THE LONDON BOROUGH OF HARINGEY (HIGH ROAD WEST PHASE A) COMPULSORY PURCHASE ORDER 2023

DOCUMENT CD 9.14

WITNESS 7: BECKY HAYWARD, BURO HAPPOLD

APPENDICES TO OVERVIEW PROOF OF EVIDENCE

CONTENTS:

BURO HAPPOLD

October 2023

Summary of work carried out by Buro Happold Crowd Flow team on HRW Masterplan

Date	Milestone	Note
29th Nov 2021	LBH / THFC Meeting • Richard Serra	Presentation of initial high-level analysis of crowd flow through End State Masterplan based on information available at that time.
30th Nov 2021	RFI to THFC	Request for recent data related to post-match egress from Tottenham Stadium and CAD drawing of queue arrangement in front of WHLS, which is not received to date.
2nd and 5th Dec 2021	Site Observation	Site visits made with the aim to understand crowd management (queue layouts, steward positions, strategy for letting crowd into the station etc.) and flows in current situation.
2nd Feb 2022	LBH Presentation • Bob McIver • Maurice Richards	Presentation of detailed analysis of End State, including Legion modelling of typical premier league match and sensitivity analysis of a range of scenarios based on information available.
11th Feb 2022	THFC Presentation • Richard Serra • Tim Spencer	Presentation of detailed analysis of End State, including Legion modelling of typical premier league match and sensitivity analysis of a range of scenarios based on information available.
16th April 2022	Site visit – Premier League	Site survey to capture crowd behaviour and crowd management strategy carried out by THFC for spectators leaving THFC stadium to WHLS after Premier League match held at THFC. Site visit summary included in the Crowd flow report dated 19th May 2022.
25th April 2022	Call with Jim Dickie	Discussion about crowd flow in the proposed masterplan, and existing site data collected from Home Games.
1st May 2022	Site visit – Premier League	Site survey to capture crowd behaviour and crowd management strategy carried out by THFC for spectators leaving THFC stadium to WHLS after Premier League match held at THFC. Site visit summary included in the Crowd flow report dated 19th May 2022.
4th May 2022	Call with Jim Dickie	Discussion regarding Parameter plans.
6th May 2022	SAG presentation	Presentation capturing site survey findings and existing crowd management strategy by THFC, comparison of queue area for Existing site and HRW Illustrative Masterplan, and Legion modelling of typical premier league match to compare Existing site and HRW Illustrative Masterplan.
12th May 2022	Site visit – Premier League against Arsenal	Site survey to capture crowd behaviour and crowd management strategy carried out by THFC for spectators leaving THFC stadium to WHLS after Premier League match held at THFC. Site

		visit summary included in the Crowd flow report dated 19th May 2022
19th May 2022	Crowd Flow Report	Report submitted to support Planning Application, capturing site observations and comments received in meetings with THFC, LBH, SAG and Jim Dickie.
28th May 2022	Site Survey – Rugby match	Site survey to capture crowd behaviour and crowd management strategy carried out by THFC for spectators leaving THFC stadium to WHLS after Rugby match held at THFC. Summary report provided to Lendlease on 9th June 2022.
22nd June 2022	Meeting with Movement Strategies	Meeting with Movement Strategies and Tim Spencer to clarify Buro Happold's crowd flow approach, Legion modelling geographical scope and demand assumptions.
30th June 2022	Information received from Movement Strategies	Queue layout and area for Southbound and Northbound queues for WHLS station, Modal split data June 2022, Modal split July 2022 Guns N Roses, Boxing Scenario Load.
1st July **4th July** **7th July** **12th July** **20th July 2022**	Call with Jim Dickie	Discussion about: • Queue layouts from Movement Strategies. • Departure profile and access licence. • Diagrams shared with MET police regarding emergency routes and dispersal routes.
7th July 2022	Information received from Movement Strategies	Correction to queue layout provided on 30th June and clarification to queries raised by Buro Happold Crowd Flow team.
13th July 2022	Appendix B of document 1676341	Queue area clarification for the information provided by Movement Strategies on the 7th of July 2022, and response to queries raised by Movement Strategies.
20th July 2022	Meeting with Met Police	Presentation explaining existing crowd management strategy, hoarding during construction phases, clarification of emergency services access routes and dispersal routes for spectators in case of an emergency from spectator queueing area.
29th July 2022	Site survey - Lady Gaga concert	Site survey to capture crowd behaviour and crowd management strategy carried out by THFC for spectators leaving THFC stadium to WHLS after a Concert event held at THFC. Summary report provided to Lendlease on 10th August 2022.
9th Oct 2022	Site survey – NFL match	Site survey to capture crowd behaviour and crowd management strategy carried out by THFC for spectators leaving THFC stadium to WHLS after NFL match held at THFC. Summary report provided to Lendlease on 21st October 2022.

TOTTENHAM HOTSPUR STADIUM

Events at the new stadium – a guide for local residents and businesses

Tottenham Hotspur · Transport for London · British Transport Police · Metropolitan Police · greateranglia · Haringey London · Homes for Haringey · NFL · Enfield Council

CONTENTS

INTRODUCTION

Tottenham Hotspur Football Club is proud to be part of Tottenham's vibrant community and the new stadium development continues to be a catalyst for positive change and regeneration in North Tottenham, creating a new sports, leisure and entertainment destination for London. You will have seen the new stadium emerge around the old ground and we are now in the final stages of the construction programme before moving back home for the 2018/19 season.

The new stadium will have a capacity of just over 62,000 and will be a multi-purpose sports, leisure and entertainment destination hosting Tottenham Hotspur home matches alongside a minimum of two NFL matches per year and a number of other events and concerts.

It will also sit alongside the Tottenham Experience and once both are complete, we shall also begin work on the new hotel, an extreme sports hub and new homes.

Much of the enhanced public transport infrastructure for the new stadium is already in place. It will be a public transport destination, well served by bus routes and within walking distance of four rail stations. Tottenham continues to benefit from significant investment in its public transport infrastructure, which will provide improved services every day of the year.

THIS INCLUDES:

- **An upgraded Victoria line** – completed in 2017 with new signalling and rolling stock providing one of the highest frequency underground services in the world, serving both Seven Sisters and Tottenham Hale stations.
- **Works to improve Tottenham Hale station** – with the creation of a new combined train and tube station entrance to be completed during 2019.
- **An upgraded White Hart Lane station** – with additional stairs and lift access, making the station step-free, due for completion during summer 2019. Alongside this, a fleet of new high capacity, air conditioned trains will be introduced from spring 2019. There will also be an enhanced timetable for every event day.
- **A redeveloped Northumberland Park station** – with improved accessibility due for completion during autumn 2018 and increased service frequencies from summer 2019 as part of the three-tracking project between Stratford and the new Meridian Water station.
- **The opening of the Elizabeth line (Crossrail) in 2019** – which will improve connectivity to the new stadium with another transport choice via Liverpool Street station.

London Borough of Haringey and the Club are also improving footways and road surfaces leading up to the new stadium, and the Club is helping to make travel on event days even better, with a host of new measures including new shuttle buses, regional coaches, additional staff, traffic and pedestrian signage, cycle parking and more.

'BEDDING-IN'

Supporters and local residents are well-used to travelling to and around Tottenham on event days. However, there will naturally be a 'bedding-in' period for the first few home games as we understand how and when supporters choose to travel and the remaining public transport works are completed. There are more options for supporters so it may take time for them to research and change their travel habits.

The Club has been working closely with the London Borough of Haringey (LBH), the London Borough of Enfield (LBE), Transport for London (TfL), Abellio Greater Anglia Trains (GA), the Metropolitan Police (MPS), the British Transport Police (BTP), the National Football League (NFL) and others to agree how we best manage crowds and the impact on local transport during this 'bedding-in' period and beyond.

This includes developing various event day plans, as well as committing to new measures for the opening of the new stadium.

One of the most significant of these is an ambition to increase the proportion of people who travel to an event by public transport.

This booklet has been produced to provide you with information regarding travel and road traffic management for events at the new stadium. Please keep it so that you can refer to it in the future. The Club is committed to publicising details of each event in advance.

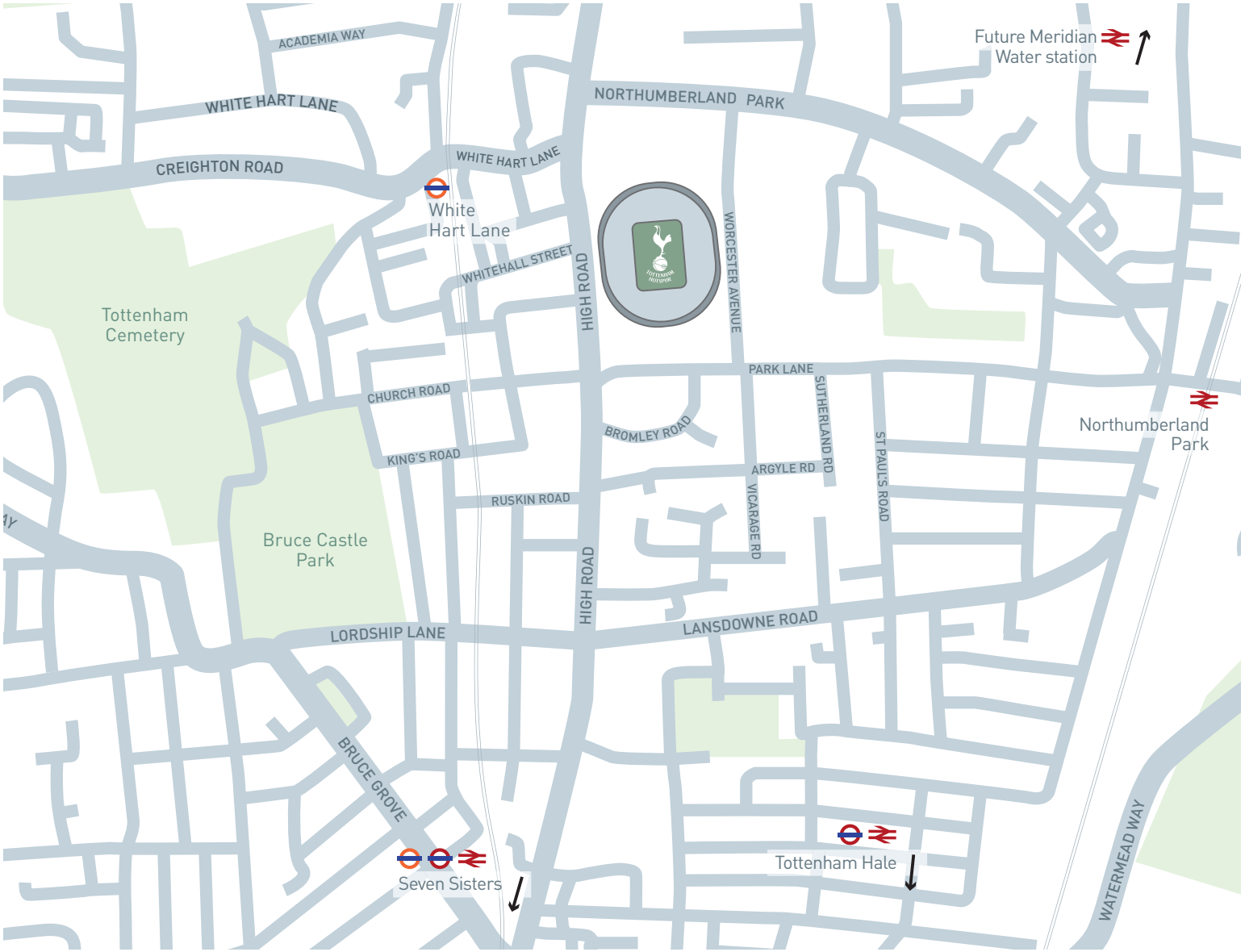
Please see details of how you can stay informed at the back of this booklet and visit the Club's website tottenhamhotspur.com/local. We shall of course be closely reviewing and monitoring how the stadium operates over the course of the next three to five years and making any changes when they are needed.

If you need to report any issues with the stadium's operation, or anti-social behaviour and litter, you can do so via our website tottenhamhotspur.com/feedback.

WHERE IS TOTTENHAM HOTSPUR STADIUM?

Tottenham Hotspur Stadium is located between Tottenham High Road, Park Lane and Worcester Avenue.

It is a public transport destination, well served by bus routes and within walking distance of four stations – White Hart Lane, Northumberland Park, Seven Sisters and Tottenham Hale – with a fifth, Meridian Water, opening in spring 2019.



HOW WILL WE MANAGE EVENT DAY IMPACTS?

The new stadium will be Tottenham Hotspur's home for generations to come and we want to ensure that it is both safe and secure whilst any impact on the local area is minimised and managed as carefully as possible.

Many of you are well-used to living and working alongside the old stadium, however the new stadium is much larger and there are additional safety and security challenges, so we have had to make a number of changes to our event day operations. This includes new national and safety guidance on how quickly a venue should be able to evacuate in the event of an emergency.

This means extended road closures, new crowd management measures between the stadium and our local stations, bus diversions and parking controls will be put in place.

We are also introducing new, free pre-booked shuttle bus services to the stadium from Alexandra Palace and Wood Green stations to provide even more travel choices for supporters.

Local train stations will face greater impacts, especially during the 'bedding-in' period and whilst station upgrades are completed.

Seven Sisters, White Hart Lane and Northumberland Park stations will continue to be primary stations for supporters and Tottenham Hale will be used more frequently as works near completion.

A new regional coach network and improved coach parking facilities, as well as greater cycle parking will help ease any queuing at the four main stations.

The stadium itself will also host more event day activities, even after an event or match has finished. This will help spread the flow of supporters exiting the area and encourage more spending at local businesses.

The Club will provide additional marshals and 'Fanbassadors' to manage supporters every step of the way and are working closely with the Metropolitan Police Service, London Borough of Haringey and TfL to ensure more staff than ever are at stations and other key areas.

These measures and those detailed over the next few pages will all help to minimise disruption to the local area and ensure you are well aware of how the stadium will work so that you can plan your travel.

You may wish to avoid the busiest times before and after events as your journey will be quicker and less crowded if you do. For example, the Victoria line and Overground services will be particularly busy. Please check TfL's journey planner tfl.gov.uk/plan-a-journey before travelling.

If you do need to travel and are using your vehicle, you should plan ahead to avoid the areas affected by road closures. Please allow plenty of time for your journey.

To help you plan ahead please keep an eye on the Club's website tottenhamhotspur.com/matches for home games and any other events programmed. Please note the current fixture list could change as broadcast selections are made and cup fixtures are confirmed. You can register for updates via tottenhamhotspur.com/local.

WHICH LOCAL ROADS WILL BE CLOSED?

As before, we shall need to close some roads closest to the stadium before, during and after an event to make it safe for visitors, residents and businesses, and for emergency access to the area.

However, because of the enhanced facilities offered at the new stadium, we are expecting supporters to arrive earlier than they have done previously, with approximately 80% potentially in or around the stadium an hour before the start of an event.

More rigorous safety requirements for modern stadiums have also been introduced, leading us to reduce the time it takes to evacuate all supporters. In the event of an emergency evacuation, a greater area (including the High Road) will be required, which means extending the timeframes of the existing road closures.

During event days, general traffic will not be able to access parts of the High Road between White Hart Lane and Lordship Lane/Lansdowne Road from two hours before and one hour after the event and will be diverted along the routes marked on the plans on page 9.

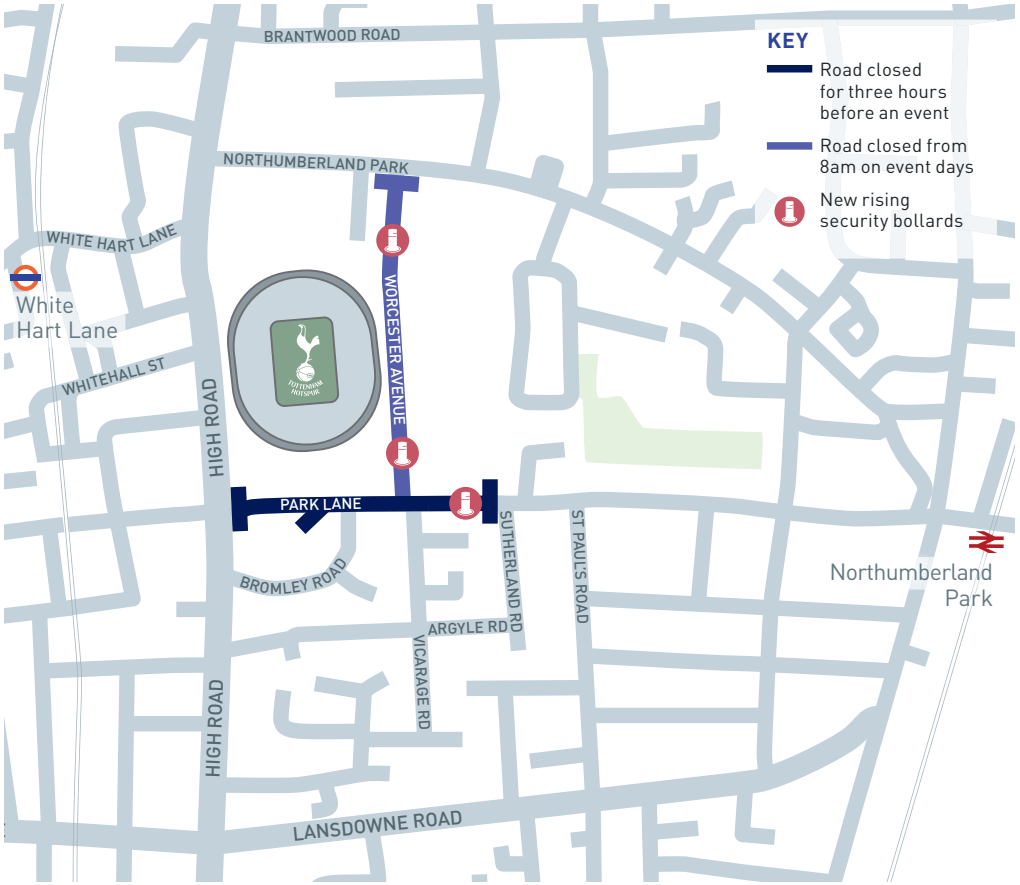
Worcester Avenue will also be closed from 8am on event days and Park Lane for three hours before an event. Parking bays will be suspended on both Park Lane and Worcester Avenue during these times.

If access to your home or business is directly affected by the road closure and you have either a Controlled Parking Zone (CPZ), Homes for Haringey (HfH) or Blue Badge parking permit, traffic marshals will allow you to pass at vehicle permit check points. Details of how to apply for a CPZ, HfH or Blue Badge can be found on page 12. Pedestrians will be able to walk along local roads at all times.

The next five maps show each phase of the road closures and how they might affect you. Similar measures will be in place for any event with a capacity of 10,000 or over. Details for NFL events will be communicated seperately nearer to the first event.

SECURITY BOLLARDS

As part of the planning permission and to aid security checks around the stadium, three sets of vehicle rising-bollards are to be installed on Worcester Avenue (2) and Park Lane (1). These will only be operational on event days and will be manned by Club traffic marshals. The operation of these bollards has been discussed with the London Borough of Haringey and will be aligned with the road closures in place on event days.

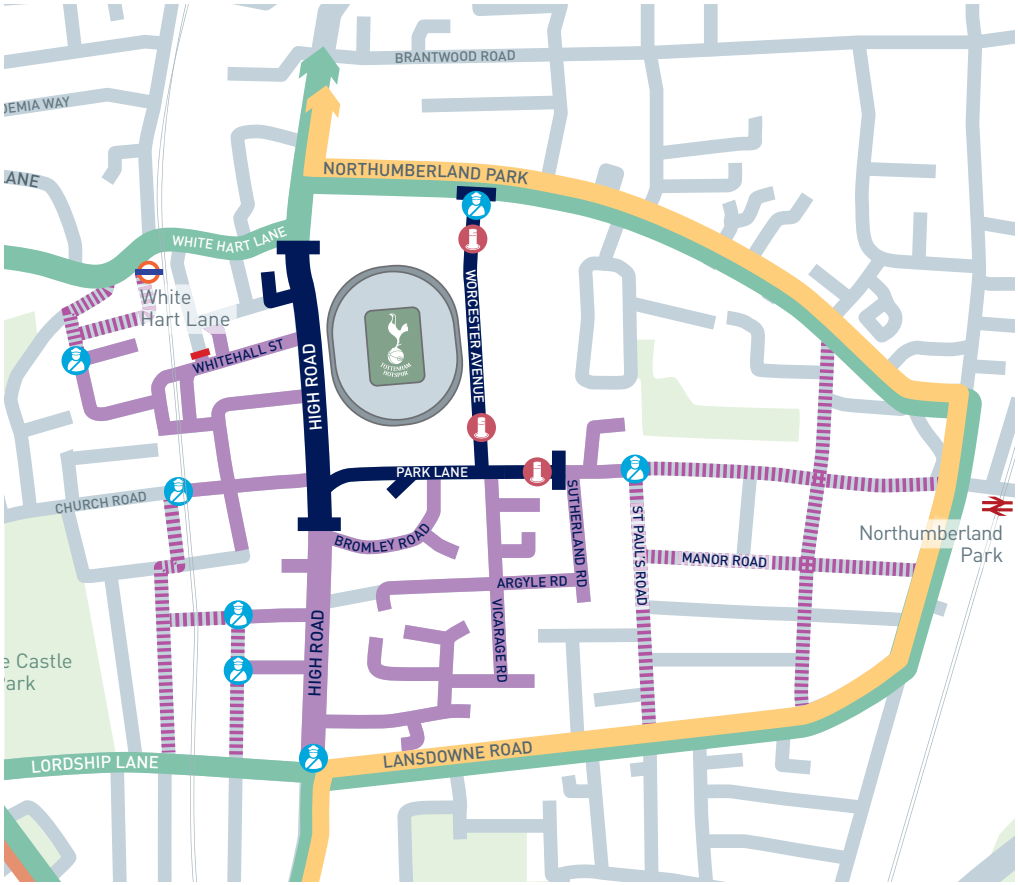


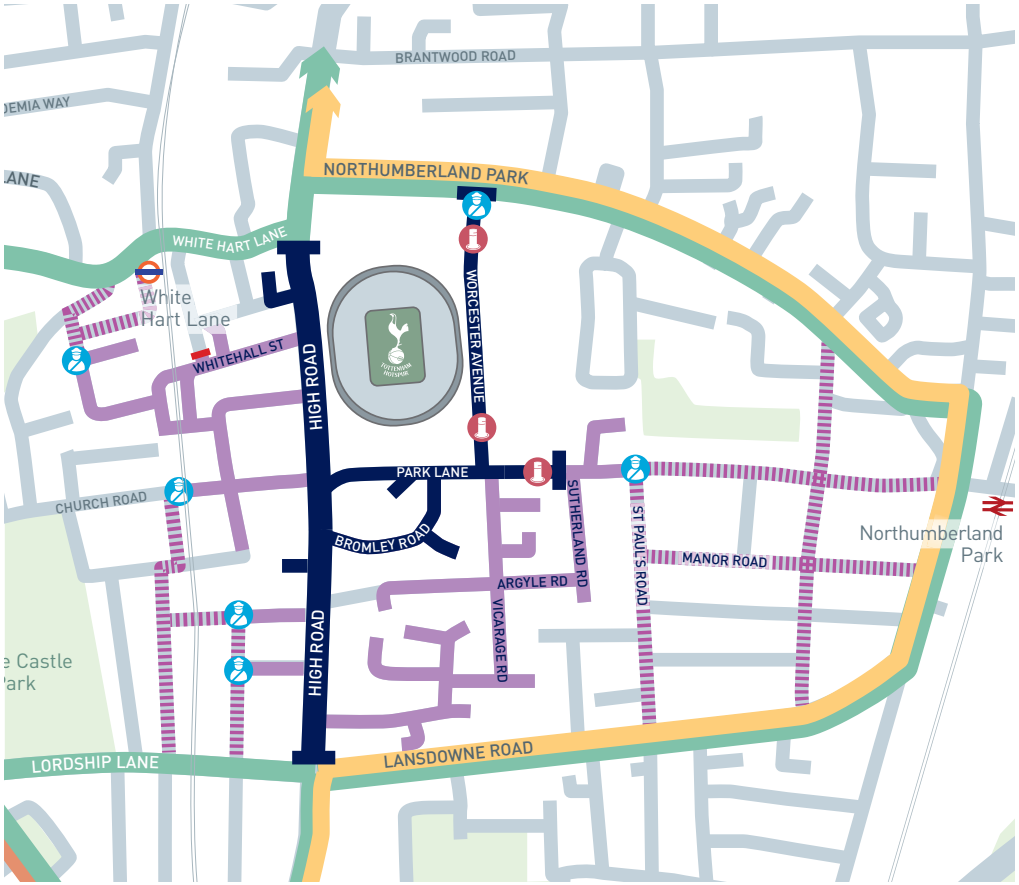
PRE-EVENT OR MATCH

From 8am on event days, Worcester Avenue will close. This is to allow early security checks of staff and vehicles going into the stadium's basement car park. Park Lane will also be closed three hours before an event and all parking bays on Worcester Avenue and Park Lane will be suspended during event days.

KEY

- Road closed
- Resident and business access permit zone
- Resident and business access route
- Vehicle permit check point
- New rising security bollards
- New eastern bus diversion route
- Local traffic diversion route
- Existing west bus diversion route
- Firegate





PHASE 1: TWO HOURS TO ONE HOUR BEFORE AN EVENT OR MATCH

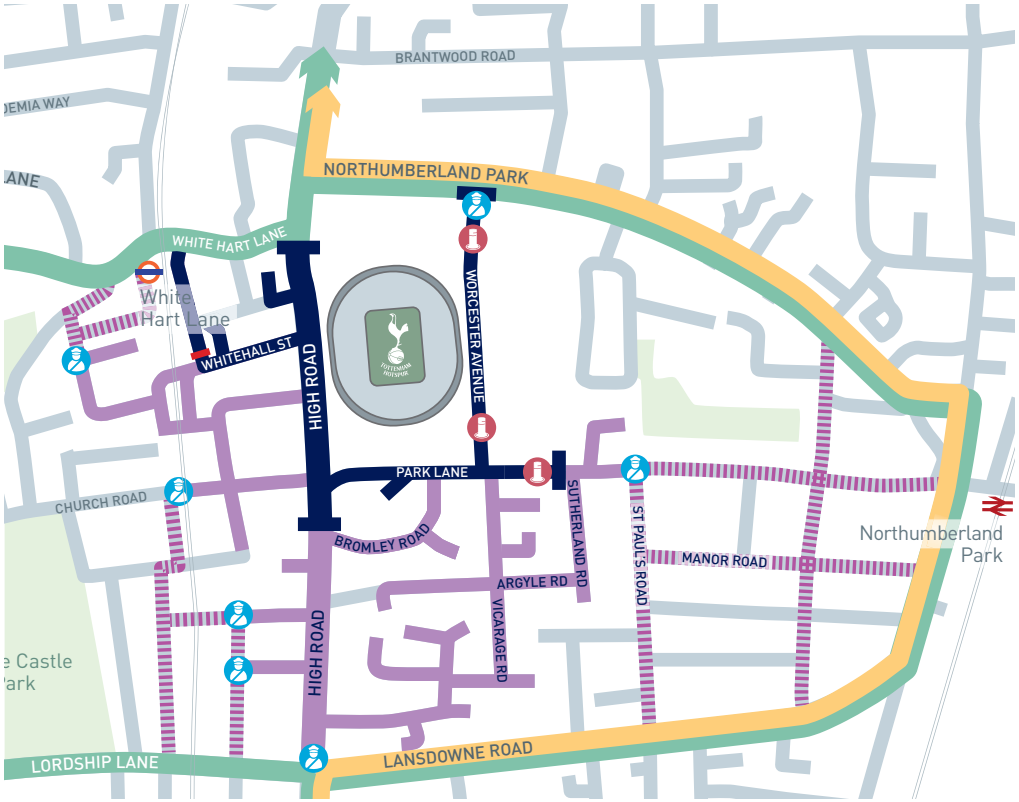
Two hours before any match or event, traffic marshals will close the northern section of the High Road from White Hart Lane to Bromley Road. General traffic and TfL buses will be on diversion to the east and west of the stadium.

