

St Giles Circus Development
St Giles Circus Event Gallery Crowd Flow Study

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Glossary

Term	Definition
LUL	London Underground
LoS	Level of Service (Fruin)

1 Introduction

The Gallery development comprises of two separate spaces which can be operated for a variety of uses (Sui Generis) together with a number of ancillary catering, technical, general support and administration spaces. The two primary Gallery Spaces are:

- **The Urban Gallery:** Located at street level, the Urban Gallery is a space within the site boundary that can be open to the public realm on both the Charing Cross Road and Centrepoint facades. The urban gallery also opens onto the internal access route linking the Centrepoint facade to Denmark Place and allows free movement between the gallery and the adjacent food court. The transparent nature of the Urban Gallery is such that it will become part of the general circulation around the St. Giles Circus and Crossrail areas and will be routinely traversed by both local and visiting pedestrians.
- **The Event Gallery:** Located directly below the Urban Gallery, the Event Gallery is a flexible auditorium space. A public stair and two fully accessible elevators links the auditorium to the street level entry foyer located towards the centre of the site on Denmark Place.

Whilst the two gallery spaces are very different in both form and function, at times they will be required to work together in order to support the operational integrity of the site.

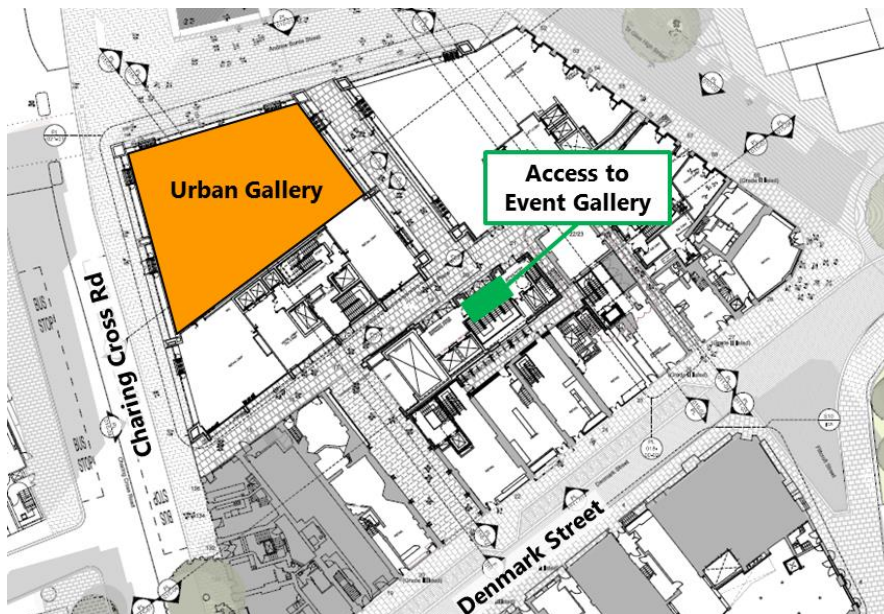


Figure 1: Urban Gallery and Event Gallery locations

2 Licensing hours

The approved licensing hours are listed below: :

- It is proposed that the site will generally be able to open for licensable activities between 10:00 hours and 23:00 hours Monday to Thursday; 10:00 hours to midnight Friday and Saturday, and 11:00 hours and 22:30 hours on Sunday.
- It is further proposed that the Event Gallery will offer licensable activities until 02:00 hours on 104 occasions per year expecting minor impact considering the 24 hour tube functions.
- Servicing to any part of the site will take place between 07:00 and 22:00 hours and will be from Denmark Street only.

3 Pedestrian and Auditorium Analysis

3.1 Maximum capacity

Under typical operation conditions, the Urban Gallery will be an open space linked directly to the public realm. As such, it is a transient space without a specified maximum capacity. Capacity only becomes relevant when the space is enclosed to house a specific event or to function as a support space to the Event Gallery. As a completely enclosed space, the maximum capacity of the Urban Gallery is 550 people.

Currently with permission for 800 people occupancy, the Event Gallery (auditorium) will have a maximum capacity of 2,000 people. Maximum attendance is most likely to be achieved in performance mode for an evening or a weekend event when it can be assumed that the total number of attendees will be present for the duration.

The following analysis has considered the concert scenario for 2,000 people. The Event Gallery has been assessed from a pedestrian capacity perspective, as well as an operational and management perspective. It is important to review both the arrival and departure of people from the auditorium, as well as management strategies to be employed, as detailed below.

3.2 People Flow Scenarios Overview

The venue performance was analysed considering the following opening hours:

- Monday to Thursday 10.00 – 23.30 hours;
- Friday and Saturday 10.00 to 00.00 hours and in 104 occasions per year to 02.00 hours;
- Sunday 11.00 to 22.30 hours
- 104 occasions per year up to 02.00 hours

The following scenario represents the most management demanding case. This report uses it as a basis for analysing the Event Gallery and adjacent spaces capacity:

- **A peak capacity concert scenario with 2,000 spectators** as example of event that would take place in a reduced number of occasions, during evenings (from 19.00 up to 02.00 hours)

For this scenario, two people flow management options have been assessed (see section 3.4 below).

These options will be adopted by the operator's security team and the operator must ensure the implementation of the most effective option relative to the needs of each specific event. Each option looks at four key components in the management of people flow through the site:

- Arrival at the site and queuing
- Ticketing
- Pedestrian accumulation
- Egress and the onward journey

3.3 Assessment criteria. Fruin’s Levels of Service

Fruin’s Levels of Service (LoS) are used in pedestrian planning to assess different spaces for pedestrian comfort and safety. They provide a quantitative way of categorising spaces, with six levels of service (A to F) and associated metrics of pedestrian density, corresponding to different crowding conditions. Fruin LoS for queuing are used as reference in this report to analyse the capacity of the possible queuing areas that will be available for people before entering the auditorium. It is considered that average LoS C is desirable for comfortable queuing, while patches of LoS D are acceptable as they are related to different people behaviour.

LoS	QUEUEING CONDITIONS	
	Space/person (person./m ²)	Description
A	< 0.83	Space is provided for standing and free circulation through the queuing area without disturbing others
B	0.83 – 1.08	Space is provided for standing and restricted circulation through the queuing area without disturbing others
C	1.08 – 1.54	Space is provided for standing and restricted circulation through the queuing area by disturbing others. It is within a personal comfort body buffer range
D	1.54 - 3.59	Space is provided for standing without personal contact with others, but circulation through the queuing area is severely restricted and forward movement is possible as a group
E	3.59 - 5.38	Space is provided for standing but personal contact with others is unavoidable. Circulation within the queuing space is not possible.
F	> 5.38	No movement possible; space is approximately equivalent to the area of the human body

Table 1: Fruin Level of Service for queues/waiting areas

3.4 Management Strategy Options

Two different options for visitor queuing and management have been developed:

- The primary strategy, as detailed below, is the default plan for an event and sees the Urban Gallery used for spectator queuing, ticket collection and management.
- The second strategy is for the exceptional occasions when the Urban Gallery has a permanent exhibition scheduled at the same time as a capacity event in the auditorium. In this case the queue will be contained inside the premises, going in via the passage from Tottenham Court Road Station and directed to the new Western alley from Denmark Street.

