



ODYSSEY

CELEBRATING **15** YEARS

FORD LANE, YAPTON

DRAINAGE STATEMENT



PROPOSED DEVELOPMENT AT FORD LANE, YAPTON

DRAINAGE STATEMENT ON BEHALF OF CLIENT

Prepared by

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**DOCUMENT CONTROL SHEET**

Project Name Ford Lane, Yapton

Project No. 18-344

Rev	Issue Purpose	Author	Checked	Reviewed	Approved	Date
	Planning	SG	LH	SG	LH	15.01.2020
A	Updated Site Layout	SG	LH	SG	LH	16.09.2020
B	Updated Site Layout	SG	LH	SG	LH	09.10.2020
C	Drawings Updated	SG	LH	SG	LH	16.10.2020
D	Drawings Updated	SG	RS	SG	RS	29.10.2020



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Appendix B	Odyssey Drawings 18-344/821, 823 – 825 (Construction Details)
Appendix C	Odyssey Drawing 18-344/108 (Catchment Plan)
Appendix D	Odyssey Drawing 18-344/107 (Overland Flow Routes)
Appendix E	Odyssey Drawing 18-344/110 (Winter Groundwater and Infiltration Data Plan)
Appendix F	Windes Calculations
Appendix G	Arun DC Surface Water Checklist



1.0 INTRODUCTION

1.1.1 Odyssey has been commissioned by Redrow Homes to prepare this drainage report in support of their Reserved Matters (RM) application for the residential development at Ford Lane, Yapton. This follows the grant of outline planning permission on 15th January 2019 (Ref: Y/80/16/OUT). This report also sets out the background, existing drainage regime, proposed drainage regime, overland flow routes and maintenance of SuDS features.

1.1.2 The description of the development at the outline application was:

“Outline application with some matters reserved for 4.5 hectares of residential development comprising 3.4 hectares of land for up to 100 dwellings (up to 30 (30%) affordable housing) together with 1.1 hectares of land set aside for public open space and strategic landscaping and 2.2 hectares of public open space and green corridors with vehicular access from Ford Lane and pedestrian/cycle access only from North End Road.”

1.1.3 The aim of this report is to support the discharge of Conditions 11 and 15 which are set out below:

Condition 11

“No development shall take place until details of the implementation, maintenance and management of a sustainable drainage scheme have been submitted to and approved in writing by the LPA. The scheme shall be implemented and thereafter managed and maintained in accordance with the approved details. Those details shall include:

- i) A timetable for the scheme’s implementation; and*
- ii) A management and maintenance plan for the lifetime of the development which shall include the arrangements for the adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.*

Condition 15

“Construction of the development shall not commence until details of the proposed means of foul water sewerage have been submitted to and approved in writing by the LPA. No dwelling shall be occupied until works for the disposal of sewerage have been fully implemented in accordance with the approved details.”



2.0 EXISTING SITE

2.1.1 The proposed development site comprises of 6.7ha of greenfield land and is located off Ford Lane to the north east of Yapton Village in West Sussex. The site is surrounded by arable land to the north and east, Orchard Business Park and residential dwellings to the south and North End Road to the west.

2.1.2 The topographical survey shows the site to be relatively flat with one half of the site falling from north to west and the other falling from north to south. Levels range from approximately 8.24m AOD in the north to 6.46m AOD in the west.

2.1.3 It is understood that there are no public surface water sewers in close proximity to the site and the existing drainage regime relies on surface water infiltrating through the underlying strata.

2.1.4 An intrusive ground investigation was conducted by Eastwood & Partners in October 2019. A total of 5 No. sample pits were excavated up to a maximum depth of 4m bgl across the development site to allow for the installation of groundwater monitoring wells. The findings in their report indicate that the existing geology consists predominantly of river terrace sands and clays underlain by the chalk.

2.1.5 In accordance with the Arun DC requirements, ten rounds of groundwater monitoring were completed during the winter period (October to March inclusive) and groundwater was encountered at depths ranging between 2.79 – 6.57m bgl.

2.1.6 In January 2020, infiltration testing was also completed at 5 locations across the site. Each location underwent two tests, one shallow and one deep. The shallow tests had a base depth of around 1m and the deeper tests around 3m. Results from the testing identified rates that ranged from 5.50×10^{-6} m/s and 0.13×10^{-6} m/s.

2.1.7 It is also understood that there are no foul water sewers present within the site. The nearest public foul water sewer is located in North End Road and currently serves existing residential dwellings in the surrounding area.



3.0 PROPOSED DRAINAGE

3.1.1 New foul and surface water drainage networks are proposed across the development site. The proposed foul and surface water drainage designs are shown on Odyssey **Drawings 18-344/800-802** provided with this report in **Appendix A**.

3.2 *Design Criteria*

3.2.1 The design criteria applied for the proposed drainage are as follows:

- Pipework beneath existing and proposed highways is to have cover of at least 1.2m where possible
- Private foul and surface water drainage is to be in accordance with Approved Document H of the Building Regulations
- Adoptable drainage is to be in accordance with Sewers for Adoption
- 10% urban creep has been allowed for the dwellings' hard standing areas (roofs and garages)

3.3 *Surface Water Drainage*

3.3.1 The proposed surface water scheme has been designed in accordance with the strategy set out in the Flood Risk Assessment (FRA) submitted as part of outline planning application for the site. The FRA proposes the use of sustainable drainage techniques to control the surface water from the development.

3.3.2 Based on the testing undertaken by Eastwood & Partners, the infiltration potential varies across the site for both shallow (1m) and deep (3m) tests/rates. The design is to infiltrate surface water run-off for the whole development from roads, roofs, parking bays and parking courts into the existing strata either with shallow systems or at depth depending on the infiltration rates in the associated infiltration areas.

3.3.3 The site is split into various catchment areas and infiltration rates as shown on **drawing 18-344/108** in **Appendix D** and **drawing 18-344/110** in **Appendix E**. Principally, the west part of the site drains into permeable paved drives/roads or courtyards, the central/northern areas into permeable paved drives/roads or cellular soakaways, the eastern side into permeable paved drives/roads and rear garden soakaways, with some perimeter visitor parking to a boundary swale via gullies. The southern area drains to permeable drives or rear garden soakaways with a small hard paved area/catchment draining via kerb drains to the basin in the open space.



3.3.4 The surface water drainage systems have been designed to accommodate all rainfall events up to 1 in 100-year event plus climate change (+40%) with no flooding. Due to some lower/slower inflation rates and extended drain times additional capacity has been added into the drainage storage/systems to allow for further storms over and above the 1 in 100 year + CC. Supporting calculations can be found within **Appendix F**. The remaining depth in the structures above the highest storms/water level shows the extra over capacity provided/available.

3.3.5 Surface water treatment would be provided by the permeable paving via both the grit layer and geotextile that the blocks are bedded on, as well as the underlying gravel media comprising of washed no fines material. These measures provide filtration and the breakdown of hydrocarbons as the water is conveyed through the system and into the piped network.

3.3.6 The swales and basin are open features which offer some treatment and attenuation locally and provide a softer and aesthetic/enhanced landscape to those areas.

3.4 Maintenance and Management Plan

3.4.1 The details for the maintenance and management of the surface water network and SuDS features is covered under a separate report (Odyssey Report reference 18-344-13 Management & Maintenance Manual). The surface water features/systems for the whole site will be kept private and maintained by a maintenance and management company.

3.5 Urban Creep

3.5.1 The CIRIA SuDS Manual states that urban creep is defined as any increase in the impervious area that is drained to an existing drainage system without planning permission being required, and therefore without any consideration of whether the capacity of the receiving sewer system can accommodate the increased flow. An increase of 10% has been applied to areas which may be subject to urban creep to allow for future urban expansion on a local scale.

3.6 Foul Drainage

3.6.1 The proposed foul water drainage design utilises a combination of gravity and pumped systems.

3.6.2 It is proposed that foul flows from the development will be conveyed and discharged into the existing Southern Water sewer located in the North End Road via a new manhole.

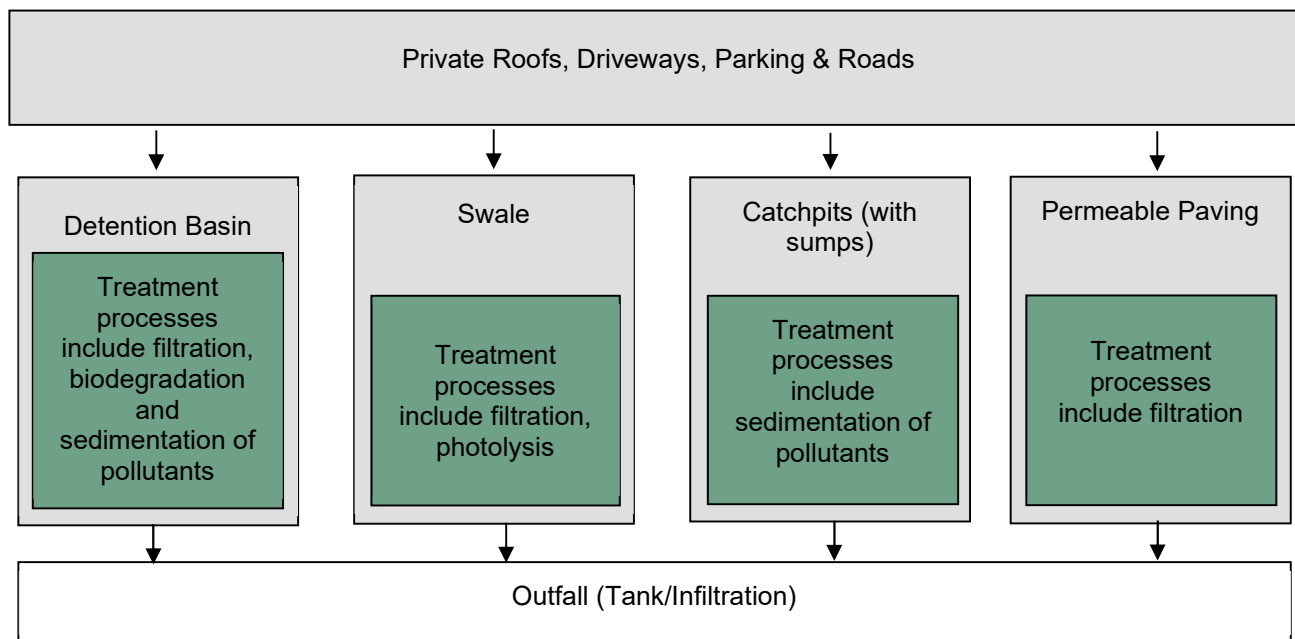


3.6.3 Due to the existing topography of the site, foul flows from a number of dwellings to the east would be conveyed to a Southern Water adopted pumping station located towards the south of the site before being pumped north via a rising main into the main network.



4.0 TREATMENT OF SURFACE WATER RUN-OFF

4.1.1 Surface water will be subject to the following treatment train prior to infiltration. The levels of proposed treatment are shown below.





5.0 OVERLAND FLOW ROUTES AND EXCEEDANCE ROUTES

5.1.1 The calculations provided in **Appendix F** show there to be no flooding for storm events up to and including the 1 in 100 year event plus 40% climate change. If an event greater than the design storm, or a drainage system failure occurs levels have been designed such that overland flow will drain away from buildings and be conveyed within the main highways and ultimately to the open spaces on site.

5.1.2 Overland flow routes have been shown on Odyssey **drawing 18-344/107**, which is supplied in **Appendix D**.



6.0 CONCLUSION

6.1.1 The surface water drainage scheme for this site proposes a mixture of piped/cellular storage systems, permeable paving and open features ultimately leading to discharge/disposing of surface water via infiltration into the existing ground below.

6.1.2 Treatment is provided in the form of silt traps/sumps, permeable paved roads/drives, swales and a basin.

6.1.3 All system/features are design to accommodate the 100 year event + 40% climate change with some spare capacity over and above this.

6.1.4 The surface water systems/features will be kept private and maintained by a private management company.

6.1.5 The foul will discharge via gravity and an onsite pumping station/rising main to the existing Southern Water sewer in North End Road.

6.1.6 This drainage statement along with the appended drawings and Micro Drainage calculations assists towards the discharging of planning Conditions 11 and 15.

APPENDIX A

Odyssey Drawings 18-344/800-802

Engineering Layouts

A M-1 - A LEVEL APPROACH (MAX. 1:50 GRADE)

B M-2 - GENTLY SLOPING MAX. (1:20 GRADE)

C M-3 - RAMPED APPROACH (MAX. 1:12 OR 1:15 GRADE)

D M-4 - D STEPPED APPROACH

E M-5 - SINGLE STEP AT THRESHOLD



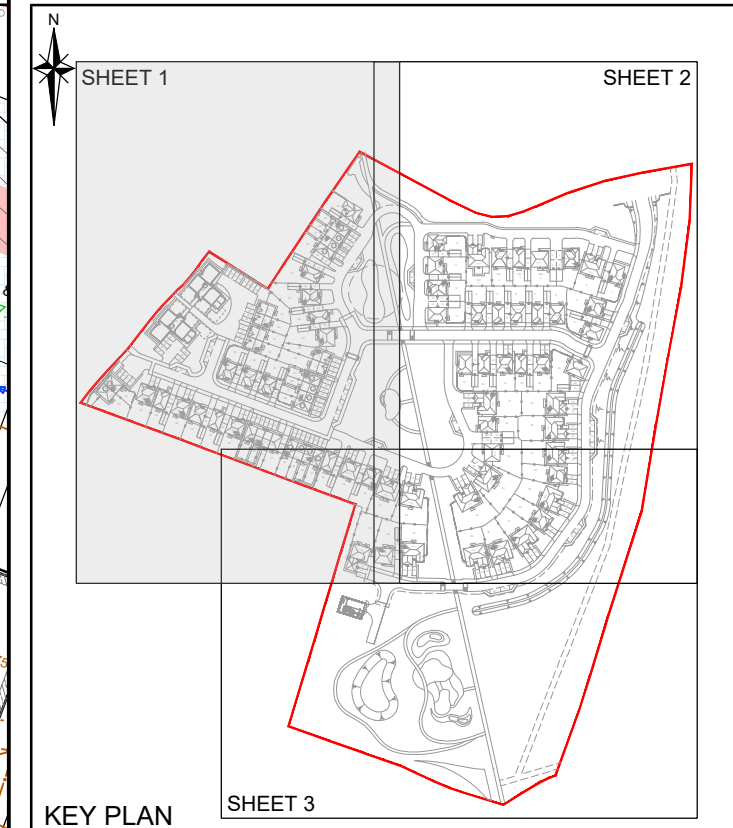
- # NOTES
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS ISSUED BY THE ARCHITECT AND ENGINEER. THE PROJECT LOCATION IS 10000 10TH AVENUE, WEST SUBSEX COUNTY, COLORADO. STANDARDS AND BOYS SHALL BE USED UNLESS OTHERWISE NOTED.
 - DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS.
 - ALL DIMENSIONS SHOWN IN METRES UNLESS NOTED OTHERWISE.
 - ALL ELEVATIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED AGAINST AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORK.
 - NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
 - CONTOUR SHOWN ON THIS DRAWING ARE AT 20mm vertical INTERVALS.
 - THIS DRAWING IS BASED ON THE PLANNING LAUNDRY PROVIDED BY GEORGE PERRY ASSOCIATES. DRAWING REFERENCE ABSS_42A.
 - TOPOGRAPHICAL SURVEY WAS UNDERTAKEN BY MK SURVEYS.
 - WATERPROOFING TO BE INSTALLED IN ACCORDANCE WITH NBRIC CHAPTER 5.4 BY SUPPLIER/CORPORATION FROM OPC WITH A MINIMUM OF 1.5mm THICKNESS. ALL AREAS OF 100mm RAISED OPC SHOWN ON THIS DRAWING IS IN AREAS WHERE FINISHED GROUND LEVEL IS LESS THAN 100mm BELOW FINISHED FLOOR LEVEL. UNLESS OTHERWISE INDICATED WHERE EXTERNAL LEVELS ARE GREATER THAN 100mm BELOW FLOOR LEVEL.
 - PRIVATE FLOOD WATER AND SURFACE WATER DRAINAGE ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING REGULATIONS 2006, AS AMENDED BY THE 2015 S.3 AND RELEVANT APPLICABLE CERTIFICATIONS.
 - ALL DRAINAGE TO BE CONSTRUCTED USING UPC BUILDING DRAINAGE SYSTEM PIPEWORK TO B S EN 1401. USED AND USED WITHIN THE SPECIFICATIONS SET OUT IN THE INSTRUCTIONS AND THE SPECIFICATIONS LISTED IN NOTE 1.
 - INSPECTION CHAMBER SIZES ARE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS PART 1, TABLE 11 AND 12 UNLESS OTHERWISE NOTED.
 - BACKFILLING OF DRAIN TRENCHES ADJACENT TO DWELLINGS OF OTHER STRUCTURES TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS PART 1, TABLE 11 AND 12 UNLESS OTHERWISE NOTED.
 - INSPECTION CHAMBER COVERS IN PRIVATE AREAS SHOULD BE GROUP 1 CLASS A1 IN PEDESTRIAN AREAS ACCESSIBLE TO THE GENERAL PUBLIC AND GROUP 4 CLASS D0 IN VEHICULAR AREAS.
 - ALL FLOOR, WIND PIPE, STUB STACKS, AIR ADMITTANCE VALVES AND RAIN WATER PIPE LOCATIONS ARE INDICATIVE ONLY. FOR ADDITIONAL DETAILS REFER TO ARCHITECTURAL PLANS AND ELEVATIONS.
 - SURFACE WATER FROM PRIVATE AREAS IS NOT TO BE DISCHARGED INTO THE DRAINAGE SYSTEM.
 - DRAINS TO BE CONSTRUCTED TO DWELLINGS WITH SUSPENDED FLOOR SLABS SHOULD EITHER BE INSTALLED THROUGH THE FLOOR OR THROUGH THE EXISTING FLOOR AND POT OR SIMILAR CONNECTION IS USED, OR SHOULD BE INSTALLED THROUGH THE EXISTING FLOOR IN LAYERS NOT EXCEEDING 225mm. CONCRETE GROUND SLABS ARE TO BE Poured IN SITU.
 - DRAINS IN AREAS OF MADE GROUND TO BE CONSTRUCTED BY EXCAVATING TO THE EXISTING FLOOR LEVEL, REMOVING THE EXISTING FLOOR AND THEN EXCAVATE THROUGH THE FILL MATERIAL TO THE EXISTING GROUND LEVEL. ALL DRAINS ARE TO BE BACKFILLED TO FORMATION LEVEL USING SUITABLE FILL MATERIAL TO THE EXISTING FLOOR LEVEL IN LAYERS NOT EXCEEDING 225mm.
 - ALL FLOOR AND SURFACE DRAINING ACCESS.
 - ALL FLOOR AND SURFACE DRAINAGE PIPES WITHIN PRIVATE AREAS TO BE 100mm Ø UNLESS SPECIFIED OTHERWISE.
 - FIRST SURFACE WATER INSPECTION CHAMBERS TO BE 600mm DEEP UNLESS SPECIFIED OTHERWISE.
 - FIRST FLOOR DRAIN INSPECTION CHAMBERS TO BE 750mm DEEP UNLESS SPECIFIED OTHERWISE.
 - IN COMPLIANCE WITH CDM 2015 (2015) HAS FOLLOWED ITS DUTY OF CARE TO IDENTIFY AND ELIMINATE OR REDUCE THE RISK OF INJURY OR DAMAGE TO PERSONS OR PROPERTY IN DEVELOPING THE PROJECT. THE DESIGNER HAS CONSIDERED THE DESIGN OF THE PROJECT AND HAS IDENTIFIED NO ABNORMAL OR UNUSUAL RISKS RELEVANT RISKS ASSOCIATED WITH THE PROJECT. THE DESIGNER HAS IDENTIFIED THAT THE DESIGN WOULD NORMALLY BE EXPECTED BY COMPETENT PERSONS OR CONTRACTORS ENGAGED ON WORK OF THIS NATURE OR TYPE.
 - THIS DRAWING SUBJECT TO TECHNICAL APPROVAL FROM SOUTHERN WATER.
 - GEOTECHNICAL ENGINEER TO BE CONFIRM SOAKAWAY OFFSETS

LEGEND

- | | |
|---|--|
|  | DEVELOPMENT BOUNDARY |
|  | HIGHWAY BOUNDARY |
|  | PROPOSED FINISHED FLOOR LEVEL (mAOOD) |
|  | PROPOSED FINISHED GARAGE LEVEL (mAOOD) |
|  | EXISTING LEVEL (mAOOD) |
|  | PROPOSED LEVEL (mAOOD) |
|  | PROPOSED PERMEABLE PAVING SUB-BASE |
|  | PROPOSED PERMEABLE PAVING SURFACE |
|  | MAIN ROAD CONSTRUCTION DEPTHS (WHERE SEEL ARE NOT SHOWN DEPTHS ARE BASED ON FULL CONSTRUCTION DEPTH) |
|  | PROPOSED GRADIENT |
|  | PROPOSED CATCHMENTS (SEE NOTE 6) |
|  | PROPOSED RETAINING WALL |
|  | PROPOSED CONCRETE GRAVEL BOARD |
|  | RAISED DPTICANTING |
|  | EXPOSED BRICKWORK/UNDERBURL |
|  | HIGHWAY DRAIN AND MANHOLE |
|  | ADOPTABLE FOUL WATER SEWER AND MANHOLE |
|  | EXISTING FOUL WATER SEWER |
|  | PRIVATE SURFACE WATER SEWER AND MANHOLE |
|  | TYPE B SURFACE WATER CATCHPIT (REFER TO WSCC STANDARD DETAIL 5278/33813) |
|  | PRIVATE FOUL DRAIN |
|  | PRIVATE SURFACE WATER DRAIN |
|  | TYPE 3 FOUL INSPECTION CHAMBER (REFER TO ODSSEY DRAWING 18-3448/124 FOR DETAILS) |
|  | TYPE 3 SURFACE WATER INSPECTION CHAMBER (REFER TO ODSSEY DRAWING 18-3448/124 FOR DETAILS) |
|  | ROODING EYE (REFER TO ODSSEY DRAWING 18-3448/24 FOR DETAILS) |
|  | CATCHPIT INSPECTION CHAMBER (REFER TO ODSSEY DRAWING 18-3448/25 FOR DETAILS) |
|  | DIFFUSER UNIT (REFER TO ODSSEY DRAWING 18-3448/25 FOR DETAILS) |
|  | FILTER DRAIN (REFER TO ODSSEY DRAWING 18-3448/27 FOR DETAILS) |
|  | ACCO DRAIN (REFER TO ODSSEY DRAWING 18-3448/28 FOR DETAILS) |
|  | ROAD GULLY AND CONNECTION (REFER TO WSCC STANDARD DETAIL 5278/3011) |
|  | PROPOSED CELLULAR STORAGE TANK (REFER TO ODSSEY DRAWING 18-3448/21) |
|  | PROPOSED PERMEABLE BLOCK PAVING (REFER TO ODSSEY DRAWING 18-3448/21) |
|  | INDICATIVE SERVICE CORRIDOR |
|  | BAFFLE WALL (REFER TO ODSSEY DRAWING 18-3448/25) |
|  | FOUL WATER RISING MAIN |
|  | TREE ROOT PROTECTION ZONES |
|  | PROPOSED STREET LIGHTING PROVIDED BY MAA |

FOR CONTINUATION SEE DRAWING NUMBER 18-344/800

**TENDER
ISSUE**



C	UPDATED TO SUIT CLIENT COMMENTS	JA	SG	RM	28.10
B	UPDATED TO SUIT REVISED SITE LAYOUT	JA	SG	LH	09.10
A	UPDATED TENDER ISSUE	JA	SG	LH	27.08



Job Title

FORD LANE,
YAPTON

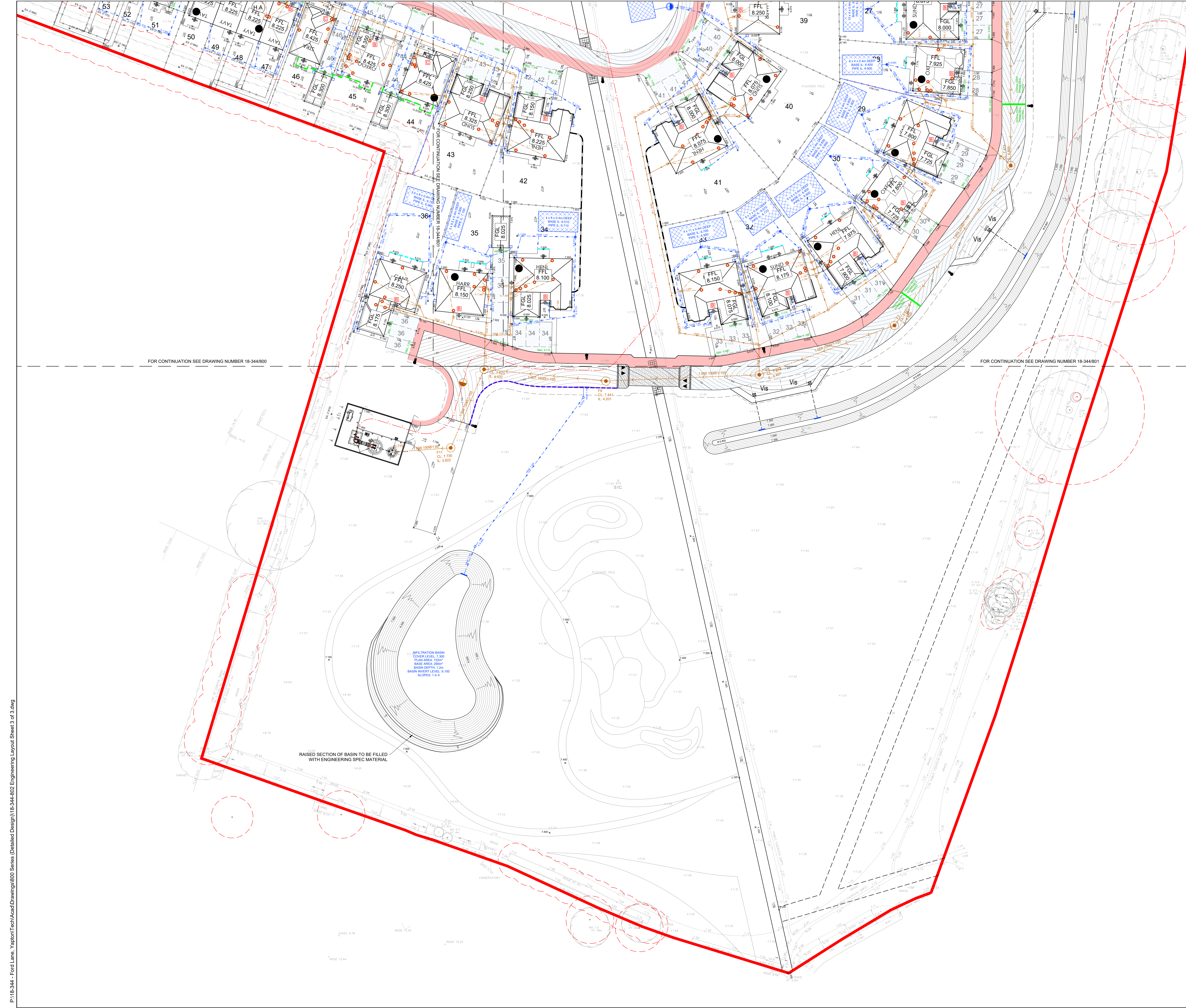
Drawing Title

ENGINEERING LAYOUT
SHEET 1 OF 3

Client

Scale 1:250 @A0	Date FEB 2020	Designed JA
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Drawn JA	Checked SG	Approved LH
Job No 18 344	Drawing No 18 344/800	Rev C



THE BUILDING REGULATIONS, PART M APPROACH ROUTE SCHEMATIC

A M4(-) - A: LEVEL APPROACH (MAX. 1:80 GRADE)

B M4(-) - B: GENTLY SLOPING (MAX. 1:20 GRADE)

