PADDINGTON GREEN
POLICE STATION

NOVEMBER 2022

Drainage Strategy (Part 2)

Drainage Strategy (Part 2) – November 2022 - GLA0711

Berkeley
Designed for life

Appendix C **Statutory Consultation**

Walsh
walsh.co.uk

+44 (0) 20 7089 6800
london@walsh.co.uk

32 Lafone Street,
London, SE1 2LX

Phoebe Tribe
32 Lafone Street
London
SE1 2LX

Wastewater pre-planning
Our ref DS6099583

26 October 2022

Pre-planning enquiry: Confirmation of sufficient capacity

Site: Paddington Green Police Station, 4 Harrow Road, London W2 1XJ

Dear Ms Tribe,

Thank you for providing information on your development.

Proposed site: Flats (556 units), Commercial (1170m2)
Proposed combined water discharge by gravity into 375mm combined sewer in Newcastle Place downstream of manhole TQ26819705
Surface water discharge restricted to 4.86l/s for all storm events up to and including 1:100+40%CC
Impermeable area = 5000m2.

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

When developing a site, policy 5.13 of the London Plan and Policy 3.4 of the Supplementary Planning Guidance (Sustainable Design And Construction) states that every attempt should be made to use flow attenuation and SuDS/Storage to reduce the surface water discharge from the site as much as possible.

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

The disposal hierarchy being:

1. store rainwater for later use.
2. use infiltration techniques where possible.
3. attenuate rainwater in ponds or open water features for gradual release.
4. attenuate rainwater by storing in tanks or sealed water features for gradual release.
5. discharge rainwater direct to a watercourse.
6. discharge rainwater to a surface water sewer/drain.
7. discharge rainwater to the combined sewer.
8. discharge rainwater to the foul sewer

Where connection to the public sewerage network is still required to manage surface water flows, we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and if the flows are restricted to a maximum of 4.86l/s for all storm events up to and including 1:100yr+40%CC, then Thames Water would not have any objections to the proposal.

Please see the attached 'Planning your wastewater' leaflet for additional information.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you have any further questions, please contact me on 0800 009 3921.

Kind Regards,

Kojo Howard
Developer Services – Adoptions Engineer, Sewer Adoptions Team
Tel: 0800 009 3921
Get advice on making your sewer connection correctly at connectright.org.uk
Clearwater Court, Vastern Road, Reading, RG1 8DB
Find us online at developers.thameswater.co.uk

Appendix D **Drainage Strategy Layouts**

Walsh
walsh.co.uk

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32 Lafone Street,
London, SE1 2LX

Block G

Block B

Block A

Newcastle Place

Edgware Road

Harrow Road

EXISTING COMBINED WATER SEWER NETWORK CLASHES WITH PROPOSED BASEMENT LINE. SEWER TO BE DIVESTED FOLLOWING APPROVAL FROM THAMES WATER. EXISTING PUMPED DRAINAGE FROM WEG TO BE REROUTED TO CONNECT TO NEW PROPOSED MANHOLE OUTSIDE OF THE BASEMENT LINE, WITHIN NEWCASTLE PLACE.

ALIGNMENT OF EXISTING COMBINED WATER SEWER NETWORK BASED ON GPR UTILITY SURVEY 4570-0001.

EXISTING PUBLIC 375/450ø SEWER TO BE ABANDONED SUBJECT TO TW DIVESTMENT AGREEMENT

EXISTING PRIVATE DRAINAGE TO BE DIVERTED TO SUIT DIVESTED SEWER ARRANGEMENT

EX CWMH (TW REF:9705)
CL=32.31
IL=28.75

NEW PROPOSED COMBINED WATER MANHOLE

EX CWMH (TW REF:9704)
CL=32.05
IL=28.92

EX CWMH (GPR)
CL=32.07
IL=N/A

ALL SURFACE WATER TO BE ROUTED TO ATTENUATION TANK AT BASEMENT LEVEL

PROPOSED COMBINED WATER DEMARCATION MANHOLE

ALL LANDSCAPE DRAINAGE ABOVE BASEMENT EXTENT TO BE AS PER M&E ENGINEERS DESIGN

ALL SURFACE WATER TO BE ROUTED TO ATTENUATION TANK AT BASEMENT LEVEL

ALL SURFACE WATER TO BE ROUTED TO ATTENUATION TANK AT BASEMENT LEVEL

N

0 5 10 15 20 25
1:250

Notes

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES.

