

1. Summary

- 1.1 Movement Strategies has undertaken a review of the **High Road West Crowd Flow Study** prepared by Buro Happold for Lendlease (4th March 2022) on behalf of Tottenham Hotspur FC (THFC). This note sets out a series of findings from the review, but three key findings have been highlighted here:
1. The Crowd Flow Study is based on a plan that directs egressing spectators for Northbound rail services via Moselle Square instead of White Hart Lane. This would introduce conflicting flows at the junction of White Hart Lane and the High Road in the vicinity of the temporary HVM barrier, and is not acknowledged in the study report. **This increases the crowd safety risk at this key location, and requires further discussion and justification given THFC's Zone Ex responsibilities.**
 2. In 2016, THFC supplied a briefing note (drafted by Movement Strategies) on event day crowd movement requirements as part of the High Road West Masterplan procurement process. **This information is not referenced in the Crowd Flow Study and as such there is no attempt to describe why the proposals deviate from this.**
 3. There are a number of clear examples where the Crowd Flow Study has either provided limited detail or remains silent on key aspects associated with event day demand, capacity or operations. Our concerns are aligned with those of the Council's Independent Crowd Advisor (Dr Jim Dickie – High Road West, 9th March 2022). **Therefore, the plans and associated assessments do not provide sufficient confidence that THFC would be able to carry out their Zone Ex responsibilities in all circumstances.**
- 1.2 In general, it is understood that there has been limited co-ordinated engagement by Lendlease and Buro Happold with THFC and other stakeholders engaged in event day crowd and transport operations. Without the engagement and transfer of knowledge prior to undertaking the study, there are many key factors and considerations missing or not fully addressed.

2. High Road West and Zone Ex

- 2.1 On event days at the Tottenham Hotspur Stadium, the Guide to Safety at Sports Grounds (SGSA, v6, 2018) indicates that the venue operators have a responsibility for assurance of the safety of attendees within Zone Ex (the area in the public domain considered to encompass the main pedestrian and vehicle routes leading from the venue perimeter to public car parks, local train stations, bus stops and so on). The responsibility is to ensure that all stakeholders with a role in supporting the delivery of this outcome are to be engaged and that the measures put in place are implemented in a co-ordinated and consistent way. The stakeholders include emergency services, local authorities and, where appropriate, local landowners.
- 2.2 The area covered by the High Road West Masterplan and LendLease application falls within the Zone Ex area. As such, THFC has accountability for crowd movement within this footprint and needs to be confident that the space available to manage event day crowds is adequately sized and laid out to accommodate safe and effective operations in all foreseeable scenarios. Ultimately, if there is deemed to be a failure in assuring the safety of spectators within Zone Ex it could lead to reductions in the licensed capacity of the venue. One implication of this not being delivered through design wherever possible will be a potential for increased and extended event day staffing requirements, which has a direct economic impact to THFC. Another potential implication is effectiveness

with which THFC can deliver their obligations through their Local Area Management Plan to mitigate the impact of major events on the local community.

- 2.3 There has been no engagement by Lendlease with THFC on this matter prior to the planning submission. The planning documentation was the first opportunity afforded to THFC to understand the proposals for the High Road West Masterplan area. This does not fit with the long term responsibility that THFC (or indeed LendLease) will have for Zone Ex.