C M4(-) - C: RAMPED APPROACH (MAX. 1:12 OR 1:16 GRADE)

D M4(-) - D: STEPPED APPROACH

E M4(-) - E: SINGLE STEP AT THRESHOLD

STEPS: 250mm MIN. GOING, 120mm MAX. RISING, 12mm MAX. WITHOUT INTERMEDIATE 900mm MIN. LEVEL LANDING, 3/4 STEPS OR MORE REQUIRE HANDRAIL

HANDRAIL: 800mm MIN. HEIGHT, 1000mm MAX. HEIGHT, 300mm EXTENSION BEYOND TOP AND BOTTOM NOSINGS

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS ISSUED BY THE ARCHITECT AND ENGINEER FOR ADOPTION BY THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
- DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
- ALL DIMENSIONS SHOWN IN METRES UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
- NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PERMISSION FROM THE ENGINEER.
- CONTOURS SHOWN ON THIS DRAWING ARE AT 20mm VERTICAL INTERVALS.
- THIS DRAWING IS BASED ON THE PLANNING LAYOUT PROVIDED BY GEOFF PERRY ASSOCIATES. DRAWING REFERENCE: A055-004.
- TOPOGRAPHICAL SURVEY WAS UNDERTAKEN BY MK SURVEYS IN OCTOBER 19.
- WATERPROOFING TO BE INSTALLED IN ACCORDANCE WITH BS EN 12550:2017. DPC TO BE SUPPLIED ON RAFTOR FROM DPC DOWNWARDS INCLUDING STEPPED FLOORS MORE THAN 150mm. RATED DPC SHOWN ON THIS DRAWING IS IN AREAS WHERE FINISHED GROUND LEVEL IS LESS THAN 150mm BELOW FFL. EXPOSED BRICKWORK UNDERBUILD HAS BEEN INDICATED WHERE EXTERNAL LEVELS ARE GREATER THAN 150mm BELOW FFL.
- PRIVATE FOUL WATER AND SURFACE WATER DRAINAGE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING REGULATIONS, BS EN 752: NHERC STANDARDS CHAPTER 3.3 AND RELEVANT AGREEMENT CERTIFICATES.
- PRIVATE DRAINS TO BE CONSTRUCTED USING UPVC BUILDING DRAINAGE SYSTEM PIPEWORK TO BS EN 1401. BEDDED AND BACKFILLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE SPECIFICATIONS LISTED IN NOTE 1.
- INSPECTION CHAMBER SIZES ARE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS PART H, TABLE 1.1 AND MANHOLE SIZES TABLE.
- BACKFILLING OF DRAIN TRENCHES ADJACENT TO DWELLINGS OR OTHER STRUCTURES TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS PART H, DIAGRAM 8.
- INSPECTION CHAMBER COVERS IN PRIVATE AREAS SHOULD BE GROUP 1 CLASS A15 IN PEDESTRIAN AREAS ACCESSIBLE TO WHEELED VEHICLES AND GROUP 4 CLASS D400 IN VEHICULAR AREAS.
- ALL SOILVENT PIPE, STUB STACKS, AIR ADMITTANCE VALVES AND RAIN WATER PIPE LOCATIONS ARE INDICATIVE ONLY. FOR ACTUAL LOCATIONS REFER TO ARCHITECTURAL PLANS AND ELEVATIONS.
- SURFACE WATER FROM PRIVATE AREAS IS NOT TO BE DISCHARGED ONTO PROPOSED HIGHWAY.
- DRAINS TO BE CONSTRUCTED UNDER DWELLINGS WITH SUSPENDED FLOOR SLABS SHOULD EITHER BE INSTALLED USING A PROPRIETARY HANGER SYSTEM WHERE 'BEAM AND POT' OR SIMILAR CONSTRUCTION IS USED, OR SHOULD BE CAST INTO LOCAL SLAB THICKENING WHERE REINFORCED CONCRETE GROUND SLABS ARE TO BE POURED IN SITU.
- DRAINS IN AREAS OF MAKE GROUND TO BE CONSTRUCTED BY FIRST MAKING UP THE AREA TO APPROXIMATELY FINISHED LEVEL AND THEN EXCAVATE THROUGH THE FILL MATERIAL INTO UNDISTURBED GROUND. THE DRAIN TRENCH IS THEN TO BE BACKFILLED TO FORMATION LEVEL USING SUITABLE GRANULAR FILL MATERIAL, WELL COMPACTED IN LAYERS NOT EXCEEDING 225 THICK.
- ALL RAMPIS TO HAVE RIDING ACCESS.
- ALL FOUL AND SURFACE WATER DRAINAGE PIPES WITHIN PRIVATE AREAS TO BE 100mm Ø UNLESS SPECIFIED OTHERWISE.
- FIRST SURFACE WATER INSPECTION CHAMBERS TO BE 600mm DEEP UNLESS SPECIFIED OTHERWISE.
- FIRST FOUL SEWER INSPECTION CHAMBERS TO BE 750mm DEEP UNLESS SPECIFIED OTHERWISE.
- IN COMPLIANCE WITH CDM 2015 ODYSSEY HAS FOLLOWED ITS DESIGN RISK MANAGEMENT PROCESS FOR HAZARD ELIMINATION AND RISK REDUCTION IN DEVELOPING THE ODYSSEY DESIGNS SHOWN ON THIS DRAWING. THERE ARE NO ABNORMAL OR UNUSUAL RESIDUAL RISKS ASSOCIATED WITH THE DESIGN. ANY OTHER RESIDUAL RISKS ARE THOSE THAT WOULD NORMALLY BE EXPECTED BY COMPETENT PERSONS OR CONTRACTORS ENGAGED ON WORK OF THIS NATURE OR TYPE.
- FOUL DRAINAGE SUBJECT TO TECHNICAL APPROVAL FROM SOUTHERN WATER.

LEGEND

DEVELOPMENT BOUNDARY

HIGHWAY BOUNDARY

PROPOSED FINISHED FLOOR LEVEL (mAOO)

PROPOSED FINISHED GARAGE LEVEL (mAOO)

EXISTING LEVEL (mAOO)

PROPOSED LEVEL (mAOO)

PROPOSED PERMEABLE PAVING SUB-BASE INVERT LEVELS

MAIN ROAD CONSTRUCTION DEPTHS (WHERE SBIL ARE NOT SHOWN DEPTHS ARE BASED ON FULL CONSTRUCTION DEPTH)

PROPOSED GRADIENT

PROPOSED RETAINING WALL

PROPOSED CONCRETE GRAVEL BOARD

RAISED DPC/TANKING

EXPOSED BRICKWORK/UNDERBUILD

ADAPTABLE FOUL WATER SEWER AND MANHOLE

PRIVATE SURFACE WATER SEWER AND MANHOLE

PRIVATE FOUL DRAIN

PRIVATE SURFACE WATER DRAIN

TYPE 3 FOUL INSPECTION CHAMBER (REFER TO ODYSSEY DRAWING 18-344/824 FOR DETAILS)

TYPE 3 SURFACE WATER INSPECTION CHAMBER (REFER TO ODYSSEY DRAWING 18-344/824 FOR DETAILS)

RODDING EYE (REFER TO ODYSSEY DRAWING 18-344/824 FOR DETAILS)

CATCHPIT INSPECTION CHAMBER (REFER TO ODYSSEY DRAWING 18-344/825 FOR DETAILS)

DIFFUSER UNIT (REFER TO ODYSSEY DRAWING 18-344/825 FOR DETAILS)

FILTER DRAIN (REFER TO ODYSSEY DRAWING 18-344/821 FOR DETAILS)

AOO DRAIN (REFER TO ODYSSEY DRAWING 18-344/824 FOR DETAILS)

ROAD GULLY AND CONNECTION (REFER TO WSCC STANDARD DETAIL S278/38/11)

PROPOSED CELLULAR STORAGE TANK (REFER TO ODYSSEY DRAWING 18-344/825)

PROPOSED PERMEABLE BLOCK PAVING (REFER TO ODYSSEY DRAWING 18-344/821)

INDICATIVE SERVICE CORRIDOR

FOUL WATER RISING MAIN

RISING MAIN WASHOUT CHAMBER

LEGEND CONT.

TREE ROOT PROTECTION ZONES

600mm DEEP INFILTRATION SWALE WITH 1 IN 3 SIDE SLOPES AND 1m WIDE BASE

KERB DRAIN TO WSCC S278/38/12 WITH GULLY OUTLET CONNECTION AT LOW POINT

WEIR KERB OFFSET GULLY. REFER TO ODYSSEY DRAWING 18-344/825 FOR DETAILS

BAGWORK HEADWALL. REFER TO WSCC DETAIL S278/38/12 FOR DETAIL

PROPOSED STREET LIGHTING PROVIDED BY MMA

TENDER ISSUE

LEGEND CONT.

300mm DEEP INFILTRATION SWALE WITH 1 IN 3 SIDE SLOPES AND 1m WIDE BASE

WEIR KERB OFFSET GULLY. REFER TO ODYSSEY DRAWING 18-344/825 FOR DETAILS

BAGWORK HEADWALL. REFER TO WSCC DETAIL S278/38/12 FOR DETAIL

PROPOSED STREET LIGHTING PROVIDED BY MMA

LEGEND CONT.

300mm DEEP INFILTRATION SWALE WITH 1 IN 3 SIDE SLOPES AND 1m WIDE BASE

WEIR KERB OFFSET GULLY. REFER TO ODYSSEY DRAWING 18-344/825 FOR DETAILS

BAGWORK HEADWALL. REFER TO WSCC DETAIL S278/38/12 FOR DETAIL

PROPOSED STREET LIGHTING PROVIDED BY MMA

LEGEND CONT.

300mm DEEP INFILTRATION SWALE WITH 1 IN 3 SIDE SLOPES AND 1m WIDE BASE

WEIR KERB OFFSET GULLY. REFER TO ODYSSEY DRAWING 18-344/825 FOR DETAILS

BAGWORK HEADWALL. REFER TO WSCC DETAIL S278/38/12 FOR DETAIL

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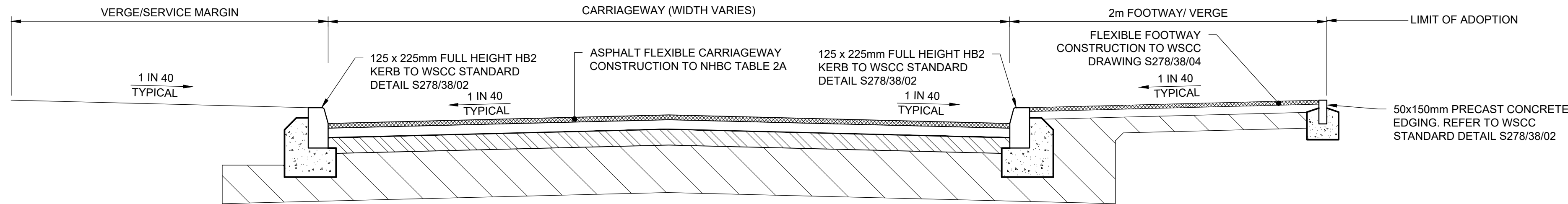
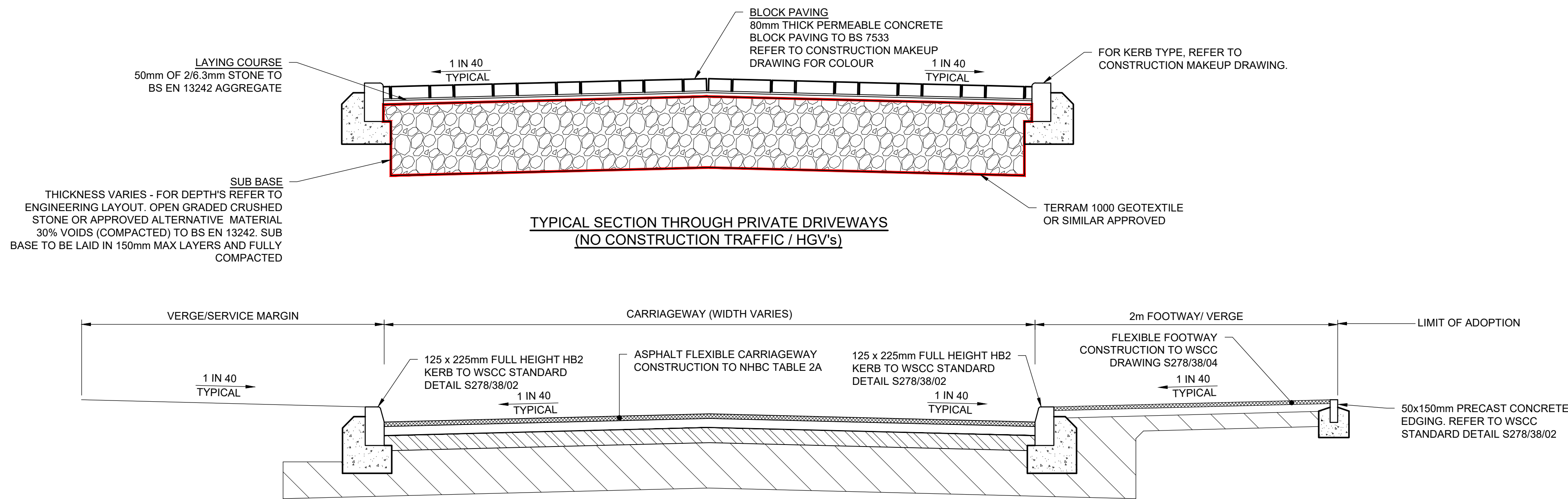
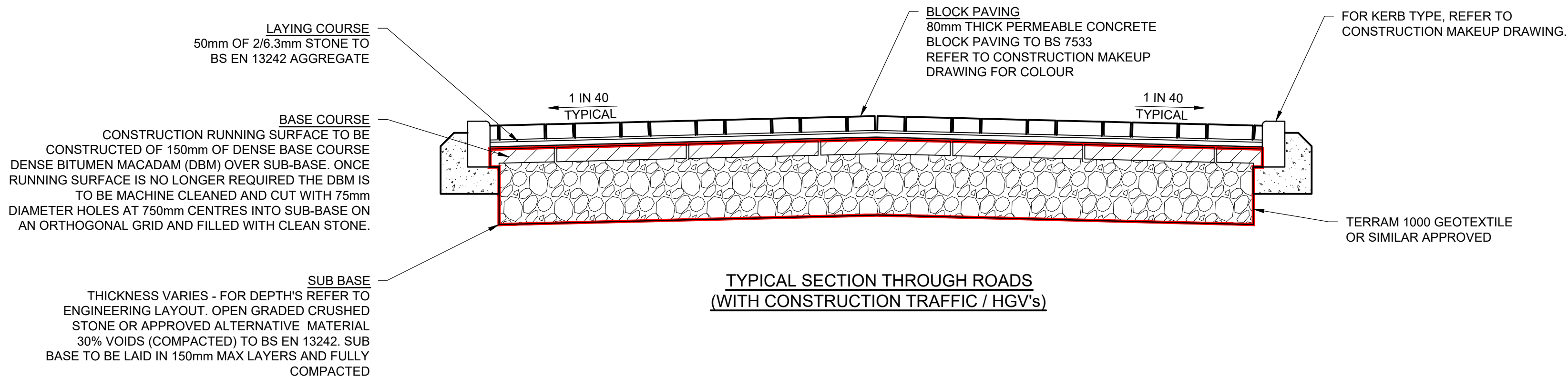
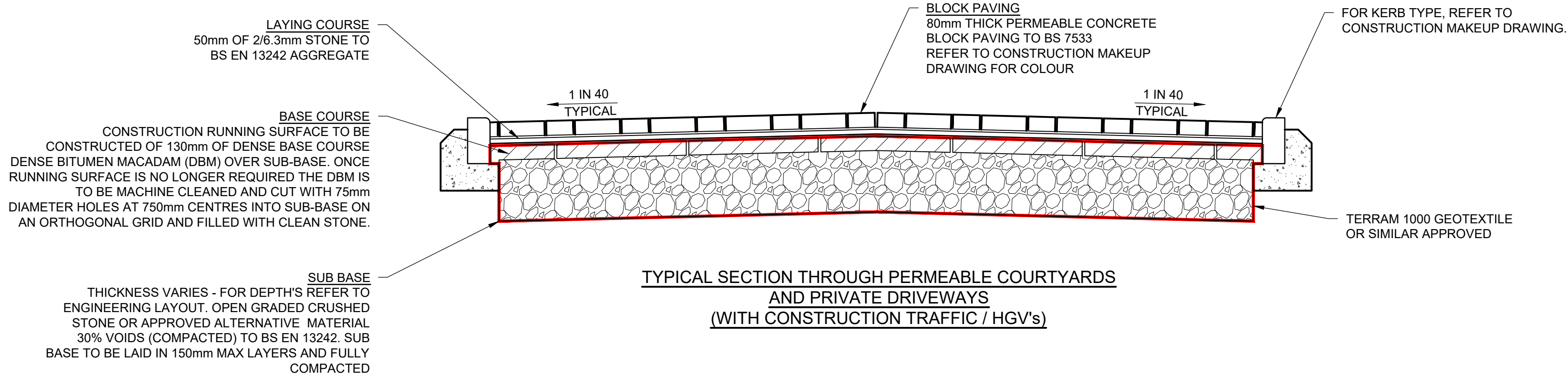
LEGEND CONT.

300mm DEEP INFILTRATION SWALE WITH 1 IN 3 SIDE SLOPES AND 1m WIDE

APPENDIX B

Odyssey Drawings 18-344/821, 823 – 825

Construction Details

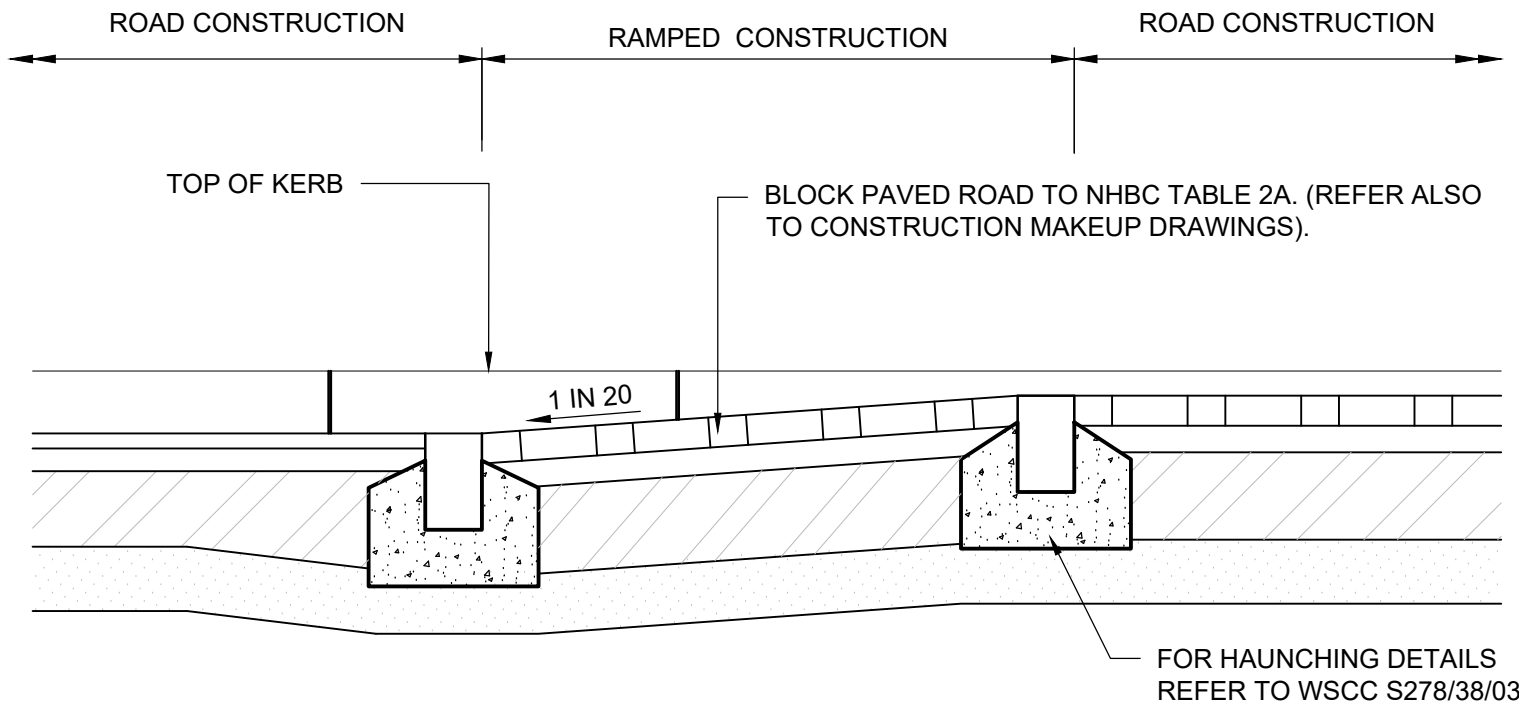


TYPICAL SECTION THROUGH CARRIAGEWAY

TABLE '2A' PRIVATE ROAD HAVING FREQUENT USE BY COMMERCIAL VEHICLES			
CONSTRUCTION		ROAD TYPE	
		BITUMINOUS MACADAM	ROAD BLOCK PAVERS
SUB-BASE	GRANULAR SUB-BASE MATERIAL TYPE 1 TO CLAUSE 803 TABLE 8/2 MCHW VOLUME 1 SERIES 800 (2)	TABLE 3*	WHERE CBR <5% = 150 WHERE CBR >5% = TABLE 3*
BASE (ROAD BASE)	DENSE BITUMINOUS MACADAM (100/150 PEN PAVING GRADE BITUMEN) WITH CRUSHED ROCK AGGREGATE TO BS 4987 (GROUP 1 MIX) CONCRETE DESIGNATION (BS 8500-2 TABLE 7)	100 (Ø32mm SIZE TO CLAUSE 5.2)	N/A
BINDER COURSE (BASE COURSE)	DENSE BITUMINOUS MACADAM (100/150 PEN PAVING GRADE BITUMEN) WITH CRUSHED ROCK AGGREGATE TO BS 4987 (GROUP 2 MIX)	60 (Ø20mm SIZE TO CLAUSE 6.5)	60 (Ø20mm SIZE TO CLAUSE 6.5)
SURFACE COURSE (WEARING COURSE)	DENSE BITUMINOUS MACADAM (100/150 PEN PAVING GRADE BITUMEN) WITH CRUSHED ROCK AGGREGATE TO BS 4987 (GROUP 3 MIX) HOT ROLLED ASPHALT TO BS 594-1 MASTIC ASPHALT TO BS 1447 CONCRETE DESIGNATION (BS 8500-2 TABLE 7)	30 (Ø10mm SIZE TO CLAUSE 7.4) 40 (DESIGNATION 30% Ø14) 30 (GRADE 5 - 40% Ø10mm SIZE)	N/A N/A N/A
BEDDING COURSE	SHARP SAND TO BS 7533-3 CATEGORY II OF ANNEX D	N/A	50
PAVERS	BLOCK PAVERS TO BS 6717 OF CLASS MARKINGS W2, A2 AND S3 (WEATHERING, ABRASION AND SLIP/SKID CLASSES)	N/A	80

RECOMMENDED DEISGN CBR AS PER LEAP REPORT IS 2.9%. IN SITU TESTING SHOULD BE CARRIED OUT ON SITE AT AGREED LOCATIONS/ INTERVALS/ DEPTHS TO CONFIRM CBR AT FORMATION AND DESIGN TO SUIT SITE INSPECTOR APPROVALS.

TABLE '3' MINIMUM SUB-BASE THICKNESS FOR PAVED AREAS		
CBR VALUES	MINIMUM THICKNESS (mm) OF SUB-BASE (CONSOLIDATED IN ACCORDANCE WITH MCHW VOLUME 1 CLAUSE 801, TABLE 8/1)	
	WITHOUT GEOTEXTILE	WITH GEOTEXTILE
< 2%	N/A	300
2-3%	325	225
3-5%	250	150
5-7%	150	N/A
7-20%	100	N/A



SECTION THROUGH RAISED TABLE

WEST SUSSEX COUNTY COUNCIL STANDARD DETAILS TO BE REFERRED TO THROUGHOUT THE CONSTRUCTION

DRAWING NO:	DRAWING TITLE:
S278/38/02 REV B	APPROVED KERB TYPE SELECTION SHEET 1
S278/38/03 REV A	APPROVED KERB TYPE SELECTION SHEET 2
S278/38/04 REV B	FOOTWAY/ CYCLEWAY TYPE 1 & 2
S278/38/06 REV A	FOOTWAY/ FOOTPATH (RURAL) TYPE 5
S278/38/07 REV C	FOOTWAY CROSSOVER TYPE 1 - RESIDENTIAL
S278/38/09 REV B	SERVICE MARGINS
S278/38/16 REV D	STREET FURNITURE - RAMP FEATURE
S278/38/18 REV A	STREET FURNITURE - TACTILE CROSSINGS
S278/38/20 REV B	CARRIAGEWAY TIE-IN OPTIONS
CARRIAGEWAY TIE-IN OPTIONS	CARRIAGEWAY FLEXIBLE SPECIFICATION

REDROW GROUP STANDARD DETAILS TO BE REFERRED TO THROUGH THE CONSTRUCTION

DRAWING NO:	TITLE
F-SD0105	LAND DRAINAGE DETAILS / FILTER DRAINS
F-SD0114	TYPICAL PATIO / PAVING DETAILS
F-SD0300	LEVEL AND STANDARD THRESHOLDS

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE MANUAL FOR CONTRACT DOCUMENTS, VOLUME 1, SPECIFICATION FOR HIGHWAY WORKS, WSCC SPECIFICATION AND ALL OTHER RELATED DRAWINGS ISSUED.
- IF THERE IS ANY AMBIGUITY BETWEEN THE SPECIFICATION AND THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER.
- DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
- ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES
- ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
- NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PERMISSION FROM THE ENGINEER.
- FOR CONSTRUCTION MAKEUP REFER TO ODYSSEY DRAWING NUMBERS 18-344/803-805.
- FOR ENGINEERING LAYOUTS REFER TO ODYSSEY DRAWING NUMBERS 18-344/800-802.