2. THIS DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND SPECIFICATIONS.

3. THIS DRAWING HAS BEEN PRODUCED ELECTRONICALLY AND MAY HAVE BEEN PHOTO REDUCED OR ENLARGED WHEN COPIED. HENCE, DO NOT RELY ON ANY SCALES QUOTED. WORK ONLY TO FIGURED DIMENSIONS (DO NOT SCALE). ALL DIMENSIONS TO BE CHECKED ON SITE. ANY ERRORS OR OMISSIONS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

LEGEND

- SITE BOUNDARY
- DEVELOPMENT BOUNDARY
- INDICATIVE BASEMENT B1 OUTLINE, BASED ON ARCHITECTS PLANS
- INDICATIVE BASEMENT B2 OUTLINE, BASED ON ARCHITECTS PLANS
- PROPOSED FOUL WATER DRAINAGE RUN
- PROPOSED SURFACE WATER DRAINAGE RUN
- PROPOSED COMBINED WATER DRAINAGE RUN
- EXISTING COMBINED THAMES WATER SEWER
- EXISTING THAMES WATER SEWER TO BE ABANDONED VIA DIVESTMENT AGREEMENT
- EXISTING PRIVATE DRAINAGE TO BE DIVERTED
- PROPOSED COMBINED WATER MANHOLE
- PROPOSED SURFACE WATER MANHOLE
- EXISTING COMBINED WATER MANHOLES

THIS DRAWING IS BASED ON THE FOLLOWING CONSULTANTS FILES

ARCHITECTS GROUND FLOOR LAYOUT:
15044-SQP-ZZ-00-DP-A-PL02003-P16

MAPMATICS GPR SURVEY:
4570_Rev0

Rev.	Date	By	Details Of Revision
P02	03.11.22	JB	UPDATED ARCHITECT LAYOUT
P01	27.10.22	JB	FIRST ISSUE

Client
BERKELEY ST EDWARDS

Project
PADDINGTON GREEN POLICE STATION

Title
GROUND FLOOR OUTLINE DRAINAGE STRATEGY

WALSH
Structural and Civil Engineers
32 Lafone Street
London
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Status
PRELIMINARY

Drawn	PT	A1 Scales	1:250		
Date	OCT 22	Eng.	PT	Chk. JK	App'd.
WA Ref.	5362				Suitblty.

ACTUAL DIMENSION = 80mm

Drawing No.	Rev.
5362-WAL-SK-221011-PT-001	P02

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- DEVELOPMENT BOUNDARY
- INDICATIVE BASEMENT B1 OUTLINE, BASED ON ARCHITECTS PLANS
- INDICATIVE BASEMENT B2 OUTLINE, BASED ON ARCHITECTS PLANS
- PROPOSED FOUL WATER DRAINAGE RUN
- FOUL WATER MANHOLE
- GU — FOUL GULLY – 100mmø @ 1:40 (MIN) UNLESS SHOWN OTHERWISE
- PUMPING MAIN
- PETROL INTERCEPTOR
- PUMPING STATION
- PROPOSED ATTENUATION TANK BELOW BASEMENT B1 SLAB

C.D.M.

SIGNIFICANT RISKS AND HAZARDS:

KEY DESIGN DECISIONS TO REDUCE OR ELIMINATE HAZARDS:

RISING MAIN ROUTING AND PENETRATION POINT TBC BY M&E ENGINEERS AT NEXT STAGE OF DESIGN

FOUL WATER RISING MAIN

SURFACE WATER RISING MAIN

PETROL INTERCEPTOR

FOUL WATER PUMPING STATION

SURFACE WATER PUMPING STATION

ANY ANY DRAINAGE REQUIRED ABOVE BASEMENT B2 EXTENT TO DROP TO BASEMENT LEVEL AS PER M&E ENGINEERS DESIGN

PROPOSED ATTENUATION TANK LOCATION, SITUATED BENEATH B1 SLAB WITH STANDARD RC CHAMBER WITH 300MM CONCRETE SURROUND. TOTAL VOLUME REQUIRED =450M³

Basement Added

Basement Omitted

Rev.	Date	By	Details Of Revision
P01	27.10.22	JB	FIRST ISSUE

Client
BERKELEY ST EDWARDS

Project
PADDINGTON GREEN POLICE STATION

Title
BASEMENT B1 OUTLINE DRAINAGE STRATEGY

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Status
PRELIMINARY

Drawn	PT	A1 Scales	1:250	
Date	OCT 22	Eng. PT	Chk. JK	App'd.
WA Ref.	5362			Suitblty.