3. Crowd Flow Study: Key Themes from the Review

- 3.1 The first **Crowd Flow Study** prepared by Buro Happold for Lendlease was only issued in February 2022 (3 months after submission of the application). A subsequent update to the report was issued on 4th March 2022. Neither version has been subject to full public or stakeholder consultation. As this is our principal source, the remainder of the comments are related to the content of that report. Further analysis and assessment of the Crowd Flow Study is required, as well as discussions with all stakeholders, but we set out our initial comments below.
- 3.2 There are three key themes that emerge from our initial review of this document:
- The Crowd Flow Study does not sufficiently cover the demand scenarios that may be anticipated to occur on an event day, and therefore cannot conclude that the masterplan design is adequate.
 - The Crowd Flow Study does not adequately address the event day crowd management requirements and the impact that the design proposals have on wider Zone Ex crowd safety and operational flexibility.
 - The crowd and queuing analysis presented in the document cannot be sufficiently sense-checked based on the content of the document alone, so it is not possible to verify the outcomes and resultant conclusions.
- 3.3 These three themes will be considered in turn, cross-referencing the findings of the review undertaken by the Council's Independent Crowd Advisor in parallel where appropriate (Dr Jim Dickie, High Road West, 9th March 2022).

4. Demand Scenarios and Omissions

- 4.1 In advance of the bidding process for the High Road West development, THFC commissioned Movement Strategies to produce a briefing note for those interested parties (including Lendlease) on event day crowd movement associated with the new Stadium. This document - *Fixed Design Parameters for THFC Stadium/WHL Station Link* – included a series of spatial requirements, including dimensions for routes and dwelling areas. Other than an acknowledgement of the document in Appendix A, there is no mention of the guidance in the Buro Happold Crowd Flow Study and therefore the deviations from the items highlighted in this guidance have not been justified.
- 4.2 The Crowd Flow Study focuses on football event day scenarios. Whilst this is the most frequent occurrence, it is not necessarily the most onerous in terms of the movement and management of spectators. There is no consideration of concert scenarios and a small sub-section that has been recently introduced to consider a 'boxing scenario'. It is noted that the boxing analysis references the planning assumptions for the 2021 boxing event, but does not reflect actual evidence of behaviours captured at that event. We know that there was increased southbound demand for travel at White Hart Lane Station with a 'hard finish', so it would be appropriate to factor in that evidence. Dr Dickie clearly states (p17 of his report) that these exceptional scenarios have not been addressed.

- 4.3 The initial version of the Crowd Flow Study only covered the 'End State', with no assessment of the requirements to manage crowds during the Construction and Build-Out period. As this is programmed to extend for at least ten years, this is a critical aspect to be addressed. The subsequent issue of the document (4th March) did include a new section associated with Crowd Flow during construction phasing, but this only considered two potential scenarios and only assessed the post-match queueing associated with a football event. This does not provide confidence that the full range of anticipated outcomes have been considered. There is also no mention of the impacts of construction on pre-event ingress flows.
- 4.4 The impact of engineering works on the rail network is not addressed. Planned blockades and restricted service running have affected a number of event days at the stadium, not to mention the unplanned disruptions that also occur. The impact of such scenarios and the spatial and operational consequences have not been considered at all. Discussion around the need to assess 'What if...' scenarios is also raised by Dr Dickie on p11 of his report. This is a key omission.

