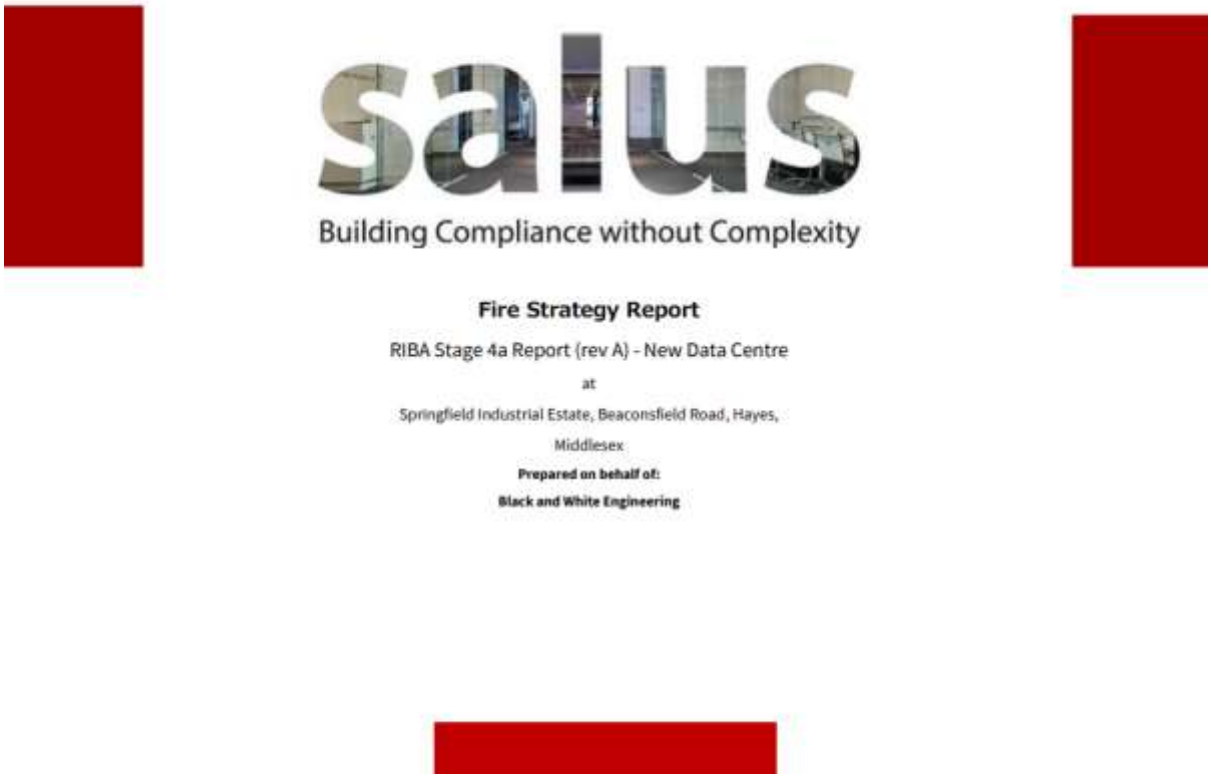
Fire strategy – Living Walls

Please refer to the submission for Planning Condition 27 ‘Fire Strategy report - Section 13.10’ for the fire strategy supporting the living walls design.



Extract from Section 13.10 below for reference

13.10 Green walls are being fixed to the south and east elevations.

The panels are dispersed over the East elevation as shown below.