ACTUAL DIMENSION = 80mm

Drawing No.	Rev.
5362-WAL-SK-221011-PT-002	P01

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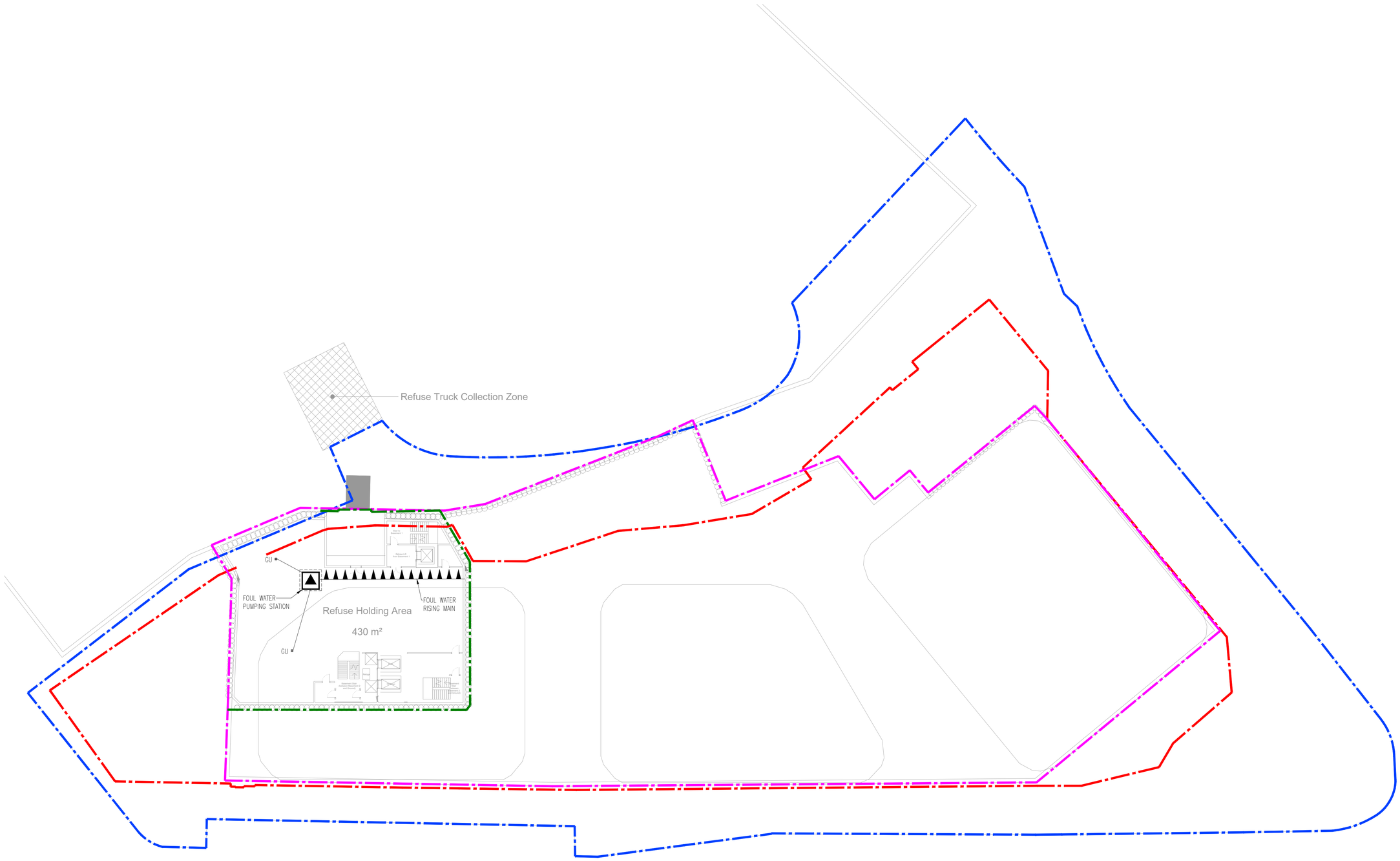

Notes

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LEGEND

- SITE BOUNDARY
- DEVELOPMENT BOUNDARY
- INDICATIVE BASEMENT B1 OUTLINE, BASED ON ARCHITECTS PLANS
- INDICATIVE BASEMENT B2 OUTLINE, BASED ON ARCHITECTS PLANS
- PROPOSED FOUL WATER DRAINAGE RUN
- GU — FOUL GULLY – 150mmø @ 1:80 (MIN) UNLESS SHOWN OTHERWISE
- PUMPING STATION
- PUMPING MAIN

C.D.M.

SIGNIFICANT RISKS AND HAZARDS:

KEY DESIGN DECISIONS TO REDUCE OR ELIMINATE HAZARDS:

N

0 5 10 15 20 25
1:250

Rev.	Date	By	Details Of Revision
P01	27.10.22	JB	FIRST ISSUE

Client
BERKELEY ST EDWARDS

Project
PADDINGTON GREEN
POLICE STATION

Title
BASEMENT B2
OUTLINE DRAINAGE STRATEGY

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walsh.co.uk

Status
PRELIMINARY

Drawn PT	A1 Scales 1:250			
Date OCT 22	Eng. PT	Chk. JK	App'd.	
WA Ref. 5362			Suitblty.	

