

THFC New Stadium ï NFL scenario Rail Capacity Analysis

Assessment of Rail Capacity

- ✧ This document contains the outcome of an assessment of National Rail service and station capacity at Northumberland Park and White Hart Lane in the light of anticipated demand associated with an expanded Tottenham Hotspur Stadium.
- ✧ This scenario considers the spectator movements associated with an NFL American Football match held at the new Stadium on a Sunday afternoon.
- ✧ Pre-match and Post-match day scenarios are considered:
 - 14:30 kick off
 - 18:00 final whistle
- ✧ Spectator demand forecasts have been generated by Tim Spencer & Co.
- ✧ Assumptions used to generate the forecasts of Spectator demand at Transport Nodes will be listed in a *Data Book* (150821-563THTA-NFL *Data Book* - 0.2).
- ✧ Spreadsheet models of demand and capacity have been constructed to assess the performance of different parts of the network and infrastructure, and the following pages summarise the performance throughout the pre- and post-match periods.
- ✧ Background loading on services and at the stations is included in the assessment. 8% growth has been applied to observed background figures on the White Hart Lane route and 22% growth applied to the Northumberland Park route to represent conditions in 2021. This is identical to the Football scenario presented in 2014.
- ✧ Station capacities are calculated according to SPSG *Special Events* guidance, recognising that the Network Rail guidance rates are consistent for all infrastructure types other than escalators.

Assessment of Rail Capacity

⚠ For assessment of capacity on the Northumberland Park route, the following assumptions are applied:

- ï Current Matchday Timetable of a 16.00 Kick-off Sunday Spurs game, plus uplift to 4tph on the Stratford-Stansted services to account for the STAR service* which will be implemented in 2018
- ï All trains operated as 8-car
- ï Existing Station Layout
- ï Assumed Standardised Capacity of 734, 718, 636ppl/train dependent on rolling stock**
- ï Background Demand patterns from 2013 Abellio
 - ⚠ 22% growth applied to reflect 2021
- ï Weekend background demand derived using relative volumes recorded at different times in previous surveys (2008) applied to 2013 midweek data
- ï Platform Capacity Limited to 700 at Northumberland Park
 - ⚠ Queues held outside the station when this number reached on either Platform

⚠ For assessment of capacity on the White Hart Lane route, the following assumptions are applied:

- ï Current Matchday Timetable of a 16.00 Kick-off Sunday Spurs game, plus uplift to 4tph on the Liverpool Street-Enfield/Chestnut service when not provided (E-mail from Tim Neale, 2nd May 2014)
- ï *Note that TfL Rail have suggested that there may be more flexible timetabling options than those presented within previous matchday timetables – offering more capacity, more timely.*
- ï All trains operated as 8-car
- ï Existing Station Layouts
- ï Assumed Standardised Capacity of 859ppl/train**
- ï Background Demand patterns from 2013 Abellio
 - ⚠ 8% growth applied for WHL to reflect 2021 (Railplan 7)
- ï Weekend background demand derived using relative volumes recorded at different times in previous surveys (2008) applied to 2013 midweek data
- ï Platform Capacity Limited to 859 at White Hart Lane
 - ⚠ Queues held outside the station when this number reached

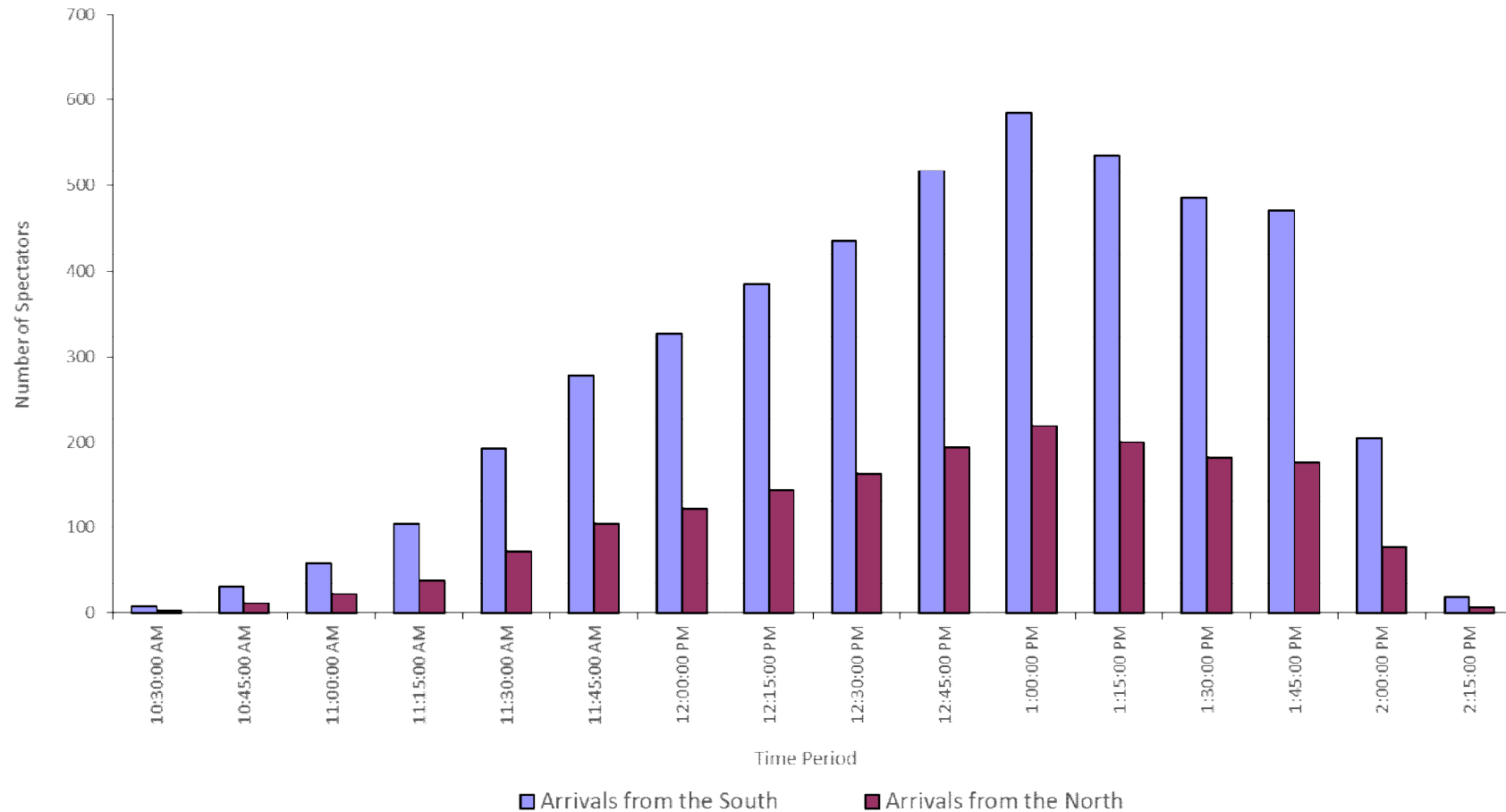
* Assumed to be 700 capacity to match the platform capacity

