

Concert Scenario – Assumptions Data Book

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Introduction

This Data Book compiles the demand assumptions used in the production of a spectator demand forecast for a Concert scenario at Tottenham Hotspur FC's expanded stadium. Only assumptions that differ from the Football scenarios (150824-Data Book 1.1) are stated in this report. A more complete description of the forecasting approach, and assumptions regarding Walk, Taxi, Coach, Car, Bus and Shuttle Bus distribution of approach are also found in the Football Data Book:

- Pedestrian Network: Section 2
- Pre/Post-Event Locations: Section 3
- Cycle: Section 4
- Walk: Section 5
- Rail: Section 6
- Car: Section 7
- Bus: Section 8
- Coach: Section 9
- Taxi: Section 10
- Shuttle Bus: Section 11

Attendee Demand

2.1. High Level Assumptions

2.1.1. Venue Capacity

The assumed gross capacity of the venue in concert mode is approximately 45,000. The base case forecasts are on the basis of all 45,000 attendees being present and who arrive and leave the stadium on foot (and are therefore included within the demand forecast).

An additional concert scenario for 55,000 attendees has also been produced.

2.1.2. Start and Finish Times

Concerts are assumed to take place during the weekend, and the scenario that has been assessed is a Saturday evening.

Concert arrival and departure profile vary considerably, depending upon the act(s), audience profile and concert schedule. To assess a 'worst-case' profile, we have considered an evening Concert where the main act is not supported. The scenario has the following timing:

- Main Act on stage Ĩ 20:00
- Finish Time Ĩ 22:00

2.1.3. Arrival and Departure profiles

Attendees will arrive at the stadium over the course of an extended time period in advance of the event. For the purposes of forecasting demand it is assumed that:

- All attendees are in the stadium by the time of Main Act takes to the stage, and
- The stadium arrival profile is applied irrespective of mode of transport used, and whether or not attendees are visiting other locations in the local area prior to the event.

The demand forecasts are generated in 15-minute time periods.

Note that the arrival profiles reflect the time at which attendees enter the venue footprint, and does not indicate the time at which attendees take their seat/position.

Table 1.1 Assumed Attendee Arrival Profiles at the Stadium

Minutes before kick-off	Proportion of spectators arriving - Saturday Evening
0-15 minutes before kick-off	2.5%
15-30 minutes before kick-off	10.0%
30-45 minutes before kick-off	12.5%
45-60 minutes before kick-off	12.5%
60-75 minutes before kick-off	12.5%
75-90 minutes before kick-off	12.5%
90-105 minutes before kick-off	12.5%
105-120 minutes before kick-off	7.5%
120-135 minutes before kick-off	7.5%
135-150 minutes before kick-off	10.0%

Gates are assumed to open two and a half hours before the Main Act takes to the stage. The assumed arrival profile has been derived from a review of arrival profiles recorded for concerts taking place at other London venues, which suggest a relatively flat arrival profile, but also recognise that some attendees will arrive for gates opening in order to get the best positions nearest the stage.

The assumed departure profile is set out below. Again, this reflects the times at which attendees exit the stadium and onto the public highway. It does not refer to the times at which attendees leave their seats/position. This has been generated by the team, and takes into account some early departures, which tend to be a key feature of Concerts.

Table 1.2 Assumed Attendee Departure Profiles from the Stadium

Minutes after End of Concert	Proportion of spectators leaving - Saturday Evening
15-30 minutes before end	5%
0-15 minutes before end	15%
0-15 minutes after end	65%
15-30 minutes after end	8%
30-45 minutes after end	8%
45-60 minutes after end	0%

2.1.4. Distribution of Entrances and Exits

Stadium drawings indicated that there will be four points of access to the stadium concourse, one at each corner. The ticketing operation leads to the assumption that demand will be distributed between the four access points on both arrival and departure, with circulation occurring outside the stadium. The assumptions shown in Table 1.3 below are applied to attendees travelling by every mode (i.e. attendees do NOT access the stadium via the gateline nearest to their point of arrival in the local area).

Table 1.3 Assumed Distribution of Demand between Stadium Entrances and Exits

Stadium Entry / Exit	Proportion of spectators using each Entrance ON ARRIVAL	Proportion of spectators using each Entrance ON DEPARTURE
North East	18.2%	18.2%
South East	32.2%	32.2%
South West	32.2%	32.2%
North West	17.8%	17.8%

2.1.5. Time in the Local Area Pre-event or Post-event

30% of the people attending the event will arrive early to spend time in the local area, and 15% will stay behind after the event before travelling home.

To identify how long attendees spend at their pre-event destinations before heading to the stadium, we have derived length of stay figures from the attendee surveys undertaken during March 2008. This included data on how long in advance of their arrival at the stadium attendees entered the local area and enabled calculation of a range of lengths of stay in the local area.