ACTUAL DIMENSION = 80mm

Drawing No.	Rev.
5362-WAL-SK-221011-PT-003	P01

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Appendix E **SuDS Details**

Walsh
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32 Lafone Street,
London, SE1 2LX

Legend

- Application boundary
  Area: 8,285 sqm
- Ownership boundary
- Basement extent
- Soft landscape (over-ground)
  Area: 761 sqm
- Soft landscape (over-structure)
  Area: 1,424 sqm
- Impermeable finishes
  Area: 6,082 sqm
- Standard and multi-stem trees
  Quantity: 74no.

MURDOCH WICKHAM
THE LANDSCAPE ATELIER
The Tithe Barn, Bradbourne House,
East Malling, Kent. ME19 6DZ
01732 752780 murdochwickham.com

Client: Berkeley Homes
Date: October 2020

Drawn by: TK
Scale: 1:250 @ A1

Paddington Green Police Station

Hard and Soft Landscape Strategy

1446/011 Rev H

Tree Planting Schedule and Size Guide

Ground Level

	Tree or multi-stem	Quantity	Form	Foliage
	Amelanchier lamarckii	1no.	Multi-Stem umbrella	Deciduous
	Amelanchier 'Robin Hill'	9no.	Standard	Deciduous
	Betula jacquemontii	17no.	Multi-stem	Deciduous
	Carpinus betulus 'Fastigiata'	5no.	Standard	Deciduous
	Euonymus alatus 'Compactus'	8no.	Multi-stem umbrella	Deciduous
	Malus 'Evereste'	14no.	Multi-stem umbrella	Deciduous
	Morus alba	4no.	Taple top	Deciduous
	Platanus x acerifolia	8no.	Standard	Deciduous
	Prunus avium	2no.	Standard	Deciduous
	Prunus serrula	5no.	Multi-stem	Deciduous
	Quercus palustris	3no.	Standard	Deciduous

Size when planted

Girth	Height	Crown (diameter)
-	2.5-3.0m	2.0m
20-25cm	1.5-2.0m	2.0m
-	5.0-5.5m	5m
30-35cm	5.0-7.0m	1.5m
-	1.2-1.5m	1.5m
-	3.0-3.5m	2.5m
25-30cm	2.5m	2.2m
30-35cm	6.0-7.0m	2.5m
25-30cm	5.0-6.0m	2.2m
-	3.5-4.0m	2
25-30cm	3.0-4.0m	3

Estimated size in 20yrs

Expected height	Expected crown (diameter)
5.0m	3.0m
8.0m	5.0m
15.0m	6.0-10m
15m	4.0m
2.0m	2.0m
6.0m	3.5m
3.0m	2.5m
16.0m	9-10m
12m	5.0m
7.0m	7.0m
20m	9-15m

Scale

1:250

0 5 10 15m

N

Legend

- Application boundary
- Basement extent
- Existing tree & RPA retained

MURDOCH WICKHAM
THE LANDSCAPE ATELIER
The Tithe Barn, Bradbourne House, East Malling, Kent, ME19 6DZ
01732 752780 murdochwickham.com

Client: Berkeley Homes
Date: September 2022

Drawn by: JM
Scale: 1:250 @ A1

Paddington Green Police Station

Tree Planting Strategy and Size Guide

1446/013 Rev I

Legend

Ownership boundary

Basement extent

Urban Greening Factor Schedule

	Surface Cover Type	Area (sqm)	Factor	Area x Factor
	Application Boundary	8285	-	-
	Semi-natural vegetation (e.g. woodland, flower rich grassland) created on site	0	1.0	0
	Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm.	797	0.8	638
	Standard trees planted in natural soils or in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree	903	0.8	722
	Flower-rich perennial planting	813	0.7	569
	Rain gardens and other vegetated sustainable drainage elements.	222	0.7	155
	Hedges (line of mature shrubs one or two shrubs wide)	32	0.6	19
	Standard trees planted in natural soils or in connected tree pits with a minimum soil volume less than two thirds of the projected canopy area of the mature tree	1257	0.6	754
	Amenity grassland (species poor, regularly mown)	321	0.4	128
	Water features (chlorinated) or unplanted detention basins	32	0.2	6
	Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone)	6082	0.0	0
			Total	2994
			UGF	0.36

Urban Greening Factor calculation scores use criteria set out in the London Planning guidance - Urban Greening Factor Pre-consultation draft, March 2021

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THE LANDSCAPE ATELIER
The Tithe Barn, Bradbourne House, East Malling, Kent, ME19 6DZ
01732 752780 murdochwickham.com

