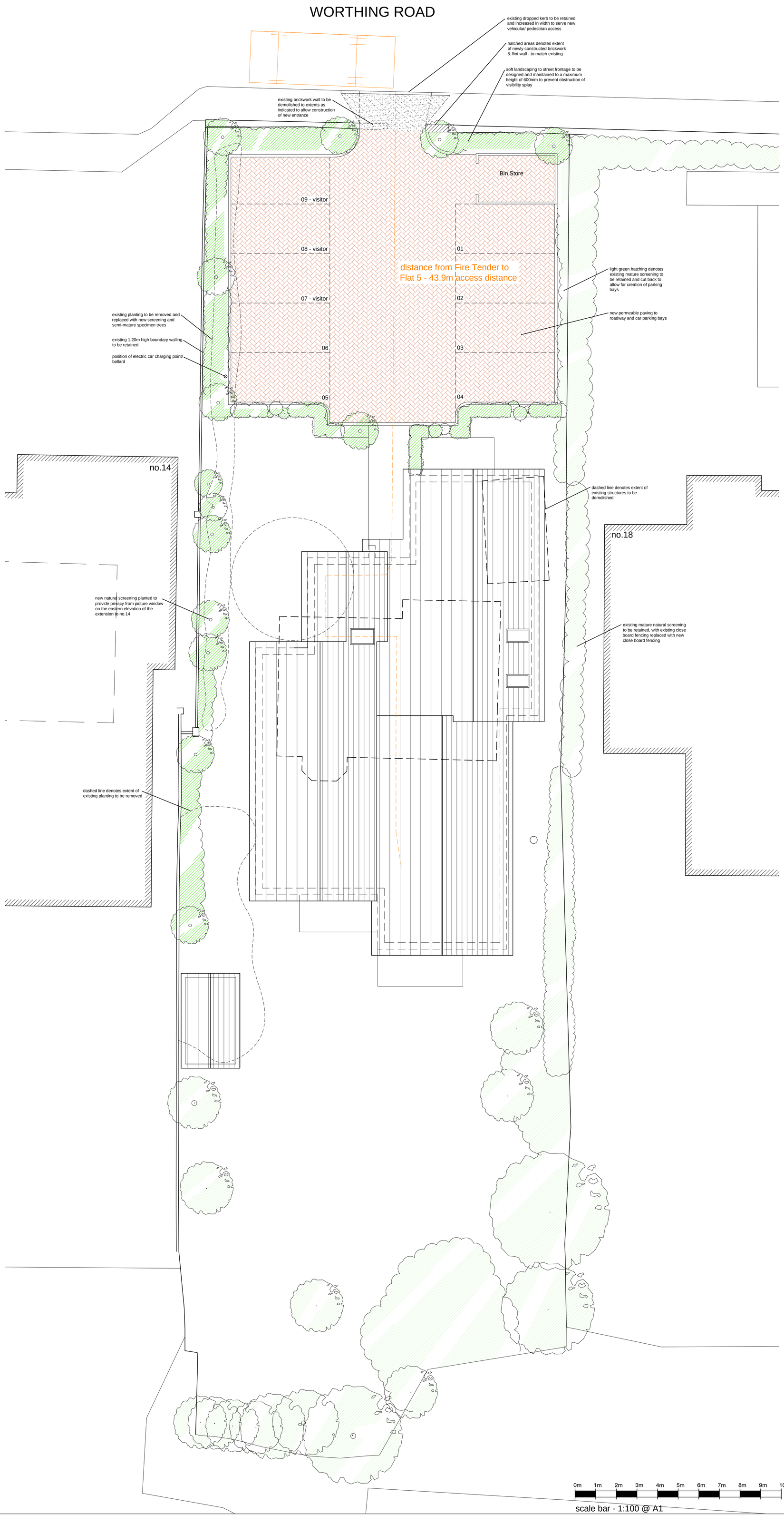
ARUN DISTRICT COUNCIL EF/49/20/DOC

APPENDIX E – PROPOSED SITE PLAN

ARUN DISTRICT COUNCIL EP/48/20/DOC

NOTES

DO NOT SCALE OFF THIS DRAWING
CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED
ALL GOODS MATERIALS AND WORKMANSHIP MUST CONFORM WITH CURRENT BUILDING REGULATIONS, BRITISH STANDARDS AND CODES OF PRACTICE
COPYRIGHT OF THIS DRAWING IS RETAINED BY THE ARCHITECT AND IT MUST NOT BE REPRODUCED WITHOUT WRITTEN CONSENT



