

Memo

To: Ciprian Burtilla (Health and Safety Executive)

From: Eric Swainson, Principal Fire Engineer

Reviewed: Miller Hannah, Director

Date: 27 July 2022

Project: Stag Brewery

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Responses to the HSE Substantive Response for Stag Brewery

Introduction

The Stag Brewery is a proposed multi-storey, multi-building residential-led mixed use development located in the London Borough of Richmond upon Thames. The development is considered to contain several relevant buildings which need to be considered under Planning Gateway One. The Health and Safety Executive (HSE) has reviewed the gateway one fire safety statement (planning reference number: 22/0900/OUT) as part of the proposed development of The Stag Brewery site in Mortlake and has provided the following comments on 9th May 2022.

Hoare Lea Fire Engineering Group thanks the HSE for their consultation and acknowledge receipt of these comments and have taken them into account as part of the updated fire strategy design. The following responses indicate how these comments have been addressed and/or where further clarification has been requested. The HSE comments are provided in black with the responses from Hoare Lea Fire Engineering Group (HLF) highlighted in green, the paragraph numbers below correspond to those used in the HSE Substantive Response.

Responses

1.3 Regarding the first part of the hybrid application for the detailed application, it is noted that the proposed buildings contain blocks which are served by single staircases. In a fire scenario, the proposed single staircases operate as the escape stair as well as the firefighting stair.

HLF: Noted. Just for clarity a firefighting shaft will only be provided for blocks 2, 4, 7, 8, 10-18 which have a top occupied storey above 18m and as such the stair shaft will be designed as a firefighting shaft. In all other blocks the stair will be designed as a protected shaft. Buildings 13-18 form part of the outline application.

1.4 The buildings 2, 3, 6, 7, 8, 11 & 12 are connected by way of a basement containing a carpark and ancillary areas.

HLF: Please refer to updated plans prepared by Squires & Partners a drawing schedule is appended to this document. Stairs serving the basement carpark have been rearranged such that they are



independent from the stairs serving the residential levels. There are no internal connections between the basement carpark stairs and the residential stairs, this is in line with the recommendations in current guidance.

1.5 The fire statement (section 7) and the plan drawings indicate that the single staircase of buildings 2, 7, 8, 11 & 12 descend to the basement level. The basement contains various ancillary areas such as a large carpark, multiple plant rooms, cycle stores and refuse areas, which connect with the single staircases by way of lobbies/corridors.

HLF: Noted, the plans have been updated such that the Stairs serving the basement carpark are independent from the stairs serving the residential levels. There are no internal connections between the basement carpark stairs and the residential stairs, this is in line with the recommendations in current guidance.

1.6 The fire safety standard states that a single stair should not serve a basement level. Moreover, where a staircase forms part of the only escape route from a flat, it should not serve ancillary accommodation (applicable in addition to buildings 4 and 10). Resolving these issues will affect land use planning considerations such as the design, layout and appearance of the development if, for example, separate stairs are to be provided for the basement level and no connection with the single stairs is ensured.

HLF: Noted and agreed, the plans have been updated such that the Stairs serving the basement carpark are independent from the stairs serving the residential levels. There are no internal connections between the basement carpark stairs and the residential stairs, this is in line with the recommendations in current guidance. These changes have been implemented with minimal changes to the external layout of the building, the full extent of which can be seen in the updated plans provided by Squires & Partners.

1.7 The plan drawings illustrate that the lifts in buildings 2, 7, 8, 11 & 12 descend to the basement level. A lift should not continue down to serve a basement storey if it is in a building, or part of a building, served by only one escape staircase. Resolving this issue may affect land use planning considerations such as the design, layout and appearance of the development if, for example, separate lifts are to be provided for the basement.

HLF: Noted, the plans have been updated such that the lifts serving the basement carpark are independent from the lifts serving the residential levels. The lifts serving the basement carpark will open into a lobby which is fire separated from the areas in which the lifts serving the above ground levels opens into. These changes have been implemented with minimal changes to the external layout of the building, the full extent of which can be seen in the updated plans provided by Squires & Partners.

1.8 The basement plan drawing of Area 1 illustrates multiple refuse stores designated to serve the above residential buildings. Due to the fire risks associated with waste, refuse stores should be approached solely from the outer air and should be separated from other parts of the building. Accordingly, design changes necessary to ensure appropriate location and separation of the bin stores will affect land use planning considerations such as the design and appearance of the development.