** Uses LU Event Planning Methodology (E-mail from Tim Neale, 3rd June 2014)

Sunday NFL Scenario
Northumberland Park Station

Northumberland Park - Arrivals

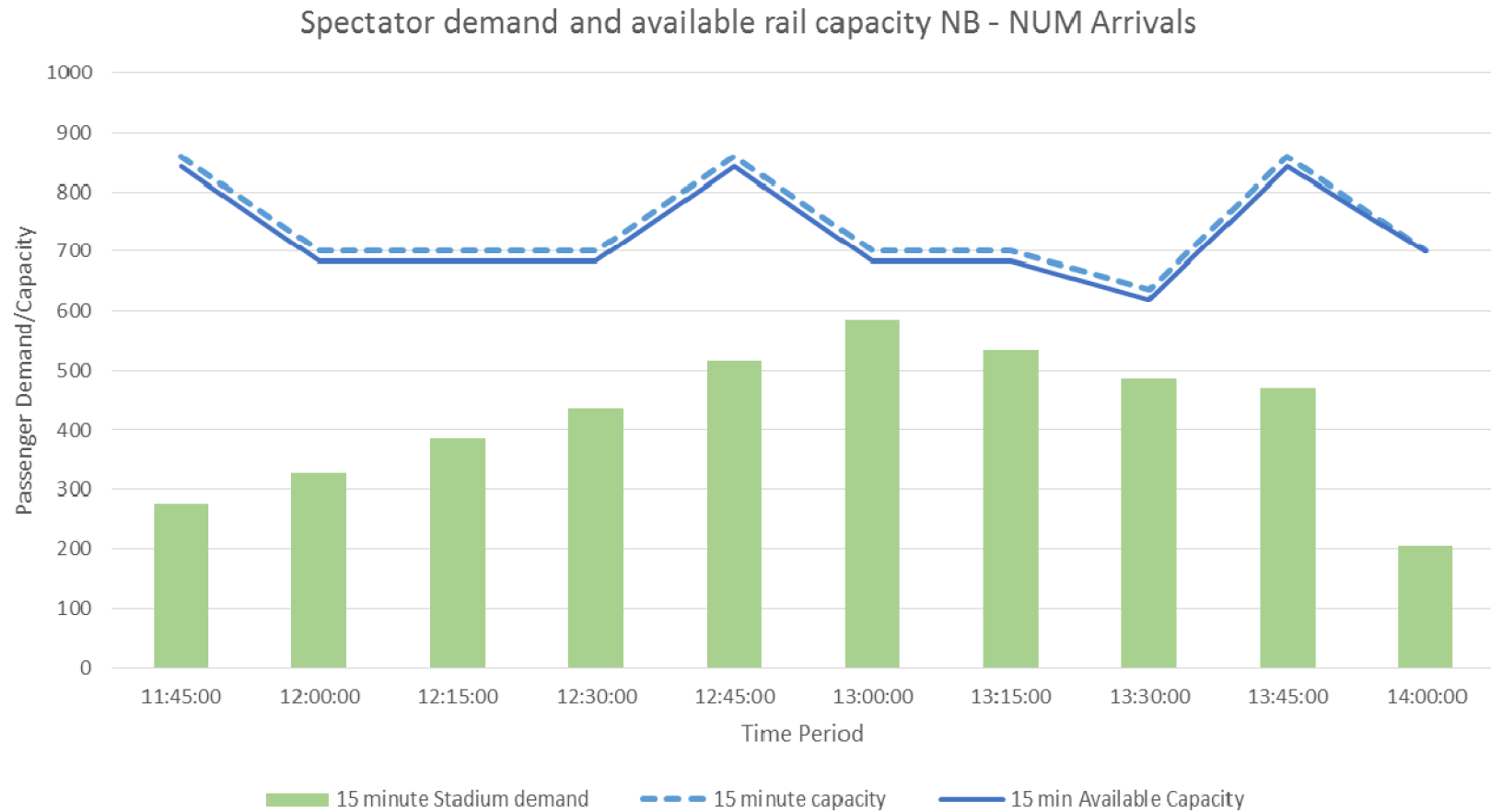
Spectator Arrivals at Northumberland Park during the Pre-Match Period