REV	DATE	BY	AMENDMENT
C	24.10.17	ec	bin store amended following planners comments
B	27.09.17	ec	feature windows omitted and rooflights added to first floor flats
A	16.08.16	ec	PLANNING ISSUE

folkes architects
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t. 01903 868629
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CLIENT
Randall & Chisnall Construction Ltd

JOB TITLE
Proposed Development
16 Worthing Road
East Preston
Littlehampton
BN16 1AZ

DRAWING TITLE
Proposed Site Plan

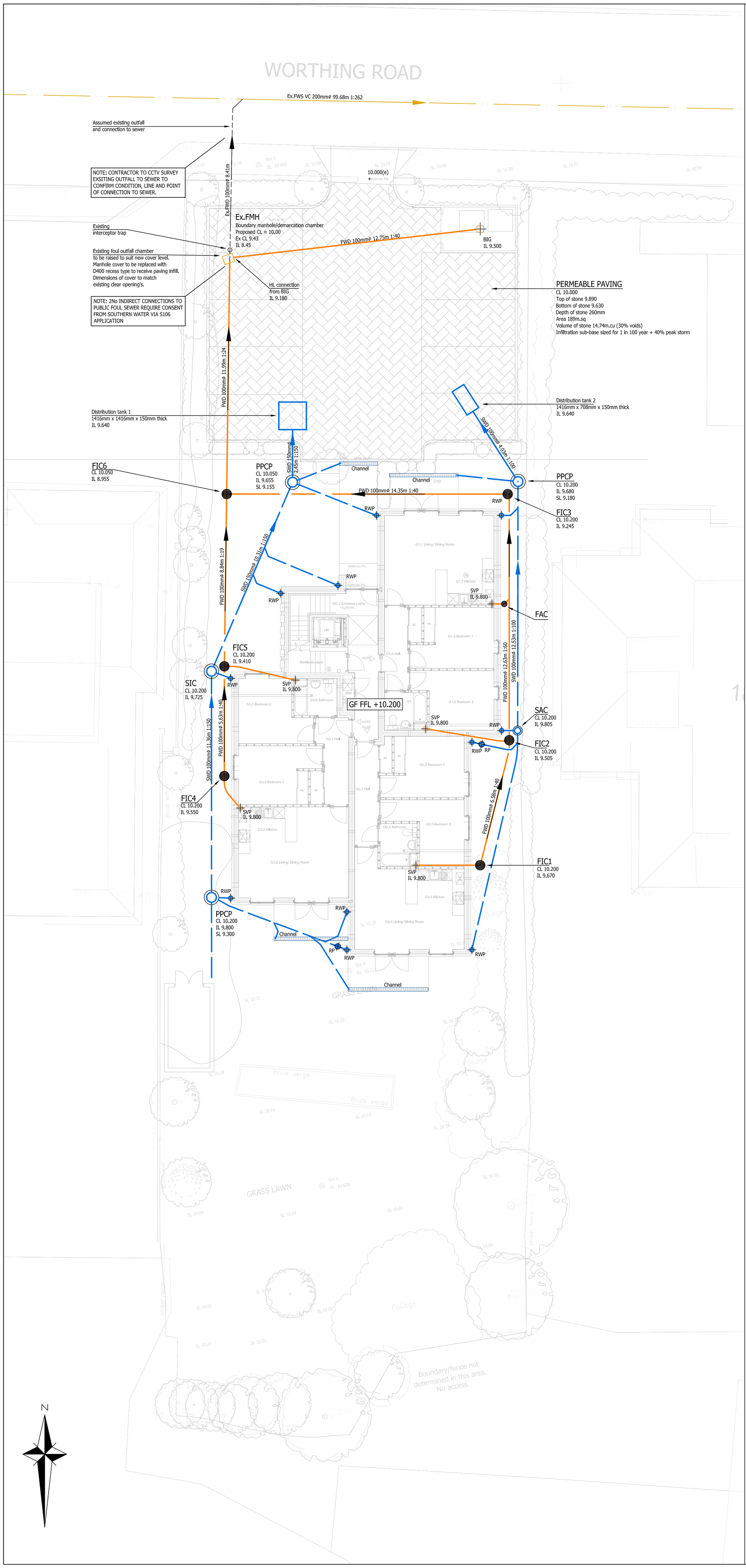
PLANNING ISSUE

DATE	SCALE	DRAWN BY / CHECKED BY
Aug '17	1:100 @ A1	ec / mf

JOB NO.	DRAWING NO.	REVISION
1681	2.01	C

APPENDIX F – SITE DRAINAGE PLAN AND DETAILS

ARUN DISTRICT COUNCIL EP/48/20/DOC



GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.

