Online Controls for Storm

Orifice Manhole: SPP1 1 FC, DS/PN: S1.001, Volume (m³): 0.1

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 87.600

Orifice Manhole: SPP2 FC, DS/PN: S2.001, Volume (m³): 0.6

Diameter (m) 0.029 Discharge Coefficient 0.600 Invert Level (m) 87.600

Storage Structures for Storm

Porous Car Park Manhole: SPP1, DS/PN: S1.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.0
Membrane Percolation (mm/hr)	1000	Length (m)	3.0
Max Percolation (l/s)	3.3	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	87.600	Membrane Depth (mm)	0

Porous Car Park Manhole: SPP2, DS/PN: S2.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.1
Membrane Percolation (mm/hr)	1000	Length (m)	4.0
Max Percolation (l/s)	2.3	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	87.600	Membrane Depth (mm)	0

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 20.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.438	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	SPP1	15 Winter	1	+0%	30/15 Summer				87.656	-0.044
S1.001	SPP1 1 FC	15 Summer	1	+0%	30/15 Summer				87.658	-0.042
S1.002	SSW2	15 Winter	1	+0%					87.563	-0.087
S2.000	SPP2	30 Winter	1	+0%	100/15 Summer				87.636	-0.064
S2.001	SPP2 FC	30 Winter	1	+0%	100/15 Summer				87.635	-0.065
S1.003	SMH1	30 Winter	1	+0%					86.864	-0.126

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SPP1	0.000	0.14		10	0.6	OK	
S1.001	SPP1 1 FC	0.000	0.08			0.5	OK	
S1.002	SSW2	0.000	0.04			0.6	OK	
S2.000	SPP2	0.000	0.06		17	0.2	OK	
S2.001	SPP2 FC	0.000	0.06			0.2	OK	
S1.003	SMH1	0.000	0.06			0.8	OK	

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	20.000
Region	England and Wales	Ratio R	0.438
Cv (Summer)	0.750		
Cv (Winter)	0.840		

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	SPP1	15 Winter	30	+0%	30/15 Summer				87.750	0.050
S1.001	SPP1 1 FC	15 Winter	30	+0%	30/15 Summer				87.768	0.068
S1.002	SSW2	15 Winter	30	+0%					87.568	-0.082
S2.000	SPP2	30 Winter	30	+0%	100/15 Summer				87.689	-0.011
S2.001	SPP2 FC	30 Winter	30	+0%	100/15 Summer				87.689	-0.011
S1.003	SMH1	30 Winter	30	+0%					86.874	-0.116

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SPP1	0.000	0.28		11	1.1	SURCHARGED	
S1.001	SPP1 1 FC	0.000	0.17			1.0	SURCHARGED	
S1.002	SSW2	0.000	0.08			1.0	OK	
S2.000	SPP2	0.000	0.14		16	0.6	OK	
S2.001	SPP2 FC	0.000	0.12			0.5	OK	
S1.003	SMH1	0.000	0.12			1.5	OK	

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.438	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	SPP1	30 Winter	100	+40%	30/15 Summer				87.913	0.213
S1.001	SPP1 1 FC	30 Winter	100	+40%	30/15 Summer				87.925	0.225
S1.002	SSW2	30 Winter	100	+40%					87.572	-0.078
S2.000	SPP2	30 Winter	100	+40%	100/15 Summer				87.779	0.079
S2.001	SPP2 FC	30 Winter	100	+40%	100/15 Summer				87.778	0.078
S1.003	SMH1	30 Winter	100	+40%					86.882	-0.108

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SPP1	0.000	0.41		15	1.6	FLOOD RISK	
S1.001	SPP1 1 FC	0.000	0.25			1.5	FLOOD RISK	
S1.002	SSW2	0.000	0.11			1.5	OK	
S2.000	SPP2	0.000	0.23		19	0.9	SURCHARGED	
S2.001	SPP2 FC	0.000	0.18			0.7	SURCHARGED	
S1.003	SMH1	0.000	0.18			2.2	OK	

G London Borough of Camden SuDS Pro-Forma

Camden

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1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	22 Kemplay Road
Address & post code	22 Kemplay Road, London, NW3 1SY
OS Grid ref. (Easting, Northing)	E 526761
	N 185703
LPA reference (if applicable)	
Brief description of proposed work	New 17m2 extension and landscaping works to rear garden
Total site Area	145 m^2
Total existing impervious area	108 m^2
Total proposed impervious area	105 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No
Existing drainage connection type and location	150mm CWS to public combined sewer in Kemplay Road via lateral connection
Designer Name	Harry Hunter
Designer Position	Senior Civil Engineer
Designer Company	Elliott Wood