HLF: Noted, the plans have been updated such that all refuse stores are accessed from external only. Please refer to the plans prepared by Squires & Partners a drawing schedule is appended to this document. This arrangement is considered to meet the HSE's recommendations above regarding access to the refuse stores.

1.9 The planning statement (section 12.36) and the plan drawings indicate that the proposed development contains residential units which are designed as wheelchair user units. However, the fire statement (section 6) states that there are no such units ("none") and it does not provide information about any wheelchair user refuge in case of fire. When establishing the refuge areas, consideration should be given to the location of the dry riser outlets. The presence of charged fire hoses could hinder effective use of the disabled refuge; likewise, the use of a refuge could prevent access to the dry riser outlet. Ensuring suitable provision of disabled refuges may affect land use planning considerations such



as the design and layout of the building as well as the health, safety and wellbeing of the future intended occupants.

HLF: Noted and agreed. The fire statement produced to describe compliance with the London Plan Policy D5 and D12 which was submitted as part of this application provides additional details with regards to the provision of refuge areas. This has been repeated below for completeness:

Furthermore, one lift per block will be provided as a lift with enhanced facilities for evacuation to facilitate the evacuation of mobility impaired occupants and meet the recommendations of Policy D5 (inclusive design) of the London Plan. In order to facilitate the use of the evacuation lift all of the residential stairs should be provided with refuge spaces with minimum dimensions of 900mm x 1400mm outside of clear escape width of the stair. The refuge should be provided with an emergency voice communication (EVC) system, designed and installed in accordance with BS 5839-9:2011. The management procedures of the evacuation lifts will be developed during the design stage.

These refuge spaces will be shown on the updated plans provided. Please refer to the plans prepared by Squires & Partners a drawing schedule is appended to this document.

1.10 Regarding the second part of the hybrid application for the outline application with all matters reserved, it is noted that there are some plan drawings illustrating the buildings design in principle. The buildings 13, 15, 16 & 17 are connected by way of a basement containing a carpark and ancillary areas. It appears that these buildings contain blocks with single staircases which, in a fire scenario, operate as the escape stair as well as the firefighting stair.

HLF: Please refer to updated plans prepared by Squires & Partners a drawing schedule is appended to this document. Stairs serving the basement carpark are independent from the stairs serving the residential levels. There are no internal connections between the basement carpark stairs and the residential stairs, this is in line with the recommendations in current guidance.

1.11 The fire statement (section 7) and the plan drawings indicate that the single staircase of buildings 13, 15, 16 & 17 descend to the basement level. The basement contains various ancillary areas such as a large carpark, multiple plant rooms, cycle stores and refuse areas, which connect with the single staircases by way of lobbies/corridors.

HLF: Please refer to updated plans prepared by Squires & Partners a drawing schedule is appended to this document. Stairs serving the basement carpark are independent from the stairs serving the residential levels. There are no internal connections between the basement carpark stairs and the residential stairs, this is in line with the recommendations in current guidance.

1.12 The fire safety standard states that a single stair should not serve a basement level. Additionally, where a staircase forms part of the only escape route from a flat, it should not serve ancillary accommodation. Resolving these issues will affect land use planning considerations such as the design, layout and appearance of the development if, for example, separate stairs are to be provided for the basement level and no connection with the single stairs is ensured.

HLF: Please refer to updated plans prepared by Squires & Partners a drawing schedule is appended to this document. Stairs serving the basement carpark are independent from the stairs serving the residential levels. There are no internal connections between the basement carpark stairs and the residential stairs, this is in line with the recommendations in current guidance.

1.13 The plan drawings illustrate that the lifts in buildings 13, 15, 16 & 17 descend to the basement level. A lift should not continue down to serve a basement storey if it is in a building, or part of a building, served by only one escape staircase. Resolving this issue may affect land use planning considerations such as the design, layout and appearance of the development if, for example, separate lifts are to be provided for the basement.



HLF: Noted, the plans have been updated such that the lifts serving the basement carpark are independent from the lifts serving the residential levels. The lifts serving the basement carpark will open into a lobby which is fire separated from the areas in which the lifts serving the above ground levels opens into. These changes have been implemented with minimal changes to the external layout of the building, the full extent of which can be seen in the updated plans provided by Squires & Partners.

