ARUP

Subject	The Post Building, 21-31 New Oxford Street – Planning Condition 16		
Date	14 January 2016	Job No/Ref	230602

This note is written and submitted to the London Borough of Camden to address and allow the discharge of Planning Condition No. 16 for The Post Building, 21-31 New Oxford Street, London.

The planning condition states:

The development hereby approved shall not be commenced, other than for site preparation, relocation of services, utilities and public infrastructure and demolition, until details of a blue roof for capturing and storing water at roof level during storm events has been submitted to and approved by the local planning authority. The development shall not be implemented other than in complete accordance with the scheme that has been approved.

The proposed building has a number of different roof areas over a number of levels. The primary areas where rainwater will land are below. These areas are illustrated in the following figures.

- Plantroom Roof (Level 11)
- Level 10 Terrace
- Level 9 Terrace
- Level 5 Terrace
- Eastern Terraces

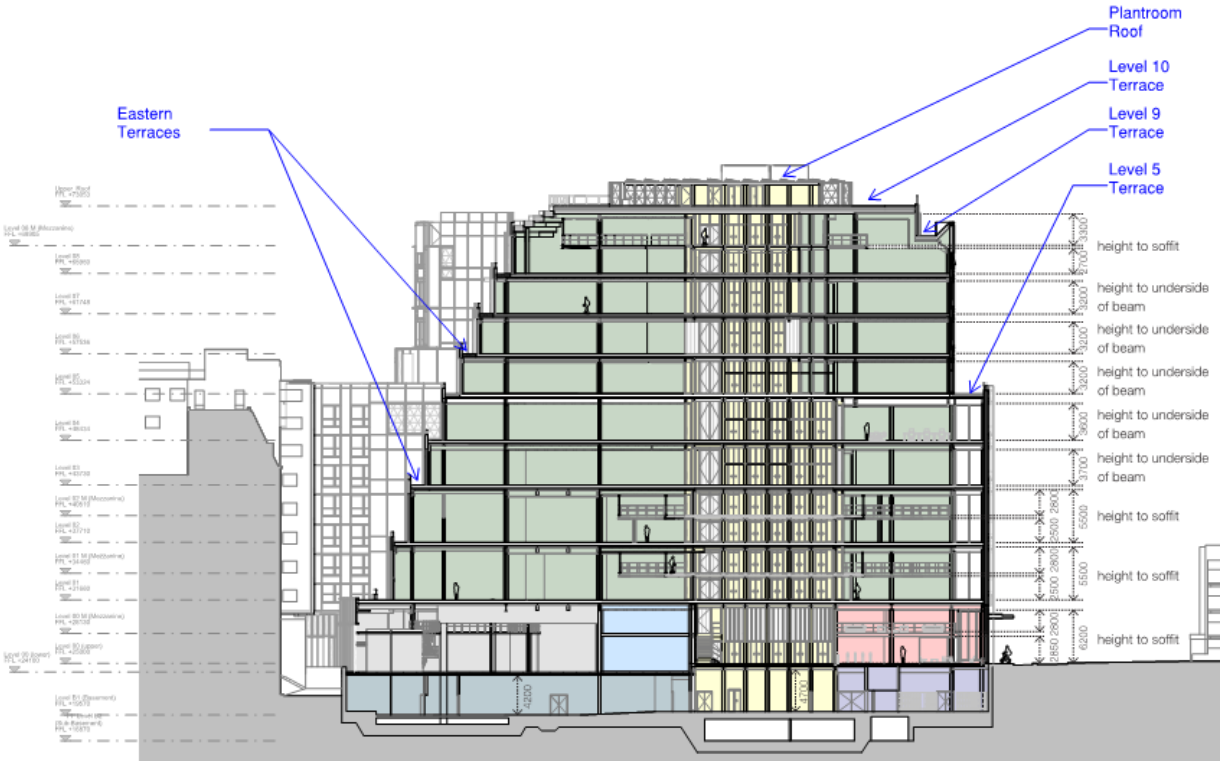

Figure 1: Section through the proposed building (East-West)

