

To:	IQ Student Accommodation	Job number:	2925
From:	Civic Engineers	Date:	25/09/2023
Subject:	Echo Street, Manchester, Planning Condition No 7	Cc:	XX

Echo Street, Manchester, Planning Condition No 7

Civic Engineers has been appointed as Civil and Structural Engineers by IQ Student Accommodation as part of the development proposals for a new Purpose Built Student Accommodation building on Echo Street, Manchester.

This file note is produced in response to the Decision Notice Ref; 136874/FO/2023 and Planning Condition No 7 and the specific requests as follows;

"A feasibility assessment and engineering details of the Green/Blue Roof"

In reference to the above, please refer to Sheppard Robson drawing references ECHO-SRA-XX-RF-DR-A-27600_Typical Blueroof Details_S4_P02_0, ECHO-SRA-XX-RF-DR-A-27601_Typical Blueroof Details - Biodiverse Part 1_S4_P02_1 and ECHO-SRA-XX-RF-DR-A-27602_Typical Blueroof Details - Biodiverse Part 2_S4_P02_1 for details.

Also provided are RASMAT blue roof calculations document reference - BR-5111-05 Blue Roof Summary and BR-5111-05.

"Details of surface water attenuation that offers a reduction in surface water run off to a maximum of 24.95l/s."

In reference to the above, a below ground drainage strategy has been included for reference, Civic Engineers drawing reference 2925-CIV-XX-XX-D-C-30001 along with Causeway Flow calculations. Due to United Utilities restricting the connection size to a maximum diameter of 150mm into the public combined water sewer in Granby Road, the surface water flow rate has been restricted to a rate no greater than 10.80l/s for up to and including the 1 in 100 year rainfall with 45% climate change event.

Also provided are RASMAT blue roof calculations document reference - BR-5111-05 Blue Roof Summary and BR-5111-05.

"An existing and proposed impermeable areas drawing that accompany all discharge rate calculations."

In reference to the above, an existing and proposed impermeable areas drawing has been provided in the appendix, Civic Engineers drawing reference - 2925-CIV-XX-XX-D-C-30002.

"Runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is reasonable practicable to the greenfield volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment."

In reference to the above please see below table indicating the surface water discharge volumes for the 1 in 100 year 6 hours rainfall event:

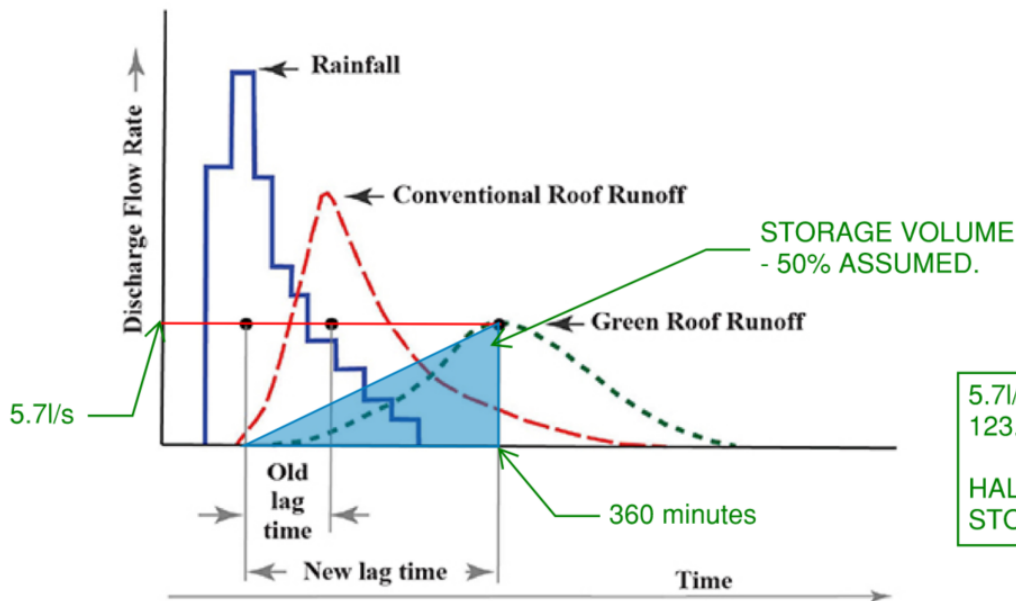
<i>Pre-development Volume document reference - 2925 Echo Street Ex 100Yr 6Hr Volume</i>	<i>155 m³</i>
<i>Post-development Volume - document reference - 2925 Echo Street SW Calcs - 100Yr 6Hr Storm and Hydrograph calculation below.</i>	<i>40m³ non green/blue roof areas +61.6 m³ = 101.6m³</i>

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Greenfield Volume – document reference - 2925 Echo Street Greenfield - 100Yr 6Hr Storm

95m³

Refer to Green Roof Hydrograph 1 in 100 year surface water storage calculation.



$$5.7\text{l/s} \times 360\text{mins} \times 60\text{secs} / 1000 = 123.12\text{cu.m}$$

HALF ABOVE FOR 1 in 100 YEAR STORAGE VOLUME = 61.56cu.m

"Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during the 1 in 100 year rainfall event with allowance for 45% climate change in any part of a building".

In reference to the above, Causeway flow calculations have been provided for reference, which indicate no flooding for up to and including the 1 in 100 year rainfall event with 45% climate change.

"Assessment of overland flow routes for extreme events that is diverted away from buildings (including basements). Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site".

In reference to the above, a below ground drainage strategy with overland flow routes has been included for reference, Civic Engineers drawing reference 2925-CIV-XX-XX-D-C-30001.

"Evidence from an appointed structural engineer, that the proposed works will not impact the structural integrity of the potentially existing circa 900mm culvert within close proximity to the works"

In reference to the following documents the following culverts have been noted within the vicinity of the site.

065374-CUR-XX-XX-RP-GE-80001 – Phase 1 Preliminary Risk Assessment by Curtin's 01/02/2023

064987-CUR-XX-XX-RP-C-g2500 – Flood Risk Assessment by Curtin's 28/04/2023

065374-CUR-XX-XX-RP-GE-80001

064987-CUR-XX-XX-RP-C-92500

An existing foul water sewer has been identified within United Utilities Asset maps on Granby Row. It is believed this 900mm brick foul sewer is that which is referred to in this Planning Condition. See below.

The existing brick sewer, as recorded within CCTV surveys, is shown to have a level circa 35.900mAOD. However, due to the proximity of piled retaining wall at circa 10m away from the existing sewer it is not anticipated that the

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action of shaft friction will impact the existing sewer as this lies outside the 45 degree influence zone which could be assumed.

As discussed it is important to note that piling activity on the site has already completed. Recent below ground CCTV works have been undertaken and these do not reveal any indication of structural issues with the existing brick sewer which may have been associated with the piling works in 2020.

"CCTV survey and routing plan of existing drainage system to understand condition, capacity, connectivity".

In reference to the above, a CCTV survey report has been included for review document reference - 2023_07_17 Echo Street Murraywood.

"Hydraulic calculation of the proposed drainage system, including all engineering parameters."

In reference to the above, Causeway flow calculations have been provided for reference.

"Construction details of flow control and SuDS elements."

In reference to the above, drainage details have been provided indicating the construction details – Civic Engineers drawing reference 2925-CIV-XX-XX-D-C-31001/31004