1.14 The basement plan drawing for Area 2 illustrates multiple refuse stores designated to serve the above residential buildings. Due to the fire risks associated with waste, refuse stores should be approached solely from the outer air and should be separated from other parts of the building. Accordingly, design changes necessary to ensure appropriate location and separation of the bin stores will affect land use planning considerations such as the design and appearance of the development.

HLF: Noted, the plans have been updated such that all refuse stores are accessed from external only. Please refer to the plans prepared by Squires & Partners a drawing schedule is appended to this document. This arrangement is considered to meet the HSE's recommendations above regarding access to the refuse stores.

1.15 Because the second part of the hybrid application for the outline application has all matters reserved, HSE is unable to provide a full comment for this part. Should the Local Planning Authority be minded to grant outline planning permission, we strongly recommend the following:

- the outline planning permission is subject to a suitable condition requiring the submission of a satisfactory fire statement with any reserved matters application, and
- that HSE is consulted in conjunction with the Local Planning Authority's consideration of any reserved matters application.

HLF: Noted

1.16 This would ensure the purpose of HSE being made a statutory consultee for such applications is achieved.

HLF: Noted

1.17 It is recommended that the applicant uses the fire statement form available on gov.uk to provide the fire safety information.

HLF: Noted

The following points do not contribute to HSE's overall headline response and are intended only as advice for the applicant. These comments identify items that could usefully be considered now to reduce the risk of making changes to the design at a later stage, which could have planning implications.

HLF: Noted, however, these comments have been considered as part of the fire engineered design and the following commentary is provided.

2.1. Regarding the basement carparks for Area 1 and Area 2, the planning statement (section 15.15) states that "20% of car parking spaces will be provided with active electric charging provision, and 100% of the remaining spaces will be provided with passive electric charging provision". It may be advisable to consider the risk to fire safety by the presence of the electric vehicles (EVs) in the basement carparks as well as the presence of electric bikes because they contain lithium-ion batteries. Lithium-ion batteries may suffer thermal runaway and cell rupture, releasing large volume of toxic gases, heat and smoke before catching fire as well as afterwards. When they burn, a large amount of water is needed to flow on the batteries, however, fire keeps flaring up even after it appears to be extinguished. Furthermore, there is a danger of electrical shock for firefighters tackling a fire due to the high voltage used in EVs. Any consequent design changes may affect land use planning considerations such as layout, appearance, and car parking provision of the development.



HLF: Noted and agreed. It is noted that as the use of electric cars is generally in its infancy a consensus on the additional provisions required to mitigate and protect the use of electric vehicles is still subject to considerable debate in the fire engineering industry. Notwithstanding the fire strategy design has considered the presence of electric vehicles and has provided the following fire safety features:

- All electric vehicle charging points will be provided with an automatic shutoff connected to the alarm system within the building. On activation of a detector this will shutoff power supply to all electric vehicle charging stations.
- The carparks will be protected by an automatic sprinkler system designed and installed in accordance with BS EN 12845.
- The carparks will be provided with a mechanical smoke ventilation system.
- As the design progresses further considerations will be given to volume of stored water to supply the sprinkler system and the extract rate of the smoke ventilation system
- Extra consideration will be given to the lobby protection to the stairs serving the basement carpark particularly with regards to the smoke ventilation provided to these protected lobbies.
- Carparks will be provided with ramped access such that the fire service would be able to remove an electric vehicle directly to external air after extinguishing a fire to prevent any hazards from re-ignition.
- Cycle stores will be provided with fire resisting construction separating them from other areas.
- All cycle stores will be separated from the stairs by means of a fire protected smoke ventilated lobby.
- Additional building management features to prevent unattended E-bike charging within the cycle store will be considered and incorporated as appropriate as the design develops.

2.2. The plan drawings illustrate that the buildings 2, 7 & 8 contain firefighting lifts with dual entry. The fire safety standard states that the use of dual entry firefighting lifts is not recommended in residential buildings. Any consequent changes, in rectifying this may affect land use planning considerations such as design and appearance of the development, including the main entrance arrangements more generally.

HLF: Noted and agreed, this was an error on the plans, all firefighting lifts will be single entry only. Please refer to the plans prepared by Squires & Partners a drawing schedule is appended to this document.