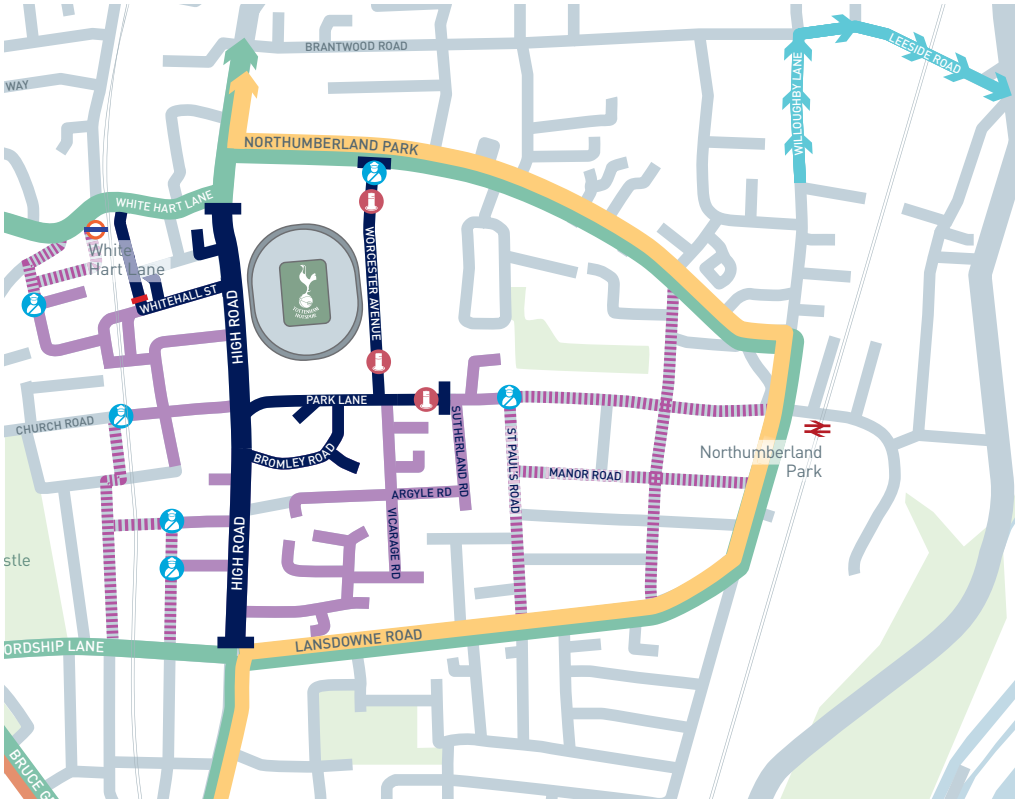
Residents and businesses who want vehicular access to their properties will need to enter via a vehicle permit check point (see map above). Access will be permitted using their CPZ, Homes for Haringey or Blue Badge parking permit.

PHASE 2: ONE HOUR PRIOR TO THE START OF AN EVENT OR MATCH AND UP TO 15 MINUTES AFTER

During this period, no vehicles (except emergency services) are permitted in the roads that are highlighted in navy blue on the map above. This is to ensure safety and security is maintained around the stadium. Residents and businesses displaying a valid CPZ, Homes for Haringey or Blue Badge permit will be able to drive through the check points into the roads highlighted purple. Traffic marshals will close the remaining southern section of the High Road to Lordship Lane/Lansdowne Road.

...WHICH LOCAL ROADS WILL BE CLOSED?





PHASE 3: DURING AN EVENT OR MATCH

Once an event or match has started, the southern section of the High Road will open for local resident and business access. The northern section (highlighted in navy blue) will remain closed to allow for the safe evacuation of the stadium in an emergency.

Worcester Avenue and Park Lane remain closed to all traffic.

PHASE 4: 15 MINUTES PRIOR TO FINAL WHISTLE AND UP TO ONE HOUR POST-EVENT OR MATCH

The roads surrounding the stadium are at their busiest after an event. Around 15 minutes before the end of an event, the Club traffic marshals will close the High Road from White Hart Lane to Lordship Lane/Lansdowne Road to all traffic. Worcester Avenue and Park Lane will remain closed to allow people to leave the stadium and make their way home. These roads will be closed for up to an hour but the MPS Match Commander may reopen them more quickly. On event days, Love Lane and Whitehall Street will have all parking bays suspended and will be closed for up to one and a half hours after an event to cater for queues at White Hart Lane station. For one to two hours after an event, Leeside Road will be one-way eastbound and Willoughby Lane will be one-way northbound to facilitate leaving the stadium efficiently.

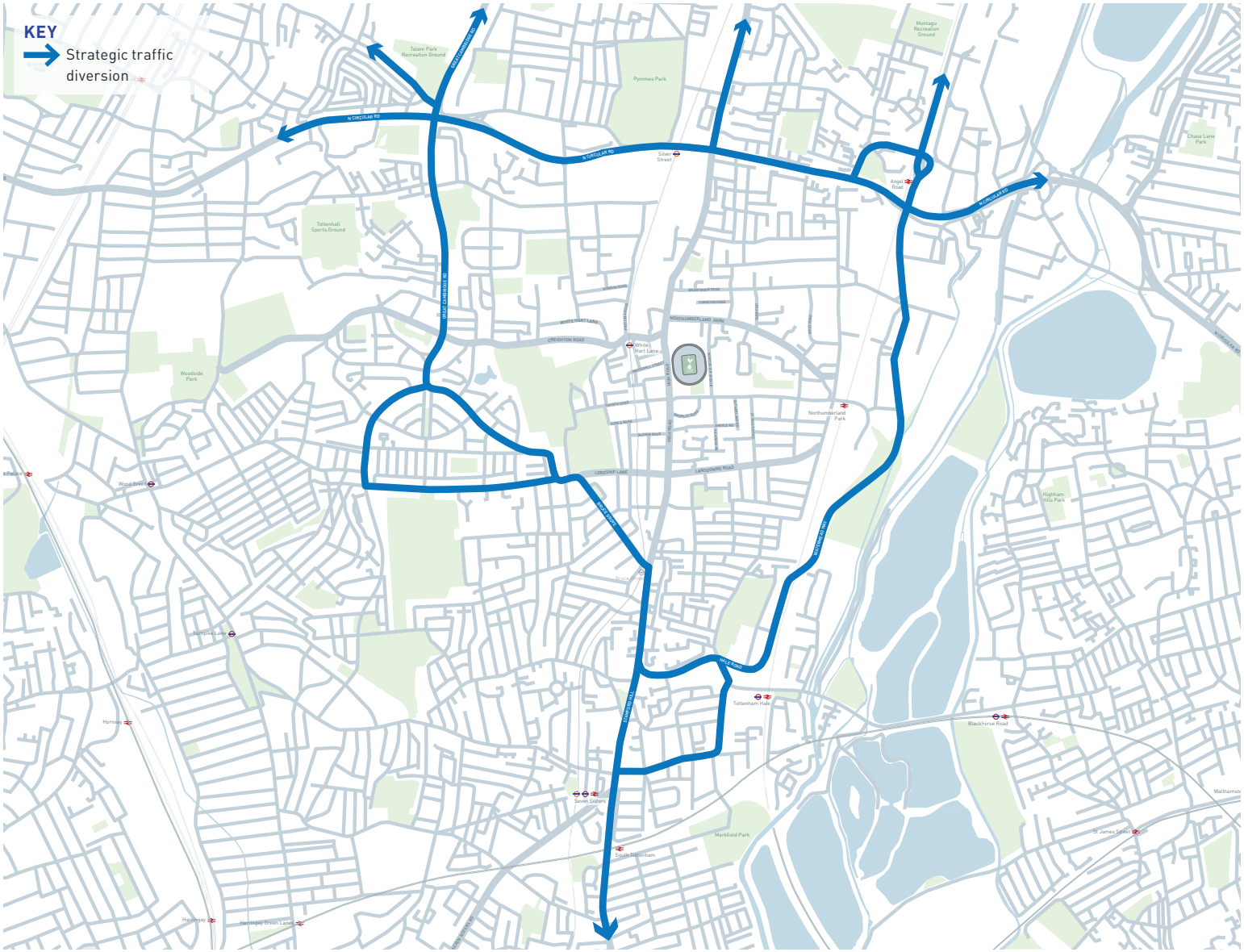
STRATEGIC TRAFFIC DIVERSION

On event days, a new strategic traffic diversion will be in place to enable traffic to avoid passing through the local area, helping to ease any local congestion (see map adjacent).

Freight and delivery vehicles travelling through the area will find it quicker to follow these routes and avoid the roads closest to the stadium on event days.

ADVANCED WARNING

Around 40 new advanced warning signs will be installed from Seven Sisters to the North Circular to raise awareness of event days.



HOW WILL THE EVENT DAY CPZ WORK?

Managing car use and minimising congestion in the local area is one of our key objectives. The stadium is a public transport destination and one of our messages to supporters is that they should not drive to the stadium. Over the years we have been successful in significantly reducing the number of people driving to events through fan communication, enhanced public transport information and the introduction of the event day Controlled Parking Zones (CPZ) and we shall continue to work hard on this.

Following consultation with local residents, the existing event day CPZ has been extended by London Boroughs of Haringey and Enfield. It will be in force for the first event and will cover a larger area than before, helping to ensure residents can park as long as they have a valid CPZ, HfH or Blue Badge permit. A map is included on the next page.

If you do not have a valid CPZ, HfH or Blue Badge permit, or now live in a property included in the event day CPZ and park on-street, you will need to apply for one. You can do so using the details below:

LONDON BOROUGH OF HARINGEY
www.haringey.gov.uk/parking-roads-and-travel/parking/parking-permits

HOMES FOR HARINGEY
www.homesforharingey.org/parking

LONDON BOROUGH OF ENFIELD
https://new.enfield.gov.uk/services/parking/parking-permits

OFF-STREET PARKING

If you have off-street parking, live on a road affected by closures and do not require a permit, or you are a Blue Badge holder, you will need to show stewards or marshals at road closure vehicle permit check points a valid proof of address.

For example, this could be your driver's licence or a utility bill. You will then be permitted access. Visitors will be able to park using a visitor parking voucher but they will need to travel **before** the road closures come into effect.

As before, a small number of resident parking bays in very close proximity to the stadium will be suspended to ensure pedestrian safety. These suspensions will last all day so please check before you park. Advanced notices will be put in place seven days before each event to inform you when suspensions are in effect.

If you leave your car parked in these suspended spaces, it will be relocated to a neighbouring street.

You will need to contact Trace (Towed Vehicle Tracing services) on 0845 206 8602 or https://trace.london for information.

OPERATIONAL HOURS OF THE EVENT DAY PARKING ZONES

LONDON BOROUGH OF ENFIELD

South Edmonton Event Day
12 noon to 9pm

North Middlesex Hospital
Monday to Sunday
9am to 8.30pm

LONDON BOROUGH OF HARINGEY

Tottenham North
Monday to Saturday
8am to 8.30pm
Sunday and Public Holidays
12 noon to 8pm

Tottenham Event Day
Monday to Friday
5pm to 8.30pm
Saturday, Sunday and Public Holidays
12 noon to 8pm

White Hart Lane
Monday to Friday
8am to 8.30pm
Saturday and Sunday
8am to 8pm
Public Holidays
12 noon to 8pm

Tottenham Hale North Event Day
Monday to Friday
5pm to 8.30pm
Saturday, Sunday and Public Holidays
12 noon to 8pm

Bruce Grove North
Monday to Friday
8am to 8.30pm
Saturday and Sunday
8am to 8pm
Public Holidays
12 noon to 8pm

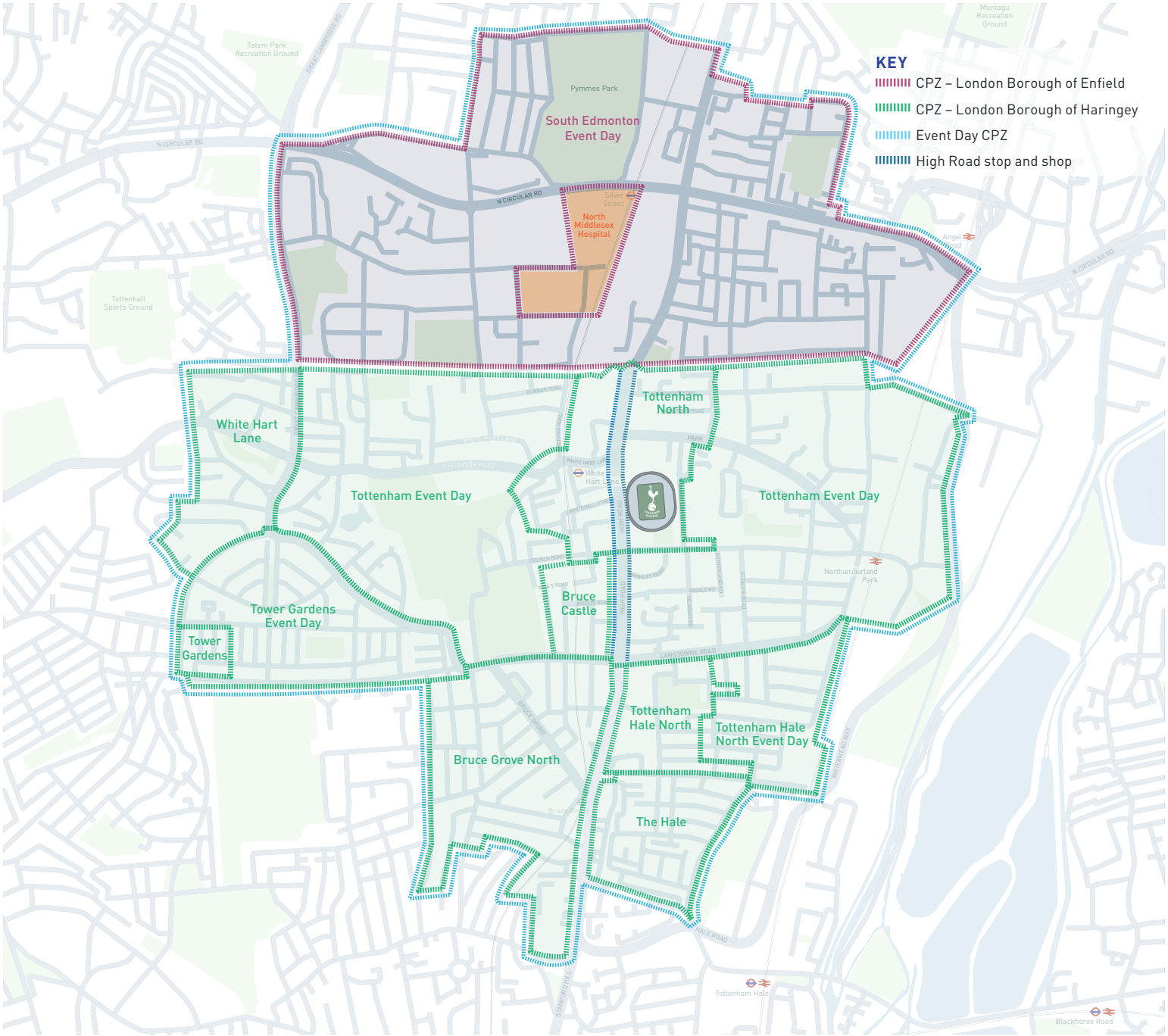
Bruce Castle
Monday to Friday
8am to 8.30pm
Saturday and Sunday
8am to 8pm
Public Holidays
12 noon to 8pm

Tower Gardens
Monday to Friday
8am to 8.30pm
Saturday and Sunday
8am to 8pm
Public Holidays
12 noon to 8pm

Tower Gardens Event Day
Monday to Friday
5pm to 8.30pm
Saturday, Sunday and Public Holidays
12 noon to 8pm

Tottenham Hale North
Monday to Friday
8am to 8.30pm
Saturday and Sunday
8am to 8pm
Public Holidays
12 noon to 8pm

The Hale
Monday to Friday
8am to 8.30pm
Saturday and Sunday
8am to 8pm
Public Holidays
12 noon to 8pm



CPZ AND ROAD CLOSURE FAQS

Here is a list of frequently asked questions about the event day Controlled Parking Zone (CPZ) and road closures which you may find helpful.

Q. Why are you closing local roads for longer?

A. The increased numbers of people visiting the stadium and updated safety and security requirements mean we shall need to close the roads closest to us to general traffic for longer. This allows pedestrians and local communities to travel around the stadium safely on event days and means we can evacuate the ground quickly in the event of an emergency.

Q. I can't drive to my home if the High Road is closed. Do I need to apply for a new CPZ permit?

A. We know there are a number of properties that will have their access affected by this necessary road closure. All you will need to do is display your existing CPZ or Homes for Haringey (HfH) parking permit and traffic marshals will let you pass. If you have off-street parking, and do not need a permit, or you are a Blue Badge holder, you can show stewards or marshals at road closure points a valid proof of address, which could be a driver's licence or utility bill, and they will give you access.

Q. I need a new CPZ permit or Homes for Haringey parking permit. How do I get one?

A. You can apply for a permit using the details below:

London Borough of Haringey:
www.haringey.gov.uk/parking-roads-and-travel/parking/parking-permits

Homes for Haringey:
www.homesforharingey.org/parking

London Borough of Enfield:
https://new.enfield.gov.uk/services/parking/parking-permits

Q. What happens if friends want to visit?

A. Visitors will need to arrive and park before road closures come into effect. If they do so, they will be able to park using a visitor parking voucher which can be applied for via your relevant local authority's website.

Q. When does the new scheme start?

A. The new road closures and CPZ will be operational for the first major event (10,000 spectators or more) in order for the Club and the local authorities to identify and resolve any issues. The Club will communicate this event and we strongly recommend you to register for updates via tottenhamhotspur.com/local.

Q. What happens if I have an incident at my home and I need emergency help?

A. Emergency access will be maintained at all times.

Q. How will I know when events are being held?

A. We shall advertise our match days or any other events via our website, social media, at CPZ entry points and through advanced warning signs. During the season, Premier League or other fixtures can often change due to broadcasting requirements but we shall always do our best to ensure our supporters and neighbours are aware. You can register for updates via tottenhamhotspur.com/local.

Q. Will these arrangements change for the NFL or other events?

A. The principles of the arrangements detailed in this information booklet are the same for all event days. Some changes may be required for the NFL – for example due to increased security, to facilitate the Fan Zone or Tailgate party. These will always be communicated with the local community and local authorities well in advance.

Q. I am a local business owner on the High Road. How will I get access?

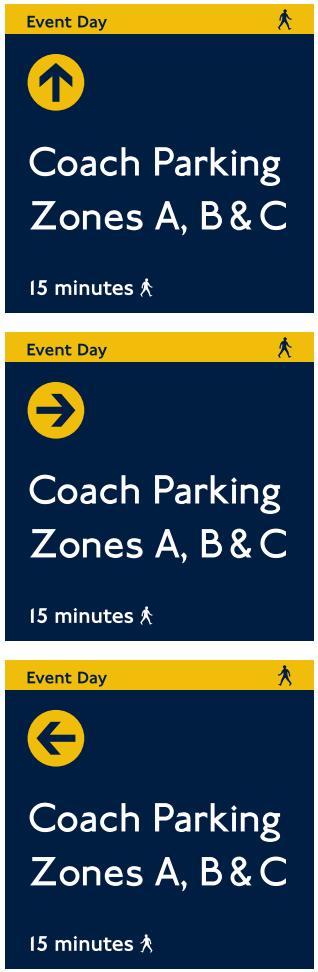
A. If you are a business owner and have a valid CPZ permit, you will be able to park on one of the side roads. Pedestrian access to your business will be maintained at all times.

Q. What if I have a delivery coming on an event day?

A. We would recommend you arrange delivery outside of the road closure hours or on non-event days if possible. Delivery drivers will not be able to pass vehicle check points once the road closures are in effect.

WHERE WILL COACHES PARK?

Coach travel is an important part of our transport strategy for getting supporters to and from the area whilst minimising the number of private cars on local roads. For the new stadium, the Club will improve how it operates and runs coaches.



We shall now manage five coach parking 'zones', all of which will be a 10 minute walk or less from the stadium (see map below):

- **'Zone A' – West Road (9 spaces)**
- **'Zone B' – Brantwood Road (19 spaces)**
- **'Zone C' – Tariff Road (10 spaces)**
- **'Zone D' – The Goods Yard (31 spaces – all off street)**
- **'Zone E' – Pretoria Road (22 spaces)**

In total, we shall have space for 60 coaches on-street and 31 off-street at the Goods Yard, 44-52 White Hart Lane.

For the on-street coach parking zones (A, B, C and E) we shall need to suspend some parking bays for event days. These will be communicated with signs seven days before an event and carefully operated by Club marshals. Coach drivers will be reminded to turn off their engines when they are parked.

We shall be monitoring coach travel carefully during the first season. Zone E will likely only be used when over 40 coaches are expected. Zone D is also a temporary location for the first season and is subject to change.

Supporter coaches will arrive between three hours and two hours before the start of an event and will normally have left within one hour after an event.

WILL TRAIN AND TUBE SERVICES BE AFFECTED?

Our supporters are used to travelling to and from the stadium using four local stations (White Hart Lane, Seven Sisters, Northumberland Park and Tottenham Hale). These stations will continue to be the main hub stations for the new stadium, with a fifth, Meridian Water, available from summer 2019.

The Victoria line has recently received upgrades to increase the service frequency. The line will be busy on event days, particularly before a weeknight event, when commuters are also making their way home. During these peak times, to manage congestion and safety, some trains may not stop at Seven Sisters and will continue straight to Tottenham Hale. Please listen to station announcements for destination information. Your journey may be less crowded if you can avoid the Victoria line during busy periods.

After events at the stadium, there will be managed queues at Seven Sisters and Tottenham Hale stations.

However, supporters will be strongly discouraged from using Silver Street station and Bruce Grove station. At Bruce Grove you will find it extremely difficult to board a train immediately after a match if you are travelling southbound. We would recommend you check event times before you travel.

As previously mentioned, we expect a period of 'bedding-in' for residents and supporters and that the experience will change and improve after the first few events as everyone gets used to the new travel options and arrangements. Congestion will also ease once the remaining station improvement works, currently being undertaken by TfL and others, have been completed.

THE IMPROVEMENT WORKS BEING DELIVERED INCLUDE:

- **At Tottenham Hale station** – the creation of a new combined station entrance to be completed during 2019.
- **At White Hart Lane station** – additional stairs and lift access due for completion during summer 2019 along with the introduction of a fleet of new high capacity, air conditioned trains from spring 2019. There will also be an enhanced event day timetable.
- **At Northumberland Park station** – improved accessibility due for completion during autumn 2018 and increased service frequencies from summer 2019 as part of the three-tracking project between Stratford and the new Meridian Water station.

HOW WILL STATIONS OPERATE?

Before and after events at Tottenham Hotspur Stadium, TfL, Greater Anglia and the Club will implement specific event day operation plans for Seven Sisters, Tottenham Hale, Northumberland Park and White Hart Lane stations. Temporary barriers will be erected outside stations near the end of an event to manage queues and, in some cases, restrict access.

More marshals and staff from the Club, TfL and Greater Anglia will be on hand than previously and new signage will guide people quickly from stations to the stadium. As with the old stadium, it is the post-event period where queues will be longest at the four local stations.

Queue lengths will reduce after the first few games as supporters learn their best travel route, station works are completed and new rolling stock comes into operation.

Midweek events will mean that the Victoria line is especially busy, as supporters travel with commuters to Tottenham.

We recommend that you check before you travel and avoid the busy periods before and after events. Please visit tfl.gov.uk/plan-a-journey for more information.

	Northumberland Park	Seven Sisters	Tottenham Hale	White Hart Lane
Step-free?	Fully step-free by autumn 2018.	Not step-free.	There is step-free access to the Victoria line and the northbound Greater Anglia platform. Southbound Greater Anglia is not step-free.	Step-free after station works are completed during summer 2019.
Post-event measures	Park Lane will be extremely busy after an event. Signage will direct supporters to a different side of the road depending on whether they are travelling northbound or southbound. The queue itself will be managed outside the Spurs Shop, adjacent to the station, with barriers also placed to the north if needed. Facilities to buy tickets and top-up Oyster cards will be very limited. Please purchase tickets or top-up cards before arriving.	After an event, queuing starts on the west side of the High Road (near Pelham Road) and works south along the High Road to Seven Sisters station. To disperse the crowds as quickly as possible, there will be changes to how the station entrances and exits operate. Please look for signs and follow directions from marshals and TfL staff. Queues after an event will suspend a small stretch of Cycle Superhighway 1.	We are not anticipating a queue at this station, but a queue management plan will be in place for one to form at the station if needed. Facilities to buy tickets and top-up Oyster cards will be very limited. Please purchase tickets or top-up cards before arriving.	Queues will run down Love Lane and into Whitehall Street, meaning these roads will be closed from one hour before the end of an event to one and a half hours after an event for safety reasons. Currently limited queueing is predicted for those travelling northbound.

WHAT ABOUT TFL BUSES?

The stadium is well-served by TfL buses. They are an important, accessible mode of transport, so we are keen to ensure services run as smoothly as possible and operate in the area for as long as possible.

When the High Road closes to buses on event days from two hours before the start time, during and up to one hour after the event finishes, it will be necessary to run some bus diversions.

NEW EAST DIVERSION

The 349 will follow a new, much shorter diversion east, along Lansdowne Road, Shelbourne Road and Northumberland Park before rejoining the High Road adjacent to Sainsbury's.

WHY THE NEW EAST BUS DIVERSION ROUTE?

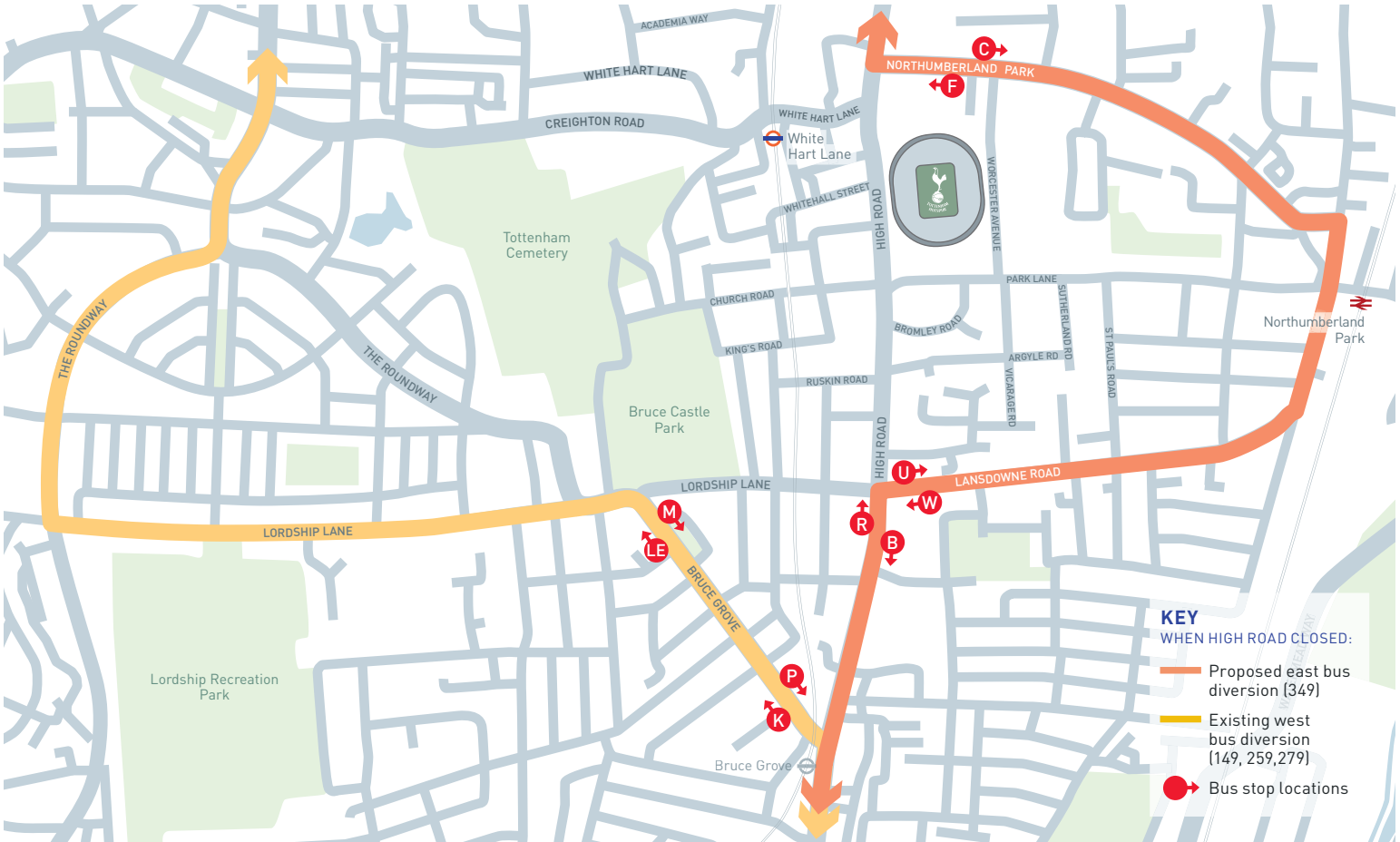
Before and after an event, a new bus diversion scheme was an obligation of the council as part of the planning permission for the stadium.

