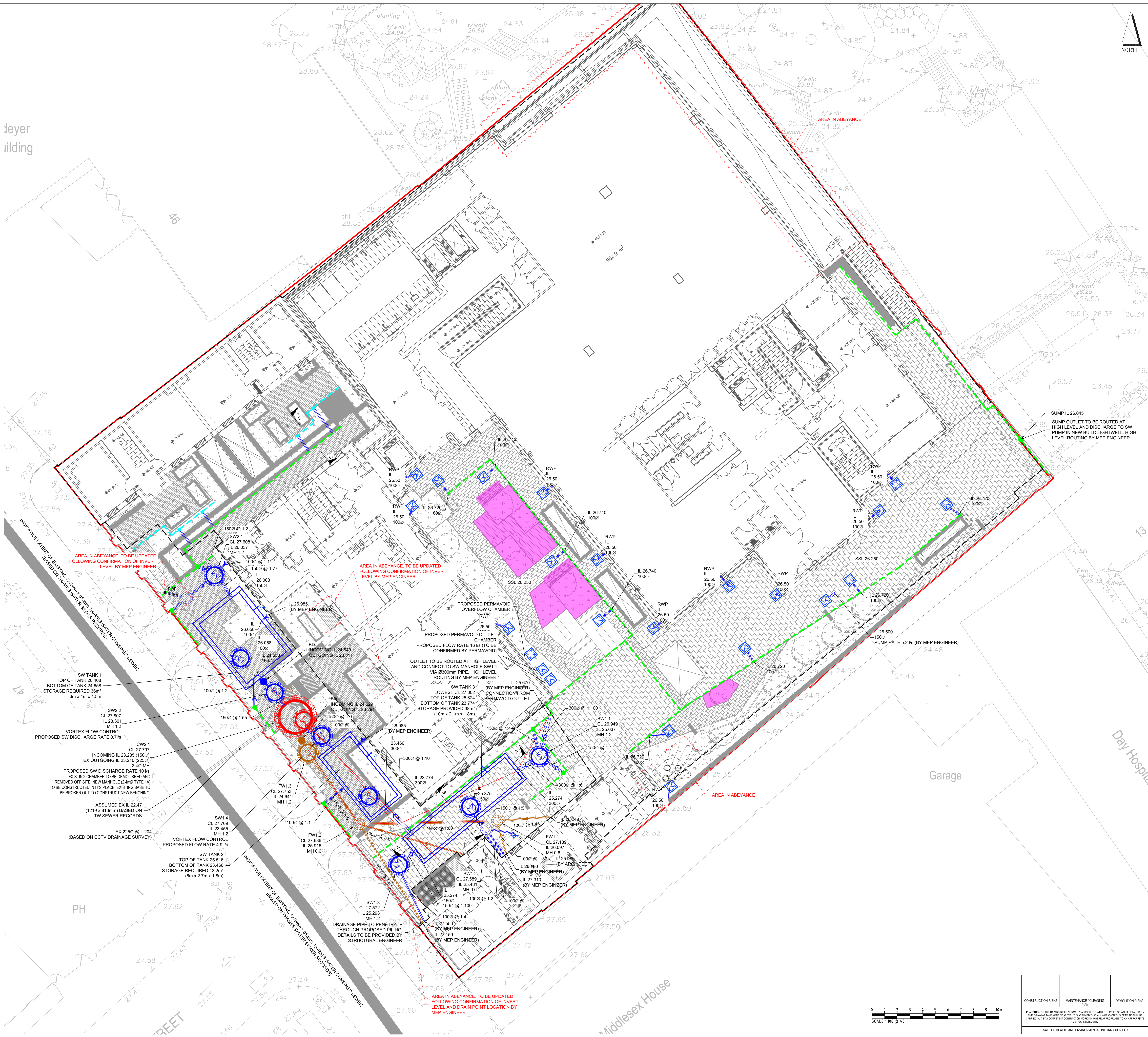


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 Approved: RP
 Designer: BL
 Project Management Initials:
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NOTES