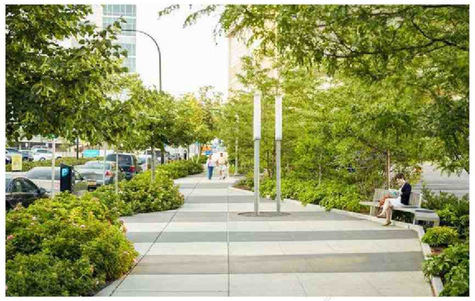
Client: Berkeley Homes
Date: October 2020

Drawn by: TK
Scale: 1:250 @ A1

Paddington Green Police Station

Urban Greening Factor

1446/014 Rev I



Met Opera House ceiling - Inspiration for water feature

Drinking fountains

Street rain gardens

Legend

1. Railings with yew hedge to garden.
2. Quiet tranquil garden with integrated seating and planting.
3. Central play area with planting and integrated seating.
4. Street trees in raised irrigated movable planters and cycle parking.
5. The Boulevards with raised planters, integrated seating and lit with overhead catenary lighting.
6. Planters with integrated seating and planted for horticultural interest and biodiversity. Planters designed as rain gardens.
7. Feature vertical stone wall fountain with green wall to southern elevation to screen visually and acoustically the busy Harrow Road. Reuse motif concrete panels to Harrow Road.
8. Linear lawn with species rich grass.
9. Granite sett paving.
10. Servicing lay-bys.
11. Existing ventilation shaft.
12. Al-fresco dinning with table top Mulberry trees enclosed with 1.5m high yew hedge.
13. Main south facing piazza space with feature paving, feature public art and busking dial.
14. Drop bollards for emergency access.
15. Birch woodland planting to filter and capture particulates and clean the traffic air. Planting zone also designed as rain garden with outfall to historic subway.
16. Location for public art.
17. Outline of old subway.
18. Biodiverse green roof.
19. Resin bound gravel path with raised planters and integrated seating.
20. Feature paved shared surface for incidental emergency vehicle access.
21. Feature piazza with focal water feature and integrated seating.
22. Outdoor drinking fountain.

Scale
1:250
0 5 10 15m N

View of central play space looking eastwards

View of gateway water feature

View of south eastern piazza

View of boulevard

MURDOCH WICKHAM
THE LANDSCAPE ATELIER

The Tithe Barn, Bradbourne House, East Malling, Kent, ME19 6DZ
01732 750780 murdochwickham.com

Client: Berkeley Homes
Date: March 2021

Drawn by: JM
Scale: 1:250 @ A0

Paddington Green Police Station

All Levels Landscape Masterplan

1446/015 Rev W

Appendix F **Drainage Calculations**

Walsh
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32 Lafone Street,
London, SE1 2LX

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Phoebe Tribe
Site name:	PGPS
Site location:	Paddington Green

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.52031° N
Longitude:	0.17183° W
Reference:	247757178
Date:	Feb 16 2021 14:51

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha): 0.5

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.413
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.14

Hydrological characteristics

	Default	Edited
SAAR (mm):	619	622
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		1.52
1 in 1 year (l/s):		1.29
1 in 30 years (l/s):		3.5
1 in 100 year (l/s):		4.86
1 in 200 years (l/s):		5.69

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 526948 181742 TQ 26948 81742
Data Type	Point
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S2.000	3.726	0.023	162.0	0.500	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	2.391	0.023	104.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	4.935	0.049	100.7	0.000	5.00	4.9	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S2.000	50.00	5.06	6.000	0.500	0.0	0.0	0.0	1.02	40.7«	67.7
S2.001	50.00	5.09	5.902	0.500	0.0	0.0	0.0	1.54	109.0	67.7
S3.000	50.00	5.08	12.000	0.000	4.9	0.0	0.0	1.00	17.7	4.9

©1982-2019 Innovyze

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S2.001	S	10.000	5.879	0.000	0	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S3.000	S	15.000	11.951	0.000	0	0

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Online Controls for Storm

Pump Manhole: S2, DS/PN: S2.001, Volume (m³): 12.5

Invert Level (m) 5.977

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.8600	1.200	4.8600	3.000	4.8600	7.000	4.8600
0.200	4.8600	1.400	4.8600	3.500	4.8600	7.500	4.8600
0.300	4.8600	1.600	4.8600	4.000	4.8600	8.000	4.8600
0.400	4.8600	1.800	4.8600	4.500	4.8600	8.500	4.8600
0.500	4.8600	2.000	4.8600	5.000	4.8600	9.000	4.8600
0.600	4.8600	2.200	4.8600	5.500	4.8600	9.500	4.8600
0.800	4.8600	2.400	4.8600	6.000	4.8600		
1.000	4.8600	2.600	4.8600	6.500	4.8600		

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Storage Structures for Storm