2. Tender or billing drawings shall not be used for construction or the ordering of materials.

3. Do not scale. All dimensions and levels to be site confirmed.

4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements

5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.

6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.

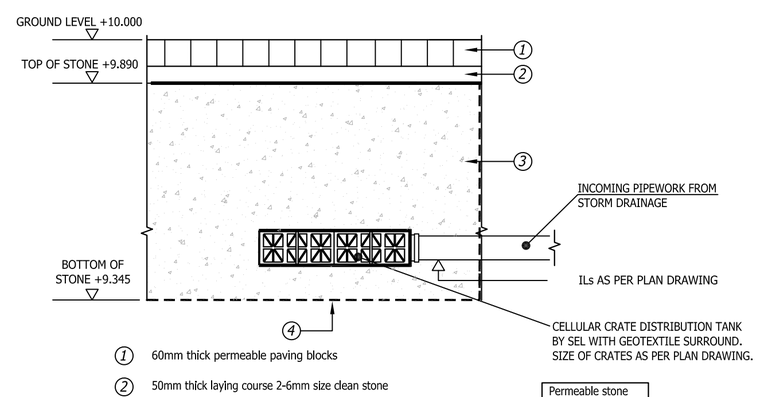
KEY

- Surface water drain
- Foul drain
- Existing foul sewer
- RWP — Rainwater pipe
- RP — Rainwater pipe
- SIC — 450mm SW plastic inspection chamber
- PPCP — 600mm SW plastic inspection chamber
- FIC — 450mm Foul plastic inspection chamber
- FAC — 300mm Foul plastic inspection chamber
- BIG — Bin store gully (trapped)
- Drainage channel

PERMEABLE PAVING
TOTAL INFILTRATION
SYSTEM

ABBREVIATIONS

BIG	BIN STORE GULLY
CL	COVER LEVEL
Ex.FMH	EXISTING FOUL MANHOLE
Ex.FWS	EXISTING FOUL SEWER
FAC	FOUL ACCESS CHAMBER
FIC	FOUL INSPECTION CHAMBER
FFL	FINISHED FLOOR LEVEL
FWD	FOUL DRAIN
GL	GROUND LEVEL
IL	INVERT LEVEL
RP	RODDING POINT
RWP	RAINWATER PIPE
SIC	SURFACE WATER INSPECTION CHAMBER
SL	SUMP LEVEL
SVP	SOIL VENT PIPE
SWD	SURFACE WATER DRAIN



1. 60mm thick permeable paving blocks
2. 50mm thick laying course 2-6mm size clean stone
3. 545mm Sub-base 10 - 63mm size open graded crushed rock with no fines (30% voids)
4. Permeable geotextile under compacted formation and to sides of sub-base

Permeable stone specifications as BS 7533 part 13

SECTION THROUGH PERMEABLE PAVING SYSTEM
SHOWING DISTRIBUTION BLOCK

DESIGN NOTES

1. INFILTRATION STORAGE SUB-BASE SIZED FOR THE 1 IN 100 YR STORM + 40%.

2. INFILTRATION STORAGE DESIGN BASED ON INFILTRATION RATE OF 8.6 x 10^{-5} m/s DERIVED FROM FALLING HEAD TESTS WITHIN RIVER TERRACE DEPOSITS RERERENCE GEOTECHNICAL ASSESSMENT REPORT No. R18-12714 BY ASHDOWN SITE INVESTIGATION LTD.

3. BRE 365 SOAKGE TESTING AT LOCATION AND DEPTH OF PROPOSED PERMEABLE PAVING SUB-BASE SHOULD BE UNDERTAKEN PRIOR TO DETAILED DESIGN.

4. LOCATION OF RWP ON CYCLE STORE TO BE CONFIRMED BY ARCHITECT.

5. THIS DRAWING HAS BEEN PRODUCED WITHOUT INPUT FROM A PROPOSED LEVELS PLAN. ALL COVER LEVELS SHOWN ARE PRELIMINARY.

6. CONTRACTOR TO UNDERTAKE CCTV SURVEY OF EXISTING DRAINAGE SYSTEM, IN PARTICULAR TO IDENTIFY THE EXISTING OUTFALL'S CONDITION, LINE AND POINT OF CONNECTION TO SEWER.

7. 2No INDIRECT CONNECTIONS TO PUBLIC FOUL SEWER REQUIRE CONSENT FROM SOUTHERN WATER VIA S106 APPLICATION.

