

10 Civil Engineering

Drainage

The drainage network as a whole will be designed in accordance with the requirements of BS EN 752 and Building Regulations Part H. Also where applicable depending upon the final surface water attenuation solution the requirements of the CIRIA Documentation will also be included within the design.

Where manholes are required these will be sized based on the largest pipe diameter and the overall depth to the soffit of the pipes and the covers and frames will be rated to suit the likely traffic load that they will experience through their lifespan, ranging from B125 for pedestrian areas to D400 in areas which are trafficked by vehicles.

All pipes will be laid soffit to soffit to prevent premature surcharging of the network and will be either vitrified clay for pipe diameter ranging from 100mm up to 300mm or concrete for pipe diameters which are in-excess of this.

The surrounds to the pipes will either be a Type S (Granular Bedding) or Type Z (Concrete surround) and will be based upon their location and the cover to the top of the pipe from ground level:

- Areas not subject to vehicle overrun – Cover less than 600mm, Type S. Cover greater than 600mm, Type Z
- Areas subject to vehicle overrun – Cover less than 1200mm, Type S. Cover greater than 1200mm, Type Z
- Pipes which are located below slabs – Type Z

Surface Water

The discharge limitation placed on the proposed scheme is derived based upon the current calculated peak discharge of the existing development during a 1 in 30 year storm event. In this case the calculated existing discharge is 47l/s which is then reduced by 50% to provide a betterment to the off-site drainage network which is in accordance with the requirement of the NPPF and the fact that the existing surrounding adopted sewer network is operating above available capacity and has flooded in the past.

The current scheme is limited to a $Q_{\text{Proposed}} = 23.5\text{l/s}$ however this is subject to the detailed calculations provided as part of the FRA and the development and testing of a hydraulic model for the existing network.

The surface water system will provide the following levels of performance:

No surcharging of the network for the 1 in 2 year event

No surface flooding for the 1 in 30 year event

No surface flooding for the 1 in 100 year event plus a 30% allowance for climate change

(In both the 1 in 30 year event and the 1 in 100 year event the final outfall for the site will be surcharge to simulate the likely storm conditions that will be occurring within the adopted network.)

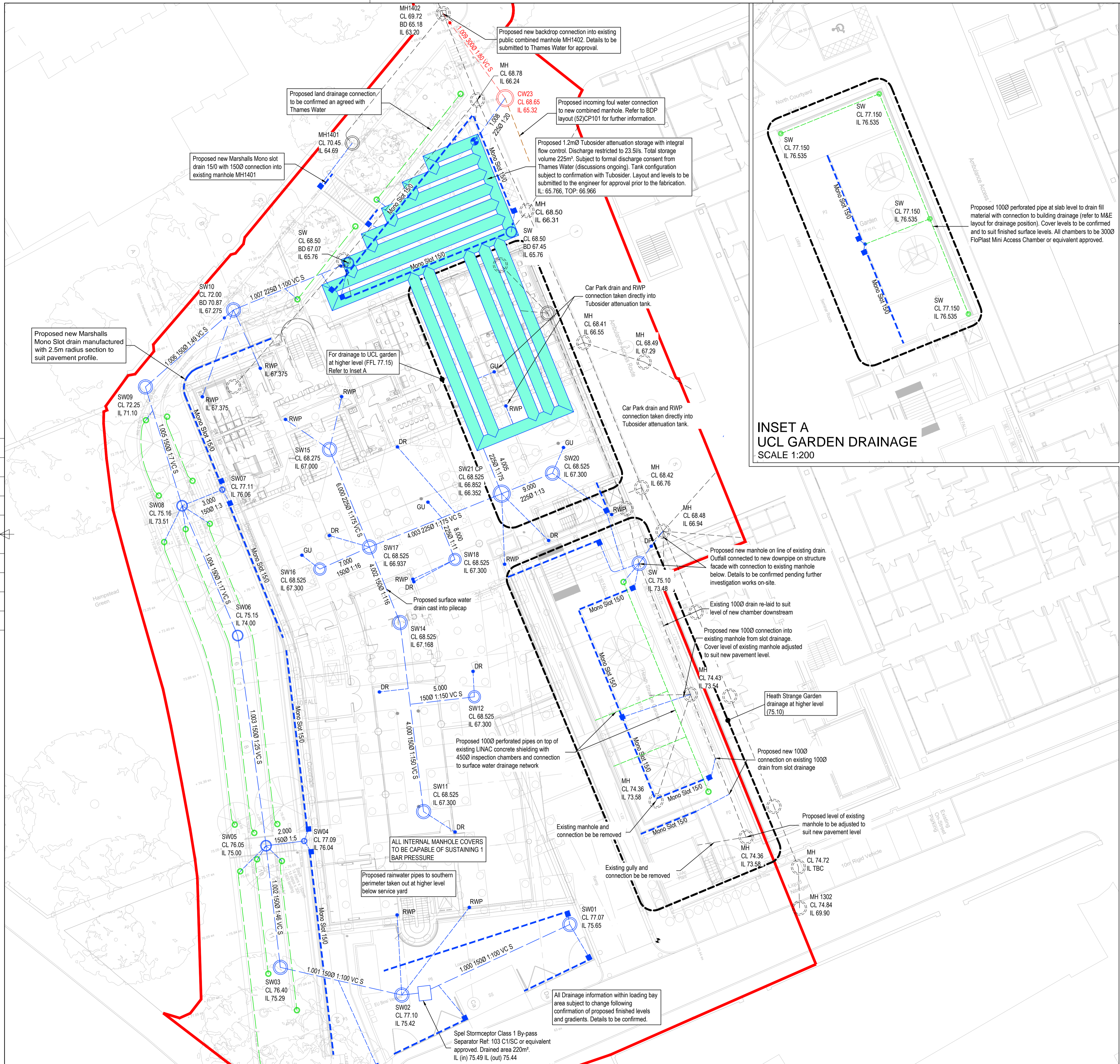
The attenuation will be sized to achieve the required limit in discharge and the performance criteria both noted above. As the tank is located below the ground floor slab and will therefore be subject to heavy loads during construction a Tubosider tank is proposed which is capable of carrying HA loading. The attenuation tank is sized to provide a storage volume of 210m^3