3.4.1 Option One – Urban Gallery Available

Option One is the default scenario when the Urban Gallery is available for use as a ticketing hall and queue holding area. This option has the benefit of allowing the crowd to interact with the digital media and other pre-event services that can be deployed in the Urban Gallery, and provide a positive visitor experience, whilst keeping the crowd away from the public footpaths. In this strategy the urban gallery would be dedicated to the Auditorium queue and hence not available to the public.

3.4.1.1 Arrival at the Site and Queuing

In this option the site perimeter is configured as follows:

- Glazed facade to Charing Cross Road closed (managed),
- Glazed facade to Centre Point closed,
- Glazed facade to Food Court alley open,
- Denmark Place links to Denmark Street, St. Giles High Street and Charing Cross Road closed

Two points of entry to the site are created:

- Controlled VIP entry via the Denmark Place to Charing Cross Road gate, as it allows direct access without queuing or encountering large on-site gatherings.
- Managed public entry from the Urban Gallery to either Charing Cross Road or to Centre Point.

A temporary barrier system will be deployed in the Urban Gallery in order to ensure that people arriving before the Event Gallery doors are open can be adequately accommodated, that the queue moves in the correct direction and that stewards can rapidly access any point in the queues. The configuration of the queue for this option is as shown in



Figure 2.



Figure 2: Management Strategy Option One. Main Flows and Queue Layout

3.4.1.2 Ticketing

It is considered that the majority of tickets will be accessed via smartphones. However, in case tickets need to be collected upon arrival at the venue, it is anticipated that the most challenging ticketing scenario will be the maximum capacity sell-out event.

Option 1 sees the Urban Gallery dedicated to queuing, although some space has been left within that space for the provision of ticket collection machines, for those visitors who have pre-ordered tickets online. Phone bookings and on the day sales (if any) would be conducted from the main ticket office. These points are identified in Figure 3.

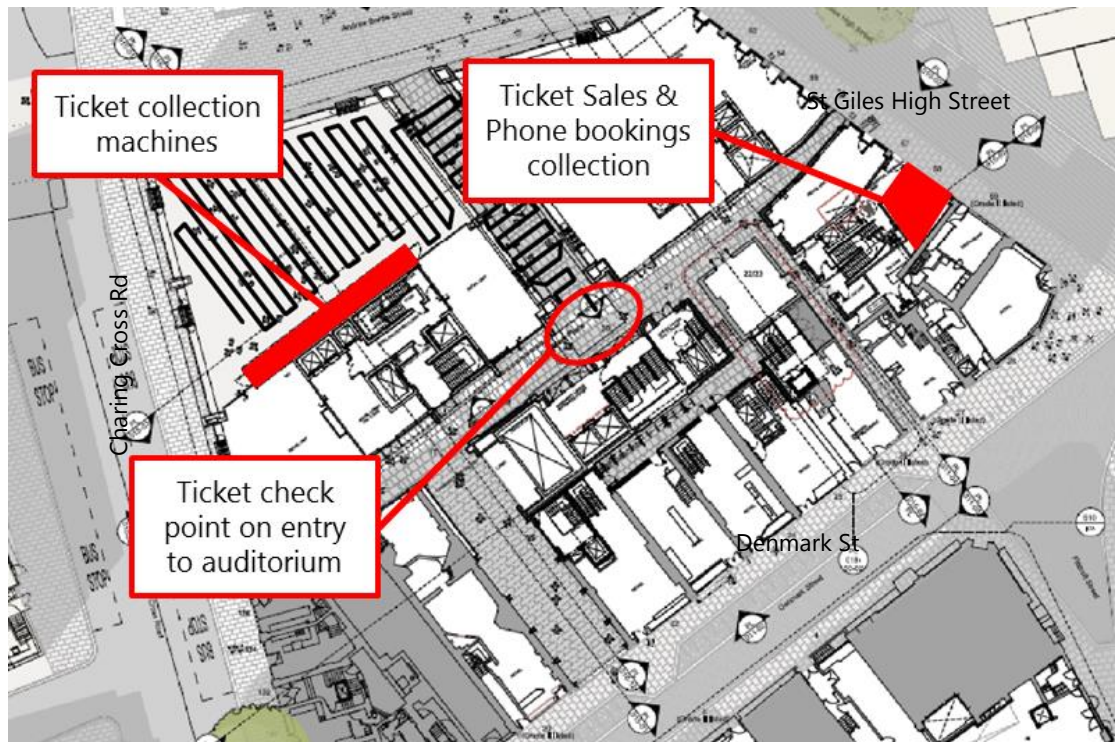


Figure 3: Management Strategy Option One. Ticket Collection/Sales points

These spaces allow the main ticket collection and visitor queue to happen within the Urban Gallery, making way-finding simpler and avoiding any potential impact associated to people queuing on the public footpath.

3.4.1.3 Pedestrian Accumulation

One item to be addressed is the potential accumulation of pedestrians outside the site boundary if the Urban Gallery is closed. Particularly people coming up from the South access of Tottenham Court Road station will be able to see the information on the screens through the building facade and may dwell outside the closed doors to view the content (see Figure 4).

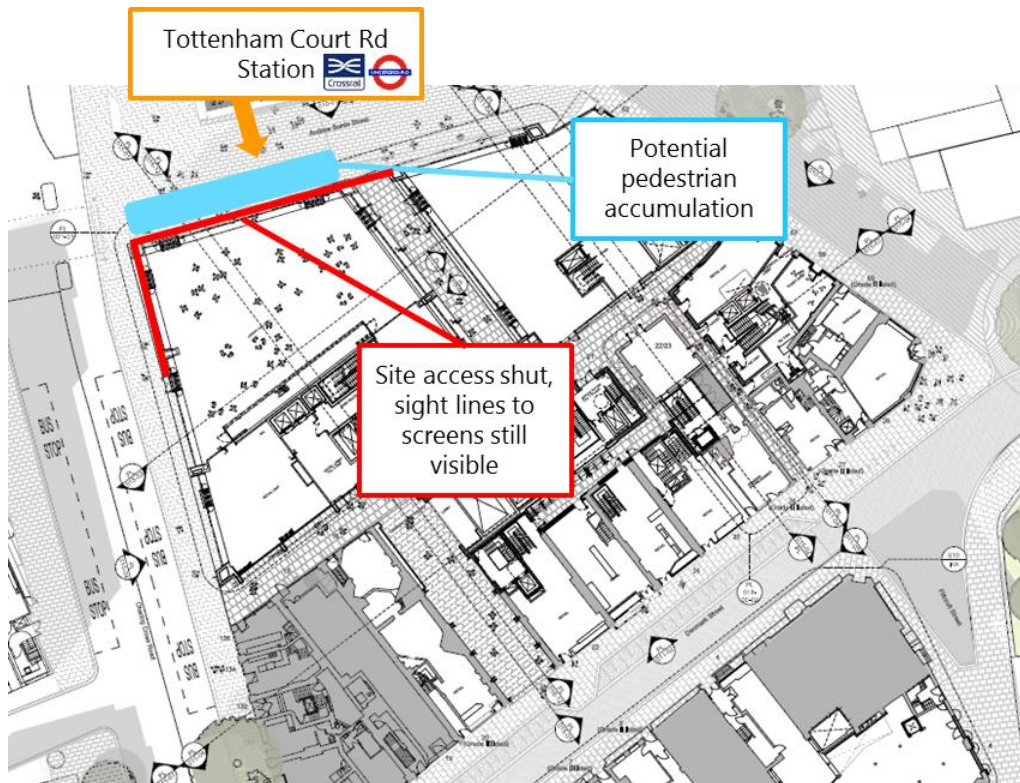


Figure 4: Management Strategy Option One. Potential accumulation of people

Events with high number of attendants (concerts, shows, etc.), which will require use of the Urban Gallery for queuing, are likely to happen during the evening (7.00 pm or later). During this period the main movement of people related with the Underground/Crossrail will be people entering the station (commuters returning home). Therefore, if the elements which will need to be deployed in the Urban Gallery generate attraction over people leaving the Underground station, it would be only over the few leaving the station during this period. This would not have a relevant impact for the pedestrian circulation on the paved areas around the Gallery.