Å 6,375 spectators in total

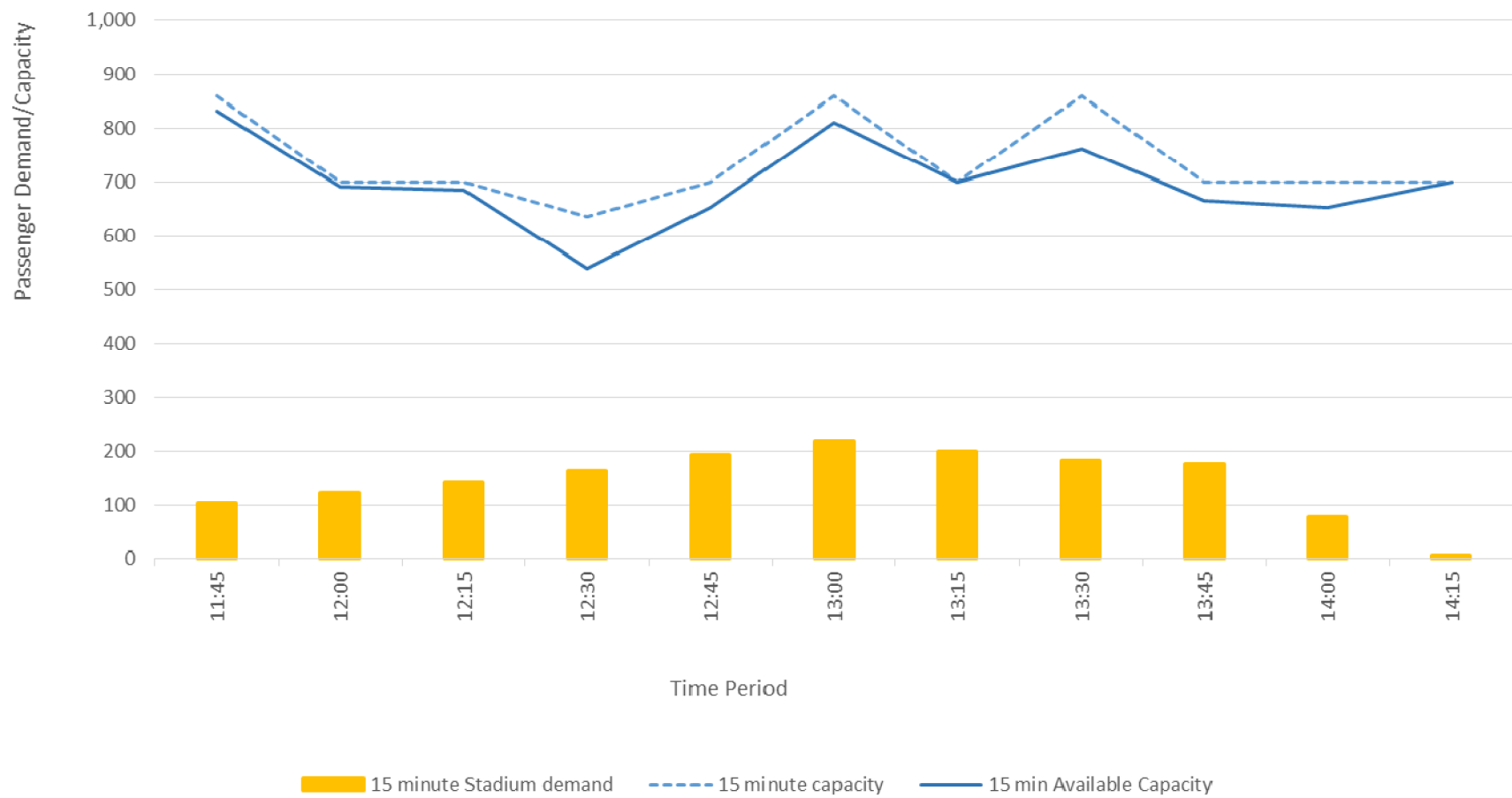
- 4,636 from the South (36% of whom interchange from VL at Tottenham Hale)
- 1,739 from the North