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- ALL DIMENSIONS, CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS NOTED OTHERWISE.
- ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH AND SAFETY INFORMATION, INCLUDING THE PROJECT HAZARD LOG FOR ANY IDENTIFIED POTENTIAL RISKS.
- DRAWING USES BACKGROUND INFORMATION RECEIVED FROM:
 - STRUCTURES (EXISTING BUILDING RECEIVED ON 12.08.2019 AND NEW BUILD ON 25.10.2018)
 - MEP (DRAIN POINTS RECEIVED ON 14.08.2019 AND PUMP RATES RECEIVED ON 13.08.2019)
 - ARCHITECT (RECEIVED ON 11.10.2019)
 - LANDSCAPE ARCHITECT (RECEIVED ON 10.10.2019)
 - TOPOGRAPHICAL SURVEY (RECEIVED ON 26.09.2016)
 - NORTH HOUSE BASEMENT TRIAL PIT RESULTS (RECEIVED ON 17.12.2018)
 - CCTV DRAINAGE SURVEY (RECEIVED ON 19.12.2017, 11.06.2018 AND 10.09.2018)
- TOTAL SURFACE WATER DISCHARGE FROM THE SITE TO EXISTING THAMES WATER SEWER IS RESTRICTED TO A RATE OF 10% + PROPOSED FOUW FLOW RATE AND UNRESTRICTED SURFACE WATER DISCHARGE OF 0.67%. THIS CAN ONLY BE INCREASED BY WRITTEN ACCEPTANCE FROM TWUL AND LOCAL PLANNING AUTHORITY.
- PROPOSED SURFACE WATER ATTENUATION REQUIREMENTS:
 - SW TANK 1 = 39m³
 - SW TANK 2 = 29m³
 - SW TANK 3 = 37.9m³
 - SHALLOW GEOSPELLULAR MODULAR UNIT = 47m³
- ALL BUILDING DRAINAGE TO BE INSTALLED AND TESTED IN COMPLIANCE WITH THE BUILDING REGULATIONS 2010 PART H (2015 EDITION) AND BS EN 752: 2008. PRE AND POST CONSTRUCTION CCTV DRAINAGE SURVEY TO BE UNDERTAKEN TO DEMONSTRATE THE DRAINAGE IS FULLY OPERATIONAL AND IN COMPLIANCE OF PART H.
- ANY PART OF THE EXISTING DRAINAGE SYSTEM TO BE RETAINED AS PART OF THE NEW SCHEME SHALL BE FULLY CLEANED AND FULLY INSPECTED. ANY STRUCTURAL DEFECTS SHALL BE REPAIRED USING APPROPRIATE AND APPROVED MEANS.
- DRAINAGE SYSTEM WITHIN BUILDING FOOTPRINT TO ENSURE TIMESAVER (CAST IRON) SPECIFICATION OR EQUIVALENT APPROVED. DRAIN PIPES TO BE CASTED INTO THE FOUNDATIONS WHERE SHOWN BELOW GROUND DRAINAGE OUTSIDE THE BUILDING FOOTPRINT TO BE PLASTIC OR OTHERWISE SPECIFIED (REFER TO DRAINAGE SPECIFICATION).
- FOR INTERNAL BUILDING DRAIN POINT SETTING OUT, REFER TO ARCHITECT AND MEP DRAWINGS.
- CAVITY DRAINAGE DESIGN TO BE CARRIED OUT BY THE ARCHITECT/WATERPROOFING SPECIALIST.