In any case, in order to minimise risks, it is recommended to keep the Urban Gallery open as long as possible during the busy periods to allow these people to enter, or alternatively to provide minimal information for people to interact with during the peak leading up to the queuing period, to discourage people to enter the gallery or stop along the perimeter.

Further to this, if a particular problem is found due to people stopping, providing blinds or dark shutters to prevent the sight line from the Tottenham Court Road station entrance to the screens will be an effective measure. It will avoid/minimise the visibility of the different elements deployed from this location forcing any people who are going to dwell to go away from the station entrance into the main plaza where there is more space available.

3.4.1.4 Egress and Onward Journey

At the conclusion of a maximum attendance event it is anticipated that the majority of attendees will leave the site via the same route by which they arrived. The primary exit point from the Event Gallery will be the stairs connecting the auditorium with the ground level. From there, it is assumed that signage and a number of stewards will be deployed to areas beyond the site boundary to assist in dispersing leavers and moving them off site in the most expedient manner.

In the unexpected event that the transport capacity after a concert is not sufficient to accommodate the number of leavers, or in case of any other contingency that could affect the normal dispersion of the spectators happens, the Urban Gallery can be used as a temporary buffer to manage leavers without generating discomfort for residents, pedestrians or any other stakeholder.

The majority of spectators will proceed directly to Tottenham Court Rd station for the Underground and Crossrail services. The expected demand for 2026 in a weekday peak hour Tottenham Court Road Station accommodates a demand of 38,000 people/hour¹, therefore it is expected that after 10pm (and especially after midnight) the demand would be drastically lower and the egressing public from the Event Gallery would be easily absorbed by Tottenham Court Road Station.

The rest will disperse to the surrounding areas for the multiple bus routes available, or in direction to the nearby commercial and leisure amenities available in the Soho area. Note that the Venue Management Plan secured under the Section 106 legal agreement requires the site to operate in conjunction with TfL to ensure the management of people movement.

The image below shows the routes used by the spectators during egress. Section 4.2 brings more details about the egress scenario.

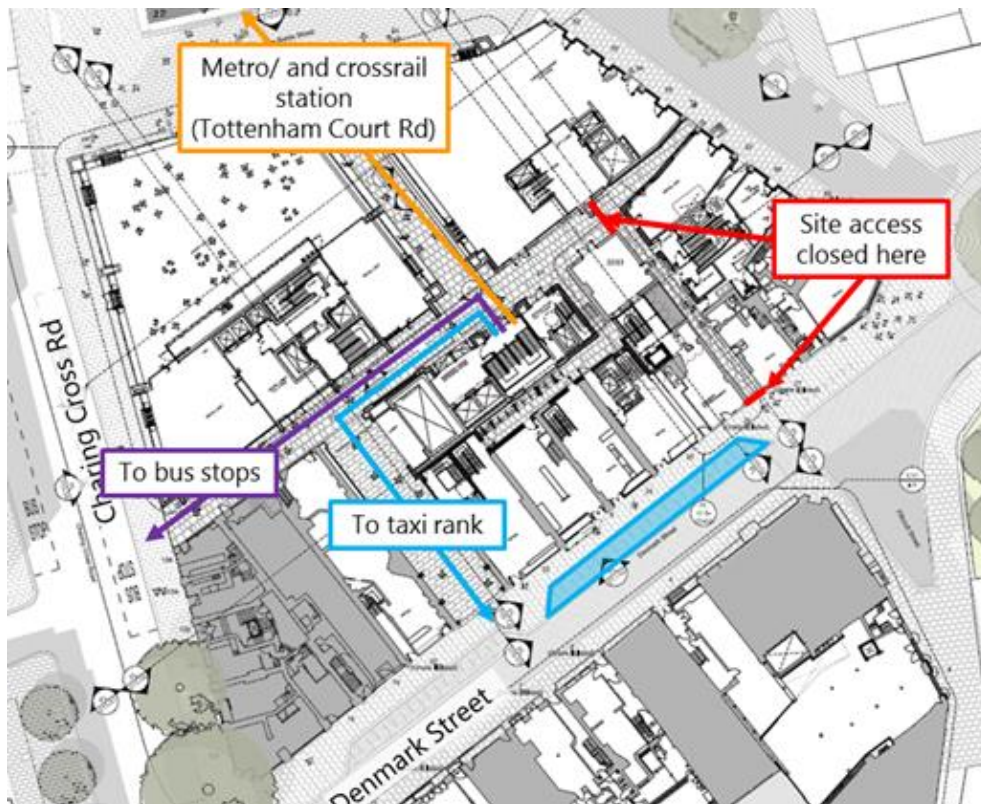


Figure 5: Egress strategy flows.

¹Arup, Impact of Crossrail on visitor numbers in Central London, January 2014, available: www.fitzroviapartnership.com

3.4.2 Option Two – Urban Gallery not available

Option Two is considered when the Urban Gallery is not available as a ticketing hall and queue holding area.

3.4.2.1 Arrival at the Site and Queuing

The second option to be considered in exceptional occasions will utilise some of the access routes between the buildings for queuing. In this option the site perimeter is treated as follows:

- Glazed facade to Charing Cross Road – open
- Glazed facade to Centre Point – open (public access)
- Glazed facade to Food Court alley – closed
- Denmark Place link to St. Giles High Street – closed
- Denmark Place links to Denmark Street - one open (controlled VIP entrance), one closed

Two points of entry to the site are created:

- Public entry via the doors in the Centre Point facade that lead into Food Court alley – the alley will be the public entrance as it allows direct access.
- Controlled VIP entry via the get-in doors from the narrow Denmark Street to Denmark Place alley.

Figure 6 details this optional queue scenario.