Pre-Match: Northumberland Park Station



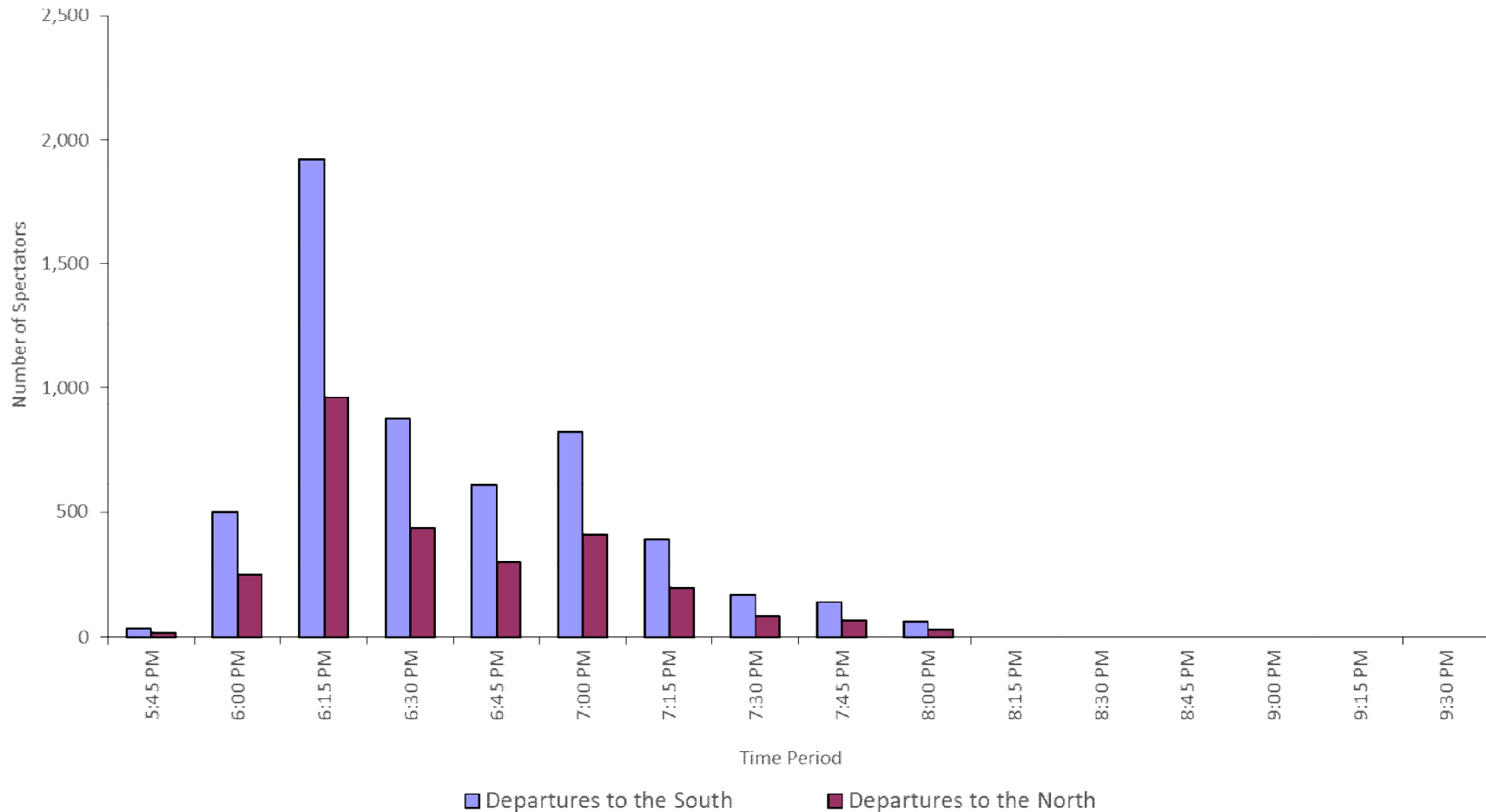
Pre-Match: Northumberland Park Station

Spectator Demand and Available Rail Capacity SB - NUM Arrivals



Northumberland Park - Departures

Spectator Departures from Northumberland Park during the Post-Event Period



8,296 spectators in total

- 5,531 to South (41% of whom interchange to VL at Tottenham Hale)
- 2,765 to North

Post-Match: Northumberland Park Station

⚠ Northbound Platform

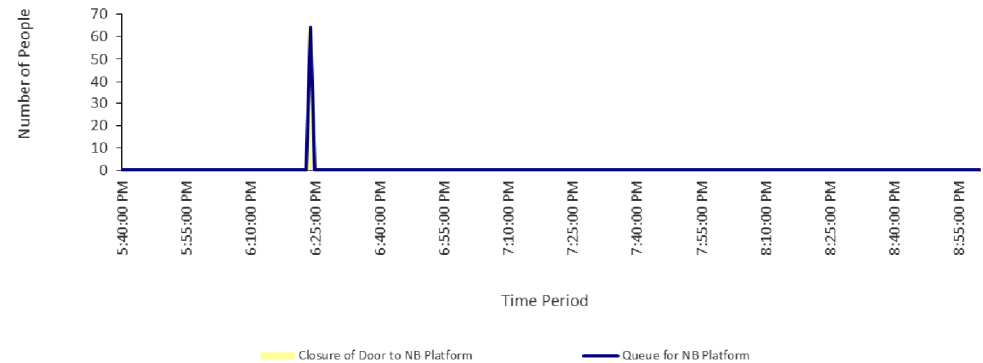
- ⓘ The queuing anticipated for northbound services from NP station is negligible

⚠ Maximum queue length: **64 people** with a maximum delay of **16 minutes**

- ⓘ 89% people will wait for less than 10 minutes
- ⓘ 10% people will wait for 11-15 minutes
- ⓘ 1% people will wait for 16-20 minutes

⚠ Queue duration: **1 minute**

Extent of Queuing outside Northumberland Park Station during the Post-Match if Platform Capacity Capped at 700 persons