- ALL FOUL WATER DRAINAGE PIPEWORK UNDER BUILDING FLOOR SLAB TO BE MINIMUM 100mm DIAMETER PIPEWORK UNLESS OTHERWISE SHOWN.
- ALL SURFACE WATER PIPEWORK UNDER BUILDING FLOOR SLAB TO BE MINIMUM 100mm DIAMETER PIPEWORK UNLESS OTHERWISE SHOWN.
- ALL BRANCH DISCHARGE PIPE SHOULD NOT DISCHARGE INTO A STACK LOWER THAN 750mm ABOVE THE INVERT OF THE TAIL OF THE BEND AT THE FOOT OF THE STACK. THE BEND AT THE FOOT OF THE STACK TO HAVE A MINIMUM RADIUS OF 200mm (BUILDING REGULATIONS PART H).
- ALL ABOVE GROUND DRAINAGE TO INCORPORATE RIDDING ACCESS FACILITIES. REFER TO MEP DRAWINGS.
- MECHANICAL ELECTRICAL SUPPLY, VENTING, RISING MAINS, PUMPS, DRAIN POINTS, GULLY, PUDDLE FLANGE AND BUILDING MANAGEMENT SYSTEM COMMUNICATION BY MEP ENGINEER.
- POSITION OF PROPOSED TREES, ETC. TO ACCOMMODATE ALL UNDERGROUND STRUCTURES, SERVICES AND DRAINAGE.
- ROOT BARRIERS TO BE PROVIDED WITHIN TREE ZONE. REFER TO LANDSCAPE ARCHITECTS DRAWINGS AND SPECIFICATION.
- ALL PRECAST CONCRETE UNITS USED IN THE DRAINAGE WORKS SHALL BE MANUFACTURED USING SULPHATE RESISTING CEMENT TO BE SPECIFIED FOR ACCE CLASSIFICATION OF AC-2 AND A DESIGN SULPHATE CLASS OF DS-2.
- COVER LEVELS SHOWN ARE APPROXIMATE ONLY AND ARE TO BE ADJUSTED TO SUIT AS CONSTRUCTED GROUND AND FLOOR LEVELS.
- ALL DRAINAGE RUNS TO BE LAID SOFFIT TO SOFFIT UNLESS SPECIFIED OTHERWISE.
- THE CONTRACTOR SHALL, BEFORE COMMENCING THE WORKS, VERIFY ALL SITE AND SETTING OUT DIMENSIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRUE AND PROPER SETTING OUT OF THE WORKS AND FOR THE CORRECTNESS OF THE POSITION, LEVELS, DIMENSIONS, AND ALIGNMENT OF ALL PARTS OF THE WORKS.
- THE CONTRACTOR IS TO FULLY VERIFY THE LOCATION AND LEVELS OF ALL EXISTING SERVICES AND DRAINAGE INCLUDING EXISTING THAMES WATER SEWER AND INVESTIGATIONS IS INDICATIVE BASED ON THAMES WATER SEWER RECORDS. THEREFORE, CONTRACTOR IS TO UNDERTAKE SURVEYS AS NECESSARY.
- THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF NEW UTILITIES CONNECTIONS, DIVERSIONS, REINFORCEMENT AND ADJUSTMENT OF EXISTING CHAMBERS/COVERS AND OTHER WORKS ETC.
- ALL MANHOLES TO BE CONSTRUCTED TO FACILITATE THE POSITIONING OF COVER AND FRAME TO COINCIDE WITH PAVEMENT PATTERN. ORIENTATION OF PAVEMENT PATTERN TO BE SUPPLIED FROM LANDSCAPE ARCHITECTS.