5. Operational Considerations

- 5.1 The event day operations in this area have evolved since the new Stadium opened in April 2019 and there is a wealth of knowledge about variation in crowd conditions and behaviours in the 'Last Mile' that can be used to support the design. The Crowd Flow Study references two site observations in late 2021 as the evidence base, which suggests that the understanding of operational aspects underlying this study is limited.
- 5.2 Crucially, the Crowd Flow Study is focused on normal egress operations and associated flows and queues. There is no consideration of the crowd flow and safety impacts should there be an emergency or incident that requires the queues to be dispersed or the station cleared (the southbound platform in particular). This would also feed into construction phasing – the proposed design must maintain adequate provision for dispersal and not only the space for queueing itself.
- 5.3 There is an underlying assumption within the analysis that egress flows to the northbound platform are re-directed through the Masterplan area (Moselle Square). This would increase the safety risk to spectators by introducing conflicting flows at the High Road/White Hart Lane junction, which is currently managed to avoid this, particularly in the vicinity of the temporary HVM. There would also be a need for THFC to make upstream changes to circulation on the Podium, which for certain matches is just not possible due to segregation measures. Given that this fundamental change to a key part of THFC's crowd management strategy will affect the safety risk profile, there is no clear justification in the Study nor presentation of mitigations. As indicated earlier, it would also be expected that any variation would require dialogue, analysis and debate with THFC. This matter is also discussed on p10 of Dr Dickie's report.
- 5.4 The study does not make any remark on the movement of those with mobility impairments, including wheelchairs, and the extent to which the proposals support their safe and efficient movement on an event day.
- 5.5 The study report identifies additional facilities within the footprint of the Masterplan, most notably toilets. It is not clear who the facilities are for and where precisely they are suggested. If they are intended to support spectators then additional work needs to be done to look at placement as for the majority of this footprint egressing spectators will be in a queue system and placing toilets inappropriately will create counter-flows and associated risks. The event day operational know-how should be used to inform the provision of any permanent facilities within the design. This equally applies to permanent planters and landscaping elements. The study indicates that they can be accommodated and serviced within the footprint from a capacity perspective, but there is no discussion about how they fit with event day operations and maintaining flexibility for management of different scenarios.

- 5.6 There is a general lack of awareness demonstrated in the study of the key factors that influence behaviours and how these are addressed in the proposed plans. These range from aspects associated with the variation in train frequency and station operations to the make-up of the crowd and their motivations – for example the differences as a result of the finish times of matches, the knowledge of the transport options available and how this affects demand at White Hart Lane station and more direct influences such as consumption of alcohol and the gender and age demographics of the crowd. Such variations may appear subtle on paper but can give rise to significant crowd safety issues in reality if not properly understood.

6. Verification of Analysis

- 6.1 Many of the input assumptions around spectator behaviour are taken from the 2015 Transport Assessment - assumptions made before the Stadium was opened. Furthermore, that assessment was based on the current situation at the time (previous Stadium and previous Transport network configuration) and then indicating what mitigations were necessary to accommodate the uplift in capacity. Using actual data on observed behaviours associated with the new Stadium would be a much more sound basis for this, and THFC has collected data of this nature through its own monitoring activities. This is discussed by Dr Dickie on p11 of his report.
- 6.2 There is no justification for the choice of the flow rates and queue density parameters that have been used to 'test' the space. There is no specific reference to the crowd conditions observed on site or justified as appropriate for post-event egress.
- 6.3 The 'available' space assumed for queuing in the design considers the entire footprint of an area, and does not address that the reality of operating a queue system will mean that it will not be possible to use the entirety of the space. An assessment considering a queue system determined by a minimum width may be more appropriate given that it will likely be served by temporary barrier arrangements.
- 6.4 The analysis is a combination of static analysis and Legion modelling. The nature of the Legion simulation is that it would require a 'hands on' review of the model in order to verify the outputs – Dr Dickie also discusses the interrogation of these models on p12 of his report. Nevertheless, the output presented looks questionable. The whole of the queuing area does not exceed LoS D, even though the queue changes width throughout its length, and there is no change in density shown at the narrower points. There is also no clarity on the level of detail that is shown (is it the peak 5 mins, 15 mins, whole egress period?). The ability to rely on the conclusions drawn from this are therefore also open to question.
- 7.1 Based on the initial review undertaken, there are a series of concerns associated with the proposals for the High Road West in relation to event day crowd movement. Given their responsibilities for crowd safety within the Zone Ex set out in the Guide to Safety at Sports Grounds, THFC need to be assured that they can deliver safe and efficient operations in this space, both in its 'end state' and during construction. We do not currently consider that submitted Crowd Flow Study has demonstrated that safe and efficient crowd flow operations can be provided during the 10-year construction phase and also during the 'end state'. Given the fundamental impacts to THFC's operation, the potential impacts on spectator safety risk profile and the lack of clarity provided in the planning documents, further engagement, information and assessment is necessary to provide this assurance prior to approval.**