2.3. The fire statement (section 8) states that “certain corridors have extended travel distances in a single direction and is addressed with a fire engineered justification including the provision of additional smoke ventilation.” However, if an engineered approach to fire safety is applied, then a “Qualitative Design Review” (QDR) is needed to determine whether the fire safety provisions are appropriate. As part of the hazard assessment process, an assessment of “what if” events should be made to identify system failures or foreseeable events that might have a significant influence on the outcome of the study. An example could be “what if” the power supply to smoke vents fails?

HLF: It is noted that QDRs are only specifically referenced in BS 9991 for buildings in excess of 50m. None of the proposed buildings within the development are close to this height and all buildings are proposed to be less than 30m. At the start of the design process for the Stag Brewery development the HSE’s role as a consultee on the Planning Gateway One process was not yet established. Hence the expectations from the HSE expressed above, which the HSE have acknowledged are more stringent than the requirements of code guidance, were not known at the start of design. On this basis a QDR was not carried out for the building prior to the first submission to the PGO team.

Notwithstanding the above, the concern noted above by the HSE is acknowledged and as such it is proposed to carry out a preliminary QDR focusing on the extended travel distances at this stage of the design. As the design for the building develops a full QDR can be carried out considering all aspects of the development (not just the extended corridor travel distances).



2.4. From the information provided on the fire statement it does not appear that a QDR has been undertaken, such that it has informed the design presented to the LPA. In circumstances such as this, best practice is for a QDR to be undertaken concurrently with design development, prior to the submission of a planning application. This approach would provide explanatory information to support the planning application. The outcome of the QDR could result in design changes which may affect land use planning considerations.

HLF: As noted above a QDR was not carried out for the building prior to the first submission to the PGO team.

This was on the basis that extended travel distances within residential single stair buildings based on provision of an enhanced smoke ventilation system is a well understood and long standing fire engineered design. The proposed enhanced smoke ventilation mitigation measures have been subject to independent research carried out by the system manufacturers and extensive fire and smoke modelling carried out by fire engineers. As such the hazards of the proposed design and the benefits and limitations of the proposed mitigation methods are well understood.

Notwithstanding the above, the concern noted above by the HSE is acknowledged and as such it is proposed to carry out a preliminary QDR focusing on the extended travel distances at this stage of the design. As the design for the building develops a full QDR can be carried out considering all aspects of the development (not just the extended corridor travel distances).

BS 7974 acknowledges when describing a QDR that the first stage of any engineering design is to establish the basic parameters and identification of any overriding constraints. This is a reasonable expectation for any design which deviates from the recommendations in code guidance.

The extended travel distance design has been considered in terms of the holistic building design from the early stage and the following fire safety enhancements will be provided as part of the design:

- All corridors provided with an extended travel distance in excess of 15m will be provided with a Double Reversible Mechanical Extract (DRME) system. This system has been demonstrated on multiple buildings by Computational Fluid Dynamics modelling to provide tenable conditions for means of escape and fire service access.
- Where extended travel distances are present smoke shafts will be positioned as close to the end of the common corridor as possible.
- All apartments will be provided with a category LD1 detection and alarm system and residential sprinkler protection throughout.

As the design develops the extended travel distances within the residential common corridors will be assessed in more detail and the fire engineered design will be examined in more detail. This process will include production of a Computational Fluid Dynamics (CFD) analysis of the proposed design. Before this model is created a scoping document will be produced. This document defines the fire hazards associated with the proposed design, establishes the performance criteria of the system and provides the proposed design solutions to mitigate the extended travel distance. The CFD analysis will consider the internal layouts of apartments and will consider the worst case fire scenarios both in terms of smoke spread into the stair and longest travel distance to the stair.

As the internal corridor layout within a building can change significantly between pre-planning and detailed design stages, full modelling of the proposed extended travel distance arrangement will not be carried out until the internal layout of the building is frozen at the detailed design stage.

2.5. The plan drawings of building 4 illustrate the firefighting stairs and lifts to run blind through the 4th floor. The fire statement (section 4) states that no formal consultation has been undertaken to date. However, it should be determined that there is adequate access for fire-fighting personnel to set up a bridgehead on any required floor. Additionally, the fire safety standard states that where lifts are proposed to run blind there should be early consultation with the local fire and rescue service. Any



subsequent changes may affect land use planning consideration such as the design and layout of the development

HLF: Noted and agreed, this was an error on the plans and has been updated and the firefighting stair and lift will serve all levels. Please refer to the plans prepared by Squires & Partners a drawing schedule is appended to this document.