LEGEND

- PROPOSED COMBINED MANHOLE
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- PROPOSED SURFACE WATER PIPE
- PROPOSED FOUL WATER MANHOLE
- PROPOSED FOUL WATER INSPECTION CHAMBER
- PROPOSED FOUL WATER PIPE
- PROPOSED PERMAVOID 150mm
- PROPOSED ROOT CELL EXTENT BY LANDSCAPE ARCHITECT
- PROPOSED PERMAVOID DIFFUSER CHAMBER
- PROPOSED PRECAST CONCRETE ATTENUATION CULVERT TANK
- PROPOSED SURFACE AND FOUL WATER BACKDROP
- PROPOSED VENT PIPE
- PROPOSED DRAINAGE CHANNEL (MD100 WITH SLOT GRATING)
- PROPOSED DRAINAGE CHANNEL (MD100 WITH STEEL GRATING)
- PROPOSED BASEMENT BOUNDARY
- SITE BOUNDARY

ISSUE/REVISION

NO	DATE	DESCRIPTION
P01	04.11.2019	REVISED STAGE 4
P02	21.08.2019	STAGE 4 REDESIGN
P03	23.01.2019	ENABLING WORKS TENDER
P04	04.01.2019	ENABLING WORKS TENDER
P05	30.04.2018	FOR INFORMATION
P02	29.03.2018	STAGE 4 DRAFT ISSUE
P01	22.12.2018	PRELIMINARY ISSUE
WR		DESCRIPTION

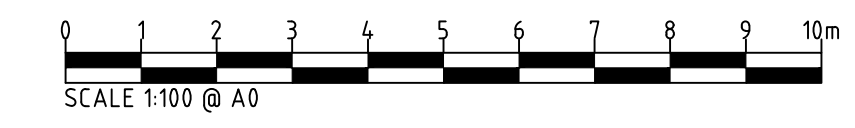
KEY PLAN

PROJECT NUMBER	
60516144	
SHEET TITLE	
PROPOSED DRAINAGE LAYOUT GROUND LEVEL	
SHEET NUMBER	
MHA-ACM-XX-00-DR-C-0001	

CONSTRUCTION RISKS	MAINTENANCE / CLEANING RISKS	DEMOLITION RISKS

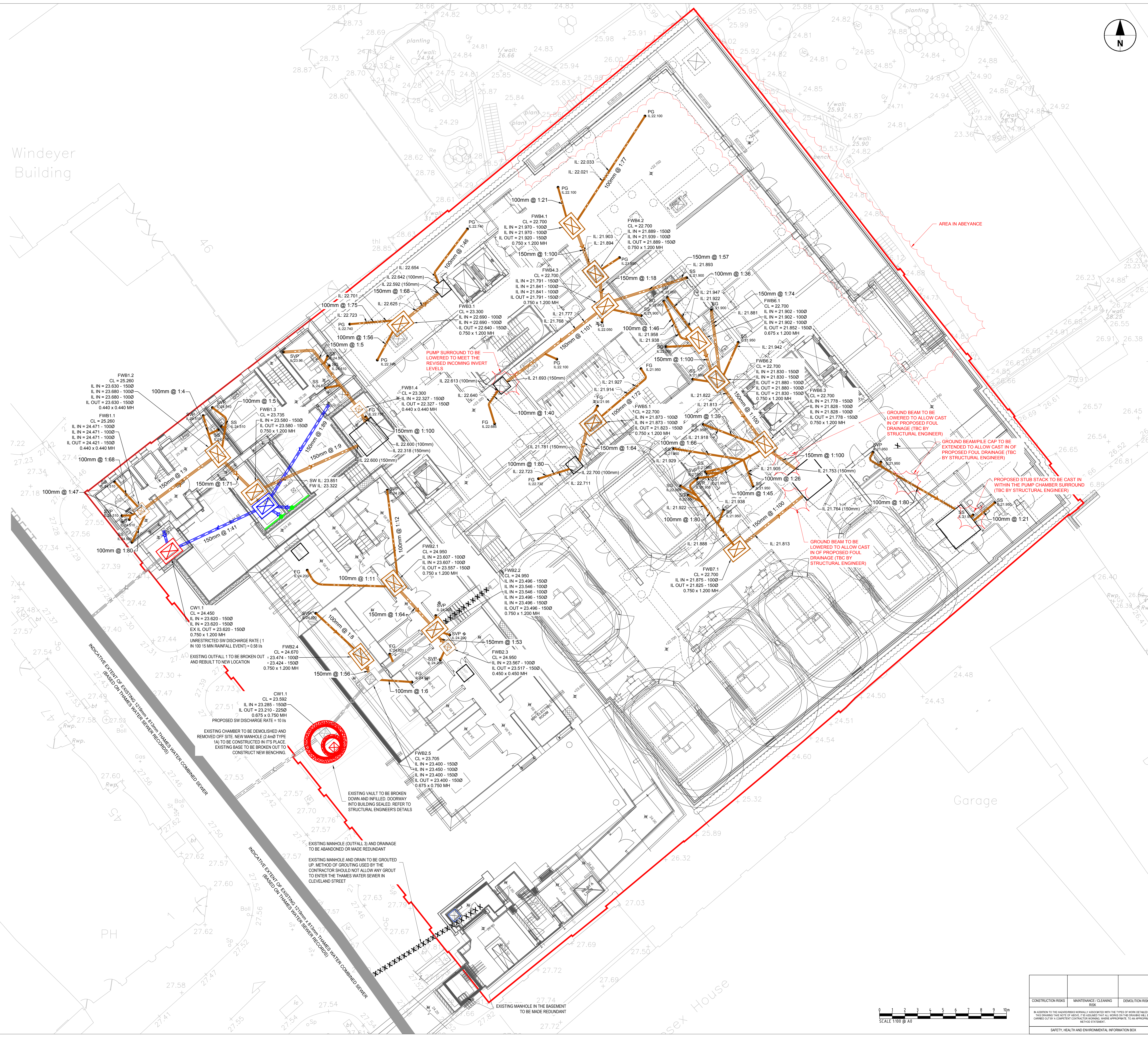
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