TENDER
ISSUE

Rev

Amendments

Drn

Chk

App

Date

A

DETAILS AMENDED TO SUIT TENDER UPDATE

JA

SG

LH

27.08.20

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Job Title

FORD LANE,
YAPTON

Drawing Title

PRIVATE
CONSTRUCTION DETAILS

Client

REDROW

Scale

NTS @ A1

Date

FEB 2020

Designed

JA

Drawn

HM

Checked

SG

Approved

LH

Job No

18-344

Drawing No

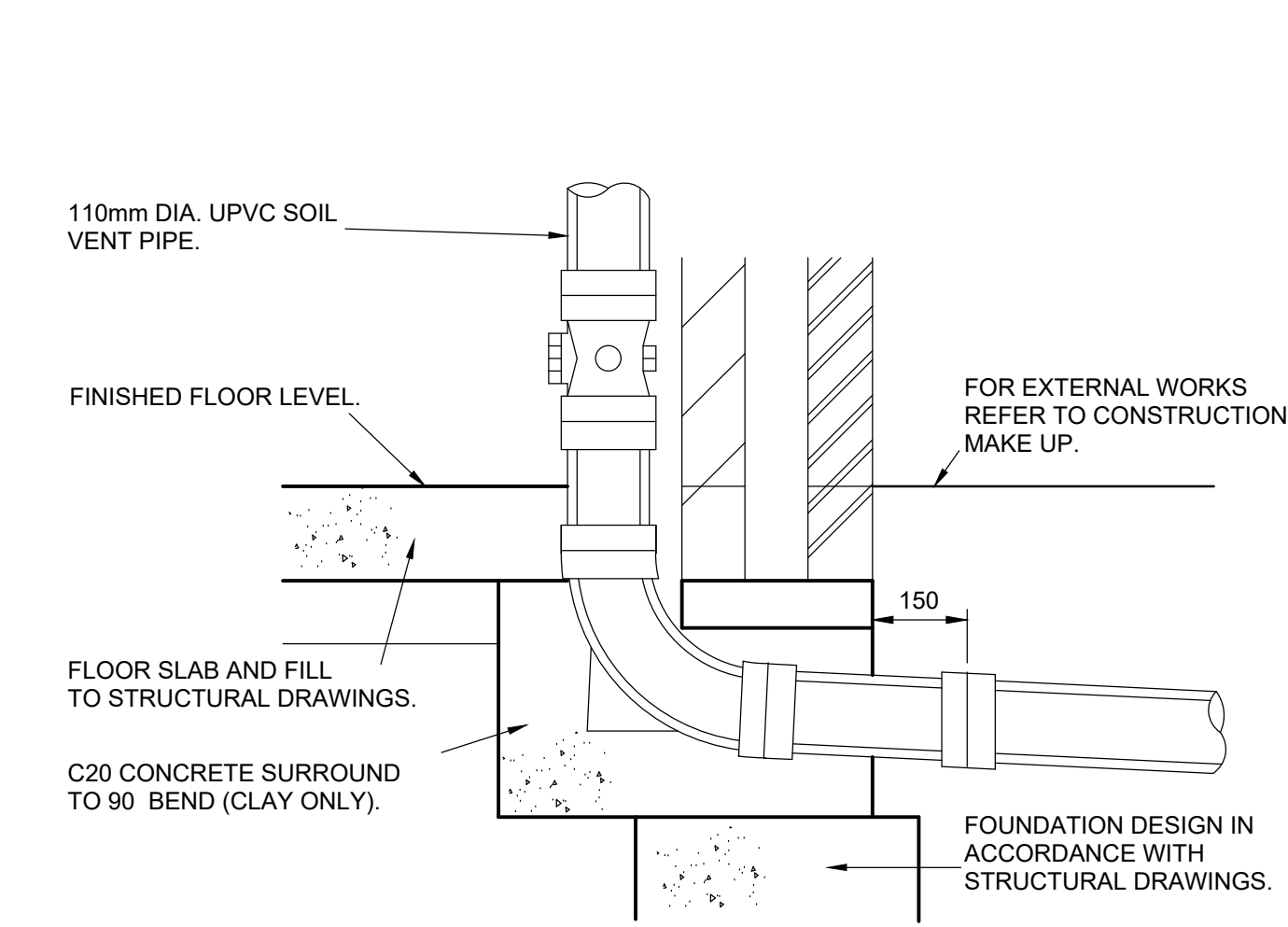
18-344/821

Rev

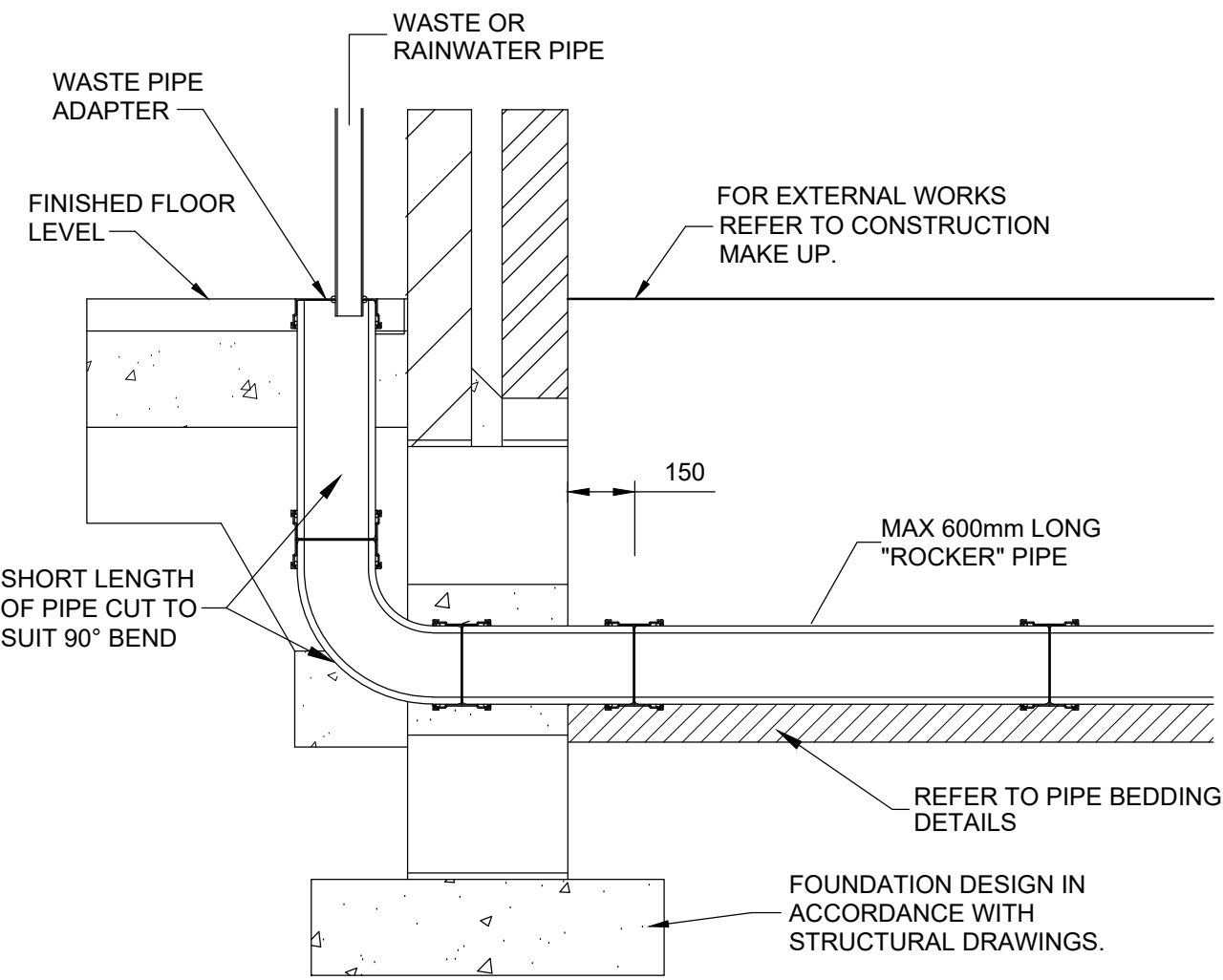
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APRA DISTRICT COUNCIL 13130900C

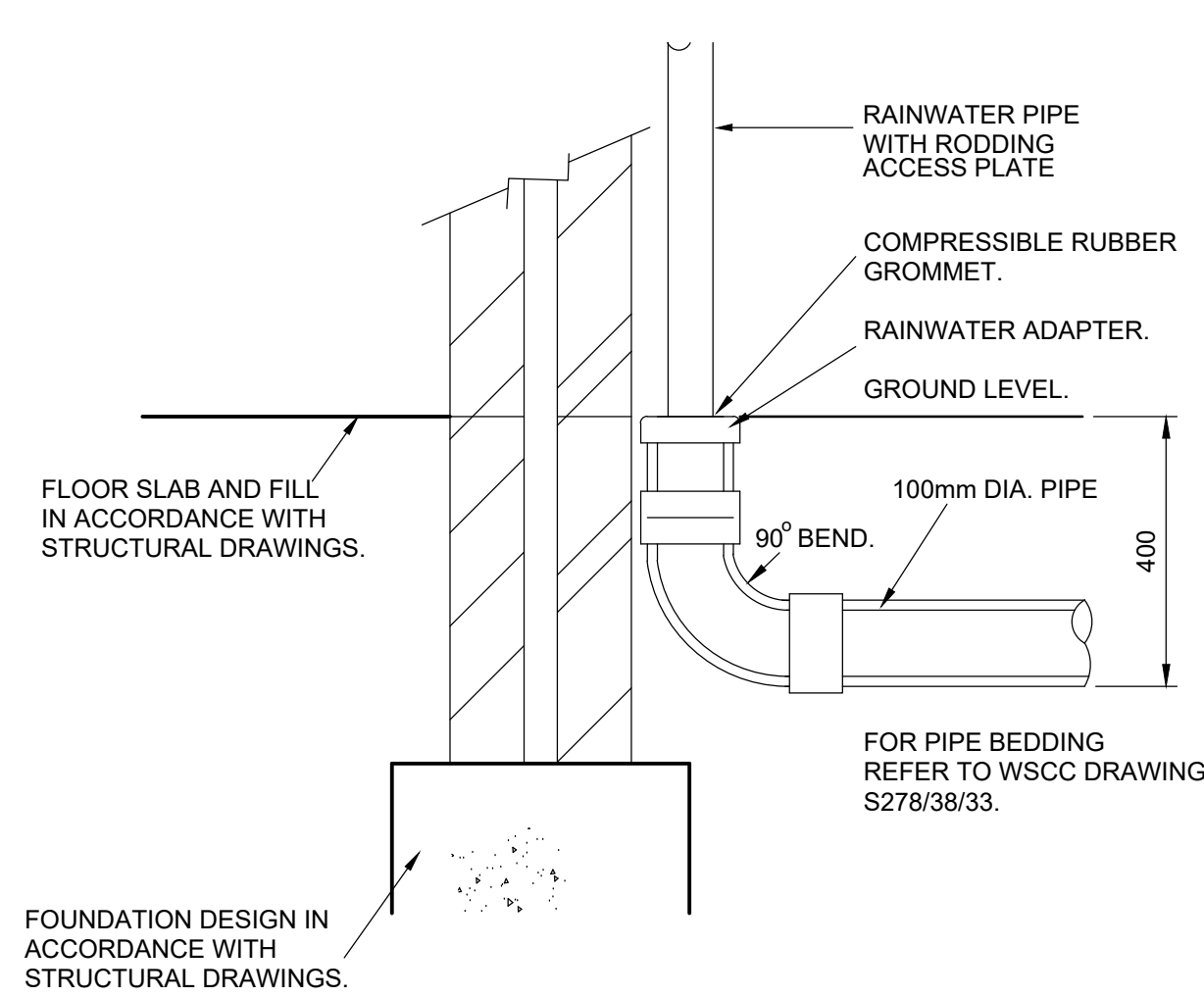




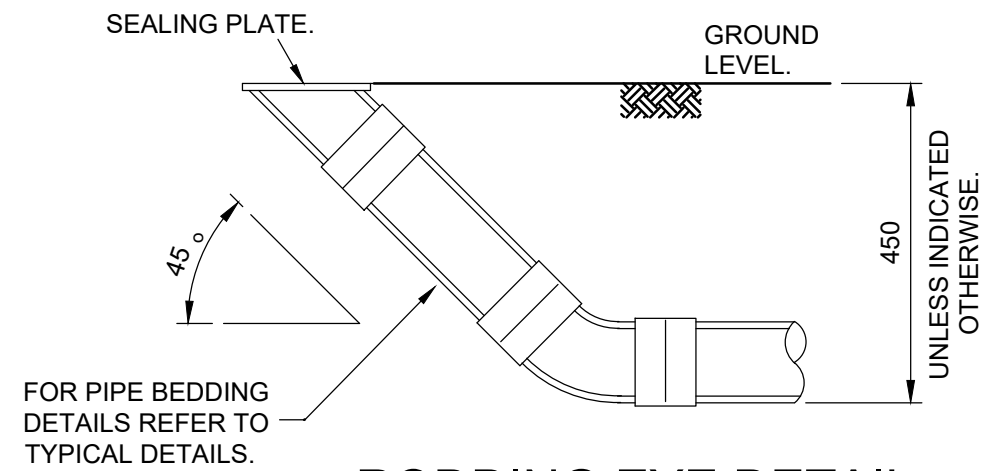
SOIL VENT PIPE CONNECTION



WASTE PIPE DIRECT CONNECTION DETAIL

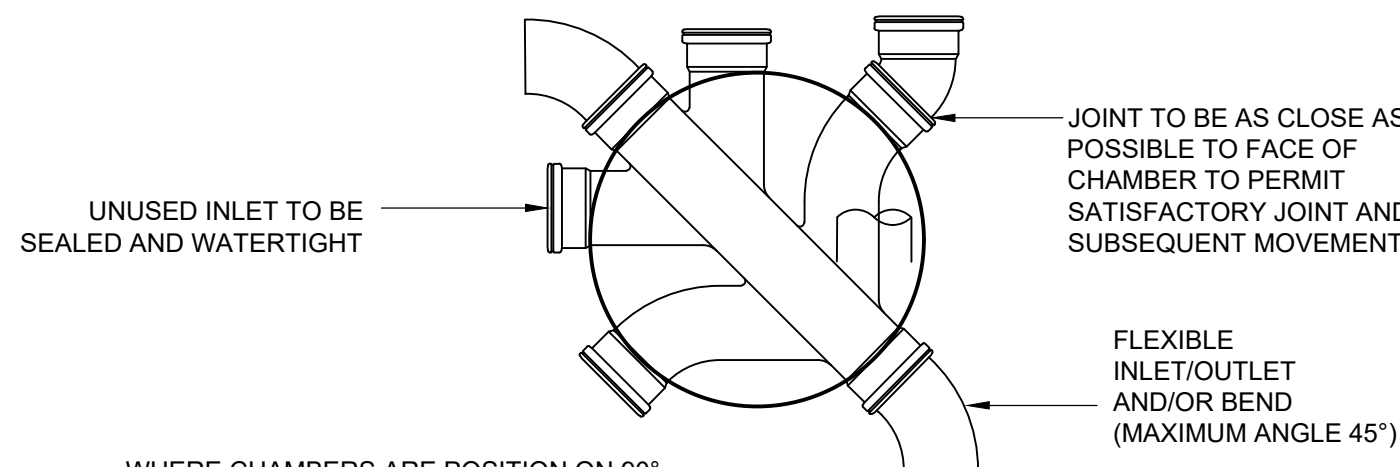


RAINWATER PIPE CONNECTION

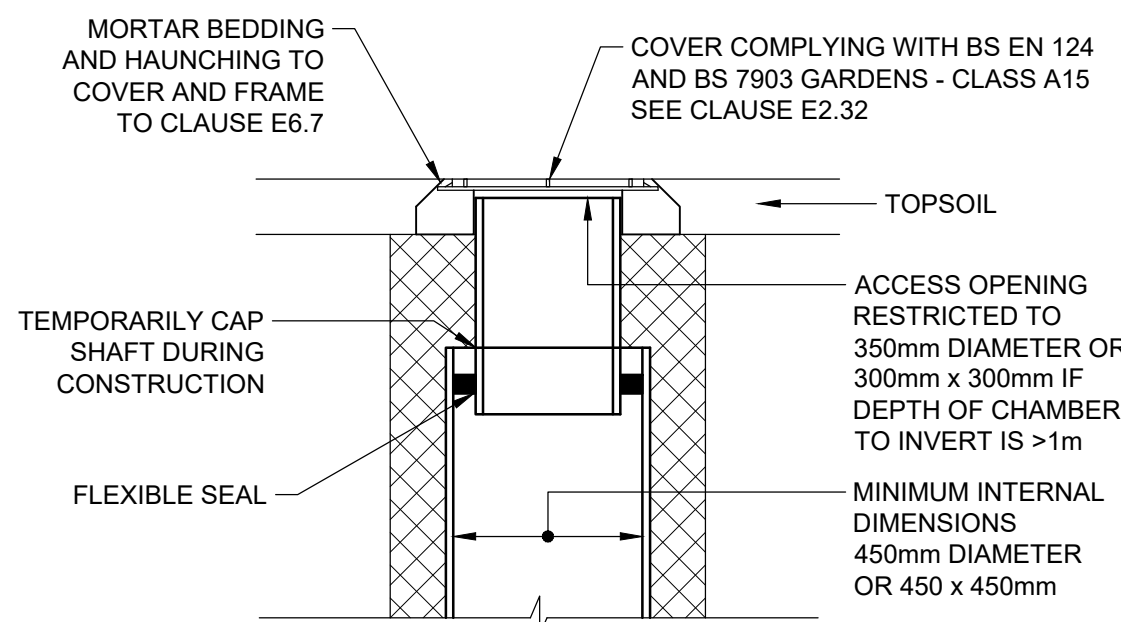


RODDING EYE DETAIL

TO BE USED IN PEDESTRAIN AND LANDSCAPED AREAS NOT SUBJECT TO VEHICULAR LOADING. MAXIMUM DEPTH TO INVERT 600mm.



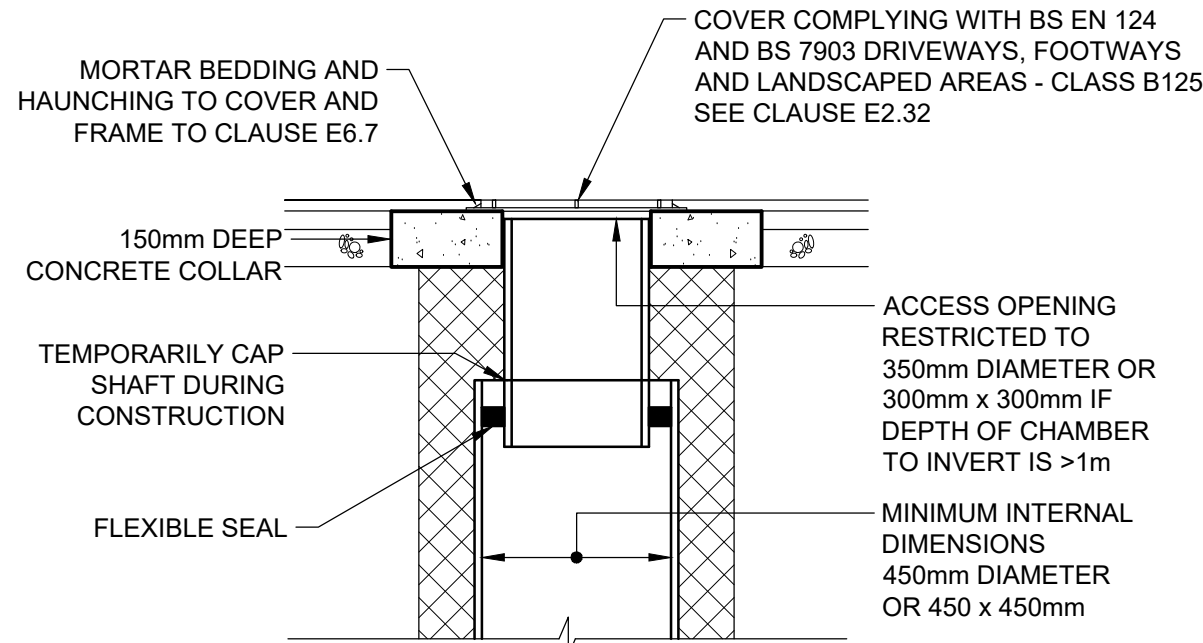
TYPICAL INSPECTION CHAMBER BASE LAYOUT - TYPE 3
(FLEXIBLE MATERIAL DETAIL)



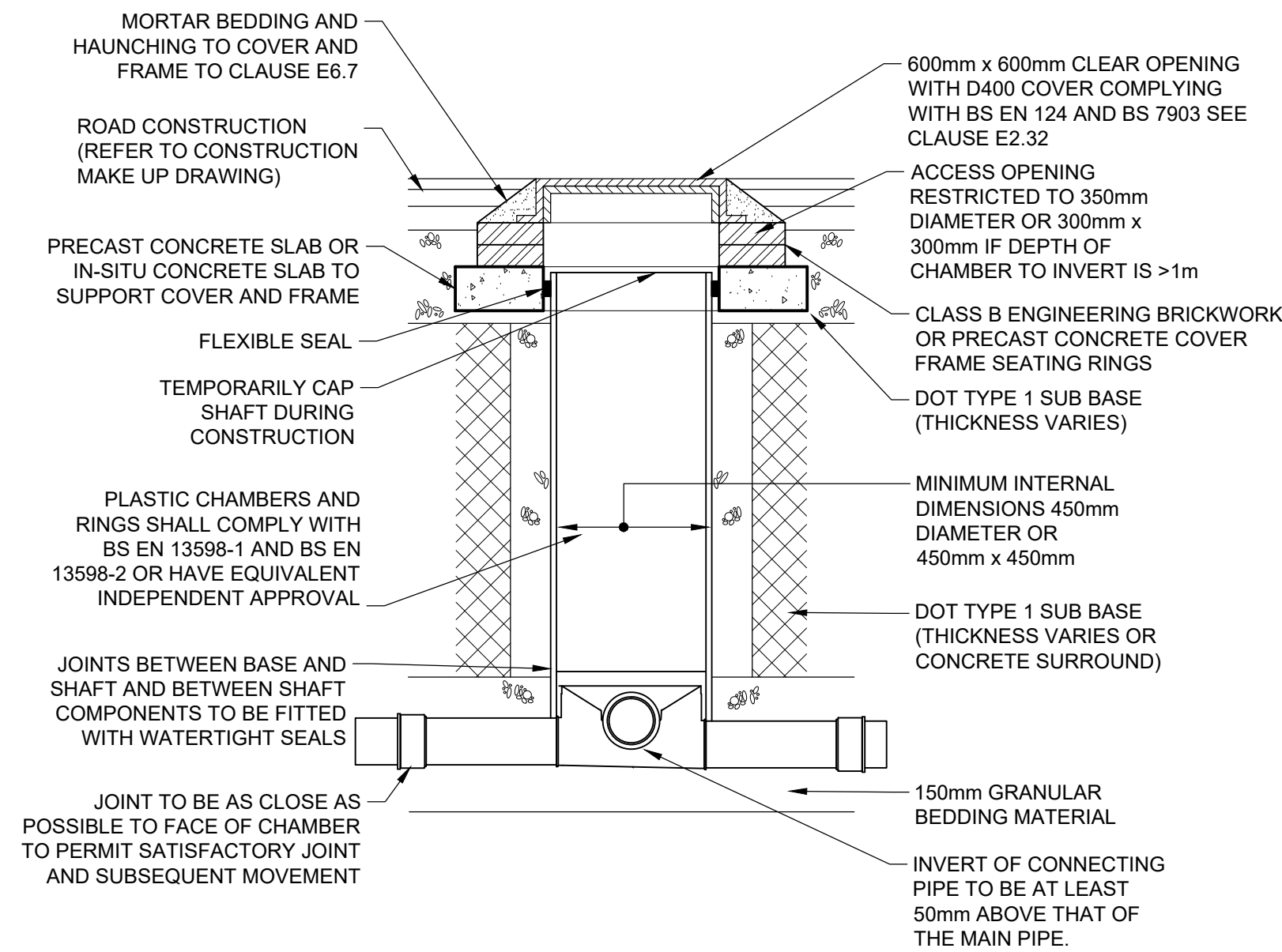
SITED IN PRIVATE GARDENS

PLASTIC CHAMBERS AND RINGS SHALL COMPLY WITH BS EN 13598-1 AND BS EN 13598-2 OR HAVE EQUIVALENT INDEPENDENT APPROVAL

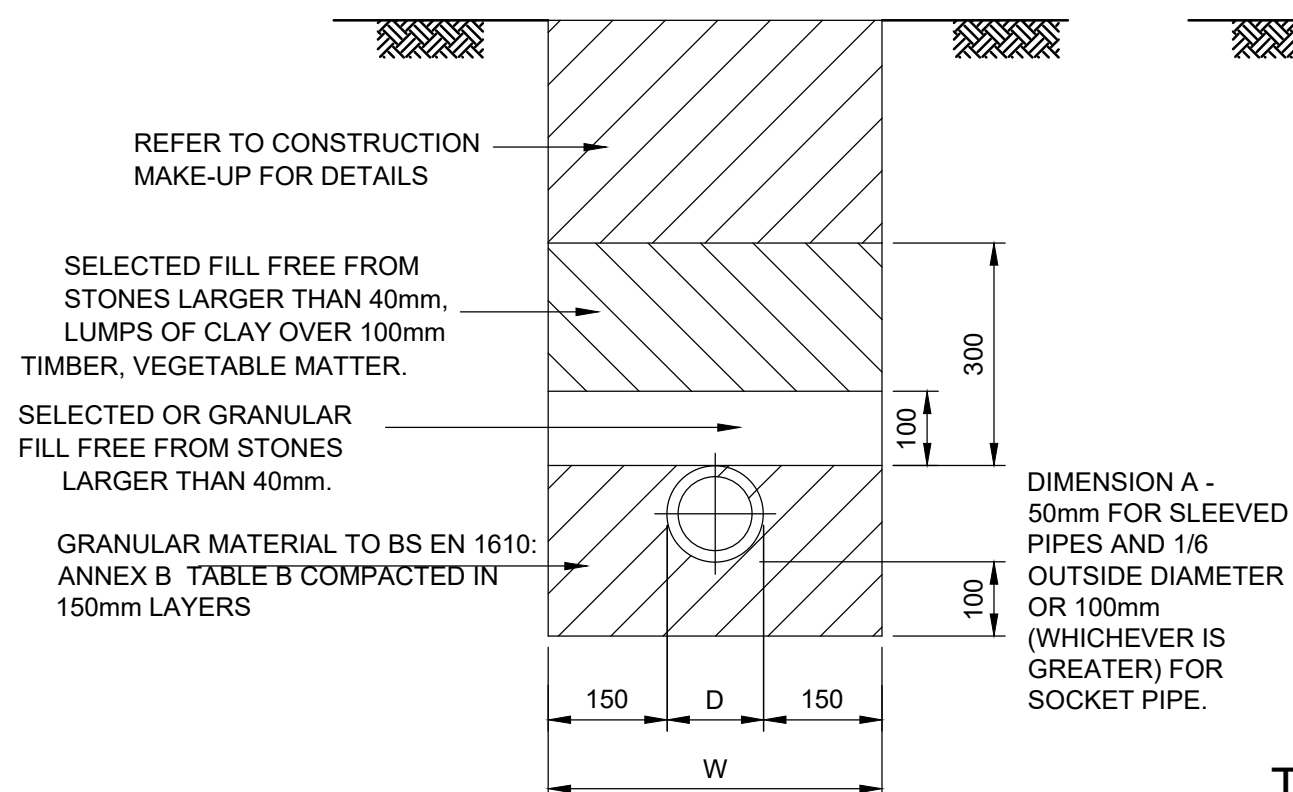
ALTERNATIVE TOP DETAILS FOR DOMESTIC DRIVEWAYS/ FOOTWAYS/ LANDSCAPED AREAS - TYPE 3



SITED IN DOMESTIC DRIVEWAYS OR FOOTWAYS

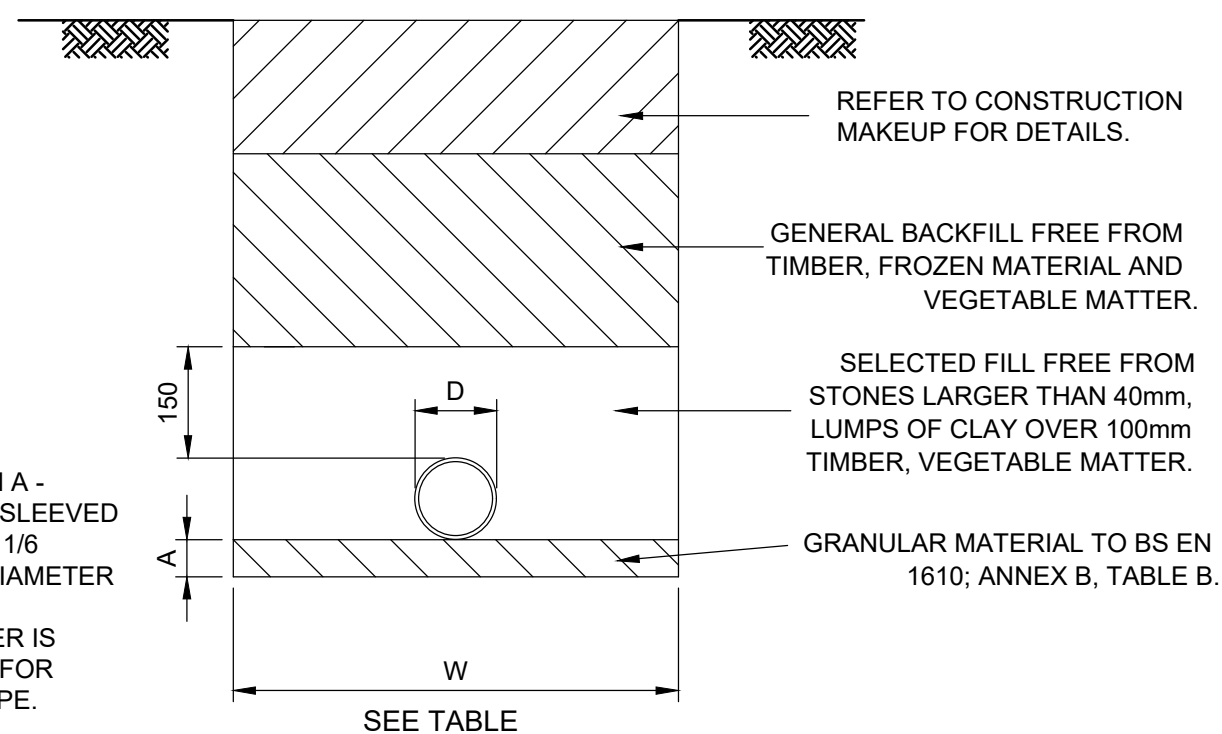


TYPICAL INSPECTION CHAMBER DETAIL - TYPE 3
(FLEXIBLE MATERIAL DETAIL) MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE IN AREAS SUBJECT TO VEHICLE LOADING 3m, NON-ENTRY



TYPICAL PIPE BEDDING DETAIL: TYPE 3 (UPVC PIPES)

LOCATION: PEDESTRIAN AREAS: 0.6 m - 8.0 m DEEP. VEHICLE AREAS: 1.2 m - 8.0 m DEEP.