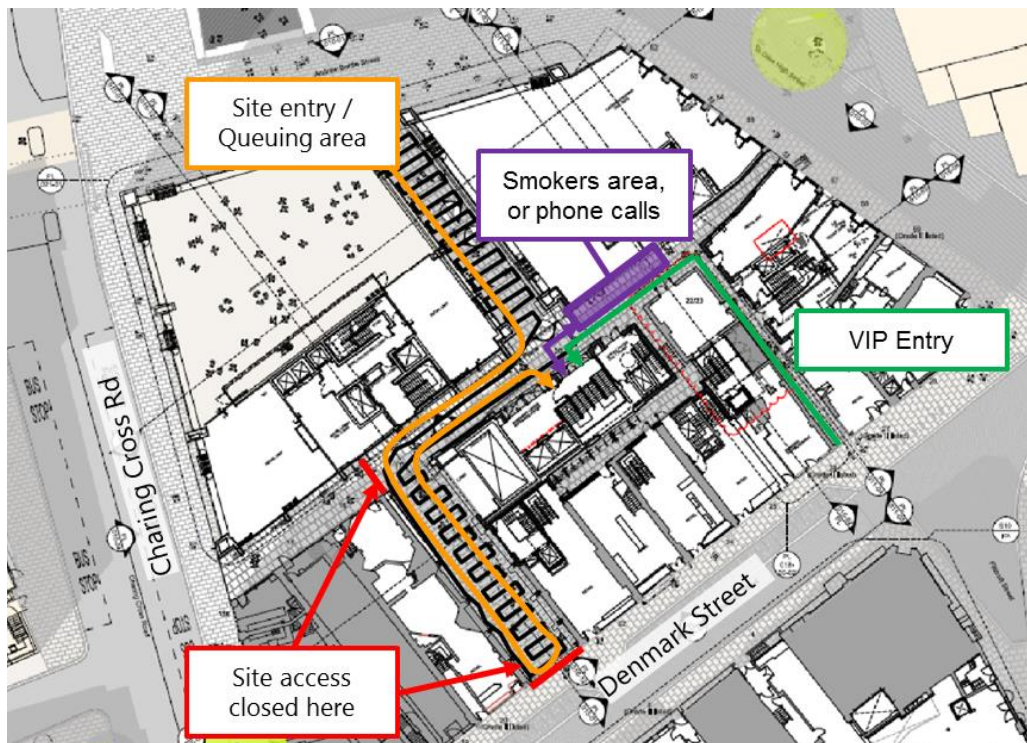


Figure 6: Management Strategy Option Two. Main Flows and Queue layout

3.4.2.2 Ticketing

The image below shows the location of ticket collection and sales points in management strategy option two. It is noted that the main ticket office will be in the same location, but the ticket machines will be re-positioned.

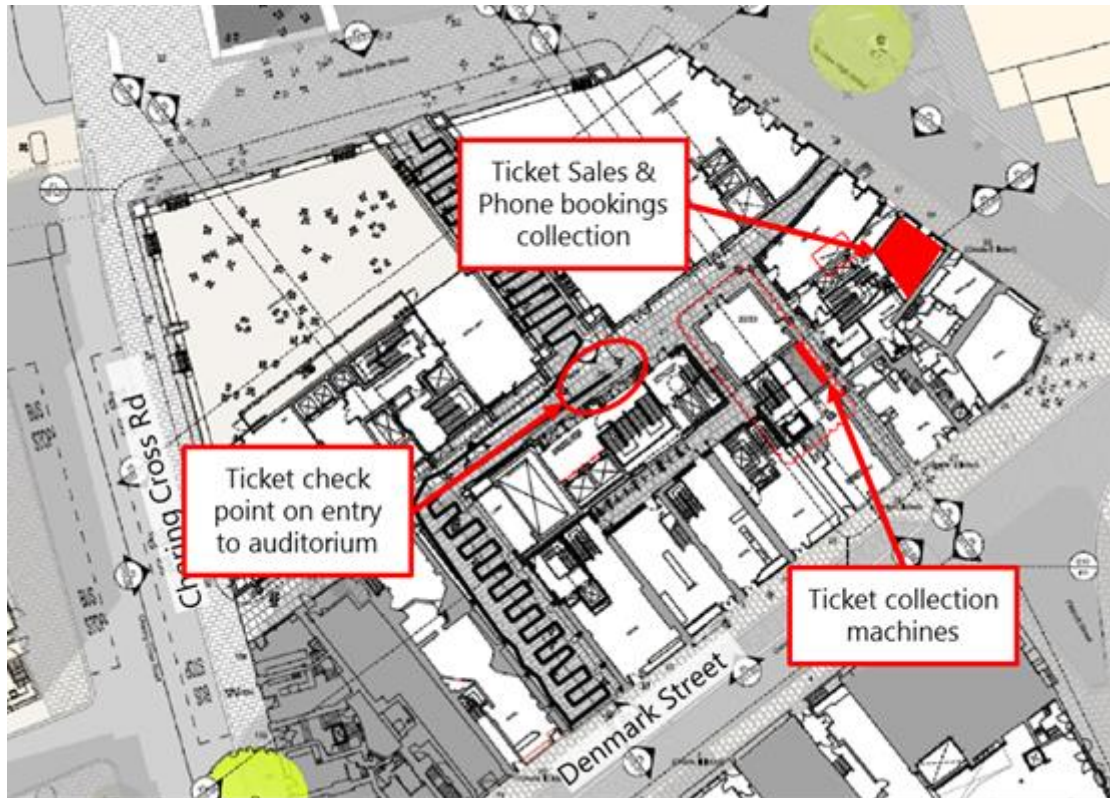


Figure 7: Management Strategy Option Two. Ticket Collection/Sales points

This proposal ensures that there will not be excessive queues on the footpath outside the ticket office on St. Giles High Street, where only on-the-day sales and telephone bookings will be served.

3.4.2.3 Pedestrian Accumulation

In this option the Urban Gallery will either be in use for a private event, or be open to the public realm at the operator's discretion. In either case, pedestrian accumulation should not become an issue.

3.4.2.4 Egress and Onward Journey

At the end of a maximum attendance event, it is anticipated that most of the public will leave the site using the same route by which they arrived.

The egress strategy from the auditorium will be the same as the one considered in Option 1, with the difference that the Urban Gallery will not be available. The egress scenario is detailed in section 4.2.

Due to the more restricted circulation of this scenario, the role played by the stewards directing people to the right locations during the egress process will be more relevant. Therefore, the event organiser is likely to need to deploy a higher number of stewards to facilitate the egress process and leavers dispersion. This is controlled by the Venue Management Plan secured under the Section 106 Legal Agreement.

4 Management scenario – 2,000 Capacity Concert Event

4.1 Auditorium Arrivals

Based on previous experiences from similar venues and considering that:

- a number of people will arrive before the beginning of the event (queuing space required),
- and that a proportion of the attendees will use the leisure offer nearby the site before their arrival to the event concentrating their arrival before the event start (demanding conditions for the access facilities)

The two following assumptions are made:

1. Assuming 50% arrive within the last 10 minutes;
2. Assuming 25% of Auditorium visitors arrive before doors open.

Based on a maximum occupancy of 2,000 people, considering the first assumption the site would see how 1,000 people arrive in the last 10 minutes before the event starts, and once the doors were open. In average this is equivalent to 100 people per minute. This flow would require opening all the access doors shown in Figure 8, and at least 4 ticket checks to avoid queuing. The parameters that will drive the arrival process and queue extent are:

- Flow rate for doors: 40-60 people per minute (CIBSE Guide D)
- Turnstiles capacity: 25-30 people per minute for waist turnstiles with card/detector operation (CIBSE Guide D)