The east bus diversion will be much shorter and throughout the 'bedding-in' period the Club, TfL and London Borough of Haringey will be looking to switch more services from the west diversion to the east diversion.

WEST DIVERSION

As with the old stadium, the 149, 259 and 279 will initially divert west along the A10, onto Lordship Lane and The Roundway, before eventually rejoining the A10 northbound to the North Circular. TfL will install notices in bus stops to advise when any services or bus stops are suspended. Working in partnership with TfL, the Club and London Borough of Haringey will be reviewing the bus operations throughout the 'bedding-in' period with the aim of increasing the number of services on the east diversion.

We shall also be investigating whether buses can remain on the High Road during phase one of the road closures. Further information is available at TfL's website: https://tfl.gov.uk/modes/buses/.



WHERE ARE THE NEW SUPPORTER SHUTTLE BUS ROUTES?

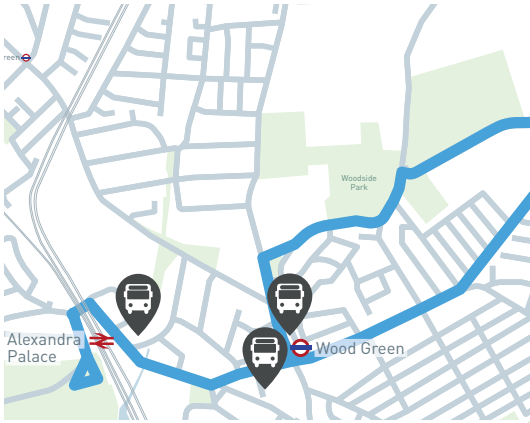
For the first time, the Club is providing new pre-booked, free shuttle bus services for supporters. This will cater for approximately 2,300 – 3,300 people per route (depending on demand) and we shall run three services, from Alexandra Palace, Wood Green and Tottenham Hale stations.

Alexandra Palace and Wood Green shuttle buses are fully accessible for wheelchair users and will be in operation for three hours before and two hours after an event. The shuttle buses will help to ease the impact on the local rail stations and the need for supporters to change at Finsbury Park Station.

The shuttle bus stops will be carefully managed by the Club and First Travel Solutions. Queues will be supervised by marshals and temporary portaloos will be provided if needed. Supporters will need to show their ticket and pre-book via the Club for this service.

ALEXANDRA PALACE

Before an event, shuttle buses will pick-up from outside Avenue Gardens and drop-off outside Haringey Sixth Form College. This journey will then be reversed after an event. Some parking spaces around Station Road and Bedford Road (Alexandra Palace) and on White Hart Lane outside the Haringey Sixth Form College will need to be suspended on event days for the shuttle buses to operate. These suspensions will be advertised at least seven days before.

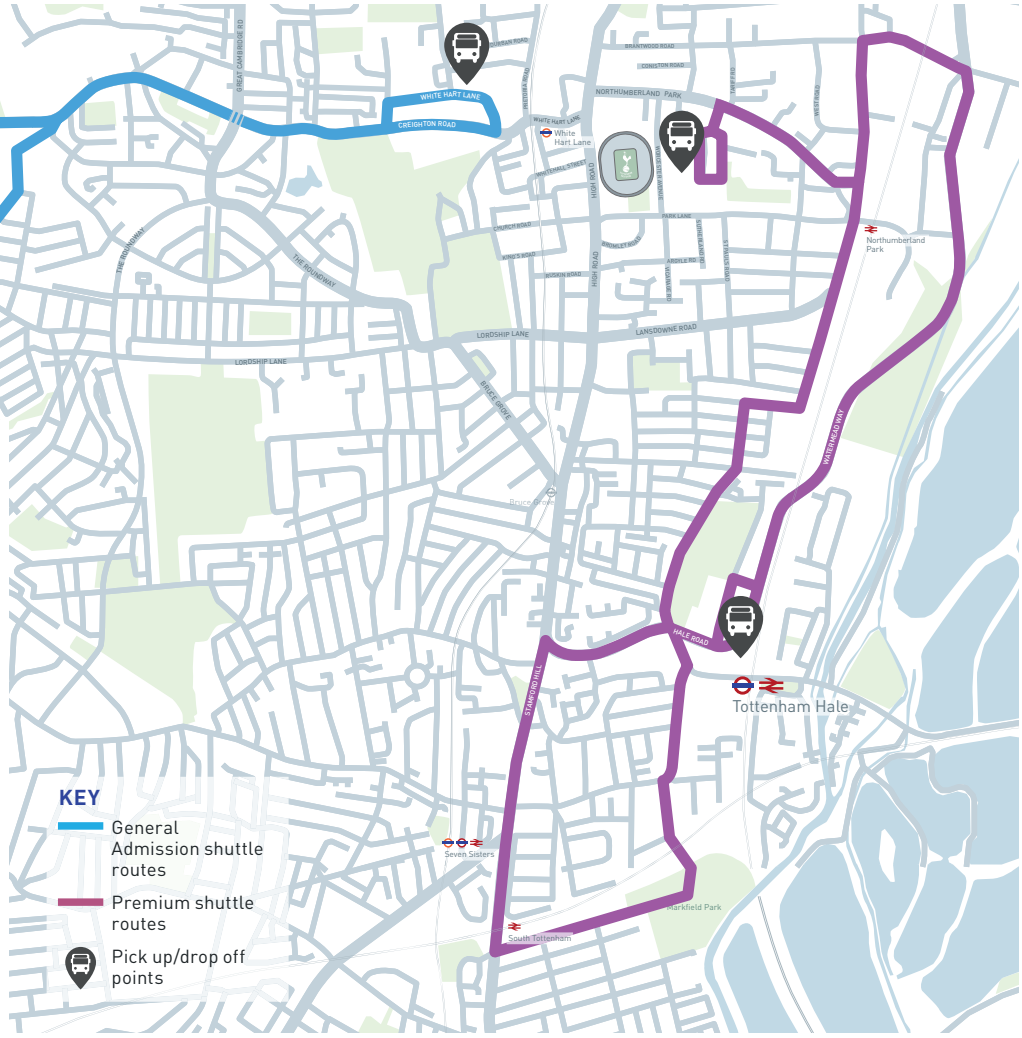


WOOD GREEN

Before an event, shuttle buses travelling from Wood Green will pick up opposite the bus station from the existing rail replacement stop just 60m from the station, and also drop off at White Hart Lane, outside the Haringey Sixth Form College. At Wood Green, we shall also have a waiting area for shuttle buses on White Hart Lane opposite Crescent Gardens. After an event, the buses will drop supporters outside the Green Rooms Hotel.

TOTTENHAM HALE

We shall also be operating a shuttle bus from Tottenham Hale station for premium customers. Before an event, this will pick up from TfL's bus stop F (on Watermead Way, near the taxi rank) and drop off by the Duke's Aldridge Academy. This journey will then be reversed after an event. This new service is offered to provide more travel choices and encourage premium guests not to drive.



If you leave your car parked in suspended parking bays, it will be relocated to a neighbouring street. You will need to contact Trace (Towed Vehicle Tracing services) on 0845 206 8602 or https://trace.london for information.

HOW WILL LOCAL BUSINESSES BE AFFECTED?

The new stadium will provide a major economic boost to local businesses. Around 62,000 supporters will visit for events and both the stadium and the Tottenham Experience will attract visitors 365 days a year.

On event days, businesses will need to comply with the same road closures and restrictions as residents (see page 8). If you are on the High Road, you will need to arrange your deliveries for outside of event day hours.

Road closures immediately before and after an event will effectively pedestrianise the High Road and other local roads, and supporters will be encouraged to arrive in the area earlier and to stay longer.

Beyond matchdays, the NFL games, concerts and other events will bring new visitors to the local area – many of whom will not have been to Tottenham before. Completion of the Tottenham Experience, which will include a new museum, along with the stadium roof/skywalk, hotel and extreme sports hub will also create a range of offers to attract visitors to the area, bringing new investment into Tottenham and supporting local businesses.

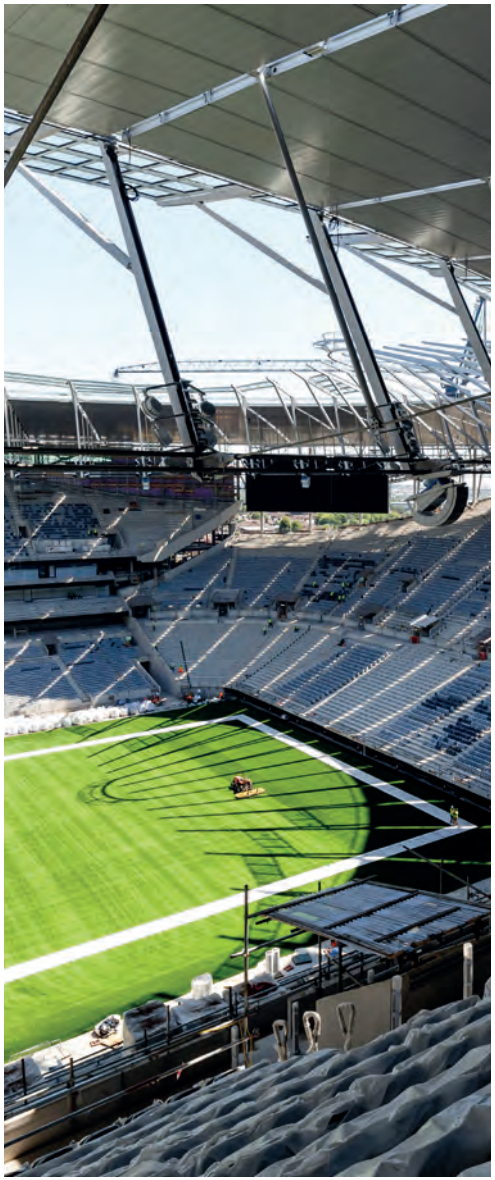
This means more people spending money at local cafés, shops, traders and pubs. It will also help to manage the flow of people in and out of the stadium and ease queues at local stations.

WHAT ABOUT BLACK TAXIS?

The Club is keen to support local black taxi drivers and has been working closely with London Borough of Haringey and TfL to understand how we might better use them as another travel option for supporters on event days.

We have secured a new, temporary, event day black taxi rank at Scotland Green, which will operate during event day hours. This will be on a side street, off the High Road and marshalled by the Club and can also be used for those with accessibility needs. It will provide another mode of transport for people travelling to and from the stadium.

If you leave your car parked in these suspended spaces, it will be relocated to a neighbouring street. You will need to contact Trace (Towed Vehicle Tracing services) on 0845 206 8602 or https://trace.london for information.

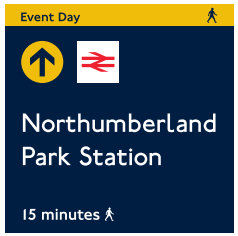


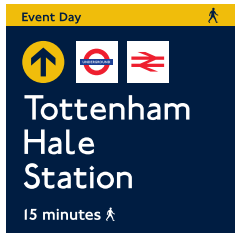
WHERE ARE THE MAIN WALKING ROUTES TO THE STADIUM?

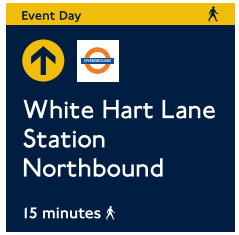
The majority of supporters will be using public transport to get to and from the stadium and will be encouraged to follow the designated walking routes from local stations and bus stops – shown in blue on the map to the right.

These routes will be especially busy three hours before and up to one and a half hours after an event.

Walking routes will be promoted through new pedestrian signs, such as those below, paid for by the Club and located on-street.





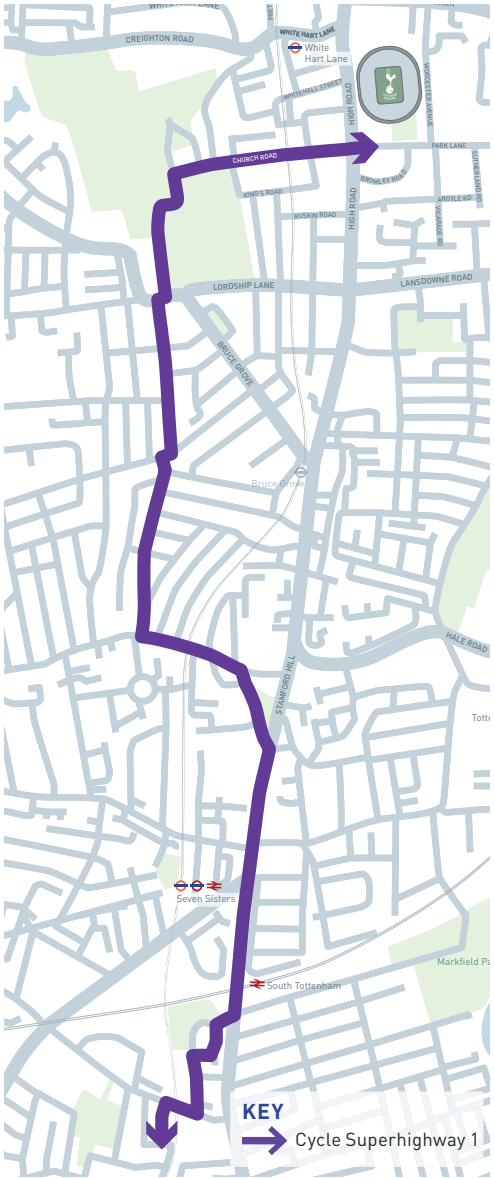


WHERE ARE THE MAIN CYCLE ROUTES TO THE STADIUM?

Cycling is growing across London and the Club is hoping to increase the number of supporters and staff who cycle to events. Ultimately, we would like at least 1% of all supporters (around 620 people) to cycle to and from events.

The infrastructure is being provided to support this, with Cycle Superhighway 1 already running to the stadium from the south and a mini-Holland route in Enfield under construction that will create a link to the stadium from the north.

With this in mind, approximately 250 new cycle stands will be installed near to the stadium. They will be located on-street, away from the stadium for security reasons so that residents and people working in the area can also use them on non-event days.



DELIVERING FOR THE LOCAL COMMUNITY

The Club is proud to be part of Tottenham's vibrant community and the new stadium development continues to be a catalyst for positive change and regeneration in North Tottenham, creating a new sports, leisure and entertainment destination for London.

It will become a hive of activity 365 days a year, with a new museum, an innovative Skywalk, 21st century retail experiences, first-class conference and banqueting and high quality leisure facilities including restaurants and a hotel – and will attract in excess of two million visitors per year.

A minimum of two NFL matches at the stadium every year, as well as other events including concerts, will bring a new audience to the local area, showcasing Tottenham and bringing further economic and social benefits to the area with truly global coverage and attraction.

As part of the wider scheme, the Club has to date already delivered:

- The London Academy of Excellence Tottenham – a new state-funded Sixth Form, financially supported by the Club and delivered in partnership with Highgate School, bringing expertise and first-class teaching from eight top independent schools, giving the area's brightest students the best possible access to leading Universities.
- A new 78,000 square foot Sainsbury's store at Northumberland Park – employing 280 people from the local area.
- The Cannon Road Development - 100% affordable, 222 new homes and the new Brook House Primary School on the site of an old rubber factory.
- Berland Court – An affordable housing development near Northumberland Park rail station, incorporating the relocation of a Jehovah's Witness Kingdom Hall and a new Club merchandise store.

Furthermore, the Club has created 1,458 new jobs for local people as a direct result of its ongoing new stadium development scheme and sport-led regeneration of the area. Jobs have been delivered across a range of industries, including retail, education, construction, hospitality, IT and security, with many going to local people.

Once complete, the stadium development scheme will have created 3,500 new jobs and pump £293 million into the local economy each year – almost double the impact of our previous stadium.

THE TOTTENHAM HOTSPUR FOUNDATION

The Tottenham Hotspur Foundation has a long established, productive and valued partnership with its local communities where there are significant socio-economic challenges alongside aspirations, potential, talent and opportunity to create, deliver and sustain positive change.

The work of The Foundation and its supporters directly touches the lives of people across North London every day, providing education and employment pathways to create life-changing opportunities for children, groups and individuals within our communities.

The Foundation delivers innovative programmes with the aim of:

- Improving achievement.
- Building community cohesion.
- Promoting healthy lifestyles.
- Supporting people with disabilities.

The development of the stadium is allowing the Foundation to significantly expand its work and impact and they have already moved into new offices within the restored Percy House, giving the Foundation a presence on the High Road for the first time.

Percy House is now a major community enterprise, employment and skills hub located at the heart of North Tottenham and the Foundation will deliver 95,000 hours of community and sports programmes to those living in the Club's local area.

For anyone interested in a role at Tottenham Hotspur's new stadium, as a steward, in a food and drink role, or as a Fanbassador, please contact the Tottenham Hotspur Foundation. Email us at thf.recruitment@tottenhamhotspur.com or ring us on 0208 365 5138 to arrange a screening session, so we can help you to find the perfect role at the new stadium.

BRINGING THE NFL TO TOTTENHAM

The new stadium has been designed from the outset to host the NFL, including a structurally engineered fully retractable pitch – the first for any stadium in the UK.

We shall be hosting our first NFL game on 14 October 2018 and are delighted to be welcoming the Oakland Raiders and Seattle Seahawks to Tottenham.

The event day measures set out in this booklet will principally be the same for NFL games, although some changes may be required to accommodate the longer nature of the games. A key feature of the NFL is the Tailgate, which takes place at selected venues close to the stadium. Local residents will be able to enjoy these vibrant activities and they will bring an added economic boost to the area.

We shall of course communicate any changes to the stadium's operation to the community and local authority ahead of NFL matches. To register for updates, please visit **tottenhamhotspur.com/local**.

To get up-to-date information and details of any other events and concerts, please visit **tottenhamhotspur.com/matches**.

WHO CAN I CONTACT AND HOW DO I FIND OUT MORE?

REPORT INCIDENT

To report a crime or incident on event days please use one of the following telephone numbers: **101** for non-emergencies; **0800 555 111** for Crimestoppers and **999** for an immediate risk.

STREET RUBBISH

To report litter or uncollected rubbish:

LB Haringey
Visit www.haringey.gov.uk and search 'street rubbish'
Call 020 8885 7700

LB Enfield
Visit www.enfield.gov.uk and search 'street rubbish'

NOISE

To report a noise complaint or issue:

LB Haringey
Visit www.haringey.gov.uk and search 'noise'
Call 020 8489 1335

LB Enfield
Visit www.enfield.gov.uk and search 'noise'

PARKING

For CPZ's or to apply for a new permit:

LB Haringey
Visit www.haringey.gov.uk and search 'controlled parking zones'
Call 020 8489 2102 for parking enforcement; or 0330 008 7895 for the vehicle pound

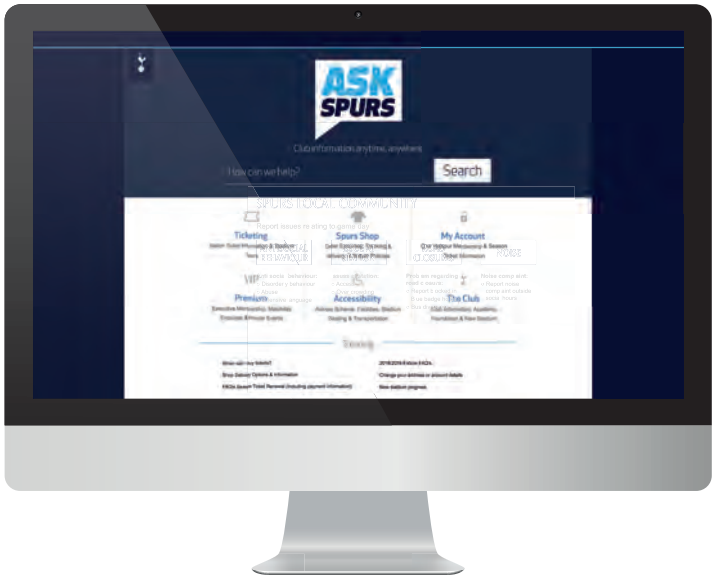
LB Enfield
Visit www.enfield.gov.uk and search 'controlled parking zones'

ANTI-SOCIAL BEHAVIOUR

To report any anti-social behaviour:

LB Haringey
Visit www.haringey.gov.uk and search 'anti-social behaviour'
Call 020 8489 1335

LB Enfield
Visit www.enfield.gov.uk and search 'anti-social behaviour'



Monitoring how the stadium runs and how people travel to and from it will also be an important task over the next three to five years.

We'll be constantly reviewing our travel arrangements and impact on the local area so that we can assess whether any changes need to be made. On our website we'll include updates about the stadium. If you have any comments or questions regarding the operation of the stadium or you also want to alert us to any of the issues above, you can:

Visit tottenhamhotspur.com/ask-spurs

Feedback via tottenhamhotspur.com/feedback

Call 020 3946 4040

Follow us on twitter @SpursOfficial

You can download a copy of this booklet and register for updates via tottenhamhotspur.com/local

OTHER USEFUL CONTACTS

Transport for London
www.tfl.gov.uk

Homes for Haringey
www.homesforharingey.org

Metropolitan Police
www.met.police.uk

Greater Anglia
www.greateranglia.co.uk

British Transport Police
www.btp.police.uk
0800 405 040

PROVISIONAL EVENTS AT TOTTENHAM HOTSPUR STADIUM 2018/19 SEASON

AUGUST 2018

18 FULHAM (WEMBLEY STADIUM)
3PM

SEPTEMBER 2018

15 LIVERPOOL
12.30pm live on Sky Sports

WC **17 UEFA CHAMPIONS LEAGUE (TBC)**

26 CARABAO CUP
ROUND THREE (TBC)

OCTOBER 2018

WC **1 UEFA CHAMPIONS LEAGUE (TBC)**

6 CARDIFF CITY
3pm

14 OAKLAND RAIDERS VS. SEATTLE SEAHAWKS (NFL)
6pm

WC **22 UEFA CHAMPIONS LEAGUE (TBC)**

27 MANCHESTER CITY
3pm

31 CARABAO CUP
ROUND FOUR (TBC)

NOVEMBER 2018

WC **5 UEFA CHAMPIONS LEAGUE (TBC)**

24 CHELSEA
3pm

26 UEFA CHAMPIONS LEAGUE (TBC)

DECEMBER 2018

5 SOUTHAMPTON
8pm

WC **10 UEFA CHAMPIONS LEAGUE (TBC)**

15 BURNLEY
3pm

19 CARABAO CUP
ROUND FIVE (TBC)

26 BOURNEMOUTH
3pm

29 WOLVES
3pm

JANUARY 2019

5 EMIRATES FA CUP
ROUND THREE (TBC)

9 CARABAO CUP
SEMI-FINAL (TBC)

12 MANCHESTER UNITED
3pm

23 CARABAO CUP
SEMI-FINAL (TBC)

26 EMIRATES FA CUP
ROUND FOUR (TBC)

30 WATFORD
8pm

FEBRUARY 2019

2 NEWCASTLE UNITED
3pm

9 LEICESTER CITY
3pm

WC **11 UEFA CHAMPIONS LEAGUE (TBC)**
ROUND OF 16

16 EMIRATES FA CUP
ROUND FIVE (TBC)

WC **18 UEFA CHAMPIONS LEAGUE (TBC)**
ROUND OF 16

MARCH 2019

2 ARSENAL
3pm

WC **4 UEFA CHAMPIONS LEAGUE (TBC)**
ROUND OF 16

WC **11 UEFA CHAMPIONS LEAGUE (TBC)**
ROUND OF 16

16 CRYSTAL PALACE
3pm

16 EMIRATES FA CUP
QUARTER-FINAL (TBC)

APRIL 2019

6 BRIGHTON
3pm

WC **8 UEFA CHAMPIONS LEAGUE (TBC)**
QUARTER-FINAL

13 HUDDERSFIELD TOWN
3pm

WC **15 UEFA CHAMPIONS LEAGUE (TBC)**
QUARTER-FINAL

27 WEST HAM UNITED
3pm

WC **29 UEFA CHAMPIONS LEAGUE (TBC)**
SEMI-FINAL

MAY 2019

WC **6 UEFA CHAMPIONS LEAGUE (TBC)**
SEMI-FINAL

12 EVERTON
3pm

Note all matches from October are likely to change as Premier League broadcast selections are made and cup fixtures confirmed. Please visit our website tottenhamhotspur.com/matches to get up-to-date information and details of any other events and concerts. Alternatively, please register with us for regular updates via tottenhamhotspur.com/local.

THANK YOU

If you would like a summary of this information in your own language, please email us at **communityrelations@tottenhamhotspur.com**.

Albanian
Nëse doni një përmbledhje të këtij informacioni
në gjuhën tuaj, ju lutemi na dërgoni një email në adresën
communityrelations@tottenhamhotspur.com.

