MOTT MACDONALD

The Hillingdon Hospital Redevelopment

Transport Assessment

May 2022

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The Hillingdon Hospitals
NHS Foundation Trust

The Hillingdon Hospital Redevelopment

Transport Assessment

May 2022

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
P01	01/04/2022	James Wright	Mark Fitch	Mark Staniland	First Draft for Trust Review
P02	22/04/2022	James Wright	Mark Fitch	Mark Staniland	Second Issue
C01	23/05/2022	James Wright	Mark Fitch	Mark Staniland	Published for Planning Submission

Document reference: | | | THHR_01-MMD-XX-XX-RP-U-1000

Information class: Standard

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Executive summary

Mott MacDonald has been appointed by The Hillingdon Hospitals NHS Foundation Trust (the Trust) to provide transport planning consultancy services to support a hybrid planning application for the proposed redevelopment of Hillingdon Hospital.

The site is in Hillingdon, which is approximately two miles south of Uxbridge and three miles north of West Drayton. The local planning and highway authority is the London Borough of Hillingdon (LBH). Currently, the site consists of the existing Hillingdon Hospital which provides services such as accident & emergency, inpatients, day surgery, outpatients and maternity, in addition to a children's nursery and pharmacy.

The proposed development is for the demolition of existing buildings and redevelopment of the site to provide the new Hillingdon Hospital, multi-storey car park (MSCP) and mobility hub, vehicle access, highways works, associated plant, generators, substation, new internal roads, landscaping and public open space, utilities, servicing area, surface car park/ expansion space, and other works incidental to the proposed development.

There is also an outline planning application for the demolition of buildings mixed-use development comprising residential (Class C3) and supporting Commercial, Business and Service uses (Class E), new pedestrian and vehicular access; public realm, amenity space, car and cycling parking.

The proposals are in accordance with current policies and guidance provided by Hillingdon Council and are compliant with national guidance documents such as the London Plan and the National Planning Policy Framework 2021 (NPPF).

The proposals include a number of improvements to the active travel network, including pedestrian and cycling facilities, as well as on-site bus stops in proximity to the main hospital and A&E entrances. Car access to the hospital will be made through three site access rather than the existing five. Car parking has been provided in line with London Plan standards within a MSCP and surface car park. Sufficient car parking will be provided throughout the construction of the proposed development through a number of off-site decant operations.

A Healthy Streets Check shows that the design of the redevelopment complies with healthy streets standards. The Active Travel Zone Assessment reviews provision for active travel in the local area and suggests a number of improvements. A number of wider enhancements have been suggested specifically for the cycling network. A Section 106 agreement will be agreed to secure these improvements.

The current trips generated by the site have been forecast using a Clinical Travel Demand Model (CTDM) which has been validated against surveys undertaken in 2018 and 2021. This CTDM has been used to forecast the redevelopment trip generation for two scenarios, based on changes in staff, patient and visitor numbers, and the anticipated mode share changes. These trips have been distributed onto the local network using ANPR survey data.

The local network assessment shows that the forecast trip generation and distribution have a negligible impact on the highway network, and in most places improves the operation of the junctions assessed.

1 Introduction

1.1 Appointment

1.1.1 This Transport Assessment has been prepared by Mott MacDonald to accompany a hybrid planning application being submitted by the applicant, The Hillingdon Hospitals NHS Foundation Trust (the Trust) to the London Borough of Hillingdon.

1.1.2 The site is in west London and is located south of Uxbridge and north of West Drayton. The local planning and highway authority is the London Borough of Hillingdon (LBH).

1.1.3 The Proposed development will be submitted as a hybrid planning application comprising:

- FULL application seeking planning permission for demolition of existing buildings and redevelopment of the site to provide the new Hillingdon Hospital, multi-storey car park and mobility hub, vehicle access, highways works, associated plant, generators, substation, new internal roads, landscaping and public open space, utilities, servicing area, surface car park / expansion space, and other works incidental to the proposed development.
- OUTLINE planning application (all matters reserved, except for access) for the demolition of buildings and structures on the remaining site (excluding the Grade II Furze and Tudor Centre) for a mixed-use development comprising residential (Class C3) and supporting Commercial, Business and Service uses (Class E), new pedestrian and vehicular access; public realm, amenity space, car and cycling parking.

1.1.4 This report provides the Transport Assessment (TA) for the proposed development. This report accompanies a suite of supporting transport related documents which have also been prepared in support of this application, including:

- Transport Assessment (this report);
- Hospital Travel Plan Framework;
- Residential Travel Plan Framework;
- Delivery and Servicing Plan;
- Car Park Management Plan;
- Outline Construction Logistics Plan; and
- Mobility Hub Vision Paper.

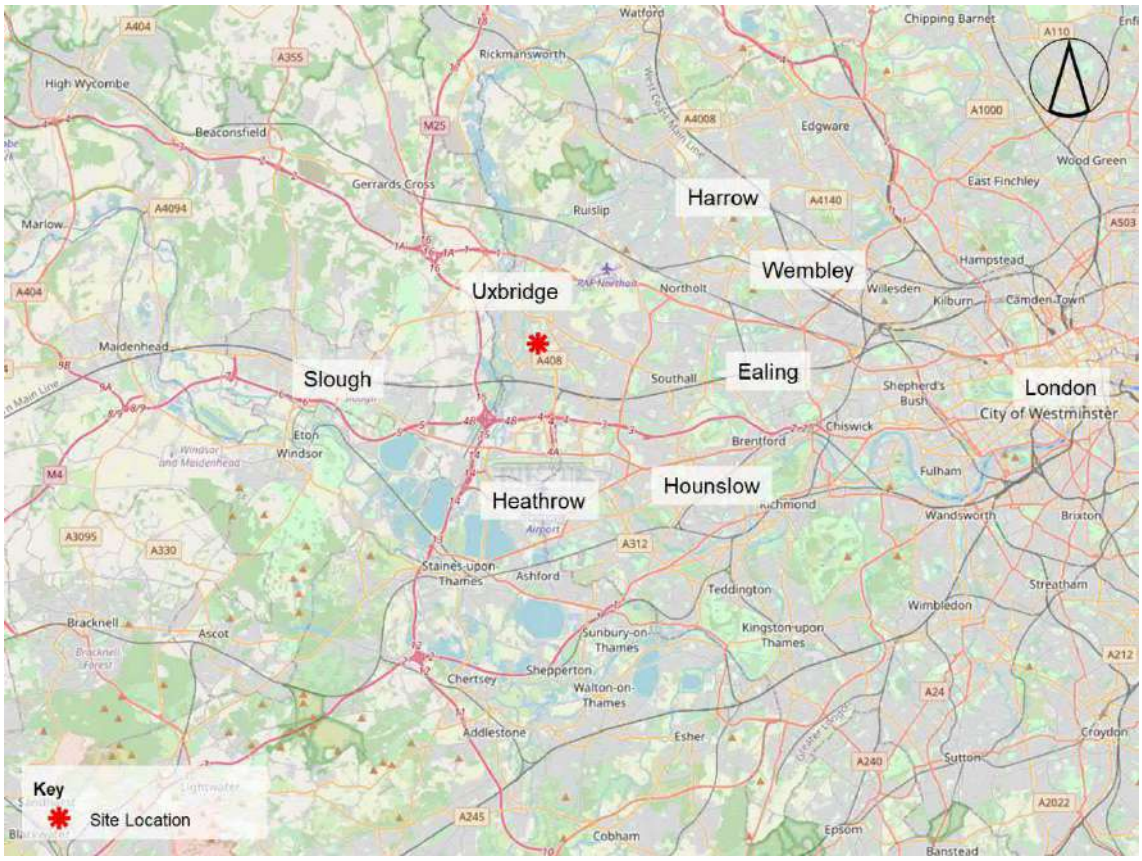
1.1.5 This TA has been prepared in accordance with Transport for London (TfL)'s Healthy Streets Approach Guidance, amended to fit with the proposed development and assessment methodology where appropriate, as was agreed with LBH and TfL through scoping.

1.2 Background

1.2.1 Hillingdon Hospital is located in west London, approximately 2km north of West Drayton and 2.5km south of Uxbridge. The site is accessed from Pield Heath Road (north), Colham Green Road (east) and Royal Lane (west). The surrounding area is largely residential in nature, though there are some complementary uses within walking distance and on the hospital site itself, such as a nursery school, a convenience store to the north-east of the site and various places of worship.

1.2.2 The site location in a regional context is shown in Figure 1.1. The site location on a local context is shown in Figure 1.2.

Figure 1.1: Site Location Regional Context



Source: Open Street Map

Figure 1.2: Site Location Local Context

Source: Open Street Map

1.2.3 The existing site accommodates Hillingdon Hospital and currently comprises:

- Accident & Emergency
- Inpatients
- Day Surgery
- Outpatients and
- Maternity

1.2.4 Other services which are located on-site include a children's nursery (operated by a third-party provider) and a pharmacy.

1.2.5 The site provides 977 car parking spaces on-site, though this number continues to fluctuate due to ongoing construction works and ad-hoc loss of spaces due to specific activities on-site. The Trust also lease a further 175 spaces off-site which are all allocated to specific staff, though at least 75 of these will be withdrawn in the near future.

1.3 Pre-Application Engagement

1.3.1 The Trust and the wider design team has been engaging closely with LBH. Since December 2020 the wider team, including Mott MacDonald has continued to engage with LBH via formal pre-application meetings, and have also held topic specific meetings on technical elements such as buses, trees, and the Transport Assessment methodology.

1.3.2 Pre-application consultation began in November 2020 and has taken place on an ongoing basis with the design team and client team engaging with LBH, TfL and the Greater London Authority (GLA) in relation to various aspects of the proposals.

1.3.3 A range of scoping reports, technical notes, slide decks and drawings have been prepared to support consultation with LBH, TfL and GLA. Key information provided is listed below:

- Transport Assessment Scoping Report
- Trip Generation and Distribution Technical Note
- Baseline, Scenario 1, and Scenario 2 Clinical Travel Demand Models (CTDM)
- Hillingdon Hospital Trip Rates 2018 Survey
- ATC Summary AADT and AAWT information
- Sustainable Travel and Transport Plan
- VISSIM Model Specification
- THHR Transport Survey Traffic Data
- Transport Scoping Bus Impact Assessment
- Residential Trip Rates
- Transport Scoping Response to WSP (commenting on behalf of LBH).
- CTDM Development Summary
- Car Parking and Transport Strategy Phasing analysis at The Trust and MVH
- THHR Transport Scoping Mobility Hub
- THHR Nursery School Transport Scoping Note
- Cycle Network Review
- Cycle Network Concept Improvements
- Bus Diversions Options Review

1.3.4 General pre-application meetings have been held with LBH and GLA periodically over the design period. Topic specific transport meetings have also been held with LBH and TfL over the design period. A summary of key meetings is listed below:

- 19 November 2020 – LBH - pre-application 1 meeting
- 03 December 2020 – TfL – introductory meeting with TfL buses
- 17 December 2020 - LBH – pre-application 2 meeting
- 12 February 2021 - GLA – pre-application meeting
- 15 April 2021 - LBH – pre-application 3 meeting
- 14 May 2021 – TfL – bus diversion meeting with TfL buses
- 11 June 2021 - LBH – pre-application 4 meeting
- 22 June – LBH and TfL – bus corridor scheme and tree impacts meeting
- 20 July – TfL – meeting with TfL modelling team
- 29 July 2021 – TfL and LBH – pre-application meeting with TfL multi-disciplinary team
- 05 August 2021 – TfL and LBH – transport pre-application meeting
- 01 September 2021 – LBH – transport topic meeting with LBH (and WSP)
- 23 September 2021 – TfL and LBH – cycle network review
- 02 February 2022 - GLA – pre-application meeting

1.3.5 The proposed development and Transport Assessment have been prepared in accordance with details agreed through the scoping process and meetings.

1.4 Proposed Development

1.4.1 The proposed development comprises the redevelopment of Hillingdon Hospital. The current Hillingdon Hospital is a collection of buildings with parts of the estate built in the 1930s as emergency wartime accommodation. Some of the older wards have become unsafe and have recently been closed to protect patients and staff.

1.4.2 The Trust advice that 81% of the hospital buildings will require major repair or replacement soon. Some works have already been undertaken and more are planned to enable the hospital to continue providing services safely in the short term. However, many of the repairs would not be cost effective and are therefore not long-term solutions.

1.4.3 For patients, the maze-like layout of the current site makes it difficult to get around and the condition of buildings can make the experience of being in hospital more difficult. The Trust's 2018 Care Quality Commission report (2018) highlighted issues of patient safety, dignity and patient experience which have directly resulted from the outdated estate. The site layout and state of disrepair can also make it difficult for staff to do their jobs as efficiently and effectively as they would like.

1.4.4 These issues contribute to the Trust's financial deficit and hinder its mission to provide high quality, safe and compassionate care to improve the health and wellbeing of the people they serve.

1.4.5 Given the above, it is clear there is an urgent need for significant investment to redevelop Hillingdon Hospital. Without this, the estate will continue to deteriorate until the delivery of modern healthcare on the site is no longer possible.

1.4.6 The proposed development will be submitted as a hybrid planning application comprising:

- Full application seeking planning permission for demolition of existing buildings and redevelopment of the site to provide the new Hillingdon Hospital, multi-storey car park and mobility hub, vehicle access, highways works, associated plant, generators, substation, new internal roads, landscaping and public open space, utilities, servicing area, surface car park/ expansion space, and other works incidental to the proposed development.
- Outline planning application (all matters reserved, except for access) for the demolition of buildings mixed-use development comprising residential (Class C3) and supporting Commercial, Business and Service uses (Class E), new pedestrian and vehicular access; public realm, amenity space, car and cycling parking.

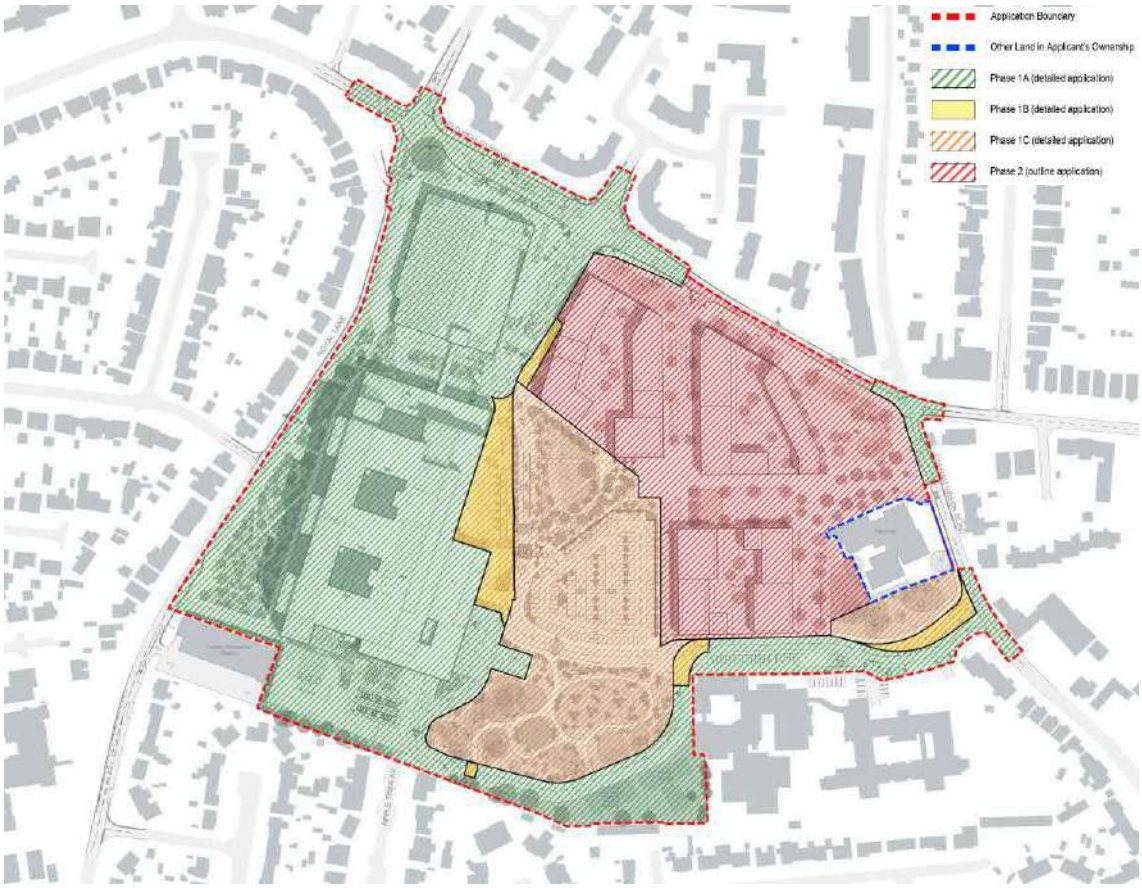
1.4.7 The outline planning application comprises up to 327 residential units and (Use Class C3) and up to 800 sqm of town centre uses (Use Class E) in a series of buildings ranging in height from 3 up to 8 storeys with associated access and car parking for up to 302 vehicles and up to 515 cycle parking spaces, refuse storage, landscape and amenity areas and associated servicing.

1.4.8 The areas of the site are designated into different phases set out below and shown in Figure 1.3.

- Phase 1a – New hospital, MSCP, and access.
- Phase 1b – All interim elements that need to be put into place so that the new hospital can be operational whilst the remaining hospital site to the east can be demolished.

- Phase 1c – All elements of the new hospital site that can only be built once the old hospital site to the east has been demolished, including the surface car park, new bus stops, and junction access upgrades.
- Phase 2 – Outline application area for the residential development.

Figure 1.3: Site Areas and Key Phases



Source: IBI Group

1.4.9 This TA assesses the development upon completion of two key phases of the development.

1. Phase 1b is assessed, as this will be the operational layout for the new hospital for a significant period of time whilst the decommissioning and demolition of the existing hospital site takes place.
2. Phase 2 is assessed, as this represents the permanent site layout once the existing hospital site and new hospital site have been developed.

1.4.10 The development site is the location of an existing major acute hospital. Though the hospital will need to remain operational, some services are being relocated to off-site locations to enable decant of the Phase 1 site area to enable construction. This will result in the removal of some buildings and parking from the Phase 1 construction area. Full details of parking implications are provided in Chapter 4.

1.4.11 The key decant moves have been captured through other minor projects, as follows:

- Decant of some staff roles to Mount Vernon Hospital (off-site);

- Relocation of the Children's Nursery to The Old Creche (on subject to a separate planning application for redevelopment); and
- Formation of an off-site temporary decant car park (subject to the submission of a separate temporary planning application)

1.5 Document Structure

1.5.1 The remainder of this TA is structured as follows, in accordance with the TfL Healthy Streets TA recommended Contents and Chapters June 2019 (deviating where necessary as confirmed to be acceptable through pre-application consultation):

- **Section 2 - Policy and Guidance**: Describes the policy and guidance which support and guide the TA
- **Section 3 - Transport Planning for People:** Describes who the development is for, when will they travel there and why
- **Section 4 - Site and Surroundings:** Describes how can people of all abilities will move around the site and its immediate surroundings
- **Section 5 - Active Travel Zone (ATZ) Assessment:** Describes how will people of all abilities will make key journeys in the ATZ that are essential to support car-free lifestyles
- **Section 6 - Travel Demand:** Describes how will people of all abilities travel onto the local highway and public transport network
- **Section 7: London Wide Network:** Describes how will people of all abilities travel smoothly and easily from the development onto London's public transport and highway networks
- **Section 8 - Local Network Assessment**: Describes the local network assessment methodology and inputs, and the results of the Traffic Impact Assessment (TIA)
- **Section 9 - Construction:** Outlines how a Construction Logistics Plan (CLP) will be prepared, using the TfL template and TfL CLP tool, and
- **Section 10 – Summary:** Summarises key transport impacts and how the development will respond.

2 Policy and Guidance

2.1 Introduction

2.1.1 This section covers the policy and guidance documents which have been utilised to understand and support the approached used for the redevelopment of Hillingdon Hospital.

2.2 Applicable Planning Framework

2.2.1 The proposed scheme has been developed with full consideration of the national, regional, and local planning framework and legislative guidance. This report demonstrates how the development proposals comply with the following:

- National Planning Policy Framework (2021);
- The London Plan (2021);
- The Mayor's Transport Strategy (2018); and
- LBH Hillingdon Local Plan (2012).

2.3 National Policy

National Planning Policy Framework

2.3.1 The National Planning Policy Framework (NPPF) was first published in 2012, the most recent revision was published in July 2021. The NPPF sets out government's planning policies for England and how these are expected to be applied. The NPPF is a material consideration in planning decisions.

2.3.2 Chapter 9 of the NPPF relates to promoting sustainable transport. Table 2.1 shows the relevant NPPF policies, their descriptions, and how the Hillingdon Hospital development complies with these policies. Details of the proposals, the movement strategy and transport mitigation measures are provided later in this report in Sections 3, 4, 5 and 6.