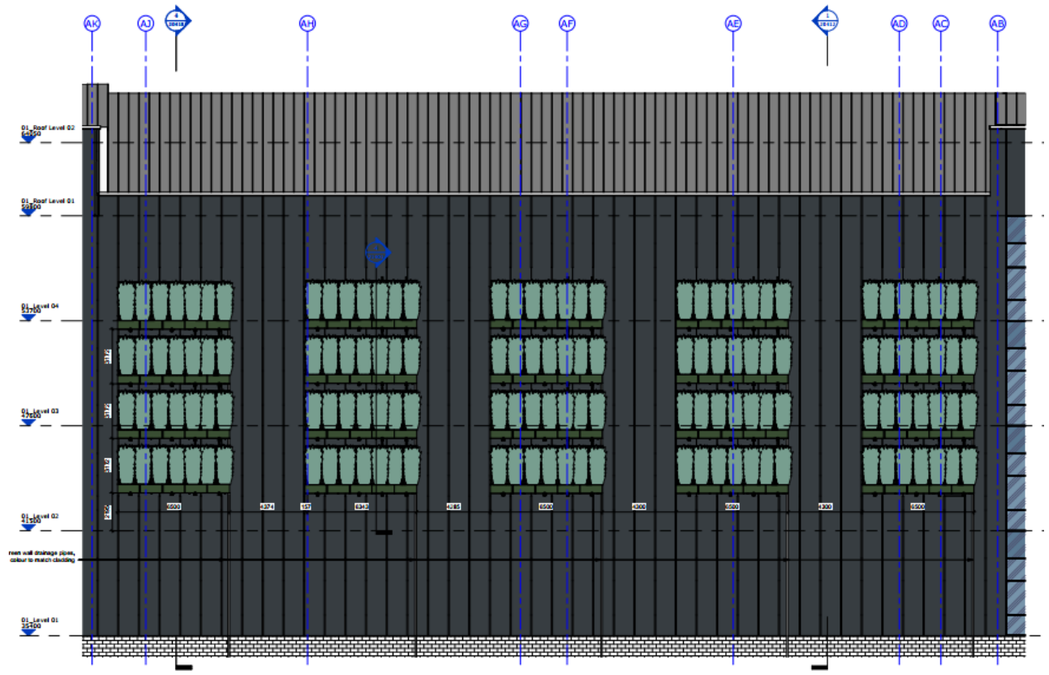


Figure 7 - East Elevation

The south elevation contains three panel of approximately 7.2m wide by 15.6m deep as shown below.

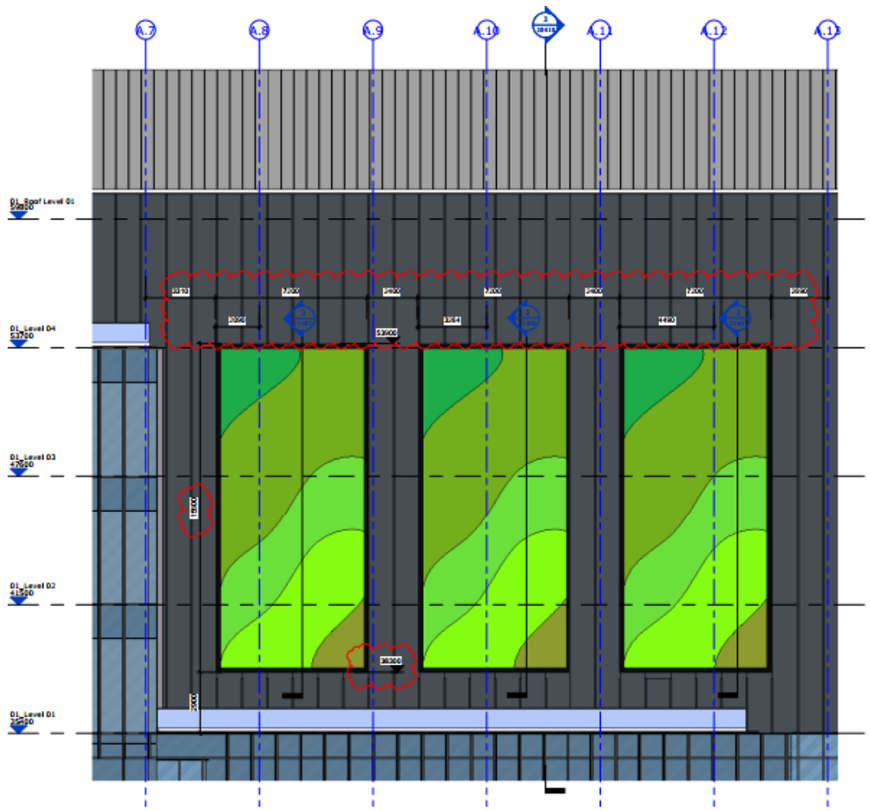


Figure 8 - South Elevation

13.10.1 Green Wall Guidance

Department for Communities and Local Government guidance titled “Fire Performance of Green Roofs and Walls” dated August 2013 is used for the design of the proposed green walls. The green wall system will need to adhere to the recommendations of this guidance. This is summarised as follows:

- As this is external requirement B2 does not apply.
- Fire stopping is applied at floor level between the compartment floor and external wall - this fire stopping is to match the 90 minutes fire resistance performance requirements applicable to the floor. Please note that products sold as cavity barriers are not required to meet this level of performance and so may not prove to be suitable.
- If a cavity is formed behind the green wall cavity barriers will need to be provided within this cavity at floor level and vertically at the centres described in table 7.
- Test evidence is needed to show that the green wall can meet the guidance contained in Table 12.1 of Approved Document B Volume 2 - 2019.