Arabic
اذا أردتم موجزاً عن هذه المعلومات بلغتكم الأم فالرجاء أن ترسل لنا إيميل على العنوان
الالكتروني التالي **communityrelations@tottenhamhotspur.com**

French
Si vous souhaitez un résumé de ces informations
dans votre langue, veuillez nous adresser un mail à
communityrelations@tottenhamhotspur.com

Gujarati
જો તમને તમારી પોતાની ભાષામાં આ માહિતીનો (ઈન્ ફર્ મેશન) ટૂંકસાર જોઈતો હોય તો,
કૃપા કરી અમને ઈમેઈલ કરો **communityrelations@tottenhamhotspur.com**

Greek
Αν θέλετε να λάβετε μία περίληψη των πληροφοριών αυτών στη
γλώσσα σας, παρακαλείσθε ενημερώστε μας μέσω email στην
διεύθυνση **communityrelations@tottenhamhotspur.com**

Kurdish
ئەگەر پوختەیەکی ئەم زانیاریانەت بە زمانی خۆت دەوێت، تکایە ئیمەیڵمان بۆ بکە بۆ:
communityrelations@tottenhamhotspur.com

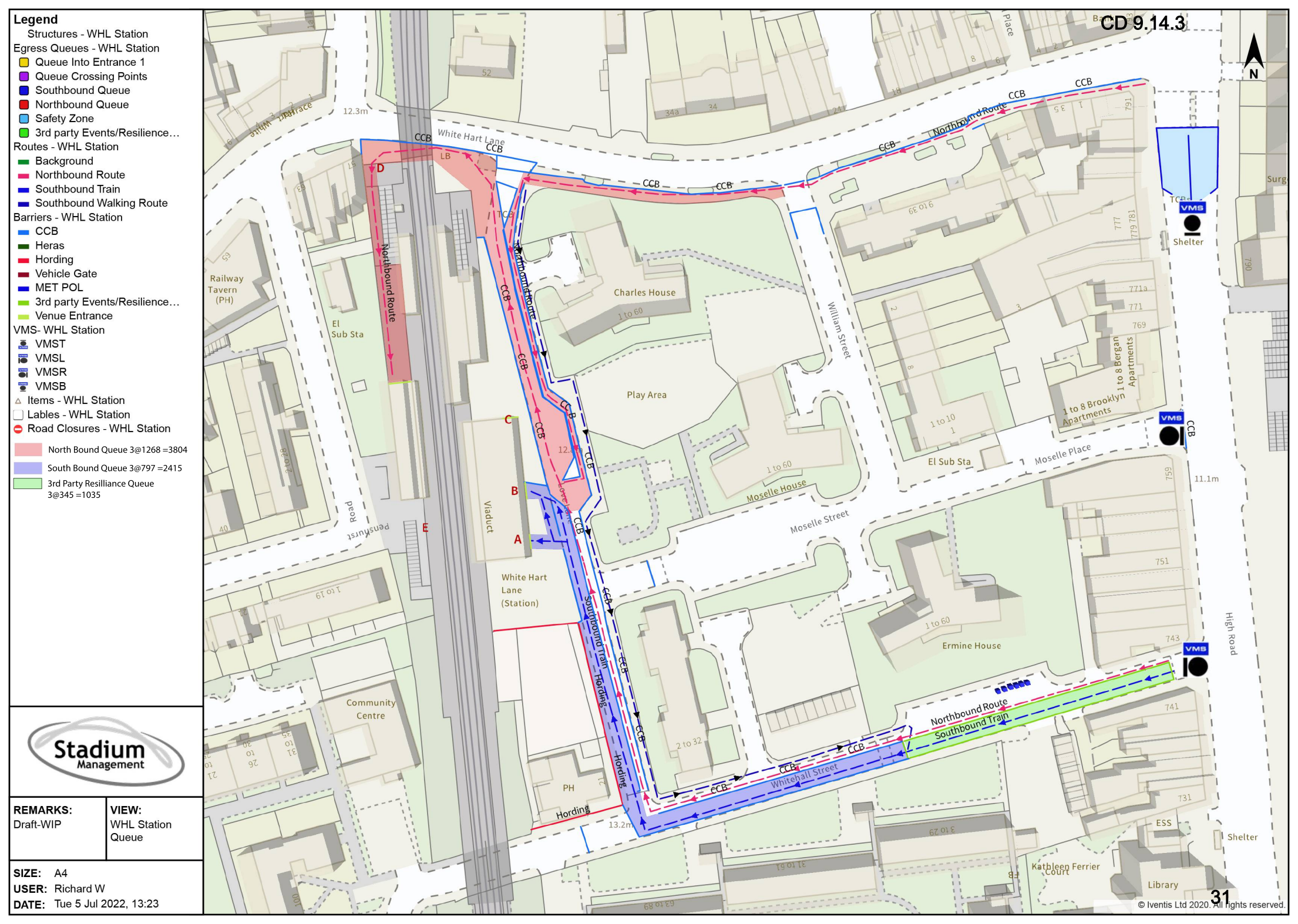
Portuguese
Se desejar obter um resumo destas informações no seu idioma,
envie um e-mail para **communityrelations@tottenhamhotspur.com**.

Romanian
Dacă doriți un rezumat al acestor informații în limba dvs.,
vă rugăm să ne trimiteți un email la
communityrelations@tottenhamhotspur.com.

Somali
Haddii aad rabto in macluumaadkan laguugu soo koobo
luqaddaada gaarka ah, fadlan iimayl noogu soo dir halkan
communityrelations@tottenhamhotspur.com.

Turkish
Bu bilgilerin kendi dilinizde özeti için lütfen **communityrelations@tottenhamhotspur.com** adresinden bize e-posta gönderin.

This information is available in large print or audio format.
Please email us at **communityrelations@tottenhamhotspur.com** to request a copy.


CD 9.14.3
Legend
Structures - WHL Station
Egress Queues - WHL Station
Queue Into Entrance 1
Queue Crossing Points
Southbound Queue
Northbound Queue
Safety Zone
3rd party Events/Resilience…
Routes - WHL Station
Background
Northbound Route
Southbound Train
Southbound Walking Route
Barriers - WHL Station
CCB
Heras
Hording
Vehicle Gate
MET POL
3rd party Events/Resilience…
Venue Entrance
VMS- WHL Station
VMST
VMSL
VMSR
VMSB
Items - WHL Station
Lables - WHL Station
Road Closures - WHL Station
North Bound Queue 3@1268 =3804
South Bound Queue 3@797 =2415
3rd Party Resilliance Queue 3@345 =1035
Stadium Management
REMARKS: Draft-WIP
VIEW: WHL Station Queue
SIZE: A4
USER: Richard W
DATE: Tue 5 Jul 2022, 13:23
White Hart Lane
Northbound Route
Southbound Train
Hording
Moselle Place
Moselle Street
Whitehall Street
William Street
Charles House
Play Area
Moselle House
Ermine House
Viaduct
Community Centre
Railway Tavern (PH)
El Sub Sta
Shelter
Library
Kathleen Ferrier Court
1 to 8 Brooklyn Apartments
1 to 8 Bergan Apartments
High Road
A
B
C
D
E
N
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31

BURO HAPPOLD - Crowd Flow study in support of Lendlease's hybrid planning application concerning the High Road West development.

Salient content - Dr Jim Dickie

May 2022 (revised version of February draft)

This redrafted BH report provides considerable detail that addresses various criticisms levelled by this writer and Movement Strategies at their earlier report previously made available to the planning committee in February 2022.

The additional detail provided derives from on-site observations, video recordings and computer modelling relating to spectator movements concerning egress from the stadium following an event. In particular, the flows to and from the stadium to White Hart Lane station provide the primary focus.

(Extracts taken from the report appear in the original font)

1 Executive Summary

The key assessment criteria for the Crowd Flow study is to ensure the HRW Masterplan provides at least equivalent areas and widths as the existing space for Northbound and Southbound queues to White Hart Lane Station on event days. Access for residents and a contraflow lane also need to be accommodated.

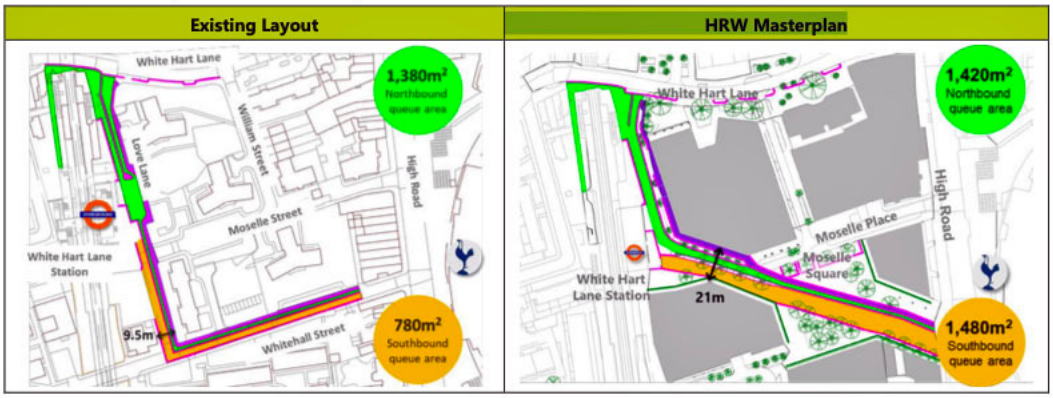


Fig.1a. (From BH May report.)

- ~55% to 90% increase in Southbound queue area on the illustrative layout compared to the existing site.
- Illustrative Masterplan Northbound queue area is equivalent to the existing Northbound queue area.

For comparative purposes the illustrated value of 780m^2, indicative of the SB queue provision. is no longer appropriate, differs from that previously provided, and has been amended. In the Existing Layout the **available** area is not limited by the barrier provision but extends to the High Road. The barrier provision simply recognises the level of expected demand. (It is understood that BH recently received amended details pertaining to the area in question. Barrier provision currently extends over an area 797m^2. A further non-barriered area of 345m^2 is described by Movement Strategies. The area currently available for the SB queue is therefore 1142m^2 as compared to 1480m^2 provided by the HRW Masterplan.

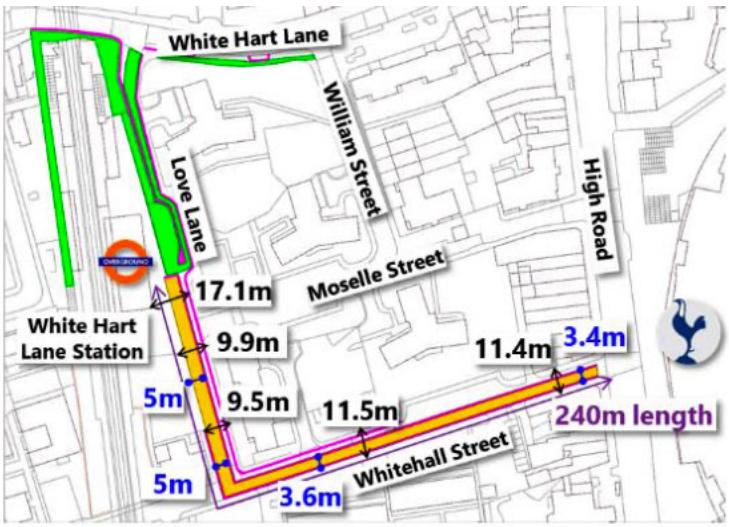


Fig.1b. (From BH May report.)

Fig.1b appears in both the February report and the May report (Appendix B) and the quoted queue provision differs.

February 960m^2 May 780m^2.

This writer considers the differing values are probably an error in editing but carry a significance beyond the simple value. Fig.1a describes the limit of the current barrier layout adopted as opposed to Fig.1b which extends the queuing area to the High Rd as adopted for the Masterplan proposal in Fig.1a.

Elsewhere this writer (JFD) has categorised events. The project comprises of two phases

1. Final 2. Construction period.

Events held at the stadium can be categorised as

1. Occurring frequently > 20/year 2. Occurring infrequently < 6/year

Category 1 – PL Football fixtures held on different days of the week.
Category 2 – NFL, Concerts, Boxing matches, occasional football matches with late finishes.

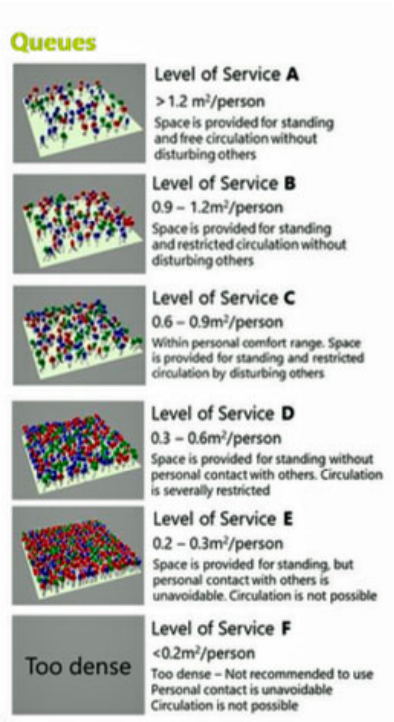
Site observations undertaken by BH indicate that for Category 1 events as previously defined the queuing area of 780m^2 as that defined by the barrier provision is sufficient. The evidence is that the current event management arrangements for Category 1 events are in the main satisfactory.

2.4 Crowd Flow Study Approach

Egress after an event is considered the most critical period for crowd flows as arrivals tend to be more distributed over a longer duration, in comparison egress can be more condensed and queues for White Hart Lane Station are likely to form. The area for queueing at White Hart Lane Station post-event is a critical parameter and is the focus of this Crowd Flow Study – ensuring that at least equivalent area and widths as the existing space for queues to White Hart Lane Station on event days are provided.

2.5 Acceptance Criteria

Fig.2 (BH report,Fig.2-4)



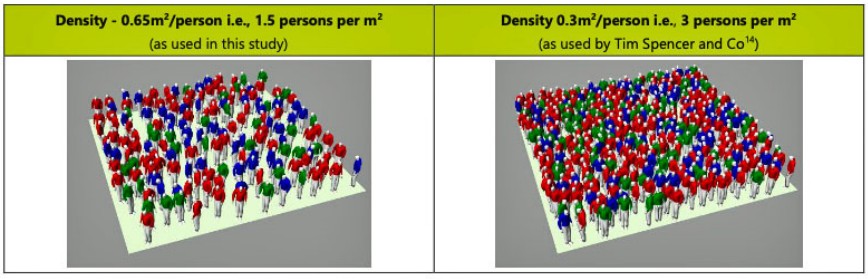


Figure 2-4 Illustration of Density applied in this study vs. previous studies

The current site has been observed to experience densities of ~0.5m² per person although it is noted that this can vary for different events, duration of queue and position within the queue.

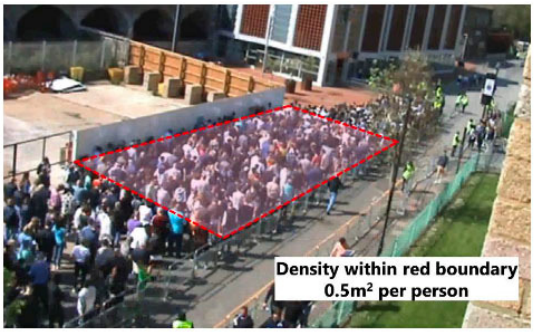


Figure 2-5 Illustration of Density captured through site survey

Fig.3. From BH report.

Level of Service D, as provided in Fig 2 covers the range 0.3 – 0.6m^2/person.

Subsequently LoS D is adopted to describe queue densities.

The density illustrated in Fig 3 falls within this range but the density will increase as individuals in the queue approach the station and as may be seen the queuing density increases to accommodate the nature of the spatial arrangement. The LoS D range is considerable. Whilst 1.5 persons/m^2 has been adopted Fig.3 indicates that 2 person/m^2 would be acceptable.

2.6 Simulation software – Legion Space Works

Content here is general and lacks detail as regards the limitations of the model, in particular assumptions required in 'building' the model need to be provided. Demographics differ according to the nature of an event. **Study adopts 1.5 persons/m^2 as compared to Spencer, 3/m^2 and Movement Strategies 2/m^2.**

3 Incorporating the existing crowd management strategy

Data was obtained on 5 occasions when PL fixtures were played.
Days of the week with kick off times as follows

Thursday	7:30
Sunday	2:00
Saturday	12:30
Sunday	2:00
Thursday	7:45

The existing crowd management plan during post-match egress provides 3-lane barrier system along Whitehall Street and Love Lane to allow spectators to access the White Hart Lane Station and Love Lane estate. The lanes allow for

Queue for Southbound platform, area 780m^2, minimum width 3.6m on Whitehall Street,
Queue for Northbound platform, area 1,380m^2 including primary queue along Love Lane (turning back towards

White Hart Lane) and access along Whitehall Street. Minimum width 1.5m on Whitehall Street and Love Lane,

Contraflow (primarily for Southbound platform users who arrived from White Hart Lane), minimum width 1.4m
Route along White Hart Lane between Love Lane and William Street is used for access to both Northbound queue and contraflow and therefore is not included in Northbound queue area

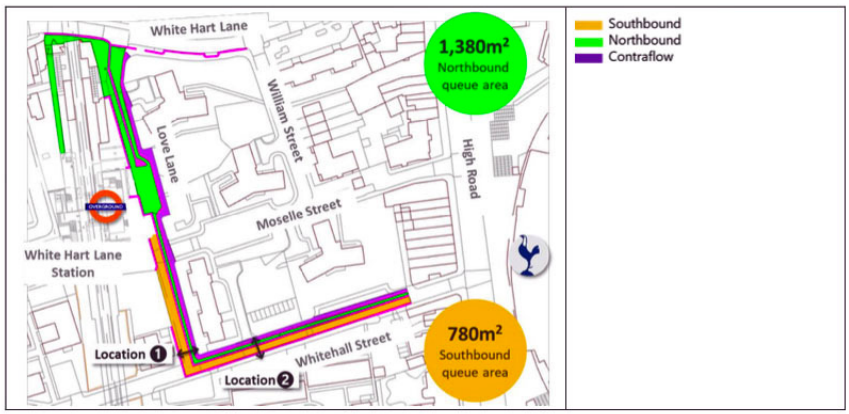


Fig.4. From BH report, (Fig.3-1).

Queue widths at locations indicated

	Resident Access	Southbound	Northbound	Contraflow
		Width	Width	Width
Location 1		5m	1.5m	1.4m
		7.5 persons	2 persons	2 persons
Location 2	2.6m	3.6m	1.5m	1.4m
		5 persons	2 persons	2 persons

The site observations also helped provide an understanding of the crowd dynamics of spectators leaving the Tottenham Hotspur Stadium and queuing at White Hart Lane Station for different days of the week i.e., Mid-week vs Weekend, for varying Kick-off / Final whistle times, for train cancellations / reduced services and for varying demographics of spectators i.e. non-London spectators (Norwich) vs London spectators (Brentford / Arsenal) in addition to season ticket holders.

The site observations carried out were primarily focused on determining the current queue strategy used on the site during the egress after a match at the stadium.

Key points noted regarding crowd dynamics from the site observations are:

- **Spectators are responsive to announcements and information provided by THFC and Stewards**. For example for the match held on the 1st of May – Sunday, THFC were aware in advance of disrupted train services and announcements were made inside the stadium to advise spectators to walk to alternative stations. A proportion of spectators walked to alternative locations instead of waiting in front of White Hart Lane Station.
- Northbound spectators arrive from both Whitehall Street or White Hart Lane to reach the Station entrance leading to Northbound platform
- Contraflow lane is mainly used by Southbound spectators who arrive via White Hart Lane
- Queues for Southbound are always contained within the barriers provided
- Background flow of residences were noted on Whitehall Street, moving towards Love Lane estate or High Road
- Queues for Southbound disappear within 45 minutes after the final whistle. Queue for Northbound platform are typically minimal and contained within the station boundary unless there is severe rail disruption reducing train frequency to 2 trains or less per hour.

Table 3.1 in the BH study summarises site observations of egress following the five Premier League fixtures that were observed-8.1.

Variability in train cycle is noteworthy.
Queue length data is inconsistent due to **questionable** variation in barrier layout, see Appendix B Section B.1.

Data supplied relating to egress is limited. In order to interpret Table 3.1 additional raw data as collected or determined from video recordings should be supplied.

Comprehensive detail as to what, where and when data is obtained is necessary for a reader to establish the merit of conclusions of the authors.

Kickoff time –	broadly determines fulltime which will influence the interpretation of station arrival rate.
WHLS demand – SB v NB demand-	Valid conclusion that spectators will make decisions if well informed. For purposes of design a reasonable conclusion, depending on who is playing, would be that 70% might seek a south bound train and 50% might seek a north bound train.
Ingress rates	Peak 153/min/door (May 12th) Uncertain as to what this means. Appendix D states that the stair capacity is 182/min based on LU criteria 35p/m/min which is very conservative. **A significant element of data for both queues is rate of arrival at the end of the queue. What increment was adopted to record this data?**
Train frequency	No. of coaches/train? No. of trains/hour seems less than adopted in calculations elsewhere. Timetabled peak numbers - 6 SB&NB/hour.
Queue lengths	May 1st important observation that spectators responded to information provided by THFC. May 12th important in demonstrating the significance of barrier configuration. (Southbound queue lane on Whitehall Street was narrower than the Northbound queue. This led to a large queue that extended onto Whitehall Street)
Observations	May 1st NB 117/min 3 trains/hour platform overspill inevitable.
Contraflow	April 16th, May 12th , predictable fractions of SB demand using WHL April 16th 28% of SB queue originated from WHL May 12th 26% of SB queue originated from WHL
May 1st 2:00 KO May 12th 7:45 KO.	Spectators diverted elsewhere due to reduced train service. 5 SB trains/hour 140m SB queue, incorrect barrier layout.

4 End-state Illustrative Masterplan

Three lanes from High Road through Moselle Square.

1. SB flow to WHL station

This writer is uncertain as to the origin of the current queuing layout. Possibly it springs from the earlier lower capacity stadium.

1480m^2 available for SB queue.
Contingency space on High Road noted and considered acceptable for short term management procedures.

Minimal increase (3%) in NB queue area which is acceptable.

Fig.4.1 Purpose and length of contraflow? Discussion would be beneficial.

If spectators from ALL stadium egress locations, particularly from the NE, use the High Road to access both NB and SB queues the contraflow lane (used by residents) could terminate when reaching Moselle Square and for late night finishes questionable whether it is needed at all.

5 Defining the Key Crowd Flow Scenarios

Range of events considered, Premier League, NFL, Cup game (stress test) Concerts?

5.1 Input Parameters

Event	Premier League	Cup Game	Boxing	Concerts* (JFD)
Capacity	62850	62850	67000	55000
Peak 15min	44.4%	80%	80%	70% (10:30 finish)
WHLS usage	20.3%	23%	14%**	30%
SB:NB	70:30	80:20	70:30	90:10
Trains	6/hour/platform	Train load 1045/929 passengers*		

* Conservative assumptions
** Questionable assumption

Two significant factors
Regular attendees Football
Train capacity 6270/hour A person joining a 3000 person queue will wait more than 30min to board a train.

The majority of regular attendees will determine the quickest path to reach a station to continue their onward journey.

Are spectators who depart from the NE exit and proceed anti-clockwise towards WHLS forced to use White Hart Lane?

(This writer has no recollection that capacities of 67000 formed part of earlier discussions)

6 Crowd flow analysis of HRW Masterplan

Model analyses undertaken - PL match, Stress test (late finish)

6.2 Egress Modelling

Dynamic crowd flow modelling has been carried out in Legion.

6.2.1 Legion Model inputs

Key inputs considered for the Legion model are summarised in Table 5-1 Key Crowd Flow parameters, considering the Premier League and Cup Game scenarios.

Additional inputs to the Legion model are as follows:

- Final Whistle is considered at 16:50
- Train frequency considered is a train arriving every 10 mins, starting from 16:45.
- The model starts from the Stadium site and considers spectator flows towards White Hart Lane and other transport nodes to the North, South and West

The content needs to be improved by providing a greater depth of detail. Additional content as part of the intended amendments could provide this.

The access ratio assumption concerning the NB queue is considered questionable.

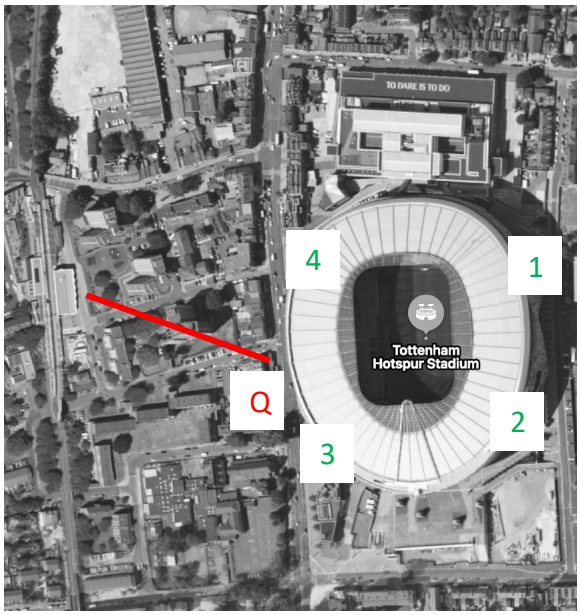


Fig.5.

Spectators exiting at locations 2,3 and 4 are likely to move directly to the entrance to the Queue. The approximate walking distances to Q from each location are:

1a	593m	anti-clockwise
1b	667m	clockwise
2	288m	
3	82m	
4	94m	

Distance coupled with an assumed walking speed determines the time taken to reach Q and define the lags in the arrival characteristics from each exit.

The train capacity creates the queue characteristic. If the length of queue creates a waiting time greater than 35min arriving knowledgeable spectators, as previously indicated, are likely to seek other stations for their onward journey.

Queue length – Typical Premier League

The still images Fig.6-2 and Fig.6-3 from the modelling show the extent of the queue build up for the Southbound platform in the existing site vs. the Illustrative Masterplan after a Typical Premier League match. The queue spills out of the barriers in the existing site while the Illustrative Masterplan can accommodate the peak queue for the typical Premier League egress scenario.

Without detailed knowledge of the computer model and given what has been observed I would not be confident in drawing any conclusion other than the illustrative Masterplan is demonstrably superior to the existing layout as regards the SB queue provision.

The model for the existing layout, Fig.6.2 does not effectively demonstrate spillage, indeed spillage was not observed by either BH or this writer following egress, see Appendix A.
Figs 6-2 and 6-3 would be of greater benefit if ordinate timings were the same. The significance regarding the range of LoS D is not sufficiently recognised in Fig.6.3.

6.2.3 Stress Test Scenario

The Stress Test Key Crowd Flow parameters predict that 9250 persons will seek to access the Southbound service from White Hart Lane during the peak 15 minutes demand. The numbers queuing outside of the station would be dependent upon the train departure cycle. If a train departs as the first spectator departs summation of platform and subsequent train loading enables the queue size to be determined. It is necessary to allow for distances travelled from the stadium exits which means that the queue will continue to grow after 15minutes until the next train departs. A queue exceeding 7000 spectators would present itself without management intervention. The inevitable spillage predicted for either existing layout or Illustrative Masterplan can be approximately derived by using area and an assumed density of occupation.

The important conclusion to be drawn is that the Event Management Plan needs to enable the spillage to either be prevented or rapidly dispersed.

6.2.4 Egress Modelling Summary:

The modelling outputs demonstrate how the crowd flows for a typical Premier League match and a Cup Match (Stress Test scenario) could be operated within the Illustrative Masterplan in comparison to how these scenarios would perform within the existing site.

In this writer's opinion the most significant conclusion, as previously stated, that this writer would draw from the results presented by BH is that the spillage levels, from either computer or the simpler linear model, predicted for their stress test must be managed to enable minimal numbers of spectators queuing on the High Road.

6.2.5 Sensitivity Study – Southbound and Northbound Queue length

The resulting queuing area taken up by spectators under these scenarios is calculated based on Fruin's LoS C/D i.e. 0.65m^2/person **(1.5 persons per m^2).** This is considered as comfortable density for pedestrians and comparable to the density observed through site surveys.

The value, 0.65m^2/person (**1.5 persons per m^2**), is significantly less than the adopted assumptions of Spencer (3/m^2) and Movement Strategies (2/m^2).

Defining a queue length using spectator numbers is meaningful. BH have adopted parameters that others have derived. A conservative approach is required in any design. This writer's prediction for the size of SB queue is marginally higher than that predicted BH, 2608 as compared to 2431. Both values can be comfortably accommodated within the proposed queuing provision.
The current comparable queuing provision is understood to be 1142m^2. The density derived using this writer's higher value is 0.43m^2/person which lies within LoS D, 0.3-0.6m^2/person.

6.3 Queue arrangement without funnelling

In this writer's opinion Fig.6-7, illustrating the current crowd flow procedures, seriously weakens THFC's objection. It is considered that regardless of the outcome concerning the objection further consideration of the crowd flows in this area should be undertaken.

6.3.4 Table 6.4

It is not considered definitive to compare options based on area alone. Option 2, a Disney style queue, has implications as regards platform loading. Option 1, a Snake queue, reflects allowing overspill onto the High Rd. The simplicity of Option 3 is beneficial should an incident arise within the queue.

6.4 White Hart Lane Station – exit flows

Event finish time is a factor.

7 Crowd flow during construction phasing

This understandably is an area of contention which the BH study addresses taking crowd 'storage' as the dominant factor. Area is significant geometry less so. This is acceptable in that crowd flows at the densities considered can accommodate geometrical discontinuity. Acceptance of temporary spillage on to the High Road is a contingency measure. Fig.7-1 is no longer correct and BH has amended this and associated figures in accordance to data recently supplied by Movement Strategies as follows.