Tank or Pond Manhole: S2, DS/PN: S2.000

Invert Level (m) 6.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	150.0	3.000	150.0	3.001	0.0

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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 Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 526948 181742 TQ 26948 81742
Data Type	Point
Cv (Summer)	0.750
Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 30, 100
Climate Change (%)	40, 40, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S2.000	S2	360 Winter	100	+40%	2/15 Summer				8.714
S2.001	S2	360 Winter	100	+40%	2/15 Summer				8.633
S3.000	S3	15 Summer	30	+40%					12.062

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S2.000	S2	2.489	0.000	0.22		6.1	FLOOD RISK	
S2.001	S2	2.431	0.000	0.09		4.9	SURCHARGED	
S3.000	S3	-0.088	0.000	0.36		4.9	OK	

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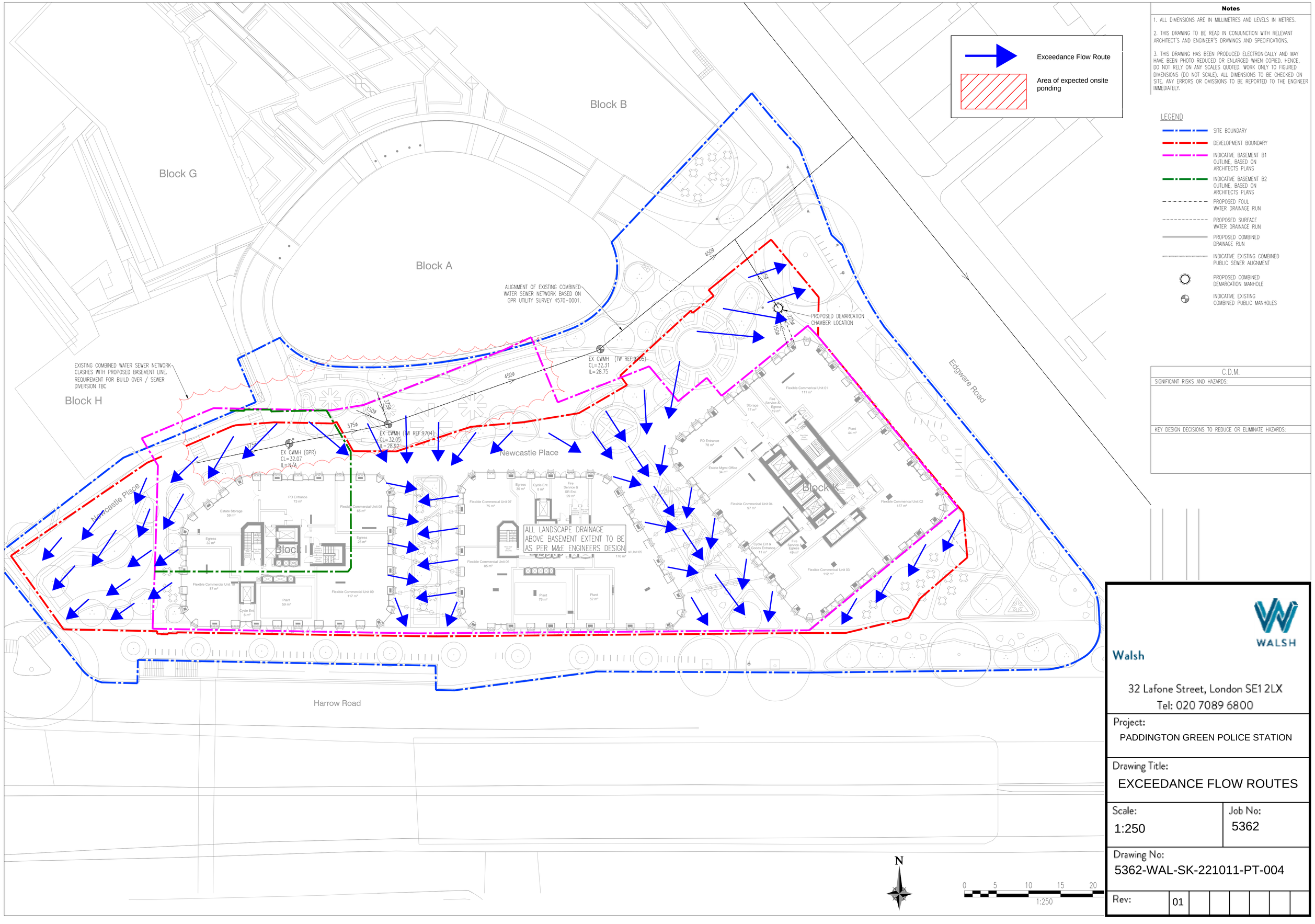

Notes

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES.