It is recognised that this survey relates to a Football match but has been used as a proxy in this scenario. Details of time spent, location and relative popularity of pre- and post- match destination can be found in the Football Data Book (*150824-Data Book 1.1*)

2.2. Attendee Types

For the purposes of generating demand forecasts, the approach adopted is to subdivide the total population into different groups to reflect the likely factors that affect their behaviour. The numbers of each type of attendee are determined based on the assumptions below, as is the pedestrian activity they generate. This then enables all types of attendee behaviour to be represented, and aggregated to give total demand forecasts.

2.2.1. Attendee Types on Arrival

The modal split assumptions are derived from the Tim Spencer & Co's assumptions document - *NFL and Concert versus PL at NDP* (24th June 2015) - and are used to calculate the number of each type of attendee on arrival.

The assumed modal split of attendees on arrival is as shown in Table 1.4 below.

The various types of attendees upon arrival are described below, with a summary of the proportion of each attendee type resulting from the application of the assumptions described above.

Table 1.4 Attendee Types on Arrival, and Assumed Proportions of Different Attendee Types (Arrival, Saturday Evening)

Description		Proportion of Total
Mode	In time for Kick-off or Early?	
Cycle	Direct to stadium	1%
Cycle	Arrives in local area early	0%
Walk	Direct to stadium	2%
Walk	Arrives in local area early	1%
Tube to Seven Sisters, then Walk	Direct to stadium	10%
Tube to Seven Sisters, then Walk	Arrives in local area early	4%
Tube to Seven Sisters, then Bus	Direct to stadium	5%
Tube to Seven Sisters, then Bus	Arrives in local area early	2%

Rail to White Hart Lane	Direct to stadium	17%
Rail to White Hart Lane	Arrives in local area early	7%
Rail to Northumberland Park	Direct to stadium	12%
Rail to Northumberland Park	Arrives in local area early	5%
Car Driver/Passenger	Direct to stadium	7%
Car Driver/Passenger	Arrives in local area early	3%
Bus	Direct to stadium	2%
Bus	Arrives in local area early	1%
Coach	Direct to stadium	1%
Coach	Arrives in local area early	0%
Taxi	Direct to stadium	2%
Taxi	Arrives in local area early	1%
Alexandra Palace Shuttle Bus	Direct to stadium	1%
Alexandra Palace Shuttle Bus	Arrives in local area early	3%
Tottenham Hale Shuttle Bus	Direct to stadium	3%
Tottenham Hale Shuttle Bus	Arrives in local area early	1%
Tube to Tottenham Hale, then Walk	Direct to stadium	6%
Tube to Tottenham Hale, then Walk	Arrives in local area early	3%

Additional assumptions have been generated in relation to the direction of travel of attendees arriving by rail. This is important when assessing pedestrian movements within stations. Table 1.5 sets out the assumed division of demand upon arrival at each station, based upon the *Updated Rail Assumptions – All Event Types* (4th June 2015).

Table 1.5 Assumed Proportions of Attendee Arrivals by Rail from each Direction

Station	Split of Demand - Saturday Evening	
	From Central London (incl. those interchanging at TH and SVS)	From North
White Hart Lane NR	66.7%	33.3%
Northumberland Park NR	64.7%	35.3%

* 33% of attendees alighting from NB services at White Hart Lane are assumed to have interchanged from the Victoria Line at Seven Sisters. 29% of attendees alighting from NB services at Northumberland Park are assumed to have interchanged from the Victoria Line at Tottenham Hale.

At Seven Sisters, there are several options available to attendees on how they continue their journey to the stadium having arrived on the Victoria Line. They can interchange on to bus services or National Rail services to White Hart Lane, or they

can walk to the stadium. The split of direction of travel on the Victoria Line differs depending upon their final mode.

- Of those who interchange from the Victoria Line to the Bus, 100% arrive from Central London.
- Of those who interchange from the Victoria Line to National Rail, 100% arrive from Central London.
- Of those who arrive on the Victoria Line and walk to the stadium, 90% arrive from Central London, 10% from the North.

Similar options exist at Tottenham Hale. The following assumptions have been applied with regard to direction of travel for Victoria Line alighters at Tottenham Hale:

- Of those who interchange from the Victoria Line to National Rail, 100% arrive from Central London.
- Of those who arrive on the Victoria Line and walk to the stadium, 10% arrive from Central London, 90% from the North.
- Of those who interchange to the Shuttle Bus, 80% come from the Victoria Line (40% from the South and 40% from the North) and 20% come from Central London via National Rail.

2.2.2. Attendee Types on Departure

The assumed modal split of Home fans on arrival is as shown in Table 1.6 below.

The various types of attendees upon departure are described below, also showing the proportions of each type resulting from the above assumptions.