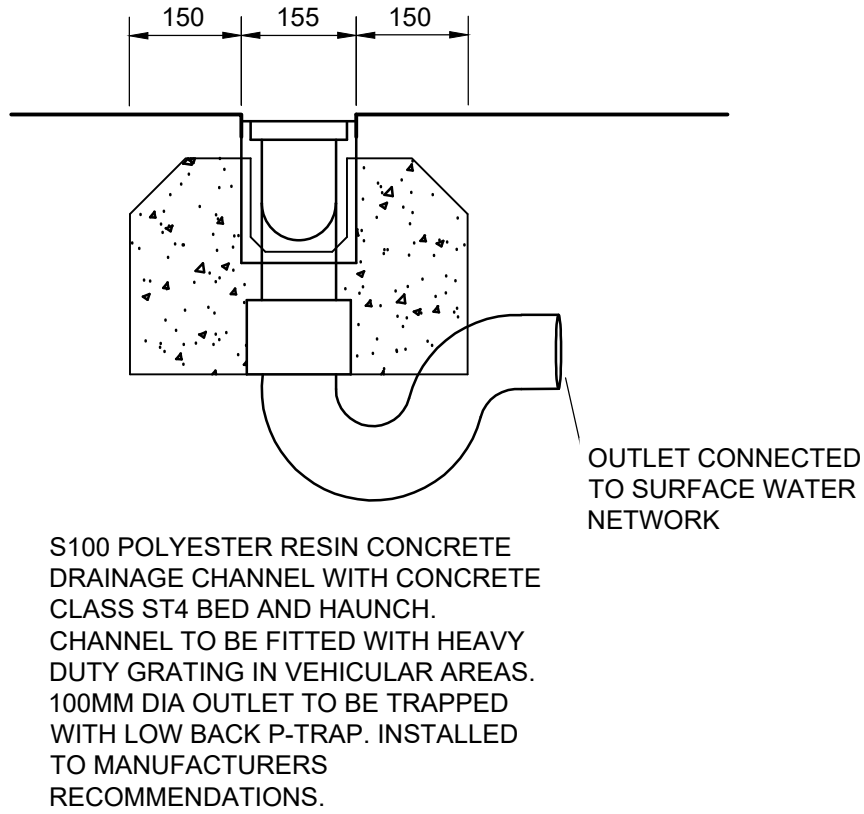


TYPICAL PIPE BEDDING DETAIL: TYPE 1 (CLAY PIPES) CLASS F

LOCATION: PEDESTRIAN AREAS UP TO 8.0 m DEEP. VEHICLE AREAS: 1.2 m - 8.0 m (100mm DIA. PIPE). 1.2 m - 8 m (150mm DIA. PIPE).

TRENCH WIDTHS FOR VARIOUS SIZE PIPES					
D	100	150	225	300	375
W	450	600	750	750	900

TYPICAL ACO DETAIL



NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE MANUAL FOR CONTRACT DRAWINGS, VOLUME 1, SPECIFICATION FOR HIGHWAY WORKS, WEST SUSSEX COUNTY COUNCIL SPECIFICATION, "SEWERS FOR ADOPTION SEVENTH EDITION - A DESIGN GUIDE FOR DEVELOPERS", LOCAL WATER AUTHORITY GUIDANCE AND ALL OTHER RELATED DRAWINGS ISSUED.
- THE CENTRELINE OF THE MANHOLE IS NOT NECESSARILY COINCIDENTAL WITH THE CENTRELINE OF THE MAIN PIPE.
- POSITION OF MANHOLE COVER SLAB AND STEP RUNGS TO BE DIRECTED ON SITE.
- WHERE PIPES OF DIFFERENT DIAMETERS ARE BUILT INTO THE MANHOLE, THEY SHOULD BE LAID TO COMMON SOFFIT UNLESS OTHERWISE STATED.
- MINIMUM GULLY PIPE GRADIENT TO BE 1:150
- AT SIGNIFICANT CHANGES IN DIRECTION, THE LARGEST PRACTICAL RADIUS OF CHANNEL JUNCTIONS SHALL BE USED.
- ALL MORTAR TO BE CLASS 1 UNLESS NOTED OTHERWISE.
- BRICKS TO BE ENGINEERING CLASS B TO BS EN 771-1, LAID IN ENGLISH BOND ON CLASS (i) MORTAR TO CLAUSE 2404, SPECIFICATION FOR HIGHWAY WORKS. ANY OVER EXCAVATION TO BE MADE GOOD.
- CONNECTIONS TO CARRIER DRAINS TO BE BY MEANS OF 'Y' JUNCTIONS OR SADDLES, AS APPROPRIATE.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- ALL TESTING TO BE CARRIED OUT AT THE CONTRACTORS EXPENSE. ALL INSPECTION TO BE IN ACCORDANCE WITH SEWERS FOR ADOPTION SEVENTH EDITION AND WEST SUSSEX COUNTY COUNCIL
- PERMITTED MATERIAL FOR PIPES ARE SHOWN IN PART E, SEWERS FOR ADOPTION SEVENTH EDITION.
- ALL CONCRETE AND CONCRETE PRODUCTS TO BE SULPHATE RESISTING.

TENDER
ISSUE

Rev	Amendments	Dm	Chk	App	Date
A	UPDATED TO SUIT LATEST DRAINAGE STRATEGY	JA	SG	LH	27.08.20

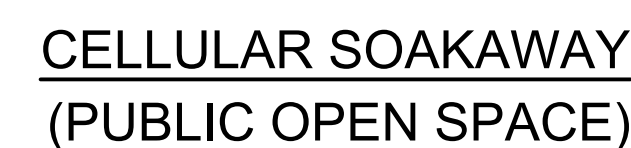
ODYSSEY
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E: info@odysseyconsult.co.uk
W: www.odysseyconsult.co.uk

Job Title
FORD LANE, YAPTON

Drawing Title
PRIVATE DRAINAGE CONSTRUCTION DETAILS SHEET 1 OF 2

Client
REDROW

Scale NTS @ A1	Date FEB 2020	Designed JA
Drawn HM	Checked SG	Approved LH
Job No 18-344	Drawing No 18-344/824	Rev A



- | NOTES | |
|-------|--|
| 1. | THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE MANUAL FOR CONTRACT DOCUMENTS, VOLUME 1, SPECIFICATION FOR HIGHWAY WORKS, WSSC SPECIFICATION AND ALL OTHER RELATED DRAWINGS ISSUED. |
| 2. | IF THERE IS ANY AMBIGUITY BETWEEN THE SPECIFICATION AND THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER. |
| 3. | DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY. |
| 4. | ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES |
| 5. | ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS. |
| 6. | NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PERMISSION FROM THE ENGINEER. |
| 7. | FOR ENGINEERING LAYOUTS REFER TO ODYSSEY DRAWING NUMBERS 18-344/800-802. |

TENDER
ISSUE

A	UPDATED TO SUIT LATEST DRAINAGE STRATEGY	JA	SG	LH	27.08.20
Rev	Amendments	Drn	Chk	App	Date



Job Title

FORD LANE,
YAPTON

Drawing Title
PRIVATE DRAINAGE CONSTRUCTION DETAILS SHEET 2 OF 2

Client 

Scale NTS @ A1	Date FEB 2020	Designed JA
Drawn HM	Checked SG	Approved LH
Job No 18-344	Drawing No 18-344/825	Rev A

APPENDIX C

Odyssey Drawing 18-344/108

Catchment Plan



- NOTES**
1. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
 2. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
 3. THIS DRAWING IS A PRELIMINARY REVIEW ONLY AND SUBJECT TO DETAILED DESIGN.
 4. ODYSSEY ACCEPTS NO LIABILITY FOR THE ACCURACY OF SURVEY INFORMATION AND LAYOUTS SUPPLIED BY OTHERS.
 5. THIS DRAWING IS BASED ON THE PLANNING LAYOUT PROVIDED BY GEOFF PERRY ASSOCIATES. DRAWING REFERENCE AG05-005A.
 6. FOR PROPOSED SURFACE WATER DRAINAGE LAYOUT, REFER TO ODYSSEY DRAWING 18-344/802.
- LEGEND**
- TANK 1 CATCHMENT
 - TANK 2 CATCHMENT
 - TANK 3 CATCHMENT
 - TANK 4 CATCHMENT
 - TANK 5 CATCHMENT
 - PLOT SOAKAWAY CATCHMENT
 - PERMEABLE PAVING CATCHMENT
 - SWALE CATCHMENT
 - BASIN CATCHMENT

FOR PLANNING PURPOSES ONLY

E SWALE UPDATED	SG	RS	RS	29.10.20
D TANK 5 CATCHMENT ADDED	JA	SG	LH	16.10.20
C UPDATED TO SUIT REVISED SITE LAYOUT	SG	LH	LH	09.10.20
B UPDATED TO SUIT REVISED SITE LAYOUT AND DRAINAGE STRATEGY	JA	SG	LH	16.09.20
A UPDATED TO SUIT REVISED SITE LAYOUT	LS	SG	LH	16.08.20
Rev	Amendments	Drawn	Checked	Approved

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Job Title			
FORD LANE, YAPTON			
Drawing Title			
SURFACE WATER CATCHMENT PLAN			
Client			
			
Scale	Date	Designed	SG
1:500 @A0	JAN 2020		
Drawn	Checked	Approved	LH
LP	SG		
Job No	Drawing No	Rev	E
18-344	18-344/108		

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APPENDIX D

Odyssey Drawing 18-344/107

Overland Flow Routes



P:\18-344 - Ford Lane, Yapton\Tech\Asad\Drawings\100 Series (RM)\18-344-107 Overland Flow Routes.dwg

- NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS ISSUED BY THE ARCHITECT AND ENGINEER.
 2. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
 3. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
 4. ODYSSEY ACCEPT NO LIABILITY FOR THE ACCURACY OF SURVEY INFORMATION AND LAYOUTS SUPPLIED BY OTHERS.
 5. THIS DRAWING IS BASED ON THE PLANNING LAYOUT PROVIDED BY GEOFF PERRY ASSOCIATES. DRAWING REFERENCE A855-065A.
 6. FOR PROPOSED SURFACE WATER DRAINAGE LAYOUT, REFER TO ODYSSEY DRAWING 18-344800-802.

- LEGEND
- SITE BOUNDARY
 - PROPOSED FINISHED FLOOR LEVEL (mAOD)
 - PROPOSED GARAGE LEVEL (mAOD)
 - PROPOSED HIGHWAY CONTOURS (20mm INTERVAL)
 - INDICATIVE DIRECTION OF OVERLAND FLOW
 - H.P. HIGH POINT
 - L.P. LOW POINT

Orchard Business Park

Path (um)

FOR PLANNING PURPOSES ONLY

E	SWALE UPDATED	SG	RS	RS	29.10.20
D	UPDATED TO SUIT REVISED SITE LAYOUT	SG	LH	LH	06.10.20
C	UPDATED TO SUIT REVISED SITE LAYOUT	JA	SG	LH	10.09.20
B	UPDATED TO SUIT REVISED SITE LAYOUT	LS	SG	LH	18.09.20
A	UPDATED TO SUIT REVISED SITE LAYOUT	BOM	SG	LH	12.06.20
Rev	Amendments	Des	Chk	App	Date

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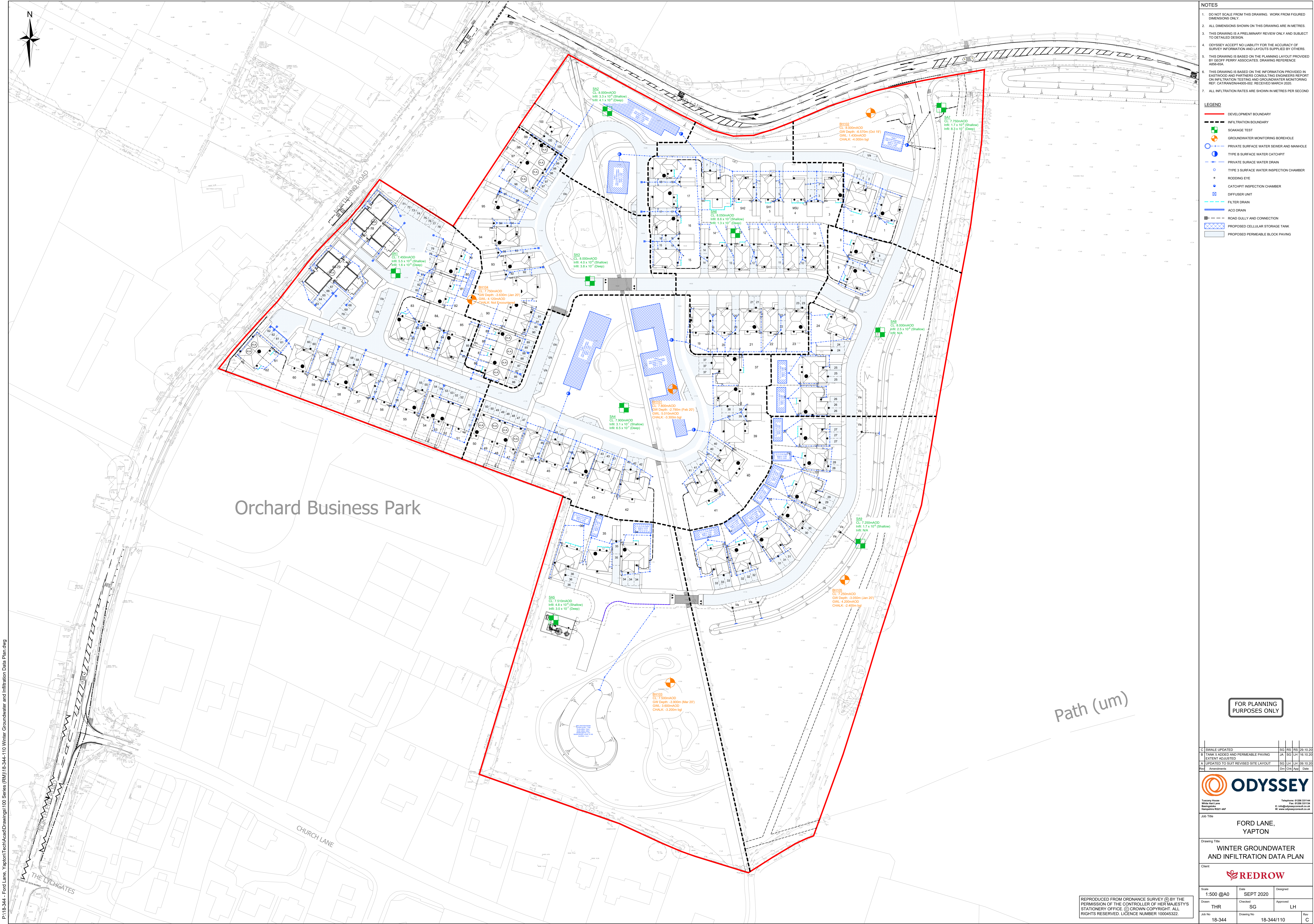
Job Title		FORD LANE, YAPTON	
Drawing Title		OVERLAND FLOW ROUTES	
Client			
Scale	1:500 @A0	Date	JAN 2020
Designed	SG	Checked	SG
Drawn	LS	Approved	LH
Job No	18-344	Drawing No	18-344/107
Rev	E		

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APPENDIX E

Odyssey Drawing 18-344/110

Winter Groundwater and Infiltration Data Plan



P:\18-344 - Ford Lane, Yapton\Tech\Asad\Drawings\100 Series (RM)\18-344-110 Winter Groundwater and Infiltration Data Plan.dwg

- NOTES
- DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
 - ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
 - THIS DRAWING IS A PRELIMINARY REVIEW ONLY AND SUBJECT TO DETAILED DESIGN.
 - ODYSSEY ACCEPTS NO LIABILITY FOR THE ACCURACY OF SURVEY INFORMATION AND LAYOUTS SUPPLIED BY OTHERS.
 - THIS DRAWING IS BASED ON THE PLANNING LAYOUT PROVIDED BY GEOFF PERRY ASSOCIATES. DRAWING REFERENCE AB56-65A.
 - THIS DRAWING IS BASED ON THE INFORMATION PROVIDED IN EASTWOOD AND PARTNERS CONSULTING ENGINEERS REPORT ON INFILTRATION TESTING AND GROUNDWATER MONITORING REF: CATRANON/0405-002. RECEIVED MARCH 2020.
 - ALL INFILTRATION RATES ARE SHOWN IN METRES PER SECOND.

- LEGEND
- DEVELOPMENT BOUNDARY
 - INFILTRATION BOUNDARY
 - SOAKAGE TEST
 - GROUNDWATER MONITORING BOREHOLE
 - PRIVATE SURFACE WATER SEWER AND MANHOLE
 - TYPE B SURFACE WATER CATCHPIT
 - PRIVATE SURFACE WATER DRAIN
 - TYPE 3 SURFACE WATER INSPECTION CHAMBER
 - ROOFTOP EYE
 - CATCHPIT INSPECTION CHAMBER
 - DIFFUSER UNIT
 - FILTER DRAIN
 - ACD DRAIN
 - ROAD GULLY AND CONNECTION
 - PROPOSED CELLULAR STORAGE TANK
 - PROPOSED PERMEABLE BLOCK PAVING

Orchard Business Park

Path (um)

FOR PLANNING PURPOSES ONLY

C SWALE UPDATED	SC	RS	RS	29.10.20
B TANK 5 ADDED AND PERMEABLE PAVING EXTENT ADJUSTED	JA	SG	LH	16.10.20
A UPDATED TO SUIT REVISED SITE LAYOUT	SG	LH	LH	06.10.20
Rev	Amendments	Chn	Chk	Appr

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Job Title	FORD LANE, YAPTON		
Drawing Title	WINTER GROUNDWATER AND INFILTRATION DATA PLAN		
Client	REDROW		
Scale	1:500 @A0	Date	SEPT 2020
Drawn	THR	Checked	SG
Job No	18-344	Drawing No	18-344/110
Rev	C	Approved	LH

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APPENDIX F

Windes Calculations

Odyssey Markides LLP				Page 1	
Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton			
Date 09/10/2020 14:22 File 18-344 Plot 14 PP Drive...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 1702 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	0.272	0.272	0.0	1.0	O K
30 min Summer	0.304	0.304	0.0	1.2	O K
60 min Summer	0.338	0.338	0.0	1.5	O K
120 min Summer	0.373	0.373	0.0	1.9	O K
180 min Summer	0.393	0.393	0.0	2.1	O K
240 min Summer	0.408	0.408	0.0	2.2	O K
360 min Summer	0.428	0.428	0.0	2.5	O K
480 min Summer	0.440	0.440	0.0	2.6	O K
600 min Summer	0.449	0.449	0.0	2.7	O K
720 min Summer	0.456	0.456	0.0	2.8	O K
960 min Summer	0.453	0.453	0.0	2.8	O K
1440 min Summer	0.444	0.444	0.0	2.7	O K
2160 min Summer	0.433	0.433	0.0	2.5	O K
2880 min Summer	0.423	0.423	0.0	2.4	O K
4320 min Summer	0.420	0.420	0.0	2.4	O K
5760 min Summer	0.414	0.414	0.0	2.3	O K
7200 min Summer	0.406	0.406	0.0	2.2	O K
8640 min Summer	0.397	0.397	0.0	2.1	O K
10080 min Summer	0.388	0.388	0.0	2.0	O K
15 min Winter	0.291	0.291	0.0	1.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	162.161	0.0	19		
30 min Summer	98.106	0.0	34		
60 min Summer	59.354	0.0	64		
120 min Summer	35.909	0.0	124		
180 min Summer	26.763	0.0	184		
240 min Summer	21.725	0.0	242		
360 min Summer	16.191	0.0	362		
480 min Summer	13.143	0.0	482		
600 min Summer	11.180	0.0	602		
720 min Summer	9.796	0.0	722		
960 min Summer	7.627	0.0	960		
1440 min Summer	5.360	0.0	1210		
2160 min Summer	3.767	0.0	1560		
2880 min Summer	2.933	0.0	1964		
4320 min Summer	2.197	0.0	2808		
5760 min Summer	1.790	0.0	3632		
7200 min Summer	1.527	0.0	4464		
8640 min Summer	1.341	0.0	5264		
10080 min Summer	1.202	0.0	6048		
15 min Winter	162.161	0.0	19		
©1982-2020 Innovyze					

Odyssey Markides LLP				Page 2	
Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton			
Date 09/10/2020 14:22 File 18-344 Plot 14 PP Drive...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	0.325	0.325	0.0	1.4	O K
60 min Winter	0.360	0.360	0.0	1.7	O K
120 min Winter	0.397	0.397	0.0	2.1	O K
180 min Winter	0.419	0.419	0.0	2.4	O K
240 min Winter	0.435	0.435	0.0	2.6	O K
360 min Winter	0.456	0.456	0.0	2.8	O K
480 min Winter	0.470	0.470	0.0	3.0	O K
600 min Winter	0.480	0.480	0.0	3.1	O K
720 min Winter	0.488	0.488	0.0	3.2	O K
960 min Winter	0.486	0.486	0.0	3.2	O K
1440 min Winter	0.477	0.477	0.0	3.1	O K
2160 min Winter	0.463	0.463	0.0	2.9	O K
2880 min Winter	0.450	0.450	0.0	2.7	O K
4320 min Winter	0.442	0.442	0.0	2.6	O K
5760 min Winter	0.431	0.431	0.0	2.5	O K
7200 min Winter	0.418	0.418	0.0	2.4	O K
8640 min Winter	0.404	0.404	0.0	2.2	O K
10080 min Winter	0.391	0.391	0.0	2.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	98.106	0.0	34		
60 min Winter	59.354	0.0	64		
120 min Winter	35.909	0.0	122		
180 min Winter	26.763	0.0	180		
240 min Winter	21.725	0.0	240		
360 min Winter	16.191	0.0	356		
480 min Winter	13.143	0.0	472		
600 min Winter	11.180	0.0	590		
720 min Winter	9.796	0.0	702		
960 min Winter	7.627	0.0	926		
1440 min Winter	5.360	0.0	1354		
2160 min Winter	3.767	0.0	1664		
2880 min Winter	2.933	0.0	2132		
4320 min Winter	2.197	0.0	3028		
5760 min Winter	1.790	0.0	3920		
7200 min Winter	1.527	0.0	4760		
8640 min Winter	1.341	0.0	5616		
10080 min Winter	1.202	0.0	6448		
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Odyssey Markides LLP		Page 3
Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton	
Date 09/10/2020 14:22 File 18-344 Plot 14 PP Drive...	Designed by WindesPC4 Checked by	
Micro Drainage		Source Control 2020.1

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.004

Time (mins)	Area
From:	To: (ha)
0	4 0.004

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton	
Date 09/10/2020 14:22 File 18-344 Plot 14 PP Drive...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 1.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00310	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	14.0
Max Percolation (l/s)	11.7	Slope (1:X)	30.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	0.000	Membrane Depth (m)	260

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Tuscany House		18-344																																																																																																																																																																																																																					
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File 18-344 Plot 34 PP Drive...		Checked by																																																																																																																																																																																																																					
Micro Drainage		Source Control 2020.1																																																																																																																																																																																																																					
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 835 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>0.190</td><td>0.190</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>0.213</td><td>0.213</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>60 min Summer</td><td>0.240</td><td>0.240</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>120 min Summer</td><td>0.270</td><td>0.270</td><td>0.0</td><td>2.3</td><td>O K</td></tr><tr><td>180 min Summer</td><td>0.288</td><td>0.288</td><td>0.0</td><td>2.5</td><td>O K</td></tr><tr><td>240 min Summer</td><td>0.300</td><td>0.300</td><td>0.0</td><td>2.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>0.316</td><td>0.316</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>0.324</td><td>0.324</td><td>0.0</td><td>3.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>0.328</td><td>0.328</td><td>0.0</td><td>3.0</td><td>O K</td></tr><tr><td>720 min Summer</td><td>0.331</td><td>0.331</td><td>0.0</td><td>3.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>0.320</td><td>0.320</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>0.301</td><td>0.301</td><td>0.0</td><td>2.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>0.276</td><td>0.276</td><td>0.0</td><td>2.4</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>0.253</td><td>0.253</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>0.231</td><td>0.231</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>0.210</td><td>0.210</td><td>0.0</td><td>1.5</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>0.192</td><td>0.192</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>0.178</td><td>0.178</td><td>0.0</td><td>1.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>0.168</td><td>0.168</td><td>0.0</td><td>1.0</td><td>O K</td></tr><tr><td>15 min Winter</td><td>0.204</td><td>0.204</td><td>0.0</td><td>1.5</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>362</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>480</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>600</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>658</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>760</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>1010</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>1408</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>1812</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>2592</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>3344</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>4040</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>4752</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>5448</td></tr><tr><td>15 min Winter</td><td>162.161</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	0.190	0.190	0.0	1.3	O K	30 min Summer	0.213	0.213	0.0	1.6	O K	60 min Summer	0.240	0.240	0.0	1.9	O K	120 min Summer	0.270	0.270	0.0	2.3	O K	180 min Summer	0.288	0.288	0.0	2.5	O K	240 min Summer	0.300	0.300	0.0	2.7	O K	360 min Summer	0.316	0.316	0.0	2.9	O K	480 min Summer	0.324	0.324	0.0	3.0	O K	600 min Summer	0.328	0.328	0.0	3.0	O K	720 min Summer	0.331	0.331	0.0	3.1	O K	960 min Summer	0.320	0.320	0.0	2.9	O K	1440 min Summer	0.301	0.301	0.0	2.7	O K	2160 min Summer	0.276	0.276	0.0	2.4	O K	2880 min Summer	0.253	0.253	0.0	2.1	O K	4320 min Summer	0.231	0.231	0.0	1.8	O K	5760 min Summer	0.210	0.210	0.0	1.5	O K	7200 min Summer	0.192	0.192	0.0	1.3	O K	8640 min Summer	0.178	0.178	0.0	1.1	O K	10080 min Summer	0.168	0.168	0.0	1.0	O K	15 min Winter	0.204	0.204	0.0	1.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	162.161	0.0	19	30 min Summer	98.106	0.0	34	60 min Summer	59.354	0.0	64	120 min Summer	35.909	0.0	122	180 min Summer	26.763	0.0	182	240 min Summer	21.725	0.0	242	360 min Summer	16.191	0.0	362	480 min Summer	13.143	0.0	480	600 min Summer	11.180	0.0	600	720 min Summer	9.796	0.0	658	960 min Summer	7.627	0.0	760	1440 min Summer	5.360	0.0	1010	2160 min Summer	3.767	0.0	1408	2880 min Summer	2.933	0.0	1812	4320 min Summer	2.197	0.0	2592	5760 min Summer	1.790	0.0	3344	7200 min Summer	1.527	0.0	4040	8640 min Summer	1.341	0.0	4752	10080 min Summer	1.202	0.0	5448	15 min Winter	162.161	0.0	19
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Tuscany House		18-344			
White Hart Lane		Ford Lane, Yapton			
Basingstoke RG21 4AF		Plot 34 PP			
Date 16/09/2020 13:21		Designed by WindesPC4			
File 18-344 Plot 34 PP Drive...		Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	0.231	0.231	0.0	1.8	O K
60 min Winter	0.261	0.261	0.0	2.2	O K
120 min Winter	0.296	0.296	0.0	2.6	O K
180 min Winter	0.316	0.316	0.0	2.9	O K
240 min Winter	0.331	0.331	0.0	3.1	O K
360 min Winter	0.349	0.349	0.0	3.3	O K
480 min Winter	0.360	0.360	0.0	3.4	O K
600 min Winter	0.367	0.367	0.0	3.5	O K
720 min Winter	0.371	0.371	0.0	3.6	O K
960 min Winter	0.357	0.357	0.0	3.4	O K
1440 min Winter	0.332	0.332	0.0	3.1	O K
2160 min Winter	0.297	0.297	0.0	2.6	O K
2880 min Winter	0.264	0.264	0.0	2.2	O K
4320 min Winter	0.228	0.228	0.0	1.8	O K
5760 min Winter	0.197	0.197	0.0	1.4	O K
7200 min Winter	0.174	0.174	0.0	1.1	O K
8640 min Winter	0.160	0.160	0.0	0.9	O K
10080 min Winter	0.148	0.148	0.0	0.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	98.106	0.0	33		
60 min Winter	59.354	0.0	62		
120 min Winter	35.909	0.0	120		
180 min Winter	26.763	0.0	180		
240 min Winter	21.725	0.0	238		
360 min Winter	16.191	0.0	354		
480 min Winter	13.143	0.0	468		
600 min Winter	11.180	0.0	578		
720 min Winter	9.796	0.0	688		
960 min Winter	7.627	0.0	886		
1440 min Winter	5.360	0.0	1096		
2160 min Winter	3.767	0.0	1536		
2880 min Winter	2.933	0.0	1960		
4320 min Winter	2.197	0.0	2764		
5760 min Winter	1.790	0.0	3512		
7200 min Winter	1.527	0.0	4112		
8640 min Winter	1.341	0.0	4848		
10080 min Winter	1.202	0.0	5552		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Plot 34 PP	
Date 16/09/2020 13:21 File 18-344 Plot 34 PP Drive...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.005