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	None
Bedrock geology classification	Claygate member
Site infiltration rate	N/A m/s
Depth to groundwater level	N/A m below ground level
Is infiltration feasible?	No

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	N	N
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	N	N
7 discharge rainwater to the combined sewer.	Y	

2c. Proposed Discharge Details

Proposed discharge location	As existing
Has the owner/regulator of the discharge location been consulted?	No

Camden

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3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	0.1			
1 in 1	0.1	1.7	8	0.8
1 in 30	0.1	4.5	8	1.5
1 in 100	0.2	5.9	8	1.8
1 in 100 + CC			8	2.2
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Orifice Plate		

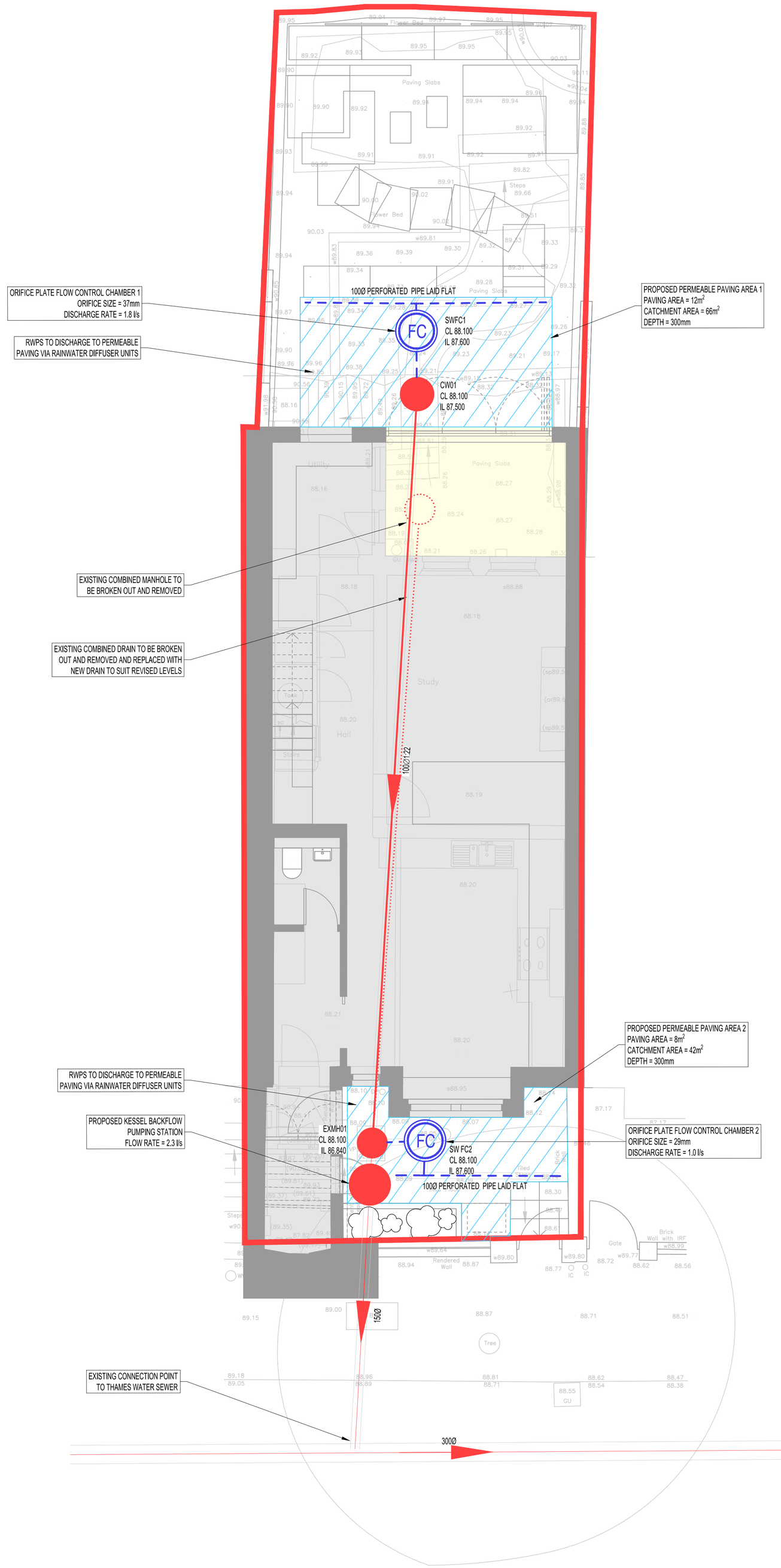
3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	115	0	1.8
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	0		0
Total	**115**	**0**	**1.8**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Page 2, Section 4
Drainage hierarchy (2b)	Page 3, Section 7
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Page 4, section 7
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Page 4, section 7
Proposed SuDS measures & specifications (3b)	Page 4, section 7
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Page 3, Section 6
Detailed drainage design drawings, including exceedance flow routes	App H
Detailed landscaping plans	Page 3, Section 6
Maintenance strategy	Page 4, section 8
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Page 4, section 7
b) biodiversity?	Page 4, section 7
c) amenity?	Page 4, section 7