Table 2.1: NPPF relevant policies and descriptions

Paragraph No.	Description	Development Proposals
104	Transport issues should be considered from the earliest stages of plan-making and development proposals, so that the potential impacts of development on transport networks can be addressed	The TA sets out how the impact of the site has been assessed, and how any negative impacts have been mitigated against. Opportunities have been explored to promote sustainable modes of travel through the Mobility Hub, pedestrian/cyclist improvements, and on-site bus stops.
105	Site location should be accessible and sustainable	The location of the hospital is well serviced by public transport. The development improves existing pedestrian, cycling facilities, and public transport facilities which have been designed to the relevant accessibility standards.
106	Planning policies should support an appropriate mix of uses across an area and provide for attractive and well-designed walking and cycling networks with supporting facilities	The development will provide a mix of class uses, including health, residential, retail, employment and café use. In addition, there walking and cycling connections have been provided between the uses, with cycle parking facilities located throughout the development.
107	Local parking standards for residential and non-residential development, policies should take into account the adequate provision of	The proposal will be providing the appropriate amount of parking and electric vehicle charging units in line with the London Plan.

Paragraph No.	Description	Development Proposals
	spaces for charging plug-in and other ultra-low emission vehicles.	
110	In assessing sites that may be allocated for development in plans, it should be ensured that appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location, and that there is safe and suitable access to the site can be achieved for all users	The proposed development provides for pedestrians by providing new pedestrian routes within the site and pedestrian crossings. The Mobility Hub will ensure sustainable transport modes are advertised so that patients, staff and residents can take up these methods.
111	The development must not have a significant impact on highway safety or a severe residual cumulative impact on the road network	The development provides a number of facilities for pedestrians to improve safety and the site has been designed to reduce conflict between different users. Also, the number of site users is forecast to decrease with the redevelopment, so the impact on highway network is likely to be negligible.
112	Applications for development should give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas, and allow for the efficient delivery of goods, and access by service and emergency vehicles	The development provides a shared use cycle and pedestrian path surrounding the site and pedestrian routes within the site. Access routes to the Ambulance Yard and Service Yard have been restricted for the sole use of ambulances and delivery and servicing vehicles where possible.
113	All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment	A residential travel plan and hospital travel plan are provided alongside the TA. These documents detail the sustainable modes of transport residents, patients, visitors and staff can use to travel to and from the site. They provide a sustainable framework that sets out how there will be a mode shift away from car for both hospital and residential developments, with a number of measures proposed.

Source: Mott MacDonald

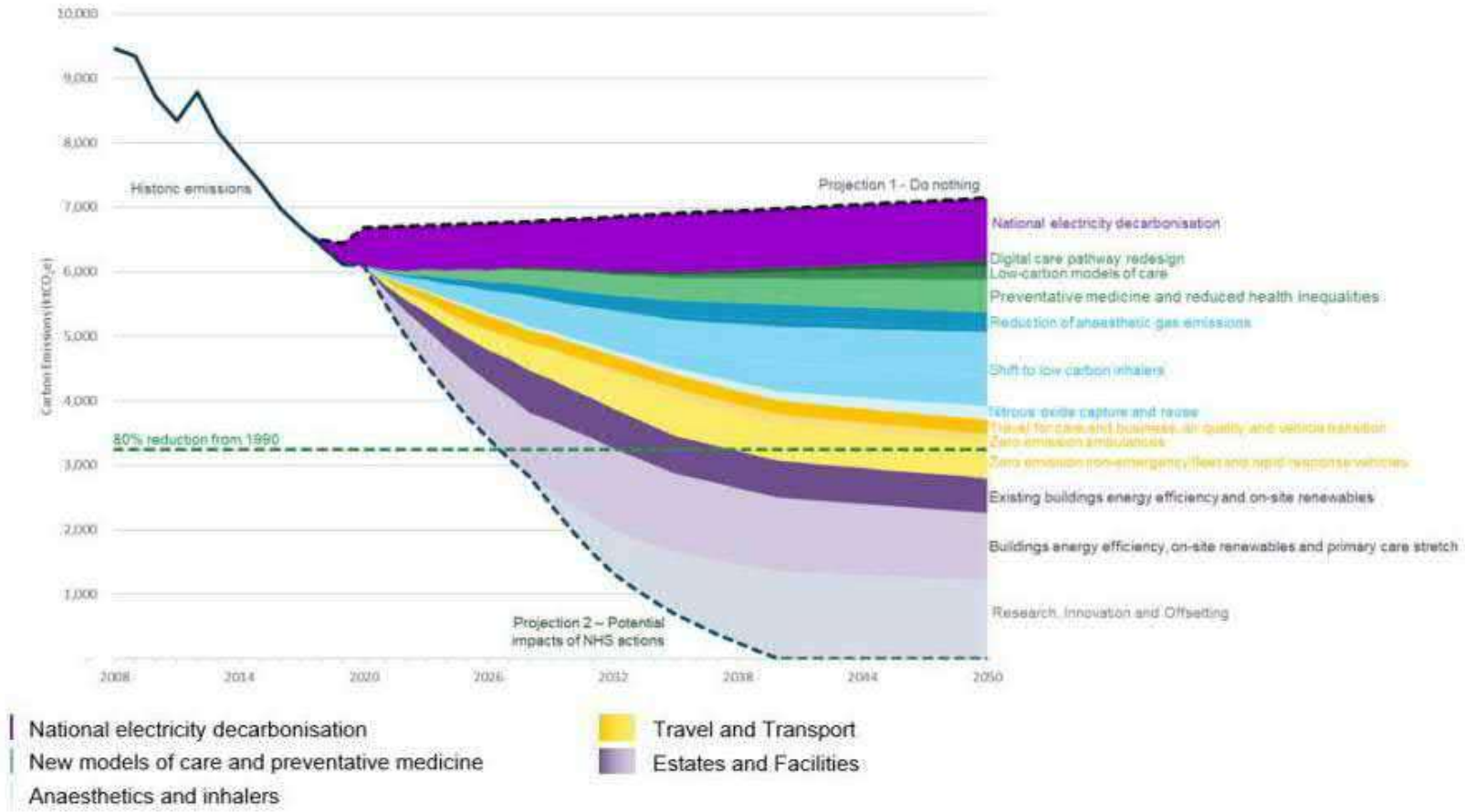
NHS Net Zero

2.3.2 In January 2020, a campaign for a green NHS was launched to involve staff and provide a route map to enable the NHS to reach net zero. A detailed plan document ‘Delivering a ‘Net Zero National Health Service’ was published in October 2020 with specified targets for the NHS. These targets are:

- For directly controlled emissions (NHS carbon footprint), net zero by 2040, with an 80% reduction by 2028-2032, shown in

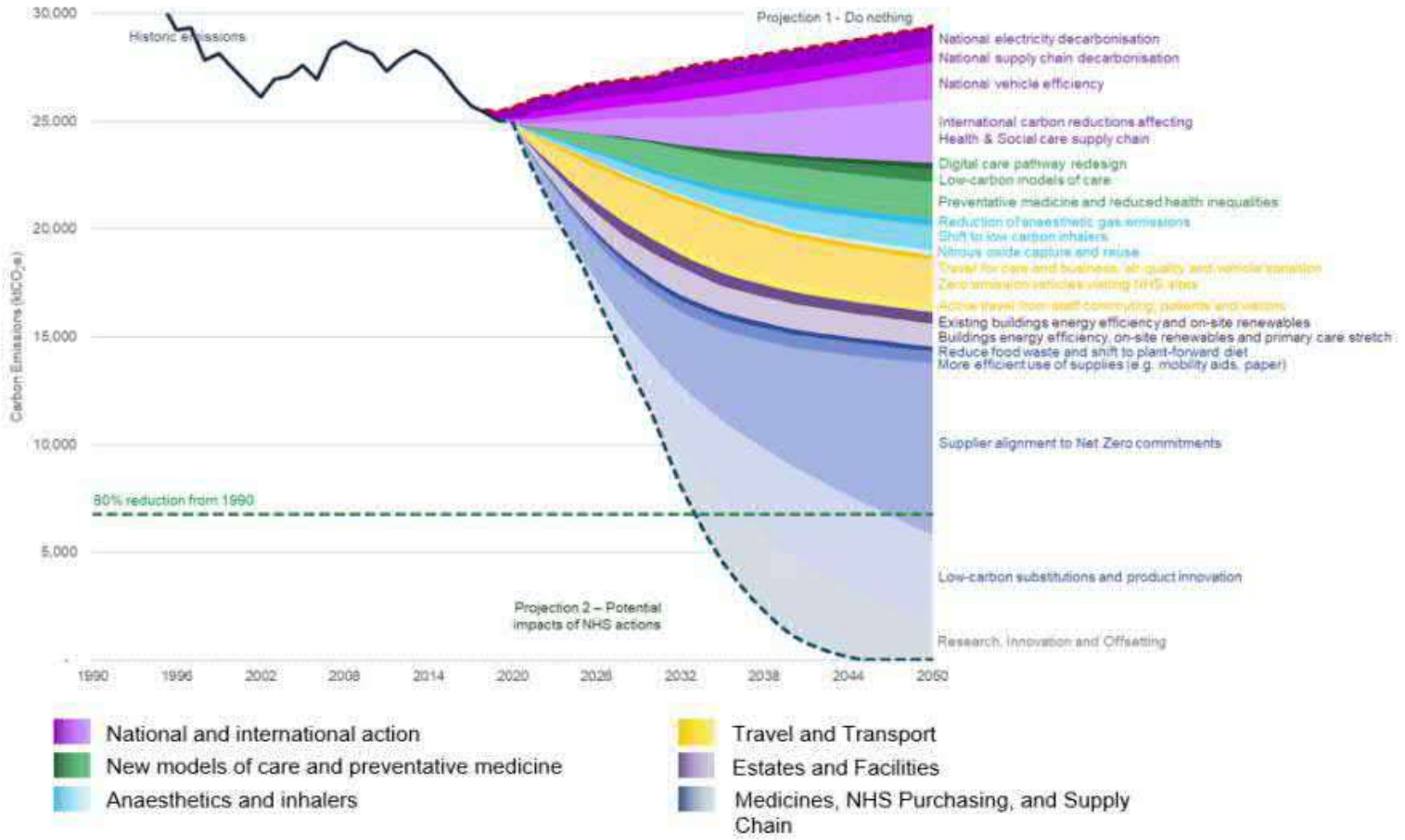
  Figure 2.1;
- For emissions that can be influenced (NHS Carbon Footprint Plus), net zero by 2045, 80% reduction 2036-2039, shown in Figure 2.2

Figure 2.1: Pathway to net zero for the NHS Carbon Footprint Scope



Source: NHS Net Zero

Figure 2.2: Pathway to net zero for the NHS Carbon Footprint Plus Scope



Source: NHS Net Zero

2.3.3 Initial early steps are already being taken, including in relation to transport and travel. These include working towards road testing zero-emission ambulances (by 2022) and a shift to zero-emissions vehicles by 2032 for the whole fleet.

2.3.4 In order to encourage a net zero development, the documents submitted with the planning application detail measures that will be undertaken to achieve this. The travel plans and Mobility Hub vision paper discuss measures on how to generate a mode shift away from the car. In addition, the delivery and servicing plan sets out how the hospital will endeavour to ensure there will be consolidated deliveries, and how suppliers will use sustainable vehicles and cargo bicycles wherever possible.

2.3.5 The NHS Net Zero plan document contained the following in relation to Covid 19 and travel (published Oct 2020):

> **Covid-19 and Travel**
>
> National measures introduced to reduce the transmission of COVID-19 have meant more people are staying at home, working from home and wherever possible accessing services online. While some of these national measures have changed, social distancing remains in place, meaning that workplaces may have lower occupancy and public transport is set up to carry fewer passengers. In the NHS, early estimates suggest that moving outpatient appointments online could have avoided 58,000,000 miles over three months.
>
> Restrictions on travel are likely to have had a significant, but as yet unquantified, effect on reducing elements of current air pollution levels in the UK. However, whether these effects are retained in the long term will depend on a variety of factors.

2.4 Regional Policy

The London Plan

2.4.1 The London Plan (March 2021) is the Spatial Development Strategy for Greater London. It sets out a framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth. As the overall strategic plan for London, it sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years, the London Plan runs from 2019 to 2041.

2.4.2 The London Plan explains that planning new developments to reduce car dependency will improve Londoners' health and make the city a better place to live. The Plan discusses how new and enhanced transport links will play an important role in unlocking homes and jobs growth in new areas and ensuring that new developments are not planned around car use.

2.4.3 The Healthy Streets Approach outlined in The London Plan (and referenced later in this report) puts improving health and reducing health inequalities at the heart of planning London's public space. It will tackle London's inactivity crisis, improve air quality and reduce the other health impacts of living in a car-dominated city by planning street networks that work well for people on foot and on bikes, and providing public transport networks that are attractive alternatives to car use.

2.4.4 Relevant transport policies from the London Plan are presented in Table 2.2, along with the proposals and actions taken to ensure that the Hillingdon Hospital development will comply.

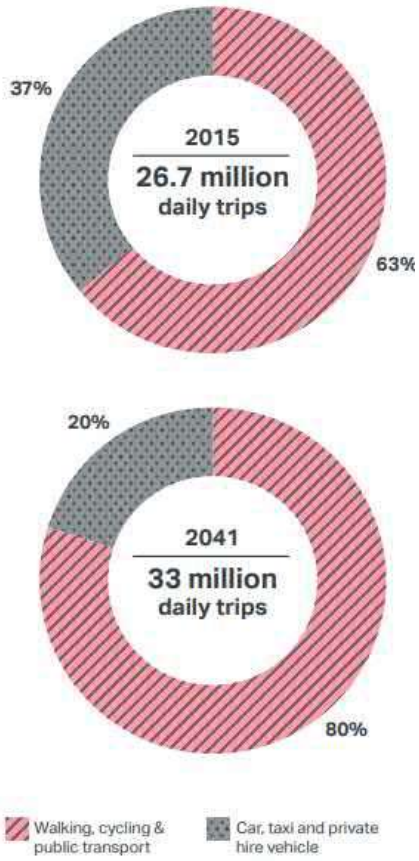
Table 2.2: Relevant London Plan transport policies

Policy No.	Description	Development Proposals
D8 Public Realm	Development proposals should ensure the public realm is well-designed, safe, accessible, inclusive, attractive, well-connected	The development includes an improved public realm including a centrally located park. There will also be a redesign of space to reduce private car spaces.
T1 Strategic approach to transport	Development proposals should support and facilitate the delivery of the Mayor's strategic target of 80 per cent of all trips in London to be made by foot, cycle or public transport by 2041	The provision of the Mobility Hub, improved pedestrian and cyclist facilities and easier access to bus stops from within the site will help to meet the Mayor's target.
T2 Healthy Streets	Development proposals should demonstrate how they will deliver improvements that support the ten Healthy Streets Indicators in line with Transport for London guidance	A Healthy Streets Check has been completed to assess the development proposals against the Healthy Streets indicators. A number of improvements have been proposed to support the Healthy Streets indicators.
T4 Assessing and mitigating transport impacts	Development proposals should reflect and be integrated with current and planned transport access, capacity and connectivity	This Transport Assessment shows that impacts on the capacity of the transport network (including impacts on pedestrians and the cycle network), at the local, network-wide and strategic level, have been fully assessed.
T5 Cycling	Development proposals should help remove barriers to cycling and create a healthy environment in which people choose to cycle	The development will be providing secure cycle parking facilities, a cycling and pedestrian corridor and bicycle repair workshop. The number of cycle parking spaces will be delivered in accordance with the London Plan.
T6 Car parking	Car parking should be restricted in line with levels of existing and future public transport accessibility and connectivity. Appropriate disabled persons parking for Blue Badge holders should be provided as set out in Policy T6.1 Residential parking to Policy T6.5 Non-residential disabled persons parking.	A car park management plan has been produced alongside this TA. Car parking provision, disabled and accessible car parking bays will be provided in accordance with the London Plan standards.
T6.1 Residential parking	New residential development should not exceed the maximum parking standards set out in the London Plan.	The number of car parking spaces will be in line with the London Plan. At least 20 per cent of spaces will have active EV charging facilities, with passive provision for all remaining spaces.
T6.5 Non-residential disabled persons parking	Disabled persons parking should be provided in accordance with the levels set out in Table 10.6 (of the London Plan), ensuring that all non-residential elements should provide access to at least one on or off-street disabled persons parking bay.	Disabled and accessible car parking bays will be provided in accordance with the London Plan standards.
T7 Deliveries, servicing and construction	Development plans and development proposals should facilitate sustainable freight movement by rail, waterways and road.	A construction logistics plan and delivery and servicing plan have been produced alongside this TA, which include measures to facilitate sustainable freight and encourage consolidated deliveries.
T9 Funding transport infrastructure through planning	Planning obligations (Section 106 agreements), including financial contributions, will be sought to mitigate impacts from development	It has been agreed with LBH that a financial contribution to local cycle enhancements via a Section 106 agreement is the most appropriate mechanism to facilitate the recommended cycling improvements set out in Section 0 of this TA.

The Mayor's Transport Strategy

2.4.10 The Mayor's Transport Strategy aims for 80% of Londoners' trips to be by foot, cycle or by public transport by 2041. All development in London must support this, as stipulated in The London Plan (March 2021). The Mayor's cycling action plan aims for 70% of Londoners to be within 400m of a London-wide network of high-quality cycle routes by 2041. The change in mode share can be seen in Figure 2.3.

Figure 2.3: Mode Share Targets for 2041



Source: The Mayor's Transport Strategy

2.4.11 The proposed redevelopment of Hillingdon Hospital supports the Mayor's Transport Strategy by utilising the healthy streets approach to prioritise human health and experience in the planning of the development.

2.4.12 The redevelopment of Hillingdon Hospital supports several key themes at the heart of the strategy:

- Healthy Streets and healthy people – the design of the redevelopment incorporates networks and opportunities to encourage walking, cycling and public transport use, which will reduce car dependency and mode share, improving people's health.

- A good public transport experience – Hillingdon Hospital is well connected to the wider area through a series of bus routes. The Mobility Hub and new bus stops outside the main entrance will be provided to improve the public transport experience.

Healthy Streets

2.4.13 The Healthy Streets Approach is the system of policies and strategies to help Londoners use cars less and walk, cycle and use public transport more. TfL has adopted the Healthy Streets Approach to improve air quality, reduce congestion and help make London's diverse communities greener, healthier and more attractive places to live, work, play and do business. The Healthy Streets ambition is set out in Policy T2 of the London Plan.

2.4.14 The aim of the Healthy Streets Approach is to help create a vibrant, successful city where people can live active, healthy lives. The Healthy Streets Approach, shown in Figure 2.4, uses 10 evidence-based indicators of what makes streets attractive places. Working towards these will help to create a healthier city, in which all people are included and can live well, and where inequalities are reduced.

Figure 2.4: Healthy Streets Indicators

Source: TfL, Healthy Streets for London

2.4.15 Good performance against each indicator means that individual streets are appealing places to walk, cycle and spend time. Improvements against all the indicators across the city's streets will radically transform the day-to-day experience of living in London, helping to fulfil this strategy's overall aim of creating a better city for more people to live and work in.

2.4.16 The proposed development supports the Healthy Streets approach by creating a connected and permeable landscaped environment for the benefit of site users and the wider public. The

redevelopment has been designed by creating spaces that are pleasant, safe, and attractive, with a reduction in through traffic. The ambition is that this improved environment around the hospital will encourage more journeys to be made by active and public transport modes.

2.4.17 The proposed development will help make Hillingdon Hospital greener, healthier and a more attractive place to visit, stay and work.

2.4.18 Aspects of the proposed development that relate to the Healthy Streets indicators have been reviewed using the Healthy Streets Design Check, contained in Chapter 4 of the Mayor's Transport Strategy, and are shown in Section 5.

Vision Zero

2.4.19 The aim of Vision Zero is the elimination of all deaths and serious injuries on London's transport system. The Vision Zero ambition is set out in Policy 3 of the Mayor's Transport Strategy.

2.4.20 Vision Zero is setting the goal of reducing the number of people killed in, or by, London buses to zero by 2030. Adopting Vision Zero will be central to the overall success of the Healthy Streets Approach, working towards the elimination of road traffic deaths and serious injuries by reducing the dominance of motor vehicles on London's streets.

2.4.21 Vision Zero for road danger means ensuring the street environment incorporates safe speeds, safe behaviour, safe street design and safe vehicles to target road danger at its source. It means reducing the dominance of motor vehicles on streets, and then making the remaining essential motorised journeys as safe as possible. With Vision Zero, road danger reduction will be considered integral to all the schemes delivered on London's streets. The proposed pace of progress is set out by the short-, medium- and long-term targets below:

- 2022 – reduce the number of people who are killed or seriously injured by 65 per cent against 2005-09 levels
- 2030 – reduce the number of people who are killed or seriously injured by 70 per cent against 2010-14 levels
- 2041 – eliminate all deaths and serious injuries from road collisions from London's streets

2.4.22 The proposed development supports the Vision Zero approach of eradicating deaths and serious injuries from roads, and making London a safer, healthier, and greener place, recognising that the design of the development shares a responsibility to reduce the danger and fear associated with traffic.

