

FRANCIS CRICK INSTITUTE - LEVEL 05 NE

Drainage Note



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1 BACKGROUND

- 1.1 This report has been produced to support a Planning Application for revisions to the terrace approved under planning permission ref. 2022/2667/P on the 25 November 2022 and related to the terrace at roof Level 05 NE of the existing Francis Crick Institute building.
- 1.2 This note includes a review of existing information regarding the design of the original brown roof on the building at Level 5, and includes observations and photographs obtained during the initial site visit on 16th July 2021 and a follow up site visit to review an exploratory 'dig' into the makeup of the brown roof on the 3rd of February 2022. It is of note that the site visits were undertaken in summer and winter conditions providing an insight into the seasonal changes to the rooftop vegetation.
- 1.3 It also considers the impacts of the changes now proposed to the drainage strategy for the building and for the use of the amended Level 05 NE area.

DRAINAGE NOTE

2 SITE LOCATION

- 2.1 The Francis Crick Building is located at approximate National Grid Reference (NGR) 529885, 183060, between Ossulston Street to the west and Midland Street to the East, and south of Brill Place and north of Dangoor Walk. The Site is in the Somers Town area of London and is approximately 400 m east of Euston Train Station and directly opposite St Pancras International.
- 2.2 The site is formed of an existing building used as a biomedical research centre.
- 2.3 Photograph 1 below shows the location of the terrace from external ground level looking up towards the Level 5 area.



Photo 1: View looking up towards the Level 05 NE brown roof, located above the windows and below the overhanging barrel shaped roof.

DRAINAGE NOTE 3 PROPOSED PLANS/DEVELOPMENT

- 3.1 Under the original proposals, it was intended to create a raised metal grate deck over the existing brown roof located on the 5th floor level. The raised deck would be created in the form of a gantry / mesh and would include landscaping planters along the eastern edge of the terrace, and a café pod serving drinks at the northern edge.
- 3.2 The raised metal grate deck was installed earlier this year but for reasons set out elsewhere in this application it has been decided to pursue a different approach to the surface material and replace the metal grating with aluminium decking strips each with a 2mm separation between them to ensure water permeability resulting from rainwater and any water from the roof above. The new decking would use the big-foot footing and beam system installed as part of the mesh proposals. The material and design are shown in the following photographs:



Photographs 2, 3 and 4 – showing the proposed new material alongside the existing grating

4 EXISTING ROOF DRAINAGE INFORMATION

- 4.1 The existing brown roof was provided to attract local wildlife, principally redstarts. It was also designed to be colonised over time by a succession of plant and animal species and thus contributing to the biodiversity value of the area. However, the roof has not fulfilled its potential due principally to the roof being in shade, from the projecting barrel shaped roof of the Crick itself, and the prevailing wind over the terrace.
- 4.2 The brown roof also forms part of the sustainable drainage scheme for the site. The existing brown roof currently supports the Sustainable Drainage Strategy for the wider site, agreed as part of Planning Application 2010/4721/P, whilst also providing biodiversity benefits. The details of the brown roof were secured by Condition 5 of the planning approval which was subsequently discharged in September 2012 under planning reference 2012/4034/P.
- 4.3 An extract from the drawings in relation to the design of the Level 5 roof is provided at Figure 1 below.



⁽Originator not identified. Drawing Number, A-DTL-8050, Rev 04, prepared for UKCMRI Construction Ltd (FCI). Not to scale)

4.4 The schematic at Figure 2 below shows a cross section of the make up for the roof and how this ties into the river stone borders sand ultimately passes into the drainage gulley.



(Originator not identified. Drawing Number, A-DTL-8050, Rev 04, prepared for UKCMRI Construction Ltd (FCI). Not to scale)

5 SITE VISIT OBSERVATIONS

- 5.1 As noted above two site visits have been undertaken, one initially to review the roof and a second during an exploratory 'dig' to confirm the makeup of the roof. Observations are described below:
 - Roof comprises brown roof that was observed to be relatively sparsely vegetated during the summer site visit and slightly more vegetated during the winter site visit, as shown in Photographs 2 and 3 below.



Photograph 2: Roof in |Summer (16 July 2021)



Photograph 3: Roof in winter (3 February 2022)

• Make up of roof comprising a sand to gravel material including crushed brick, which is kept in place by a metal edging strip, surrounded by a river stone border, as shown in Photograph 4 below.



Photograph 4: Gravel roof, with metal edging strip and river stone border, with pedestrian walkway

• Gullies were present in each corner of roof and one centrally along the brown roof edge adjacent to the building, providing drainage of surface water runoff, as shown in Photograph 5 below.



Photograph 5: Corner gulley's at southern end of roof.

• During the exploratory 'dig' evidence of a filter layer with water storage (plastic 'egg crate' type feature) was observed to retain some water for plant growth, with holes in to allow excess water to drain via a geotextile membrane to the underlying polystyrene insultation, which includes channels to convey water to the river stone boarder and ultimately into the gulley's, as indicated in Photograph 6 below. It should be noted that the Photograph 6 show the 'egg crate' plastic layer lift to view the layers beneath, and ordinarily this would site flat such that the 'cups' would store water to help facilitate the growth of plants.



Photograph 6: Water storage lay with geotextile membrane beneath

- The system allows any excess flows to build up at the surface and pass towards the river stone boarder bypassing the lower layers and ultimately into the gulley's.
- 5.2 It is understood that subsequently drains pass through building before discharging into the wider site surface water attenuation tanks.

6 ASSESSMENT

- 6.1 Based on the makeup of the existing roof comprising the metal mesh gantry suspended over the existing brown roof, on a 'Big Foot' type system, any rainfall falling onto the gantry will ultimately pass through the gaps within the proposed new surface material or pass towards the riverstone border to be collected by the gullies running around the edge of the roof; all of which will be retained.
- 6.2 From this point, water will follow the existing pathways through the roof materials and drainage channels into the gulley's located at five points around the edges, and subsequently into the wider building drainage and attenuation system.
- 6.3 The proposal seeks to maintain the existing roof build up and mimic the existing situation as far as possible, thereby from a hydrological perspective maintaining a status quo in terms of the drainage.
- 6.4 The intent is to draw water from the storage element of the existing system for irrigation purposes. The existing system includes a degree of water storage within the 'egg crate' design and filter pumps located at key points will enable some of the stored water to be accessed for this purpose. This will result in an overall minor reduction in water outflow from the roof as a whole.
- 6.5 Therefore, from a hydrological perspective these proposals will provide a minor betterment over the existing situation in terms of the drainage.

7 SUMMARY & CONCLUSIONS

- 7.1 The proposed revisions to the Level 05 NE terrace, over the proposals under ref. 2022/2667/P seek to replace to approved metal mesh with a more appropriate surface material.
- 7.2 Whilst there will be changes to the makeup of this roof, and the removal of the brown roof and its replacement with a water attenuation tank, this will have no adverse hydrological functionality to the overall drainage strategy for the building, and if anything will represent a minor benefit. The use of an attenuation tank, to provide grey water irrigation should be encouraged. Overall, the proposals will not compromise the drainage strategy for the building.
- 7.3 Overall, there will be no impact on the existing drainage makeup arising from the proposals and there will be no increased outfall from the roof areas.