2.6. The fire statement (section 13) states that “some existing public hydrants are provided within 90m of all blocks. Where this is not the case, additional private hydrants will be provided.” However, the fire service site plan (fire statement, section 14) does not illustrate the water hydrants’ locations that the proposed development relies on and associated distances.

HLF: Noted, the locations of the existing hydrants will be provided and attached to these responses (please refer to Appendix B). It is noted that the design has not yet progressed to a stage where the location of new hydrants has been provided as the general landscape design is still in an early stage.

However, the provision of hydrants within the requirements of current code guidance; within 90m of the dry riser inlet to each block can be made a condition of the planning application.

Note that as the design is developed further new hydrants will be provided such that the maximum distance of 90m to all blocks is not exceeded.

2.7. It is noted that some buildings are not relevant buildings as their height is under 18 m, however, they are within the curtilage of the relevant buildings. The following advice is offered with that context in mind.

HLF: See response to 2.10 below

2.8. The fire statement (section 7) and the plan drawings indicate that the single staircase of buildings 3 and 6 descend to the basement level. The basement contains multiple ancillary areas such as a large carpark, multiple plant rooms, cycle stores and refuse areas, which connect with the single staircases by way of lobbies/corridors.

HLF: Stairs serving the basement carpark are independent from the stairs serving the residential levels, this is in line with the recommendations in current guidance. These changes have been implemented with minimal changes to the external layout of the building, the full extent of which can be seen in the updated plans provided by Squires & Partners.

It is noted that consideration has also been given to the fact that blocks both above and below 18m are connected via underground carparks and so do not have a continuous line of vertical separation and as such all blocks which share access to the carparks will be treated as over 18m in terms of external wall design.

2.9. The fire safety standard states that a single stair should not serve a basement level. Moreover, where a staircase forms part of the only escape route from a flat, it should not serve ancillary accommodation (applicable in addition to building 9). Resolving these issues will affect land use planning considerations such as the design, layout and appearance of the development if, for example, separate stairs are to be provided for the basement level and no connection with the single stairs is ensured.

HLF: Stairs serving the basement carpark are independent from the stairs serving the residential levels, this is in line with the recommendations in current guidance. These changes have been implemented with minimal changes to the external layout of the building, the full extent of which can be seen in the updated plans provided by Squires & Partners.

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such all blocks which share access to the carparks will be treated as over 18m in terms of external wall design.

2.10. The plan drawings illustrate that the lifts in buildings 3 and 6 descend to the basement level. A lift should not continue down to serve a basement storey if it is in a building, or part of a building, served by only one escape staircase. Resolving this issue may affect land use planning considerations such as the design, layout and appearance of the development if, for example, separate lifts are to be provided for the basement.

HLF: Stairs serving the basement carpark are independent from the stairs serving the residential levels. The lifts serving the basement carpark are independent from the lifts serving the residential levels. The lifts serving the basement carpark will open into a lobby which is fire separated from the areas in which the lifts serving the above ground levels open into. This is in line with the recommendations in current guidance. These changes have been implemented with minimal changes to the external layout of the building, the full extent of which can be seen in the updated plans provided by Squires & Partners.

It is noted that consideration has also been given to the fact that blocks both above and below 18m are connected via underground carparks and so do not have a continuous line of vertical separation and as such all blocks which share access to the carparks will be treated as over 18m in terms of external wall design.

Conclusion

It is the considered opinion of Hoare Lea Fire Engineering Group that the responses detailed above fully address the concerns raised by the HSE as part of their Planning Gateway One review process. The proposals have considered fire safety at the earliest stage, and the further development of the fire strategy will be based upon these principles. The fire strategy will be further developed for submission to the Approving Authority at the appropriate time and will meet the functional requirements of the Building Regulations 2010, taking recommendations from BS 9999:2017, BS 9991:2015, the comments received by the HSE and the requirements of Policy D5 and D12 of The London Plan.



Appendix A – Drawing Register



Appendix B – Existing Hydrant Locations