1. Drawings from THFC (shared 7.7.22) show 797m^2 for SB queue (including **128m^2** in front of the station) + 345m^2 resilience queue = total **1,142m^2**
2. In our area measurements we had **not** included the area in front of the station as this is reserved for crowd management
3. For the basis of comparison, using the same approach of measurement (i.e. adding in the area in front of the station) the queue areas in our report would update as follows:
    a. **End state:** 1,480m^2 + 95m^2 = **1,575m^2** (see note below)
    b. **Construction** (figure 7-1): in this scenario the existing area is used, hence this would update to **1,142m^2**
    c. **Construction** (figure 7-2, 7-3, 7-4, 7-5): 1,010m^2 + 128m^2 = **1,138m^2**

The 4m^2 difference between 1 and 3c is not considered meaningful as the value would lie within the error boundary

8 Summary and Recommendations

Buro Happold's Crowd Flow team has been appointed to review the High Road West (HRW) development Masterplan for crowd safety and management on major event days at Tottenham Hotspur Stadium and to facilitate efficient wayfinding throughout the site.

The key assessment criteria for the Crowd Flow study is to ensure the HRW Masterplan provides at least equivalent areas and widths as the existing space for Northbound and Southbound queues to White Hart Lane Station on event days. Access for residents and a contraflow lane also need to be accommodated.

8.1 Spatial requirements for HRW Masterplan

- The aim of the HRW Masterplan is to provide at least equivalent area and widths as the existing space for Northbound and Southbound queues to White Hart Lane Station on event days in the End-State Masterplan and Construction phasing:

- **Southbound**:Minimum area 780m^2,minimum width 3.6m

It is understood that the minimum area has been amended and the increase satisfies area equivalence.

Appendix A Detailed Crowd Flow data

Shows detail of research undertaken.

The implied accuracy of the Modal splits provided require quoted values to be rounded up for purposes of design.

Details provided concerning transport reflect positively as regards the understanding of mass egress provisions.

Appendix B Detailed Site visit Summary

Site observations reported upon supplemented in the report using data obtained from video recordings.

Appendix C Departure Profiles

Provides data related to analysis presented in the study. Incremental plots would be more informative than block diagrams

Appendix D Platform Loading and Capacity

Flowrates adopted for purposes of analysis considered to be conservative and could be increased.

Appendices E,F,G and H primarily present overviews of elements of the scheme with Appendix F providing requisite dimensions.

Dr Jim Dickie July 13th 2022

Haringey questions (e-mail May 31 2022**) V3**

Q1. Is the minimum area allowed for in the parameter plans equivalent to the existing area provided for crowds to queue to the station?

The intention of this question is understood. Replacing the word *area* with the term *queuing provision* embraces both area and geometry.

Area alone is not sufficient. The geometry of the space is significant, and the term suggested, embraces both area and geometry.

BH report - Fig.7-1, crowd circulation route proposed during Q3 2022 to 2023

The provision of 780m^2 (now revised) is not sufficient. (see detail provided below in response to your question Q2).

([I have been given to understand, following conversations with Buro Happold, that the value has been increased satisfactorily addressing the matter when compared with the current provision).

1. Drawings from THFC (shared 7.7.22) show 797m^2 for SB queue (including **128m^2** in front of the station) + 345m^2 resilience queue = total **1,142m^2**
2. In our area measurements we had **not** included the area in front of the station as this is reserved for crowd management
3. For the basis of comparison, using the same approach of measurement (i.e., adding in the area in front of the station) the queue areas in our report would update as follows:
    a. **End state:** 1,480m^2 + 95m^2 = **1,575m^2** (see note below)
    b. **Construction** (figure 7-1): in this scenario the existing area is used, hence this would update to **1,142m^2**
    c. **Construction** (figure 7-2, 7-3, 7-4, 7-5): 1,010m^2 + 128m^2 = **1,138m^2**
4. The 95m^2 added for the end state is not quite the 128m^2 as there was a small overlap of areas.

(Extract from Buro Happold e-mail July 12th)

Q2. Does the minimum area allowed for in the parameter plans exceed the existing area provided for crowds to queue to the station and therefore provide a better position as compared to the existing position?

I have been informed that, following their most recent receipt of 'area data' the minimum current SB queue area during the construction phases provides equivalence. The current provision addresses the current demand on WHSL, providing barrier placement is correct, with considerable space to spare. There is additional space during the construction phases that could be used, planned or in emergency, should the necessity arise.

The current NB queue provision and that described in the BH study as being available upon completion of the Masterplan are broadly similar.

The project comprises of two phases

1. Final 2. Construction period.

Events held at the stadium can be categorised as

1. Occurring frequently > 20/year 2. Occurring infrequently < 6/year

Category 1 – PL Football fixtures held on different days of the week.
Category 2 – NFL, Concerts, Boxing matches, occasional football matches with late finishes.

Alternatively, Category 1 could be defined as *regular* and Category 2 as *irregular.*
Both categories place differing demands on White Hart Lane Station.

Train issues can occasionally result in a Category 1 event being necessarily considered as a Category 2 event.

Observations undertaken by BH, FIVE Premier League fixtures and ONE Premier League fixture by this writer, indicate that the current queuing area is sufficient to enable safe management of the movement of spectators events between the stadium and WHLS following egress for events in Category 1.

Question – What dictates the necessary queuing provision (Area and geometry)?

The train frequency coupled with the train and platform capacities dictate the rate of spectator departures from the queue. A broad-brush analysis suffices to illustrate the issue.

The arrival/departure cycle of trains in combination with the time of arrival of the first spectator influences the number of spectators who depart the station in a given interval which in turn determines the size of the queue outside of the station.

Adopting the same assumptions for a PL game as Buro Happold Table 5-1 namely

Capacity attendance 62850 Peak 15 minute demand 44.4% WHLS usage 20.3%

SBound : NBound 70:30 Train frequency 6 trains/hour. Train/platform loading capacity 1045

After the peak demand interval of 15 min., the remainder of the cohort departs in the following 30min.

The upward flowrate, 35 persons/m/min., on the station stairs adopted by Buro Happold is considered too conservative. In similar circumstances this writer has measured upward flows of 63 persons/m/min.

Assume that the first spectator arrival occurs simultaneously with the departure of a train.
During the initial 15minute arrival interval spectators on one fully loaded train and a fully loaded platform will not contribute to the queue outside of the station.

It is reasonable to assume that during an interval of 15min the SB platform can be loaded to capacity TWICE together with ONE full train departure which would mean 2090 spectators who have arrived would not form part of the SB queue outside of the station.

Using the BH assumptions indicates that 62850 x 0.444 x 0.203 x 0.7 = 3966 will arrive in the 15min interval resulting in 3966 – 2090 = 1876 person in the queue.

The calculation as undertaken by BH is not correct but is conservative as there is a lag between arrivals from the west side and spectators originating from the east side. It is understood the BH computer model incorporates this aspect.

Arrival rate from both southern and western exits on the High Rd

= 0.5 x 3966/15 = 132/min

Assuming lags in arrivals of 3min and 8min from SE and NE exits respectively means at 15min there would be

1983 +66 (12 + 7) = 3237 persons in the queue.

In reality this will be less as early arrivals will board the first train to depart.

During the 15 – 20 minute interval a further 1025 spectators will arrive to join the queue.

A reduced flowrate from the western exits needs to be recognised.

At 20min the resultant queue comprises of 2173 persons which equates to 1.9 persons/m^2 assuming an available area of 1142m^2 or 2.8 persons/m^2 with an available area of 797m^2. The area values adopted derive from the most recent drawings supplied to BH by MS. It would appear that the lower value of 797m^2 relates to the barrier provision considered necessary for PL fixtures.

Using data derived from observations it is reasonable to assume that 200 persons would board the first train. Allowing for early arrivals would reduce the foregoing density figures to 1.8 and 2.5 respectively. This writer would adopt the lower value to justify the area provision.

A similar calculation adopting BH values adopted for their Stress Test (Category 2 event) would predict a queue in excess of 6000 persons. A spectator joining the back of this size of queue would wait for more than one hour before entering the station.

Excluding NFL games excessive wait times can be avoided for Category 2 events providing spectators are informed of alternatives. The Event Management Plan can successfully accommodate this as illustrated by the communication to spectators of rail problems during the match that BH observed on May 1st. Similarly travel information supplied to attendees prior to the recent Guns and Roses concert was comprehensive and beneficial.

Additional text concerned conditions to be attached to permissions granted.

Also below is a condition that is proposed to be part of any permission granted.

- *Can this condition be endorsed?*

Crowd Flow Management to be approved

Prior to the commencement of any Phase (excluding Plot A) an interim Crowd Flow Management Report will be submitted to and approved in writing by the Local Planning Authority. The approved report must include queue configurations and locations and shall confirm that the interim access and space for visitors to the stadium across the Development Site is no less than the situation as at the date of grant of this planning permission in terms of minimum queue widths, minimum areas for queueing, and general queue safety such as tripping hazards and ensuring queue configurations and locations meet the necessary requirements for crowd safety.

The principle here is accepted. The first sentence could be challenged in a similar manner to the current objection. The phrase *no less than the situation* is, to my way of thinking, rather more specific than might appear. The words *provide equivalence in the provision of crowd safety as regards queue area and geometry.* This is more definitive than may appear and accommodates such matters as tripping hazards, queue configurations and any possible hazard.

For the last reserved matter application for any Phase south of White Hart Lane a Final Crowd Flow Management Report shall be submitted to and approved by the Local Planning Authority. The approved report must include queue configurations and locations and shall confirm that the final access and space for visitors to the stadium across the Development Site is no less than the situation as at the date of grant of this planning permission in terms of minimum queue widths, minimum areas for queueing, and general queue safety such as tripping hazards and ensuring queue configurations and locations meet the necessary requirements for crowd safety.

I am not certain that this paragraph is required given the first sentence of Paragraph 1.

Both the Interim and Final Crowd Flow Management Reports will be consulted upon with the Safety Advisory Group, The Metropolitan Police, Haringey Council Building Control, and Tottenham Hotspur Football Club. All measures in the approved reports shall be implemented for the lifetime of the Development.

Questionable on the grounds that is promotes everlasting debate. What the bodies refer to need to agree to with regard to the provision of safety is relatively simple. The Safety Advisory Group is in the best position to address this. I note from minutes concerning the Boxing event the frustration voiced with regard to lack of knowledge needed to arrive at a decision. I have too frequently noticed this to create problems at numerous events I have had an involvement with. Consequently, I would consider that each of the groups mentioned above should stipulate what information they require to know and how long before an event do they require to have possession of the information.

JFD conclusion

The current queuing provision for spectators seeking to board SB trains at WHLS has been observed by BH and by this writer to operate satisfactorily for Category 1 events. Providing equivalent or superior provision is in place and the necessity of Event Management plans addressing Category 2 events is recognised in this writer's opinion the BH proposals are acceptable.

Q1 YES
Q2 I interpret this question as relating to the End State and the answer would be YES.

It is also necessary to recognise the geometry of the queue and the proposal presents a significant improvement. During the construction phases it is not appropriate to couch the question solely in terms of area. The BH study, in fact, demonstrates areas within the current procedures that could be improved.

Dr Jim Dickie
July 14th 2022

High Road West

Crowd Flow Study – Construction Phasing

Jinu Varughese

5th October 2023

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author	**Jinu Varughese**
date	**15.09.2023**
approved	**Becky Hayward**
signature	
date	**15.09.2023**

1 Crowd flow during construction phasing, High Road West

During the construction life-cycle of the High Road West masterplan, it is essential that crowd safety can be achieved – in particular during peak event days at the Tottenham Hotspur Stadium.

An initial review of the construction phasing is summarised in Buro Happold's Crowd Flow report dated May 2022. This document provides an updated review based on latest construction phase layouts from SEW and Lendlease. The Crowd Flow team has carried out a high-level review of the construction phasing scenarios to ensure the key principles for safe and effective management of crowds can be achieved during peak event days at the Tottenham Hotspur Stadium within the space available.

The indicative crowd circulation routes considered for match days for each construction phases are provided. These crowd flow routes will be reviewed and updated with Lendlease and other stakeholders, as part of the Reserved Matters Application (RMA) process as well as in consultation with the Safety Advisory Group (SAG) at each key route change.

1.1 Crowd flow key principles:

The key crowd flow principles considered in the review of the construction phase layouts are as follows:

1. **Sufficient area and width for queues and circulation** - ensure at least equivalent area and widths as the existing space for Northbound and Southbound queues to White Hart Lane Station on event days can be provided during construction phasing.
2. **Safe circulation routes** – provide routes with minimal impact from hoarding and other on-site construction elements (e.g., to avoid the Canyon effect created by long stretches of hoarding on both sides of a circulation route)
3. **Emergency access** - provide unobstructed and safe egress routes for crowd dispersal and emergency service access in case of an emergency.

These principles are explained in detailed in this document.

Existing minimum queue area and width provisions:

The existing circulation width and queuing area defined for match days are summarised below based on observations made by Buro Happold Crowd Flow team and the queue layout provided by THFC (see Figure 1-1).

- Existing circulation width: Lane widths on Whitehall Street varied for each event day, minimum widths observed are:
    - 3.6m for Southbound Queue Lane, 1.5m for Northbound Queue Lane, 1.4m for Contraflow
    - 0.7m width for barrier (footing), one line of barrier per lane.
- There are some segments along Whitehall Steet with an additional ~2.1m width providing access to the residencies on the south side of Whitehall Street and through towards the West of the Station.
- Total minimum 11.5m width is required on Whitehall Street for spectator queue, circulation and barriers and including the 2.1m wide access used by residences.
- Along Love Lane a minimum of 9.4m is required for spectator queue, circulation and barriers.
- Existing queue area as provided by THFC (refer image below):
    - Area for Southbound queue = 1,142m^2 (including the front of the station).
    - Area for Northbound queue = 1,268m^2.
- The width of the queues and circulation in some spaces may need to be higher than the minimum width specified above in order to meet the required area.

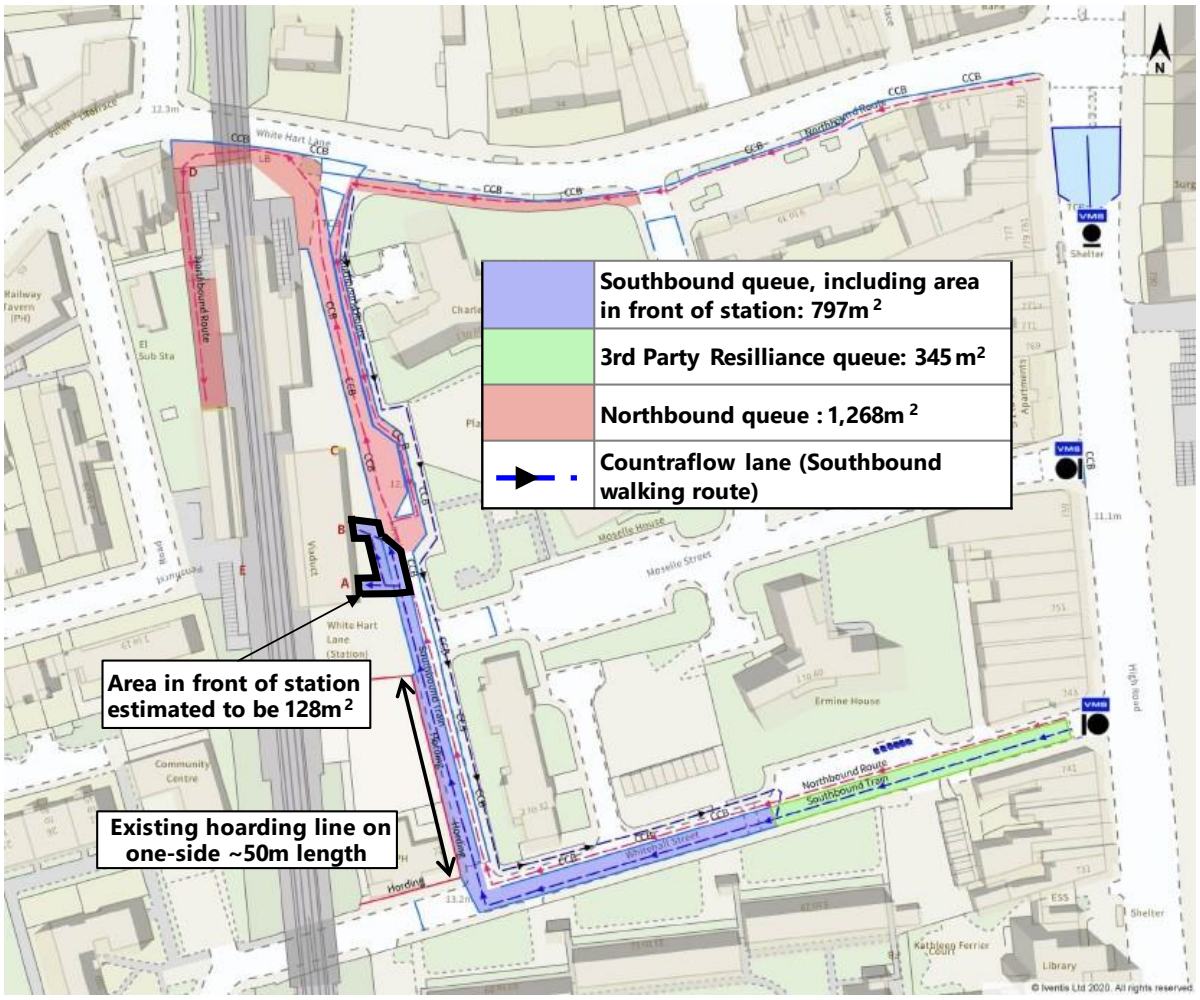


Figure 1-1 Existing crowd circulation route

Existing hoarding around circulation / queueing area

On Whitehall Street, there is 50m of hoarding on one-side of the Southbound Lane and continual fence along the same length of opposite side of Whitehall Street. See image below.

Figure 1-2 Existing crowd dispersal routes

Assumed Existing Dispersal Routes and Ambulance Routes

In case of an emergency, spectators need to leave the queuing area via the nearest available route and emergency services would need to reach the incident area.

In the existing scenario, in case of emergency, spectators waiting in front of White Hart Lane Station can exit the queue system and disperse at the following locations (refer Figure 1-3):

- East and West of Whitehall Street,
- North of Love Lane, and
- Moselle Street

Figure 1-3 Existing crowd dispersal routes in case of emergency

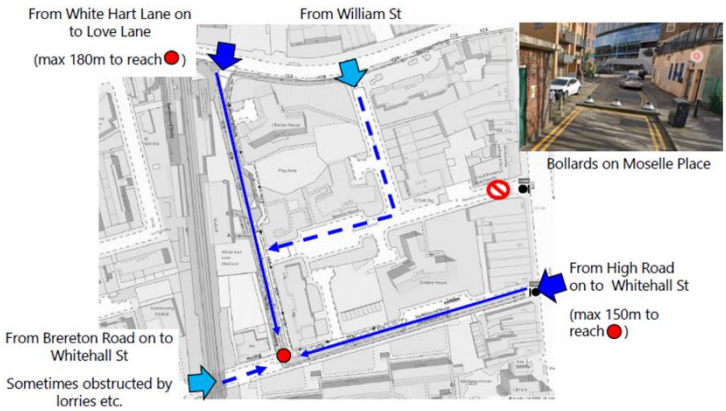


Figure 1-4 Existing emergency service access routes

In the existing scenario, emergency services can reach the queue space in front of White Hart Lane Station via the following locations (refer Figure 1-4). Since High Road is closed to vehicles during peak stadium egress, it is assumed emergency services vehicles arrive at the nearest road and emergency responders can then access the incident on foot:

- West of Whitehall Street, and potentially through East if Lorries are not obstructing the route.
- North of Love Lane.
- Potentially via William Street if cars parked on the street do not obstruct the route.

1.2 Circulation Routes and Queue Area in the Proposed Construction Phases:

Summary

The space and routes available during all construction phases can facilitate the existing Tottenham Hotspur Stadium Event Local Area Management Plan with regards to the following: road closure; train station access; main walking / cycle routes to and from the Stadium, to and from Shuttle bus and coach services, taxis, car parks; stewards and barriers; emergency access routes; and queuing spaces in front of the WHLS.

Lend lease has proposed to provide 10 stages of construction for how the development will be delivered from the existing condition to completion of the final development. These stages can be grouped into three main phases (or routes) for the purpose of crowd flow during the construction of the Scheme. These are:

- Route 1: The crowd flow routes for construction stages 1 and 2 will be the same as existing provision. During Stage 2, it is noted that hoarding will be provided along a section of Whitehall Street and Love Lane (opposite the Station main entrance). However, safety and effectiveness of spectator circulation will not be compromised during this Stage. The circulation widths and areas of the queue spaces are unaffected, and an alternative route connecting William Street and Love Lane is provided for crowd dispersal and emergency service access in case of an emergency. Route 1 will be in place for approximately 2.25 years.
- Route 2: The crowd flow routes for construction stages 3, 4, 5 and 6 will follow the same routes as the existing, with very minor alterations along those routes which will not fundamentally change the route people currently take between the Station and THFC stadium. These changes include the presence of hoarding adjacent to the route and slight angle changes along the routes. Route 2 will be in place for approximately for 3.75 years.
- Route 3: The crowd flow routes for construction stage 7 onwards shifts the access from the High Road approximately 30 metres to the south. This is the new access that leads to Moselle Square, which will be completed by construction Stage 8. The new access is highly visible from the High Road and will be easily identifiable for spectators egressing the stadium. Route 3 will be in place for approximately 4.75 years.

The table below summarises the impact of the construction phases on the key crowd flow elements. The colours show:

	There is sufficient provision to meet the existing minimum requirements
	The construction phases can work, but needs to be monitored regularly

	Stage	Circulation width and queue area	Lengths of double-sided hoarding on circulation routes	Dispersal route and emergency access
Route 1	1	As existing	None	As existing
	2	As existing	None	Equivalent to existing, with a temporary alternative dispersal/ emergency route via play area connecting to William Street
Route 2	3	Diverted route has sufficient width and queue area to accommodate the existing 3-lane crowd management strategy and existing queue area	None	Equivalent to existing
	4	Same as Stage 3	None	Equivalent to existing
	5	Same as Stage 3	None	An additional route is available
	6	Diverted route has sufficient width and queue area to accommodate the existing 3-lane crowd management strategy and existing queue area	45m at the entrance of Whitehall Street	An additional route is available
Route 3	7	Diverted route has sufficient width and queue area to accommodate the existing 3-lane crowd management strategy and existing queue area	50m at the entrance of Whitehall Street	An additional route is available
	8	End-State-Masterplan public realm with improved circulation and increased queue area is available, with hoarding	40m along the circulation route leading to WHLS	An additional route is available
	9	Same as Stage 8	Same as Stage 8	An additional route is available
	10	Same as Stage 8	None	An additional route is available
	11	End-State-Masterplan layout completed, improved circulation and increased queue area is available	None	An additional route is available

During each construction phase, Lendlease should ensure that the hoarding do not encroach onto the pavements along Whitehall Street, Love Lane, White Hart Lane and High Road, and that the pavements are available for circulation during event days, as per existing crowd management strategies.

Stage 1

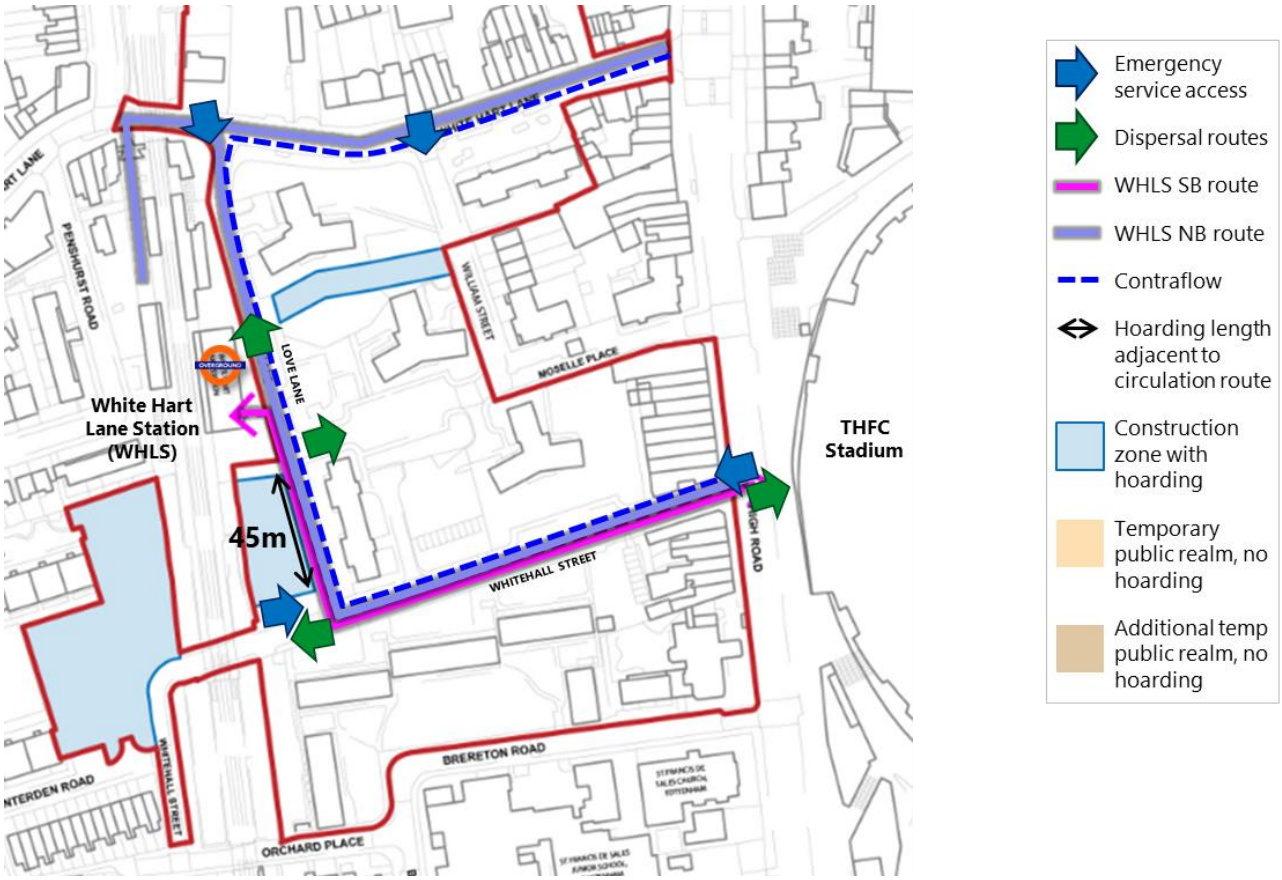


Figure 1-5 Circulation route and queue area, Stage 1

Circulation width and queue area

As existing.

Hoarding around circulation routes and queue area

As existing.

Dispersal routes and Emergency access

As existing.