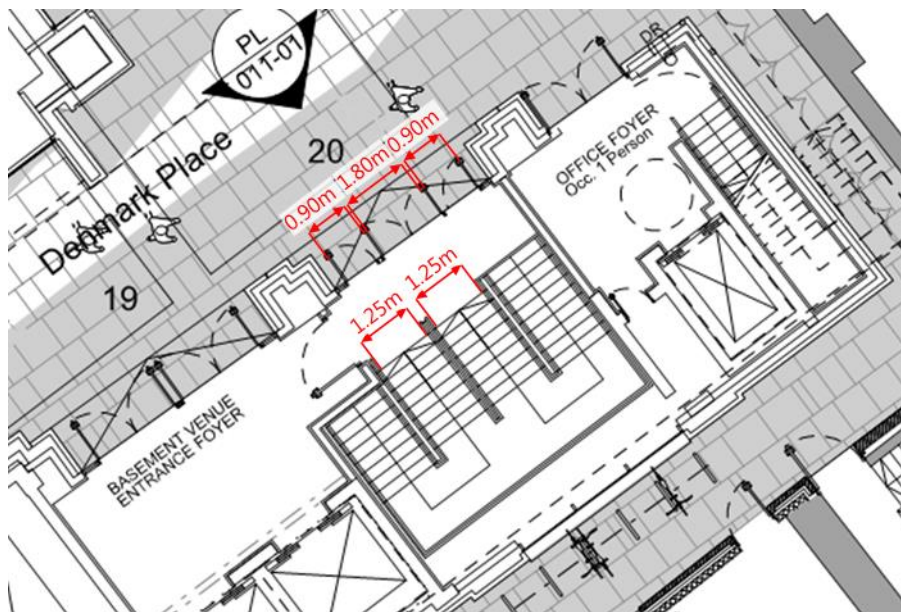


Figure 8: Horizontal and Vertical Circulation to/from the Event Gallery

If small queues arise, these can be managed in the access routes, where there is sufficient space, as demonstrated below. The width of the accesses to the auditorium are the first criteria to evaluate for a comfortable access process. In view of the width of the main staircase which provides access to the event Gallery (2.5 m. –see image above) and assuming a flow rate per metre of 43 people/metre/minute (Fruin Level of Service D for stairways), the main staircase provides a capacity of 107 people/minute, which is sufficient to cater the 100 people/minute demand expected during the last 10 minutes before the event start (1,000 people arriving in the last 10 minutes).

The second criteria to consider is assuming 25% of visitors arrive before the doors open – creating a maximum queue size of 500 people for the 2,000 capacity event. These people would require 140 - 325m² (at 0.28 - 0.65 m² / person), which is the range for Fruin Queuing Level of Service D for waiting spaces. This allows for standing without personal contact with others and forwards movement is possible as a group – which is reflective of queuing for an event. For a better level of service Fruin LoS C (0.65 – 0.93 m²/person) 500 people would require 325 – 500 m². The Urban Gallery is planned to have a useful surface of approx. 525 m² providing sufficient space to accommodate the expected number of people considering both levels of service criteria.

4.1.1 Management Strategy Option One

Considering Management Strategy Option One, there will be 500 people queuing in the Urban Gallery space as shown in Figure 9. Figure 10 shows the density plot for the queue.



Figure 9: Management Strategy Option One – Arrivals: Queue of 500 people

The queue is easily contained within the Urban Gallery, with sufficient room to include information and concession stands, or additional promotional information on further events.

This density plot is shown below at a comfortable Queuing Level of Service C (around 0.75 m²/person). In this image, green is associated with queuing level of service C. The spots of higher density levels (plotted in yellow) are associated to normal density variations between queue sections. As detailed above, up to queuing level of service D would be acceptable for this space and scenario.

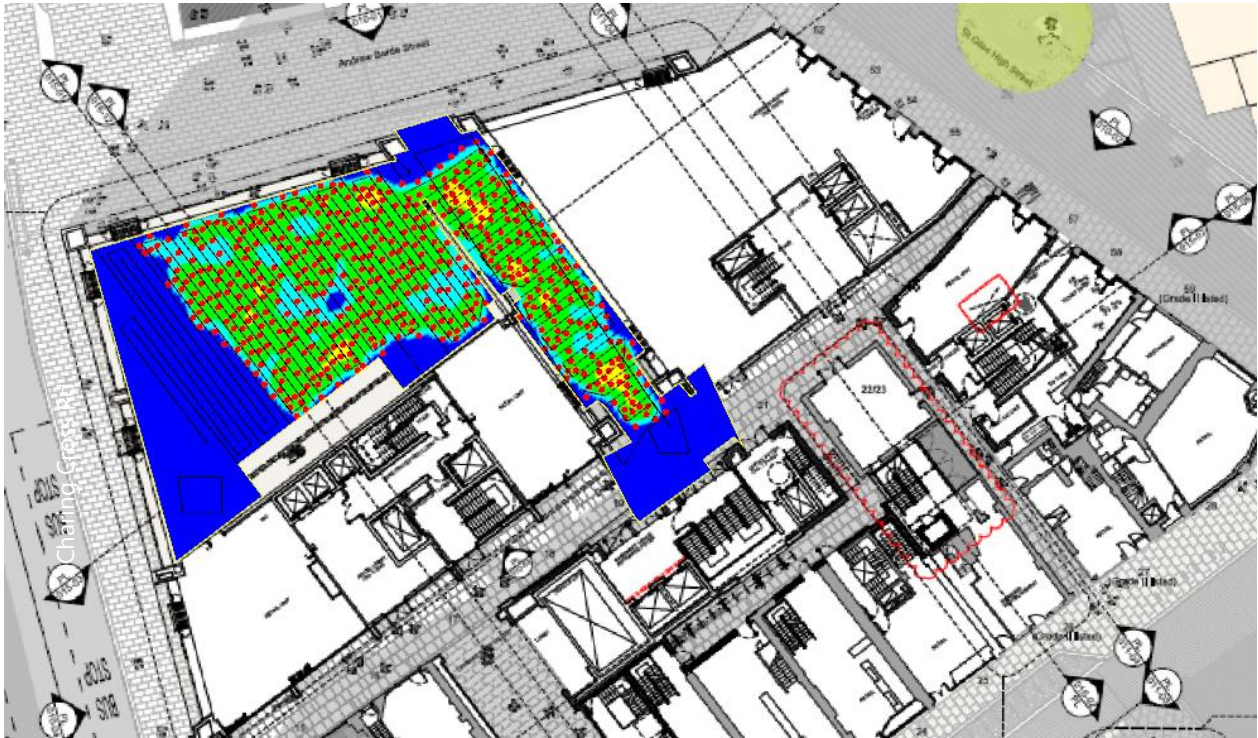


Figure 10: Management Strategy Option One - Arrivals: Queue of 500 people (density)

4.1.1.1 Maximum Queues

In terms of a maximum queue that can be accommodated at high Level of Service D, the Urban Gallery and adjacent corridor have around 525m² of space and can accommodate up to 1,875 people (up to 94% of the audience) considering Queuing Level of Service D.

This indicates that should there be a problem with the event preparations, delaying the entry of people into the venue, there is sufficient space within the urban gallery and adjacent space to hold almost the full 2,000 venue capacity at a comfortable level of service until the venue doors can be opened.

In these situations an even higher density than LoS D would be acceptable as it is an exceptional case, and would only be for a short period of time.

It is noted that overall there is approximately 750m² of space within the site which can be used for spectator holding without causing disruptions on pedestrian network around the site. In cases of longer contingency situations, the management strategy has the possibility to make use of this space to accommodate the additional 125 people who can't be contained within the urban gallery and adjacent corridor considering Queuing Fruin LoS D.