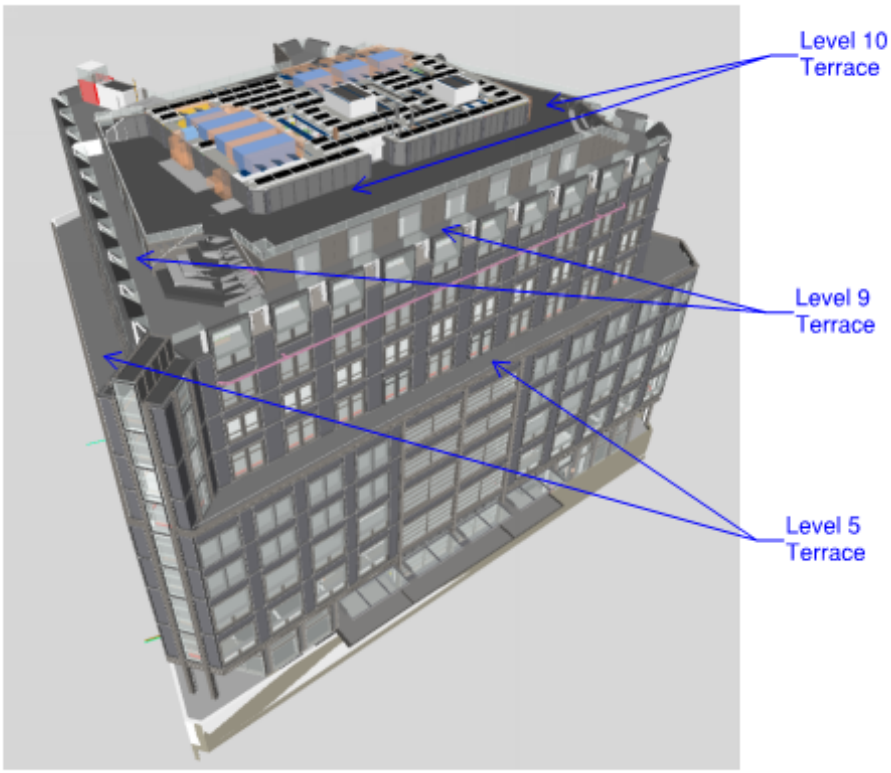

Figure 2: View from North West showing the layout of the terraces

The blue roof system will consist of a surface water catchment and attenuation system. When rain lands on the building it will be directed to the blue roof attenuation cells through which it will be able to flow to the sewer. The outflow from the blue roof attenuation cells to the sewer will be restricted. This means that during larger storm events there will be insufficient outflow capacity from the cells and the blue roof attenuation cells will fill so allowing a controlled, safe and attenuated storm water outflow to sewer. A diagram of the strategy is shown in Figure 3.

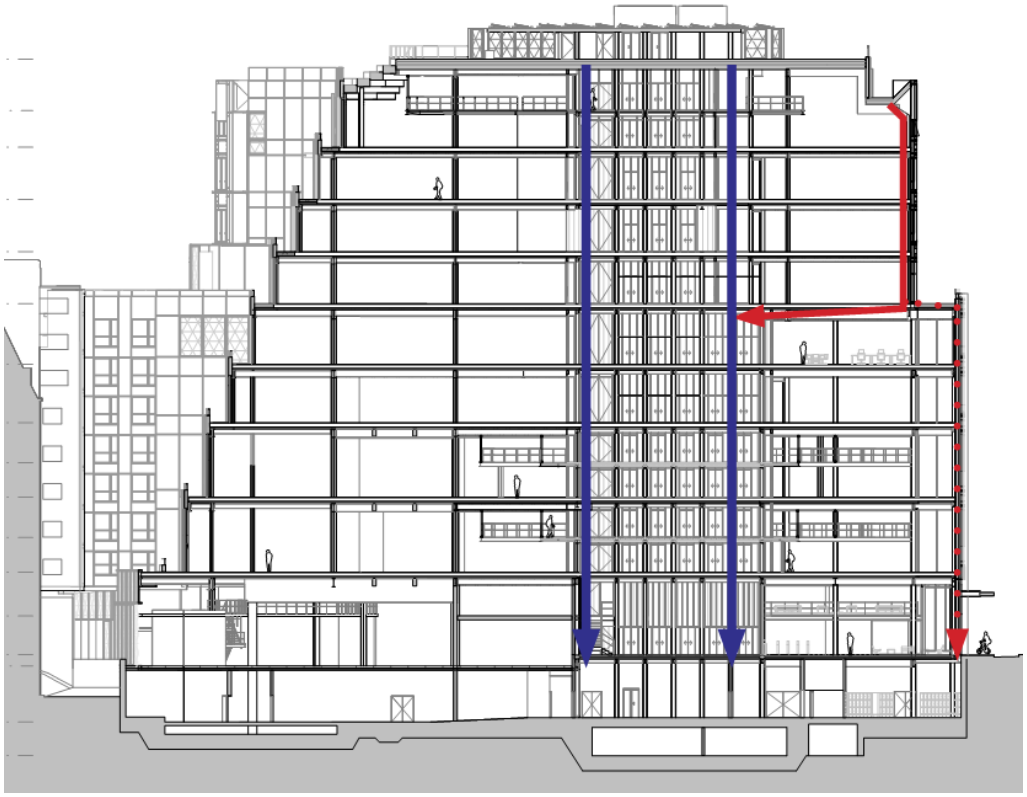

Figure 3: Blue roof strategy. Note that pipework routes are indicative only.