Stage 2

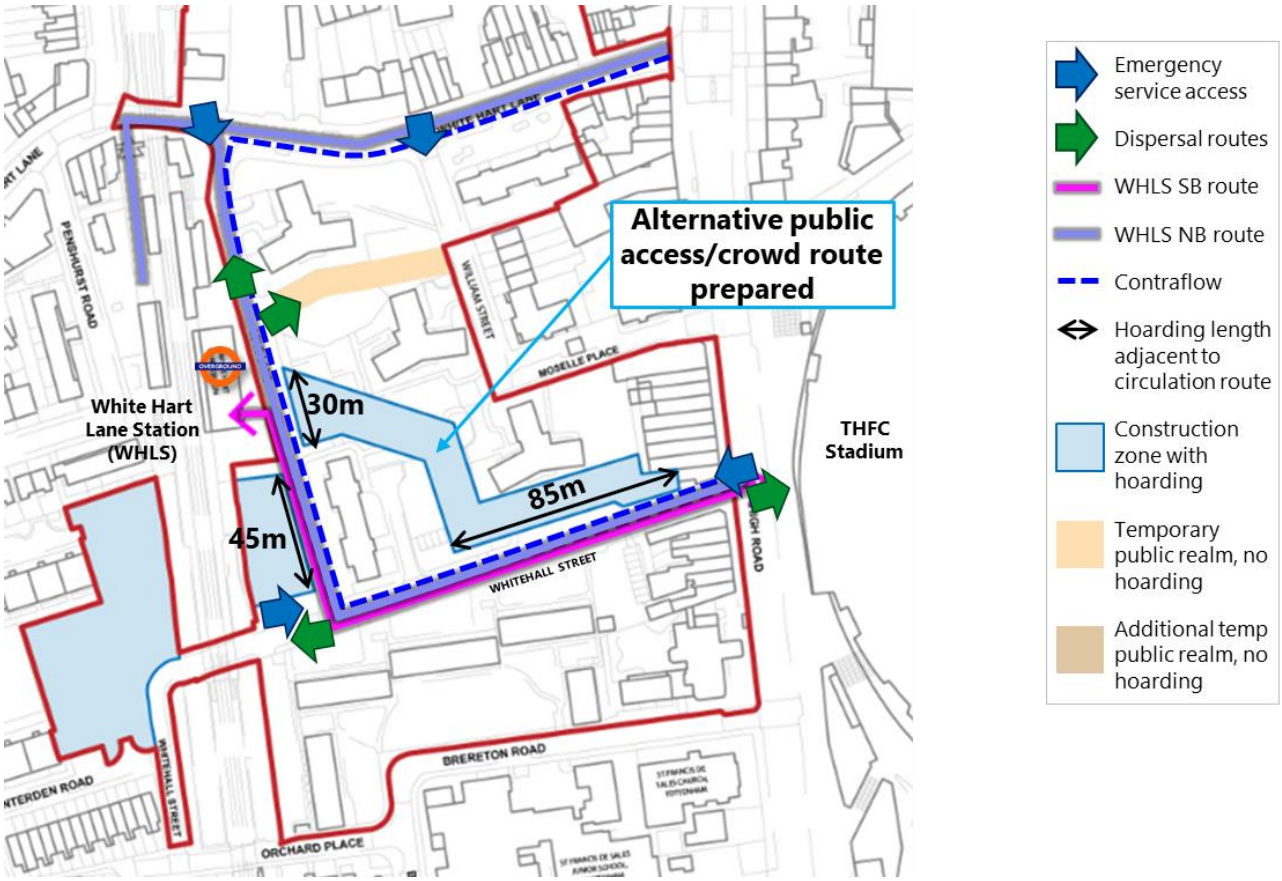


Figure 1-6 Circulation route and queue area, Stage 2

Circulation width and queue area

As existing.

Hoarding around circulation routes and queue area

On one-side of the circulation route only and hence no canyon effect expected.

Dispersal routes and Emergency access

The route directly in front of the WHLS (leading to Moselle Place) / William Street) is hoarded off. An alternative dispersal route is indicated above - connecting Love Lane and William Street, to be reviewed / discussed with Emergency Services and Risk assessment team.

Stage 3

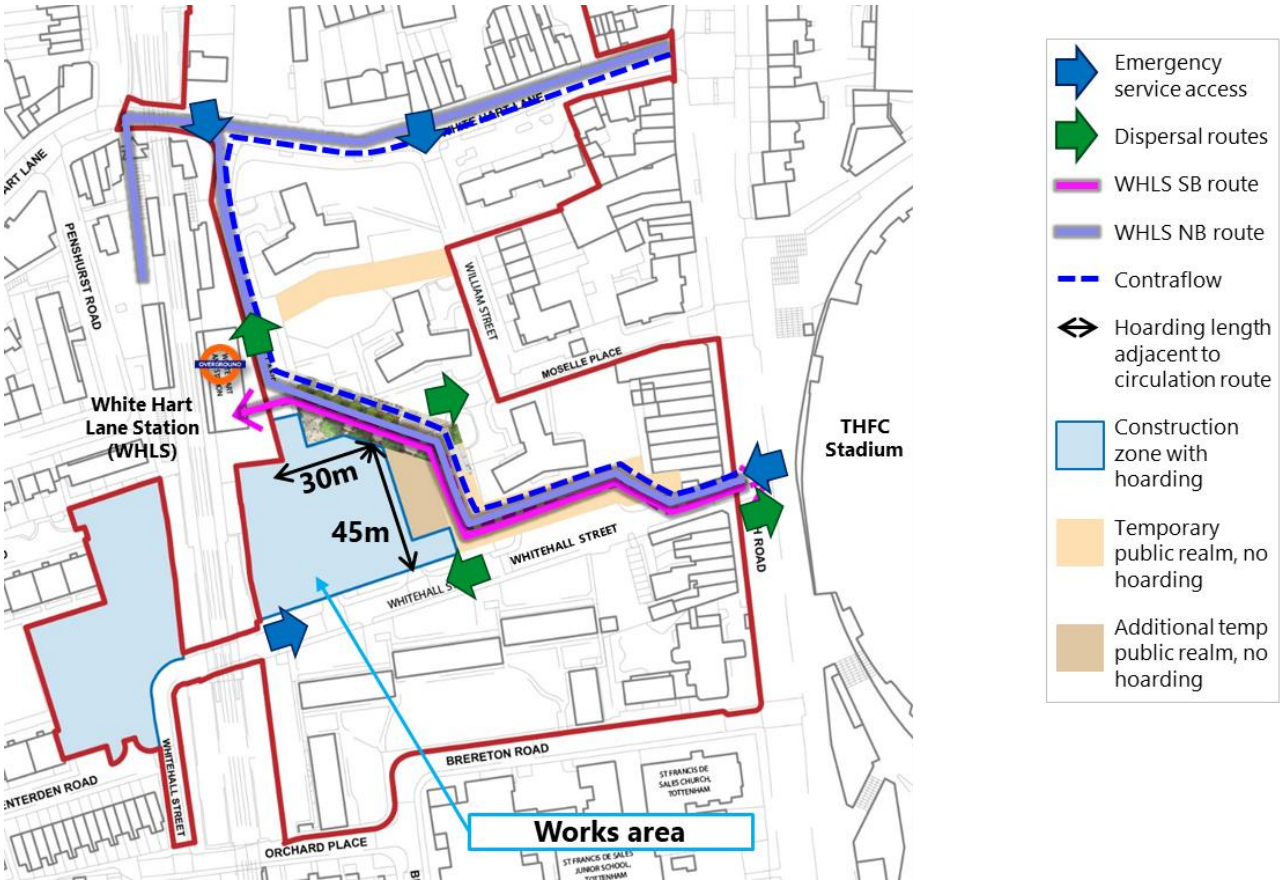


Figure 1-7 Circulation route and queue area, Stage 3

Circulation width and queue area

- As existing to the Entrance of Whitehall Street. Circulation and queuing area is then diverted via temporary public realm leading to the new public realm in front of WHLS.
- There is sufficient width and area within this temporary + new public realm to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days.
- Additional temporary public realm is also provided to add extra width and area to help with crowd flow.
- The temporary public realm should be reviewed with regard to surface condition, signage, lighting, accessibility etc to ensure safety for circulation.
- Lendlease should only place landscape elements (trees, planters and other furniture) on the public realm in front of WHLS after Stage 10.

Hoarding around circulation routes and queue area

On one-side of the circulation route only and hence no canyon effect expected.

Dispersal routes and Emergency access

Minor adjustments due to the new public realm in front of WHLS but same number and distance to dispersal routes / access points as existing.

Stage 4

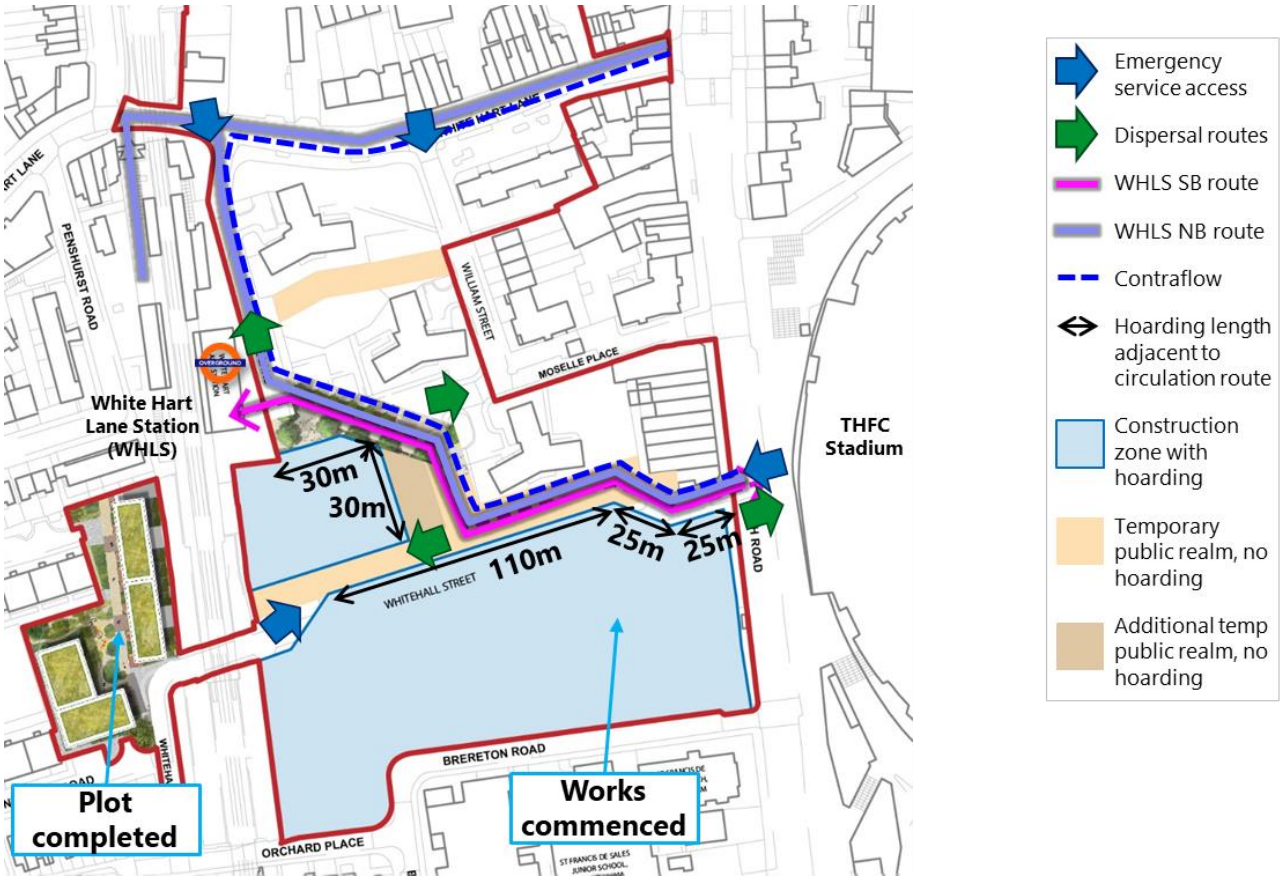


Figure 1-8 Circulation route and queue area, Stage 4

Circulation width and queue area

- As existing to the Entrance of Whitehall Street. Circulation and queuing area is then diverted via temporary public realm leading to the new public realm in front of WHLS.
- There is sufficient width and area within this temporary + new public realm to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days.
- Additional temporary public realm is also provided to add extra width and area to help with crowd flow.
- The temporary public realm should be reviewed with regard to surface condition, signage, lighting, accessibility etc to ensure safety for circulation.
- Lendlease should only place landscape elements (trees, planters and other furniture) on the public realm in front of WHLS after Stage 10.

Hoarding around circulation routes and queue area

- On one-side of the circulation route only and hence no canyon effect expected.
- Hoarding is on both sides along the West of Whitehall Street which is not the main queue / circulation route but only used as onward dispersal route/ emergency route.

Dispersal routes and Emergency access

Equivalent to existing

Stage 5

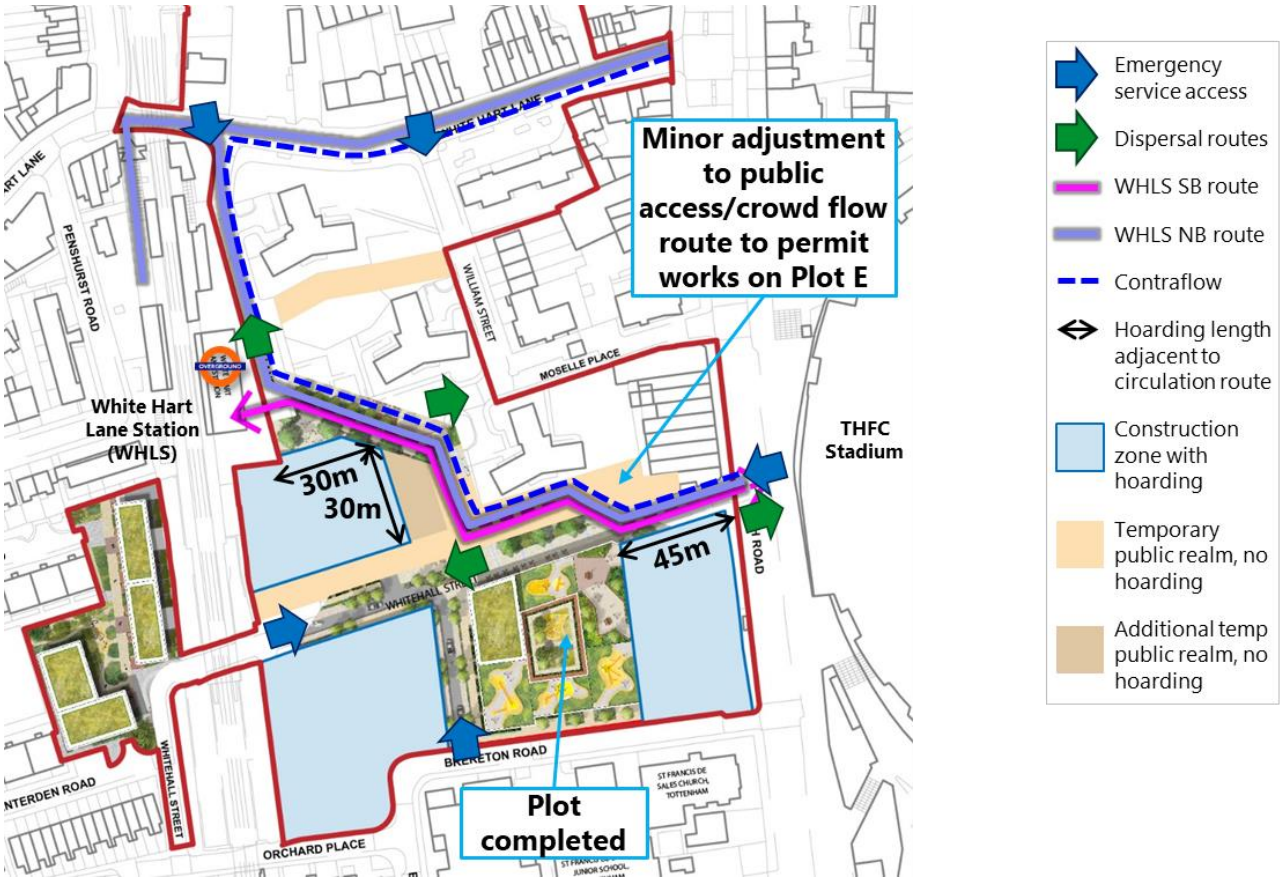


Figure 1-9 Circulation route and queue area, Stage 5

Circulation width and queue area

- As existing to the Entrance of Whitehall Street. Circulation and queuing area is then diverted via temporary public realm leading to the new public realm in front of WHLS.
- There is sufficient width and area within this temporary + new public realm to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days.
- Additional temporary public realm is also provided to add extra width and area to help with crowd flow.
- The temporary public realm should be reviewed with regard to surface condition, signage, lighting, accessibility etc to ensure safety for circulation.
- Lendlease should only place landscape elements (trees, planters and other furniture) on the public realm in front of WHLS after Stage 10.

Hoarding around circulation routes and queue area

- On one-side of the circulation route only and hence no canyon effect expected.
- Hoarding is on both sides along the West of Whitehall Street which is not the main queue / circulation route but only used as onward dispersal route/ emergency route.

Dispersal routes and Emergency access

- Equivalent to existing, plus an additional onward dispersal route and emergency access is available via a new South route towards Brereton Road.

Stage 6

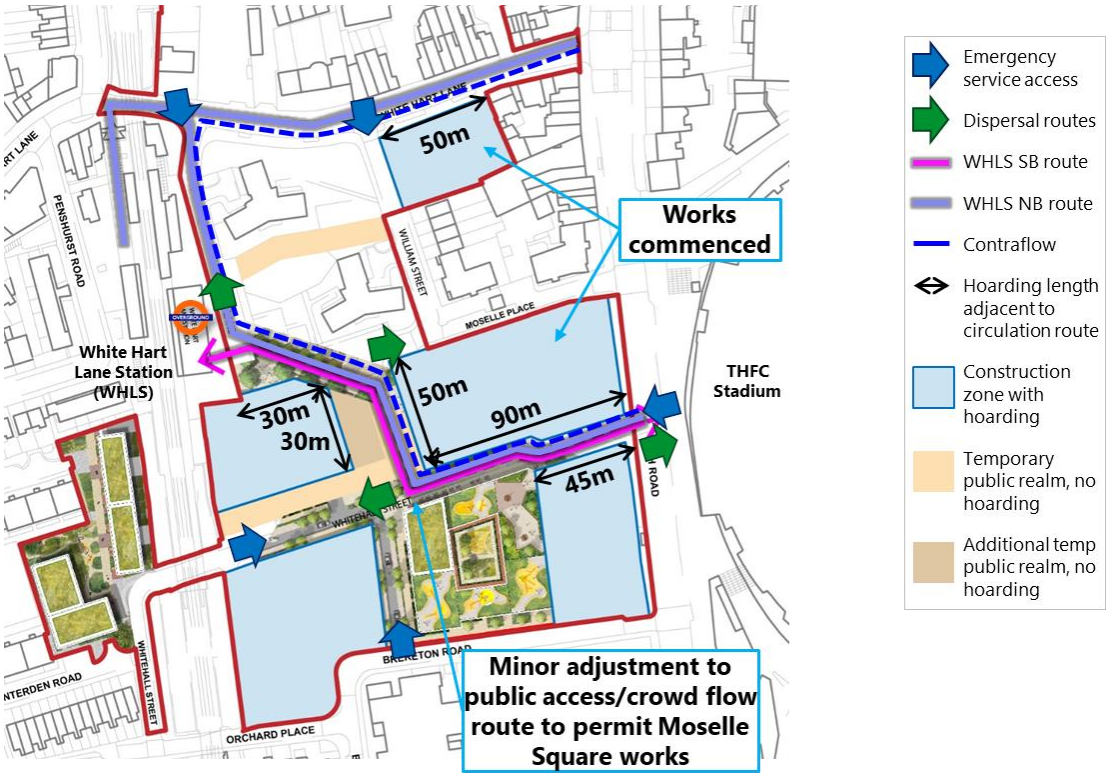


Figure 1-10 Circulation route and queue area, Stage 6

Circulation width and queue area

- As existing to the Entrance of Whitehall Street. Circulation and queuing area is then diverted via the new public realm with temporary public realm for a short distance (~30m).
- There is sufficient width and area within this temporary + new public realm to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days.
- Additional temporary public realm is also provided to add extra width and area to help with crowd flow.
- The temporary public realm should be reviewed with regard to surface condition, signage, lighting, accessibility etc to ensure safety for circulation.
- Lendlease should only place landscape elements (trees, planters and other furniture) on the public realm in front of WHLS after Stage 10.

Hoarding around circulation routes and queue area

There would potentially be hoarding on both sides along:

- The entrance of Whitehall Street for 45m.
- The circulation route leading to WHLS for 30m, additional public realm helps mitigate canyon effect along this route.
- The West of Whitehall Street which is not the main queue / circulation route but only used as onward dispersal route/ emergency route.

Dispersal routes and Emergency access

- Equivalent to existing, plus an additional onward dispersal route and emergency access is available via a new South route towards Brereton Road.
- Lendlease should ensure that William Street is maintained unobstructed as it provides access for emergency vehicle.

Stage 7

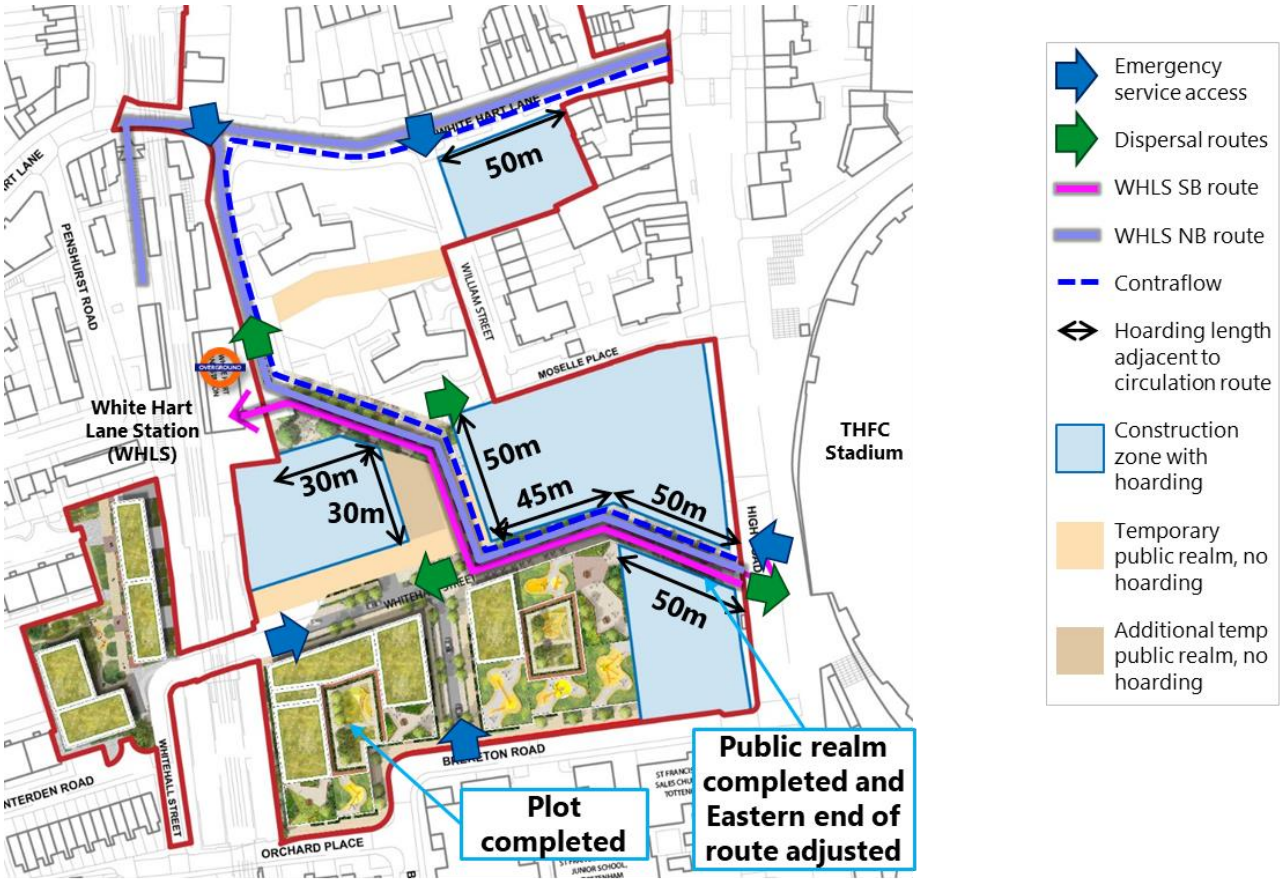


Figure 1-11 Circulation route and queue area, Stage 7

Circulation width and queue area

- Circulation and queuing area is diverted via the new public realm with temporary public realm for a short distance (~30m). There is sufficient width and area within this temporary + new public realm to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days.
- Additional temporary public realm is also provided to add extra width and area to help with crowd flow.
- The temporary public realm should be reviewed with regard to surface condition, signage, lighting, accessibility etc to ensure safety for circulation.
- Lendlease should only place landscape elements (trees, planters and other furniture) on the public realm in front of WHLS after Stage 10.

Hoarding around circulation routes and queue area

There would potentially be hoarding on both sides along:

- The entrance of Whitehall Street for 50m.
- The circulation route leading to WHLS for 30m, additional public realm helps mitigate canyon effect along this route.

Dispersal routes and Emergency access

- Equivalent to existing, plus an additional onward dispersal route and emergency access is available via a new South route towards Brereton Road.
- Lendlease should ensure that William Street is maintained unobstructed as it provides access for emergency vehicle.

Stage 8

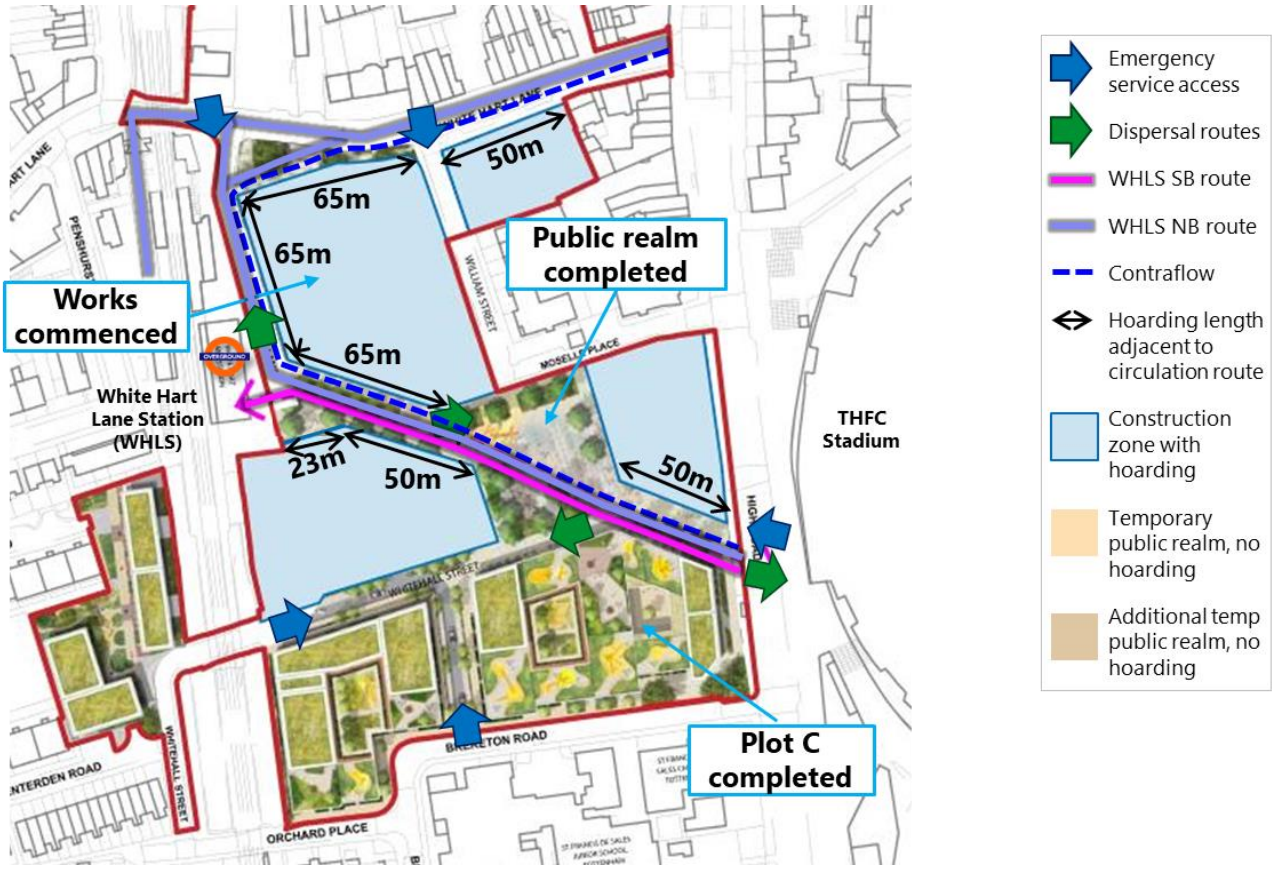


Figure 1-12 Circulation route and queue area, Stage 8

Circulation width and queue area

- The End-State-Masterplan layout for public realm and Moselle Square is ready for circulation and queuing. There is sufficient width and increased area to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days within this public realm.
- Lendlease should only place landscape elements (trees, planters and other furniture) on the public realm in front of WHLS after Stage 10.