4.1.2 Management Strategy Option Two

Although it is unlikely that the conditions to observe this scenario will happen (a 2,000 people event while the Urban Gallery is in use for a different occasion), Figure 11 shows how it would be possible to accommodate 25% of the audience (500 people) within the premises, considering Management Strategy Option Two.



Figure 11: Management Strategy Option Two – Arrivals: Queue of 500 people

In this scenario, the 500 people queuing would be entering via the Centre Point façade and occupying the new eastern alley from Denmark Street before reaching the Auditorium entrance. The queue would be thus contained within the premises.

Figure 12 shows the density plot for this scenario, where again the queue is predominantly at a comfortable level of service C with some patches presenting LoS D, which would be acceptable for this kind of scenario.

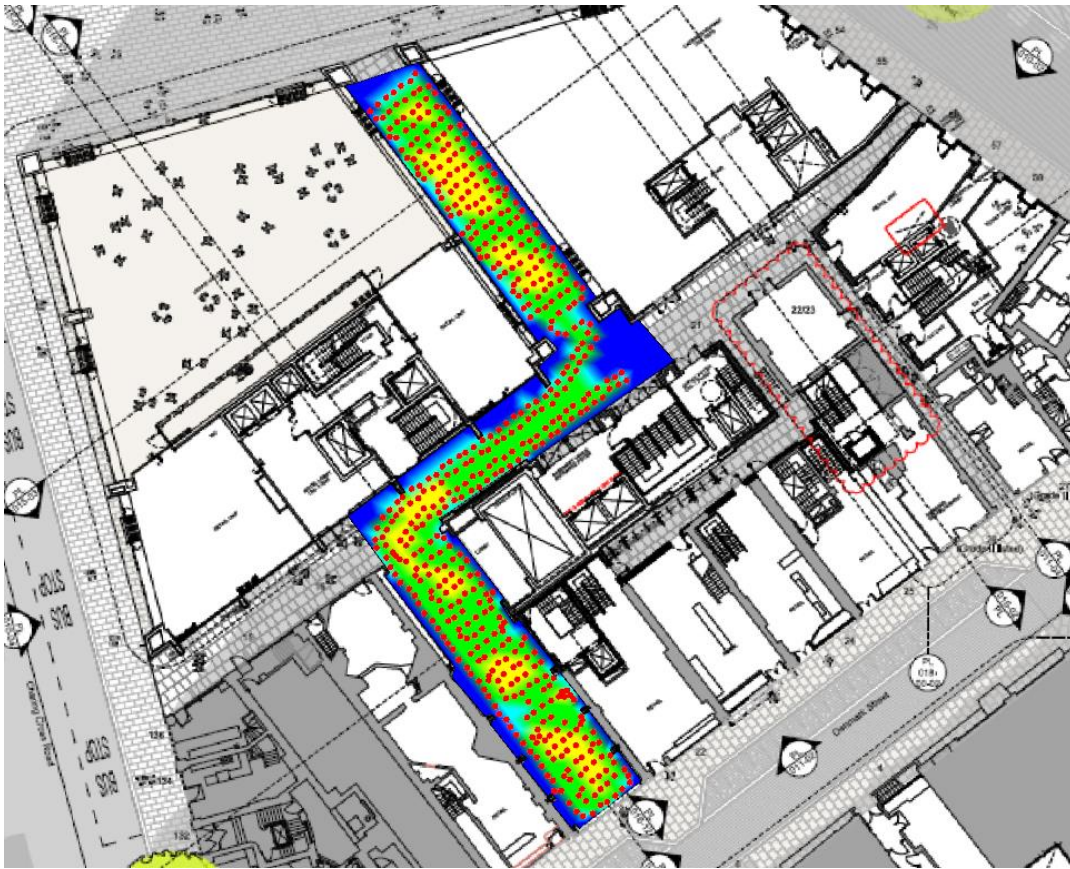


Figure 12: Management Strategy Option Two – Arrivals: Queue of 500 people (density)

4.1.2.1 Maximum Queues

As shown above, a queue of 500 people can be contained within the alleyways at an acceptable level of service.

It is noted that if a larger queue area is needed following a delay to entering the venue, then localised management will need to be employed. Either to allow some people to dwell in the Urban Gallery or to direct people around the local footpaths and into the plaza area. Although this strategy is very unlikely (Urban Gallery in use, together with an event using the whole capacity of the Event Gallery and event delay), in this extreme worst-case scenario the Urban Gallery and plaza do provide options for queue containment without utilising the local footpaths.

From an operational perspective, if an event is occurring where the back-up queuing strategy is to be used, then it is recommended to set the venue up earlier such that the doors can be opened sooner, so that less of the queue will build up outside the venue.

4.2 Auditorium Egress

For a concert egress, it can be assumed that, to reflect a worst-case scenario, all visitors will leave simultaneously at the end of an event. To tie in with licensing requirements, it is likely an event will end at 11.30 pm (Crossrail and the London Underground will still be in operation). For events ending up to 2.00 am, it is assumed that the Central and Northern London Underground Lines will run 24 hours. These services will provide a fast transport service which will attract event leavers to the station, reducing the impact they could generate on the pedestrian network around the site.

The Auditorium Egress process will be supported by a number of stewards in areas within and beyond the site to offer assistance in the dispersion of leavers and moving them off site in the most expedient manner.

The primary exit point from the Event Gallery will be the stairs connecting the auditorium with the ground level, which provide 2.5 meters of width in total. This stairs land at the Entrance Foyer, which is connected with Denmark Place via three doors (two single doors and one double door) which provide a total width of 3.6 meters (see Figure 13 below).

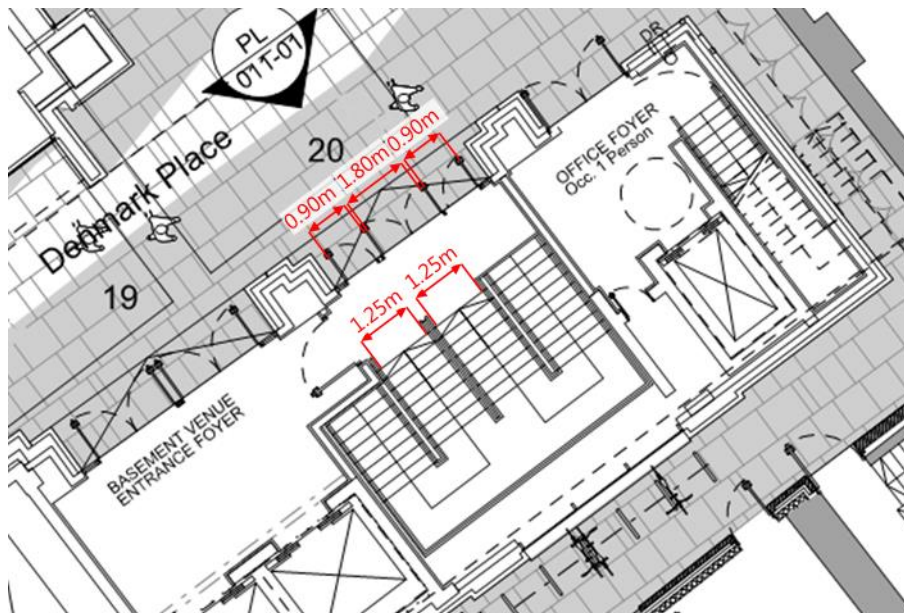


Figure 13: Egress width description

The parameters that will control the egress of the auditorium are the following:

- Stairs width: 2.5 m
- Access doors width: 3.6 m
- Typical flowrate capacity of doors: 40-60 people per minute (CIBSE Guide D)
- Typical flowrate capacity of stairs: 43 people /m/min (Fruin LoS D for stairways)

Considering the egress route configuration and flowrate capacities described, the stairways will be the most limiting element for the departure process. In light of the 2.5 m stairs width provided and a flow rate of 43 people/min/m, the resulting egress capacity is 107 people/min. This means that the departure process from the auditorium will have a duration of 18min 41s.