2. THIS DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND SPECIFICATIONS.

3. THIS DRAWING HAS BEEN PRODUCED ELECTRONICALLY AND MAY HAVE BEEN PHOTO REDUCED OR ENLARGED WHEN COPIED, HENCE, DO NOT RELY ON ANY SCALES QUOTED. WORK ONLY TO FIGURED DIMENSIONS (DO NOT SCALE). ALL DIMENSIONS TO BE CHECKED ON SITE. ANY ERRORS OR OMISSIONS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

LEGEND

- SITE BOUNDARY
- DEVELOPMENT BOUNDARY
- INDICATIVE BASEMENT B1 OUTLINE, BASED ON ARCHITECTS PLANS
- INDICATIVE BASEMENT B2 OUTLINE, BASED ON ARCHITECTS PLANS
- PROPOSED FOUL WATER DRAINAGE RUN
- PROPOSED SURFACE WATER DRAINAGE RUN
- PROPOSED COMBINED DRAINAGE RUN
- INDICATIVE EXISTING COMBINED PUBLIC SEWER ALIGNMENT
- PROPOSED COMBINED DEMARCATION MANHOLE
- INDICATIVE EXISTING COMBINED PUBLIC MANHOLES

C.D.M.

SIGNIFICANT RISKS AND HAZARDS:

KEY DESIGN DECISIONS TO REDUCE OR ELIMINATE HAZARDS:

Walsh

32 Lafone Street, London SE1 2LX
Tel: 020 7089 6800

Project:
PADDINGTON GREEN POLICE STATION

Drawing Title:
EXCEEDANCE FLOW ROUTES

Scale:	Job No:
1:250	5362

Drawing No:
5362-WAL-SK-221011-PT-004

Rev: 01

Project: PGPS
Job No:5362

Date: 11-Nov-22

Design of Total Foul Flow from Development - Population Method

BLOCK	Residential									Commercial			All
	MH	1 Bed Units	2 Bed Units	2 Bed Units	3 Bed Units	3 Bed Units	4 Bed Units	Population	Peak Design Flow	Gross Area	Estimated Users	Peak Design Flow	Peak Design Flow
PERSONS/UNIT	1	2	3	4	5	6	6	No	l/s	m2	No	l/s	l/s
PD	22	77	0	139	0	93	6	1326	19.9		0	0.0	**19.9**
Int	13	59	18	20	0	0	0	265	4.0		0	0.0	**4.0**
SR	0	11	18	32	32	14	2	460	6.9		0	0.0	**6.9**
Sitewide								0	0.0	1079.0	15	0.1	**0.1**
Total	**35**	**147**	**36**	**191**	**32**	**107**	**8**	**2051**	**30.8**	**1079.0**	**15**	**0.1**	**30.9**
							556	3.7 pers per unit					

Assumptions

*1. For residential blocks assume 220l/day/person - discharged over a 24 hour period. (Ref. Ciria Report 121 Cl 1.1.2) with DWF 6 i.e. 220/24/3600*6 = 0.015l/s/person*

*2. Flow from retail units based on 20m^3/year/employee - discharged over a 8 hour period. (Ref. Ciria Report 177 Table4.4), 70m2 of retail space per employee and DWF of 4 i.e. 20*1000/365/8/3600*4 = 0.0076 l/sec/employee*

Appendix G **Maintenance Plan**

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32 Lafone Street,
London, SE1 2LX

Drainage & SUDS Maintenance Plan
Paddington Green Police Station

The below list is not extensive and is to be read in conjunction with any specific inspection and maintenance requirements set by product manufacturers.

Table 1 – Below Ground Drainage Maintenance Tasks

Regular Maintenance	Frequency	Responsibility
The inspection of drainage channels, gullies, and sumps in manholes. All traps should be topped up with water where unused to prevent drying out.	Monthly. More regular in warm weather.	Site Maintenance Contractor
Inspect below ground drainage components from the surface, removing obstructions and silt, as necessary. Check there is no physical damage.	6 Monthly.	Site Maintenance Contractor
Regular sweeping or blowing or pavement to remove any debris that can clog.	Monthly.	Site Maintenance Contractor
Inspection of flow control device to identify any areas that are not operating correctly and clear out and debris from chamber.	Monthly for first 3 months then every 6 months.	Site Maintenance Contractor
Inspect inlet structures such as RWP's, channel drains and gullies removing silt, as necessary. Check for any physical damage.	Monthly.	Site Maintenance Contractor
Inspect and identify any areas of pipework that is not operating correctly, undertake remedial works if required.	Monthly for first 3 months then annually.	Site Maintenance Contractor
Maintain vegetation to designed limits within the vicinity of all below ground drainage structures and pipes.	Annually or as required.	Site Maintenance Contractor
Remove debris from catchment surface where it presents a risk to the performance of the below ground drainage system.	Monthly or as required.	Site Maintenance Contractor
Occasional Tasks	**Frequency**	**Responsibility**
Inspect drainage runs using CCTV technology and undertaking cleaning when required with a high-powered jet cleaner.	Every 6-8 Years.	Specialist Maintenance Contractor
Sweep and vacuum permeable pavement to prevent silt blockage.	As required.	Specialist Maintenance Contractor
Remove covers on inspection chambers and inspect, ensure that water is flowing freely and is unobstructed. Remove debris and silt as required.	Annually.	Site Maintenance Contractor
Remedial Work	**Frequency**	**Responsibility**
Remedial works to be undertaken as necessary on below ground drainage systems following observations from regular and occasional maintenance tasks.	As required	Specialist Maintenance Contractor