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6. DRAWING USES BACKGROUND INFORMATION RECEIVED FROM STRUCTURES (EXISTING BUILDING RECEIVED ON 12.08.2019 AND NEW BUILD ON 25.10.2018)...
7. TOTAL SURFACE WATER DISCHARGE FROM THE SITE TO EXISTING THAMES WATER SEWER IS RESTRICTED TO A RATE OF 10% + PROPOSED FLOU FLOW RATE AND UNRESTRICTED SURFACE WATER DISCHARGE OF 0.67% THIS CAN ONLY BE INCREASED BY WRITTEN ACCEPTANCE FROM TWUL AND LOCAL PLANNING AUTHORITY.
8. PROPOSED SURFACE WATER ATTENUATION REQUIREMENTS:
- SW TANK 1 = 39m³
- SW TANK 2 = 29m³
- SW TANK 3 = 378m³
- SHALLOW GEOCELLULAR MODULAR UNIT = 47m³
9. ALL BUILDING DRAINAGE TO BE INSTALLED AND TESTED IN COMPLIANCE WITH THE BUILDING REGULATIONS 2010 PART H (2015 EDITION) AND BS EN 752: 2008. PRE AND POST CONSTRUCTION CCTV DRAINAGE SURVEY TO BE UNDERTAKEN TO DEMONSTRATE THE DRAINAGE IS FULLY OPERATIONAL AND IN COMPLIANCE OF PART H.
10. ANY PART OF THE EXISTING DRAINAGE SYSTEM TO BE RETAINED AS PART OF THE NEW SCHEME SHALL BE FULLY CLEANED AND FULLY INSPECTED. ANY STRUCTURAL DEFECTS SHALL BE REPAIRED USING APPROPRIATE AND APPROVED METHODS.
11. DRAINAGE SYSTEM WITHIN BUILDING FOOTPRINT TO ENSURE TIMESAVER (CAST IRON) SPECIFICATION OR EQUIVALENT APPROVED. DRAIN PIPES TO BE CASTED INTO THE FOUNDATIONS WHERE SHOWN BELOW GROUND DRAINAGE OUTSIDE THE BUILDING FOOTPRINT TO BE PLASTIC OR OTHERWISE SPECIFIED (REFER TO DRAINAGE SPECIFICATION).
12. FOR INTERNAL BUILDING DRAIN POINT SETTING OUT, REFER TO ARCHITECT AND MEP DRAWINGS.
13. CAVITY DRAINAGE DESIGN TO BE CARRIED OUT BY THE ARCHITECT/WATERPROOFING SPECIALIST.
14. ALL FOUL WATER DRAINAGE PIPEWORK UNDER BUILDING FLOOR SLAB TO BE MINIMUM 100mm DIAMETER PIPEWORK UNLESS OTHERWISE SHOWN.
15. ALL SURFACE WATER PIPEWORK UNDER BUILDING FLOOR SLAB TO BE MINIMUM 100mm DIAMETER PIPEWORK UNLESS OTHERWISE SHOWN.
16. ALL BRANCH DISCHARGE PIPE SHOULD NOT DISCHARGE INTO A STACK LOWER THAN 750mm ABOVE THE INVERT OF THE TAIL OF THE BEND AT THE FOOT OF THE STACK. THE BEND AT THE FOOT OF THE STACK TO HAVE A MINIMUM RADII OF 200mm (BUILDING REGULATIONS PART H).
17. ALL ABOVE GROUND DRAINAGE TO INCORPORATE RODDING ACCESS FACILITIES. REFER TO MEP DRAWINGS.
18. MECHANICAL, ELECTRICAL SUPPLY, VENTING, RISING MAINS, PUMPS, DRAIN POINTS, GULLY, PUDDLE FLANGE AND BUILDING MANAGEMENT SYSTEM COMMUNICATION BY MEP ENGINEER.
19. POSITION OF PROPOSED TREES, ETC. TO ACCOMMODATE ALL UNDERGROUND STRUCTURES, SERVICES AND DRAINAGE.
20. ROOT BARRIERS TO BE PROVIDED WITHIN TREE ZONE. REFER TO LANDSCAPE ARCHITECTS DRAWINGS AND SPECIFICATION.
21. ALL PRECAST CONCRETE UNITS USED IN THE DRAINAGE WORKS SHALL BE MANUFACTURED USING SULPHATE RESISTING CEMENT TO BE SPECIAL DIGEST 1 FOR ACEC CLASSIFICATION OF AC-2 AND A DESIGN SULPHATE CLASS OF DS-2.
22. COVER LEVELS SHOWN ARE APPROXIMATE ONLY AND ARE TO BE ADJUSTED TO SUIT AS CONSTRUCTED GROUND AND FLOOR LEVELS.
23. ALL DRAINAGE RUNS TO BE LAID SOFFIT TO SOFFIT UNLESS SPECIFIED OTHERWISE.
24. THE CONTRACTOR SHALL, BEFORE COMMENCING THE WORKS, VERIFY ALL SITE AND SETTING OUT DIMENSIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRUE AND PROPER SETTING OUT OF THE WORKS AND FOR THE CORRECTNESS OF THE POSITION, LEVELS, DIMENSIONS, AND ALIGNMENT OF ALL PARTS OF THE WORKS.
25. THE CONTRACTOR IS TO FULLY VERIFY THE LOCATION AND LEVELS OF ALL EXISTING SERVICES AND DRAINAGE INCLUDING EXISTING THAMES WATER SEWER AND INVESTIGATIONS IS INDICATIVE BASED ON THAMES WATER SEWER RECORDS. THEREFORE, CONTRACTOR IS TO UNDERTAKE SURVEYS AS NECESSARY.
26. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF NEW UTILITIES CONNECTIONS, DIVERSIONS, REINFORCEMENT AND ADJUSTMENT OF EXISTING CHAMBERS/COVERS AND OTHER WORKS ETC.
27. ALL MANHOLES TO BE CONSTRUCTED TO FACILITATE THE POSITIONING OF COVER AND FRAME TO COINCIDE WITH PAVEMENT PATTERN WHERE FEASIBLE. ORIENTATION OF PAVEMENT PATTERN TO BE SUPPLIED FROM LANDSCAPE ARCHITECTS.



