Surface Water Drainage Strategy

Project: **10360-10 150 Holborn**
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Surface Water Discharge Rate

The surface water drainage strategy for the above has been based upon the minimum London Plan requirement of a 50% reduction in peak discharge rate.

The existing site is 100% impermeable and the proposed development will also be 100% impermeable.

Existing runoff calculated using the modified rational method

Q = 2,78 C i A

Q = peak runoff (l/s)
C = runoff coefficient
i = rainfall intensity (mm/hr)
A catchment area (ha)

Q= 2.78 x 0.9 x 50 x 0.285

Q = 35.65 l/s

When applying the 50% reduction to this a final discharge rate of 17 l/s into the receiving public sewers is allowed.

Drainage Regime

The proposed drainage regime has been reviewed on a level by level basis in order to clarify what is required in order that the surface water runoff from all design rainfall events up to and including those for the 100 year return can be accommodated by the drainage system. An increase of 40% in peak rainfall intensities should be applied to allow for the predicted effects of climate change. Each area of the building has been reviewed in order to define the strategy and are outlined below and illustrated on the included mark ups.

Commercial Core Roof level – The roof over the atrium core that gives access to the roof terrace is to drain directly onto the 8th floor roof terrace.

Commercial Sloping Roof – This will drain traditionally to ground level and the external below ground system in the vehicle access area where attenuation will be provided.

8th Floor Commercial Terrace - The terrace and landscaped planter areas of this level are to be constructed as a blue roof attenuation system. The atrium roof, secondary escape stair roof and the parapets will drain onto the 8th floor and form part of the catchment for the blue roof. The floor finishes are to include a 50mm deep attenuation board across the whole area. The paved areas will provide an additional 30mm of attenuation within the void created by the pedestal support system for the paving. An additional depth of attenuation board should be

provided within the landscape planter areas so that there is an overall 80mm across the terrace area. Outfalls should be provided spread across the roof giving a maximum discharge rate of 7 l/s. These are to be connected to a suspended system that discharges direct to the final sewer outfalls.

7th Floor Commercial Terrace – This is to drain via a traditional roof system with no restriction to ground level where it will be taken by a suspended drainage system to the external below ground system in the vehicle access area where attenuation will be provided.

7th Floor Commercial Plant Area – This is to drain via a traditional roof system with no restriction to ground level where it will be taken by a suspended drainage system to the external below ground system in the vehicle access area where attenuation will be provided.

6th Floor Commercial Terrace – The terrace is to be constructed as a blue roof attenuation system. The floor finishes are to include a 30mm deep attenuation board across the whole area. An additional 30mm of attenuation is provided within the void created by the pedestal support system for the paving. There is an overall 60mm of attenuation across the terrace area. Outfalls should be provided spread across the terrace giving a maximum discharge rate of 3 l/s. These are to be connected to a suspended system that discharges direct to the final sewer outfalls.

Residential Roof – This roof is a green roof that is to incorporate a blue roof system. The parapets and lift overrun form part of the catchment. The build up is to include a 50mm deep attenuation board. Outfalls should be provided giving a maximum discharge rate of 1 l/s. These are to be connected to a suspended system that discharges direct to the final sewer outfalls.

6th Floor Residential Terrace – This is to drain via a traditional roof system with no restriction to ground level where it will be taken by a suspended drainage system to the external below ground system in the vehicle access area where attenuation will be provided.

5th Floor Residential Terrace – This is to drain via a traditional roof system with no restriction to ground level where it will be taken by a suspended drainage system to the external below ground system in the vehicle access area where attenuation will be provided.

Vehicle Access Area – This will drain to a below ground drainage system with an attenuation tank. The outflow from this tank will be controlled by a Hydrobrake designed for a maximum discharge rate of 6 l/s. This will connect to a system suspend against the basement wall leading to one of the proposed drainage outfalls to the public sewer.

Outfalls – There are currently proposed to be four outfalls from within the basement to the public sewers in the adjacent roads, two of these are existing outfalls and the other two are proposed new outfalls and the exact location is subject to detailed design.

It is proposed that the outfall from the below ground external attenuation tank is taken to the outfall (No. 2) via a system suspended from the basement wall.

All suspended drainage from the blue roof attenuation can be taken directly to any outfall as deemed most viable by the above ground M$E design.