2.4.23 Particularly, the redevelopment of Hillingdon Hospital incorporates:

- **Safe speeds** – the speeds within Hillingdon Hospital will be appropriate for the level of traffic, and will reduce the possibility of on-site accidents;
- **Safe streets** – the proposed internal road layout has been designed to minimise conflict between different user types with a clear hierarchy of users and high quality ped infrastructure;
- **Safe vehicles** – most of the motorised transport will not need to travel through the site, with the proposed car park close to the entrance/exit points.
- **Safe behaviours** – the internal route has been redesigned and simplified to improve safe access

2.5 Local Policy

Hillingdon Local Plan

2.5.1 The Hillingdon Local Plan Part 1: Strategic Policies was adopted in November 2012 and is the key strategic planning document for Hillingdon. It sets out a long term spatial vision and objectives for the Borough, what is planned to happen, where and how it will be achieved. Table 2.3 shows the relevant transport policies that have been extracted.

Table 2.3: Relevant Hillingdon's Local Plan Part 1 transport policies

Policy No.	Description	Development Proposals
T1: Accessible Local Destinations	All development should encourage access by sustainable modes and include good cycling and walking provision.	There are a number of improvements to the local routes that have been suggested within the Active Travel Zone Assessment. The site has been designed with improvements to cycling and walking facilities.
T2: Accessible Local Destinations	The Council will facilitate improved public transport interchanges at Uxbridge, Hayes, West Drayton, Heathrow Airport, West Ruislip and other locations as appropriate in the future.	The proposed development improves access to public transport interchanges through improvements to public transport facilities and accessibility on site.

Source: Mott MacDonald

2.5.3 Hillingdon's Local Plan Part 2 provides detailed policies that form the basis of the Council's decisions on planning applications. Relevant transport policies have been extracted below in Table 2.4 for ease of reference:

Table 2.4: Relevant Hillingdon's Local Plan Part 2 transport policies

Policy No.	Description	Development Proposals
DMT 1: Managing Transport Impacts	Development proposals will be required to meet the transport needs of the development and address its transport impacts in a sustainable manner	The pedestrian, cycle and public transport networks have been assessed and some improvements have been proposed. The delivery and servicing plan addresses sustainable deliveries. In addition, the impact of the hospital traffic on the local road network has been assessed.
DMT 2: Highways Impacts	Development proposals must ensure that there is safe and efficient vehicular access, no contribution to the deterioration of air quality or noise, and safe, secure and convenient access and facilities for cyclists and pedestrian are accommodated	The impact on the highway network and accessibility has been addressed for all modes. For safe and efficient access, the highway network has been designed to DMRB standards, and junction modelling has been undertaken to assess the impact. Sustainable mitigation measures have also been suggested.
DMT 4: Public Transport	The Council will support and promote the enhancement of public transport facilities, including at key interchanges that address the needs of the Borough. The Council may require developers to mitigate transport impacts from development proposals by improving local public transport facilities and services	Public transport facilities have been enhanced with new bus stops at the hospital entrance. The PTAL assessment shows that the development proposals improve the public transport offering in and around the site.
DMT 5: Pedestrians and Cyclists	Development proposals will be required to ensure that safe, direct and inclusive access for pedestrians and cyclists is provided on the site connecting it to the wider network	An assessment of the existing pedestrian and cyclist provision has been undertaken, and the facilities have been improved by providing a number of shared use corridors.

Source: Mott MacDonald

3 Transport Planning for People

3.1 Introduction

3.1.1 Access to the proposed development has been designed to put people first. in-line with TfL's Healthy Streets approach and Healthy Streets TA Guidance.

3.1.2 The strategy at Hillingdon Hospital underpinning the transport elements is about enabling and promoting sustainable travel for all site users where practicable. Naturally some user groups will have limited choice of mode, particularly patients and visitors on unplanned visits, those with specific needs or impairments and those who travel long distances or out of normal working hours.

3.1.3 This section presents the most up-to-date London travel trends and identifies the future occupiers of the site. This section also identified the travel patterns of the future occupiers with a focus on the propensity to travel by sustainable modes, or shift to more sustainable modes (walk, cycle, and public transport).

3.2 Who is the development for and why?

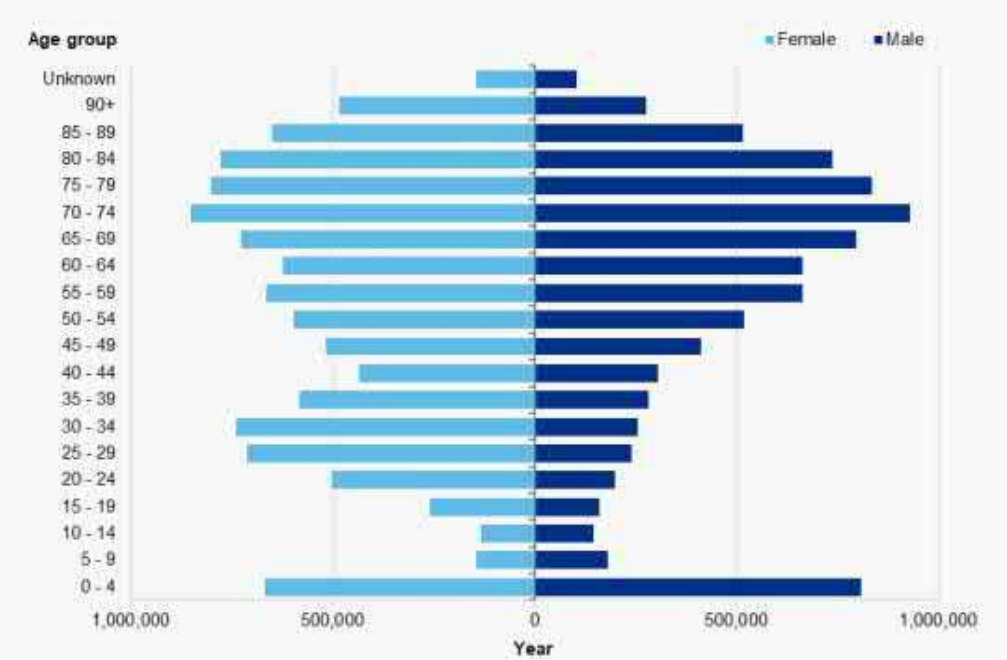
New Hospital

3.2.1 The new hospital is for patients seeking healthcare of a variety of forms. Due to this use the hospital also generates trips associated with visitors, staff and ancillary trips associated with deliveries to and servicing of the hospital.

3.2.2 Although there will inevitably be a variation in travel demand from the existing hospital, the Trust are developing stronger partnership working with community care providers, seeking to promote avoidance healthcare (tackling health issues at source rather than through treatment) and have also seen a rapid shift in their digital capability in terms of both healthcare delivery (digital consultations) and ability to enable agile/remote working among staff. This has been considered in later sections.

3.2.3 A publication by NHS Digital called 'Hospital Admitted Patient Care and Adult Critical Care Activity' assessed the number of people admitted into hospital in 2017-2018 by and age and sex. The results are shown in Figure 3.1. 'FCE' stands for Finished Consultant Episodes, meaning a continuous period of care under one consultant.

Figure 3.1: FCEs by age and sex, 2017-2018



Source: NHS Digital

3.2.4 The age group with the highest number of episodes was the 70-74 year group (1.8 million), accounting for 7.95% of all episodes. The next two highest age groups are 75-79 and 80 to 84. Female patients accounted for 11 million (54.9%) of episodes, with notably higher rates for admittance of females than males when females are of child baring age. The demographics using Hillingdon Hospital are likely to be similar to this.

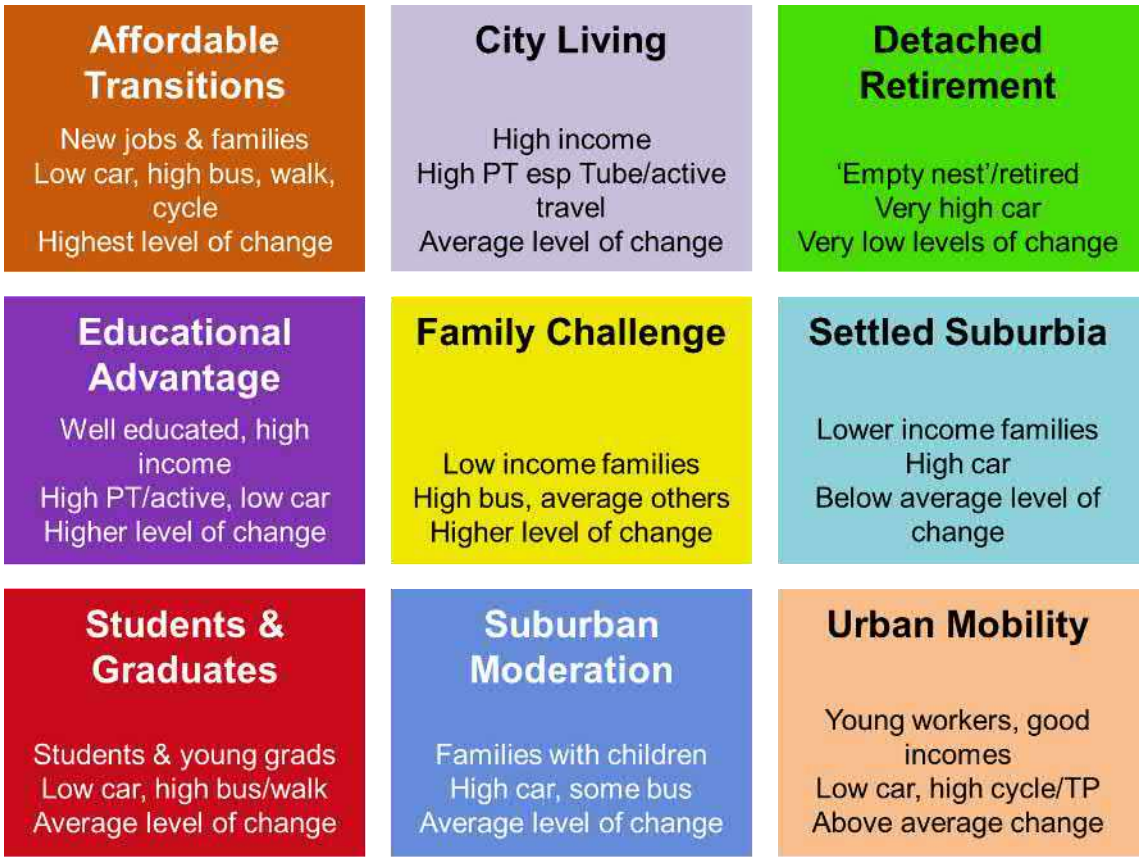
Future Residents

3.2.5 The 'Opportunity Site' enables the further development of the existing site. The proposed primary use is residential dwellings. Due to this the use of the site will generate residential and visitor trips, alongside associated servicing and delivery trips for the dwellings and residents. The Trust are preparing a sustainable travel plan to encourage sustainable travel choices.

3.3 Transport classification of Londoners

3.3.1 The Transport Classification of Londoners (TCoL) is a multi-modal customer segmentation tool developed by TfL, and published in 2017, that has been designed to categorise Londoners on the basis of the travel choices they make, and the motivations for making those decisions. The desire to understand these behaviours and motivations is borne out of a need to plan effectively for London, both now, and in the future. Following analysis of sub-groups, TfL developed nine key segments taking account of the key characteristics and to enable smaller subgroups and those who could not be characterised to be assigned to broader key segments. The nine key segments are shown in Figure 3.2.

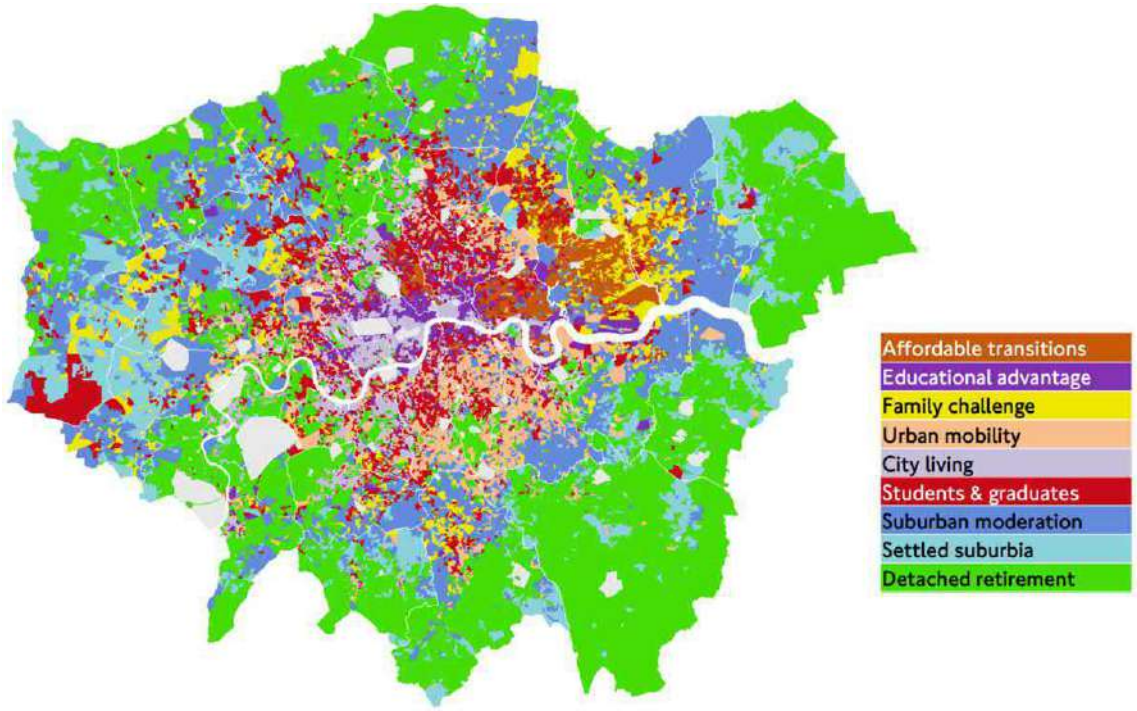
Figure 3.2: Transport Classification of Londoners – Segment Summary



Source: TfL, Transport Classification of Londoners

3.3.2 The distribution of the nine key segments across Greater London is shown in Figure 3.3.

Figure 3.3: TCoL Distribution Greater London



Source: TfL, Transport Classification of Londoners

TCoL Summary - Current Population

3.3.3 The Hillingdon Hospital development site is in the London Borough of Hillingdon. The TCoL segments of the existing population in Hillingdon have been reviewed and are summarised in Table 3.1.

Table 3.1: London Borough of Hillingdon TCoL Profiles

Transport Classification	Percentage (%)
Affordable Transitions	1
City Living	0
Detached Retirement	**31**
Educational Advantage	0
Family Challenge	7
Settled Suburbia	**30**
Students & Graduates	4
Suburban Moderation	**26**
Urban Mobility	0

Source: TfL, Transport Classification of Londoners

3.3.4 Most of the existing population in London Hillingdon is characterised by a mix of the following three segments, explained in Table 3.2.

- Detached Retirement
- Settled Suburbia

- Suburban Moderation

Table 3.2: TCoL Segment Profile Analysis – Current Population Mode Use

	Detached Retirement	Settled Suburbia	Suburban Moderation
Car Driver	Well above average	Above average	Above average
Bus	Well below average	Well below average	Below average
Rail	Average	Below average	Below average
Tube	Well below average	Below average	Below average
Walk	Below average	Below average	Below average
Cycle	Below average	Below average	Below average

Source: TfL, Transport Classification of Londoners

3.3.5 The motivations for behaviour change in each of the three local key segments have been listed from 1 to 5 in the TCoL report. These are listed in Table 3.3.

Table 3.3: TCoL Segment Profile Analysis – Current Population Motivations for Behaviour Change

	Detached Retirement	Settled Suburbia	Suburban Moderation
Car Driver	Changes to roads and driving	Changes to roads and driving	Changes to roads and driving
Bus	Health and fitness	Changes to PT	Money
Rail	Changes to PT	Money	Changes to PT
Tube	Lifestyle changes	Lifestyle changes	Health and fitness
Walk	Money	Health and fitness	Lifestyle changes

Source: TfL, Transport Classification of Londoners

3.3.6 The analysis contained in the TCoL report demonstrates that the existing population in the London Borough of Hillingdon have a higher-than-average reliance on car travel and a below average use of public transport and active modes. Motivations for change vary across the three key local segments, with money being a higher motivation of suburban moderation, whilst money is least important for the detached retirement segment. All three groups see changes to roads and driving as the greatest motivator for behaviour change.

3.3.7 Much of the travel that will be targeted through the Travel Plan will be associated with staff. Hospital staff vary in their characteristics greatly; however, through wider supporting plans and strategies, the high reliance on car in the local area will be targeted through a development of a bespoke tailored strategy which consider the accessibility of the hospital staff in different locations and promotes use of sustainable modes where practicable and allows car use only for those with limited mobility options.

TCoL Summary – Future Residents

3.3.8 The proposed development is seeking to deliver 327 new residential units. The outline element of the scheme is being submitted in outline form. The scheme will comprise a mixture of privately owned and affordable residential units. The likely TCoL Segments that are anticipated to make up new residents are as follows:

- Affordable Transitions
- Family Challenge
- Students and Graduates

Table 3.4: TCoL Segment Profile Analysis – Future Resident Mode Use

	Affordable Transitions	Family Challenge	Students and Graduates
Car Driver	Well below average	Below average	Below average
Bus	Above average	Above average	Above average
Rail	Well above average	Below average	Average
Tube	Above average	Average	Above average
Walk	Average	Average	Above average
Cycle	Well above average	Average	Above average

Source: TfL, Transport Classification of Londoners

3.3.9 The motivations for behaviour change in each of the three future segments have been listed from 1 (most important) to 5 (least important) in the TCoL report. These are listed in Table 3.5.

Table 3.5: TCoL Segment Profile Analysis – Future Resident Motivations for Behaviour Change

	Affordable Transitions	Family Challenge	Students and Graduates
Car Driver	Money	Changes to PT	Changes to PT
Bus	Health and fitness	Lifestyle changes	Money
Rail	Lifestyle changes	Money	Lifestyle changes
Tube	Changes to PT	Health and fitness	Health and fitness
Walk	Changes to roads and driving	Changes to roads and driving	Changes to roads and driving

Source: TfL, Transport Classification of Londoners

3.3.10 The analysis contained in the TCoL report demonstrates that the future population of the London Borough of Hillingdon have a much lower level of car ownership and lower than average proportion of driving licence holders.

3.3.11 Motivations for change vary, but all three segments see changes to roads and driving as least important motivation for behaviour change.

3.3.12 Residents will have access to the Mobility Hub, which will provide access to a range of sustainable travel options including access to a car club. The Mobility Hub will also provide supporting information, facilities, and ticketing for a well-integrates community facility to promote sustainable travel.

3.4 Travel in London

3.4.1 Travel in London is TfL's annual publication that examines and summarises trends and developments relating to travel and transport in London. It provides an authoritative source of transport statistics as well as topical evidence-based analysis, and tracks trends and progress in relation to the transport and other related strategies of the Mayor.

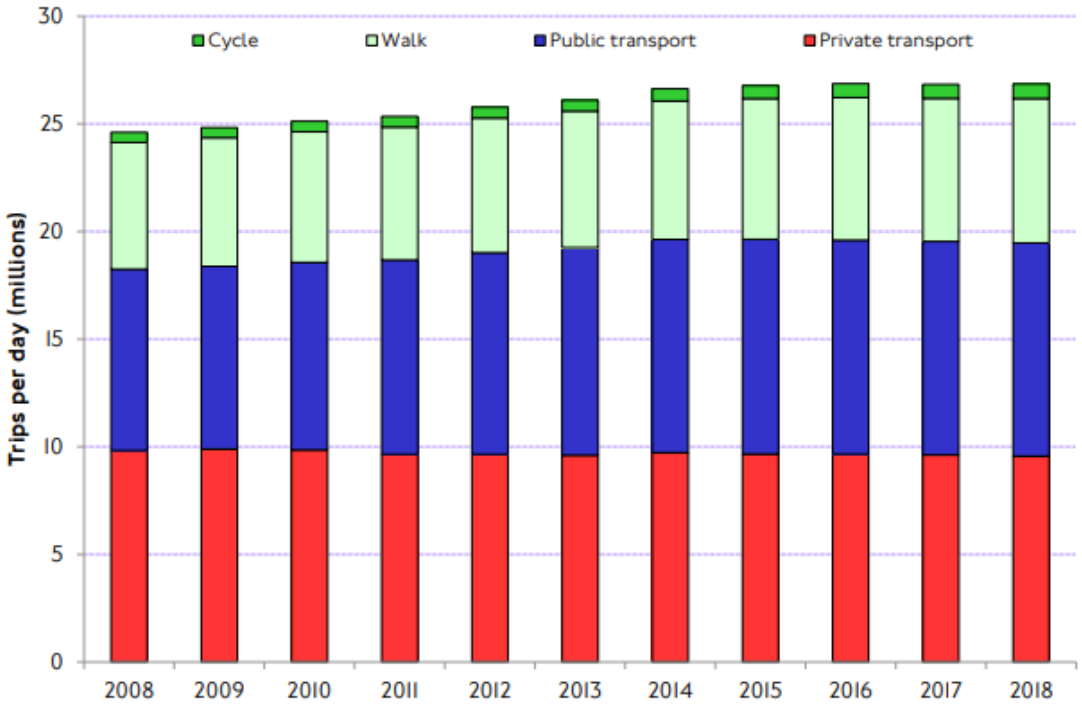
3.4.2 TfL's Travel in London Report 12 has been reviewed to identify any useful information about the likely travel behaviour of users of the proposed development. There is a more recent report (Travel in London Report 13) however this reflects travel during disruption caused by the Covid-19 pandemic and is not representative of typical travel at this time.