Rev	Amendments	Date	Dsn	Chk
P1	INITIAL ISSUE	06.05.20	JR	MR

Status: PRELIMINARY

Client: RANDALL & CHISNALL CONSTRUCTION LTD

Architect: FOLKES ARCHITECTS

Project: 16 WORTHING ROAD FERRING, BN16 1AZ

Title: SITE DRAINAGE

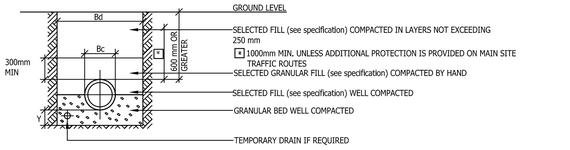
Date: MAY 2020 | Scale @ A1: 1:100

Clients Ref. | Project Ref.

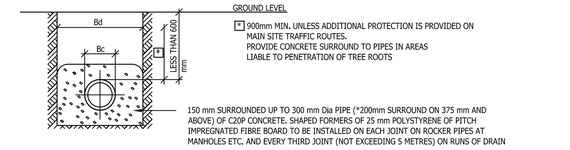
gta Civils & Transport
Gloucester House, 66a Church Walk,
Burgess Hill, West Sussex, RH15 9AS
Tel.01444 871444 Web: www.gtacivils.co.uk

Drawing Number: 7338/1601 | Rev.: P1

CLASS B GRANULAR BED



CONCRETE BED & SURROUND (C.B.S.)



DIMENSION Y = - IN ROCK, CONCRETE OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS, LARGE FLINTS OR STONES OR OTHER IRREGULAR HARD SPOTS THAT RESULT IN UNEVEN TRENCH BOTTOM Y=1/4 Bc OR 200 mm WHICH EVER IS THE GREATER, BUT NOT LESS THAN 50mm UNDER COLLARS

NOTES - IN SOILS THAT PERMIT AN EVEN TRENCH BOTTOM TO BE EXCAVATED Y=1/6 Bc OR 150 mm WHICH EVER IS GREATER, BUT NOT LESS THAN 50 mm UNDER COLLARS

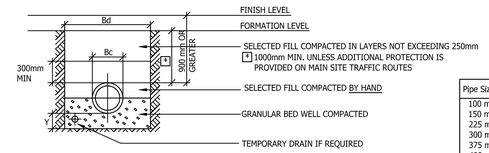
1) FOR PIPES EXCEEDING 600 mm DIA REFER TO ENGINEER
2) IN WET OR SOFT GROUND SEEK GUIDANCE FROM ENGINEER
3)THE BEDDINGS MAY BE MODIFIED FOR CERTAIN SUB-SOIL CONDITIONS AT THE ENGINEERS DISCRETION
4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL PROTECTION IN AREAS SUBJECT TO LOADS FROM SITE TRAFFIC. THE CONTRACTOR SHALL IDENTIFY THESE ZONES AND RESTRICT TRAFFIC ELSEWHERE
5) SEE ALSO BS 8301
6) FOR GREATER TRENCH WIDTHS SEEK GUIDANCE FROM ENGINEER

PIPE SIZE	Bd TRENCH WIDTH
100 mm	0.6 m
150 mm	0.6 m
225 mm	0.7 m
300 mm	0.8 m
375 mm	1.1 m
400 mm	1.1 m
450 mm	1.2 m
500 mm	1.2 m
600 mm	1.4 m

GRANULAR MATERIAL	
PIPE SIZE	AGGREGATE
100 mm	10 mm SINGLE SIZE
150 mm	OR 14-5 mm GRADED 10,14,20 SINGLE SIZE OR
150 mm- 500 mm	20-25 mm GRADED 10,14,20 OR 40 mm SINGLE
600 mm	CRUSHED ROCK OR 40-45 mm GRADED

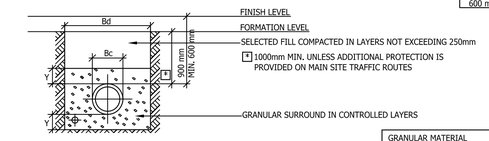
BEDDING DETAILS LANDSCAPE AREAS

CLASS B GRANULAR BED

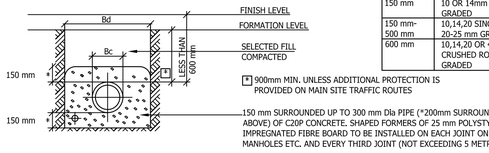


Pipe Size	Trench Width
100 mm	0.6 m
150 mm	0.6 m
225 mm	0.7 m
300 mm	0.8 m
375 mm	1.1 m
400 mm	1.1 m
450 mm	1.2 m
500 mm	1.2 m
600 mm	1.4 m

CLASS S GRANULAR SURROUND



CONCRETE BED & SURROUND (C.B.S.)