⚠ Southbound Platform

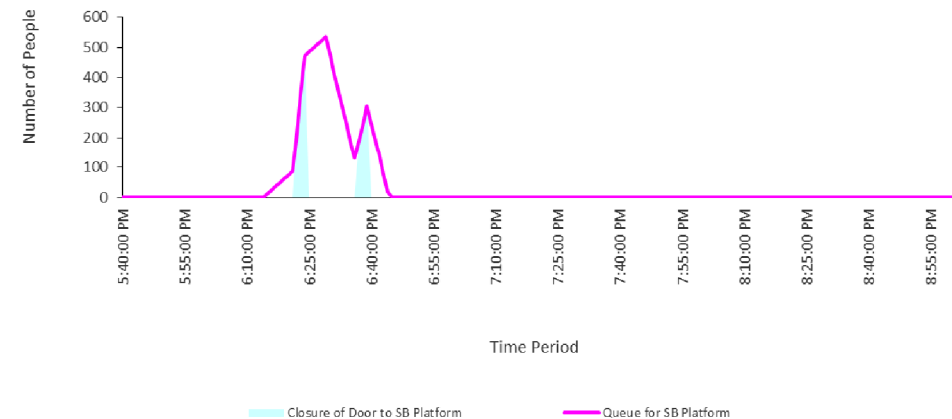
- ⓘ Some queues are anticipated to form outside the station for access to the northbound platform. It is assumed that the capacity of the platform is capped at 700 people, as this broadly matches the capacity per train.

⚠ Maximum queue length: **534 people** with a maximum delay of **14 minutes**

- ⓘ 86% people will wait for less than 10 minutes
- ⓘ 14% people will wait for 11-15 minutes

⚠ Queue duration: **30 minutes**

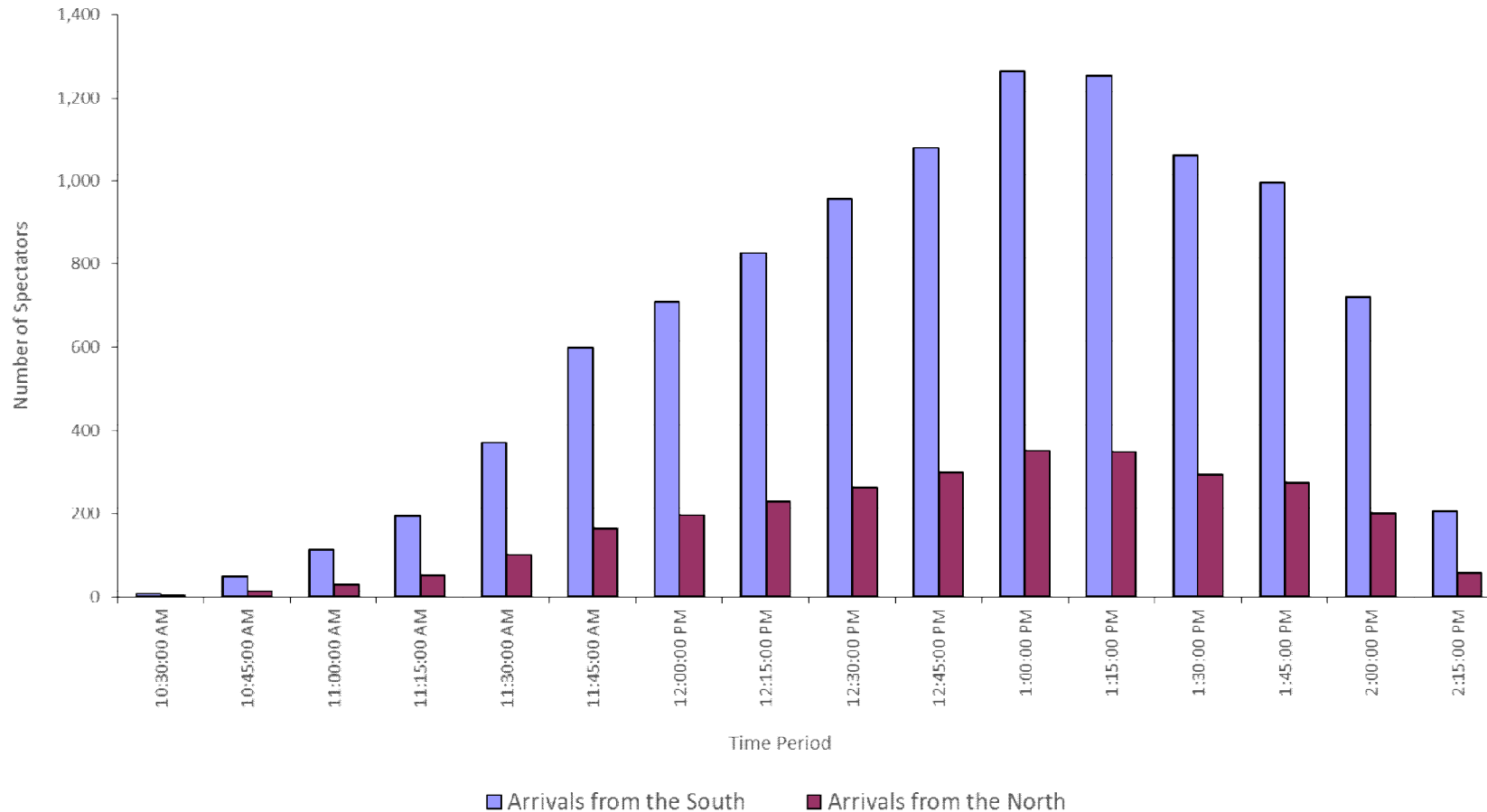
Extent of Queuing outside Northumberland Park Station during the Post-Match if Southbound Platform Capacity Capped at 700 persons



