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1 - Fire service access and facilities

1.1 - The fire service site plan in section 14 of the fire statement shows that the fire service access points to buildings C1, C2, D1 and D2 do not provide access into the firefighting shafts by way of fire protected corridors. Instead, access is shown leading into open-plan ancillary areas. Entry to a fire-fighting shaft at fire service access level should be available either directly from the open air or by way of a protected corridor. Resolving this issue may affect land use planning considerations such as appearance and layout of the building.

On the basis that the buildings will have 24/7 concierge, it is considered that the primary point of arrival for the Fire Service will be the main entrances, where management staff can provide additional information if required, and, therefore, the primary point of arrival for each building was indicated in the Section 14 site plan. However, in addition to access to the firefighting stair and lift via main entrance space, each building is also provided with direct access to the firefighting stair via an external door and protected stair access/discharge corridor. For clarity, the entry point to the protected route into the firefighting stair for each building is indicated in Figures 1 and 2 of the appendix below.

1.2 - The fire statement site plan does not indicate locations of inlets for wet rising fire mains. Inlets should ideally be adjacent to access points to firefighting shafts (although not on external walls as the water in the riser may freeze) and within 18m of the fire service vehicle access point.

As the fire service access points shown in the fire statement do not give entry to fire protected routes leading to stairs, and landscaping surrounding the proposed buildings appears to inhibit vehicle access to such routes, it is not clear where riser inlets will be.

If the inlets are remote from access to the firefighting stairs, this introduces extra distances for firefighters to travel carrying heavy equipment which could have negative effect on firefighter physiology and safety. Resolving this issue may affect land use planning considerations such as appearance and layout of the building.

Whilst the exact position of the wet fire main breeching inlet for each building is subject to detailed design, the approximate locations are highlighted in Figures 1 and 2 of the appendix below. These inlet locations have been proposed so that they are adjacent to the primary point of arrival for each building, in order to meet the requirements for them to be visible to the attending Fire Service crews and to be within 18m of hardstanding suitable for Fire Service vehicle parking

Whilst the wet fire main within the stair will be charged, it is noted that the breeching inlet valve and pipework will be dry unless being used by the Fire Service to replenish the wet fire main tank and, therefore, is not considered to be at risk of freezing. In accordance with the Section 4.2.2 of BS 9990 recommendation that 'inlet connections for a fire main should be installed in an external wall or in a boundary wall of a building', it is intended that the wet fire main breeching inlets will be located within the external wall of each building, in the locations outlined above.

2 - Means of escape

2.1 - The escape route distances from the most remote areas of several areas of basement car parks to the escape stairs appear excessive. For instance, the distance from the eastern point of basement level 2 below building C2 appears to exceed 50m to the nearest stair.

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Likewise, the distance from the easterly point of basement level 2 below building D2 appears to exceed 50m to the nearest stair. If people are not able to reach a place of safety within a suitable distance there is a risk that a fire could compromise the escape route before escape can be made. Resolving this issue may affect land use planning considerations such as layout of the building and car parking provision.

The basement car park travel distances have been assessed in accordance with BS 9999, based on an A1 Risk Profile (sprinklered residents-only car parking) and the provision of comprehensive automatic fire detection and alarm, which permits travel distances of 29.9m in a single direction and 74.75m in multiple directions. On the basis of these travel distance limits and the availability of multiple storey exits (see Figure 3 of the appendix below), the travel distances in each building basement are considered to be compliant.

2.2 - The travel distance from the furthest point of the gym to the fire exit leading to the stairs, in Building D2 (level 3) appears excessive. Additionally, as no internal layout is shown in the plan drawing, the actual travel distance will be greater than the direct distance shown once internal fit-out is complete. Similarly, the travel distance in the business lounge on level 3 of Building D1 may be excessive once internal fit out is complete. If people are not able to reach a fire exit within a short distance there is a risk that escape routes will be compromised by fire before safety is reached. Resolving this issue may require more fire escape routes and may affect land use planning considerations such as layout and appearance of the building.

Residents' ancillary accommodation has been assessed in accordance with BS 9999, based on an A1 Risk Profile (e.g. sprinklered gym and lounge accommodation) and the provision of comprehensive automatic fire detection and alarm, which permits travel distances of 29.9m in a single direction and 74.75m in multiple directions. On the basis of these travel distance limits, the travel distances in the ancillary accommodation are considered to be compliant.

Whilst internal fit-out designs have not been developed at this stage, it is acknowledged that it will be necessary to ensure that the travel distance limits are not exceeded as the fit-out designs for the accommodation are developed, which will form part of the Building Regulations approvals process

2.3 - Section 7 of the fire statement discusses the provision of a smoke control system in the basement car park levels. However, the information provided does not indicate where smoke would be vented to outside. It is important that smoke vented from a basement fire is not able to re-enter the building, affect escape routes or fire service access points. Resolving this issue may affect land use planning considerations such as landscaping and appearance of the building.

Please refer to Figures 1 and 2 of the appendix below, which highlight the basement smoke extract discharge points. These have been located such that they are not in close proximity to means of escape routes and Fire Service access points.