Total Travel in London

3.4.3 In 2018, 26.9 million trips were made on an annual average day (7-day week) in London, as shown in Figure 3.4.

3.4.4 On an average day (7-day week) in 2018, the share for active, efficient, and sustainable modes (walking, cycling and public transport) was 63.0%, an increase of 0.3% on 2017. The Mayor's aim of 80% of trips in London being made by active, efficient, and sustainable modes in 2041 requires, on average, a yearly 0.7 percentage point shift towards public transport, walking and cycling. The redevelopment at Hillingdon Hospital aims to align with this shift by providing improved walking, cycling and public transport facilities.

Figure 3.4: Daily average number of trips in Greater London, by main mode, 2008-2018

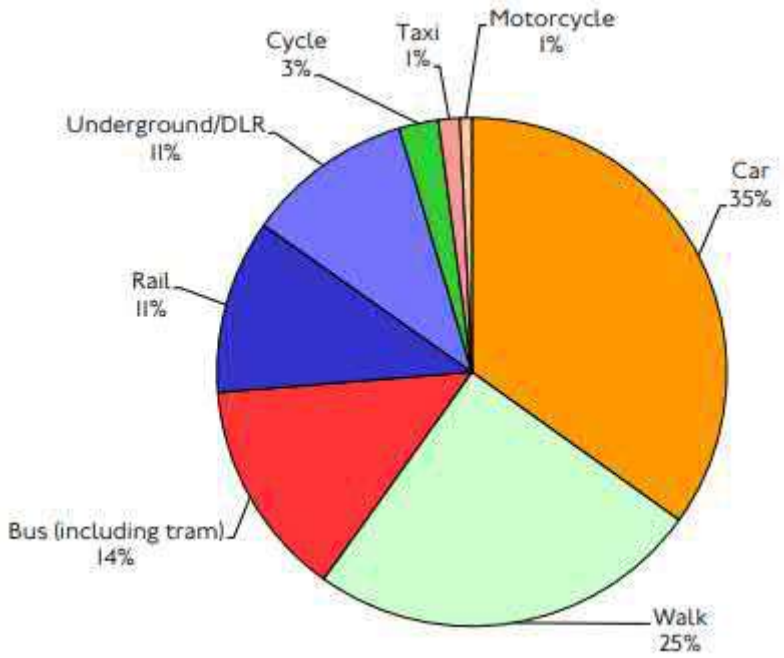


Source: Strategic Analysis, TfL City Planning

Mode Shares in London

3.4.5 The mode shares of daily trips in London in 2018 is shown below in Figure 3.5. This shows that public transport accounted for 35.5% of trips in 2018.

Figure 3.5: Mode shares of daily trips in London, 2018

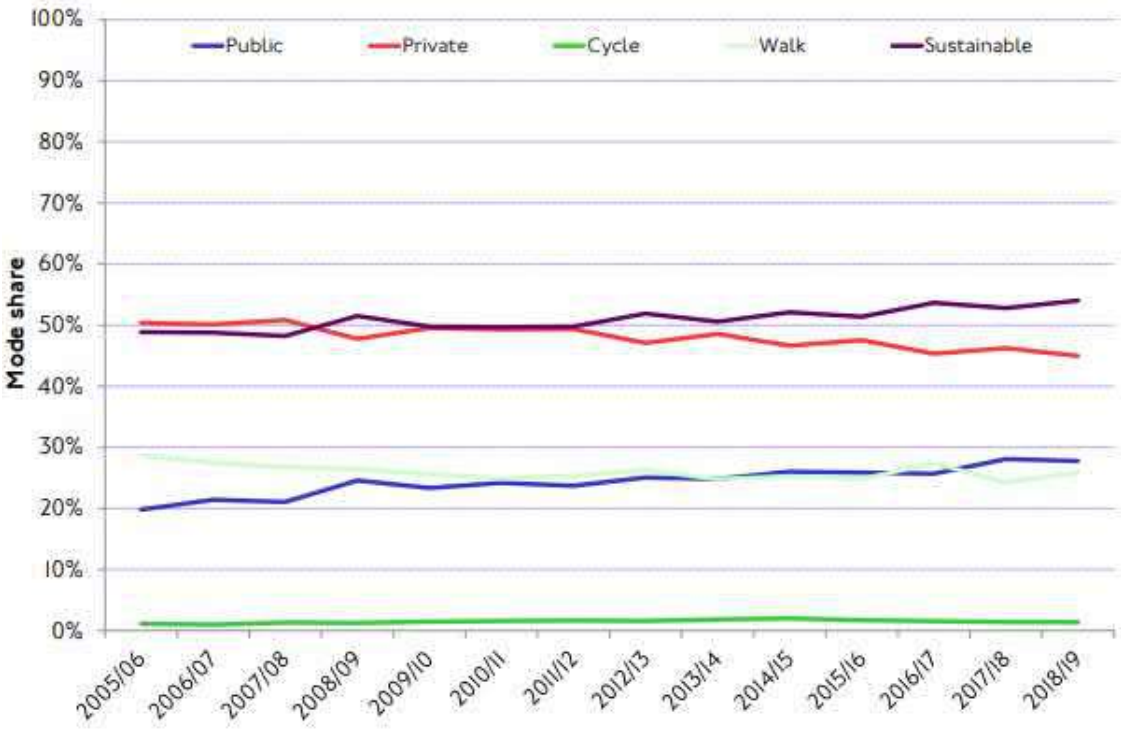


Source: Strategic Analysis, TfL City Planning

Travel by London residents: active, efficient, and sustainable mode shares

3.4.6 In outer London, where public transport coverage is less comprehensive, private transport mode share has fallen from 50.4% in 2005/06 to 45% in 2018/19. This can be seen in Figure 3.6.

Figure 3.6: Mode share of trips by outer London residents, 2005/06–2018/19



Source: Strategic Analysis, TfL City Planning

3.5 Summary

3.5.1 The data summarised from the Travel in London report demonstrates a sustained steady shift towards more sustainable travel and continuing to push towards the Mayor's goal of 80% of trips being made by sustainable modes (on foot, by cycle, or using public transport) by 2041. Further, there is a demonstrated reduction in overall trip rates per person per day, which also shows that people are travelling less frequently. As per the Travel in London report 13, this is also expected to be exacerbated by the COVID-19 pandemic, which has forced companies to adopt agile and remote working. The redevelopment provides an excellent opportunity to maximise the benefits of these changes in demand and mode share and support the formation of a new sustainable community, led by an exemplar hospital.

4 Site and Surroundings

4.1 Introduction

4.1.1 This section describes the location of the site and surrounding areas, including information on accessibility from locations by mode, public transport routes, stops and interchanges that currently serve the site.

4.1.2 The nature of the development means that further detail will be provided on the current and future blue light access and delivery and servicing routes, alongside the detail of the service yard and facility management elements. This is in line with TfL Healthy Streets TA guidance.

4.1.3 The guidance is interpreted to include the proposed site frontages, access points and internal circulation arrangements for all suitable modes, including parking and servicing, but excluding means of access to and from the wider area. Detail on wider accessibility in the surrounding area is provided in Section 5 where the Active Travel Zone assessment is reported.

The proposed development includes a substantial package of non-car measures and initiatives, as per the Trust's Sustainable Travel Plan, and in-line with the NHS Net Zero agenda. The measures and initiatives are described in this section in-line with the phased delivery of the development.

The content of the 'Site and Surroundings' section is shown below and reflects current and proposed arrangements, along with details of phased delivery where appropriate.

- Walking;
- Cycling;
- Public transport;
- Ambulance;
- Deliveries and servicing;
- Car;
- Car parking; and
- Proposed provisions.

4.1.3.1 It should also be noted, alongside this TA, a Car Parking Management Plan (CPMP) has been prepared, which sets out the framework of management measures upon occupation of the hospital, for the Trust to manage and monitor parking and take action as and when needed.

4.2 Site Location

4.2.1 The site is in Hillingdon, which is approximately two miles south of Uxbridge and three miles north of West Drayton. The site location is shown in Figure 4.1.

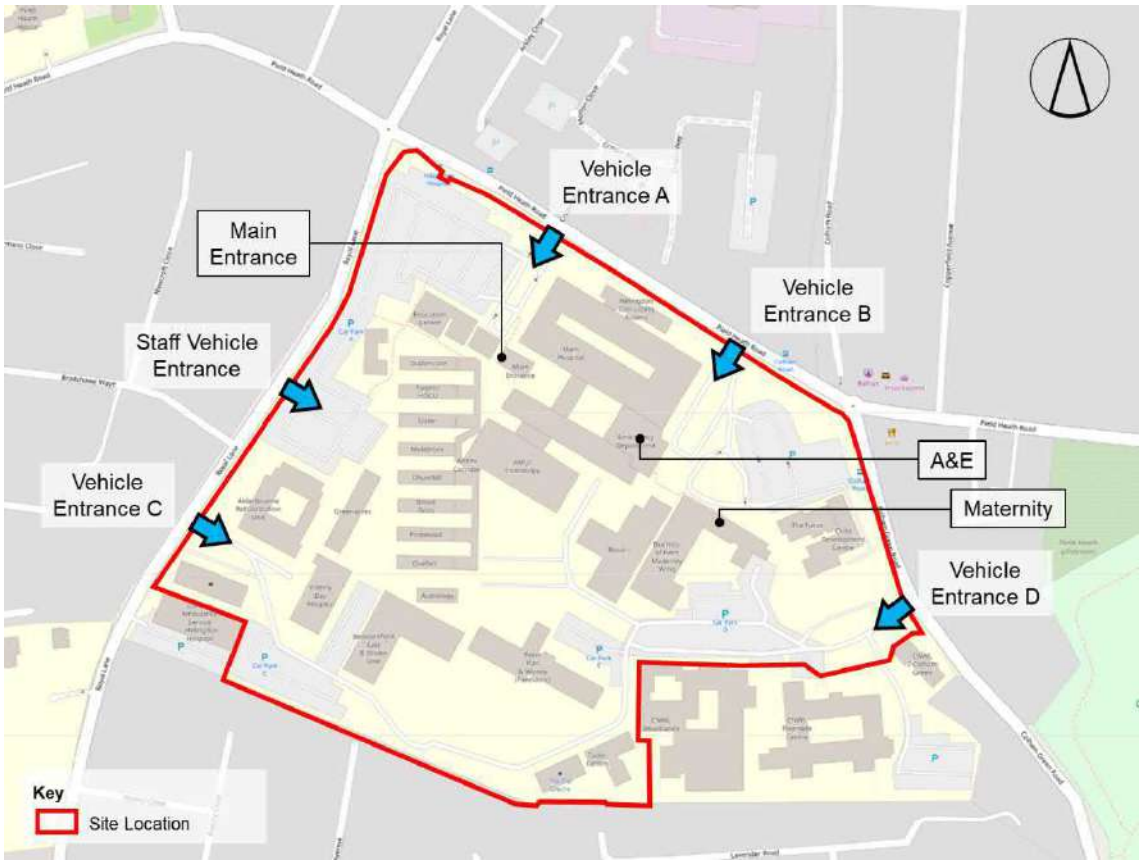
Figure 4.1: Site Location

Source: Open Street Map

4.2.2 The area surrounding the site is largely residential, with nearby education facilities, convenience retail and other local small businesses. The existing site is accessed from five locations, shown in Figure 4.2. The five locations are:

- Vehicle Entrance A – from Pield Heath Road (Main Entrance);
- Vehicle Entrance B – from Pield Heath Road (A&E and maternity entrance);
- Vehicle Entrance C - from Royal Lane (hospital only internal link through site to Colham Green Road);
- Vehicle Entrance D – from Colham Green Road (hospital only internal link through site to Royal Lane); and
- Staff Vehicle Entrance – from Colham Green Road (staff car park entrance).

Figure 4.2: Existing Site Access Locations



Source: Open Street Map

4.3 Walking

Existing

4.3.1 The site is in a largely residential area and is well connected to the surrounding areas by a network of good quality footways and footpaths. Along the Pield Heath Road site frontage there are multiple formal crossing locations, including signalised crossing facilities at the Main Entrance, a zebra crossing between the northern and southern footway near to the A&E entrance, and informal dropped kerb crossings at the mini-roundabout junction with Royal Lane.

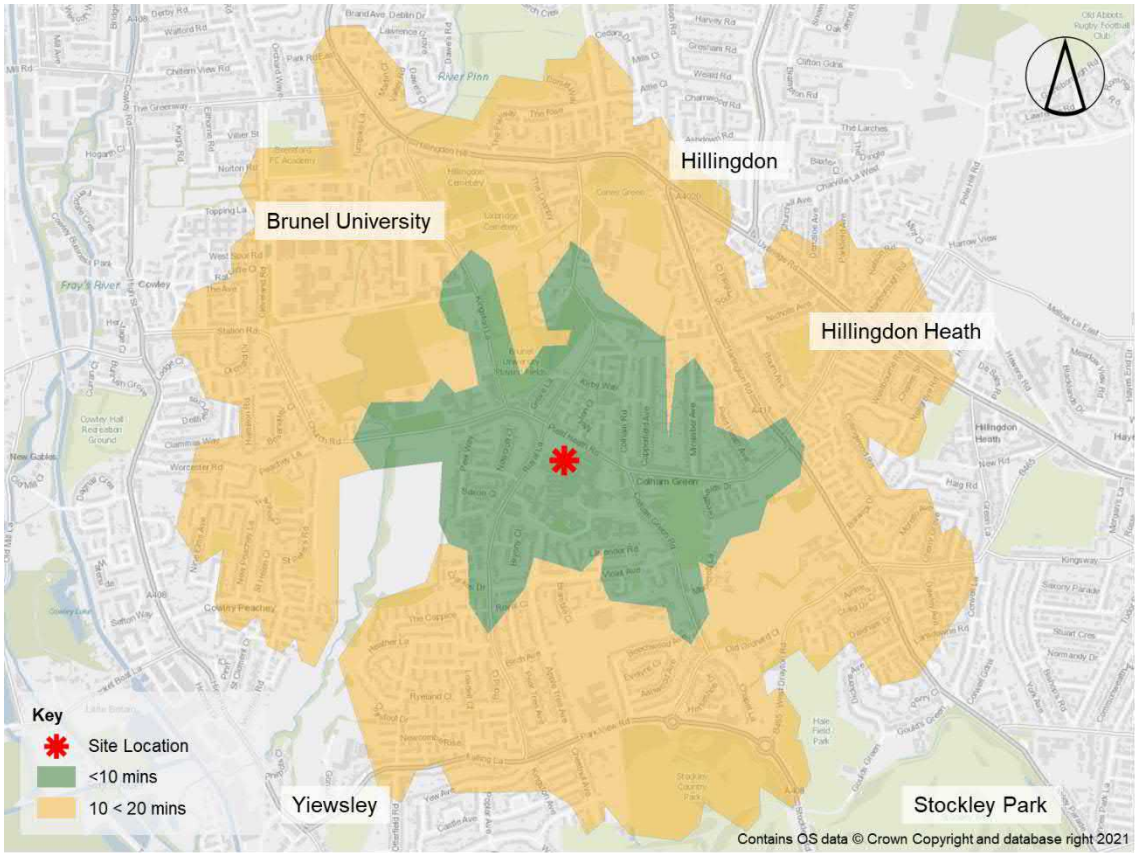
4.3.2 Within the site, the standard of provision is currently varied. Areas of the site where more recent development has taken place provide good pedestrian connections, whereas many areas have substandard or absent infrastructure. Various routes are severed, footways are not of sufficient width, or tactile paving is missing. Likewise, the layout of the site is poor; areas where new development has added to the facilities on offer have been poorly coordinated in terms of accessibility. This has resulted in the site being fragmented with very poor natural wayfinding embedded in the site layout.

4.3.3 The proposed redevelopment is an opportunity to bring the hospital estate up to current standards for walking provision. The future Phase 1b and Phase 2 pedestrian proposals are detailed below.

4.3.4 The wider walking network has also been reviewed. This has been captured in the Active Travel Zone assessment in Chapter 5. For completeness, the existing pedestrian network has been

reviewed to a high level here. A walking Isochrone is displayed in Figure 4.3, showing all locations that can be accessed within a 10-minute and 20-minute walk of the site using existing pedestrian infrastructure.

Figure 4.3: Walking Isochrone



Source: Mott MacDonald

4.3.5 Figure 4.3 identifies the various trip attractors that are accessible within a 20 minute walk. This includes Brunel University, which is a trip attractor for students and nurses, accessible within a 20 minute walk. This also includes Hillingdon Heath, a small stretch of high street, accessible within a 20 minute walk. There is an opportunity to promote walking as a mode to those who live within a reasonable walking distance of the site.

Proposed – Phase 1b

4.3.6 The proposed development has been designed to provide all site users with a high-quality environment within which walking and travel by active modes will be central to its success as a modern and high-quality healthcare campus.

The site layout defined in the masterplan (

4.3.7 Figure 4.4) provides a network of high-quality pedestrian routes and public realm areas, which sit within a carefully planned arrangement of development plots across the site.

Figure 4.4: Proposed Phase 1b Masterplan

Source: IBI Group

4.3.8 Along the Pield Heath Road frontage the footways will be widened and resurfaced to provide a high-quality pedestrian route along the southern site of Pield Heath Road, connecting Colham Green Road with Royal Lane, and all points in between.

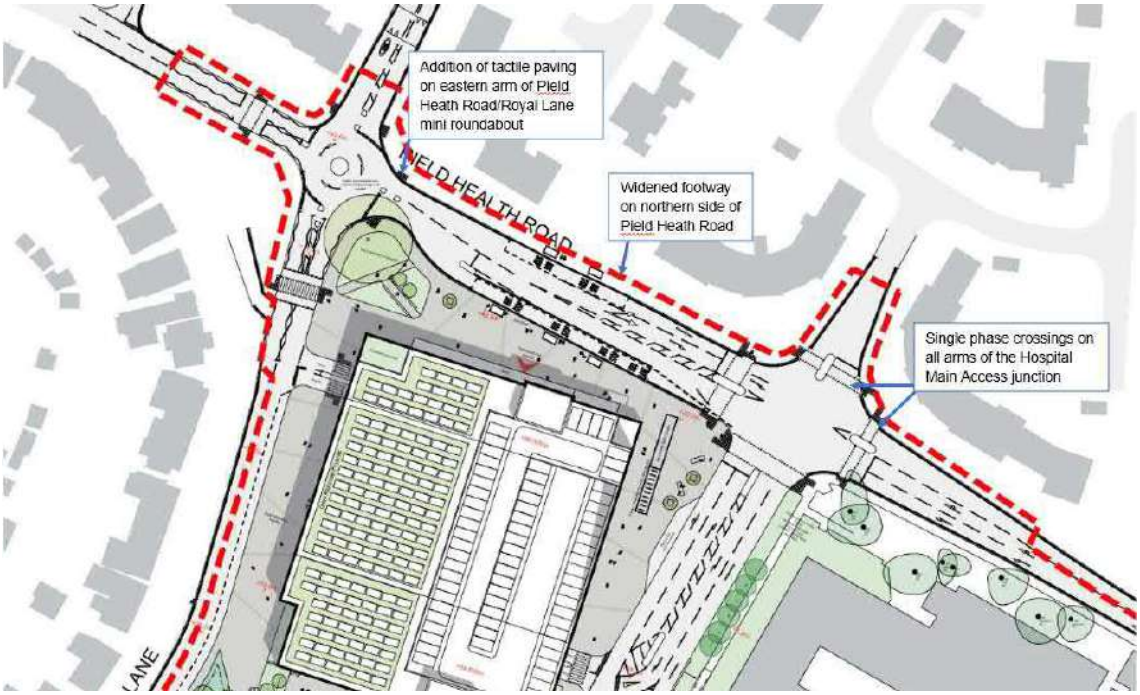
4.3.9 A full list of pedestrian improvements in Phase 1b is provided below:

- New signalised crossing on Pield Heath Road west of Royal Lane
- New zebra crossing on Royal Lane south of Pield Heath Road
- Addition of tactile paving on eastern arm of Pield Heath Road/Royal Lane mini roundabout
- Widened footway on northern side of Pield Heath Road
- Area of public realm south of Pield Heath Road
- Upgraded single phase crossings at Main Entrance junction (all arms)
- Priority crossings at all crossings along the boulevard within the hospital areas of the site
- Southern/eastern footway on Pield Heath Road and Colham Green Road (south-east of mini roundabout) extended along Colham Green Road southern arm to new controlled crossing
- New controlled crossing on southern arm of Colham Green Road/Pield Heath Road mini roundabout

- Tactile paving at all crossing points in the site
- New continuous 2.0m footway to relocated Children's Nursery

4.3.10 The footway along the northern side of Pield Heath Road, between Royal Lane and Crispin Way will be widened to a minimum width of 3m. This will enhance the route from the new hospital and the opportunity site to reach the eastbound bus stops north of Pield Heath Road. The scheme also comprises changes to the Main Entrance signalised junction, this will provide single phase crossing facilities on all arms of the junction, simplifying the crossing, prioritising pedestrian movement, and providing safe crossing facilities for the most vulnerable road users, which is particularly important for a healthcare facility. Figure 4.5 below details the footway enhancements discussed.