H Proposed Below Ground Drainage Layout



BELOW GROUND DRAINAGE NOTES

1. THE LOCATION AND LEVEL OF EXISTING DRAINAGE CONNECTIONS AND EXISTING SERVICES IS TO BE CHECKED PRIOR TO COMMENCEMENT OF DRAINAGE WORKS. ANY VARIANCE TO THE DETAILS ON THIS DRAWING AND THE SCHEDULE IS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. THE DESIGN IS BASED ON THE INFORMATION AVAILABLE ON THE DATE OF ISSUE FROM OTHER PARTIES (EG. ARCHITECT AND M & E ENGINEER). IT IS SUBJECT TO CHANGE RESULTING FROM UPDATES TO THE AVAILABLE INFORMATION FROM OTHERS.
3. THE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE NBS SPECIFICATIONS, ASSOCIATED MANHOLE SCHEDULE AND STANDARD DRAINAGE DETAIL DRAWINGS WHERE APPLICABLE.
4. THE POSITIONS OF FOUL AND SURFACE WATER DRAINAGE POINTS ARE INDICATIVE ONLY, REFER TO THE ARCHITECTS DRAWINGS FOR SETTING OUT DETAILS.
5. PRIVATE FOUL AND SURFACE WATER DRAINAGE IS TO BE CONSTRUCTED IN ACCORDANCE WITH BUILDING REGULATIONS PART H, BS EN752 AND BS EN12056.
6. DRAINS AT GROUND LEVEL ARE TO BE CONSTRUCTED USING VITRIFIED CLAY PIPES TO BS EN 295-1 SUPER STRENGTH SPECIFICATION (HEPWORTH SUPERSLEVE) OR SIMILAR APPROVED.
7. ALL SOIL CONNECTIONS UNDER BUILDINGS TO BE 100mm DIA LAID AT A MINIMUM GRADIENT OF 1/40 UNLESS NOTED OTHERWISE.
8. ALL SURFACE WATER CONNECTIONS TO BE 150mm DIAMETER AND TO BE LAID AT A MINIMUM GRADIENT OF 1/80 UNLESS NOTED OTHERWISE .
9. ALL SOIL CONNECTIONS AND RAINWATER PIPES SHOULD BE RODDABLE FROM GROUND LEVEL.
10. RAINWATER DOWN PIPES ARE TO CONNECT TO A DRAIN VIA A REST BEND. WHERE DRAINAGE IS COMBINED A 'P' TRAP MUST ALSO BE PROVIDED.
11. IN CASES OF IN SITU CONCRETE FLOOR SLABS, DRAINS ARE TO BE CAST INTEGRAL WITH THE SLAB WHERE PIPE COVER TO THE CROWN IS LESS THAN 300mm. - NOTE SPECIAL PROVISIONS APPLY TO BASEMENT FLOOR SLABS - SEE DETAILED DRAINAGE AND STRUCTURAL DRAWINGS. CONCRETE ENCASEMENT TO BE REINFORCED AS PER DRAINAGE DETAIL.
12. WHERE DRAINS PASS THROUGH FOUNDATIONS OR OTHER RIGID STRUCTURES A LINTEL OR SLEEVE IS TO BE USED AND PROVISION FOR FLEXIBILITY IS TO BE MADE USING ROCKER PIPES.
13. BACKFILLING OF DRAIN TRENCHES ADJACENT TO BUILDING OR OTHER STRUCTURES IS TO BE IN ACCORDANCE WITH DIAGRAM 8 OF THE BUILDING REGULATIONS.
14. ANY PIPE OR GULLY OR OTHER FITTING OR DUCT PENETRATING THE BASEMENT SLAB OR WALL IS TO BE WATERPROOFED USING HYDROPHILIC STRIPS OR PUDDLE FLANGES TO ENSURE A WATER TIGHT JOINT. CONCRETE SURROUND TO DRAINAGE PIPES AND FITTINGS MAY BE REQUIRED IN CERTAIN CASES - REFER TO DETAILED DRAINAGE DRAWINGS AND RELEVANT STRUCTURAL DETAILS.
15. EXISTING FOUNDATIONS AND RETAINING WALLS MUST NOT BE UNDERMINED BY NEW DRAINAGE RUNS UNLESS AGREED IN WRITING WITH THE STRUCTURAL ENGINEER. CONTRACTOR TO SUBMIT METHOD STATEMENTS AND TEMPORARY WORKS PROPOSALS TO THE STRUCTURAL ENGINEER FOR COMMENT PRIOR TO COMMENCEMENT OF WORKS.