AECOM PROJECT BEDFORD PASSAGE DEVELOPMENT CLIENT MIDDLESEX ANNEXE LLP CONSULTANT AECOM Aldgate Tower 2 Lemn Street London E1 8FA www.aecom.com GENERAL NOTES

LEGEND: PROPOSED SURFACE WATER PIPE, PROPOSED SURFACE WATER MANHOLE, PROPOSED FOUL WATER PIPE, PROPOSED CAST-IN-FOUL WATER PIPE, PROPOSED FOUL WATER MANHOLE, PROPOSED FOUL WATER INSPECTION CHAMBER, EXISTING COMBINED PIPESEWER, EXISTING COMBINED MANHOLE, EXISTING DRAINAGE TO BE ABANDONED, SUMP, PROPOSED DRAINAGE CHANNEL (ACO M1000 OR EQUIVALENT APPROVED), PROPOSED PLANTROOM GULLY, PROPOSED FLOOR POINT, PROPOSED YARD GULLY, PROPOSED SOIL VENT PIPE, PROPOSED SOIL STACK, PROPOSED SHOWER GULLY, PROPOSED PUMP BY MEP ENGINEER, SITE BOUNDARY, PROPOSED COMBINED MANHOLE

ISSUE/REVISION table with columns for Issue No., Date, Description, and Risk. Includes entries for Revised Stage 4, Enabling Works Tender, Enabling Works Tender, For Information, Stage 4 Draft Issue, and Preliminary Issue.