Time (mins)	Area
From:	To: (ha)
0	4 0.005

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Plot 34 PP																									
Date 16/09/2020 13:21 File 18-344 Plot 34 PP Drive...	Designed by WindesPC4 Checked by																									
Micro Drainage Source Control 2020.1																										
<u>Model Details</u> Storage is Online Cover Level (m) 1.000 <u>Porous Car Park Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.00612</td> <td>Width (m)</td> <td>6.0</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1000</td> <td>Length (m)</td> <td>7.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>11.7</td> <td>Slope (1:X)</td> <td>40.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Depression Storage (mm)</td> <td>5</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Evaporation (mm/day)</td> <td>3</td> </tr> <tr> <td>Invert Level (m)</td> <td>0.000</td> <td>Membrane Depth (m)</td> <td>260</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.00612	Width (m)	6.0	Membrane Percolation (mm/hr)	1000	Length (m)	7.0	Max Percolation (l/s)	11.7	Slope (1:X)	40.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	0.000	Membrane Depth (m)	260
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<u>Summary of Results for 10 year Return Period</u> Half Drain Time : 7173 minutes. Outflow is too low. Design is unsatisfactory. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>6.325</td><td>0.025</td><td>0.0</td><td>7.2</td><td>O K</td></tr><tr><td>30 min Summer</td><td>6.332</td><td>0.032</td><td>0.0</td><td>9.1</td><td>O K</td></tr><tr><td>60 min Summer</td><td>6.340</td><td>0.040</td><td>0.0</td><td>11.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>6.350</td><td>0.050</td><td>0.0</td><td>14.3</td><td>O K</td></tr><tr><td>180 min Summer</td><td>6.357</td><td>0.057</td><td>0.0</td><td>16.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>6.363</td><td>0.063</td><td>0.0</td><td>17.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>6.371</td><td>0.071</td><td>0.0</td><td>20.3</td><td>O K</td></tr><tr><td>480 min Summer</td><td>6.378</td><td>0.078</td><td>0.0</td><td>22.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>6.383</td><td>0.083</td><td>0.0</td><td>23.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>6.388</td><td>0.088</td><td>0.0</td><td>25.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>6.392</td><td>0.092</td><td>0.0</td><td>26.1</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>6.396</td><td>0.096</td><td>0.0</td><td>27.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>6.400</td><td>0.100</td><td>0.0</td><td>28.5</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>6.402</td><td>0.102</td><td>0.0</td><td>29.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>6.410</td><td>0.110</td><td>0.0</td><td>31.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>6.415</td><td>0.115</td><td>0.0</td><td>32.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>6.419</td><td>0.119</td><td>0.0</td><td>33.8</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>6.421</td><td>0.121</td><td>0.0</td><td>34.6</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>6.423</td><td>0.123</td><td>0.0</td><td>35.2</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>51.534</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>32.474</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>20.463</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>12.894</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>9.842</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>8.125</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>6.202</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>5.120</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>4.413</td><td>0.0</td><td>604</td></tr><tr><td>720 min Summer</td><td>3.908</td><td>0.0</td><td>724</td></tr><tr><td>960 min Summer</td><td>3.095</td><td>0.0</td><td>962</td></tr><tr><td>1440 min Summer</td><td>2.227</td><td>0.0</td><td>1442</td></tr><tr><td>2160 min Summer</td><td>1.603</td><td>0.0</td><td>2160</td></tr><tr><td>2880 min Summer</td><td>1.269</td><td>0.0</td><td>2880</td></tr><tr><td>4320 min Summer</td><td>0.974</td><td>0.0</td><td>4320</td></tr><tr><td>5760 min Summer</td><td>0.807</td><td>0.0</td><td>5136</td></tr><tr><td>7200 min Summer</td><td>0.698</td><td>0.0</td><td>5976</td></tr><tr><td>8640 min Summer</td><td>0.619</td><td>0.0</td><td>6744</td></tr><tr><td>10080 min Summer</td><td>0.560</td><td>0.0</td><td>7560</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	6.325	0.025	0.0	7.2	O K	30 min Summer	6.332	0.032	0.0	9.1	O K	60 min Summer	6.340	0.040	0.0	11.4	O K	120 min Summer	6.350	0.050	0.0	14.3	O K	180 min Summer	6.357	0.057	0.0	16.3	O K	240 min Summer	6.363	0.063	0.0	17.9	O K	360 min Summer	6.371	0.071	0.0	20.3	O K	480 min Summer	6.378	0.078	0.0	22.2	O K	600 min Summer	6.383	0.083	0.0	23.8	O K	720 min Summer	6.388	0.088	0.0	25.1	O K	960 min Summer	6.392	0.092	0.0	26.1	O K	1440 min Summer	6.396	0.096	0.0	27.5	O K	2160 min Summer	6.400	0.100	0.0	28.5	O K	2880 min Summer	6.402	0.102	0.0	29.0	O K	4320 min Summer	6.410	0.110	0.0	31.4	O K	5760 min Summer	6.415	0.115	0.0	32.8	O K	7200 min Summer	6.419	0.119	0.0	33.8	O K	8640 min Summer	6.421	0.121	0.0	34.6	O K	10080 min Summer	6.423	0.123	0.0	35.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	51.534	0.0	19	30 min Summer	32.474	0.0	34	60 min Summer	20.463	0.0	64	120 min Summer	12.894	0.0	124	180 min Summer	9.842	0.0	184	240 min Summer	8.125	0.0	244	360 min Summer	6.202	0.0	364	480 min Summer	5.120	0.0	484	600 min Summer	4.413	0.0	604	720 min Summer	3.908	0.0	724	960 min Summer	3.095	0.0	962	1440 min Summer	2.227	0.0	1442	2160 min Summer	1.603	0.0	2160	2880 min Summer	1.269	0.0	2880	4320 min Summer	0.974	0.0	4320	5760 min Summer	0.807	0.0	5136	7200 min Summer	0.698	0.0	5976	8640 min Summer	0.619	0.0	6744	10080 min Summer	0.560	0.0	7560
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Odyssey Markides LLP				Page 2	
Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 1			
Date 09/10/2020 14:13 File 18-344 POS Tank 1 (3.1 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 10 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Winter	6.328	0.028	0.0	8.1	O K
30 min Winter	6.336	0.036	0.0	10.2	O K
60 min Winter	6.345	0.045	0.0	12.8	O K
120 min Winter	6.356	0.056	0.0	16.1	O K
180 min Winter	6.364	0.064	0.0	18.3	O K
240 min Winter	6.370	0.070	0.0	20.1	O K
360 min Winter	6.380	0.080	0.0	22.8	O K
480 min Winter	6.388	0.088	0.0	25.0	O K
600 min Winter	6.394	0.094	0.0	26.7	O K
720 min Winter	6.399	0.099	0.0	28.2	O K
960 min Winter	6.403	0.103	0.0	29.4	O K
1440 min Winter	6.409	0.109	0.0	31.0	O K
2160 min Winter	6.413	0.113	0.0	32.3	O K
2880 min Winter	6.416	0.116	0.0	33.0	O K
4320 min Winter	6.426	0.126	0.0	35.9	O K
5760 min Winter	6.432	0.132	0.0	37.7	O K
7200 min Winter	6.436	0.136	0.0	38.8	O K
8640 min Winter	6.439	0.139	0.0	39.5	O K
10080 min Winter	6.440	0.140	0.0	40.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Winter	51.534	0.0	19		
30 min Winter	32.474	0.0	34		
60 min Winter	20.463	0.0	64		
120 min Winter	12.894	0.0	122		
180 min Winter	9.842	0.0	182		
240 min Winter	8.125	0.0	242		
360 min Winter	6.202	0.0	360		
480 min Winter	5.120	0.0	478		
600 min Winter	4.413	0.0	596		
720 min Winter	3.908	0.0	716		
960 min Winter	3.095	0.0	952		
1440 min Winter	2.227	0.0	1426		
2160 min Winter	1.603	0.0	2120		
2880 min Winter	1.269	0.0	2800		
4320 min Winter	0.974	0.0	4152		
5760 min Winter	0.807	0.0	5480		
7200 min Winter	0.698	0.0	6768		
8640 min Winter	0.619	0.0	7872		
10080 min Winter	0.560	0.0	8072		
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Tuscany House	18-344	
White Hart Lane	Ford Lane, Yapton	
Basingstoke RG21 4AF	Cellular Soakaway 1	
Date 09/10/2020 14:13	Designed by WindesPC4	
File 18-344 POS Tank 1 (3.1 ...	Checked by	
Micro Drainage	Source Control 2020.1	

Rainfall Details

Rainfall Model	FEH
Return Period (years)	10
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.075

Time (mins)	Area
From:	To: (ha)
0	4 0.075

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 1	
Date 09/10/2020 14:13 File 18-344 POS Tank 1 (3.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 6.300 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00112 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	300.0	300.0	0.801	0.0	356.0
0.800	300.0	356.0			

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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 1			
Date 09/10/2020 14:12 File 18-344 POS Tank 1 (3.1 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time exceeds 7 days. Outflow is too low. Design is unsatisfactory.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	6.380	0.080	0.0	22.8	O K
30 min Summer	6.397	0.097	0.0	27.5	O K
60 min Summer	6.417	0.117	0.0	33.3	O K
120 min Summer	6.441	0.141	0.0	40.2	O K
180 min Summer	6.457	0.157	0.0	44.8	O K
240 min Summer	6.470	0.170	0.0	48.4	O K
360 min Summer	6.489	0.189	0.0	53.9	O K
480 min Summer	6.504	0.204	0.0	58.1	O K
600 min Summer	6.516	0.216	0.0	61.6	O K
720 min Summer	6.527	0.227	0.0	64.6	O K
960 min Summer	6.534	0.234	0.0	66.6	O K
1440 min Summer	6.543	0.243	0.0	69.3	O K
2160 min Summer	6.551	0.251	0.0	71.6	O K
2880 min Summer	6.556	0.256	0.0	72.9	O K
4320 min Summer	6.579	0.279	0.0	79.4	O K
5760 min Summer	6.594	0.294	0.0	83.8	O K
7200 min Summer	6.605	0.305	0.0	86.9	O K
8640 min Summer	6.613	0.313	0.0	89.1	O K
10080 min Summer	6.618	0.318	0.0	90.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	162.161	0.0	19		
30 min Summer	98.106	0.0	34		
60 min Summer	59.354	0.0	64		
120 min Summer	35.909	0.0	124		
180 min Summer	26.763	0.0	184		
240 min Summer	21.725	0.0	244		
360 min Summer	16.191	0.0	364		
480 min Summer	13.143	0.0	484		
600 min Summer	11.180	0.0	604		
720 min Summer	9.796	0.0	724		
960 min Summer	7.627	0.0	964		
1440 min Summer	5.360	0.0	1444		
2160 min Summer	3.767	0.0	2164		
2880 min Summer	2.933	0.0	2884		
4320 min Summer	2.197	0.0	4324		
5760 min Summer	1.790	0.0	5760		
7200 min Summer	1.527	0.0	7200		
8640 min Summer	1.341	0.0	8640		
10080 min Summer	1.202	0.0	10080		
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 1			
Date 09/10/2020 14:12 File 18-344 POS Tank 1 (3.1 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Winter	6.389	0.089	0.0	25.5	O K
30 min Winter	6.408	0.108	0.0	30.8	O K
60 min Winter	6.431	0.131	0.0	37.3	O K
120 min Winter	6.458	0.158	0.0	45.0	O K
180 min Winter	6.476	0.176	0.0	50.2	O K
240 min Winter	6.490	0.190	0.0	54.2	O K
360 min Winter	6.512	0.212	0.0	60.4	O K
480 min Winter	6.529	0.229	0.0	65.2	O K
600 min Winter	6.543	0.243	0.0	69.1	O K
720 min Winter	6.554	0.254	0.0	72.5	O K
960 min Winter	6.562	0.262	0.0	74.8	O K
1440 min Winter	6.573	0.273	0.0	77.9	O K
2160 min Winter	6.583	0.283	0.0	80.7	O K
2880 min Winter	6.589	0.289	0.0	82.3	O K
4320 min Winter	6.616	0.316	0.0	90.0	O K
5760 min Winter	6.634	0.334	0.0	95.3	O K
7200 min Winter	6.648	0.348	0.0	99.1	O K
8640 min Winter	6.658	0.358	0.0	102.0	O K
10080 min Winter	6.666	0.366	0.0	104.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Winter	162.161	0.0	19		
30 min Winter	98.106	0.0	34		
60 min Winter	59.354	0.0	64		
120 min Winter	35.909	0.0	124		
180 min Winter	26.763	0.0	184		
240 min Winter	21.725	0.0	242		
360 min Winter	16.191	0.0	362		
480 min Winter	13.143	0.0	482		
600 min Winter	11.180	0.0	602		
720 min Winter	9.796	0.0	720		
960 min Winter	7.627	0.0	956		
1440 min Winter	5.360	0.0	1430		
2160 min Winter	3.767	0.0	2140		
2880 min Winter	2.933	0.0	2852		
4320 min Winter	2.197	0.0	4276		
5760 min Winter	1.790	0.0	5656		
7200 min Winter	1.527	0.0	7056		
8640 min Winter	1.341	0.0	8464		
10080 min Winter	1.202	0.0	9784		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 1	
Date 09/10/2020 14:12 File 18-344 POS Tank 1 (3.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.075

Time (mins)	Area
From:	To: (ha)
0	4 0.075

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 1	
Date 09/10/2020 14:12 File 18-344 POS Tank 1 (3.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 6.300 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00112 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	300.0	300.0	0.801	0.0	356.0
0.800	300.0	356.0			

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<u>Summary of Results for 10 year Return Period</u> Half Drain Time : 7089 minutes. Outflow is too low. Design is unsatisfactory. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>6.525</td><td>0.025</td><td>0.0</td><td>12.0</td><td>O K</td></tr><tr><td>30 min Summer</td><td>6.532</td><td>0.032</td><td>0.0</td><td>15.0</td><td>O K</td></tr><tr><td>60 min Summer</td><td>6.540</td><td>0.040</td><td>0.1</td><td>18.9</td><td>O K</td></tr><tr><td>120 min Summer</td><td>6.550</td><td>0.050</td><td>0.1</td><td>23.7</td><td>O K</td></tr><tr><td>180 min Summer</td><td>6.557</td><td>0.057</td><td>0.1</td><td>27.0</td><td>O K</td></tr><tr><td>240 min Summer</td><td>6.562</td><td>0.062</td><td>0.1</td><td>29.6</td><td>O K</td></tr><tr><td>360 min Summer</td><td>6.571</td><td>0.071</td><td>0.1</td><td>33.6</td><td>O K</td></tr><tr><td>480 min Summer</td><td>6.577</td><td>0.077</td><td>0.1</td><td>36.7</td><td>O K</td></tr><tr><td>600 min Summer</td><td>6.583</td><td>0.083</td><td>0.1</td><td>39.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>6.587</td><td>0.087</td><td>0.1</td><td>41.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>6.591</td><td>0.091</td><td>0.1</td><td>43.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>6.596</td><td>0.096</td><td>0.1</td><td>45.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>6.599</td><td>0.099</td><td>0.1</td><td>47.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>6.601</td><td>0.101</td><td>0.1</td><td>47.9</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>6.609</td><td>0.109</td><td>0.1</td><td>51.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>6.614</td><td>0.114</td><td>0.1</td><td>54.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>6.617</td><td>0.117</td><td>0.1</td><td>55.8</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>6.620</td><td>0.120</td><td>0.1</td><td>57.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>6.622</td><td>0.122</td><td>0.1</td><td>58.0</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>51.534</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>32.474</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>20.463</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>12.894</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>9.842</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>8.125</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>6.202</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>5.120</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>4.413</td><td>0.0</td><td>604</td></tr><tr><td>720 min Summer</td><td>3.908</td><td>0.0</td><td>724</td></tr><tr><td>960 min Summer</td><td>3.095</td><td>0.0</td><td>962</td></tr><tr><td>1440 min Summer</td><td>2.227</td><td>0.0</td><td>1442</td></tr><tr><td>2160 min Summer</td><td>1.603</td><td>0.0</td><td>2160</td></tr><tr><td>2880 min Summer</td><td>1.269</td><td>0.0</td><td>2880</td></tr><tr><td>4320 min Summer</td><td>0.974</td><td>0.0</td><td>4320</td></tr><tr><td>5760 min Summer</td><td>0.807</td><td>0.0</td><td>5136</td></tr><tr><td>7200 min Summer</td><td>0.698</td><td>0.0</td><td>5912</td></tr><tr><td>8640 min Summer</td><td>0.619</td><td>0.0</td><td>6744</td></tr><tr><td>10080 min Summer</td><td>0.560</td><td>0.0</td><td>7560</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	6.525	0.025	0.0	12.0	O K	30 min Summer	6.532	0.032	0.0	15.0	O K	60 min Summer	6.540	0.040	0.1	18.9	O K	120 min Summer	6.550	0.050	0.1	23.7	O K	180 min Summer	6.557	0.057	0.1	27.0	O K	240 min Summer	6.562	0.062	0.1	29.6	O K	360 min Summer	6.571	0.071	0.1	33.6	O K	480 min Summer	6.577	0.077	0.1	36.7	O K	600 min Summer	6.583	0.083	0.1	39.3	O K	720 min Summer	6.587	0.087	0.1	41.5	O K	960 min Summer	6.591	0.091	0.1	43.2	O K	1440 min Summer	6.596	0.096	0.1	45.4	O K	2160 min Summer	6.599	0.099	0.1	47.1	O K	2880 min Summer	6.601	0.101	0.1	47.9	O K	4320 min Summer	6.609	0.109	0.1	51.8	O K	5760 min Summer	6.614	0.114	0.1	54.1	O K	7200 min Summer	6.617	0.117	0.1	55.8	O K	8640 min Summer	6.620	0.120	0.1	57.1	O K	10080 min Summer	6.622	0.122	0.1	58.0	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	51.534	0.0	19	30 min Summer	32.474	0.0	34	60 min Summer	20.463	0.0	64	120 min Summer	12.894	0.0	124	180 min Summer	9.842	0.0	184	240 min Summer	8.125	0.0	244	360 min Summer	6.202	0.0	364	480 min Summer	5.120	0.0	484	600 min Summer	4.413	0.0	604	720 min Summer	3.908	0.0	724	960 min Summer	3.095	0.0	962	1440 min Summer	2.227	0.0	1442	2160 min Summer	1.603	0.0	2160	2880 min Summer	1.269	0.0	2880	4320 min Summer	0.974	0.0	4320	5760 min Summer	0.807	0.0	5136	7200 min Summer	0.698	0.0	5912	8640 min Summer	0.619	0.0	6744	10080 min Summer	0.560	0.0	7560
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 2			
Date 09/10/2020 14:14 File 18-344 POS Tank 2 (3.1 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 10 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Winter	6.528	0.028	0.0	13.4	O K
30 min Winter	6.535	0.035	0.1	16.9	O K
60 min Winter	6.545	0.045	0.1	21.2	O K
120 min Winter	6.556	0.056	0.1	26.5	O K
180 min Winter	6.564	0.064	0.1	30.3	O K
240 min Winter	6.570	0.070	0.1	33.2	O K
360 min Winter	6.579	0.079	0.1	37.7	O K
480 min Winter	6.587	0.087	0.1	41.3	O K
600 min Winter	6.593	0.093	0.1	44.2	O K
720 min Winter	6.598	0.098	0.1	46.7	O K
960 min Winter	6.602	0.102	0.1	48.6	O K
1440 min Winter	6.608	0.108	0.1	51.2	O K
2160 min Winter	6.612	0.112	0.1	53.4	O K
2880 min Winter	6.615	0.115	0.1	54.5	O K
4320 min Winter	6.625	0.125	0.1	59.3	O K
5760 min Winter	6.631	0.131	0.1	62.2	O K
7200 min Winter	6.635	0.135	0.1	64.0	O K
8640 min Winter	6.637	0.137	0.1	65.1	O K
10080 min Winter	6.639	0.139	0.1	66.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Winter	51.534	0.0	19		
30 min Winter	32.474	0.0	34		
60 min Winter	20.463	0.0	64		
120 min Winter	12.894	0.0	122		
180 min Winter	9.842	0.0	182		
240 min Winter	8.125	0.0	242		
360 min Winter	6.202	0.0	360		
480 min Winter	5.120	0.0	478		
600 min Winter	4.413	0.0	596		
720 min Winter	3.908	0.0	716		
960 min Winter	3.095	0.0	952		
1440 min Winter	2.227	0.0	1426		
2160 min Winter	1.603	0.0	2120		
2880 min Winter	1.269	0.0	2800		
4320 min Winter	0.974	0.0	4152		
5760 min Winter	0.807	0.0	5480		
7200 min Winter	0.698	0.0	6768		
8640 min Winter	0.619	0.0	7864		
10080 min Winter	0.560	0.0	8064		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 2	
Date 09/10/2020 14:14 File 18-344 POS Tank 2 (3.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage		Source Control 2020.1

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Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 6.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00112 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	500.0	500.0	0.801	0.0	548.0
0.800	500.0	548.0			

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Design is unsatisfactory. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>6.579</td><td>0.079</td><td>0.1</td><td>37.6</td><td>O K</td></tr><tr><td>30 min Summer</td><td>6.596</td><td>0.096</td><td>0.1</td><td>45.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>6.616</td><td>0.116</td><td>0.1</td><td>55.0</td><td>O K</td></tr><tr><td>120 min Summer</td><td>6.640</td><td>0.140</td><td>0.1</td><td>66.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>6.656</td><td>0.156</td><td>0.1</td><td>74.1</td><td>O K</td></tr><tr><td>240 min Summer</td><td>6.668</td><td>0.168</td><td>0.1</td><td>80.0</td><td>O K</td></tr><tr><td>360 min Summer</td><td>6.688</td><td>0.188</td><td>0.1</td><td>89.1</td><td>O K</td></tr><tr><td>480 min Summer</td><td>6.702</td><td>0.202</td><td>0.1</td><td>96.1</td><td>O K</td></tr><tr><td>600 min Summer</td><td>6.714</td><td>0.214</td><td>0.1</td><td>101.9</td><td>O K</td></tr><tr><td>720 min Summer</td><td>6.725</td><td>0.225</td><td>0.1</td><td>106.8</td><td>O K</td></tr><tr><td>960 min Summer</td><td>6.732</td><td>0.232</td><td>0.1</td><td>110.1</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>6.741</td><td>0.241</td><td>0.1</td><td>114.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>6.749</td><td>0.249</td><td>0.1</td><td>118.3</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>6.754</td><td>0.254</td><td>0.1</td><td>120.5</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>6.776</td><td>0.276</td><td>0.1</td><td>131.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>6.791</td><td>0.291</td><td>0.1</td><td>138.4</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>6.802</td><td>0.302</td><td>0.1</td><td>143.5</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>6.810</td><td>0.310</td><td>0.1</td><td>147.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>6.815</td><td>0.315</td><td>0.1</td><td>149.8</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>604</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>724</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>964</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>1444</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>2164</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>2884</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>4324</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>5760</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>7200</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>8640</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>10080</td></tr></table>							Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	6.579	0.079	0.1	37.6	O K	30 min Summer	6.596	0.096	0.1	45.5	O K	60 min Summer	6.616	0.116	0.1	55.0	O K	120 min Summer	6.640	0.140	0.1	66.4	O K	180 min Summer	6.656	0.156	0.1	74.1	O K	240 min Summer	6.668	0.168	0.1	80.0	O K	360 min Summer	6.688	0.188	0.1	89.1	O K	480 min Summer	6.702	0.202	0.1	96.1	O K	600 min Summer	6.714	0.214	0.1	101.9	O K	720 min Summer	6.725	0.225	0.1	106.8	O K	960 min Summer	6.732	0.232	0.1	110.1	O K	1440 min Summer	6.741	0.241	0.1	114.5	O K	2160 min Summer	6.749	0.249	0.1	118.3	O K	2880 min Summer	6.754	0.254	0.1	120.5	O K	4320 min Summer	6.776	0.276	0.1	131.2	O K	5760 min Summer	6.791	0.291	0.1	138.4	O K	7200 min Summer	6.802	0.302	0.1	143.5	O K	8640 min Summer	6.810	0.310	0.1	147.1	O K	10080 min Summer	6.815	0.315	0.1	149.8	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	162.161	0.0	19	30 min Summer	98.106	0.0	34	60 min Summer	59.354	0.0	64	120 min Summer	35.909	0.0	124	180 min Summer	26.763	0.0	184	240 min Summer	21.725	0.0	244	360 min Summer	16.191	0.0	364	480 min Summer	13.143	0.0	484	600 min Summer	11.180	0.0	604	720 min Summer	9.796	0.0	724	960 min Summer	7.627	0.0	964	1440 min Summer	5.360	0.0	1444	2160 min Summer	3.767	0.0	2164	2880 min Summer	2.933	0.0	2884	4320 min Summer	2.197	0.0	4324	5760 min Summer	1.790	0.0	5760	7200 min Summer	1.527	0.0	7200	8640 min Summer	1.341	0.0	8640	10080 min Summer	1.202	0.0	10080
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 2			
Date 09/10/2020 14:14 File 18-344 POS Tank 2 (3.1 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Winter	6.589	0.089	0.1	42.2	O K
30 min Winter	6.607	0.107	0.1	51.0	O K
60 min Winter	6.630	0.130	0.1	61.6	O K
120 min Winter	6.657	0.157	0.1	74.4	O K
180 min Winter	6.675	0.175	0.1	83.0	O K
240 min Winter	6.689	0.189	0.1	89.7	O K
360 min Winter	6.710	0.210	0.1	99.9	O K
480 min Winter	6.727	0.227	0.1	107.8	O K
600 min Winter	6.741	0.241	0.1	114.3	O K
720 min Winter	6.752	0.252	0.1	119.8	O K
960 min Winter	6.760	0.260	0.1	123.6	O K
1440 min Winter	6.771	0.271	0.1	128.7	O K
2160 min Winter	6.781	0.281	0.1	133.3	O K
2880 min Winter	6.786	0.286	0.1	136.0	O K
4320 min Winter	6.813	0.313	0.1	148.7	O K
5760 min Winter	6.831	0.331	0.1	157.4	O K
7200 min Winter	6.845	0.345	0.1	163.7	O K
8640 min Winter	6.855	0.355	0.1	168.5	O K
10080 min Winter	6.862	0.362	0.1	172.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Winter	162.161	0.0	19		
30 min Winter	98.106	0.0	34		
60 min Winter	59.354	0.0	64		
120 min Winter	35.909	0.0	124		
180 min Winter	26.763	0.0	184		
240 min Winter	21.725	0.0	242		
360 min Winter	16.191	0.0	362		
480 min Winter	13.143	0.0	482		
600 min Winter	11.180	0.0	602		
720 min Winter	9.796	0.0	720		
960 min Winter	7.627	0.0	956		
1440 min Winter	5.360	0.0	1430		
2160 min Winter	3.767	0.0	2140		
2880 min Winter	2.933	0.0	2852		
4320 min Winter	2.197	0.0	4276		
5760 min Winter	1.790	0.0	5656		
7200 min Winter	1.527	0.0	7056		
8640 min Winter	1.341	0.0	8464		
10080 min Winter	1.202	0.0	9784		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 2	
Date 09/10/2020 14:14 File 18-344 POS Tank 2 (3.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.124