Table 1.6 Attendee Types on Departure and Assumed Proportions of Different Attendee Types ĩ 45k scenario (Departure, Saturday Evening)

Description		Proportion of Total
Mode?	In time for Kick-off or Early?	
Cycle	Leave directly	0.9%
Cycle	Stays in local area post-match	0.2%
Walk	Leave directly	2.1%
Walk	Stays in local area post-match	0.4%
Walk to Seven Sisters Tube	Leave directly	12.8%
Walk to Seven Sisters Tube	Stays in local area post-match	2.3%
Bus to Seven Sisters Tube	Leave directly	2.6%
Bus to Seven Sisters Tube	Stays in local area post-match	0.5%
Rail from White Hart Lane	Leave directly	21.3%
Rail from White Hart Lane	Stays in local area post-match	3.8%
Rail from Northumberland Park	Leave directly	15.3%
Rail from Northumberland Park	Stays in local area post-match	2.7%
Car Driver/Passenger	Leave directly	8.5%
Car Driver/Passenger	Stays in local area post-match	1.5%

Bus	Leave directly	2.6%
Bus	Stays in local area post-match	0.5%
Coach	Leave directly	1.3%
Coach	Stays in local area post-match	0.2%
Taxi	Leave directly	1.7%
Taxi	Stays in local area post-match	0.3%
Alexandra Palace Shuttle Bus	Leave directly	3%
Alexandra Palace Shuttle Bus	Stays in local area post-match	0%
Tottenham Hale Shuttle Bus	Leave directly	2.6%
Tottenham Hale Shuttle Bus	Stays in local area post-match	0.5%
Walk to Tottenham Hale Tube	Leave directly	11.1%
Walk to Tottenham Hale Tube	Stays in local area post-match	2.0%

An additional concert scenario for 55,000 attendees has been produced.

Whilst arrival assumptions remain the same as for the 45,000 attendees scenario, as there would be increased pressure on the rail network, the Mode split for departure is expected to change in favour of an increased capacity shuttle bus service. This is presented in the table 1.7 below:

Table 1.7 Attendee Types on Departure and Assumed Proportions of Different Attendee Types i 55k scenario (Departure, Saturday Evening)

Description		Proportion of Total
Mode?	In time for Kick-off or Early?	
Cycle	Leave directly	0.9%
Cycle	Stays in local area post-match	0.2%
Walk	Leave directly	2.1%
Walk	Stays in local area post-match	0.4%
Walk to Seven Sisters Tube	Leave directly	12.8%
Walk to Seven Sisters Tube	Stays in local area post-match	2.3%
Bus to Seven Sisters Tube	Leave directly	2.6%
Bus to Seven Sisters Tube	Stays in local area post-match	0.5%
Rail from White Hart Lane	Leave directly	17.9%
Rail from White Hart Lane	Stays in local area post-match	3.2%
Rail from Northumberland Park	Leave directly	15.3%
Rail from Northumberland Park	Stays in local area post-match	2.7%
Car Driver/Passenger	Leave directly	8.5%
Car Driver/Passenger	Stays in local area post-match	1.5%
Bus	Leave directly	2.6%
Bus	Stays in local area post-match	0.5%
Coach	Leave directly	1.3%
Coach	Stays in local area post-match	0.2%
Taxi	Leave directly	1.7%
Taxi	Stays in local area post-match	0.3%
Alexandra Palace Shuttle Bus	Leave directly	5.1%
Alexandra Palace Shuttle Bus	Stays in local area post-match	0.9%
Tottenham Hale Shuttle Bus	Leave directly	2.6%
Tottenham Hale Shuttle Bus	Stays in local area post-match	0.5%
Walk to Tottenham Hale Tube	Leave directly	11.9%
Walk to Tottenham Hale Tube	Stays in local area post-match	2.1%

Assumptions have been generated in relation to the direction of travel of attendees departing by rail to enable the assessment of pedestrian movements within stations. This is taken from the Indicative Transport Strategy (September 2008), which was derived based upon the findings of surveys and observations made during events in March 2008.

Table 1.12 Assumed Proportions of Attendee Departures by Rail from each

Station	Split of Demand - Saturday Evening	
	To Central London (incl. those interchanging at TH and SVS)	To North
White Hart Lane NR	68.0%	32.0%
Northumberland Park NR	66.7%	33.3%

Direction

* For the 45,000 attendees scenario, 40% of attendees boarding the SB services at White Hart Lane are assumed to interchange onto the Victoria Line at Seven Sisters. 33% of attendees boarding the SB services at Northumberland Park are assumed to interchange onto the Victoria Line at Tottenham Hale.

For the 55,000 attendees scenario, 33% of attendees boarding the SB services at White Hart Lane are assumed to interchange onto the Victoria Line at Seven Sisters. 28% of attendees boarding the SB services at Northumberland Park are assumed to interchange onto the Victoria Line at Tottenham Hale.