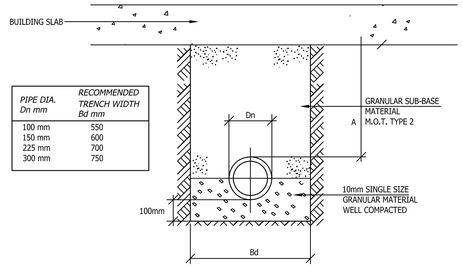
GRANULAR MATERIAL	
PIPE SIZE	AGGREGATE
100 mm	10 mm SINGLE SIZE
150 mm	10 OR 14mm SINGLE SIZE OF 14-5 mm GRADED
150 mm- 500 mm	10,14,20 SINGLE SIZE OR 20-25 mm GRADED
600 mm	10,14,20 OR 40 mm SINGLE CRUSHED ROCK OR 40-45 mm GRADED

DIMENSION Y = - IN ROCK, CONCRETE OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS, LARGE FLINTS OR STONES OR OTHER IRREGULAR HARD SPOTS THAT RESULT IN UNEVEN TRENCH BOTTOM Y=1/4 Bc OR 200 mm WHICH EVER IS THE GREATER, BUT NOT LESS THAN 50mm UNDER COLLARS

NOTES - IN SOILS THAT PERMIT AN EVEN TRENCH BOTTOM TO BE EXCAVATED Y=1/6 Bc OR 150 mm WHICH EVER IS GREATER, BUT NOT LESS THAN 50 mm UNDER COLLARS

1) FOR PIPES EXCEEDING 600 mm DIA REFER TO ENGINEER
2) IN WET OR SOFT GROUND SEEK GUIDANCE FROM ENGINEER
3)THE BEDDINGS MAY BE MODIFIED FOR CERTAIN SUB-SOIL CONDITIONS AT THE ENGINEERS DISCRETION
4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL PROTECTION IN AREAS SUBJECT TO LOADS FROM SITE TRAFFIC. THE CONTRACTOR SHALL IDENTIFY THESE ZONES AND RESTRICT TRAFFIC ELSEWHERE
5) SEE ALSO BS 8301
6) FOR GREATER TRENCH WIDTHS SEEK GUIDANCE FROM ENGINEER

BEDDING DETAILS LIGHT TRAFFIC AREAS

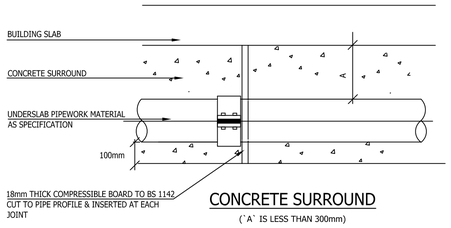


PIPE DIA. Dn mm	RECOMMENDED TRENCH WIDTH Bd mm
100 mm	550
150 mm	600
225 mm	700
300 mm	750

NOTE
WHEN DIMENSION `A` IS GREATER THAN 300mm GRANULAR BED SHALL APPLY. IF LESS THAN 300mm THEN CONCRETE SURROUND. THIS DETAIL IS FOR PIPES LAID IN DRY UNIFORM SOILS ONLY. FOR WET SOILS ADD 75mm THICK LAYERS OF WEAK MIX CONCRETE UNDER BED.

GRANULAR BED

(`A` IS GREATER THAN 300mm)



CONCRETE SURROUND

(`A` IS LESS THAN 300mm)

BEDDING DETAILS FOR PIPE UNDERBUILDING

GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.