Time (mins)	Area
From:	To: (ha)
0	4 0.124

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 2	
Date 09/10/2020 14:14 File 18-344 POS Tank 2 (3.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 6.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00112 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	500.0	500.0	0.801	0.0	548.0
0.800	500.0	548.0			

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<u>Summary of Results for 10 year Return Period</u> Half Drain Time : 777 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>5.064</td><td>0.064</td><td>0.5</td><td>14.7</td><td>O K</td></tr><tr><td>30 min Summer</td><td>5.080</td><td>0.080</td><td>0.5</td><td>18.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>5.099</td><td>0.099</td><td>0.5</td><td>22.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>5.121</td><td>0.121</td><td>0.5</td><td>27.6</td><td>O K</td></tr><tr><td>180 min Summer</td><td>5.134</td><td>0.134</td><td>0.5</td><td>30.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>5.144</td><td>0.144</td><td>0.5</td><td>32.8</td><td>O K</td></tr><tr><td>360 min Summer</td><td>5.156</td><td>0.156</td><td>0.5</td><td>35.7</td><td>O K</td></tr><tr><td>480 min Summer</td><td>5.164</td><td>0.164</td><td>0.5</td><td>37.4</td><td>O K</td></tr><tr><td>600 min Summer</td><td>5.169</td><td>0.169</td><td>0.5</td><td>38.4</td><td>O K</td></tr><tr><td>720 min Summer</td><td>5.172</td><td>0.172</td><td>0.5</td><td>39.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>5.168</td><td>0.168</td><td>0.5</td><td>38.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>5.159</td><td>0.159</td><td>0.5</td><td>36.1</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>5.144</td><td>0.144</td><td>0.5</td><td>32.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>5.130</td><td>0.130</td><td>0.5</td><td>29.7</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>5.117</td><td>0.117</td><td>0.5</td><td>26.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>5.104</td><td>0.104</td><td>0.5</td><td>23.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>5.092</td><td>0.092</td><td>0.5</td><td>20.9</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>5.080</td><td>0.080</td><td>0.5</td><td>18.3</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>5.071</td><td>0.071</td><td>0.5</td><td>16.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>5.072</td><td>0.072</td><td>0.5</td><td>16.4</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>51.534</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>32.474</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>20.463</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>12.894</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>9.842</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>8.125</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>6.202</td><td>0.0</td><td>360</td></tr><tr><td>480 min Summer</td><td>5.120</td><td>0.0</td><td>480</td></tr><tr><td>600 min Summer</td><td>4.413</td><td>0.0</td><td>572</td></tr><tr><td>720 min Summer</td><td>3.908</td><td>0.0</td><td>626</td></tr><tr><td>960 min Summer</td><td>3.095</td><td>0.0</td><td>744</td></tr><tr><td>1440 min Summer</td><td>2.227</td><td>0.0</td><td>998</td></tr><tr><td>2160 min Summer</td><td>1.603</td><td>0.0</td><td>1404</td></tr><tr><td>2880 min Summer</td><td>1.269</td><td>0.0</td><td>1816</td></tr><tr><td>4320 min Summer</td><td>0.974</td><td>0.0</td><td>2596</td></tr><tr><td>5760 min Summer</td><td>0.807</td><td>0.0</td><td>3352</td></tr><tr><td>7200 min Summer</td><td>0.698</td><td>0.0</td><td>4104</td></tr><tr><td>8640 min Summer</td><td>0.619</td><td>0.0</td><td>4840</td></tr><tr><td>10080 min Summer</td><td>0.560</td><td>0.0</td><td>5544</td></tr><tr><td>15 min Winter</td><td>51.534</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	5.064	0.064	0.5	14.7	O K	30 min Summer	5.080	0.080	0.5	18.3	O K	60 min Summer	5.099	0.099	0.5	22.6	O K	120 min Summer	5.121	0.121	0.5	27.6	O K	180 min Summer	5.134	0.134	0.5	30.6	O K	240 min Summer	5.144	0.144	0.5	32.8	O K	360 min Summer	5.156	0.156	0.5	35.7	O K	480 min Summer	5.164	0.164	0.5	37.4	O K	600 min Summer	5.169	0.169	0.5	38.4	O K	720 min Summer	5.172	0.172	0.5	39.2	O K	960 min Summer	5.168	0.168	0.5	38.2	O K	1440 min Summer	5.159	0.159	0.5	36.1	O K	2160 min Summer	5.144	0.144	0.5	32.9	O K	2880 min Summer	5.130	0.130	0.5	29.7	O K	4320 min Summer	5.117	0.117	0.5	26.8	O K	5760 min Summer	5.104	0.104	0.5	23.7	O K	7200 min Summer	5.092	0.092	0.5	20.9	O K	8640 min Summer	5.080	0.080	0.5	18.3	O K	10080 min Summer	5.071	0.071	0.5	16.1	O K	15 min Winter	5.072	0.072	0.5	16.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	51.534	0.0	19	30 min Summer	32.474	0.0	33	60 min Summer	20.463	0.0	64	120 min Summer	12.894	0.0	122	180 min Summer	9.842	0.0	182	240 min Summer	8.125	0.0	242	360 min Summer	6.202	0.0	360	480 min Summer	5.120	0.0	480	600 min Summer	4.413	0.0	572	720 min Summer	3.908	0.0	626	960 min Summer	3.095	0.0	744	1440 min Summer	2.227	0.0	998	2160 min Summer	1.603	0.0	1404	2880 min Summer	1.269	0.0	1816	4320 min Summer	0.974	0.0	2596	5760 min Summer	0.807	0.0	3352	7200 min Summer	0.698	0.0	4104	8640 min Summer	0.619	0.0	4840	10080 min Summer	0.560	0.0	5544	15 min Winter	51.534	0.0	19
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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Date 09/10/2020 14:16 File 18-344 POS Tank 3 (4.1 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 10 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	5.090	0.090	0.5	20.5	O K
60 min Winter	5.112	0.112	0.5	25.4	O K
120 min Winter	5.136	0.136	0.5	31.1	O K
180 min Winter	5.152	0.152	0.5	34.7	O K
240 min Winter	5.163	0.163	0.5	37.2	O K
360 min Winter	5.179	0.179	0.5	40.7	O K
480 min Winter	5.188	0.188	0.5	42.9	O K
600 min Winter	5.195	0.195	0.5	44.4	O K
720 min Winter	5.199	0.199	0.5	45.4	O K
960 min Winter	5.192	0.192	0.5	43.8	O K
1440 min Winter	5.180	0.180	0.5	41.0	O K
2160 min Winter	5.159	0.159	0.5	36.3	O K
2880 min Winter	5.138	0.138	0.5	31.5	O K
4320 min Winter	5.115	0.115	0.5	26.2	O K
5760 min Winter	5.093	0.093	0.5	21.1	O K
7200 min Winter	5.073	0.073	0.5	16.7	O K
8640 min Winter	5.058	0.058	0.5	13.3	O K
10080 min Winter	5.050	0.050	0.5	11.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	32.474	0.0	33		
60 min Winter	20.463	0.0	62		
120 min Winter	12.894	0.0	120		
180 min Winter	9.842	0.0	180		
240 min Winter	8.125	0.0	238		
360 min Winter	6.202	0.0	352		
480 min Winter	5.120	0.0	466		
600 min Winter	4.413	0.0	578		
720 min Winter	3.908	0.0	686		
960 min Winter	3.095	0.0	868		
1440 min Winter	2.227	0.0	1084		
2160 min Winter	1.603	0.0	1536		
2880 min Winter	1.269	0.0	1960		
4320 min Winter	0.974	0.0	2768		
5760 min Winter	0.807	0.0	3528		
7200 min Winter	0.698	0.0	4248		
8640 min Winter	0.619	0.0	4840		
10080 min Winter	0.560	0.0	5344		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 3	
Date 09/10/2020 14:16 File 18-344 POS Tank 3 (4.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	10
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.155

Time (mins)	Area
From:	To: (ha)
0	4 0.155

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Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 5.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01476 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	240.0	240.0	0.801	0.0	294.4
0.800	240.0	294.4			

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Tuscany House		18-344			
White Hart Lane		Ford Lane, Yapton			
Basingstoke RG21 4AF		Cellular Soakaway 3			
Date 09/10/2020 14:15		Designed by WindesPC4			
File 18-344 POS Tank 3 (4.1 ...		Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 2307 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	5.205	0.205	0.5	46.7	O K
30 min Summer	5.247	0.247	0.5	56.3	O K
60 min Summer	5.296	0.296	0.5	67.5	O K
120 min Summer	5.353	0.353	0.5	80.5	O K
180 min Summer	5.390	0.390	0.5	88.8	O K
240 min Summer	5.417	0.417	0.5	95.0	O K
360 min Summer	5.455	0.455	0.5	103.8	O K
480 min Summer	5.482	0.482	0.5	110.0	O K
600 min Summer	5.503	0.503	0.5	114.6	O K
720 min Summer	5.518	0.518	0.5	118.2	O K
960 min Summer	5.514	0.514	0.5	117.2	O K
1440 min Summer	5.495	0.495	0.5	112.9	O K
2160 min Summer	5.459	0.459	0.5	104.6	O K
2880 min Summer	5.429	0.429	0.5	97.7	O K
4320 min Summer	5.416	0.416	0.5	94.9	O K
5760 min Summer	5.400	0.400	0.5	91.2	O K
7200 min Summer	5.382	0.382	0.5	87.1	O K
8640 min Summer	5.363	0.363	0.5	82.8	O K
10080 min Summer	5.344	0.344	0.5	78.4	O K
15 min Winter	5.230	0.230	0.5	52.4	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	162.161	0.0	19		
30 min Summer	98.106	0.0	34		
60 min Summer	59.354	0.0	64		
120 min Summer	35.909	0.0	124		
180 min Summer	26.763	0.0	184		
240 min Summer	21.725	0.0	244		
360 min Summer	16.191	0.0	362		
480 min Summer	13.143	0.0	482		
600 min Summer	11.180	0.0	602		
720 min Summer	9.796	0.0	722		
960 min Summer	7.627	0.0	962		
1440 min Summer	5.360	0.0	1440		
2160 min Summer	3.767	0.0	1840		
2880 min Summer	2.933	0.0	2188		
4320 min Summer	2.197	0.0	2984		
5760 min Summer	1.790	0.0	3808		
7200 min Summer	1.527	0.0	4616		
8640 min Summer	1.341	0.0	5448		
10080 min Summer	1.202	0.0	6256		
15 min Winter	162.161	0.0	19		
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Tuscany House		18-344			
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Date 09/10/2020 14:15		Designed by WindesPC4			
File 18-344 POS Tank 3 (4.1 ...		Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	5.277	0.277	0.5	63.1	O K
60 min Winter	5.332	0.332	0.5	75.8	O K
120 min Winter	5.397	0.397	0.5	90.5	O K
180 min Winter	5.439	0.439	0.5	100.0	O K
240 min Winter	5.470	0.470	0.5	107.1	O K
360 min Winter	5.515	0.515	0.5	117.4	O K
480 min Winter	5.547	0.547	0.5	124.7	O K
600 min Winter	5.571	0.571	0.5	130.2	O K
720 min Winter	5.590	0.590	0.5	134.6	O K
960 min Winter	5.589	0.589	0.5	134.4	O K
1440 min Winter	5.575	0.575	0.5	131.1	O K
2160 min Winter	5.539	0.539	0.5	122.9	O K
2880 min Winter	5.500	0.500	0.5	113.9	O K
4320 min Winter	5.481	0.481	0.5	109.6	O K
5760 min Winter	5.454	0.454	0.5	103.4	O K
7200 min Winter	5.423	0.423	0.5	96.5	O K
8640 min Winter	5.391	0.391	0.5	89.2	O K
10080 min Winter	5.359	0.359	0.5	81.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	98.106	0.0	34		
60 min Winter	59.354	0.0	64		
120 min Winter	35.909	0.0	122		
180 min Winter	26.763	0.0	182		
240 min Winter	21.725	0.0	240		
360 min Winter	16.191	0.0	358		
480 min Winter	13.143	0.0	476		
600 min Winter	11.180	0.0	594		
720 min Winter	9.796	0.0	710		
960 min Winter	7.627	0.0	942		
1440 min Winter	5.360	0.0	1398		
2160 min Winter	3.767	0.0	2052		
2880 min Winter	2.933	0.0	2336		
4320 min Winter	2.197	0.0	3244		
5760 min Winter	1.790	0.0	4160		
7200 min Winter	1.527	0.0	5048		
8640 min Winter	1.341	0.0	5960		
10080 min Winter	1.202	0.0	6760		
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Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.155

Time (mins)	Area
From:	To: (ha)
0	4 0.155

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 3	
Date 09/10/2020 14:15 File 18-344 POS Tank 3 (4.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 5.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01476 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	240.0	240.0	0.801	0.0	294.4
0.800	240.0	294.4			

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<u>Summary of Results for 10 year Return Period</u> Half Drain Time : 457 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>5.043</td><td>0.043</td><td>0.2</td><td>5.1</td><td>O K</td></tr><tr><td>30 min Summer</td><td>5.053</td><td>0.053</td><td>0.3</td><td>6.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>5.065</td><td>0.065</td><td>0.3</td><td>7.7</td><td>O K</td></tr><tr><td>120 min Summer</td><td>5.078</td><td>0.078</td><td>0.3</td><td>9.3</td><td>O K</td></tr><tr><td>180 min Summer</td><td>5.085</td><td>0.085</td><td>0.3</td><td>10.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>5.090</td><td>0.090</td><td>0.3</td><td>10.8</td><td>O K</td></tr><tr><td>360 min Summer</td><td>5.096</td><td>0.096</td><td>0.3</td><td>11.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>5.099</td><td>0.099</td><td>0.3</td><td>11.9</td><td>O K</td></tr><tr><td>600 min Summer</td><td>5.102</td><td>0.102</td><td>0.3</td><td>12.2</td><td>O K</td></tr><tr><td>720 min Summer</td><td>5.104</td><td>0.104</td><td>0.3</td><td>12.4</td><td>O K</td></tr><tr><td>960 min Summer</td><td>5.100</td><td>0.100</td><td>0.3</td><td>12.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>5.092</td><td>0.092</td><td>0.3</td><td>11.0</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>5.080</td><td>0.080</td><td>0.3</td><td>9.6</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>5.070</td><td>0.070</td><td>0.3</td><td>8.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>5.060</td><td>0.060</td><td>0.3</td><td>7.1</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>5.052</td><td>0.052</td><td>0.3</td><td>6.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>5.047</td><td>0.047</td><td>0.2</td><td>5.6</td><td>O K</td></tr><tr><td>8640 min 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Summer</td><td>4.413</td><td>0.0</td><td>454</td></tr><tr><td>720 min Summer</td><td>3.908</td><td>0.0</td><td>522</td></tr><tr><td>960 min Summer</td><td>3.095</td><td>0.0</td><td>656</td></tr><tr><td>1440 min Summer</td><td>2.227</td><td>0.0</td><td>924</td></tr><tr><td>2160 min Summer</td><td>1.603</td><td>0.0</td><td>1320</td></tr><tr><td>2880 min Summer</td><td>1.269</td><td>0.0</td><td>1700</td></tr><tr><td>4320 min Summer</td><td>0.974</td><td>0.0</td><td>2424</td></tr><tr><td>5760 min Summer</td><td>0.807</td><td>0.0</td><td>3112</td></tr><tr><td>7200 min Summer</td><td>0.698</td><td>0.0</td><td>3824</td></tr><tr><td>8640 min Summer</td><td>0.619</td><td>0.0</td><td>4576</td></tr><tr><td>10080 min Summer</td><td>0.560</td><td>0.0</td><td>5256</td></tr><tr><td>15 min Winter</td><td>51.534</td><td>0.0</td><td>18</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	5.043	0.043	0.2	5.1	O K	30 min Summer	5.053	0.053	0.3	6.3	O K	60 min Summer	5.065	0.065	0.3	7.7	O K	120 min Summer	5.078	0.078	0.3	9.3	O K	180 min Summer	5.085	0.085	0.3	10.2	O K	240 min Summer	5.090	0.090	0.3	10.8	O K	360 min Summer	5.096	0.096	0.3	11.5	O K	480 min Summer	5.099	0.099	0.3	11.9	O K	600 min Summer	5.102	0.102	0.3	12.2	O K	720 min Summer	5.104	0.104	0.3	12.4	O K	960 min Summer	5.100	0.100	0.3	12.0	O K	1440 min Summer	5.092	0.092	0.3	11.0	O K	2160 min Summer	5.080	0.080	0.3	9.6	O K	2880 min Summer	5.070	0.070	0.3	8.4	O K	4320 min Summer	5.060	0.060	0.3	7.1	O K	5760 min Summer	5.052	0.052	0.3	6.2	O K	7200 min Summer	5.047	0.047	0.2	5.6	O K	8640 min Summer	5.043	0.043	0.2	5.2	O K	10080 min Summer	5.040	0.040	0.2	4.8	O K	15 min Winter	5.048	0.048	0.2	5.7	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	51.534	0.0	19	30 min Summer	32.474	0.0	33	60 min Summer	20.463	0.0	62	120 min Summer	12.894	0.0	122	180 min Summer	9.842	0.0	182	240 min Summer	8.125	0.0	240	360 min 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360 min Winter	5.110	0.110	0.3	13.2	O K																																																																																																																																																																																														
480 min Winter	5.114	0.114	0.3	13.6	O K																																																																																																																																																																																														
600 min Winter	5.116	0.116	0.3	13.9	O K																																																																																																																																																																																														
720 min Winter	5.118	0.118	0.3	14.1	O K																																																																																																																																																																																														
960 min Winter	5.112	0.112	0.3	13.4	O K																																																																																																																																																																																														
1440 min Winter	5.100	0.100	0.3	12.0	O K																																																																																																																																																																																														
2160 min Winter	5.082	0.082	0.3	9.9	O K																																																																																																																																																																																														
2880 min Winter	5.067	0.067	0.3	8.0	O K																																																																																																																																																																																														
4320 min Winter	5.052	0.052	0.3	6.2	O K																																																																																																																																																																																														
5760 min Winter	5.045	0.045	0.2	5.3	O K																																																																																																																																																																																														
7200 min Winter	5.040	0.040	0.2	4.7	O K																																																																																																																																																																																														
8640 min Winter	5.036	0.036	0.2	4.3	O K																																																																																																																																																																																														
10080 min Winter	5.033	0.033	0.2	3.9	O K																																																																																																																																																																																														
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																
30 min Winter	32.474	0.0	33																																																																																																																																																																																																
60 min Winter	20.463	0.0	62																																																																																																																																																																																																
120 min Winter	12.894	0.0	120																																																																																																																																																																																																
180 min Winter	9.842	0.0	178																																																																																																																																																																																																
240 min Winter	8.125	0.0	234																																																																																																																																																																																																
360 min Winter	6.202	0.0	344																																																																																																																																																																																																
480 min Winter	5.120	0.0	448																																																																																																																																																																																																
600 min Winter	4.413	0.0	488																																																																																																																																																																																																
720 min Winter	3.908	0.0	564																																																																																																																																																																																																
960 min Winter	3.095	0.0	714																																																																																																																																																																																																
1440 min Winter	2.227	0.0	1010																																																																																																																																																																																																
2160 min Winter	1.603	0.0	1424																																																																																																																																																																																																
2880 min Winter	1.269	0.0	1788																																																																																																																																																																																																
4320 min Winter	0.974	0.0	2464																																																																																																																																																																																																
5760 min Winter	0.807	0.0	3176																																																																																																																																																																																																
7200 min Winter	0.698	0.0	3896																																																																																																																																																																																																
8640 min Winter	0.619	0.0	4664																																																																																																																																																																																																
10080 min Winter	0.560	0.0	5352																																																																																																																																																																																																
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 4	
Date 16/09/2020 11:48 File 18-344 POS Tank 4 (4.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	10
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.054

Time (mins)	Area
From:	To: (ha)
0	4 0.054

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 4	
Date 16/09/2020 11:48 File 18-344 POS Tank 4 (4.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 5.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01476 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	126.0	126.0	0.401	0.0	144.4
0.400	126.0	144.4			

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Tuscany House		18-344																																																																																																																																																																																																																					
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Micro Drainage		Source Control 2020.1																																																																																																																																																																																																																					
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 1436 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>5.136</td><td>0.136</td><td>0.3</td><td>16.2</td><td>O K</td></tr><tr><td>30 min Summer</td><td>5.163</td><td>0.163</td><td>0.3</td><td>19.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>5.195</td><td>0.195</td><td>0.3</td><td>23.3</td><td>O K</td></tr><tr><td>120 min Summer</td><td>5.231</td><td>0.231</td><td>0.3</td><td>27.6</td><td>O K</td></tr><tr><td>180 min Summer</td><td>5.253</td><td>0.253</td><td>0.3</td><td>30.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>5.269</td><td>0.269</td><td>0.3</td><td>32.3</td><td>O K</td></tr><tr><td>360 min Summer</td><td>5.291</td><td>0.291</td><td>0.3</td><td>34.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>5.306</td><td>0.306</td><td>0.3</td><td>36.6</td><td>O K</td></tr><tr><td>600 min Summer</td><td>5.315</td><td>0.315</td><td>0.3</td><td>37.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>5.322</td><td>0.322</td><td>0.3</td><td>38.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>5.312</td><td>0.312</td><td>0.3</td><td>37.4</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>5.291</td><td>0.291</td><td>0.3</td><td>34.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>5.265</td><td>0.265</td><td>0.3</td><td>31.8</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>5.243</td><td>0.243</td><td>0.3</td><td>29.1</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>5.226</td><td>0.226</td><td>0.3</td><td>27.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>5.207</td><td>0.207</td><td>0.3</td><td>24.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>5.188</td><td>0.188</td><td>0.3</td><td>22.5</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>5.170</td><td>0.170</td><td>0.3</td><td>20.4</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>5.153</td><td>0.153</td><td>0.3</td><td>18.3</td><td>O K</td></tr><tr><td>15 min Winter</td><td>5.152</td><td>0.152</td><td>0.3</td><td>18.2</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>362</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>960</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>1196</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>1552</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>1936</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>2768</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>3576</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>4392</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>5112</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>5856</td></tr><tr><td>15 min Winter</td><td>162.161</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	5.136	0.136	0.3	16.2	O K	30 min Summer	5.163	0.163	0.3	19.5	O K	60 min Summer	5.195	0.195	0.3	23.3	O K	120 min Summer	5.231	0.231	0.3	27.6	O K	180 min Summer	5.253	0.253	0.3	30.3	O K	240 min Summer	5.269	0.269	0.3	32.3	O K	360 min Summer	5.291	0.291	0.3	34.9	O K	480 min Summer	5.306	0.306	0.3	36.6	O K	600 min Summer	5.315	0.315	0.3	37.8	O K	720 min Summer	5.322	0.322	0.3	38.5	O K	960 min Summer	5.312	0.312	0.3	37.4	O K	1440 min Summer	5.291	0.291	0.3	34.9	O K	2160 min Summer	5.265	0.265	0.3	31.8	O K	2880 min Summer	5.243	0.243	0.3	29.1	O K	4320 min Summer	5.226	0.226	0.3	27.0	O K	5760 min Summer	5.207	0.207	0.3	24.8	O K	7200 min Summer	5.188	0.188	0.3	22.5	O K	8640 min Summer	5.170	0.170	0.3	20.4	O K	10080 min Summer	5.153	0.153	0.3	18.3	O K	15 min Winter	5.152	0.152	0.3	18.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	162.161	0.0	19	30 min Summer	98.106	0.0	34	60 min Summer	59.354	0.0	64	120 min Summer	35.909	0.0	124	180 min Summer	26.763	0.0	182	240 min Summer	21.725	0.0	242	360 min Summer	16.191	0.0	362	480 min Summer	13.143	0.0	482	600 min Summer	11.180	0.0	602	720 min Summer	9.796	0.0	722	960 min Summer	7.627	0.0	960	1440 min Summer	5.360	0.0	1196	2160 min Summer	3.767	0.0	1552	2880 min Summer	2.933	0.0	1936	4320 min Summer	2.197	0.0	2768	5760 min Summer	1.790	0.0	3576	7200 min Summer	1.527	0.0	4392	8640 min Summer	1.341	0.0	5112	10080 min Summer	1.202	0.0	5856	15 min Winter	162.161	0.0	19
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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Tuscany House		18-344			
White Hart Lane		Ford Lane, Yapton			
Basingstoke RG21 4AF		Cellular Soakaway 4			
Date 16/09/2020 11:47		Designed by WindesPC4			
File 18-344 POS Tank 4 (4.1 ...		Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	5.183	0.183	0.3	21.9	O K
60 min Winter	5.219	0.219	0.3	26.2	O K
120 min Winter	5.260	0.260	0.3	31.1	O K
180 min Winter	5.286	0.286	0.3	34.2	O K
240 min Winter	5.304	0.304	0.3	36.4	O K
360 min Winter	5.331	0.331	0.3	39.6	O K
480 min Winter	5.348	0.348	0.3	41.7	O K
600 min Winter	5.360	0.360	0.3	43.1	O K
720 min Winter	5.369	0.369	0.3	44.2	O K
960 min Winter	5.362	0.362	0.3	43.3	O K
1440 min Winter	5.339	0.339	0.3	40.6	O K
2160 min Winter	5.306	0.306	0.3	36.6	O K
2880 min Winter	5.276	0.276	0.3	33.0	O K
4320 min Winter	5.247	0.247	0.3	29.6	O K
5760 min Winter	5.216	0.216	0.3	25.8	O K
7200 min Winter	5.185	0.185	0.3	22.1	O K
8640 min Winter	5.156	0.156	0.3	18.7	O K
10080 min Winter	5.129	0.129	0.3	15.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	98.106	0.0	33		
60 min Winter	59.354	0.0	62		
120 min Winter	35.909	0.0	122		
180 min Winter	26.763	0.0	180		
240 min Winter	21.725	0.0	240		
360 min Winter	16.191	0.0	356		
480 min Winter	13.143	0.0	474		
600 min Winter	11.180	0.0	590		
720 min Winter	9.796	0.0	704		
960 min Winter	7.627	0.0	930		
1440 min Winter	5.360	0.0	1354		
2160 min Winter	3.767	0.0	1668		
2880 min Winter	2.933	0.0	2108		
4320 min Winter	2.197	0.0	3024		
5760 min Winter	1.790	0.0	3864		
7200 min Winter	1.527	0.0	4680		
8640 min Winter	1.341	0.0	5448		
10080 min Winter	1.202	0.0	6160		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 4	
Date 16/09/2020 11:47 File 18-344 POS Tank 4 (4.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.054