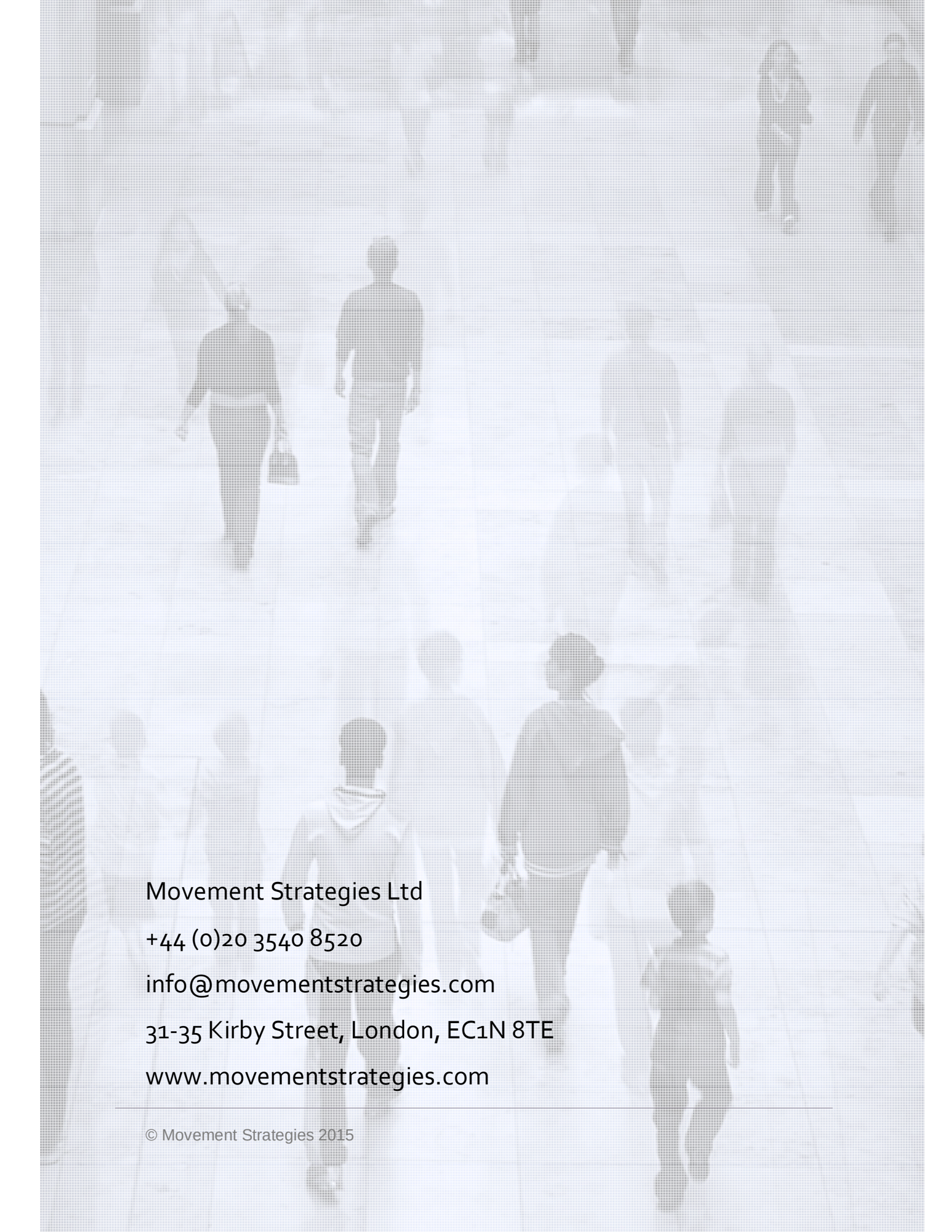
At Seven Sisters, there are several options available to attendees on how they reach the Victoria Line from the Stadium during the Post-event period. They can interchange from bus services or National Rail services from White Hart Lane, or they can walk directly to the station. The split of direction of travel on the Victoria Line differs depending upon their initial travel mode.

- Of those who interchange from the Bus to the Victoria Line, 100% travel towards Central London.
- Of those who interchange from National Rail to the Victoria Line, 100% travel towards Central London.
- Of those who walk from the Stadium and board the Victoria Line, 100% travel towards Central London.

Similar options exist at Tottenham Hale. The following assumptions have been applied with regard to direction of travel for Victoria Line boarders at Tottenham Hale:

- Of those who interchange from National Rail to the Victoria Line, 35% travel towards Central London, 65% travel to the North.
- Of those who walk from the Stadium and board the Victoria Line, 73% travel towards Central London, 27% travel to the North.
- Of those who interchange from the Shuttle Bus, 80% go to the Victoria Line (40% to the South and 40% to the North) and 20% use National Rail (10% go North and 10% go South)





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