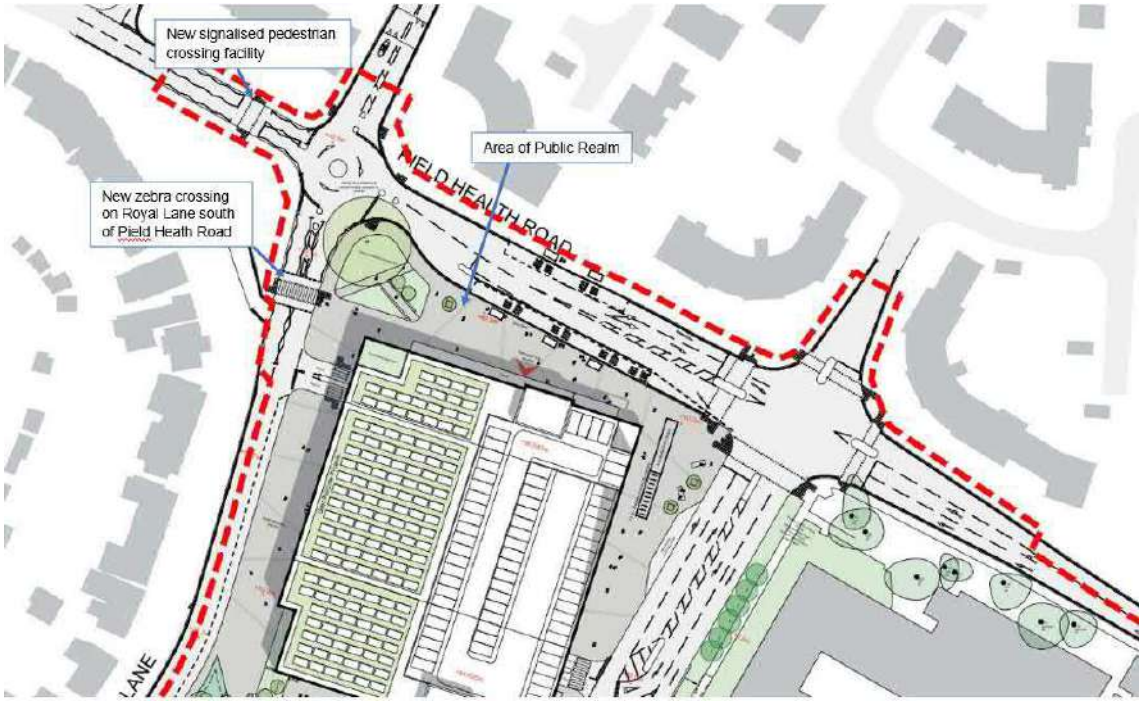
Figure 4.5: Northern Section Enhancements



Source: IBI Group/Mott MacDonald

4.3.11 South of the westbound bus priority measure, an area of public realm will be created in place of the southern footway, again between the Main Entrance and Royal Lane. This will provide an enhanced environment, adjacent to the Mobility Hub, small retail space and the westbound bus stops. Landscape planting will enhance the environment further and create a place in which people can both dwell and walk through. This area of public realm will connect to the existing footway along Royal Lane, south of Pield Heath Road. Royal Lane and Pield Heath Road mini roundabout will be retained and enhanced with a new zebra crossing facility on the southern arm, and a new signalised pedestrian crossing facility on the western arm. These key pedestrian priority crossings will provide a connection west for trips on-foot towards Brunel University. Figure 4.6 shows the eastern and westbound enhancements.

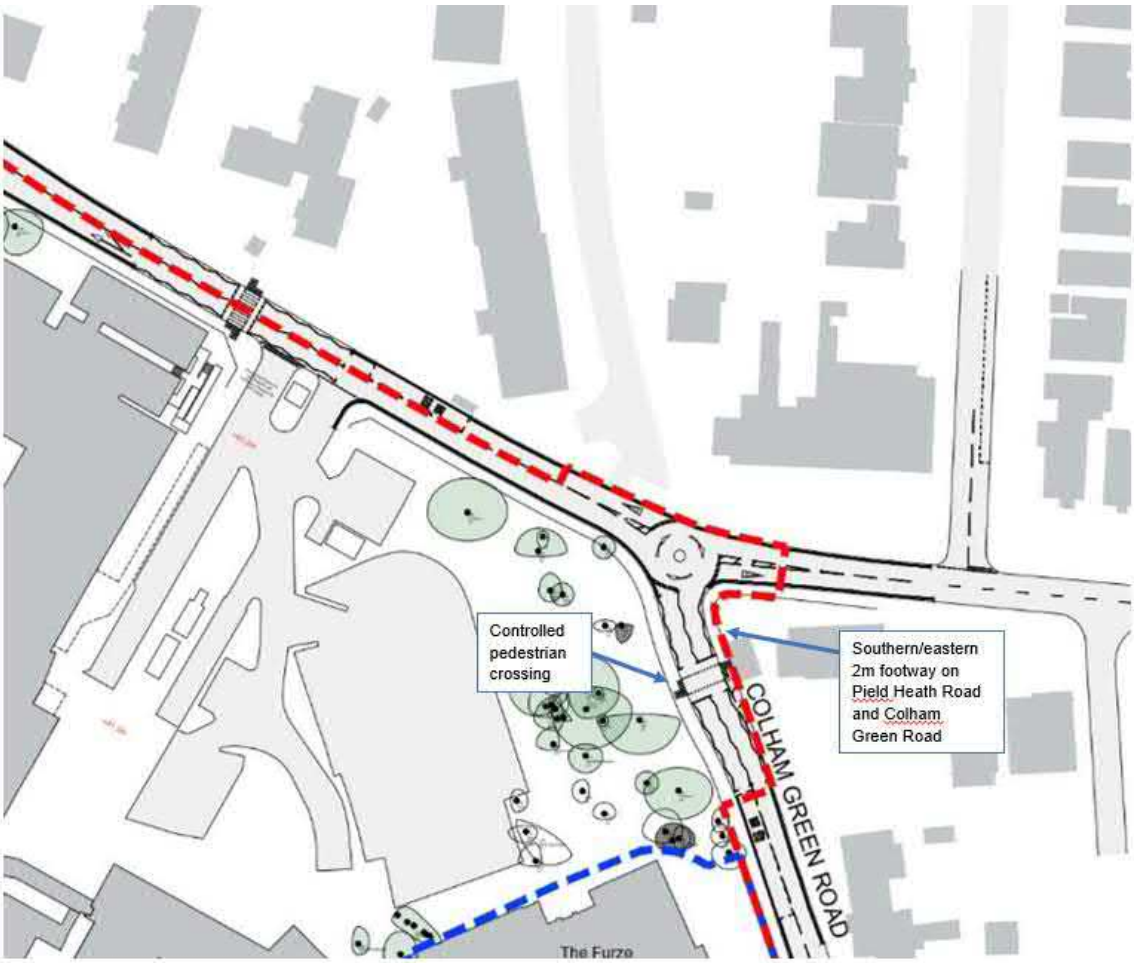
Figure 4.6: Southern and Western Section Enhancements



Source: IBI Group/Mott MacDonald

4.3.12 East of the Main Entrance at the mini roundabout of Colham Green Road and Pield Heath Road, a minor scheme is proposed which will significantly enhance the pedestrian facilities on the southern arm of the roundabout. Through minor realignment of the southern arm, a 2.0m footway will be provided alongside the eastern side of southern arm, as shown in Figure 4.8. This will provide a safe pedestrian crossing facility a short distance from the junction and enhance the safety of this crossing movement. Figure 4.7 details these pedestrian infrastructure improvements.

Figure 4.7: Eastern Section Enhancements



Source: IBI Group/Mott MacDonald

Proposed – Phase 2

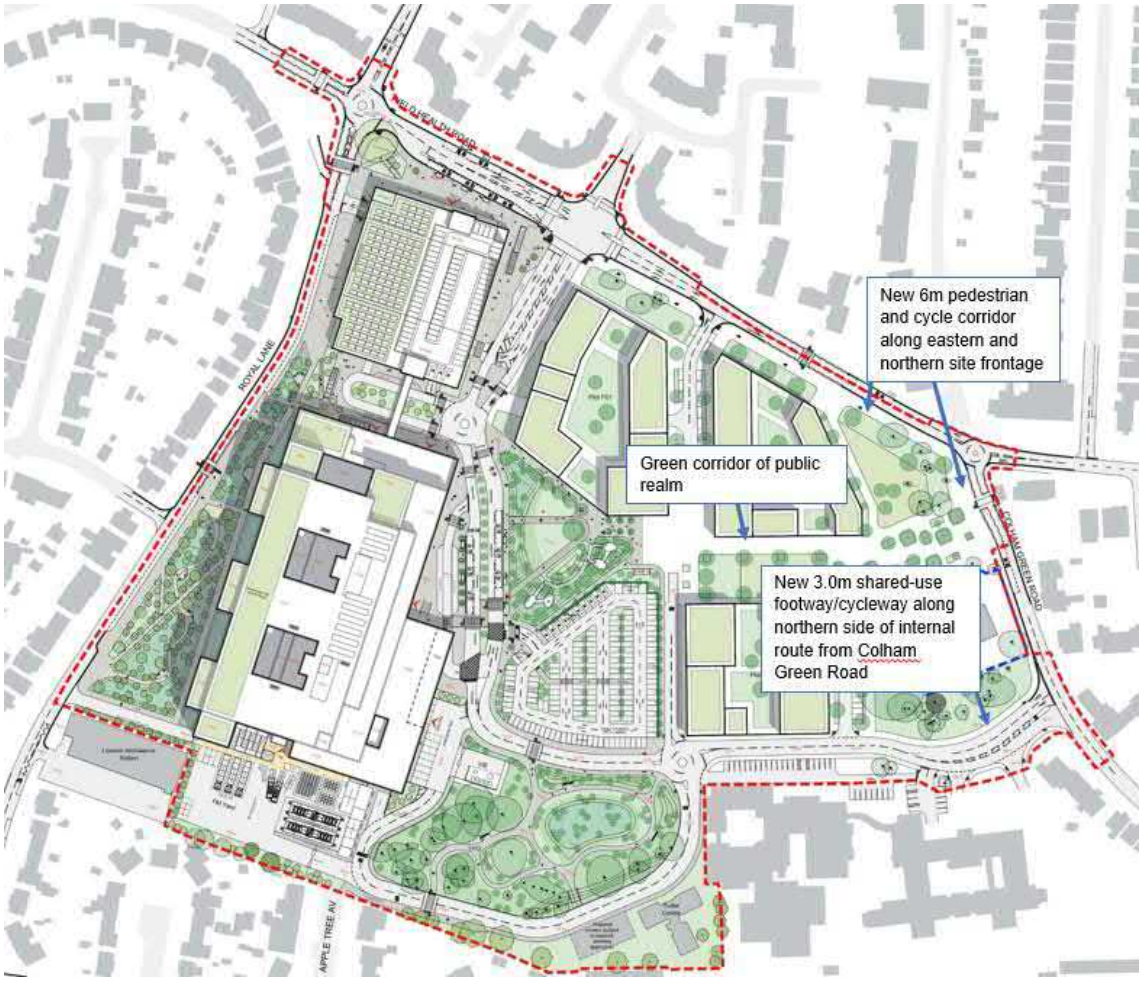
4.3.13 At the Colham Green Road site access, the junction will be upgraded to accommodate the hospital servicing traffic routing to the service yard. Along with the junction improvements, the western footway on Colham Green Road will be widened and resurfaced along the length of the junction improvements, to provide high quality footways at and around the Colham Green Road site access.

4.3.14 Within the site, minimum 2.0m footways will be provided alongside all roads. This is increased to 3.0m where low speed shared-use pedestrian and cycle routes are to be provided. The network of routes alongside the highway infrastructure all connect towards the new hospital and towards the central ‘green corridor’.

4.3.15 The green corridor is a central spine through the site from Colham Green Road to a central triangle of public open space which is east of the new hospital building. The green corridor is a further area of public realm and is a pedestrian and cycle route from Colham Green Road through the site to the new hospital. The design codes reflect that this will be a low speed area for cycles, with calming measures integrated through the design of the public realm to prevent high speed cycling and provide an environment which is suitable for all users, including vulnerable hospital users.

4.3.16 Figure 4.8 shows the pedestrian provision within the site and along the site frontages and also identifies the new east/west green corridor, as described above. Design drawings of the highway schemes are provided in Appendix A and also reflect the designs above where these are in conjunction with highway schemes. The site layout plans for both Phase 1b and Phase 2 are provided in Appendix B and Appendix C and also reflects the proposals described above.

Figure 4.8: Phase 2 Pedestrian Facilities



Source: IBI Group/Mott MacDonald

4.3.17 A full list of pedestrian improvements in Phase 2 is provided below:

- New 6m pedestrian and cycle corridor along eastern and northern site frontage
- New pedestrianised east/west corridor through site (service traffic only)
- New 3.0m shared-use footway/cycleway along northern side of internal route from Colham Green Road

4.4 Cycling

Existing

4.4.1 Currently on site there are 40 secured cycle parking spaces for staff, and an unsecured parking shed with 114 spaces for visitors, with free to use bike pumps. There is also a Santander Bike station by one of the entrances (Entrance A). This Santander station is not part of the main Santander cycle hire scheme that is in central London; rather, this is a scheme that was introduced at Brunel University and has locations in Uxbridge Town Centre and Hillingdon Hospital.

4.4.2 There is an existing network of cycle routes in LBH. The local cycle network is shown in Figure 4.9, which details the current extent of the available cycling routes, including a TfL Quietway that exists in the local area.

Figure 4.9: Existing Cycle Routes

Source: Open Street Map

4.4.3 Figure 4.9 shows that the only cycle route in proximity to the site is the advisory cycle route along Royal Lane. Uxbridge Road cycle route 39 runs between Uxbridge and Shepherds Bush to the north east of the hospital site. The Grand Union Canal cycle route runs between West Drayton in the south and Uxbridge in the north, and runs to the west of the hospital site. TfL Quietway 16 runs between West Drayton in the west and the centre of London in the east, and runs to the south of the hospital.

4.4.4 There are a number of connecting routes from the hospital site to these strategic cycle routes and surrounding trip attractors.

- Royal Lane (south) - Royal Lane (south) connects from Pield Heath Road and the hospital main entrance to the A408 Falling Lane and onwards to Quietway 16. Royal Lane (south) is an advisory cycle route, and the residential street is traffic calmed in areas, with 'SLOW" markings, speed humps and cycle markings. This presents an opportunity to further enhance provision for cyclists along this key north/south route through further road safety improvements and additional traffic calming.
- Royal Lane (north) – Royal Lane (north) connects from Pield Heath Road and the hospital main entrance to A4020 Uxbridge Road and cycle route 39, which connects Hillingdon and Uxbridge. Royal Lane (north) is an advisory cycle route, and the residential street is traffic calmed in areas, with 'SLOW" markings, speed humps and cycle markings. This presents an opportunity to further enhance provision for cyclists along this key north/south route through further road safety improvements and additional traffic calming.
- Pield Heath Road (west) – This route provides a connection to the Grand Union Canal strategic route via Church Road, Station Road and Iver Lane. However, Cyclists are required to cycle on-road with no formal provision or protection. Pield Heath Road is a primary route for traffic and a high frequency bus route (60bph), and therefore is not an attractive route for cyclists.
- Pield Heath Road (east) – Although Pield Heath Road (east) is a primary route and connects to Hillingdon High Street, there are limited onwards connections for cycling and this does not connect to the strategic cycle network (Uxbridge Road and Quietway 16). Cyclists are required to cycle on-road with no formal provision or protection. Pield Heath Road is a primary route for traffic and a high frequency bus route (60bph), and therefore is not an attractive route for cyclists.
- Colham Green Road – Colham Green Road provides a connection to cycle route 39 on A4020 Uxbridge Road via West Drayton Road. However, cyclists are required to cycle on-road with no formal provision or protection. Colham Green Road is also a bus route, and there are sections of on-street parking. Therefore, it is not an attractive route for cyclists.

4.4.5 This shows that Hillingdon Hospital is located in a gap in the strategic cycle network and requires connections to be made to the strategic routes in order to access the wider network and support the TfL/LBH goals to achieve modal shift.

Proposed – Phase 1b

4.4.6 The proposed development has been designed to provide cyclists with high quality facilities on-site. Consultation has also been carried out with LBH and TfL in relation to wider cycle network improvements which are described in this section.

4.4.7 The proposed layout defined in the masterplan provides a new mobility hub, which will provide high quality cycle facilities. The mobility hub proposals are discussed further in Section 4.12. As part of the application process, an Active Travel Zone assessment has been undertaken in-line with TfL requirements and is reported in Chapter 5. This provides a review of the existing active travel infrastructure connecting to key nearby destinations and suggests improvements that could be made to improve the network for pedestrians and cyclists.

4.4.8 The proposals include a range of on-site measures and facilities which enable, promote and prioritise cycling.

- Secure internal long stay cycle parking;
- Conveniently located short stay cycle parking;
- Dedicated 6.0m pedestrian and cycle route along the northern and eastern frontage;
- A low-speed environment within the site; and
- Maintained Brunel University cycle hire scheme.

4.4.9 The infrastructure for cycling on-site will be supported by high quality cycle parking as detailed below.

Phase 1b Cycle Parking - Hospital

4.4.10 The London Plan specifies the requirement for long-stay and short-stay cycle parking at hospitals, as follows:

- Long-stay - 1 space per 5 FTE staff
- Short-stay - 1 space per 30 FTE staff

4.4.11 Based on the staff numbers developed by the Trust's Healthcare Planning colleagues, it is forecast there will be 1,676 FTE staff on-site in any given 24-hour period.

4.4.12 In total, for the Phase 1b hospital development, this requires:

- 336 long-stay cycle parking spaces; and
- 56 short-stay cycle parking spaces.

4.4.13 The secure long-stay cycle parking will be provided in the form of two-tier cycle storage racks. These will be located on the ground floor of the MSCP, accessible from the northern side of the building. The access will be secured and accessible with either a key code or swipe card.

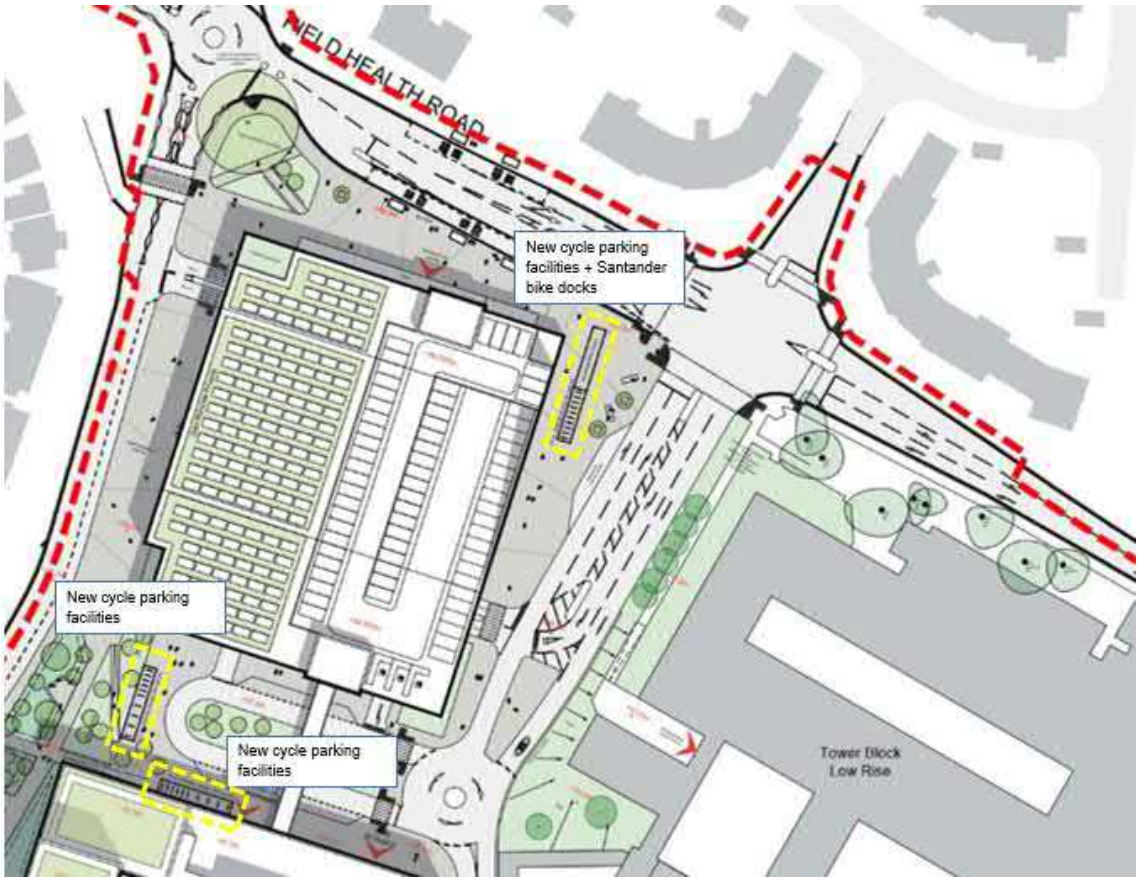
4.4.14 Alongside parking, for those using the internal cycle storage areas dedicated lockers will be provided. Within the long-stay cycle parking area there will also be a small cycle workshop area with tools and equipment for cycle maintenance.

