



Project Description

Project Cavendish is the development name for a new 6 storey commercial building and adjoining food and beverage pod (The Kiosk) constructed in Sheffield City Centre. The finished building was created to a detailed brief from HSBC, who moved into the offices in June 2019. The main block (D) building provides circa 15,000 sq m of office floor space over four levels including a central atrium, two levels of retail/plant accommodation, screened rooftop plant area, basement car park, service area and associated works.

The Challenge

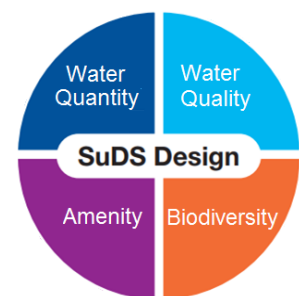
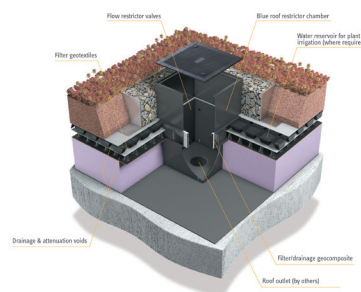
In accordance with the NPPF, local authorities should prevent both new and existing developments from contributing to, or being put at risk of, unacceptable risk of flooding and water pollution. The site's Flood Risk Management Policy listed a number of requirements for the new development to reduce the extent and impact of flooding, by significantly limiting surface water run-off and requiring the use of Sustainable Drainage. The allowable rate of run-off / discharge to public sewers was to be a reduction of 30% on the existing rate from a 1 in 1 year rainfall event. This was estimated as 110 l/s for 1.191 ha [9.196x10⁻³ l/s.m²]. Also as part of the preplanning process an application was made to evaluate the office areas under the LEED scheme (rather than BREEAM) to meet HSBC's requirements.

The Solution

The attenuation for the buildings is provided at roof level by the ABG bluroof system, comprising a void within the roof structure to temporarily attenuate storm water before gradually releasing it over a number of hours via ABG's restrictor chambers.

Project Information

Client	Sheffield City Council & HSBC
Contractor	BAM Construction
Consultants	Arup & Leonard Design Associates
Products	ABG bluroof VF HD 107mm (L50 & L60) ABG bluroof 75mm (Kiosk roof)
Quantity	4,220m ²
Benefits	<ul style="list-style-type: none"> • Restricted flow rates to 24 l/s over a total site catchment area of 6,100m² • Green roof finish promotes biodiversity and cleans & treats storm water run-off before it reaches the local sewer network • Avoids need for basement attenuation tanks and the associated carbon and ground engineering construction costs



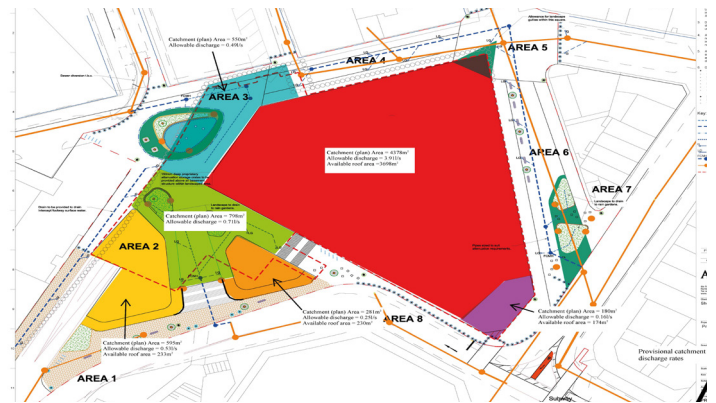
ABG bluroof, with an extensive green finish



To meet the LEED assessment criteria the system must restrict rainwater run-off to the 95th percentile of regional or local rainfall events. Credits are also awarded to the development for Heat Island Reduction, including requirements to meet minimum solar reflectance index values. The retail area of the building is covered by a 'Very Good' BREEAM assessment. ABG bluroof directly attributes 10 credits under sections POL5, reduction of noise pollution (3 credits), and sections LE4 (2 credits), LE5 (3 credits) & LE6 (2 credits) for enhancing site ecology and the positive long-term impact on biodiversity. In addition to the roof level attenuation areas, the ABG bluroof system was also installed underneath the surrounding walkways and access routes to restrict discharge rates at ground level. This included a large landscaped podium deck area above a service yard, where heavy duty void formers were used in the event emergency vehicle access is required.

The ABG Service

ABG modelled rainfall depths and storm duration data for the location taken from the flood estimation handbook (FEH). The attenuation void capacity is calculated to match, typically (as in this design) for a one in a hundred year storm event plus an additional 30% allowance for the effects of climate change.



ABG Installs

- 3,500m² of blue roof system with paved and ballast surface and 4 restrictor chambers for the main roof Level 60 (red shaded area) to enable access to the building services plant
- 270m² of blue roof system with 2 restrictor chambers installed to L50 terrace (purple shaded area)
- 450m² of blue roof with extensive green roof finish and 4 restrictor chambers for food and beverage 'Kiosk' building (yellow / orange shaded areas)
- Over 2,000m² of blue roof capacity for ground level landscaped areas and walkways (green & turquoise shaded areas)



Stainless steel restrictor chamber over RWO



Installing paved finish to Level 60