KEY PLAN: PROJECT NUMBER 60516144, SHEET TITLE PROPOSED DRAINAGE LAYOUT BASEMENT LEVEL, SHEET NUMBER MHA-ACM-XX-B1-DR-C-0002. Includes a scale bar (SCALE 1:100 @ A0) and a safety, health and environmental information box.

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Appendix F : Existing Foul Flow Rate Calculation

LOCATION: Aldgate Tower London
 Project: Bedford Passage Development
 Project No: 60516144
 Title: Existing Foul Flow Rate Calculation - North House
 Revision: 1

Made by: EW
 Date: 28 October 2019
 Checked by: BL
 Date: 29 October 2019

APPLIANCE	Discharge Units ¹⁾ (du/l/s)	Number of appliances ²⁾	Total of du's (l/s)
Toilet Bowl with flushing box	2	7	14
Basin	0.3	5	1.5
Bath	1.3	0	0
Shower Tray	1.3	1	1.3
Kitchen Sink	1.3	2	2.6
Urinal	0.4	0	0
Washing Machine	1.2	0	0
Dishwasher	0.2	0	0
Floor Gully	1.5	0	0
Bidet	0.3	0	0
Drinking fountain	0.05	0	0
Sprinkling tap	0.3	0	0

Frequency of use factors (K)	
Intermittent use-e.g. domestic/guesthouse/	0.50
Frequent use- e.g. Restaurant/Office	0.70
Congested use- e.g. Public use	1.00
Special use- e.g. laboratory	1.20

Enter Frequency of use factor (from above) 0.50

(ΣDu) total load (du-l/s) for this location 19.4

Total waste flow rate based on equation (l/s) (Q _{ww}) = K (√ du's)	2.20
Any pumped waste discharge (l/s) (Q _p)	0.00
Any continuous discharge (e.g. condensate etc) (l/s) (Q _c)	0.00
Peak design flow rate for stack/location (Q _{tot}) (l/s)	2.20

Designers notes :
 1) Wastewater discharge units in accordance with BS EN 12056-2:2000 table 2
 2) The calculations are based on Building Survey carried out by greenhatch group in 2016

Average flow (l/s) 0.37*

*average flow rates dependant upon fitting usage and building operation hours

LOCATION Aldgate Tower London
 Project : Bedford Passage Development
 Project No : 60516144
 Title : Existing Foul Flow Rate Calculation - Work House
 Revision: 1

Made by : EW
 Date : 28 October 2019
 Checked by : BL
 Date : 29 October 2019

APPLIANCE	Discharge Units ¹⁾ (du/l/s)	Number of appliances ²⁾	Total of du's (l/s)
Toilet Bowl with flushing box	2	7	14
Basin	0.3	15	4.5
Bath	1.3	0	0
Shower Tray	1.3	2	2.6
Kitchen Sink	1.3	3	3.9
Urinal	0.4	2	0.8
Washing Machine	1.2	0	0
Dishwasher	0.2	0	0
Floor Gully	1.5	0	0
Bidet	0.3	0	0
Drinking fountain	0.05	0	0
Sprinkling tap	0.3	0	0

Frequency of use factors (K)	
Intermittent use- e.g. domestic/guesthouse/	0.50
Frequent use- e.g. Restaurant/Office	0.70
Congested use- e.g. Public use	1.00
Special use- e.g. laboratory	1.20

Enter Frequency of use factor (from above) 0.50

(ΣDu) total load (du-l/s) for this location 25.8

Total waste flow rate based on equation (l/s) (Q _{ww}) = K (√ du's)	2.54
Any pumped waste discharge (l/s) (Q _p)	0.00
Any continuous discharge (e.g. condensate etc) (l/s) (Q _c)	0.00
Peak design flow rate for stack/location (Q _{tot}) (l/s)	<u>2.54</u>