Time (mins)	Area
From:	To: (ha)
0	4 0.054

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 4	
Date 16/09/2020 11:47 File 18-344 POS Tank 4 (4.1 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 5.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01476 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	126.0	126.0	0.401	0.0	144.4
0.400	126.0	144.4			

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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 5																																																																																																																																																																																																																					
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Micro Drainage		Source Control 2020.1																																																																																																																																																																																																																					
<u>Summary of Results for 10 year Return Period</u> Half Drain Time : 4591 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>5.051</td><td>0.051</td><td>0.0</td><td>3.1</td><td>O K</td></tr><tr><td>30 min Summer</td><td>5.065</td><td>0.065</td><td>0.0</td><td>3.9</td><td>O K</td></tr><tr><td>60 min Summer</td><td>5.081</td><td>0.081</td><td>0.0</td><td>4.9</td><td>O K</td></tr><tr><td>120 min Summer</td><td>5.101</td><td>0.101</td><td>0.0</td><td>6.1</td><td>O K</td></tr><tr><td>180 min Summer</td><td>5.115</td><td>0.115</td><td>0.0</td><td>6.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>5.126</td><td>0.126</td><td>0.0</td><td>7.5</td><td>O K</td></tr><tr><td>360 min Summer</td><td>5.143</td><td>0.143</td><td>0.0</td><td>8.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>5.155</td><td>0.155</td><td>0.0</td><td>9.3</td><td>O K</td></tr><tr><td>600 min Summer</td><td>5.166</td><td>0.166</td><td>0.0</td><td>9.9</td><td>O K</td></tr><tr><td>720 min Summer</td><td>5.174</td><td>0.174</td><td>0.0</td><td>10.4</td><td>O K</td></tr><tr><td>960 min Summer</td><td>5.180</td><td>0.180</td><td>0.0</td><td>10.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>5.187</td><td>0.187</td><td>0.0</td><td>11.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>5.190</td><td>0.190</td><td>0.0</td><td>11.4</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>5.189</td><td>0.189</td><td>0.0</td><td>11.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>5.198</td><td>0.198</td><td>0.0</td><td>11.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>5.204</td><td>0.204</td><td>0.0</td><td>12.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>5.207</td><td>0.207</td><td>0.0</td><td>12.4</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>5.209</td><td>0.209</td><td>0.0</td><td>12.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>5.209</td><td>0.209</td><td>0.0</td><td>12.5</td><td>O K</td></tr><tr><td>15 min Winter</td><td>5.058</td><td>0.058</td><td>0.0</td><td>3.4</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>51.534</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>32.474</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>20.463</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>12.894</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>9.842</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>8.125</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>6.202</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>5.120</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>4.413</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>3.908</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>3.095</td><td>0.0</td><td>962</td></tr><tr><td>1440 min Summer</td><td>2.227</td><td>0.0</td><td>1442</td></tr><tr><td>2160 min Summer</td><td>1.603</td><td>0.0</td><td>2160</td></tr><tr><td>2880 min Summer</td><td>1.269</td><td>0.0</td><td>2880</td></tr><tr><td>4320 min Summer</td><td>0.974</td><td>0.0</td><td>3676</td></tr><tr><td>5760 min Summer</td><td>0.807</td><td>0.0</td><td>4496</td></tr><tr><td>7200 min Summer</td><td>0.698</td><td>0.0</td><td>5264</td></tr><tr><td>8640 min Summer</td><td>0.619</td><td>0.0</td><td>6136</td></tr><tr><td>10080 min Summer</td><td>0.560</td><td>0.0</td><td>6960</td></tr><tr><td>15 min Winter</td><td>51.534</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	5.051	0.051	0.0	3.1	O K	30 min Summer	5.065	0.065	0.0	3.9	O K	60 min Summer	5.081	0.081	0.0	4.9	O K	120 min Summer	5.101	0.101	0.0	6.1	O K	180 min Summer	5.115	0.115	0.0	6.9	O K	240 min Summer	5.126	0.126	0.0	7.5	O K	360 min Summer	5.143	0.143	0.0	8.5	O K	480 min Summer	5.155	0.155	0.0	9.3	O K	600 min Summer	5.166	0.166	0.0	9.9	O K	720 min Summer	5.174	0.174	0.0	10.4	O K	960 min Summer	5.180	0.180	0.0	10.8	O K	1440 min Summer	5.187	0.187	0.0	11.2	O K	2160 min Summer	5.190	0.190	0.0	11.4	O K	2880 min Summer	5.189	0.189	0.0	11.3	O K	4320 min Summer	5.198	0.198	0.0	11.9	O K	5760 min Summer	5.204	0.204	0.0	12.2	O K	7200 min Summer	5.207	0.207	0.0	12.4	O K	8640 min Summer	5.209	0.209	0.0	12.5	O K	10080 min Summer	5.209	0.209	0.0	12.5	O K	15 min Winter	5.058	0.058	0.0	3.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	51.534	0.0	19	30 min Summer	32.474	0.0	34	60 min Summer	20.463	0.0	64	120 min Summer	12.894	0.0	124	180 min Summer	9.842	0.0	184	240 min Summer	8.125	0.0	244	360 min Summer	6.202	0.0	364	480 min Summer	5.120	0.0	484	600 min Summer	4.413	0.0	602	720 min Summer	3.908	0.0	722	960 min Summer	3.095	0.0	962	1440 min Summer	2.227	0.0	1442	2160 min Summer	1.603	0.0	2160	2880 min Summer	1.269	0.0	2880	4320 min Summer	0.974	0.0	3676	5760 min Summer	0.807	0.0	4496	7200 min Summer	0.698	0.0	5264	8640 min Summer	0.619	0.0	6136	10080 min Summer	0.560	0.0	6960	15 min Winter	51.534	0.0	19
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 5			
Date 16/10/2020 13:46 File 18-344 POS Tank 5 (8.3 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 10 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	5.072	0.072	0.0	4.3	O K
60 min Winter	5.091	0.091	0.0	5.4	O K
120 min Winter	5.114	0.114	0.0	6.8	O K
180 min Winter	5.129	0.129	0.0	7.7	O K
240 min Winter	5.142	0.142	0.0	8.5	O K
360 min Winter	5.160	0.160	0.0	9.6	O K
480 min Winter	5.175	0.175	0.0	10.5	O K
600 min Winter	5.187	0.187	0.0	11.2	O K
720 min Winter	5.197	0.197	0.0	11.8	O K
960 min Winter	5.204	0.204	0.0	12.2	O K
1440 min Winter	5.212	0.212	0.0	12.7	O K
2160 min Winter	5.217	0.217	0.0	13.0	O K
2880 min Winter	5.217	0.217	0.0	13.0	O K
4320 min Winter	5.230	0.230	0.0	13.7	O K
5760 min Winter	5.235	0.235	0.0	14.1	O K
7200 min Winter	5.238	0.238	0.0	14.2	O K
8640 min Winter	5.239	0.239	0.0	14.3	O K
10080 min Winter	5.239	0.239	0.0	14.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	32.474	0.0	34		
60 min Winter	20.463	0.0	64		
120 min Winter	12.894	0.0	122		
180 min Winter	9.842	0.0	182		
240 min Winter	8.125	0.0	242		
360 min Winter	6.202	0.0	360		
480 min Winter	5.120	0.0	478		
600 min Winter	4.413	0.0	596		
720 min Winter	3.908	0.0	714		
960 min Winter	3.095	0.0	950		
1440 min Winter	2.227	0.0	1414		
2160 min Winter	1.603	0.0	2100		
2880 min Winter	1.269	0.0	2772		
4320 min Winter	0.974	0.0	4104		
5760 min Winter	0.807	0.0	5248		
7200 min Winter	0.698	0.0	5688		
8640 min Winter	0.619	0.0	6648		
10080 min Winter	0.560	0.0	7568		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 5	
Date 16/10/2020 13:46 File 18-344 POS Tank 5 (8.3 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	10
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.032

	Time (mins)	Area	
	From:	To:	(ha)
	0	4	0.032

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 5	
Date 16/10/2020 13:46 File 18-344 POS Tank 5 (8.3 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 5.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00298 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	63.0	63.0	0.801	0.0	88.6
0.800	63.0	88.6			

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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Cellular Soakaway 5			
Date 16/10/2020 13:45 File 18-344 POS Tank 5 (8.3 ...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time exceeds 7 days. Outflow is too low. Design is unsatisfactory.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	5.162	0.162	0.0	9.7	O K
30 min Summer	5.196	0.196	0.0	11.7	O K
60 min Summer	5.237	0.237	0.0	14.2	O K
120 min Summer	5.285	0.285	0.0	17.1	O K
180 min Summer	5.318	0.318	0.0	19.0	O K
240 min Summer	5.343	0.343	0.0	20.5	O K
360 min Summer	5.382	0.382	0.0	22.8	O K
480 min Summer	5.411	0.411	0.0	24.6	O K
600 min Summer	5.435	0.435	0.0	26.0	O K
720 min Summer	5.455	0.455	0.0	27.2	O K
960 min Summer	5.468	0.468	0.0	28.0	O K
1440 min Summer	5.483	0.483	0.0	28.9	O K
2160 min Summer	5.495	0.495	0.0	29.6	O K
2880 min Summer	5.499	0.499	0.0	29.9	O K
4320 min Summer	5.536	0.536	0.0	32.1	O K
5760 min Summer	5.557	0.557	0.0	33.4	O K
7200 min Summer	5.570	0.570	0.0	34.1	O K
8640 min Summer	5.576	0.576	0.0	34.5	O K
10080 min Summer	5.579	0.579	0.0	34.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	162.161	0.0	19		
30 min Summer	98.106	0.0	34		
60 min Summer	59.354	0.0	64		
120 min Summer	35.909	0.0	124		
180 min Summer	26.763	0.0	184		
240 min Summer	21.725	0.0	244		
360 min Summer	16.191	0.0	364		
480 min Summer	13.143	0.0	484		
600 min Summer	11.180	0.0	604		
720 min Summer	9.796	0.0	724		
960 min Summer	7.627	0.0	964		
1440 min Summer	5.360	0.0	1444		
2160 min Summer	3.767	0.0	2164		
2880 min Summer	2.933	0.0	2884		
4320 min Summer	2.197	0.0	4320		
5760 min Summer	1.790	0.0	5760		
7200 min Summer	1.527	0.0	7200		
8640 min Summer	1.341	0.0	8640		
10080 min Summer	1.202	0.0	9984		
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Tuscany House		18-344			
White Hart Lane		Ford Lane, Yapton			
Basingstoke RG21 4AF		Cellular Soakaway 5			
Date 16/10/2020 13:45		Designed by WindesPC4			
File 18-344 POS Tank 5 (8.3 ...		Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Winter	5.182	0.182	0.0	10.9	O K
30 min Winter	5.220	0.220	0.0	13.1	O K
60 min Winter	5.265	0.265	0.0	15.9	O K
120 min Winter	5.320	0.320	0.0	19.1	O K
180 min Winter	5.357	0.357	0.0	21.3	O K
240 min Winter	5.385	0.385	0.0	23.0	O K
360 min Winter	5.428	0.428	0.0	25.6	O K
480 min Winter	5.462	0.462	0.0	27.6	O K
600 min Winter	5.489	0.489	0.0	29.2	O K
720 min Winter	5.512	0.512	0.0	30.6	O K
960 min Winter	5.526	0.526	0.0	31.5	O K
1440 min Winter	5.545	0.545	0.0	32.6	O K
2160 min Winter	5.560	0.560	0.0	33.5	O K
2880 min Winter	5.567	0.567	0.0	33.9	O K
4320 min Winter	5.612	0.612	0.0	36.7	O K
5760 min Winter	5.641	0.641	0.0	38.3	O K
7200 min Winter	5.659	0.659	0.0	39.5	O K
8640 min Winter	5.671	0.671	0.0	40.2	O K
10080 min Winter	5.678	0.678	0.0	40.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Winter	162.161	0.0	19		
30 min Winter	98.106	0.0	34		
60 min Winter	59.354	0.0	64		
120 min Winter	35.909	0.0	124		
180 min Winter	26.763	0.0	182		
240 min Winter	21.725	0.0	242		
360 min Winter	16.191	0.0	362		
480 min Winter	13.143	0.0	480		
600 min Winter	11.180	0.0	600		
720 min Winter	9.796	0.0	718		
960 min Winter	7.627	0.0	954		
1440 min Winter	5.360	0.0	1428		
2160 min Winter	3.767	0.0	2140		
2880 min Winter	2.933	0.0	2848		
4320 min Winter	2.197	0.0	4236		
5760 min Winter	1.790	0.0	5640		
7200 min Winter	1.527	0.0	6992		
8640 min Winter	1.341	0.0	8376		
10080 min Winter	1.202	0.0	9680		
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Odyssey Markides LLP		Page 3
Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 5	
Date 16/10/2020 13:45 File 18-344 POS Tank 5 (8.3 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.032

Time (mins)	Area
From:	To: (ha)
0	4 0.032

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Cellular Soakaway 5	
Date 16/10/2020 13:45 File 18-344 POS Tank 5 (8.3 ...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 5.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00298 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	63.0	63.0	0.801	0.0	88.6
0.800	63.0	88.6			

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Odyssey Markides LLP				Page 1																																																																																																																																																																																																																			
Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Road 04 PP																																																																																																																																																																																																																					
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<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 2951 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>0.355</td><td>0.355</td><td>0.1</td><td>10.4</td><td>O K</td></tr><tr><td>30 min Summer</td><td>0.393</td><td>0.393</td><td>0.1</td><td>12.8</td><td>O K</td></tr><tr><td>60 min Summer</td><td>0.436</td><td>0.436</td><td>0.1</td><td>15.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>0.486</td><td>0.486</td><td>0.1</td><td>18.9</td><td>O K</td></tr><tr><td>180 min Summer</td><td>0.519</td><td>0.519</td><td>0.1</td><td>21.0</td><td>O K</td></tr><tr><td>240 min Summer</td><td>0.543</td><td>0.543</td><td>0.1</td><td>22.6</td><td>O K</td></tr><tr><td>360 min Summer</td><td>0.579</td><td>0.579</td><td>0.1</td><td>25.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>0.606</td><td>0.606</td><td>0.1</td><td>26.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>0.626</td><td>0.626</td><td>0.1</td><td>28.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>0.642</td><td>0.642</td><td>0.1</td><td>29.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>0.645</td><td>0.645</td><td>0.1</td><td>29.4</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>0.641</td><td>0.641</td><td>0.1</td><td>29.1</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>0.624</td><td>0.624</td><td>0.1</td><td>28.0</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>0.606</td><td>0.606</td><td>0.1</td><td>26.8</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>0.609</td><td>0.609</td><td>0.1</td><td>27.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>0.605</td><td>0.605</td><td>0.1</td><td>26.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>0.597</td><td>0.597</td><td>0.1</td><td>26.2</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>0.587</td><td>0.587</td><td>0.1</td><td>25.6</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>0.576</td><td>0.576</td><td>0.1</td><td>24.8</td><td>O K</td></tr><tr><td>15 min Winter</td><td>0.378</td><td>0.378</td><td>0.1</td><td>11.8</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>962</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>1440</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>2056</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>2340</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>3116</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>3928</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>4760</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>5616</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>6448</td></tr><tr><td>15 min Winter</td><td>162.161</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	0.355	0.355	0.1	10.4	O K	30 min Summer	0.393	0.393	0.1	12.8	O K	60 min Summer	0.436	0.436	0.1	15.6	O K	120 min Summer	0.486	0.486	0.1	18.9	O K	180 min Summer	0.519	0.519	0.1	21.0	O K	240 min Summer	0.543	0.543	0.1	22.6	O K	360 min Summer	0.579	0.579	0.1	25.0	O K	480 min Summer	0.606	0.606	0.1	26.8	O K	600 min Summer	0.626	0.626	0.1	28.1	O K	720 min Summer	0.642	0.642	0.1	29.2	O K	960 min Summer	0.645	0.645	0.1	29.4	O K	1440 min Summer	0.641	0.641	0.1	29.1	O K	2160 min Summer	0.624	0.624	0.1	28.0	O K	2880 min Summer	0.606	0.606	0.1	26.8	O K	4320 min Summer	0.609	0.609	0.1	27.0	O K	5760 min Summer	0.605	0.605	0.1	26.7	O K	7200 min Summer	0.597	0.597	0.1	26.2	O K	8640 min Summer	0.587	0.587	0.1	25.6	O K	10080 min Summer	0.576	0.576	0.1	24.8	O K	15 min Winter	0.378	0.378	0.1	11.8	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	162.161	0.0	19	30 min Summer	98.106	0.0	34	60 min Summer	59.354	0.0	64	120 min Summer	35.909	0.0	124	180 min Summer	26.763	0.0	184	240 min Summer	21.725	0.0	244	360 min Summer	16.191	0.0	364	480 min Summer	13.143	0.0	482	600 min Summer	11.180	0.0	602	720 min Summer	9.796	0.0	722	960 min Summer	7.627	0.0	962	1440 min Summer	5.360	0.0	1440	2160 min Summer	3.767	0.0	2056	2880 min Summer	2.933	0.0	2340	4320 min Summer	2.197	0.0	3116	5760 min Summer	1.790	0.0	3928	7200 min Summer	1.527	0.0	4760	8640 min Summer	1.341	0.0	5616	10080 min Summer	1.202	0.0	6448	15 min Winter	162.161	0.0	19
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Road 04 PP			
Date 16/09/2020 13:18 File 18-344 ROAD 04 (8.6 X 1...		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	0.419	0.419	0.1	14.4	O K
60 min Winter	0.467	0.467	0.1	17.6	O K
120 min Winter	0.523	0.523	0.1	21.3	O K
180 min Winter	0.560	0.560	0.1	23.7	O K
240 min Winter	0.588	0.588	0.1	25.6	O K
360 min Winter	0.629	0.629	0.1	28.3	O K
480 min Winter	0.659	0.659	0.1	30.3	O K
600 min Winter	0.683	0.683	0.1	31.9	O K
720 min Winter	0.702	0.702	0.1	33.2	Flood Risk
960 min Winter	0.707	0.707	0.1	33.5	Flood Risk
1440 min Winter	0.707	0.707	0.1	33.4	Flood Risk
2160 min Winter	0.692	0.692	0.1	32.5	O K
2880 min Winter	0.671	0.671	0.1	31.1	O K
4320 min Winter	0.670	0.670	0.1	31.0	O K
5760 min Winter	0.662	0.662	0.1	30.5	O K
7200 min Winter	0.648	0.648	0.1	29.6	O K
8640 min Winter	0.631	0.631	0.1	28.5	O K
10080 min Winter	0.613	0.613	0.1	27.2	O K
Storm Event	Rain (mm/hr)		Flooded Volume (m³)	Time-Peak (mins)	
30 min Winter	98.106		0.0	34	
60 min Winter	59.354		0.0	64	
120 min Winter	35.909		0.0	122	
180 min Winter	26.763		0.0	182	
240 min Winter	21.725		0.0	240	
360 min Winter	16.191		0.0	358	
480 min Winter	13.143		0.0	476	
600 min Winter	11.180		0.0	596	
720 min Winter	9.796		0.0	712	
960 min Winter	7.627		0.0	944	
1440 min Winter	5.360		0.0	1400	
2160 min Winter	3.767		0.0	2076	
2880 min Winter	2.933		0.0	2684	
4320 min Winter	2.197		0.0	3372	
5760 min Winter	1.790		0.0	4320	
7200 min Winter	1.527		0.0	5192	
8640 min Winter	1.341		0.0	6136	
10080 min Winter	1.202		0.0	6968	
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Road 04 PP	
Date 16/09/2020 13:18 File 18-344 ROAD 04 (8.6 X 1...	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.038

Time (mins)	Area
From: To:	(ha)
0	4 0.038

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Road 04 PP																									
Date 16/09/2020 13:18 File 18-344 ROAD 04 (8.6 X 1...	Designed by WindesPC4 Checked by																									
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<u>Model Details</u> Storage is Online Cover Level (m) 1.000 <u>Porous Car Park Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.00310</td> <td>Width (m)</td> <td>5.5</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1000</td> <td>Length (m)</td> <td>40.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>61.1</td> <td>Slope (1:X)</td> <td>100.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Depression Storage (mm)</td> <td>5</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Evaporation (mm/day)</td> <td>3</td> </tr> <tr> <td>Invert Level (m)</td> <td>0.000</td> <td>Membrane Depth (m)</td> <td>260</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.00310	Width (m)	5.5	Membrane Percolation (mm/hr)	1000	Length (m)	40.0	Max Percolation (l/s)	61.1	Slope (1:X)	100.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	0.000	Membrane Depth (m)	260
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Tank 34																																																																																																																																																																																																																					
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K</td></tr><tr><td>600 min Summer</td><td>6.790</td><td>0.090</td><td>0.0</td><td>3.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>6.793</td><td>0.093</td><td>0.0</td><td>3.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>6.792</td><td>0.092</td><td>0.0</td><td>3.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>6.790</td><td>0.090</td><td>0.0</td><td>3.8</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>6.786</td><td>0.086</td><td>0.0</td><td>3.6</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>6.781</td><td>0.081</td><td>0.0</td><td>3.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>6.779</td><td>0.079</td><td>0.0</td><td>3.3</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>6.774</td><td>0.074</td><td>0.0</td><td>3.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>6.770</td><td>0.070</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>6.765</td><td>0.065</td><td>0.0</td><td>2.7</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>6.761</td><td>0.061</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>6.736</td><td>0.036</td><td>0.0</td><td>1.5</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>51.534</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>32.474</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>20.463</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>12.894</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>9.842</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>8.125</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>6.202</td><td>0.0</td><td>362</td></tr><tr><td>480 min Summer</td><td>5.120</td><td>0.0</td><td>480</td></tr><tr><td>600 min Summer</td><td>4.413</td><td>0.0</td><td>600</td></tr><tr><td>720 min Summer</td><td>3.908</td><td>0.0</td><td>714</td></tr><tr><td>960 min Summer</td><td>3.095</td><td>0.0</td><td>808</td></tr><tr><td>1440 min Summer</td><td>2.227</td><td>0.0</td><td>1052</td></tr><tr><td>2160 min Summer</td><td>1.603</td><td>0.0</td><td>1452</td></tr><tr><td>2880 min Summer</td><td>1.269</td><td>0.0</td><td>1848</td></tr><tr><td>4320 min Summer</td><td>0.974</td><td>0.0</td><td>2680</td></tr><tr><td>5760 min Summer</td><td>0.807</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>0.698</td><td>0.0</td><td>4248</td></tr><tr><td>8640 min Summer</td><td>0.619</td><td>0.0</td><td>5008</td></tr><tr><td>10080 min Summer</td><td>0.560</td><td>0.0</td><td>5656</td></tr><tr><td>15 min Winter</td><td>51.534</td><td>0.0</td><td>19</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	6.732	0.032	0.0	1.3	O K	30 min Summer	6.740	0.040	0.0	1.7	O K	60 min Summer	6.750	0.050	0.0	2.1	O K	120 min Summer	6.761	0.061	0.0	2.6	O K	180 min Summer	6.768	0.068	0.0	2.9	O K	240 min Summer	6.774	0.074	0.0	3.1	O K	360 min Summer	6.781	0.081	0.0	3.4	O K	480 min Summer	6.787	0.087	0.0	3.6	O K	600 min Summer	6.790	0.090	0.0	3.8	O K	720 min Summer	6.793	0.093	0.0	3.9	O K	960 min Summer	6.792	0.092	0.0	3.8	O K	1440 min Summer	6.790	0.090	0.0	3.8	O K	2160 min Summer	6.786	0.086	0.0	3.6	O K	2880 min Summer	6.781	0.081	0.0	3.4	O K	4320 min Summer	6.779	0.079	0.0	3.3	O K	5760 min Summer	6.774	0.074	0.0	3.1	O K	7200 min Summer	6.770	0.070	0.0	2.9	O K	8640 min Summer	6.765	0.065	0.0	2.7	O K	10080 min Summer	6.761	0.061	0.0	2.6	O K	15 min Winter	6.736	0.036	0.0	1.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	51.534	0.0	19	30 min Summer	32.474	0.0	34	60 min Summer	20.463	0.0	64	120 min Summer	12.894	0.0	122	180 min Summer	9.842	0.0	182	240 min Summer	8.125	0.0	242	360 min Summer	6.202	0.0	362	480 min Summer	5.120	0.0	480	600 min Summer	4.413	0.0	600	720 min Summer	3.908	0.0	714	960 min Summer	3.095	0.0	808	1440 min Summer	2.227	0.0	1052	2160 min Summer	1.603	0.0	1452	2880 min Summer	1.269	0.0	1848	4320 min Summer	0.974	0.0	2680	5760 min Summer	0.807	0.0	3464	7200 min Summer	0.698	0.0	4248	8640 min Summer	0.619	0.0	5008	10080 min Summer	0.560	0.0	5656	15 min Winter	51.534	0.0	19
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Tank 34			
Date 16/09/2020 12:43 File 18-344 Tank Plot 34 (1....		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 10 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	6.745	0.045	0.0	1.9	O K
60 min Winter	6.756	0.056	0.0	2.3	O K
120 min Winter	6.769	0.069	0.0	2.9	O K
180 min Winter	6.777	0.077	0.0	3.2	O K
240 min Winter	6.783	0.083	0.0	3.5	O K
360 min Winter	6.792	0.092	0.0	3.9	O K
480 min Winter	6.799	0.099	0.0	4.1	O K
600 min Winter	6.803	0.103	0.0	4.3	O K
720 min Winter	6.806	0.106	0.0	4.5	O K
960 min Winter	6.805	0.105	0.0	4.4	O K
1440 min Winter	6.802	0.102	0.0	4.3	O K
2160 min Winter	6.796	0.096	0.0	4.0	O K
2880 min Winter	6.789	0.089	0.0	3.7	O K
4320 min Winter	6.782	0.082	0.0	3.4	O K
5760 min Winter	6.774	0.074	0.0	3.1	O K
7200 min Winter	6.766	0.066	0.0	2.8	O K
8640 min Winter	6.759	0.059	0.0	2.5	O K
10080 min Winter	6.753	0.053	0.0	2.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	32.474	0.0	33		
60 min Winter	20.463	0.0	62		
120 min Winter	12.894	0.0	120		
180 min Winter	9.842	0.0	180		
240 min Winter	8.125	0.0	238		
360 min Winter	6.202	0.0	354		
480 min Winter	5.120	0.0	468		
600 min Winter	4.413	0.0	582		
720 min Winter	3.908	0.0	694		
960 min Winter	3.095	0.0	906		
1440 min Winter	2.227	0.0	1126		
2160 min Winter	1.603	0.0	1580		
2880 min Winter	1.269	0.0	2020		
4320 min Winter	0.974	0.0	2896		
5760 min Winter	0.807	0.0	3696		
7200 min Winter	0.698	0.0	4464		
8640 min Winter	0.619	0.0	5184		
10080 min Winter	0.560	0.0	5848		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Tank 34	
Date 16/09/2020 12:43 File 18-344 Tank Plot 34 (1....	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 6.700 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00612 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	44.0	44.0	0.401	0.0	54.6
0.400	44.0	54.6			