For a better handling of the departure process, it is assumed that a number of stewards will be redeployed to areas beyond the site boundary to assist in dispersing leavers and moving them off site in the most expedient manner.

The stewards will direct leavers from Denmark Place to:

- Tottenham Court Road Station (London Underground and Crossrail services) located at the North of Event Gallery exit
- The taxi rank located at Denmark Street
- Bus stops located at Charing Cross Road
- Leisure activities in the vicinities (Soho)

Figure 14 below shows the routes that people will follow at the end of the event in order to reach the main transport modes available in the proximities of the development.

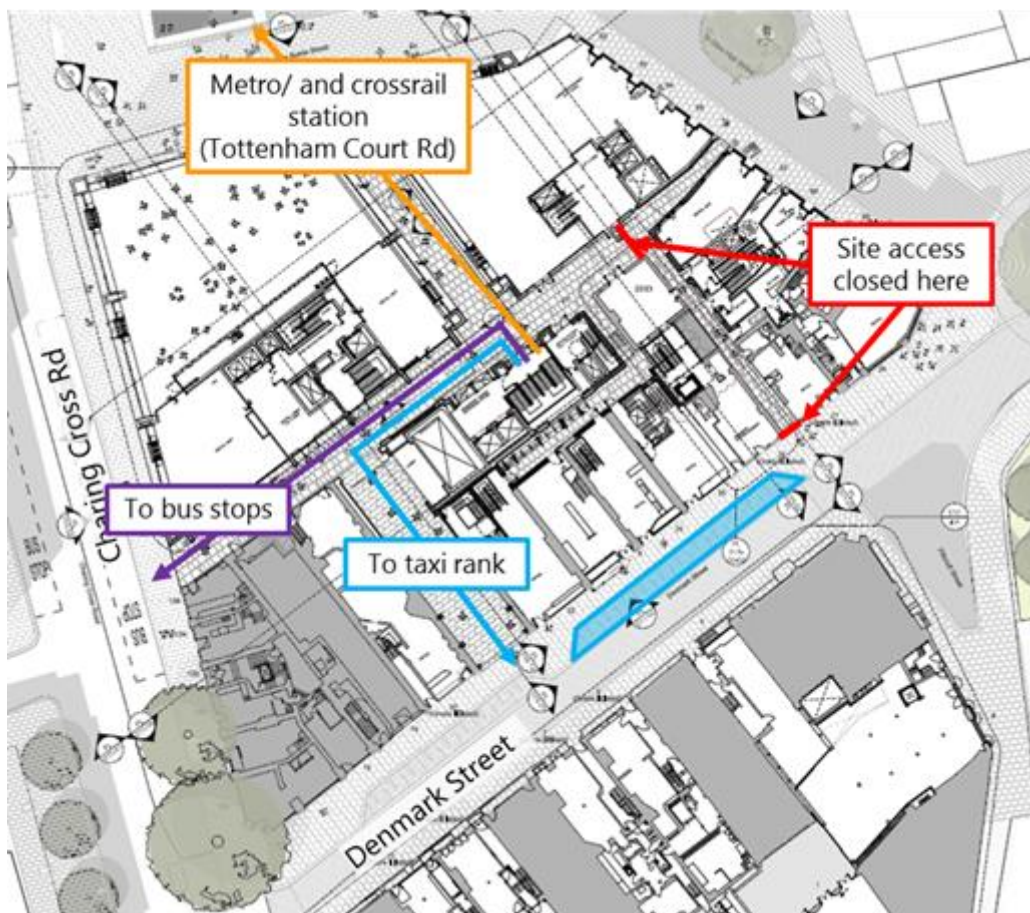


Figure 14: Egress strategy flows.

4.2.1 Tottenham Court Road Station

As anticipated, Tottenham Court Road station will accommodate the highest proportion of people departing from the Event Gallery.

The end of a 2,000 people concert event is expected to happen after 20:00 – 21:00 and up to 0:00 or 2:00, long after the PM peak has passed. According to the Crossrail report commissioned to ARUP by the Fitzrovia Partnership and TfL (Transport for London) in 2014, the expected demand for 2026 in a weekday peak hour Tottenham Court Road Station accommodates a demand of 38,000 people/hour². After 10-11pm, however, the demand would be drastically lower and the number of background people entering the station can be considered negligible.

The South entry of Tottenham Court Road Station is provided with two escalators (one operated upwards, one operated downwards) and 1.75m wide stairs. According to LUL standards, the capacity of each escalator is 100 people/min, while the capacity of the stairs is approximately 49 people/min (bidirectional flow). Considering this, it is estimated that the station can potentially accommodate 100% of the people departing from the Event Gallery having some spare capacity to accommodate the normal demand during late non-peak hours. Considering the total ingress capacity of the escalators and stairs (149 people/min), and comparing it with the egress capacity of the Event Gallery stairs (107 people/min), it is possible to anticipate the spare capacity available for people entering the station (42 people/min).

Note that metro passengers leaving Tottenham Court Rd station can use the upwards escalator without suffering any impact on their journey. It is also noted that there are three lifts available for use, which will provide some additional vertical circulation capacity (estimated 20-30 people per minute for egress).

The Venue Management Plan secured under the Section 106 legal agreement requires the site to operate in conjunction with TfL to ensure the management of crowd movement.

4.2.2 Taxi rank

As described in Figure 14, Denmark Street will be provided with a taxi rank. Attendees who want to depart using the cab service will be directed to this location. The event operators will engage with the taxi service to ensure that there is sufficient number of taxis at the end of the concert event to accommodate the expected demand to facilitate people dispersion.

In case the demand of taxis is very high and the availability is not enough to serve the demand generated, operators will have the possibility to hold people in the corridor between Denmark Place and Denmark Street while they wait for a cab. This strategy is aimed to avoid people accumulations on the pavement beside the taxi rank and any negative impact on other pedestrians circulation.

The analysis of the capacity of the corridor between Denmark Place and Denmark Street, considering a people density equivalent to Queuing Los C, shows that it is possible to accommodate approximately 200 people considering queuing LoS C, or up to 450 people at queuing LoS D (10% or 22.5% of the Event Gallery audience). Based on BH experience analysing similar events/venues, it is expected that the demand of taxis will be lower than these percentages, therefore the capacity of this corridor and of the taxi rank should not be saturated.

4.2.3 City bus service

Although there is a number of bus stops in the proximities of St. Giles Circus development, the closest bus stops are in Charing Cross Road. Attendees who will leave the St Giles area using the city bus service will reach these stops walking along Denmark Place to the West. It is not anticipated a preferred utilisation of any line. The number of attendees using the bus is expected to be reduced, and in any case, below the typical patterns associated to the peak hours with high presences of commuters.