Sunday NFL Scenario
White Hart Lane Station

White Hart Lane - Arrivals

Spectator Arrivals at White Hart Lane during the Pre-Match Period

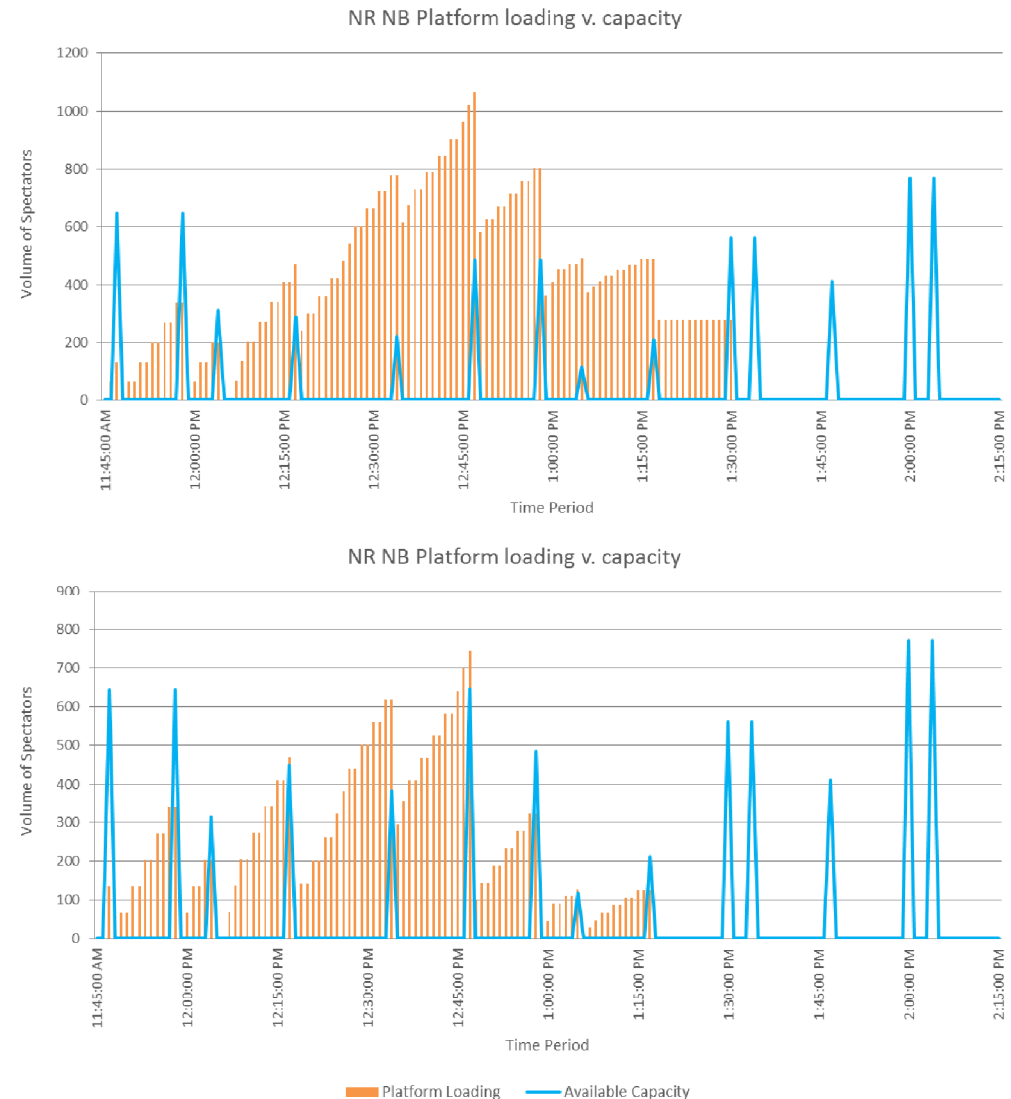


Å 13,329 spectators in total

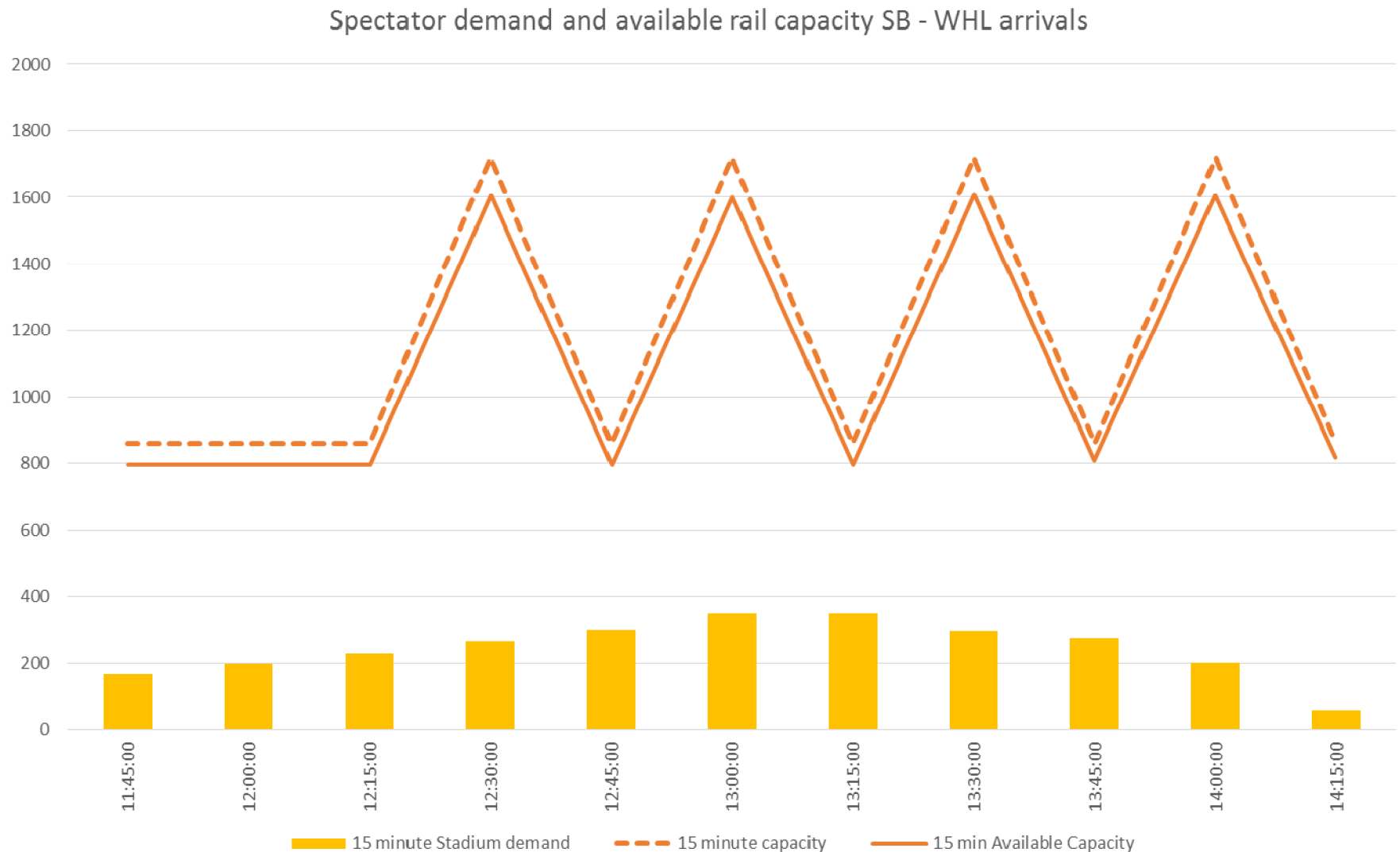
- 10,431 from the South (35% of whom interchange from VL at Seven Sisters)
- 2,898 from the North

Pre-Match: Services to White Hart Lane

- Å Given that NB trains arriving at Seven Sisters will already be partially loaded with background travellers and Spectators travelling to White Hart Lane from Central London, there will be capacity constraints between 12:15 and 13:30.
- Å As there is a finite train capacity, a potential issue for consideration is the occupancy of the NB National Rail platform during this period.
- Å In the first scenario, where train capacity is assumed to be limited to 859 pax/train (TfL advice that service capacity at 85% of total for events), this implies some trains will have no space for boarders at Seven Sisters. This would result in Platform loadings in excess of 1,000 people, with associated risks to safety and management.
- Å Higher loadings on these services are currently observed, and as discussed at the TfL pre-application meeting in July 2014, it is reasonable to assume that the full capacity will be available during peak times.
- Å In the second scenario, 1,020 pax/train is assumed for three train services, which suggests that the peak loading of the platform would be between 700 and 800 passengers.
- Å Some passengers waiting on this platform would have to wait for one service to pass before being able to board.
- Å NB: TfL have anecdotally stated that loadings of circa 700 pax per 4-car train have been observed during peak commuting hours on other London Overground lines (i.e. using this rolling stock).