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<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 2821 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>6.801</td><td>0.101</td><td>0.0</td><td>4.2</td><td>O K</td></tr><tr><td>30 min Summer</td><td>6.822</td><td>0.122</td><td>0.0</td><td>5.1</td><td>O K</td></tr><tr><td>60 min Summer</td><td>6.847</td><td>0.147</td><td>0.0</td><td>6.1</td><td>O K</td></tr><tr><td>120 min Summer</td><td>6.876</td><td>0.176</td><td>0.0</td><td>7.3</td><td>O K</td></tr><tr><td>180 min Summer</td><td>6.894</td><td>0.194</td><td>0.0</td><td>8.1</td><td>O K</td></tr><tr><td>240 min Summer</td><td>6.909</td><td>0.209</td><td>0.0</td><td>8.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>6.929</td><td>0.229</td><td>0.0</td><td>9.6</td><td>O K</td></tr><tr><td>480 min Summer</td><td>6.944</td><td>0.244</td><td>0.0</td><td>10.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>6.956</td><td>0.256</td><td>0.0</td><td>10.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>6.965</td><td>0.265</td><td>0.0</td><td>11.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>6.966</td><td>0.266</td><td>0.0</td><td>11.1</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>6.963</td><td>0.263</td><td>0.0</td><td>11.0</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>6.950</td><td>0.250</td><td>0.0</td><td>10.5</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>6.938</td><td>0.238</td><td>0.0</td><td>10.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>6.937</td><td>0.237</td><td>0.0</td><td>9.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>6.933</td><td>0.233</td><td>0.0</td><td>9.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>6.927</td><td>0.227</td><td>0.0</td><td>9.5</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>6.920</td><td>0.220</td><td>0.0</td><td>9.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>6.913</td><td>0.213</td><td>0.0</td><td>8.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>6.813</td><td>0.113</td><td>0.0</td><td>4.7</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>962</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>1442</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>2056</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>2360</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>3116</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>3968</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>4824</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>5616</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>6456</td></tr><tr><td>15 min Winter</td><td>162.161</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	6.801	0.101	0.0	4.2	O K	30 min Summer	6.822	0.122	0.0	5.1	O K	60 min Summer	6.847	0.147	0.0	6.1	O K	120 min Summer	6.876	0.176	0.0	7.3	O K	180 min Summer	6.894	0.194	0.0	8.1	O K	240 min Summer	6.909	0.209	0.0	8.7	O K	360 min Summer	6.929	0.229	0.0	9.6	O K	480 min Summer	6.944	0.244	0.0	10.2	O K	600 min Summer	6.956	0.256	0.0	10.7	O K	720 min Summer	6.965	0.265	0.0	11.1	O K	960 min Summer	6.966	0.266	0.0	11.1	O K	1440 min Summer	6.963	0.263	0.0	11.0	O K	2160 min Summer	6.950	0.250	0.0	10.5	O K	2880 min Summer	6.938	0.238	0.0	10.0	O K	4320 min Summer	6.937	0.237	0.0	9.9	O K	5760 min Summer	6.933	0.233	0.0	9.7	O K	7200 min Summer	6.927	0.227	0.0	9.5	O K	8640 min Summer	6.920	0.220	0.0	9.2	O K	10080 min Summer	6.913	0.213	0.0	8.9	O K	15 min Winter	6.813	0.113	0.0	4.7	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	162.161	0.0	19	30 min Summer	98.106	0.0	34	60 min Summer	59.354	0.0	64	120 min Summer	35.909	0.0	124	180 min Summer	26.763	0.0	184	240 min Summer	21.725	0.0	244	360 min Summer	16.191	0.0	364	480 min Summer	13.143	0.0	482	600 min Summer	11.180	0.0	602	720 min Summer	9.796	0.0	722	960 min Summer	7.627	0.0	962	1440 min Summer	5.360	0.0	1442	2160 min Summer	3.767	0.0	2056	2880 min Summer	2.933	0.0	2360	4320 min Summer	2.197	0.0	3116	5760 min Summer	1.790	0.0	3968	7200 min Summer	1.527	0.0	4824	8640 min Summer	1.341	0.0	5616	10080 min Summer	1.202	0.0	6456	15 min Winter	162.161	0.0	19
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Tank 34			
Date 16/09/2020 12:42 File 18-344 TANK PLOT 34 (1....		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	6.837	0.137	0.0	5.7	O K
60 min Winter	6.865	0.165	0.0	6.9	O K
120 min Winter	6.897	0.197	0.0	8.2	O K
180 min Winter	6.919	0.219	0.0	9.1	O K
240 min Winter	6.935	0.235	0.0	9.8	O K
360 min Winter	6.958	0.258	0.0	10.8	O K
480 min Winter	6.976	0.276	0.0	11.5	O K
600 min Winter	6.989	0.289	0.0	12.1	O K
720 min Winter	7.000	0.300	0.0	12.5	O K
960 min Winter	7.002	0.302	0.0	12.6	O K
1440 min Winter	7.001	0.301	0.0	12.6	O K
2160 min Winter	6.991	0.291	0.0	12.1	O K
2880 min Winter	6.977	0.277	0.0	11.6	O K
4320 min Winter	6.973	0.273	0.0	11.4	O K
5760 min Winter	6.966	0.266	0.0	11.1	O K
7200 min Winter	6.956	0.256	0.0	10.7	O K
8640 min Winter	6.944	0.244	0.0	10.2	O K
10080 min Winter	6.931	0.231	0.0	9.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	98.106	0.0	34		
60 min Winter	59.354	0.0	64		
120 min Winter	35.909	0.0	122		
180 min Winter	26.763	0.0	182		
240 min Winter	21.725	0.0	240		
360 min Winter	16.191	0.0	358		
480 min Winter	13.143	0.0	476		
600 min Winter	11.180	0.0	596		
720 min Winter	9.796	0.0	712		
960 min Winter	7.627	0.0	944		
1440 min Winter	5.360	0.0	1402		
2160 min Winter	3.767	0.0	2076		
2880 min Winter	2.933	0.0	2704		
4320 min Winter	2.197	0.0	3372		
5760 min Winter	1.790	0.0	4320		
7200 min Winter	1.527	0.0	5256		
8640 min Winter	1.341	0.0	6136		
10080 min Winter	1.202	0.0	7056		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Tank 34	
Date 16/09/2020 12:42 File 18-344 TANK PLOT 34 (1....	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.014

Time (mins)	Area
From:	To: (ha)
0	4 0.014

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Tank 34	
Date 16/09/2020 12:42 File 18-344 TANK PLOT 34 (1....	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 8.000

Cellular Storage Structure

Invert Level (m) 6.700 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00612 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	44.0	44.0	0.401	0.0	54.6
0.400	44.0	54.6			

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Summer</td><td>6.189</td><td>0.089</td><td>0.8</td><td>26.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>6.189</td><td>0.089</td><td>0.8</td><td>26.9</td><td>O K</td></tr><tr><td>720 min Summer</td><td>6.189</td><td>0.089</td><td>0.8</td><td>26.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>6.183</td><td>0.083</td><td>0.8</td><td>25.1</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>6.173</td><td>0.073</td><td>0.8</td><td>21.8</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>6.160</td><td>0.060</td><td>0.7</td><td>17.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>6.151</td><td>0.051</td><td>0.7</td><td>15.1</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>6.144</td><td>0.044</td><td>0.6</td><td>13.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>6.139</td><td>0.039</td><td>0.6</td><td>11.5</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>6.135</td><td>0.035</td><td>0.5</td><td>10.3</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>6.132</td><td>0.032</td><td>0.5</td><td>9.4</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>6.130</td><td>0.030</td><td>0.4</td><td>8.7</td><td>O K</td></tr><tr><td>15 min Winter</td><td>6.156</td><td>0.056</td><td>0.7</td><td>16.6</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>18</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>62</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>180</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>232</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>290</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>354</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>422</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>492</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>626</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>892</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>1256</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>1612</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>2336</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>3064</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>3816</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>4504</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>5248</td></tr><tr><td>15 min Winter</td><td>162.161</td><td>0.0</td><td>18</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	6.150	0.050	0.7	14.8	O K	30 min Summer	6.159	0.059	0.7	17.6	O K	60 min Summer	6.169	0.069	0.8	20.6	O K	120 min Summer	6.178	0.078	0.8	23.6	O K	180 min Summer	6.183	0.083	0.8	25.0	O K	240 min Summer	6.185	0.085	0.8	25.6	O K	360 min Summer	6.187	0.087	0.8	26.4	O K	480 min Summer	6.189	0.089	0.8	26.8	O K	600 min Summer	6.189	0.089	0.8	26.9	O K	720 min Summer	6.189	0.089	0.8	26.9	O K	960 min Summer	6.183	0.083	0.8	25.1	O K	1440 min Summer	6.173	0.073	0.8	21.8	O K	2160 min Summer	6.160	0.060	0.7	17.9	O K	2880 min Summer	6.151	0.051	0.7	15.1	O K	4320 min Summer	6.144	0.044	0.6	13.0	O K	5760 min Summer	6.139	0.039	0.6	11.5	O K	7200 min Summer	6.135	0.035	0.5	10.3	O K	8640 min Summer	6.132	0.032	0.5	9.4	O K	10080 min Summer	6.130	0.030	0.4	8.7	O K	15 min Winter	6.156	0.056	0.7	16.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	162.161	0.0	18	30 min Summer	98.106	0.0	33	60 min Summer	59.354	0.0	62	120 min Summer	35.909	0.0	122	180 min Summer	26.763	0.0	180	240 min Summer	21.725	0.0	232	360 min Summer	16.191	0.0	290	480 min Summer	13.143	0.0	354	600 min Summer	11.180	0.0	422	720 min Summer	9.796	0.0	492	960 min Summer	7.627	0.0	626	1440 min Summer	5.360	0.0	892	2160 min Summer	3.767	0.0	1256	2880 min Summer	2.933	0.0	1612	4320 min Summer	2.197	0.0	2336	5760 min Summer	1.790	0.0	3064	7200 min Summer	1.527	0.0	3816	8640 min Summer	1.341	0.0	4504	10080 min Summer	1.202	0.0	5248	15 min Winter	162.161	0.0	18
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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Odyssey Markides LLP				Page 2	
Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Basin			
Date 09/10/2020 14:08 File BASIN (100YR + CC).SRCX		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	6.166	0.066	0.8	19.8	O K
60 min Winter	6.177	0.077	0.8	23.2	O K
120 min Winter	6.188	0.088	0.8	26.7	O K
180 min Winter	6.194	0.094	0.8	28.4	O K
240 min Winter	6.197	0.097	0.8	29.4	O K
360 min Winter	6.199	0.099	0.8	30.1	O K
480 min Winter	6.200	0.100	0.8	30.3	O K
600 min Winter	6.200	0.100	0.8	30.3	O K
720 min Winter	6.199	0.099	0.8	30.0	O K
960 min Winter	6.191	0.091	0.8	27.5	O K
1440 min Winter	6.176	0.076	0.8	22.8	O K
2160 min Winter	6.158	0.058	0.7	17.2	O K
2880 min Winter	6.147	0.047	0.7	14.0	O K
4320 min Winter	6.139	0.039	0.6	11.5	O K
5760 min Winter	6.133	0.033	0.5	9.8	O K
7200 min Winter	6.129	0.029	0.4	8.6	O K
8640 min Winter	6.126	0.026	0.4	7.7	O K
10080 min Winter	6.124	0.024	0.3	7.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	98.106	0.0	33		
60 min Winter	59.354	0.0	62		
120 min Winter	35.909	0.0	120		
180 min Winter	26.763	0.0	176		
240 min Winter	21.725	0.0	232		
360 min Winter	16.191	0.0	334		
480 min Winter	13.143	0.0	378		
600 min Winter	11.180	0.0	456		
720 min Winter	9.796	0.0	534		
960 min Winter	7.627	0.0	682		
1440 min Winter	5.360	0.0	954		
2160 min Winter	3.767	0.0	1324		
2880 min Winter	2.933	0.0	1672		
4320 min Winter	2.197	0.0	2420		
5760 min Winter	1.790	0.0	3168		
7200 min Winter	1.527	0.0	3888		
8640 min Winter	1.341	0.0	4584		
10080 min Winter	1.202	0.0	5344		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Basin	
Date 09/10/2020 14:08 File BASIN (100YR + CC).SRCX	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.050

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

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Basin	
Date 09/10/2020 14:08 File BASIN (100YR + CC).SRCX	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 7.300

Infiltration Basin Structure

Invert Level (m) 6.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01728 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	290.0	1.200	722.0

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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Swale																																																																																																																																																																																																																					
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<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 1043 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>6.834</td><td>0.034</td><td>0.1</td><td>7.5</td><td>O K</td></tr><tr><td>30 min Summer</td><td>6.840</td><td>0.040</td><td>0.1</td><td>9.1</td><td>O K</td></tr><tr><td>60 min Summer</td><td>6.847</td><td>0.047</td><td>0.2</td><td>10.8</td><td>O K</td></tr><tr><td>120 min Summer</td><td>6.855</td><td>0.055</td><td>0.2</td><td>12.8</td><td>O K</td></tr><tr><td>180 min Summer</td><td>6.859</td><td>0.059</td><td>0.2</td><td>14.0</td><td>O K</td></tr><tr><td>240 min Summer</td><td>6.862</td><td>0.062</td><td>0.2</td><td>14.8</td><td>O K</td></tr><tr><td>360 min Summer</td><td>6.867</td><td>0.067</td><td>0.2</td><td>16.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>6.869</td><td>0.069</td><td>0.2</td><td>16.7</td><td>O K</td></tr><tr><td>600 min Summer</td><td>6.871</td><td>0.071</td><td>0.2</td><td>17.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>6.872</td><td>0.072</td><td>0.2</td><td>17.4</td><td>O K</td></tr><tr><td>960 min Summer</td><td>6.870</td><td>0.070</td><td>0.2</td><td>17.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>6.867</td><td>0.067</td><td>0.2</td><td>16.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>6.863</td><td>0.063</td><td>0.2</td><td>15.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>6.859</td><td>0.059</td><td>0.2</td><td>14.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>6.856</td><td>0.056</td><td>0.2</td><td>13.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>6.853</td><td>0.053</td><td>0.2</td><td>12.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>6.850</td><td>0.050</td><td>0.2</td><td>11.5</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>6.847</td><td>0.047</td><td>0.2</td><td>10.8</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>6.845</td><td>0.045</td><td>0.2</td><td>10.2</td><td>O K</td></tr><tr><td>15 min Winter</td><td>6.838</td><td>0.038</td><td>0.1</td><td>8.4</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>362</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>480</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>600</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>702</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>798</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>1036</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>1428</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>1820</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>2636</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>3400</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>4112</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>4848</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>5640</td></tr><tr><td>15 min Winter</td><td>162.161</td><td>0.0</td><td>19</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	6.834	0.034	0.1	7.5	O K	30 min Summer	6.840	0.040	0.1	9.1	O K	60 min Summer	6.847	0.047	0.2	10.8	O K	120 min Summer	6.855	0.055	0.2	12.8	O K	180 min Summer	6.859	0.059	0.2	14.0	O K	240 min Summer	6.862	0.062	0.2	14.8	O K	360 min Summer	6.867	0.067	0.2	16.0	O K	480 min Summer	6.869	0.069	0.2	16.7	O K	600 min Summer	6.871	0.071	0.2	17.1	O K	720 min Summer	6.872	0.072	0.2	17.4	O K	960 min Summer	6.870	0.070	0.2	17.0	O K	1440 min Summer	6.867	0.067	0.2	16.2	O K	2160 min Summer	6.863	0.063	0.2	15.1	O K	2880 min Summer	6.859	0.059	0.2	14.0	O K	4320 min Summer	6.856	0.056	0.2	13.2	O K	5760 min Summer	6.853	0.053	0.2	12.3	O K	7200 min Summer	6.850	0.050	0.2	11.5	O K	8640 min Summer	6.847	0.047	0.2	10.8	O K	10080 min Summer	6.845	0.045	0.2	10.2	O K	15 min Winter	6.838	0.038	0.1	8.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	162.161	0.0	19	30 min Summer	98.106	0.0	34	60 min Summer	59.354	0.0	64	120 min Summer	35.909	0.0	122	180 min Summer	26.763	0.0	182	240 min Summer	21.725	0.0	242	360 min Summer	16.191	0.0	362	480 min Summer	13.143	0.0	480	600 min Summer	11.180	0.0	600	720 min Summer	9.796	0.0	702	960 min Summer	7.627	0.0	798	1440 min Summer	5.360	0.0	1036	2160 min Summer	3.767	0.0	1428	2880 min Summer	2.933	0.0	1820	4320 min Summer	2.197	0.0	2636	5760 min Summer	1.790	0.0	3400	7200 min Summer	1.527	0.0	4112	8640 min Summer	1.341	0.0	4848	10080 min Summer	1.202	0.0	5640	15 min Winter	162.161	0.0	19
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Tuscany House White Hart Lane Basingstoke RG21 4AF		18-344 Ford Lane, Yapton Swale			
Date 29/10/2020 10:40 File Swale (100yr + CC).SRCX		Designed by WindesPC4 Checked by			
Micro Drainage		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	6.845	0.045	0.2	10.1	O K
60 min Winter	6.852	0.052	0.2	12.1	O K
120 min Winter	6.861	0.061	0.2	14.4	O K
180 min Winter	6.866	0.066	0.2	15.8	O K
240 min Winter	6.869	0.069	0.2	16.8	O K
360 min Winter	6.874	0.074	0.2	18.1	O K
480 min Winter	6.877	0.077	0.2	19.0	O K
600 min Winter	6.879	0.079	0.2	19.6	O K
720 min Winter	6.881	0.081	0.2	20.0	O K
960 min Winter	6.879	0.079	0.2	19.4	O K
1440 min Winter	6.875	0.075	0.2	18.3	O K
2160 min Winter	6.869	0.069	0.2	16.7	O K
2880 min Winter	6.864	0.064	0.2	15.2	O K
4320 min Winter	6.858	0.058	0.2	13.6	O K
5760 min Winter	6.853	0.053	0.2	12.2	O K
7200 min Winter	6.848	0.048	0.2	11.1	O K
8640 min Winter	6.845	0.045	0.2	10.2	O K
10080 min Winter	6.842	0.042	0.1	9.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	98.106	0.0	33		
60 min Winter	59.354	0.0	62		
120 min Winter	35.909	0.0	122		
180 min Winter	26.763	0.0	180		
240 min Winter	21.725	0.0	238		
360 min Winter	16.191	0.0	354		
480 min Winter	13.143	0.0	468		
600 min Winter	11.180	0.0	582		
720 min Winter	9.796	0.0	694		
960 min Winter	7.627	0.0	904		
1440 min Winter	5.360	0.0	1112		
2160 min Winter	3.767	0.0	1560		
2880 min Winter	2.933	0.0	1988		
4320 min Winter	2.197	0.0	2812		
5760 min Winter	1.790	0.0	3576		
7200 min Winter	1.527	0.0	4320		
8640 min Winter	1.341	0.0	5096		
10080 min Winter	1.202	0.0	5848		
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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Swale	
Date 29/10/2020 10:40 File Swale (100yr + CC).SRCX	Designed by WindesPC4 Checked by	
Micro Drainage		Source Control 2020.1

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 498650 101750 SU 98650 01750
C (1km)	-0.025
D1 (1km)	0.390
D2 (1km)	0.245
D3 (1km)	0.403
E (1km)	0.310
F (1km)	2.321
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) 0.025

Time (mins)	Area
From:	To: (ha)
0	4 0.025

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Tuscany House White Hart Lane Basingstoke RG21 4AF	18-344 Ford Lane, Yapton Swale	
Date 29/10/2020 10:40 File Swale (100yr + CC).SRCX	Designed by WindesPC4 Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 7.400

Swale Structure

Infiltration Coefficient Base (m/hr)	0.00612	Length (m)	200.0
Infiltration Coefficient Side (m/hr)	0.00000	Side Slope (1:X)	3.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	1.00	Cap Volume Depth (m)	0.300
Invert Level (m)	6.800	Cap Infiltration Depth (m)	0.000
Base Width (m)	1.0		

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APPENDIX G

Arun DC Surface Water Checklist



Surface Water Drainage Proposal Checklist

This 'Surface Water Drainage Proposals Checklist' has been designed to clearly define Arun District Council's and Chichester District Council's expectations and requirements for any surface water drainage proposals, submitted for appraisal by the council's Engineers, during the planning process.

Please be aware that it is in your interest to provide all of the requested information, as this will allow the council's Engineers to quickly and efficiently review your proposals. The omission of any requested information may lead to delays in the planning process.

This document will be of help to any applicant, or drainage consultant, preparing to submit a 'Discharge of Conditions Application' relating to surface water drainage conditions. Alternatively, it can also be used earlier in the planning process, if the applicant wishes to avoid pre-commencement conditions relating to surface water drainage. The Town and Country Planning Regulations now require pre-commencement conditions to have the prior agreement of the applicant regarding their wording and use. Therefore, if you wish to avoid pre-commencement conditions, in relation to surface water drainage, you will need to submit proposals that provide the information requested in this checklist and also align with the requirements of the following documents:

[West Sussex Policy for the Management of Surface Water](#) (WSSC)

['Supplementary Requirements for Surface Water Drainage Proposals'](#). (Arun DC)

['Supplementary Requirements for Surface Water Drainage Proposals'](#). (Chichester DC)

By submitting all of the information requested by this checklist you will enable the council's Engineers to determine whether your proposals follow the hierarchy for sustainable drainage and will adequately drain the site.

Please be aware that it will be difficult for the council's Engineers to undertake a timely assessment of your application if you fail to provide any of the information requested.

Surface Water Drainage Proposal Checklist

Ground Investigation Results				
Results Required	Results Provided?			
Winter groundwater monitoring results ^(Please refer to guidance note 1 below)	Yes	X	No	
Period of winter groundwater monitoring ^{Note 1}	From	29/10/19		
	To	12/03/20		
Maximum recorded groundwater level	5.010 mAOD 2.790 mBGL			
Winter infiltration test results ^{Note 2}	Yes	X	No	
Date of winter infiltration testing	28/01/20			
Details of the location and depth of the infiltration testing ^{Note 3}	Yes	X	No	
Minimum infiltration rate ^{Note 4}	REFER TO REPORT m/s			

Guidance Notes

1. A full winters groundwater monitoring should be undertaken, (October to March inclusive) to enable the peak annual groundwater levels to be established. The extent of winter monitoring for developments of less than 5 properties should be discussed with the council's Engineers.
2. Infiltration testing should be undertaken during the wet winter months (typically January) and in line with BRE365, or a similar approved method. Tests should be repeated 3x, to replicate saturated ground conditions. Please note that infiltration testing is to be carried out at a time and depth agreed with the Councils engineers.
3. Infiltration testing should be undertaken at the location and depth of any proposed infiltration structures. This must be above the maximum recorded groundwater level in that vicinity.
4. The minimum infiltration rate obtained at the location and depth of the proposed infiltration structures should be used to inform the design of the structures.

Proposed Method of Surface Water Disposal				
Infiltration On-site, via soak-away structures	Yes	X	No	
If on-site infiltration is not to be used, has justification for this been provided? Note 5	Yes		No	
Attenuation (on-site) with a restricted discharge to a watercourse on, or adjacent to, the site	Yes		No	
Attenuation (on-site) with a restricted discharge to a surface water sewer on, or adjacent to, the site	Yes		No	
Attenuation (on-site) with a restricted discharge to a foul water sewer on, or adjacent to, the site	Yes		No	

Guidance Notes

5. If on-site infiltration is not being used to drain the site you will need to provide evidence that demonstrates on-site infiltration is unviable.

Drainage Design: Supporting Calculations						
Calculations Required				Calculations Provided?		
Infiltration Structures	Half-drain time for 10 year event (plus climate change allowance)	Yes	X	No		
		SEE CALCS Hours				
	Half-drain time for 100 year event (plus climate change allowance)	Yes	X	No		
		SEE CALCS Hours				
	Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. ^{Note 7}	Yes	X	No		
Attenuation and Subsequent Restricted Discharge	Lowest base level of infiltration structure	REFER TO mAOD DRAWINGS mBGL				
	Has the design sought to provide treatment of potential contaminants? E.g. hydrocarbons.	Yes	X	No		
	Pre-development run-off rate calculations	Yes		No		
		l/s				
	Proposed discharge rate ^{Note 6}	l/s				
Attenuation and Subsequent Restricted Discharge	Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. ^{Note 7}	Yes		No		
	Has the design sought to provide treatment of potential contaminants? E.g. hydrocarbons.	Yes		No		
	If your proposed scheme incorporates any impermeable lined attenuation features we require calculations to demonstrate that appropriate resistance to floatation (due to groundwater levels) is catered for in the design	Yes		No		
	If you propose discharging into or altering an ordinary watercourse; have you sought Ordinary Watercourse/Land Drainage Consent? ^{Note 8}	Yes		No		
	If discharging to a watercourse, piped system or the sea, has the proposed drainage network been modelled against predicted top water levels for the 1 in 100 year storm event plus climate change allowance, within the existing system? ^{Note 9}	Yes		No		

Guidance Notes

- Any proposed discharge rate must be less than, or equal to, the pre-development rate. Greenfield sites must use the mean flow rate (Q_{bar}) and be based upon the area occupied by the development, ignoring significant open spaces. Please note that the minimum acceptable discharge rate is 2l/s when using formal flow control devices, unless otherwise agreed. Additionally, if you are developing a brownfield site, we expect you to provide fully detailed plans of the existing surface water drainage arrangements on site, including impermeable areas, gullies, outfalls, pipes & diameters, manholes, etc. We generally seek 50% betterment in terms of run off from brownfield sites.
- The appropriate factor of safety from the table below must be applied to your calculations to ensure your design is fully in accordance with CIRIA R156/ CIRIA C753.

Factor of Safety Table						
Size of Area to be Drained	Consequences of failure					
	No damage or inconvenience		Minor inconvenience, e.g. surface water on car park		Damage to buildings or structures or roads.	
	Cv=1.0	Cv=0.75	Cv=1.0	Cv=0.75	Cv=1.0	Cv=0.75
<100 m ²	1.5	2	2	3	10	13
100m ² to 1000m ²	1.5	2	3	4	10	13
>1000m ²	1.5	2	5	6.5	10	13

8. [Ordinary Watercourse/Land Drainage Consent](#) will need to be sought, ideally in parallel with planning permission, if you propose discharging into, culverting or altering a watercourse.
9. Modelling is required to ensure that problems, such as surcharged outfalls, are addressed.

Plans/Drawings/Diagrams				
Required	Provided?			
Plan detailing the location of groundwater monitoring and infiltration testing	Yes	X	No	
Detailed drainage layout plan ^{Note 10}	Yes	X	No	
Construction detail plans ^{Note 11}	Yes	X	No	
Exceedance flow route plans ^{Note 12}	Yes	X	No	
Impermeable area plan	Yes	X	No	
If ground levels are being raised $\geq 300\text{mm}$ above existing levels and is unavoidable, have fully detailed plans been provided, together with drainage proposals, to address any potential drainage related issues.	Yes	X	No	

Guidance Notes

10. Drainage layout plans should include:
 - All surface water drainage pipes labelled with; diameters, pipe materials, falls and invert levels.
 - All infiltrating and attenuating structures (including permeable paving) labelled with; dimensions, invert and cover levels.
 - All manholes labelled with; cover levels, invert levels, cover types detailed.
 - All silt traps clearly labelled with sump depths.
 - Control structures with outflow rates and invert levels.
 - Proposed/existing levels of any areas subject to ground raising, together with suitable measures/detailed drawings for the associated management of surface water runoff. Please note that ground raising should be avoided unless there are exceptional circumstances.
11. Site specific construction detail plans should be supplied if your proposed drainage scheme includes any of the following elements: pipe bed and surround; infiltrating structures; attenuating structures; manholes; catch-pits/silt traps; control devices; permeable paving; headwalls.
12. Unless specifically requested by the council's drainage engineers 'Exceedance Flow Route Plans' are only required for developments of more than 5 residential properties or more than 0.5ha of commercial development .