Foul Water

The sizing of the pipe network will be designed based upon a domestic unit approach and a usage frequency factor:

Applied Domestic Units:

Appliance		Domestic Unit (Du)
WC	=	2.0
Kitchen Sink	=	1.3
Hand Basin	=	0.3
Showers	=	0.3



INSET A
UCL GARDEN DRAINAGE
 SCALE 1:200

KEY

- TUBOSIDER ATTENUATION TANK
 STORAGE VOLUME: 225m 3
 LIMIT Q_{max} = 23.5l/s
 DESIGN HEAD = 1.2m
- SURFACE WATER DRAIN
- COMBINED DRAIN
- COMBINED MANHOLE
 REFER TO SCHEDULE
- SURFACE WATER MANHOLE/ CATCHPIT/
 INSPECTION CHAMBER. REFER TO SCHEDULE
- LAND DRAINAGE TO RETAINING WALL AND
 4500 ϕ INSPECTION CHAMBER. UNO.
- LINEAR SLOT DRAINAGE CHANNEL
 BY MARSHALLS & SUMP UNIT WITH
 1000 ϕ CONNECTION
- ROAD GULLY & 1500 ϕ CONNECTION
- BYPASS SEPARATOR
- RAIN WATER PIPE/ GULLY/ DRAIN POINT
 REFER TO M&E LAYOUTS & DETAILS
- EXISTING MANHOLE AND DRAIN.
 REFER TO CCTV SURVEY REPORT AND
 DRAWING FOR FURTHER INFORMATION

THIS DRAWING IS IN THE DESIGN DEVELOPMENT STAGE AND MAY BE SUBJECT TO CHANGE AS THE SCHEME IS PROGRESSSED.

THE FOLLOWING INFORMATION IS YET TO BE FINALISED/ CONFIRMED AND MAY IMPACT ON THE CURRENT DRAINAGE SOLUTION.

- EXTERNAL FINISHED LEVELS AND GRADIENTS;
- BUILDING AND RETAINING WALL FOUNDATIONS;
- RAINWATER PIPE POSITIONS AND FLOW RATES;
- DRAINAGE DISCHARGE APPROVALS.

ALL EXISTING DRAINAGE SHOWN ON THIS DRAWING IS BASED UPON THAMES WATER RECORDS, TOPOGRAPHIC SURVEY, BELOW GROUND SERVICES SURVEY AND CCTV SURVEY. THESE DRAWINGS AND REPORTS SHOULD ALL BE REFERRED TO FURTHER INFORMATION.

BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE MADE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND ISSUED.
 ALL DIMENSIONS SHOULD BE CHECKED ON SITE.
 DO NOT SCALE FROM THIS DRAWING.
 ANY DRAWING ERRORS OR DIVERGENCES SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

NOTES

1. All dimensions are in metres unless stated otherwise.
2. This drawing shall be read in conjunction with all other relevant architectural and engineering details, drawings and specifications.
3. Any discrepancies should be reported to the engineer immediately so that clarification can be sought prior to the commencement of work.
4. All pipes shall be laid with soffits level (unless otherwise shown) and all manhole/ inspection chamber invert levels shown are for the outlet pipe (unless otherwise shown). Pipe runs shall be laid to the levels indicated, and all pipe gradients indicated are approximate.
5. All internal surface water manholes to be capable of sustaining 1 bar pressure e.g. Peter Savage 750 Series or equivalent approved.
6. The proposed cover levels shown are approximate and are subject to detailed levels design.
7. All existing chambers to be retained to be amended to suit the exact finished surface levels.
8. All building drainage works shall be carried out in accordance with BS EN 752 drainage and sewer systems outside buildings, the current building regulations, the local authority building control specifications and requirements and the civil engineering specification for the water industry 7th edition, published by the UK water industry research Ltd. (CISWI).
9. Existing drainage, manhole positions and levels taken are indicative only and taken from Thames Water records and Greenhatch Group CCTV information.
10. Services are present in the area. The presence of services on site should be verified by the contractor prior to the commencement of any construction work or intrusive investigations.
11. The contractor shall allow for the protection, temporary and permanent support and diversion works as necessary, to all existing services to the satisfaction of the public utilities.
12. Gully & channel positions shown are indicative and are subject to detailed finished level design.
13. RWP/PW above slab drainage positions are based on M&E Stage E proposals and subject to change. Exact setting out to be confirmed by the architect.
14. The existing sewer within the Heart Attack Access Road is shown as retained in its current position should a diversion be required then any works will be subject to a Section 185 agreement and will need to be designed in accordance with Sewers for Adoption 7th Edition.

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REVISION	DESCRIPTION	DATE

BDP.

16 Brewhouse Yard
 Clerkenwell
 London EC1V 4LJ
 United Kingdom
 T +44 (0)20 7812 8000
 F +44 (0)20 7812 8399
 www.bdp.com

PROJECT TITLE	Pears Building		
PROJECT NUMBER	P2005878		
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DRAWING NO.	(52)CP100	DATE	Dec '14
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