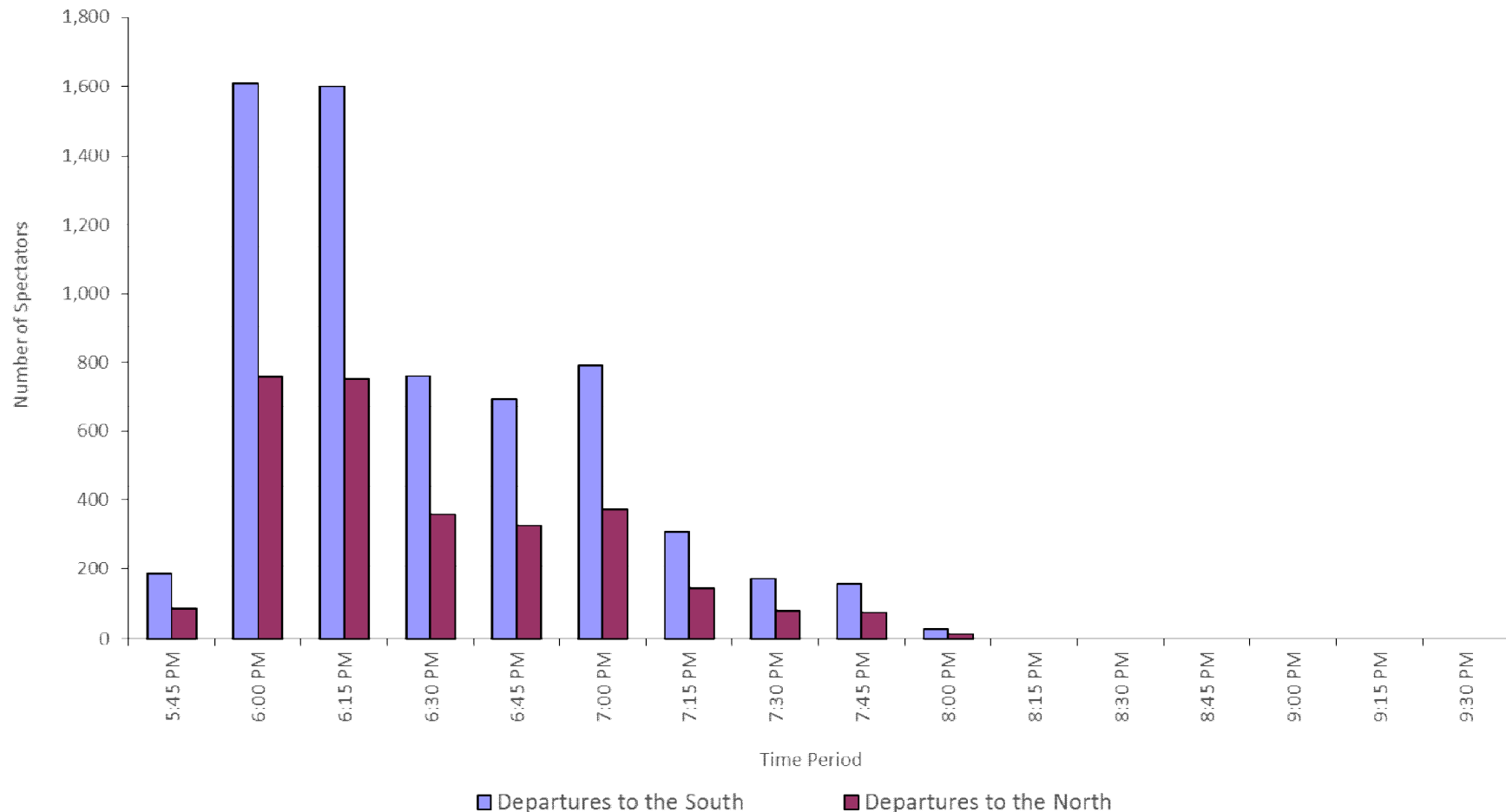


Pre-Match: Services to White Hart Lane



White Hart Lane - Departures

Spectator Departures from White Hart Lane during the Post-Event Period

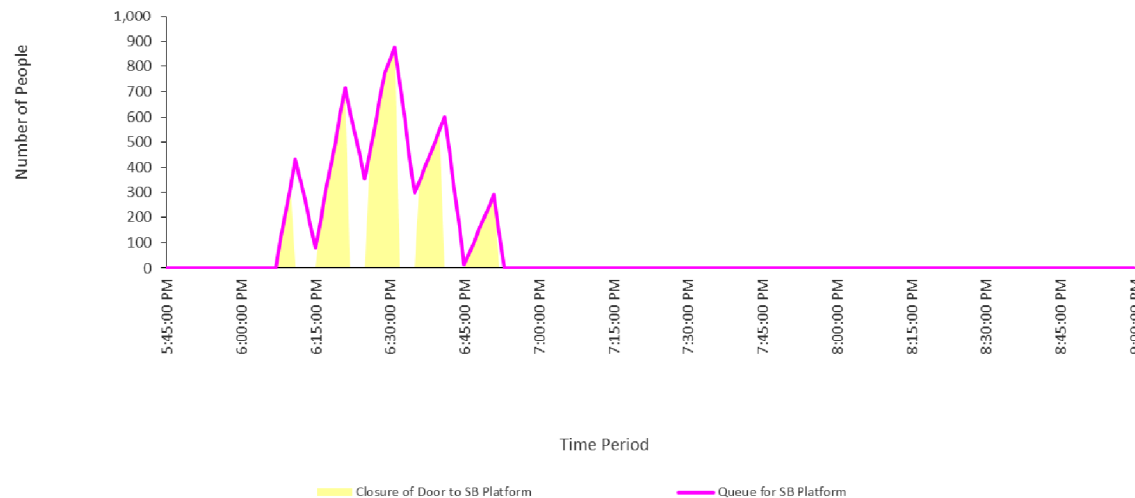


À 9,272 spectators in total

- 6,305 to South (37% of whom interchange from VL at Seven Sisters)
- 2,967 to North

Post-Match: White Hart Lane Station

Extent of Queuing outside White Hart Lane Station during the Post-Match if Southbound Platform Capacity Capped at 859 persons



Southbound Platform

- Queues are anticipated to form outside the station for access to the southbound platform. It is assumed that the capacity of the platform is capped at 859 people, as this matches the capacity per train (assuming that new Class 378 rolling stock is in use).

Maximum queue length: **877 people** with maximum delay of **16 minutes**

- 84% of people will wait for less than 10 minutes
- 15% of people will wait for 11-15 minutes
- 1% of people will wait for 16-20 minutes

Queue duration: **45 minutes**

Northbound Platform

- No queues anticipated as demand never exceeds capacity.

info@movementstrategies.com

+44 (0)20 3540 8520

© Movement Strategies 2014