16. ALL DRAINAGE EXCAVATIONS SHOULD BE RISK ASSESSED BY THE CONTRACTOR TO ENSURE TRENCH SAFETY / STABILISATION MEASURES ARE CONSIDERED DURING THE CONSTRUCTION PERIOD. ANY EXCAVATIONS LEFT EXPOSED SHOULD BE INSPECTED BY A COMPETENT PERSON ON A DAILY BASIS. GROUND CONDITIONS SHOULD BE MONITORED AND TOOL BOX TALKS SHOULD INCLUDE SITE INVESTIGATION INFORMATION TO AID THE CONTRACTORS ONGOING RISK ASSESSMENT AND METHOD OF EXCAVATION. ALL EXCAVATIONS SHOULD BE ASSESSED BY A COMPETENT PERSON FOR CONFINED SPACES REQUIREMENTS.
17. THE CONTRACTOR IS TO CONSIDER PHASING OF THE DRAINAGE INSTALLATION AND ARE TO PROVIDE TEMPORARY DRAINAGE MEASURES THEY DETERMINE ARE REQUIRED.
18. SuDS ARE TO BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS MADE WITHIN THE CIRIA SUDS MANUAL C753 (WITH PARTICULAR ATTENTION DRAWN TO CHAPTER 31) AND CIRIA GUIDANCE ON THE CONSTRUCTION OF SuDS C768. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSIDER CONSTRUCTION PROGRAMME OF SuDS.
19. ALL MANHOLE COVER LEVELS SHOWN ARE APPROXIMATE AND ARE TO SUIT THE FINAL GROUND OR BUILDING LEVELS .
20. MANHOLE COVERS IN BLOCK PAVED AREAS ARE TO BE RECESSED UNLESS NOTED OTHERWISE.
21. ALL INTERNAL MANHOLE COVERS ARE TO BE NON-VENTILATING AND DOUBLE SEALED.
22. ALL EXTERNAL FOUL AND COMBINED WATER MANHOLE COVERS IN FOOTPATHS AND PAVED AREAS (OTHER THAN ROADS) ARE TO BE NON-VENTILATING AND SINGLE SEALED UNLESS NOTED OTHERWISE.
23. ALL EXTERNAL SURFACE WATER MANHOLE COVERS ARE TO BE NON-VENTILATING UNLESS NOTED OTHERWISE.
24. ALL MANHOLE COVERS ARE TO BE INSTALLED SQUARE TO PAVING, KERB LINES OR BUILDINGS.
25. INSPECTION CHAMBERS ARE TO HAVE A REDUCED ACCESS PIECE WHEN THE DEPTH IS GREATER THAN 1.2m TO THE BASE OF THE CHAMBER.

LEGEND

- COMBINED WATER MANHOLE
- SURFACE WATER MANHOLE
- EXISTING COMBINED WATER
- PROPOSED COMBINED WATER
- PROPOSED SURFACE WATER
- COMBINED WATER PIPE TO BE ABANDONED
- PROPOSED PERMEABLE PAVING WITH LINED POROUS SUB-BASE
- FLOW CONTROL CHAMBER
- EXISTING BUILDING
- PROPOSED BUILDING
- SITE BOUNDARY

This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

Do not scale from this drawing.

Drawing title
Proposed Below Ground Drainage Layout

rev	sc	date	by	chk	description
P1	S2	16.11.22	HHu	KTr	Issued for Planning

scale (s): 1:50@ A1; 1:100@ A3
date: November 2022
drawn: HHu

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Project
22 Kemplay Road, London

Drawing status: Preliminary
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Originator: EWP-
Zone: ZZ-
Level: XX-
Type: DR-
Role: C-
drg no.: 1000

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