4.4.15 Short-stay cycle parking will be provided in the form of 28 Sheffield Stands. It is proposed that 20 of the Sheffield Stands will be located at the western end of the Main Entrance Plaza. The remaining eight Sheffield Stands will be located east of the MSCP. Three of these Sheffield Stands will provide electric bike and e-scooter charging points.

4.4.16 The current Brunel University cycle scheme will also be maintained. The cycle docking station will be located east of the MSCP in a prominent location in proximity of the Main Entrance junction with Pield Heath Road.

4.4.17 The locations on-site cycle parking in Phase 1b are illustrated in Figure 4.10.

Figure 4.10: Phase 1b Cycle Parking Locations



Source: IBI Group / Mott MacDonald

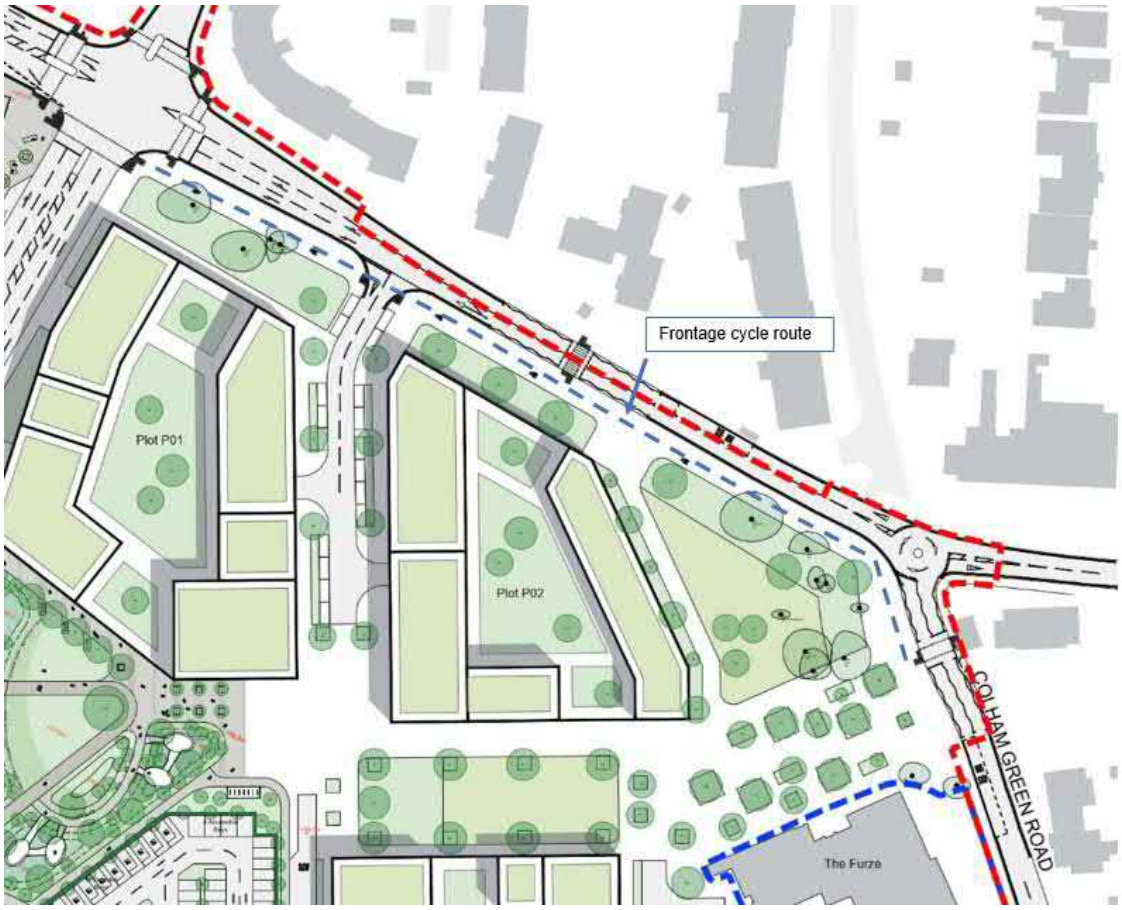
4.4.18 To inform the requirements for e-bike charging a specialist provider has been consulted with. They advised e-bike charging pillars are installed covering 10% of all bike parking (equally apportioned internally and externally). Each pillar provides two parking spaces and capacity to charge two e-bikes.

Proposed- Phase 2

4.4.19 In Phase 2, the eastern area of the site will be largely cleared providing the opportunity to make more significant changes to the site to improve cycling accessibility.

4.4.20 The infrastructure along Pield Heath Road, running parallel to the hospital sites northern boundary, will be upgraded to include a 6m pedestrian and cycle movement corridor. The shared provision runs along the southern side of Pield Heath Road from the hospital Main Entrance junction to the Colham Green Road mini roundabout. It then follows the road towards the south, continuing along the western side of Colham Green Road and ending at the gateway to the central pedestrian route through the site. As this element forms part of the outline application the detail of how the route is designed will be detailed in a reserved matters application. Given that there are no onward segregated routes to the east or west of the site it is recommended that this route is shared-space and is designed as a low speed route on the site. The alignment of this route is shown in Figure 4.11.

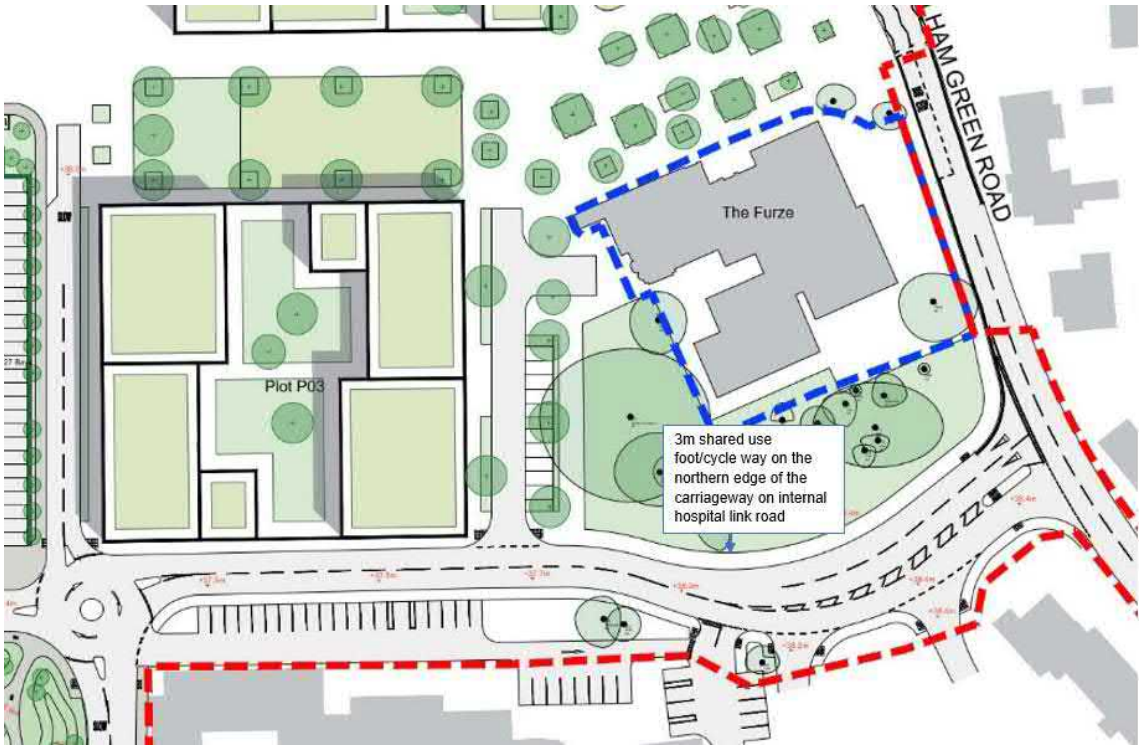
Figure 4.11: Phase 2 Frontage Cycle Route



Source: IBI Group / Mott MacDonald

4.4.21 The internal hospital link, accessed by Colham Green Road, will have an upgraded shared use foot/cycle way on the northern edge of the carriageway. The upgraded provision will be 3m wide, to enable free and safe movement for all users, and will connect to the new hospital and the central ‘green corridor’.

Figure 4.12: Phase 2 Internal Cycle Route



Source: IBI Group/Mott MacDonald

Phase 2 Cycle Parking - Residential

4.4.22 The London Plan specifies the requirement for long-stay and short-stay cycle parking with residential dwellings, as follows:

- Long-stay:
  - 1 space per studio or 1 person 1 bedroom dwelling;
  - 1.5 spaces per 2 person 1 bedroom dwelling;
  - 2 spaces per all other dwellings;
- Short-stay:
  - 5 to 40 dwellings: 2 spaces
  - Thereafter: 1 space per 40 dwellings

4.4.23 Long-stay residential cycle parking will be provided in secure areas in each residential block. Short-stay cycle parking will be spread across the masterplan in convenient locations close to key entrances.

4.4.24 As the residential element of the scheme has been submitted as an outline application full details of proposed cycle parking will be provided as part of a future reserved matters application.

Wider Enhancements

4.4.25 A review of the cycling conditions and facilities in the local area was undertaken and presented to LBH and TfL. The review found that the existing road network surrounding the hospital is

constrained. Different routes have different characteristics, but a common theme is that there is very limited space in which to provide any dedicated or segregated cycling facilities.

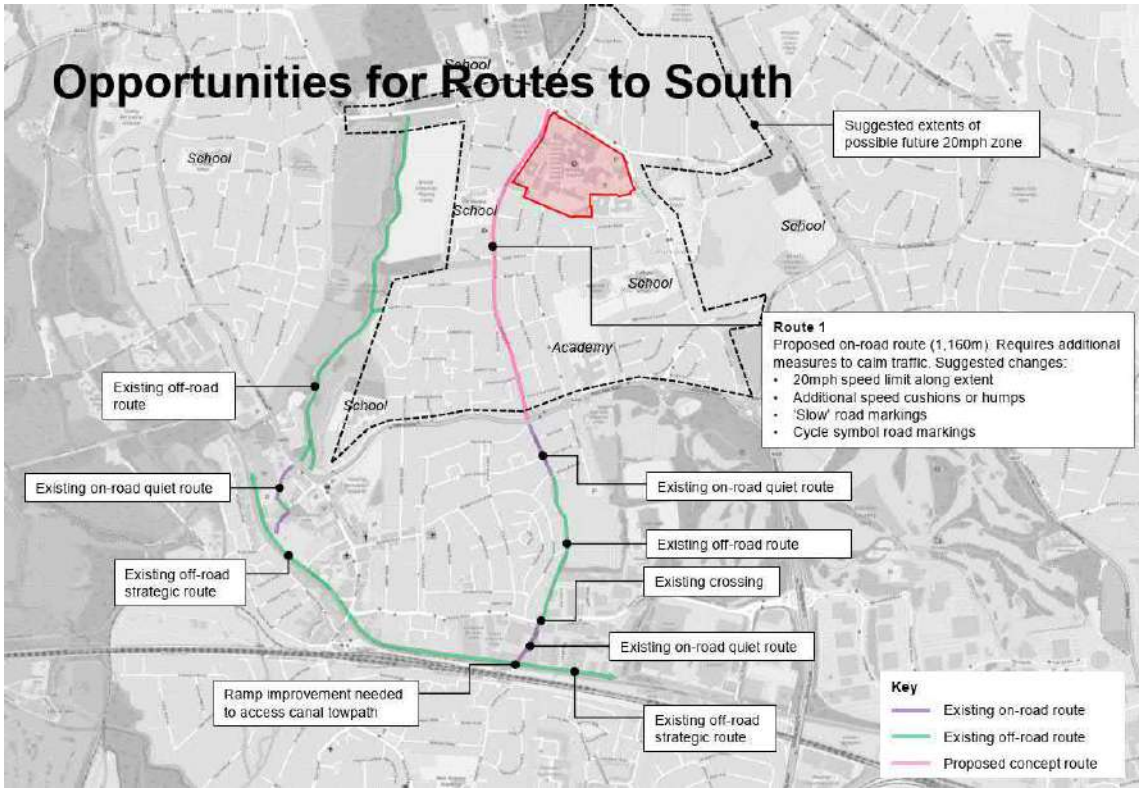
4.4.26 The current local highway network is predominantly made up of 30mph roads, with some 20mph roads. However, observed 85th percentile speeds tended to be just above the posted speed limit. This was particularly evident on the 20mph roads. There is also a lack of cycling infrastructure in the local area, with limited connections to the strategic cycling network.

4.4.27 It was agreed with LBH and TfL that improvements needed to focus on making the road environment safer, through bringing down traffic speeds on the surrounding network. It was also agreed that in this instance, cycling infrastructure interventions need to be met through developing measures to promote enhanced protection of cyclists on road, such as traffic calming and cycle priority measures. It was also agreed that a financial contribution to local cycle enhancements via a Section 106 agreement would be the most appropriate mechanism to facilitate the relevant recommended cycling improvements.

4.4.28 A package of concept improvements was developed subsequently and circulated with LBH and TfL. This contained a range of recommended improvements along specific routes around the site. The routes are shown in Figure 4.13 - Figure 4.15 and listed below. Recommended measures are shown in Table 4.1;

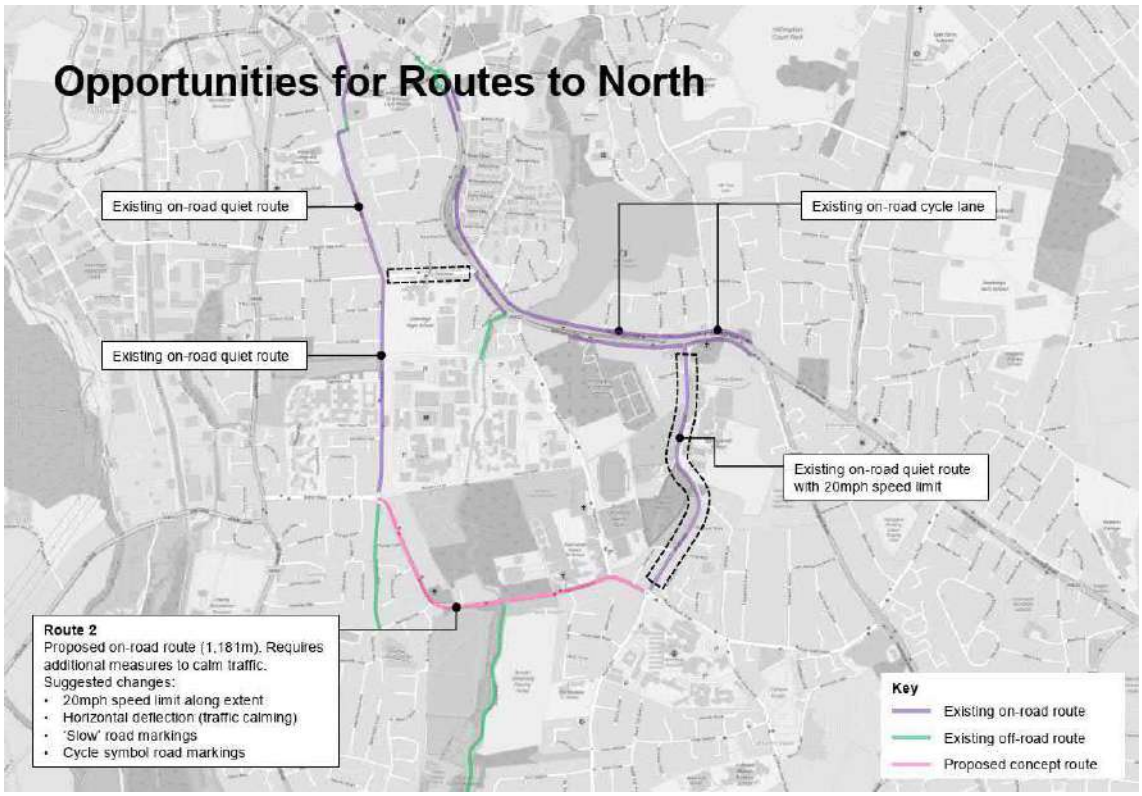
- Route 1 – Royal Lane South from Pield Heath Road to Falling Lane
- Route 2 - Pield Heath Road from Royal Lane to Cleveland Road
- Route 3 – Colham Green Road from Hospital Entrance to Park View Road

Figure 4.13: Proposed Improvements for Routes to the South



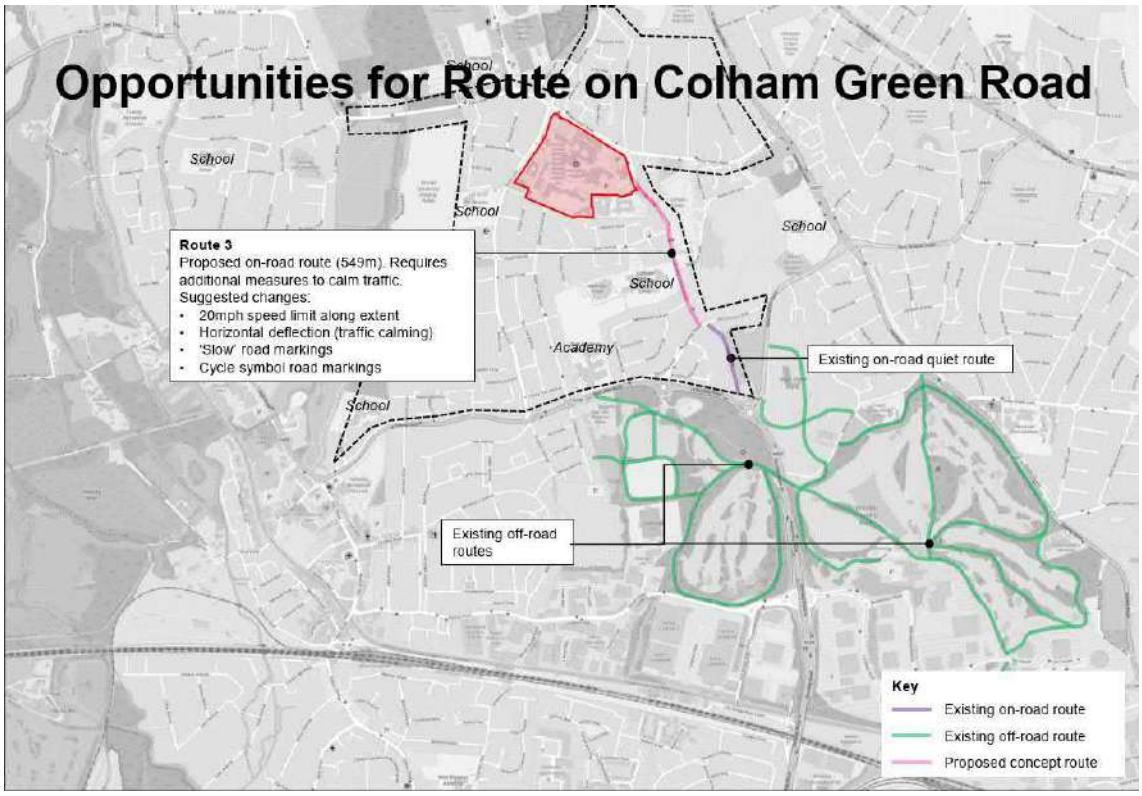
Source: Mott MacDonald

Figure 4.14: Concept Improvements for Routes to the North



Source: Mott MacDonald

Figure 4.15: Concept Improvements for Route on Colham Green Road



Source: Mott MacDonald

4.4.29 Table 4.1 shows the recommended improvements on three key routes in the local area.

Table 4.1: Recommended Improvements to the Local Cycling Network

Concept Design	Route 1	Route 2	Route 3
Total Length	1,160m	1181m	549m
Speed cushions to reduce speeds to 20mph	4 pairs	-	-
Horizontal deflection (traffic calming) – road narrowing or chicane with cycle bypass	-	2	2
SLOW road markings (bi-directional)	5	5	2
Cycle road markings	5	5	2
Coloured and textured surfacing (full width)	-	2	-

4.4.30 The proposed cycle improvements have been set out in concept form and reviewed for agreement with LBH and TfL. It was agreed with LBH that a section 106 contribution will be suitable to secure an appropriate and proportionate contribution to local cycle improvements.