Additionally, as these facades are not sufficiently far from the boundary to have 100% unprotected areas as described in the aforementioned document, the risk of fire spread to adjoining sites needs to be mitigated. The AWFSS will in combination with the internal compartmentation will reduce the risk of a fire affecting the green wall. In addition to this all the cladding of the data halls on these elevations will

achieve 90 minutes fire resistance when measured from the inside (to further reduce the risk of fire igniting the green walls) and the walls will be constructed from materials that meet the requirements of Regulation 7 of the Building Regulations to prevent the wall contributing to the fire should the green wall ignite.

Some items built into external walls or forming part of specified attachments do not need to meet the requirement to be non-combustible. They are:

- Cavity trays when used between two leaves of masonry;
- Any part of a roof (other than any part of a roof which falls within paragraph (iv) of regulation 2(6)) of The Building Regulations 2010 as amended if that part is connected to an external wall;
- Door frames and doors;
- Electrical installations;
- Insulation and water proofing materials used below ground level;
- Intumescent and fire stopping materials where the inclusion of the materials is necessary to meet the requirements of Part B of Schedule 1;
- Membranes which achieve a minimum classification of European Class B-S3, d0;
- Seals, gaskets, fixings, sealants and backer rods;
- Thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1; or
- Window frames and glass (spandrel and infill panels must meet the requirement described above).

Thermal breaks are small elements used as part of the external wall construction to restrict thermal bridging. There is no minimum performance for these materials. However, they should not span compartments and should be limited to the minimum required to restrict the thermal bridging (the principal insulation is not to be regarded as thermal a thermal break).

13.10.2 South Elevation – MobiLane, MobiPanel system

The area of green wall on the south elevation has three panels which are approximately 15.6m x 7.2m, with an overall aggregate of unprotected area to this wall is 112.32 x 3 = 336.96m^2. These panels are located between floor levels 01 to 04 as these have compartment floors. The length of the wall on this elevation is 32.1m.

Using the enclosed rectangle method in BRE187 the percentage is calculated by dividing the overall area between the compartments (each floor having 90 minutes floor compartments) = 18.3m high x 32.1 wide = 587.43m^2.
The aggregate area of the unprotected green wall attached to this elevation are 336.96m^2, therefore the total percentage of unprotected area to section of wall = 336.96/587.43 x 100 = 57%,

Table G in BRE 187 is used for an enclosing rectangle of 21m high. As the unprotected area is over 50%, the next nearest percentage is 60% which requires a boundary distance of 21.5m.
The boundary has a minimum distance of 20m.

The BRE document paragraph 2.1.7 accepts that with functional suppression system which is designed and installed to the relevant standards which are to BS EN 12845:2015+A1:2019. This enables the boundary distance to be halved from 21.5m to 10.75m. This would therefore comply with the relevant boundary distances for unprotected area.

13.10.3 East Elevation – MobiLane Wall Planter system

The area of green wall on the east elevation is proposed to use 5 panels at 12.2m x 6.7m, with each panel having an area of 83.75m^2 the total aggregate area would be 335m^2. The green walls are located between level 02 and Roof level 01 giving an overall height of 18.3m. The length of the building is 59m.

Using the enclosed rectangle method in BRE187 the percentage is calculated by dividing the overall area between the compartments (each floor having 90 minutes floor compartments) = 18.3m high x 59.0 wide = 1079m^2.
The aggregate area of the unprotected green walls wall attached to this elevation are 335m^2, therefore the total percentage of unprotected area to section of wall = 335/1079 x 100 = 31%

Table G in BRE 187 is used for an enclosing rectangle of 21m high. As the unprotected area is over 30%, the next nearest percentage is 40% which requires a boundary distance of 19.5m.
The boundary has a minimum distance of 11m.

The BRE document paragraph 2.1.7 accepts that with functional suppression system which is designed and installed to the relevant standards which are to BS EN 12845:2015+A1:2019. This enables the boundary distance to be halved from 19.5m to 9.75m. This would therefore comply with the relevant boundary distances for unprotected area.

13.10.4 Green Wall Classifications

The proposed systems for the East and South elevations are as follows:
South elevation – MobiPanel FR test document reference number 2021-Efectis-R000817 defines the reaction to fire classification with the procedures described in BS EN 13501-1:2018 is given a classification of B-s2, d0.
East elevation – MobiLane Wallplanter, test document reference number JN/JN//Y 2832-5E-RA-001 defines the reaction to fire classification with the procedures described in BS EN 13501-1:2018, is given a classification of B-s1, d0.

BS9999:2017 figure 47 (e) any building with a boundary more than 1.0m from the boundary allows for C-s3,d2 below 18m and B-s3,d2 above 18m.