Hoarding around circulation routes and queue area

There is double-sided hoarding:

- For 40m on the circulation route leading to the WHLS.
- On William Street which is not the main queue / circulation route but only used as onward dispersal route/ emergency route.

Dispersal routes and Emergency access

- Equivalent to existing, plus an additional onward dispersal route and emergency access is available via a new South route towards Brereton Road.
- Lendlease should ensure that:
    - William Street is maintained unobstructed as it provides access for emergency vehicle.
    - North of Love Lane is maintained unobstructed to accommodate existing crowd management strategy, provide access for emergency service and accommodate dispersal of crowd in case of an emergency.

Stage 9

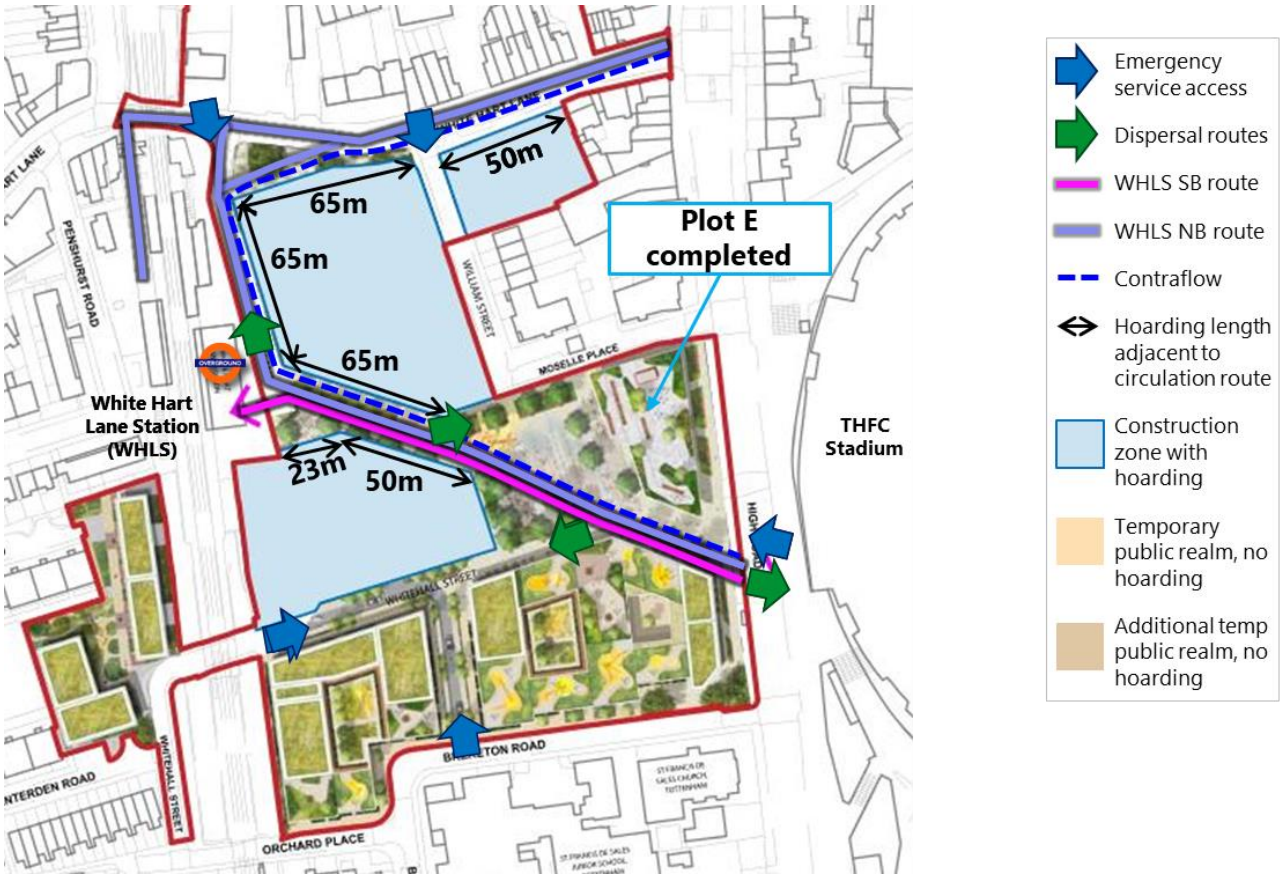


Figure 1-13 Circulation route and queue area, Stage 9

Circulation width and queue area

- The End-State-Masterplan layout for public realm and Moselle Square is ready for circulation and queuing. There is sufficient width and increased area to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days within this public realm.
- Lendlease should only place landscape elements (trees, planters and other furniture) on the public realm in front of WHLS after Stage 10.

Hoarding around circulation routes and queue area

There is double-sided hoarding:

- For 40m on the circulation route leading to the WHLS.
- On William Street which is not the main queue / circulation route but only used as onward dispersal route/ emergency route.

Dispersal routes and Emergency access

- Equivalent to existing, plus an additional onward dispersal route and emergency access is available via a new South route towards Brereton Road.
- Lendlease should ensure that:
    - William Street is maintained unobstructed as it provides access for emergency vehicle.
    - North of Love Lane is maintained unobstructed to accommodate existing crowd management strategy, provide access for emergency service and accommodate dispersal of crowd in case of an emergency.

Stage 10

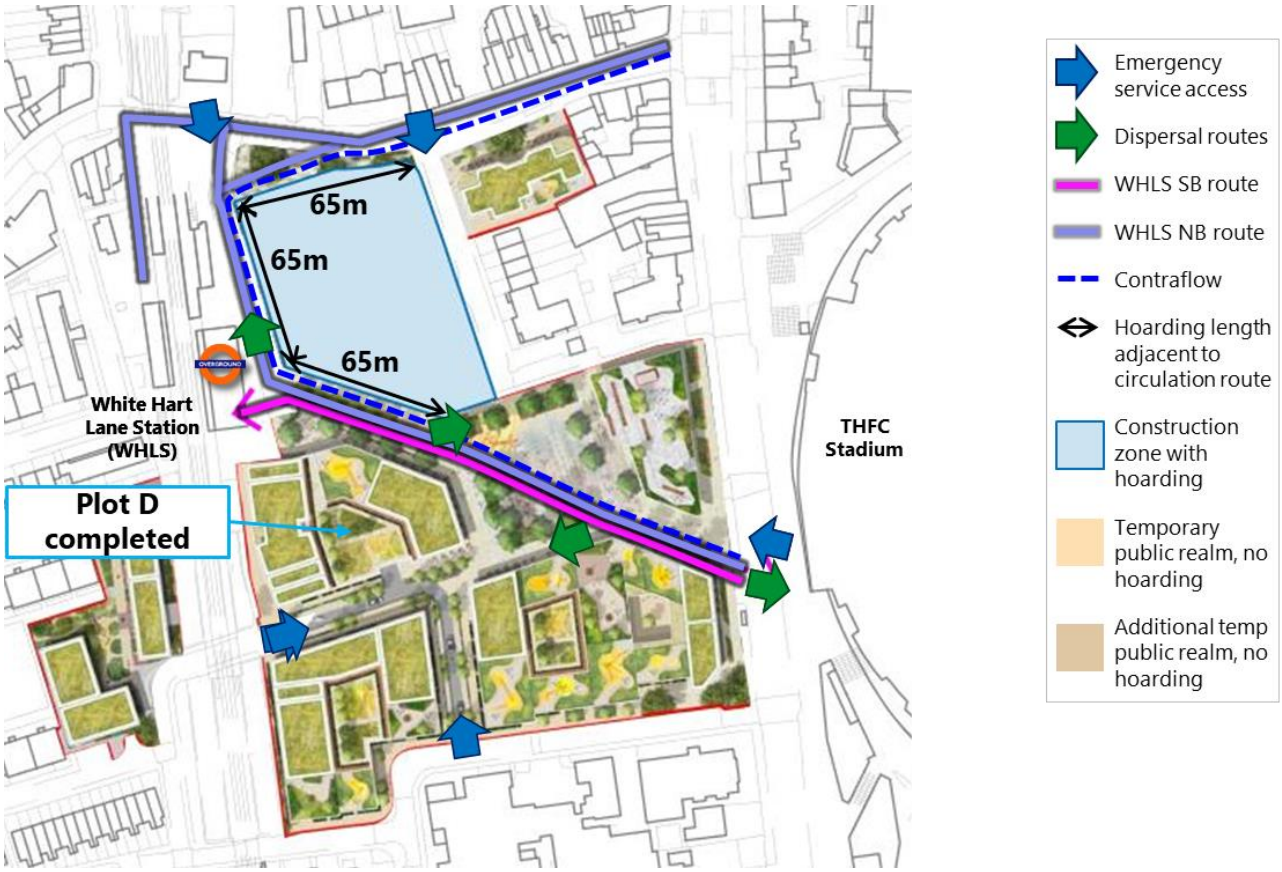


Figure 1-14 Circulation route and queue area, Stage 10

Circulation width and queue area

The End-State-Masterplan layout for public realm and Moselle Square is ready for circulation and queuing. There is sufficient width and increased area to accommodate the existing 3-lane crowd management strategy and accommodate spectators queueing during match days within this public realm.

Hoarding around circulation routes and queue area

On one-side of the circulation route only and hence no canyon effect expected

Dispersal routes and Emergency access

- Equivalent to existing, plus an additional onward dispersal route and emergency access is available via a new South route towards Brereton Road.
- Lendlease should ensure that:
    - William Street is maintained unobstructed as it provides access for emergency vehicle.
    - North of Love Lane is maintained unobstructed to accommodate existing crowd management strategy, provide access for emergency service and accommodate dispersal of crowd in case of an emergency.

Stage 11

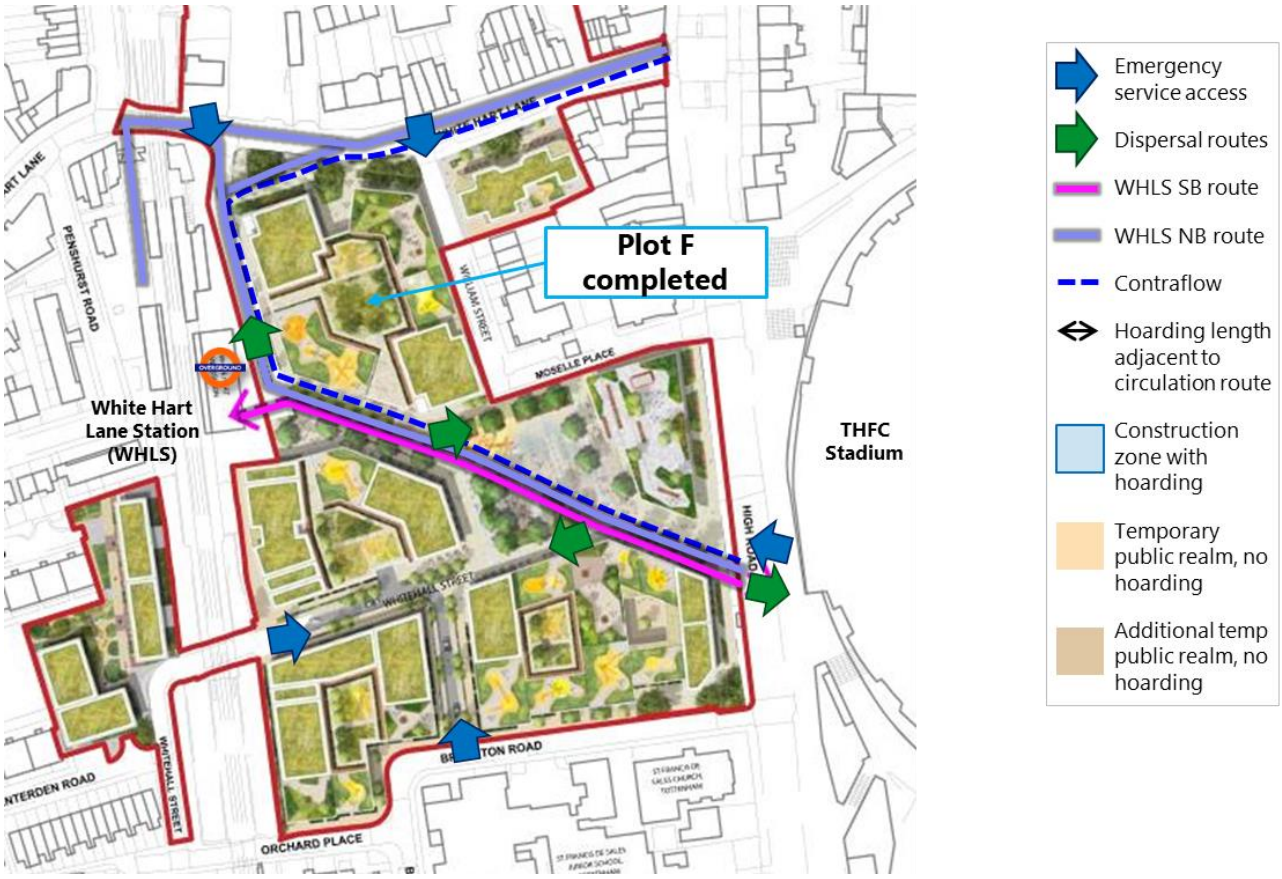


Figure 1-15 Circulation route and queue area, Stage 11

Circulation width and queue area

The End-state-Masterplan layout completed, improved circulation and increased queue area is available.

Hoarding around circulation routes and queue area

None

Dispersal routes and Emergency access

Equivalent to existing, plus, an additional onward dispersal route and emergency access is available via a new South route towards Brereton Road.

1. **APPENDIX**

1.1 **Route 1: Existing public access / crowd flow route maintained**

(a) Stage 1

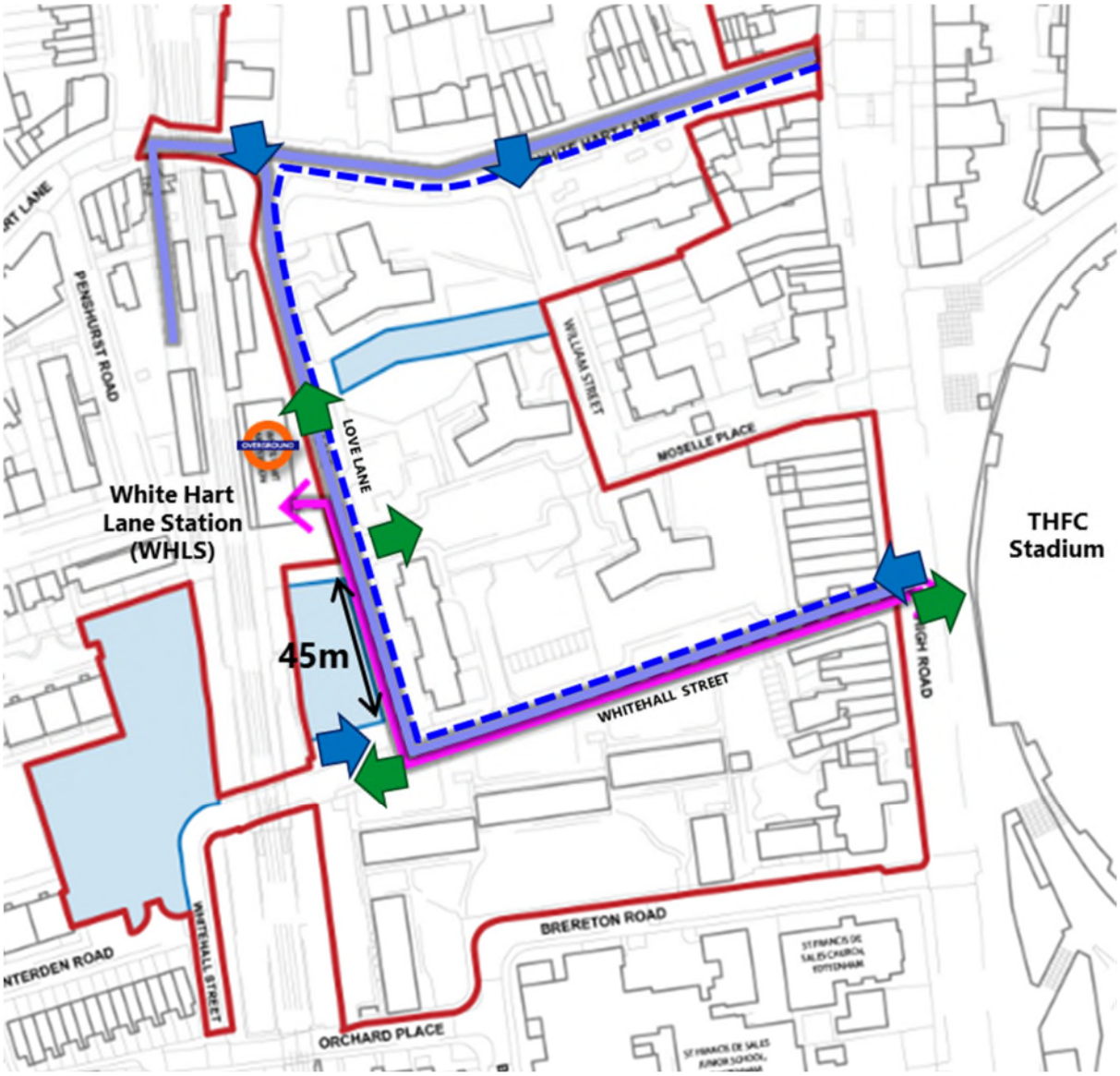
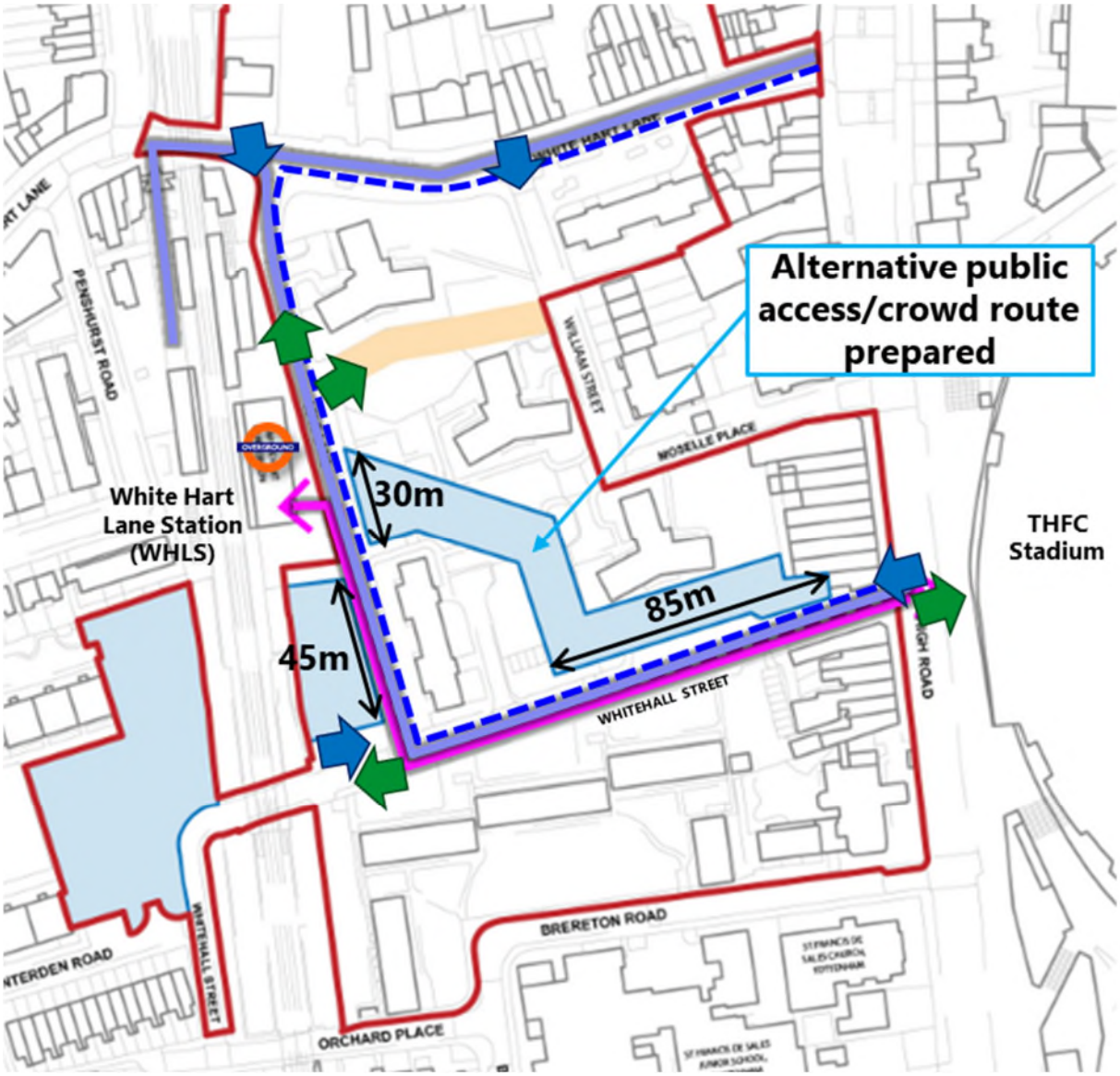


Figure 5: Stage 1 of interim construction phases

(b) Stage 2



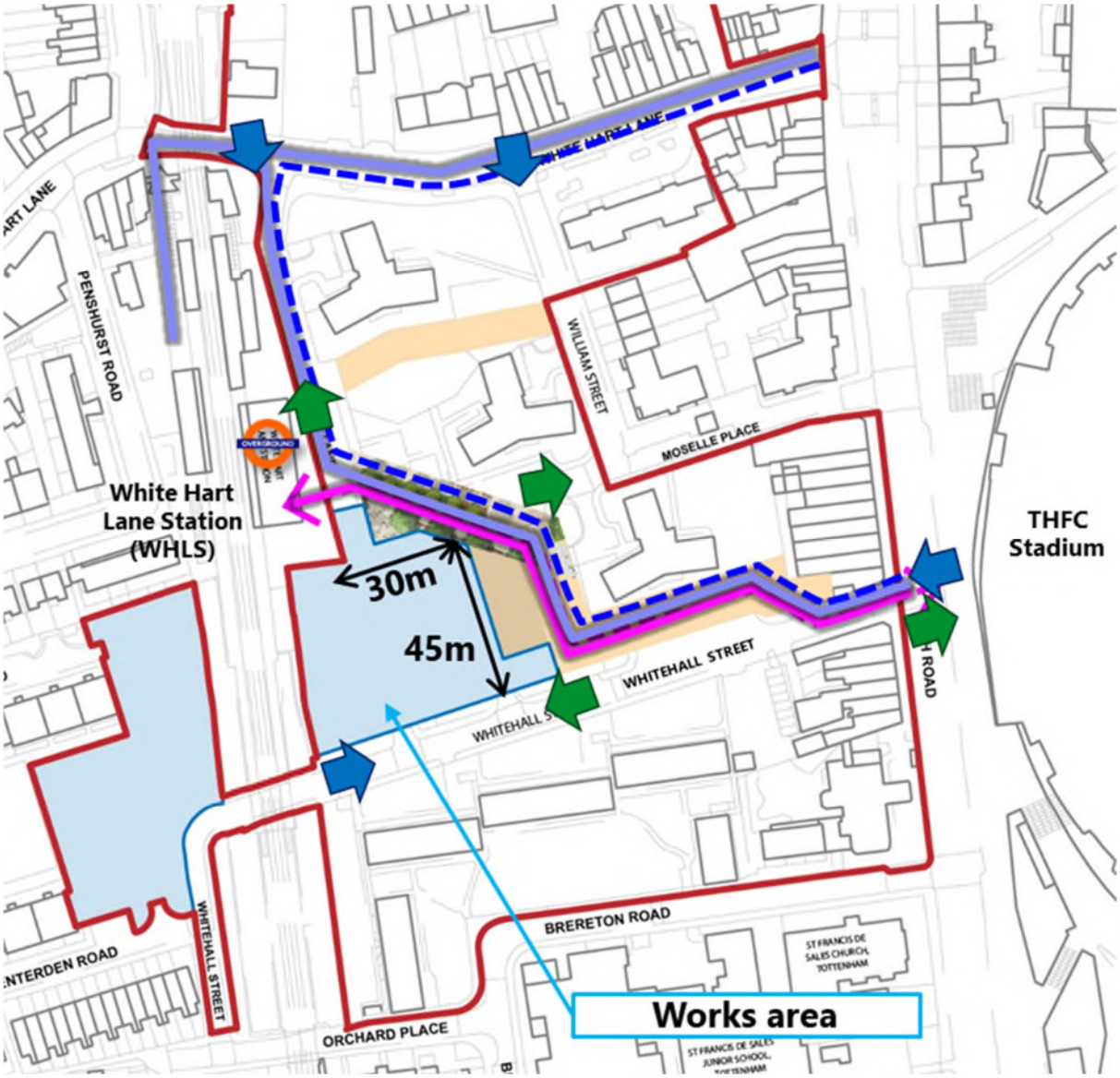
Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 6: Stage 2 of interim construction phases

1.2 **Route 2: Existing public access/crowd flow route with minor alterations**

(a) Stage 3

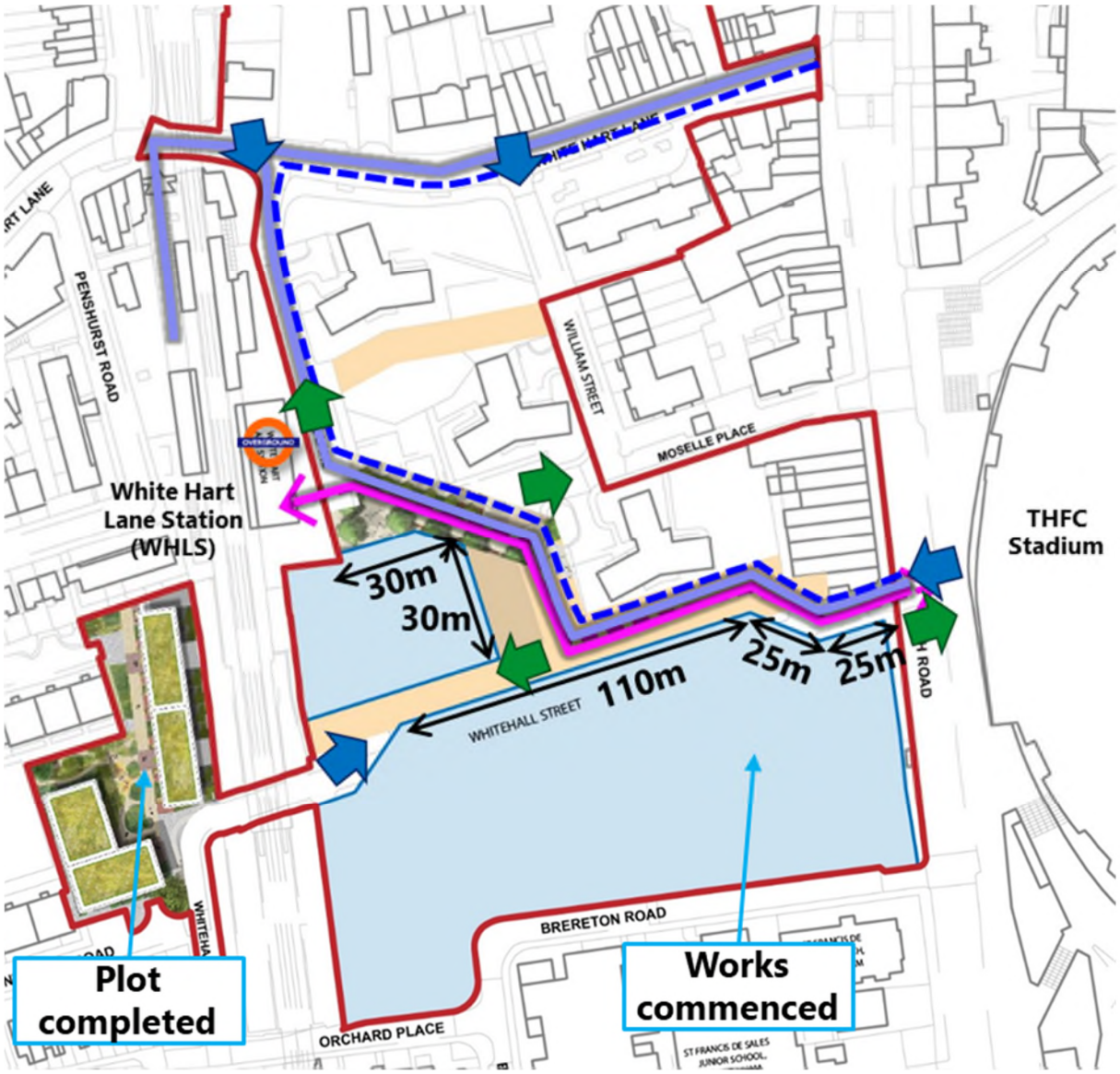


Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 7: Stage 3 of interim construction phases