Discussions with TfL

4.4.31 Discussions were undertaken with TfL, and an email response was sent by TfL on 31 January 2022. The key points about the three routes were suggested as follows:

Route 1 – Royal Lane:

- Provide improvements to link up with the existing crossing of Falling Lane and the route along Kingston Avenue, such as Royal Lane / Violet Drive / Clarkes Drive mini-roundabout, Royal Lane / Bond Close / Birch Avenue, and Royal Lane / Cherry Tree Avenue mini-roundabout

Route 2 - Pield Health Road / Church Road:

- Carriageway width not ideal for cycling
- Horizontal calming would create issues for buses and would need consultation with TfL Buses
- The section in the west, with no building frontage, looks especially difficult and potentially hostile for cycling, and an off-carriageway solution would probably be better

Route 3 - Colham Green Road / Chapel Lane:

- Invest in improvements to the roundabout – where there are not any decent crossing facilities for pedestrians and cyclists
- Or, invest in improvements via the eastern section of Pield Heath Road to connect to Harlington Road from the site
- A route down Pinewood Avenue (via Beechwood Avenue and Ashwood Avenue) and a decent pedestrian and cycle crossing of Park View Road by the Park Academy would be a lot more useful, as it would connect to the existing network of paths through Stockley Country Park.
- For Colham Green Road, targeted interventions to improve public realm and reduce traffic speeds and volumes at key locations and intersections, such as:
    - Potential for some traffic management / access controls in the very constrained northern section
    - Junction with the existing hospital access road – this could do with pedestrian crossings, and the parking, half on the footway, just to the north, needs sorting out – this is a hazard for cyclists if they've been at the kerbside as it forces them suddenly into the path of moving traffic
    - Colham Green Road / Violet Avenue junction – sort out this location, which also gives access to a recreation ground but where there is no safe way to cross any of the arms of the mini-roundabout; there is potential for SUDS in the section to the north on CGR
    - Colham Manor Primary School gates / Moorcroft Lane junction – very constrained here and it would be good to have some consultation with the school to understand what the safety issues might be around this entrance. A controlled crossing could be of benefit or trial a section of school street (with an exception for buses)
    - Area around and to the south of the junction with Beechwood Avenue – no footway on the east side and no way to cross to the narrow 'island' of footway around the bus stop
    - Junction with Park View Road (if the route goes that far down) – it is a tricky junction both for pedestrians and cyclists and so could do with controlled crossings; there is also potential for improvement to the public realm and parking area around the local shops

Response to Comments

4.4.32 TfL's comments on the wider cycling enhancements discussed have been taken into account, and a number of recommendations have been made in response to these comments. All of the routes will include extensive traffic calming measures and are within the recommended 20mph

zone. These measures will improve the provision and mitigate against some of the issues raised by TfL. The concept recommendations should be further developed in line with TfL's comments at a more detailed design stage.

4.5 Public Transport - Bus

Existing

4.5.1 The hospital is located in a largely residential area, which is well connected to the wider area through bus services, linking with onward underground and rail stations. On Pield Heath Road, two bus stops serve the hospital, two further stops are located to the north-east of the hospital on Pield Heath Road and Colham Green Road, as shown in Figure 4.16.

Figure 4.16: Existing Bus Stops

Source: Open Street Map

4.5.2 The existing hospital is served by six TfL Bus Services. These are the U1, U2, U3, U4, U5 and U7 services. A spider map of these services is provided in Figure 4.17, and the timetables are shown in Table 4.2.

Figure 4.17: Spider Map of Services

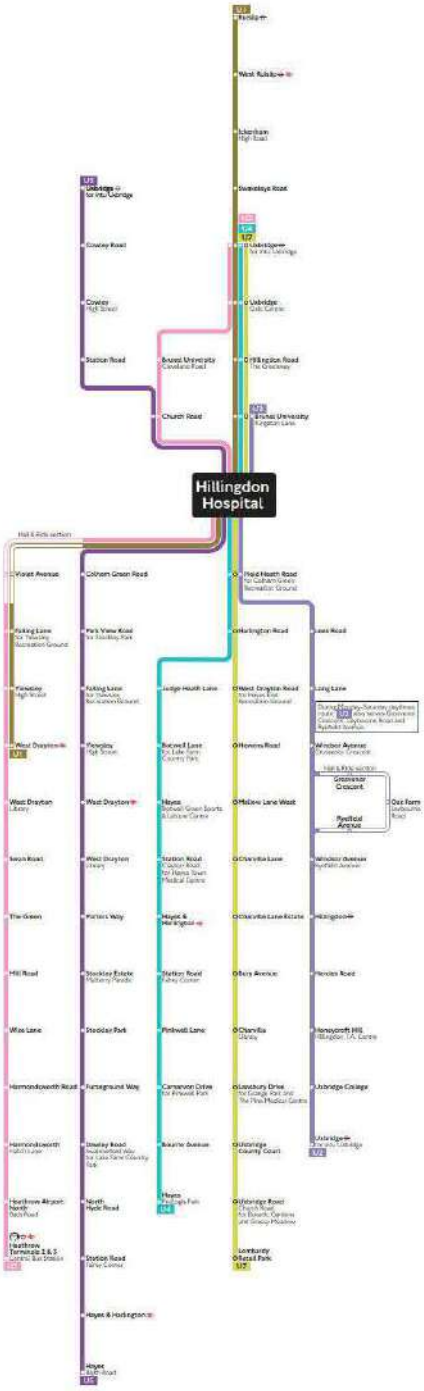
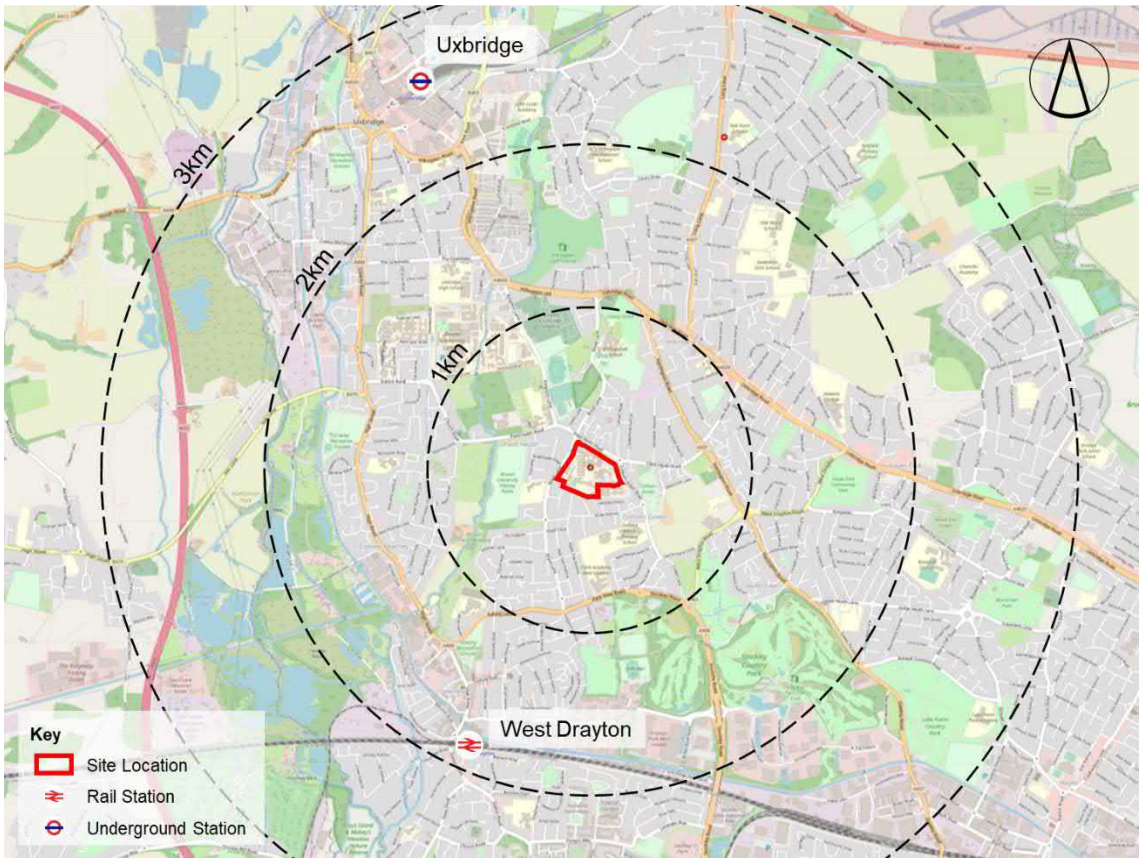


Table 4.2: Existing Bus Service Summary

Time	U1		U2		U3		U4		U5		U7	
	EB	**WB**	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**
First	0610	0513	0507	0535	0430	0536	0524	0542	0511	0537	0530	0538
0400-0500	-	-	-	-	2	-	-	-	-	-	-	-
0500-0600	-	4	2	2	3	2	3	2	4	2	1	1
0600-0700	3	4	3	3	4	4	5	4	5-6	4	3	2
0700-0800	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4	2	2
0800-0900	4	4	3	3	5-7	5-6	5-7	5-7	5-6	5-6	2	3
0900-1000	4	4	3	3	5-7	5-6	5-7	5-7	5-6	5-6	2	2
1000-1100	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1100-1200	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1200-1300	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1300-1400	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1400-1500	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1500-1600	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	3	2
1600-1700	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1700-1800	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1800-1900	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
1900-2000	4	3	3	3	4	5-6	5	5	5-7	4-6	2	2
2000-2100	3	2	3	3	4	4	3	3	4	5	2	3
2100-2200	2	2	3	3	3	3	3	3	3	3	2	2
2200-2300	2	2	3	3	3	3	3	3	3	3	2	2
2300-0000	2	2	3	3	3	3	3	3	3	3	2	2
0000-0100	2	2	1	1	1	3	1	1	1	2	2	1
Last	0105	0038	0008	0017	0002	0048	0009	0002	0013	0037	0100	0029
Typical daytime frequency	4	4	3	3	5-7	5-6	5-7	5-7	5-6	4-6	2	2
Typical daytime hourly services	47-57 hourly daytime services in both directions											
Total daily services	Approximately 840 daily services in both directions											

4.5.3 The nearest rail and underground services are located in both West Drayton and Uxbridge respectively. The proximity of these key interchanges in respect to the site are shown in Figure 4.18.

Figure 4.18: Key Public Transport Interchanges



Source: Open Street Map

4.5.4 Bus journey times between the hospital and surrounding key destinations, along with daytime frequency of services, are summarised below:

Uxbridge 16 mins 18 bph	**Hillingdon** 17 mins 4 bph	**Ruislip** 51 mins 7 bph
West Drayton 14 mins 12 bph	**Hayes & Harlington** 33 mins 6 bph	**Heathrow** 47 mins 5 bph

4.5.4.1 Currently, the bus stops located on Pield Heath Road conflict with traffic, as there is not enough room between the stops to enable a two-way flow of traffic when buses are stopped concurrently. As there are 60bhp (two way) in the peak periods, this can happen for short periods throughout the day.

4.5.4.2 The bus stop westbound on Pield Heath Road is sheltered and has seating and timetables. The bus stops eastbound on Pield Heath Road do not have any shelter or seating; only timetables.

4.5.4.3 The footways on Pield Heath Road have street lighting and are approximately 2m wide. The quality of the footways needs improvement and there are multiple guardrails. There are

pedestrian priority controlled crossings at the main hospital access junction on Pield Heath Road junction of Pield Heath Road and Crispin Way. The remaining pedestrian crossings surrounding the site on Pield Heath Road are uncontrolled.

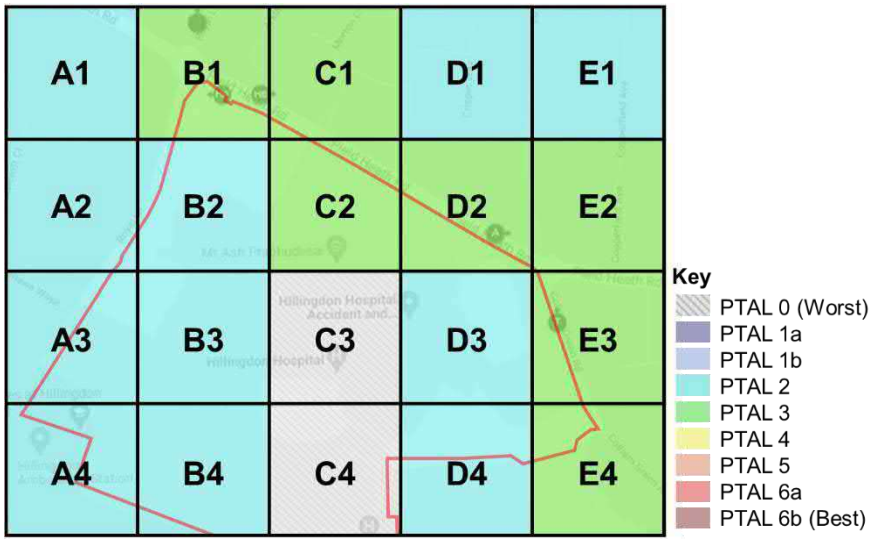
4.5.4.4 The bus stop southbound on Colham Green Road is sheltered and has seating and timetables. There is no bus stop northbound on Colham Green Road near the site (the nearest stops are on Pield Heath Road instead).

4.5.4.5 The northbound footway on Colham Green Road has street lighting and is approximately 2m wide. There is no footway on the southbound side of Colham Green Road.

PTAL Rating

4.5.4.6 The existing PTAL rating for all grid squares across the site has been extracted from TfL's WebCAT tool. These current PTAL ratings across the site are shown in Figure 4.19.

Figure 4.19: Existing PTAL Ratings



Source: Mott MacDonald (recreated using TfL Data)

Proposed – Phase 1b

4.5.5 It is key that improvements are made to the sustainable travel offerings at the hospital in Phase 1b. The level of parking at the site is being reduced, with a reduction in parking demand that will take place through an increase in remote working, virtual appointments and changes in healthcare delivery (i.e. preventative and community treatments and care). However, there will still be residual demand for travel, and it is critical that this is captured as far as it reasonably can be by the sustainable transport solutions that can be accessed at the site and improved drop off and pick up facilities.

4.5.6 In Phase 1b, a corridor widening scheme will be delivered at and around the existing bus stops on Pield Heath Road. Currently the eastbound bus stop is in the carriageway, and it's proximity to the westbound bus stop means that only one direction of traffic can flow when buses are stopped concurrently (i.e. eastbound or westbound), causing traffic congestion at peak times.

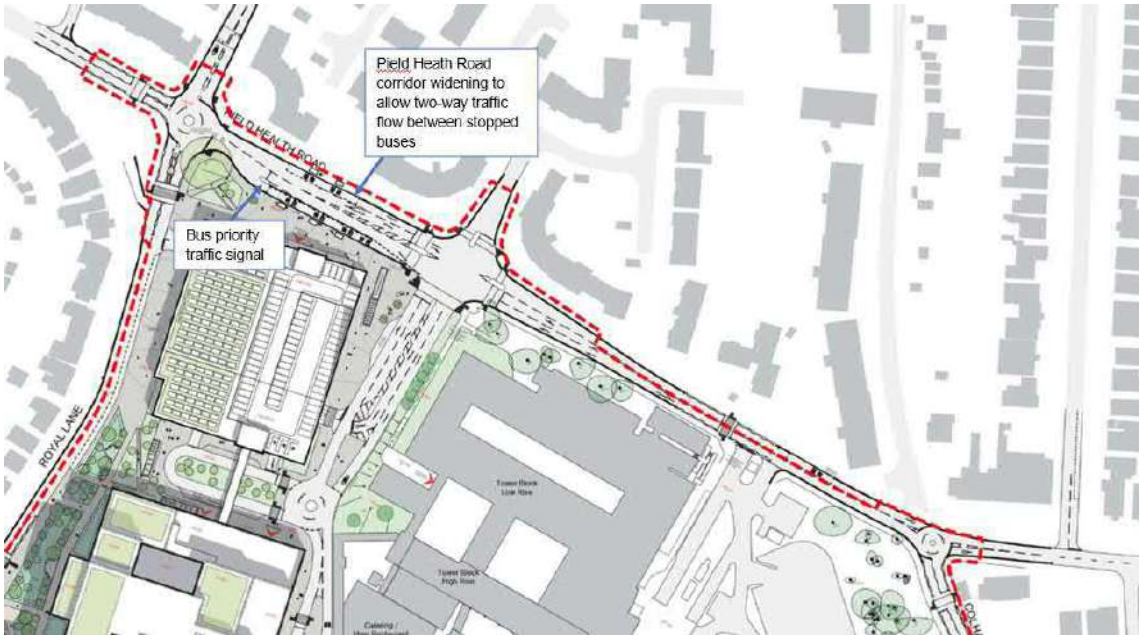
4.5.7 A corridor widening scheme has been developed to enable two-way traffic flow between stopped buses. The scheme will see the southern edge of carriageway pushed south and the formation of a short section of westbound lane, where buses will stop clear of the carriageway.

As buses exit the stops westbound, a new traffic signal will be installed (westbound only) to control the westbound traffic lane and enable buses to merge ahead of the mini-roundabout junction at the intersection of Pield Heath Road and Royal Lane.

4.5.8 The existing northern footway will also be widened to a minimum 3m width to facilitate safe standing and waiting at the eastbound bus stop on Pield Heath Road. The signalised Main Entrance junction is being improved as part of the scheme; this will also include the introduction of single-phase pedestrian crossings on all arms of the junction.

4.5.9 The proposed scheme drawings are summarised in Section 4.13. An extract of the proposed corridor widening scheme is shown in Figure 4.20.

Figure 4.20: Pield Heath Road Corridor Improvements



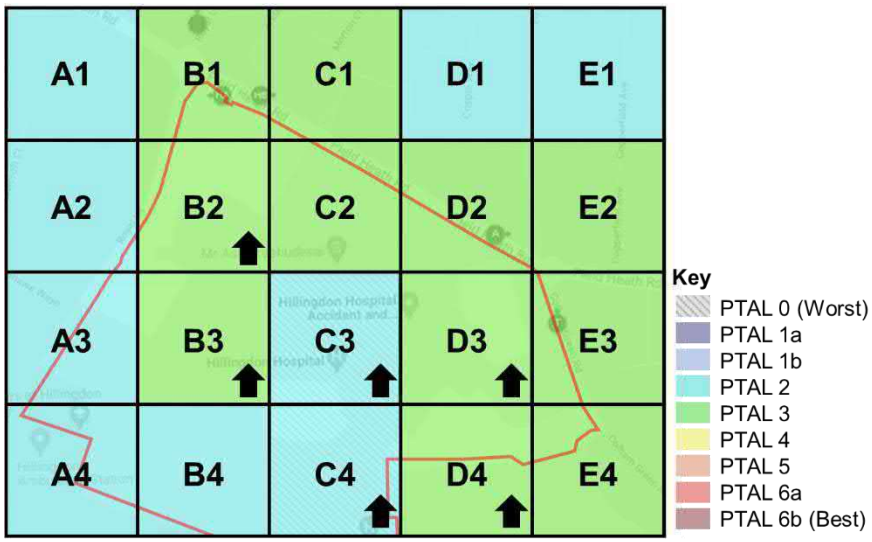
PTAL Rating

4.5.10 The future PTAL ratings have been calculated for all grid squares across the site based on the proposed masterplan. Although all bus services are anticipated to remain as per the current situation in terms of routes and frequencies in Phase 1b, the site layout significantly improves accessibility between areas of the site and the bus stops. This reduces the walking distance from various parts of the site and results in an improved Accessibility Index (AI) and an increase in the resulting PTAL in six grid squares within the site, as follows:

- PTAL in B2 increases from 2 to 3
- PTAL in B3 increases from 2 to 3
- PTAL in C3 increases from 0 to 2
- PTAL in D3 increases from 2 to 3
- PTAL in C4 increases from 0 to 2
- PTAL in D4 increases from 2 to 3

4.5.11 The future PTAL ratings across the site are shown in Figure 4.21.

Figure 4.21: Future PTAL Ratings



Source: Mott MacDonald (recreated using TfL Data)

4.5.12 The improved PTAL rating in six grid squares on the site demonstrates how the site layout, which is open and has direct pedestrian routes with pedestrian priority crossings, will significantly improve public transport accessibility at the site.

Proposed - Phase 2

4.5.13 Upon consultation with TfL and LBH, it was agreed that a bus diversion into the site with stops outside the hospital entrance is not viable during Phase 1b but can be made possible once part of the remaining hospital site to the east of the new hospital is demolished. Therefore, the bus diversion is part of the Phase 1c works and will be operational during Phase 2.