3 - External walls

3.1 - The site C typical wall details drawing appears to show storey-height windows separated by small distances between floors (for instance section BB on drawing file name (SITE_C_TYPICAL_EXTERNAL_WALL_DETAILS_01-1837970)). This may require further fire engineering analysis to consider whether fire or smoke protruding from one large window, and adhering to the external surface, can quickly spread back into the building

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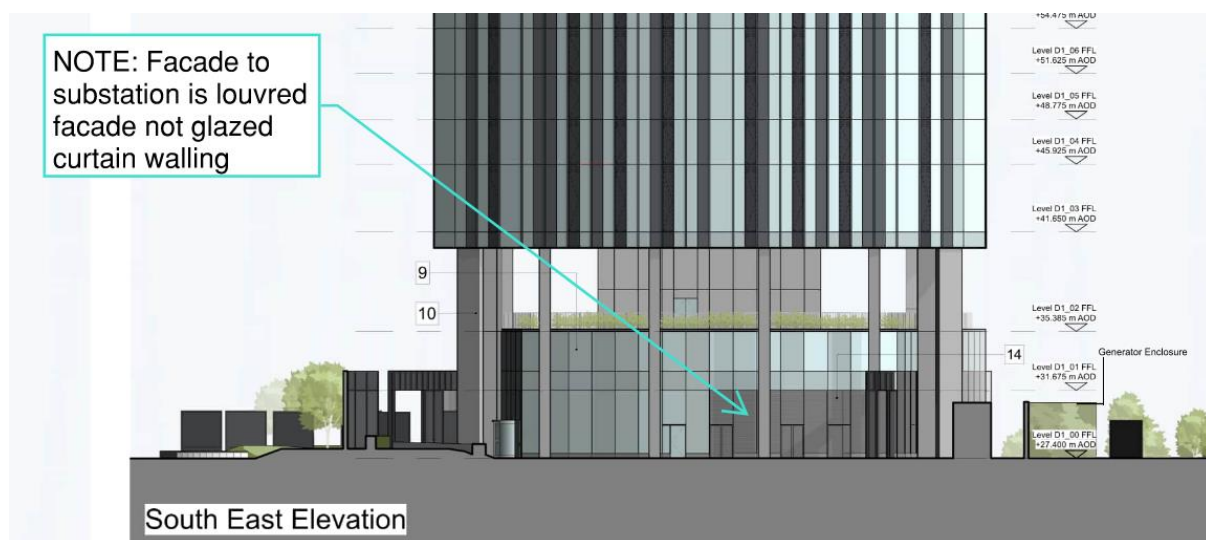
through the window above. Any design changes following engineering analysis may affect land use planning considerations such as appearance of the building.

It is noted that consideration of the external wall in such a scenario is not a requirement of the Building Regulations guidance for residential buildings and where similar guidance is provided within HTM 05-02 for hospitals the requirements are negated where both compartments are provided with sprinklers (i.e. as will be the case in these residential buildings).

Notwithstanding, when considering such a scenario, it is noted that the provision of sprinklers will act to limit fire growth and reduce temperatures within the apartment/compartment of fire origin and the stringent thermal and safety requirements for the multi-layered external glazing panels will mean that the likelihood of complete glazing failure in the event of a sprinklered fire will be low (i.e. the risk of flames protruding from the apartment/compartment of fire origin and directly impinging on the glazing of the apartment/compartment above is low). Furthermore, the upper apartment/compartment will be provided with sprinklers if fire were to spread in this way. Therefore, the arrangement is considered reasonable and to meet the functional requirements of the Building Regulations.

3.2 - The ground floor plan drawing of building D1 appears to show glazed external walls of the electricity substation and 'move in' store, immediately adjacent to the entrance to a firefighting shaft. This could allow fire to spread from the adjoining accommodation to the firefighting shaft. Likewise, an entry to the firefighting shaft in building C1 appears to adjoin glazed sections of external walls. Resolving this issue may affect land use planning considerations such as the appearance of the building.

For reference, it is noted that the area of Building D1 elevation associated with the substation and 'move in' store will be louvred panels, rather than glazing (see elevation extract below).



Notwithstanding, in each scenario referred to above, the façade of the accommodation adjacent to the stair discharge door does not form an internal angle to the stair door (i.e. risk of received radiation is limited due them being on the same plane) and in the event of a fire within the adjacent accommodation the Fire Service would not be required to utilise the firefighting shaft (i.e. as they could fight the fire directly from outside) and any occupants

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escaping via the stair may discharge via an alternative route away from the fire (e.g. the main entrance). Therefore, the arrangement is considered reasonable and to meet the functional requirements of the Building Regulations.

4 - Supplementary information

4.1 - The following points do not contribute to HSE's overall headline response and are meant only for guidance/clarification purposes. These comments identify items that may have implications for planning and could usefully be considered now.

No response necessary.

4.2 - It is noted that the proposed basements contain several car parking levels. Given the current transition to electric vehicles it may be advisable to consider the implications for firefighting posed by electric vehicle fires several storeys below ground. Fires involving electric vehicles pose particular challenges for fire and rescue services, including difficulty in extinguishing fires, the potential re-ignition due to the chemistry involved, extended use of large volumes of firefighting water, emission of combustible and toxic gases, and the challenge of removing a vehicle which may re-ignite when moved. Any consequent design changes may affect land use planning considerations such as appearance and layout of the building and car parking provision.

Despite the current transition to EV's it is noted that the current car park design guidance provides little or no information with regards EV's and, therefore, the basement car park design proposals and fire safety provisions (i.e. mechanical smoke extract and sprinklers) have been based on recent engagement with Greater Manchester Fire Service and Local Authority Building Control for previous developments.