²Arup, Impact of Crossrail on visitor numbers in Central London, January 2014, available: www.fitzroviapartnership.com

Considering that the number of bus passenger falls drastically out of the commuting hours, in case of high demand, almost the full capacity of each bus will be available for the Event Gallery spectators. This will help clearing people from the area quickly.

4.2.4 Surrounding amenities

When an event ends in the evening, leisure activities available in Soho, Covent Garden and Fitzrovia will attract a proportion of the Event Gallery spectators. People choosing to leave the area walking will relieve the pressure that can be generated over the different transport modes described above. Maps will be available to facilitate the dispersion process.

4.2.5 Egress Management - Option 1

As it is described above, the transport alternatives which will be available and the offer of services in the area will be sufficient to accommodate the transport demand of 2,000 people departing from the Event Gallery. In case of contingency situations such as unexpected reduction of the capacity of the Underground or buses, the event management team has the possibility of reducing the speed of the departure process from the Event Gallery, in order to adapt it to the transport capacity available. Alternatively, instead of holding people within the Event Gallery, the Urban Gallery can be used as buffer. In case of need, people leaving the Event Gallery can be directed to the Urban Gallery, and from there to manage their departure.

Although the alternative of managing the departure only from the Event Gallery is less management demanding, it has the inconvenience of not segregating between users of different transport services. On the other hand, managing people departure in two stages allows to segregate people (departure from the Event Gallery as first stage and from the Urban Gallery as second stage): for example, in case the bus service is running without disruptions but the Underground service is having issues, bus users will be directed to the bus service after leaving the Event Gallery, whereas Underground users will be driven to the Urban Gallery to wait until the the service is available without impacting other pedestrians.

4.2.6 Egress Management - Option 2

The egress routes for Option 1 and 2 are the same. The main difference between the two options is the availability of the Urban Gallery. In case the Urban Gallery is in use (as per management strategy Option 2), there will not be the possibility of using this space as a buffer for the departure process. Instead, although its capacity is lower, there is still the possibility to accommodate people within the corridor between the Event Gallery access and the Urban Gallery. This corridor has a surface of approximately 130m², therefore it can accommodate approximately up to 450 people.

In case of not suffering disruptions in any transport services, their capacity will be sufficient to accommodate people egressing from the Event Gallery without impacting other pedestrians. In case there are disruptions in any of the services, event organisers will need to decide between managing the departure from the Event Gallery or use any of the buffers described for a particular group of people.

5 Security

The St Giles Circus Event Gallery will be a unique site attracting a wide range of audiences and located in part of central London, which is increasing busy due to the proximity of transport facilities and large building developments. Where people gather there is always an increased risk of crime, including terrorism and anti-social behaviour and that respect the Event Gallery will be no different to any other location to which the public have access.

A security strategy should be established which focuses on the three principal issues of protection of life, prevention of crime and protection of assets. Each of these factors should support the ultimate objective of providing an environment which is relaxed and free from the fear of crime.

Protection of the visitors and staff is of paramount importance, which include the prevention of harm should always take precedence over other issues. Prevention of crime through the deployment of trained and competent security staff supported by technology including CCTV and physical features is vital to the visitors experience and the reputation of the venue. Finally, but of importance to the Gallery operators and event holders is the protection of their assets particularly those which are critical to the operation of their businesses.

Whilst there will be a common strand for the security arrangements across the range of events that will be held within the venue the diverse nature of the events will require specific arrangements in accordance with the demographics of the attendees, the type of event and the attendance of VIPs. For instance a music event is likely to attract reasonably high numbers of young people for a specified period, whilst an art exhibition will attract a greater age range over a longer period of the day. The sale of intoxicated drink could have an impact on behaviour and possibly criminal activity and as such requires careful monitoring by the bar and security staff to reduce the likelihood of incidents. Close co-operation between the operators and the event organisers is of significant importance to the safety of those attending and the site itself.

Achieving a balance between the delivery of an overt security presence and a welcoming environment should be the objective. A high profile presence of security staff at the entrances and within the Urban Gallery when it is being used a space for queuing will be the key factors in such a strategy. Such a presence will act as deterrence as well as a capability to observe the queues and those entering the galleries. Moreover, those queuing within the Urban Gallery may be a risk of opportunist criminals who will take advantage of the relaxed environment. Inside the galleries and connecting spaces security staff should be strategically located to provide reassurance those attending events. To ensure appropriate levels of security strict protocols should be drawn up with event organisers.

London, in common with other capital cities is continuously under the threat of terrorist attacks. Therefore measures to reduce the risk as well as the impact must be taken. Both the Urban and Event Galleries when occupied by the public will be classed as 'crowded places' within the definition of the United Kingdom Government's counter terrorism strategy.

Whilst allowing the Galleries to be attractive and accessible integration of protective security measures against acts of terrorism should be considered for the design including the following:

- Blast resistance within both the structure and facade
- Space available for the searching and screening personal property
- Appropriate levels of internal and external CCTV coverage

- Provision of routes from which occupiers of the Plaza may escape to a safe area in the event of a terrorist incident
- Safe spaces and routes for VIPs

Security staff should be both competent and trained in the implementation of plans for emergencies. As a part of their training and enhanced awareness it recommended that each member of security team undertakes Project Griffin training, a program operated by the Metropolitan Police Service. This will enhance their levels of vigilance helping to combat both crime and terrorism.

In assessing the proposals it is important to note that the applicant is already required under the Section 106 Legal Agreement to submit a detailed Servicing Management Plan and Venue Management Plan for the site in order to ensure all of these matters are dealt with to the satisfaction of the Council. Additionally a specific 'Event Management Plan' must be prepared and made available on site for inspection for any event which is to take place within the Gallery space. Consideration to the impact upon the local community, especially in the immediate neighbourhood has to be taken into account in order that the reputation of the Event Gallery is not damaged. An approach to this issue should include all aspects including deliveries, queuing, large numbers exiting events and late night activities in the vicinity of the entrances. It is recommended that plans are drawn up to ensure that deliveries do not cause congestion both in relation to vehicles and pedestrians. After exiting the Galleries people should be discouraged from gathering on the footways so as to prevent obstruction and possible danger to other pedestrians. The Event Gallery managers should maintain close liaison with both business and residential community groups.

In the case of safety it is important that the crowds are managed at the conclusion of the larger events so as to avoid excess number on the footways or endangering access to the Tottenham Court Road Underground Station. A system of staggered egress from the site may be achieved by use of a variety of routes or the provision of post-event activities which will create short-term interesting allowing the effect of a sudden egress to be reduced. At all events it will be necessary to monitor movement from a central point and implement measures to ensure the safety of those leaving the site.

Maintenance of the security of the Event Gallery will be critical to both the continuity of the operations and its reputation. Therefore the a wide approach to security strategy must be taken to ensure that there is a safe and secure environment at all times.

Appendix A Authors

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Shrikant leads Smart Space - BuroHappold's specialist service helping architects, planners, regulators, operators and security advisors to predict the interaction of people within spatial layouts and processes, with a view to optimising the design and operation of buildings and urban spaces.

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Roberto is a People Flow Consultant within the Smart Space team at BuroHappold, with a particular interest in using crowd and process modelling to optimise spaces for a wide range of uses and industries. Having previously worked in logistics, Roberto has a deep knowledge of discrete process simulation, and people flow simulation.

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