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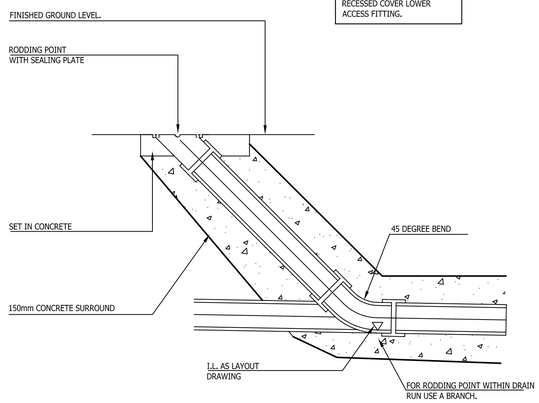
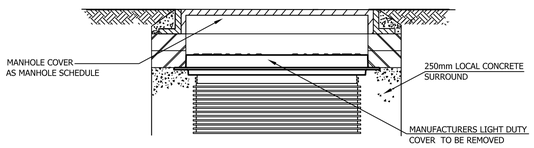
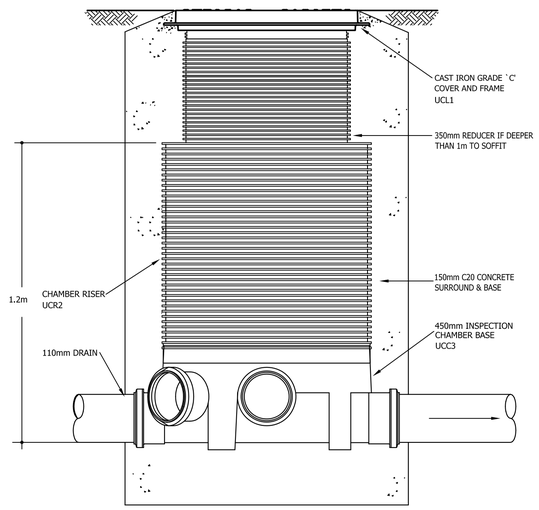
NOTE
WHERE LOCATED IN PAVED AREA PROVIDE BRIPAVE 6332A. RECESSED COVER LOWER ACCESS FITTING.



RODDING POINT SHALLOW DRAIN RUN

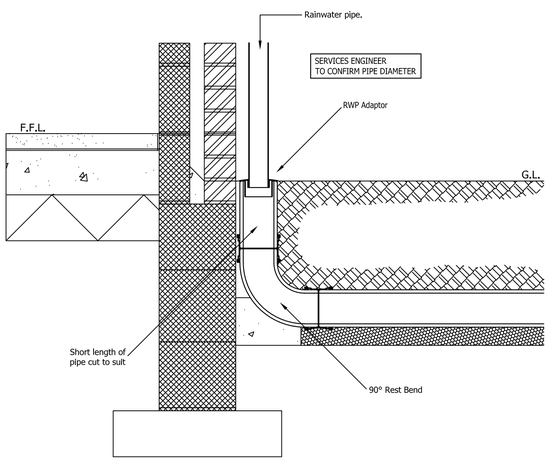


INSPECTION CHAMBER LOCATED CAR PARK AREAS

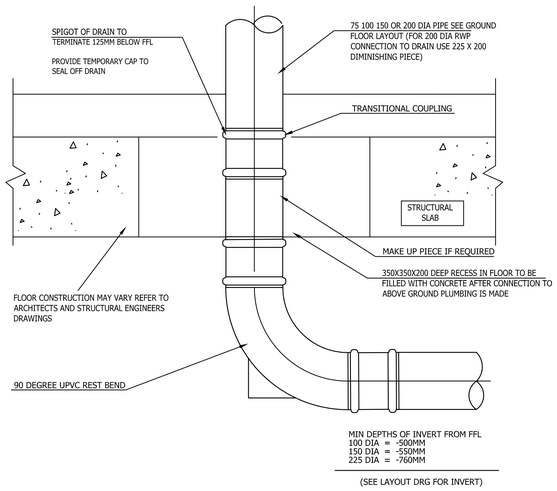


NOTE! ANY 450mm INSPECTION CHAMBER WITH A DEPTH EXCEEDING 1.2m THE INSPECTION CHAMBER MUST REDUCE TO 350mm dia AT THE 1.2m DEPTH TO THE COVER LEVEL. AS DETAIL ABOVE.

450mm INSPECTION CHAMBER



DOMESTIC RAINWATER PIPE CONNECTION TO DRAIN



DRAIN POINT TERMINATION

Rev	Amendments	Date	Dsn	Chk
P1	INITIAL ISSUE	06.05.2020	JR	MR

Status: PRELIMINARY

Client: RANDALL & CHISNALL CONSTRUCTION LTD

Architect: FOLKES ARCHITECTS

Project: 16 WORTHING ROAD FERRING, BN16 1AZ

Title: SITE DRAINAGE DETAILS SHEET 1 OF 2

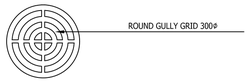
Date: MAY 2020 | Scale @ A1

Clients Ref. | Project Ref. 7338

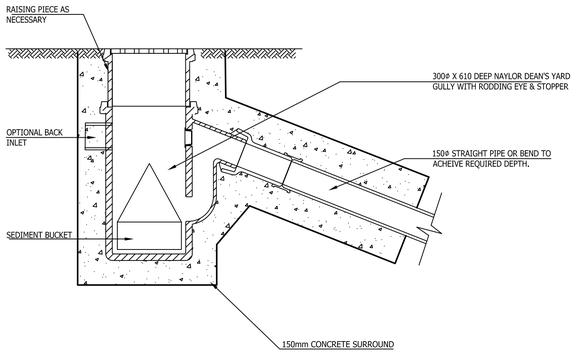
gta Civils & Transport
Gloucester House, 66a Church Walk,
Burgess Hill, West Sussex, RH15 9AS
Tel.01444 871444 Web: www.gtacivils.co.uk