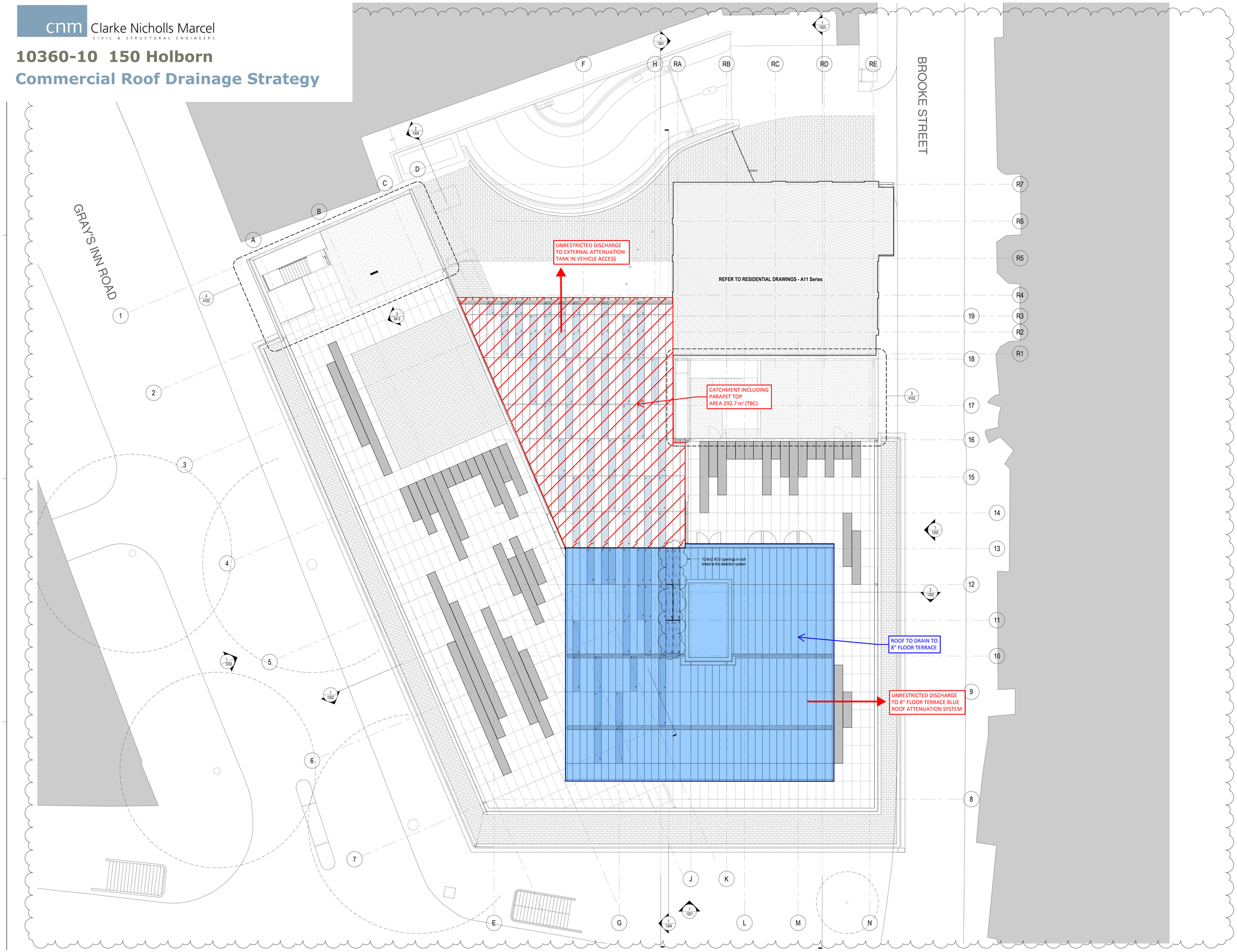
Due to the level of the sewers and the depth of the basement the outfall points will be above the basement floor level. To provide a gravity drainage system an internal suspended system incorporating all necessary rodding eyes, running traps, non-return vales etc will need to be developed by the M&E consultant.

10m
4
2
0m

cnm Clarke Nicholls Marcel
CIVIL & STRUCTURAL ENGINEERS

10360-10 150 Holborn

Commercial Roof Drainage Strategy



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NOTES

NOTE: DOCUMENTS ARE INCOMPLETE AND MAY NOT BE USED FOR REGULATORY APPROVAL, PERMITTING, OR CONSTRUCTION PURPOSES.

PROJECT

150 HOLBORN
EC1N 2NS
London, UK

DARPLUS

DAR
WIGMORE STREET
LONDON W1

KEYPLAN

ISSUE CHART

MARK	ISSUE	DATE
P1.3	STAGE 03	2017/09/08
P1.2	STAGE 03	2017/08/25
P1.1	ISSUED FOR PRELIM COSTING	2016/09/16

Date	04/05/16
Job Number	325424
Scale	1 : 100
Drawn	Author
Checked	Checker
Approved	Approver

CDE STATUS

STAGE 03

TITLE

GA Plan Roof Plan

SHEET NUMBER

150 PWA Z1 09 DR A 1109

PROJECT | AUTHOR | VOLUME | LEVEL | TYPE | ROLE | NUMBER

CDE STATUS CODE	REVISION
03	P1.3

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