As recorded in Section 3.6 of the previously submitted Sustainability Statement (RP/230602/002) the storm water outflow limit required according to the London Plan is at least a 50% reduction on the existing storm water outflow. The existing building storm water outflow has been assessed at 61.1l/s (4,150m^2 @ 6hr storm duration 1:100 year rainfall intensity of 53mm/hr). This means that the revised scheme must achieve a storm water outflow of no more than 30.55l/s. This limit has been assessed against a 1 in 100 year storm plus a 30% uplift to allow for climate change. Note that there is planting on the roof terraces of the building but the attenuation effect of this has been excluded from the analysis. All storm water will be discharged to the existing sewer connections on site.

An assessment has been carried out to determine the size and arrangement of the blue roof attenuation system required at each level based on the available water capture areas and the space available for the cells. Blue roof attenuation cells are available in different sizes and so the deeper the individual cell the smaller the attenuation cell footprint that is required. The project aims to maximise footprint and minimise cell depth as a rule in order to limit roof fabric build up depth, allow sufficient space for the required level of insulation and minimise the amount of roof finishes that require finish on gradient to where the blue roof cells are located. A typical detail of the roof fabric build up is shown in Figure 4.

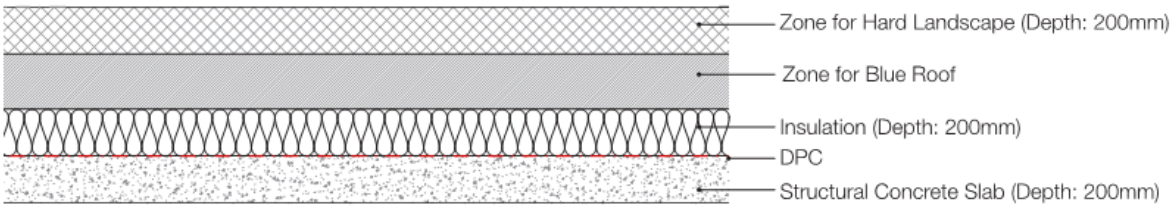

Figure 4: Typical blue roof arrangement

The strategy that will be implemented for the development will be to capture water from the following areas:

- Plantroom Roof & Level 10 Terrace 1827m^2
- Level 9 Terrace 963 m^2
- Level 5 Terrace 1238 m^2

This means storm water is captured for attenuation from 4028m^2 which is 96% of the site rainfall area.

There will remain a non-captured and non-attenuated area of 193m^2. Rain landing on this area will be drained directly to the sewer. The non-captured area is predominantly the Eastern Terraces on the east façade. Based on the being able to convey the 5min storm duration for the 1 in 100 year storm event + 30% for climate change (219mm/hr), the non-attenuated discharge from this area would be 11.7l/s. This leaves a remaining 18.85l/s (30.55 – 8l/s) to manage the runoff from the attenuated terraces of Levels 10, 9 and 5. Therefore the limit of outflow from the blue roof attenuation system is 18.55l/s.

The hydraulic assessment aimed to ensure we can achieve the limit of outflow while ensuring we can achieve the overall depths of finishes to ensure the finished roof levels work architecturally.

Using a variety of depths of blue roof attenuation cells the rainwater outflows from each area is as follows.

- 5l/s from Level 10 using 550m^2 of 150mm deep attenuation cells
- 7l/s from Level 9 using 354m^2 of 85mm deep attenuation cells
- 1.1l/s from Level 5 using 909m^2 of 85mm deep attenuation cells

The above results in a total outflow of 24.8l/s which is less than the 30.55l/s limit imposed by the London Plan.

The final detailed blue roof layout will be determined during the ongoing design phases and while there may be some adjustment to the numbers quoted in this document (e.g. the exact storage volume on each terrace will be influenced by ongoing architectural coordination), the blue roof strategy will remain the same and the overall surface water outflow limit will not change and will be adhered to. Note that the areas assumed available for cells in the assessment are conservative and so there is an allowance within the assessment for unforeseen coordination challenges which may arise to ensure that the required outflow limit will be maintained on the final build.