Drawing Number: 7338/1701 | Rev. P1

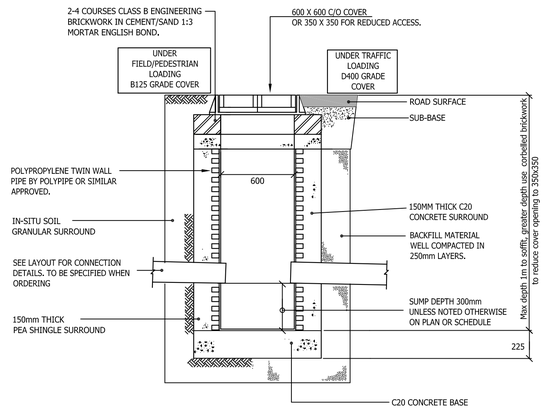
ARUN DISTRICT COUNCIL EPH8200/DOC



PLAN



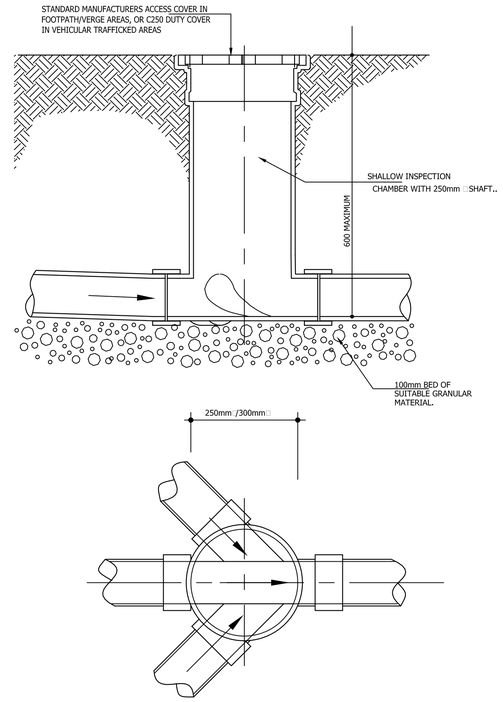
BIN STORE GULLY



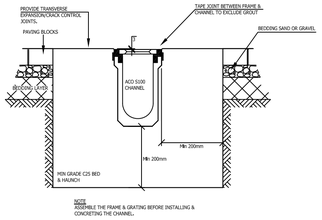
NOTES

1. ROCKER PIPES 600mm LONG FOR 100 TO 450 DIA PIPEWORK (1000mm LONG UP TO 750 DIA) ON OUTLET AND EACH ENTRY STARTING 150mm FROM CONCRETE SURROUND.

PLASTIC CATCHPIT 600mm



PLASTIC ACCESS CHAMBER 300mm



DRAINAGE CHANNEL

GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.

2. Tender or billing drawings shall not be used for construction or the ordering of materials.

3. Do not scale. All dimensions and levels to be site confirmed.

4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements.

5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.

6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.

Rev	Amendments	Date	Dsn	Chk
P2	DRAINAGE CHANNEL DETAIL ADDED	02.06.2020	JR	MR
P1	INITIAL ISSUE	06.05.2020	JR	MR

Status: PRELIMINARY

Client: RANDALL & CHISNALL CONSTRUCTION LTD

Architect: FOLKES ARCHITECTS

Project: 16 WORTHING ROAD FERRING, BN16 1AZ

Title: SITE DRAINAGE DETAILS SHEET 2 OF 2

Date: MAY 2020

Scale @ A1:

Clients Ref.:

Project Ref.: 7338

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Drawing Number: 7338/1702

Rev.: P2

ARUN DISTRICT COUNCIL EP/48/20/DOC

APPENDIX G – MICRO DRAINAGE OUTPUT SHEETS

ARUN DISTRICT COUNCIL EP/48/20/DOC

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 22 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	9.800	0.170	5.4	9.7	O K
30 min Summer	9.833	0.203	5.4	11.5	O K
60 min Summer	9.840	0.210	5.4	11.9	O K
120 min Summer	9.793	0.163	5.4	9.2	O K
180 min Summer	9.752	0.122	5.4	6.9	O K
240 min Summer	9.720	0.090	5.4	5.1	O K
360 min Summer	9.683	0.053	5.4	3.0	O K
480 min Summer	9.672	0.042	4.6	2.4	O K
600 min Summer	9.666	0.036	3.9	2.0	O K
720 min Summer	9.661	0.031	3.4	1.8	O K
960 min Summer	9.655	0.025	2.7	1.4	O K
1440 min Summer	9.648	0.018	2.0	1.0	O K
2160 min Summer	9.643	0.013	1.4	0.8	O K
2880 min Summer	9.641	0.011	1.2	0.6	O K
4320 min Summer	9.638	0.008	0.9	0.5	O K
5760 min Summer	9.637	0.007	0.7	0.4	O K
7200 min Summer	9.636	0.006	0.6	0.3	O K
8640 min Summer	9.635	0.005	0.6	0.3	O K
10080 min Summer	9.635	0.005	0.5	0.3	O K
15 min Winter	9.827	0.197	5.4	11.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	152.216	0.0	15
30 min Summer	101.752	0.0	25
60 min Summer	64.903	0.0	42
120 min Summer	37.581	0.0	76
180 min Summer	27.232	0.0	106
240 min Summer	21.625	0.0	136
360 min Summer	15.557	0.0	190
480 min Summer	12.291	0.0	248
600 min Summer	10.233	0.0	308
720 min Summer	8.811	0.0	368
960 min Summer	6.963	0.0	490
1440 min Summer	5.012	0.0	734
2160 min Summer	3.632	0.0	1100
2880 min Summer	2.906	0.0	1456
4320 min Summer	2.147	0.0	2184
5760 min Summer	1.749	0.0	2904
7200 min Summer	1.501	0.0	3624
8640 min Summer	1.331	0.0	4368
10080 min Summer	1.209	0.0	5000
15 min Winter	152.216	0.0	16

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	9.863	0.233	5.4	13.2	O K
60 min Winter	9.866	0.236	5.4	13.4	O K
120 min Winter	9.795	0.165	5.4	9.3	O K
180 min Winter	9.734	0.104	5.4	5.9	O K
240 min Winter	9.692	0.062	5.4	3.5	O K
360 min Winter	9.670	0.040	4.4	2.3	O K
480 min Winter	9.662	0.032	3.5	1.8	O K
600 min Winter	9.657	0.027	3.0	1.5	O K
720 min Winter	9.653	0.023	2.5	1.3	O K
960 min Winter	9.649	0.019	2.0	1.0	O K
1440 min Winter	9.643	0.013	1.4	0.7	O K
2160 min Winter	9.640	0.010	1.1	0.5	O K
2880 min Winter	9.638	0.008	0.8	0.4	O K
4320 min Winter	9.636	0.006	0.6	0.3	O K
5760 min Winter	9.635	0.005	0.5	0.3	O K
7200 min Winter	9.634	0.004	0.5	0.2	O K
8640 min Winter	9.634	0.004	0.4	0.2	O K
10080 min Winter	9.633	0.003	0.4	0.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	101.752	0.0	27
60 min Winter	64.903	0.0	46
120 min Winter	37.581	0.0	80
180 min Winter	27.232	0.0	112
240 min Winter	21.625	0.0	136
360 min Winter	15.557	0.0	190
480 min Winter	12.291	0.0	250
600 min Winter	10.233	0.0	308
720 min Winter	8.811	0.0	370
960 min Winter	6.963	0.0	488
1440 min Winter	5.012	0.0	736
2160 min Winter	3.632	0.0	1068
2880 min Winter	2.906	0.0	1424
4320 min Winter	2.147	0.0	2176
5760 min Winter	1.749	0.0	2936
7200 min Winter	1.501	0.0	3776
8640 min Winter	1.331	0.0	4424
10080 min Winter	1.209	0.0	5024

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 506633 102789 TQ 06633 02789
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.049

Time (mins) From:	To:	Area (ha)
0	4	0.049

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Model Details

Storage is Online Cover Level (m) 10.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.31000	Width (m)	13.5
Membrane Percolation (mm/hr)	1000	Length (m)	14.0
Max Percolation (l/s)	52.5	Slope (1:X)	0.0
Safety Factor	3.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	9.630	Membrane Depth (m)	0

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