Designers notes :
 1) Wastewater discharge units in accordance with BS EN 12056-2:2000 table 2
 2) The calculations are based on Building Survey carried out by greenhatch group in 2016

Average flow (l/s) 0.42 *

*average flow rates dependant upon fitting usage and building operation hours

LOCATION	Aldgate Tower London
Project :	Bedford Passage Development
Project No :	60516144
Title :	Existing Foul Flow Rate Calculation - South House
Revision:	1

Made by : EW
Date : 28 October 2019
Checked by : BL
Date : 29 October 2019

APPLIANCE	Discharge Units ¹⁾ (du/l/s)	Number of appliances ²⁾	Total of du's (l/s)
Toilet Bowl with flushing box	2	2	4
Basin	0.3	4	1.2
Bath	1.3	0	0
Shower Tray	1.3	0	0
Kitchen Sink	1.3	0	0
Urinal	0.4	0	0
Washing Machine	1.2	0	0
Dishwasher	0.2	0	0
Floor Gully	1.5	0	0
Bidet	0.3	0	0
Drinking fountain	0.05	0	0
Sprinkling tap	0.3	0	0

(ΣDu) total load (du-l/s) for this location	5.2
---	-----

Total waste flow rate based on equation (l/s) (Q _{ww}) = K (√ du's)	1.14
Any pumped waste discharge (l/s) (Q _p)	0.00
Any continuous discharge (e.g. condensate etc) (l/s) (Q _c)	0.00
Peak design flow rate for stack/location (Q _{tot}) (l/s)	<u>1.14</u>

Average flow (l/s)	<u>0.19</u> *
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*average flow rates dependant upon fitting usage and building operation hours

Frequency of use factors (K)	
Intermittent use- e.g. domestic/guesthouse/c	0.50
Frequent use- e.g. Restaurant/Office	0.70
Congested use- e.g. Public use	1.00
Special use- e.g. laboratory	1.20

Enter Frequency of use factor (from above)	0.50
--	------

Designers notes :
1) Wastewater discharge units in accordance with BS EN 12056-2:2000 table 2
2) The calculations are based on Building Survey carried out by greenhatch group in 2016

LOCATION: Aldgate Tower London
 Project: Bedford Passage Development
 Project No: 60516144
 Title: Existing Foul Flow Rate Calculation - New Build
 Revision: 1

Made by: EW
 Date: 28 October 2019
 Checked by: BL
 Date: 29 October 2019

APPLIANCE	Discharge Units ¹⁾ (du/l/s)	Number of appliances ²⁾	Total of du's (l/s)
Toilet Bowl with flushing box	2	7	14
Basin	0.3	11	3.3
Bath	1.3	0	0
Shower Tray	1.3	1	1.3
Kitchen Sink	1.3	0	0
Urinal	0.4	2	0.8
Washing Machine	1.2	0	0
Dishwasher	0.2	0	0
Floor Gully	1.5	0	0
Bidet	0.3	0	0
Drinking fountain	0.05	0	0
Sprinkling tap	0.3	0	0

Frequency of use factors (K)	
Intermittent use- e.g. domestic/guesthouse/c	0.50
Frequent use- e.g. Restaurant/Office	0.70
Congested use- e.g. Public use	1.00
Special use- e.g. laboratory	1.20

Enter Frequency of use factor (from above) 0.50

(ΣDu) total load (du-l/s) for this location 19.4

Total waste flow rate based on equation (l/s) (Q _{ww}) = K (√ du's)	2.20
Any pumped waste discharge (l/s) (Q _p)	0.00
Any continuous discharge (e.g. condensate etc) (l/s) (Q _c)	0.00
Peak design flow rate for stack/location (Q _{tot}) (l/s)	2.20

Average flow (l/s) 0.37*

*average flow rates dependant upon fitting usage and building operation hours

Designers notes :
 1) Wastewater discharge units in accordance with BS EN 12056-2:2000 table 2
 2) The calculations are based on Building Survey carried out by greenhatch group in 2010

Appendix G : Proposed Architectural Layout