(b) Stage 4



Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 8: Stage 4 of interim construction phases

(c) Stage 5

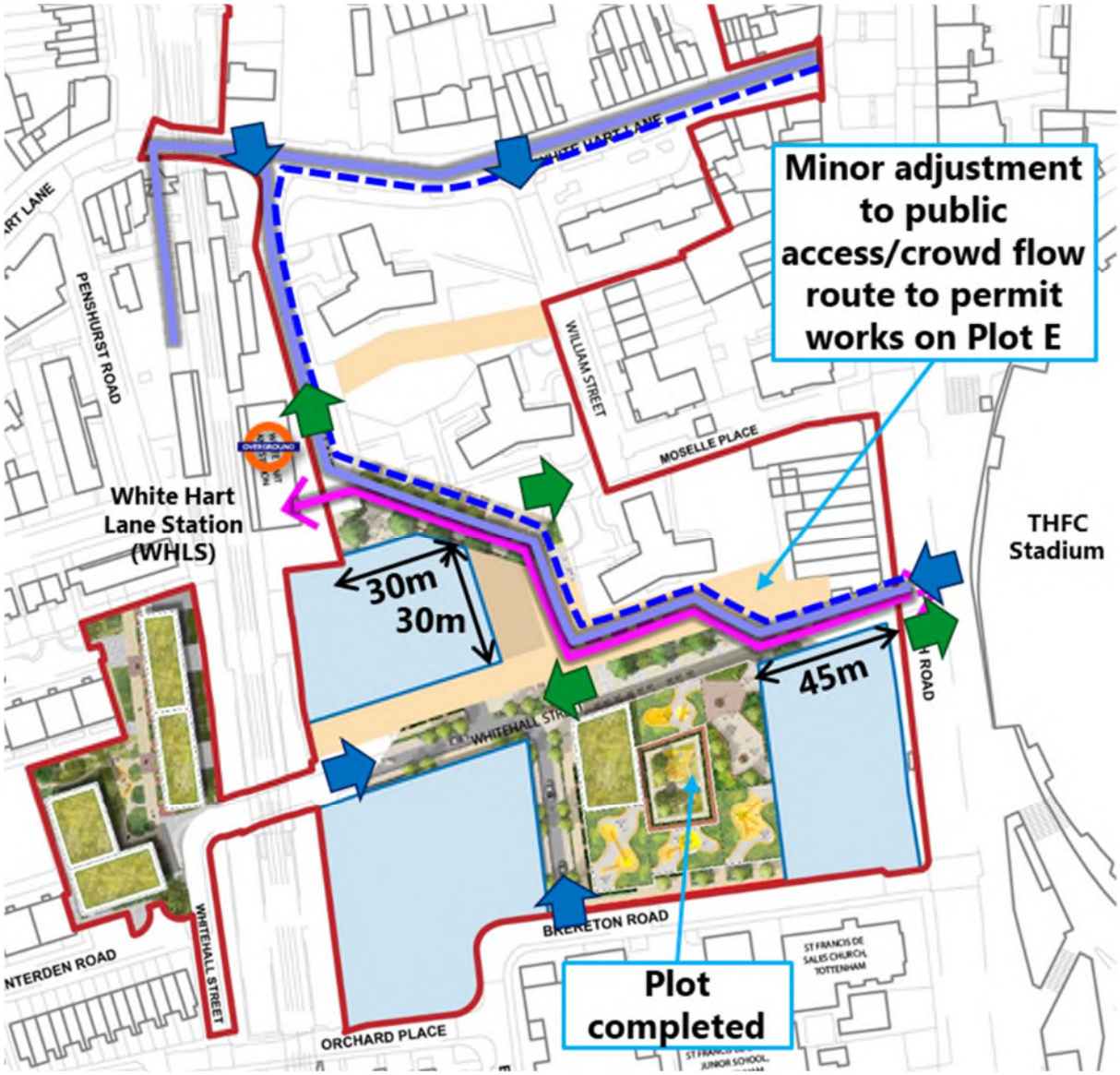


Figure 9: Stage 5 of interim construction phases

(d) Stage 6

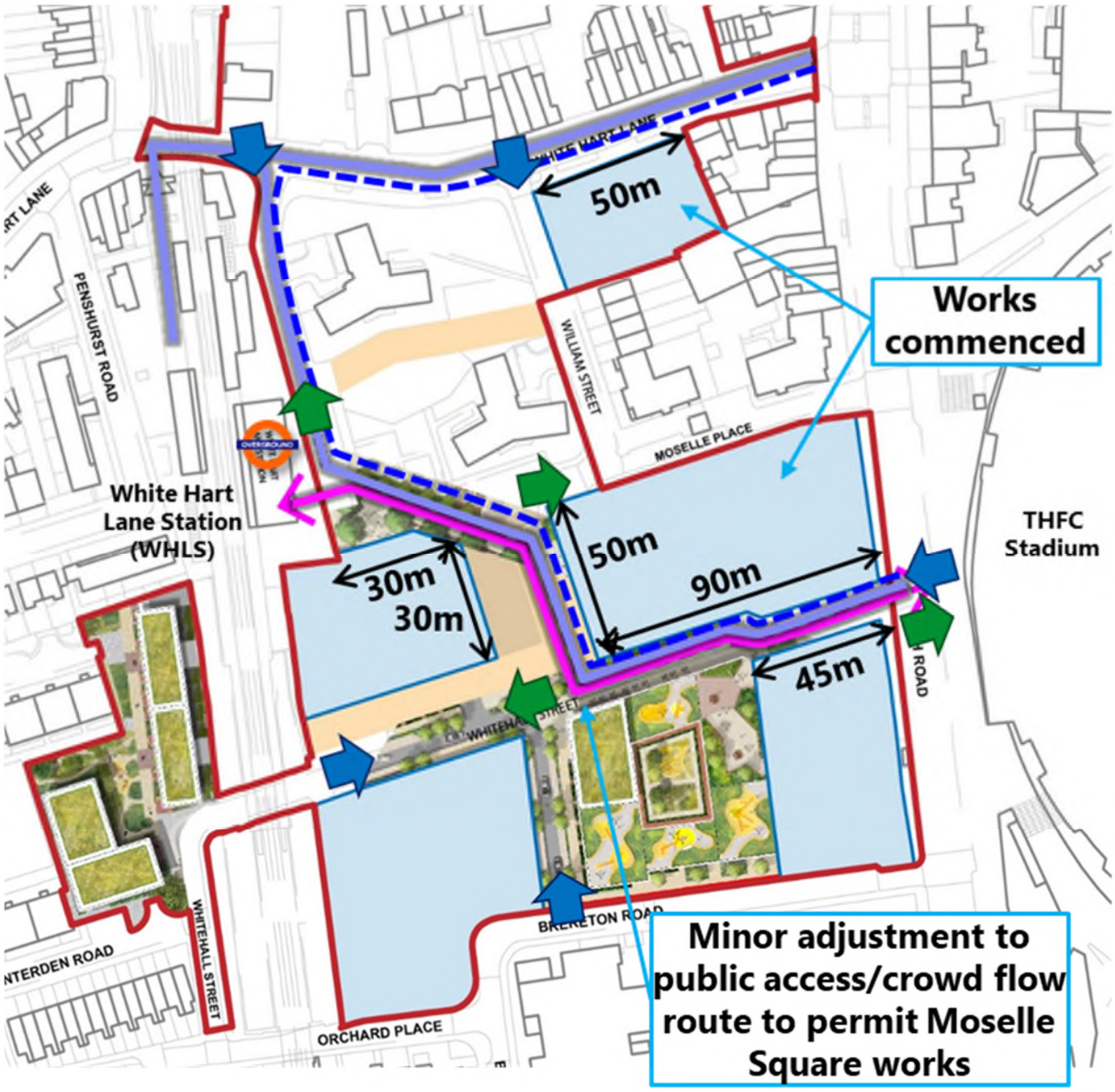
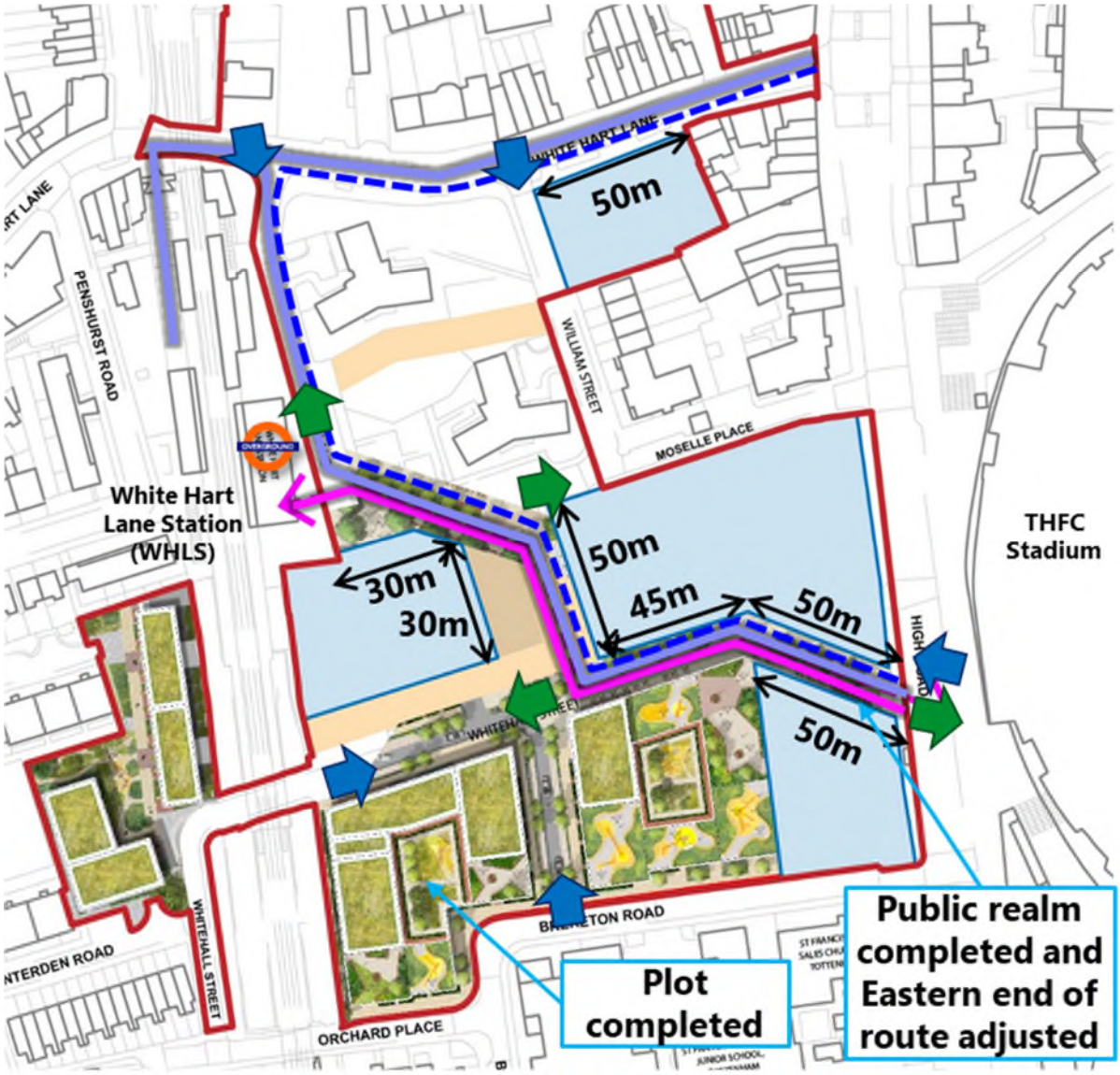


Figure 10: Stage 6 of interim construction phases

1.3 **Route 3: Adjusted public access / crowd flow route creating new access that leads to Moselle Square and Final public access / crowd flow route**

(a) Stage 7

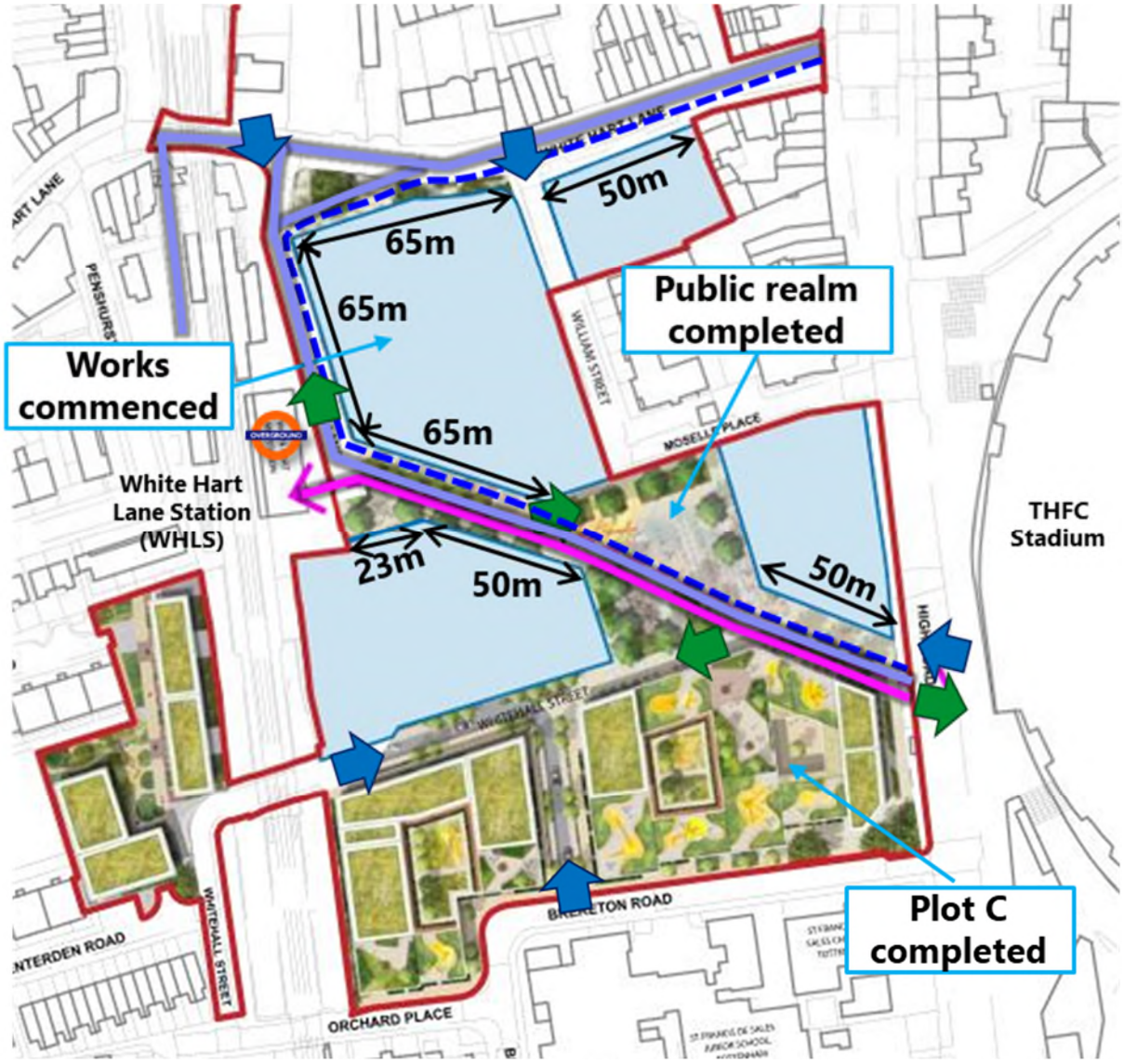


Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 11: Stage 7 of interim construction phases

(b) Stage 8

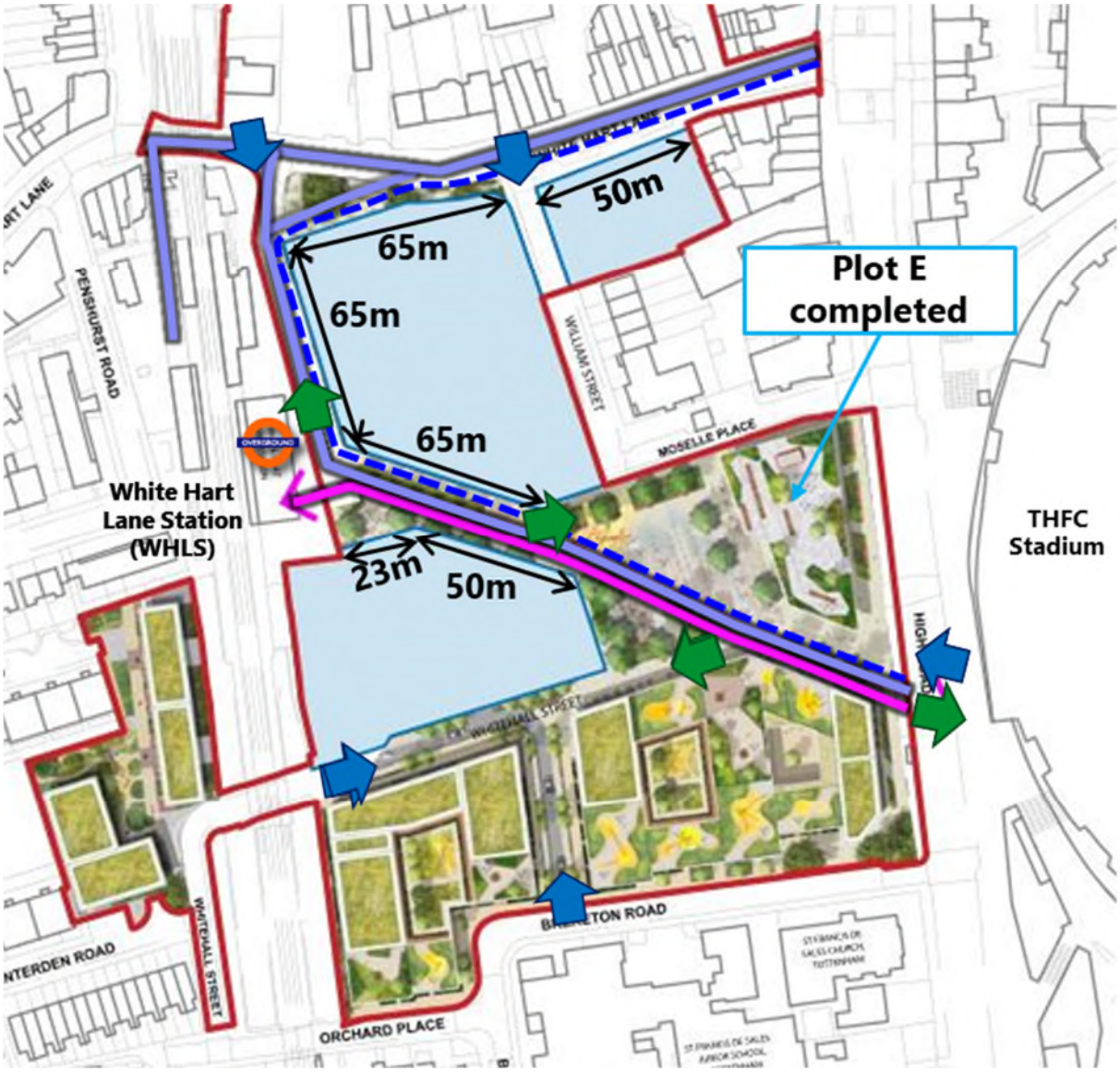


Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 12: Stage 8 of interim construction phases

(c) Stage 9

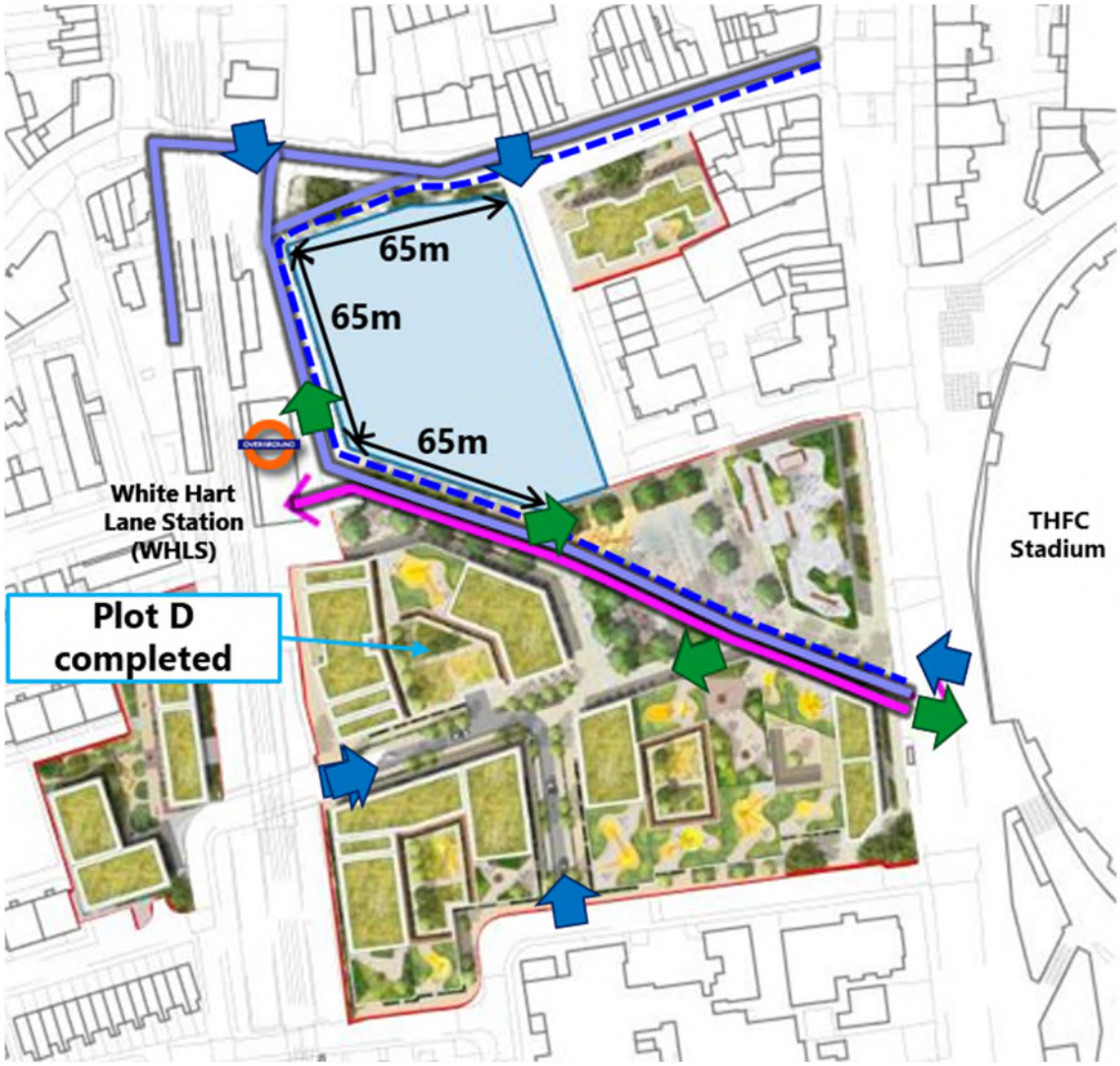


Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 13: Stage 9 of interim construction phases

(d) Stage 10

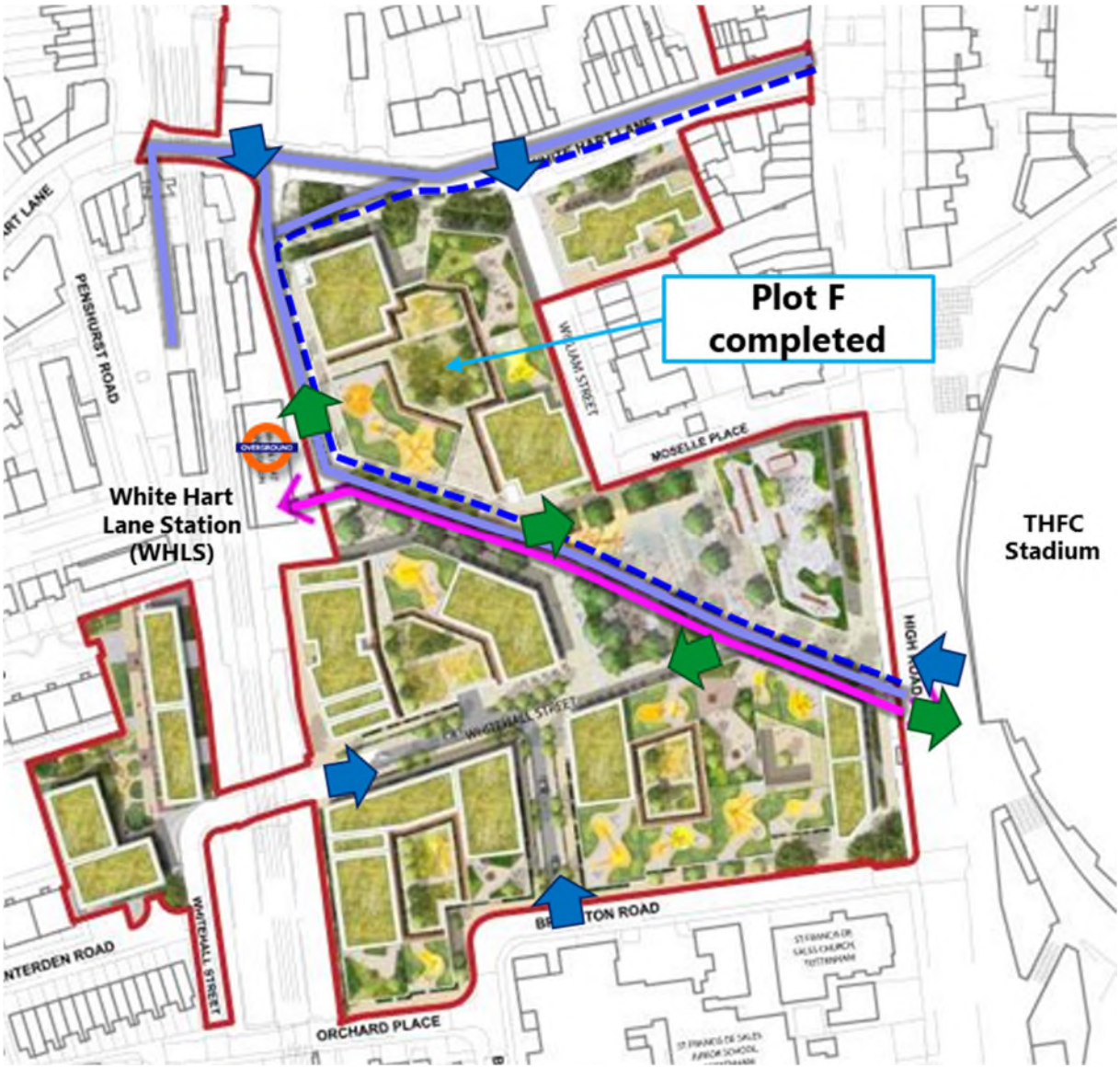


Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 14: Stage 10 of interim construction phases

(e) Stage 11



Key:

Emergency service access	WHLS SB route	Hoarding length adjacent to circulation route	Temporary public realm, no hoarding
Dispersal routes	WHLS NB route	Construction zone with hoarding	Additional temp public realm, no hoarding
	Contraflow		

Figure 15: Stage 11 Final end-state