Table 2 – Permeable/Porous Block Paving Maintenance Tasks

Regular Maintenance	Frequency	Responsibility
Brushing and vacuuming (general sweep over whole surface).	Annually	Site Maintenance Contractor
Occasional Tasks	**Frequency**	**Responsibility**
Stabilise and mow contributing and adjacent areas.	As required	Site Maintenance Contractor
Removal of weeds (ideally through non-spray techniques e.g. glyphosate application).	As required	Site Maintenance Contractor
Remedial Work	**Frequency**	**Responsibility**
Remediate and landscaping which, through vegetation maintenance or soil slip, has been raised above pavement level (min 50mm).	As required	Site Maintenance Contractor
Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	Annually	Specialist Maintenance Contractor
Rehabilitation of surface and upper structure by remedial suction sweeping.	Every 10-15 years or as required.	Specialist Maintenance Contractor
Initial inspection.	Monthly for three months after construction.	Site Maintenance Contractor
Inspect for evidence of poor operations and/or weed growth.	Three monthly, 48hrs after large storms and in the first six months.	Site Maintenance Contractor

Inspect silt accumulation rates (use to define brushing frequency).	Annually	Specialist Maintenance Contractor
Monitor the effectiveness of areas of permeable paving, where water pools and does not infiltrate immediately advise Client of any remedial action required.	Annually	Specialist Maintenance Contractor
Monitor inspection chambers.	Annually	Site Maintenance Contractor

Table 7 – Green, Brown and Blue Roofs Maintenance Tasks

Regular Maintenance	Frequency	Responsibility
Inspect all components including soil substrates, vegetation, irrigation systems, membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms	Site Maintenance Contractor
Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms	Site Maintenance Contractor
Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drainage system	Annually and after severe storms	Site Maintenance Contractor
Inspect underside of roof for evidence of leakage	Annually and after severe storms	Site Maintenance Contractor
Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required	Site Maintenance Contractor
During establishment (i.e. year one), replace dead plants as required	Monthly (but usually responsibility of manufacturer)	Specialist Maintenance Contractor
Post establishment, replace dead plants as required	Annually (in autumn)	Specialist Maintenance Contractor
Occasional Tasks	**Frequency**	**Responsibility**
Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required	Site Maintenance Contractor
Remove nuisance and invasive vegetation, including weeds	Six monthly or as required	Site Maintenance Contractor
Mow grasses, prune shrubs and manage other planting as required – clippings should be removed and not allowed to accumulate	Six monthly or as required	Site Maintenance Contractor
Remedial Work	**Frequency**	**Responsibility**
If erosion channels are evident, these should be established with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required	Specialist Maintenance Contractor
If drain outlet has settled, cracked or moved, investigate and repair as appropriate	As required	Specialist Maintenance Contractor

Additional Maintenance Recommendations

The above is not an exhaustive list and is a guide on the minimum expected inspection to be undertaken on the below ground drainage and sustainable drainage features. Additional or more frequent inspections can be undertaken to ensure the below ground drainage network operates appropriately and is maintained to a level suitable to accommodate the peak design flows.

For all attenuation systems, proprietary treatment systems, backflow prevention devices and pumps the above maintenance plan is to be read in conjunction with any specific inspection and maintenance requirements set by product manufacturers.

Further specific maintenance guidance for SuDS features to enable continuous operational performance is available in the CIRIA SuDS Manual (C753).

In additional to the regular, occasional and remedial maintenance tasks the following site and special circumstances shall be considered, including:

- Special inspection and immediate appraisal may be required in the event of a structural accident, fire, flooding, reported structural distress or suspected inadequacy.
- It is recommended that in situations where an expected severe storm is to hit that all gullies, drainage channels and manhole sumps are cleared of any debris material.
- Refer to the manufactures of all attenuation & rainwater harvesting systems and flow control devices for their specific inspection regime requirements for their products.
- All inspections should be carried out by the appropriate persons and they should be confined space trained if entering below ground structures such as manholes or attenuation tanks.

Contact

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