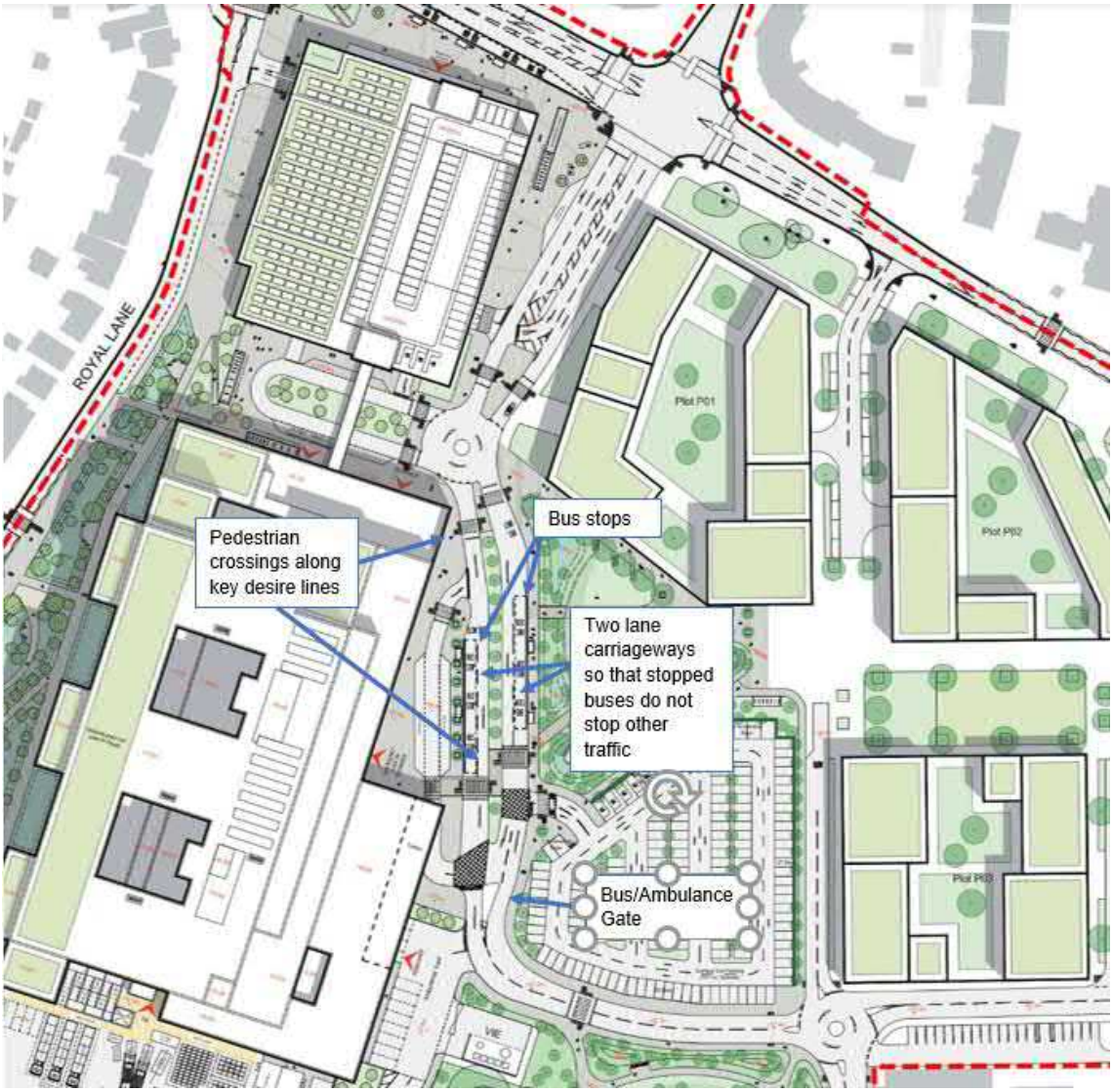
4.5.14 The improvements made in Phase 1b will still remain in place. Phase 2 will divert buses from Pield Heath Road and Colham Green Road into the site, where they will stop at new bus stops located between the main hospital entrance and the A&E entrance. There will be two two-lane carriageways to the east of the A&E drop off loop, which will consist of a 3.8m wide bus lane and a 3.2m wide traffic lane. This arrangement has been provided so that the buses can stop without blocking traffic accessing the surface car park or ambulances accessing the Ambulance Yard.

4.5.15 A number of pedestrian priority crossings along the key desire lines will be provided so that pedestrians are still given priority when entering or leaving the hospital. A new bus and ambulance gate will be provided to the south of the drop off loop access so that only TfL buses and ambulances can continue through the site, out onto Colham Green Rd and either south towards Hayes or north and back onto Pield Heath Rd, or vice versa. The main route for A&E ambulances will be via Colham Green Rd and the bus and ambulance gate will ensure this route is free of general traffic, such that there is no delay to buses or ambulances.

4.5.16 The bus stops on Pield Heath Road between Royal Lane and the main hospital access junction will still be in use. However, the bus stop on Pield Heath Road between the main hospital access junction and Colham Green Road will no longer be in use.

4.5.17 A plan of the bus diversion is shown in Figure 4.22.

Figure 4.22: Phase 2 Bus Diversion



Source: IBI Group/Mott MacDonald

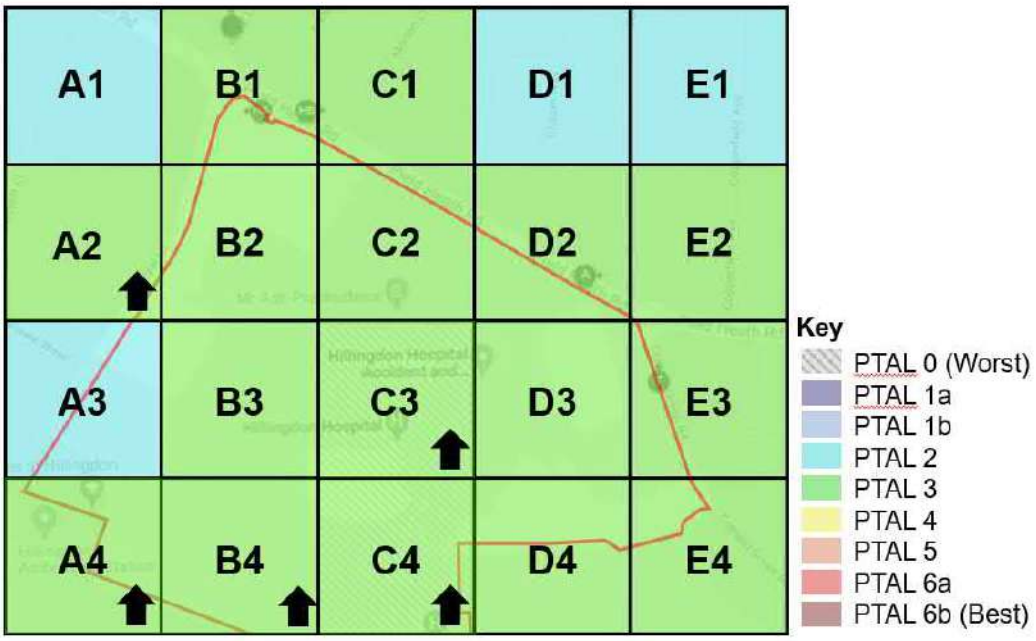
PTAL Rating

4.5.18 The future PTAL ratings have been calculated for all grid squares across the site based on the proposed Phase 2 masterplan. Although the bus services will be diverted into the site, the frequencies will remain the same. This reduces the walking distance from various parts of the site and results in an improved Accessibility Index (AI) and an increase in the resulting PTAL in five grid squares within the site, as follows:

- PTAL in A2 increases from 2 to 3
- PTAL in C3 increases from 0 to 3
- PTAL in A4 increases from 2 to 3
- PTAL in B4 increases from 2 to 3
- PTAL in C4 increases from 0 to 3

4.5.19 The future PTAL ratings across the site are shown in Figure 4.23.

Figure 4.23: Future PTAL Ratings



Source: Mott MacDonald (recreated using TfL Data)

4.5.20 The improved PTAL rating in five grid squares on the site demonstrates how the site layout, which is open and has direct pedestrian routes with pedestrian priority crossings and bus diversions through the site, will significantly improve public transport accessibility at the site.

4.6 Public Transport - Rail and Underground

Existing

Rail

4.6.1 Hillingdon Hospital is well connected by rail for longer distance journeys. West Drayton is the closest station and served by the U3 and U4 bus routes. Hayes and Harlington station is also served by a direct bus route, the U4.

4.6.2 West Drayton station serves large areas of the London Borough of Hillingdon. West Drayton station is served by stopping services run by Great Western Railway and TfL Rail between Paddington and Reading as well as two trains per hour to Didcot Parkway. These services run six days a week with 4 trains hourly, two from Reading and two from Didcot Parkway. On Sundays a half-hourly service operates with one Reading and one Didcot Parkway service in each direction. Typical journey times are just over 20 minutes to Paddington, and just under 40 minutes to Reading.

4.6.3 Hayes & Harlington station is also served by stopping services run by Great Western Railway and TfL Rail between Paddington and Reading as well as two trains per hour to Didcot Parkway. These services run six days a week with 4 trains hourly, two from Reading and two from Didcot Parkway. On Sundays a half-hourly service operates with one Reading and one Didcot Parkway service in each direction.

Crossrail

4.6.4 Crossrail is the biggest railway infrastructure project in Europe and is one of the largest single investments undertaken in the UK. The Crossrail project is delivering the new Elizabeth line which will provide a high-speed cross city service, connecting the outer western edges of the capital to the outer east. First to open will be the central section, between Paddington and Abbey Wood; with the other sections, from Reading and Heathrow in the west to Shenfield in the east, coming into service by mid-2022.

4.6.5 Crossrail, together with Network Rail and Transport for London (TfL), are working on West Drayton and Hayes & Harlington stations to prepare for the start of the Elizabeth line services.

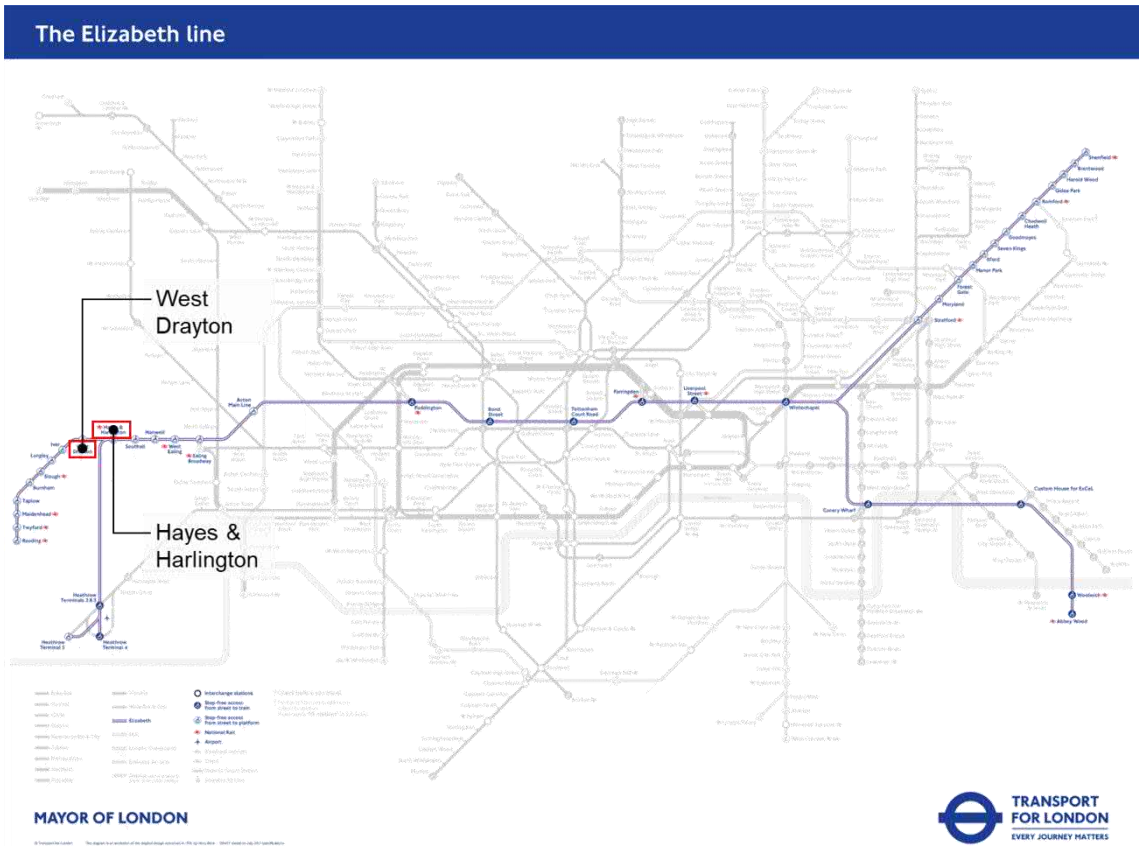
4.6.6 West Drayton station has benefitted from major improvements in preparation for the new Elizabeth line services including a new glass and steel extension which provides an additional entrance as well as a covered walkway between the existing building and a new footbridge.

4.6.7 Hayes & Harlington station will benefit from major improvements in preparation for the new Elizabeth line services including a redeveloped station entrance and façade, and a new, bright, spacious ticket hall will provide a more welcoming environment for passengers and a range of other improvements will be made to the station.

Elizabeth Line Services

4.6.8 When the full Crossrail route opens West Drayton and Hayes & Harlington Stations will be served by new trains connecting to East London, the new Elizabeth Line route map is shown in Figure 4.24.

Figure 4.24: Elizabeth Line Map



Source: Crossrail

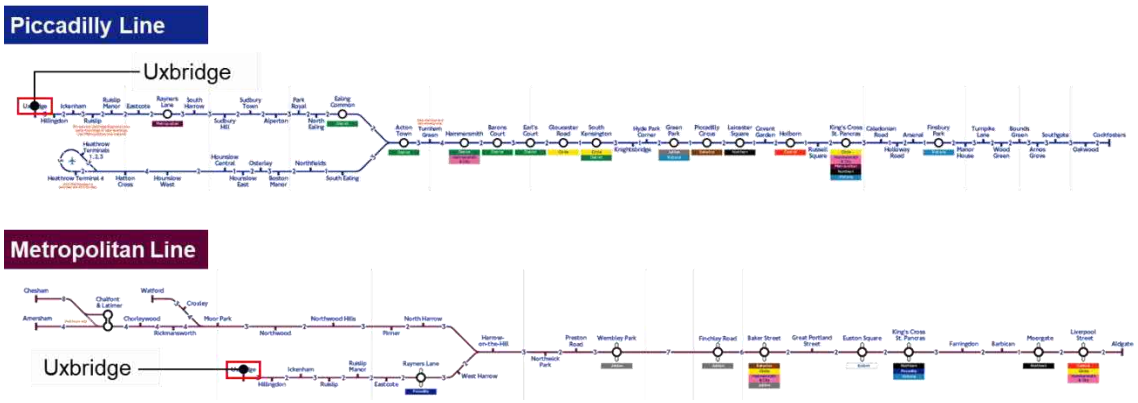
4.6.9 At West Drayton, up to six Elizabeth line services an hour will serve the station. At Hayes & Harlington up to ten Elizabeth line services an hour will allow passengers from Hayes & Harlington to travel to Reading or Heathrow in the west or through the central London tunnels to Essex and southeast London.

Underground

4.6.10 Uxbridge Underground station is located approximately 3km north of Hillingdon Hospital. The station is the terminus of the Uxbridge branch of both the Metropolitan line and the Piccadilly line which provide service to Central London via Wembley and Hammersmith respectively. The route maps for each service are shown in Figure 4.25.

4.6.11 Hillingdon Station is served directly by the U4 bus route, and is one top nearer central London than Uxbridge.

Figure 4.25: Underground Services



4.6.12 A summary of service frequencies throughout the day on both the Piccadilly Line and Metropolitan Line to and from Uxbridge Underground Station is provided below.

	To Uxbridge			From Uxbridge		
	Morning Peak	Evening Peak	Off-Peak	Morning Peak	Evening Peak	Off-Peak
Metropolitan Line	10 tph	10 tph	8 tph	10 tph	10 tph	8 tph
Piccadilly Line	6 tph	6 tph	3 tph	6 tph	6 tph	3 tph

Proposed – Phase 1b

4.6.13 No changes to the Underground or points of access are proposed as part of the redevelopment.

Proposed - Phase 2

4.6.14 No changes to the Underground or points of access are proposed as part of the redevelopment.

4.7 Ambulance Access

Existing

4.7.1 Emergency ambulances access Hillingdon Hospital from Pield Heath Road via the A&E vehicle entrance, as shown in Figure 4.26. Within the site, the ambulance yard is accessed via a vehicle ramp and allows ambulances to set down patients immediately adjacent to the emergency department.

4.7.2 The ambulance yard is restricted for parking by emergency vehicles only. There are no designated spaces in the ambulance yard, and the entire surface is covered by hatched markings. During a site visit, up to four ambulances were observed in the ambulance yard, though there is capacity for approximately six ambulances at any one time.

4.7.3 The Hillingdon Hospital ambulance yard is currently located off Royal Lane, with A&E access from a separate entrance on Pield Heath Road. Non-emergency ambulances can utilise the western access on Pield Heath Road, with A&E ambulances utilising the eastern access. The ambulance routes are shared with other vehicles, until the dedicated bays/ramps.

Figure 4.26: Existing Ambulance Access

Source: Open Street Map

Proposed – Phase 1b

4.7.4 The Phase 1b development will include updating the current provision for ambulances at the hospital, enabling smoother transfers and easier flow. The proposed Phase 1b plan enables the existing A&E entrance to be maintained until the complete transition of the new hospital. Once the new hospital is complete, emergency ambulances will be able to access the site via two entrance points, one from Pield Heath Road via the Main Entrance, and one from Colham Green Road via the southern service route.

4.7.5 When accessing from Pield Heath Road, the new internal road layout restricts private vehicle access beyond the drop-off locations. An ambulance gate ('Authorised Vehicles Only') will provide a route for ambulances to enter the ambulance yard.

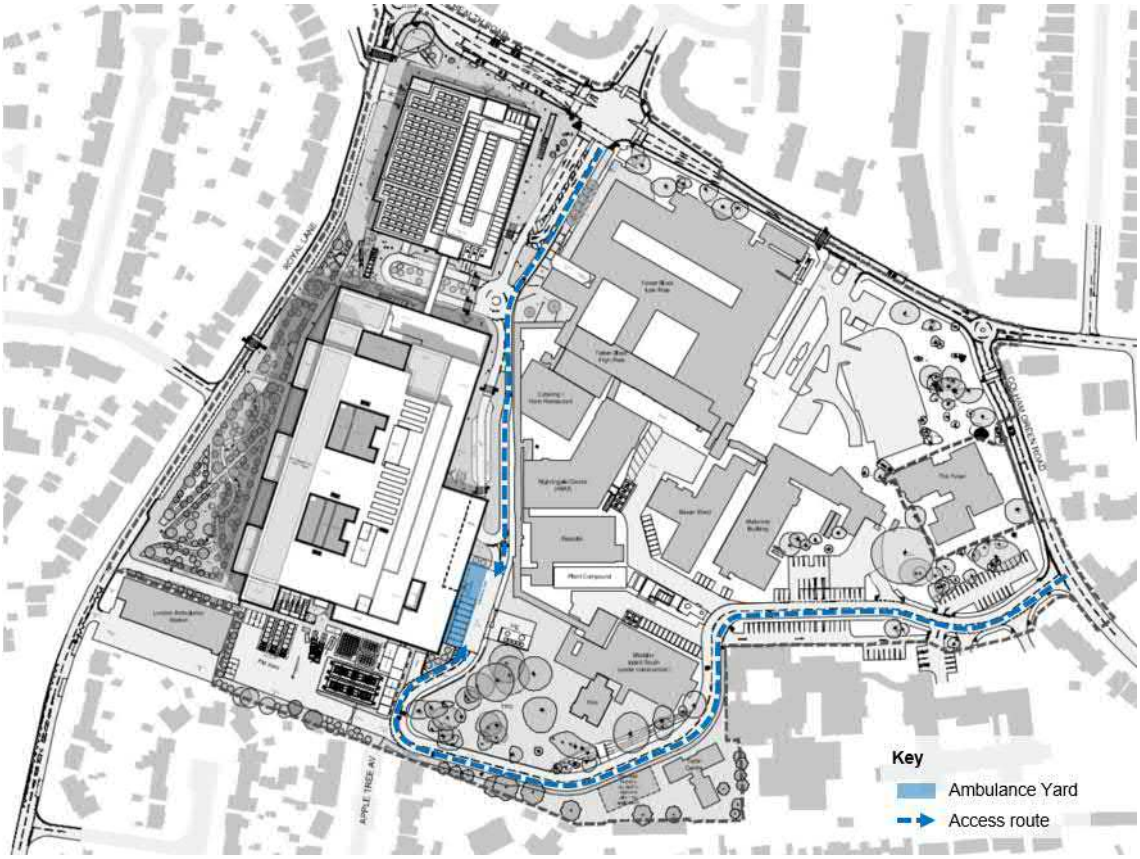
The access from Colham Green Road provides a direct link to the new ambulance yard using the southern service route. This new route provides resilience and removes the need to travel along Pield Heath Road for ambulances arriving from the south and east.

4.7.6 Patient Transport Services (PTS) also operate non-emergency ambulances for planning patient attendances at the hospital. A dedicated parking area has been set aside for the PTS ambulances in the ground floor of the MSCP.

4.7.7 PTS ambulances will enter the site via the Main Entrance from Pield Heath Road. Patients will be set down and collected from the Main Entrance pick-up/drop-off. PTS ambulances will park in the dedicated parking area just north of the Main Entrance pick-up/drop-off loop.

4.7.8 The Phase 1b access arrangements for ambulances is shown in Figure 4.27.

Figure 4.27: Phase 1b Ambulance Access



Source: IBI Group/Mott MacDonald

Proposed – Phase 2

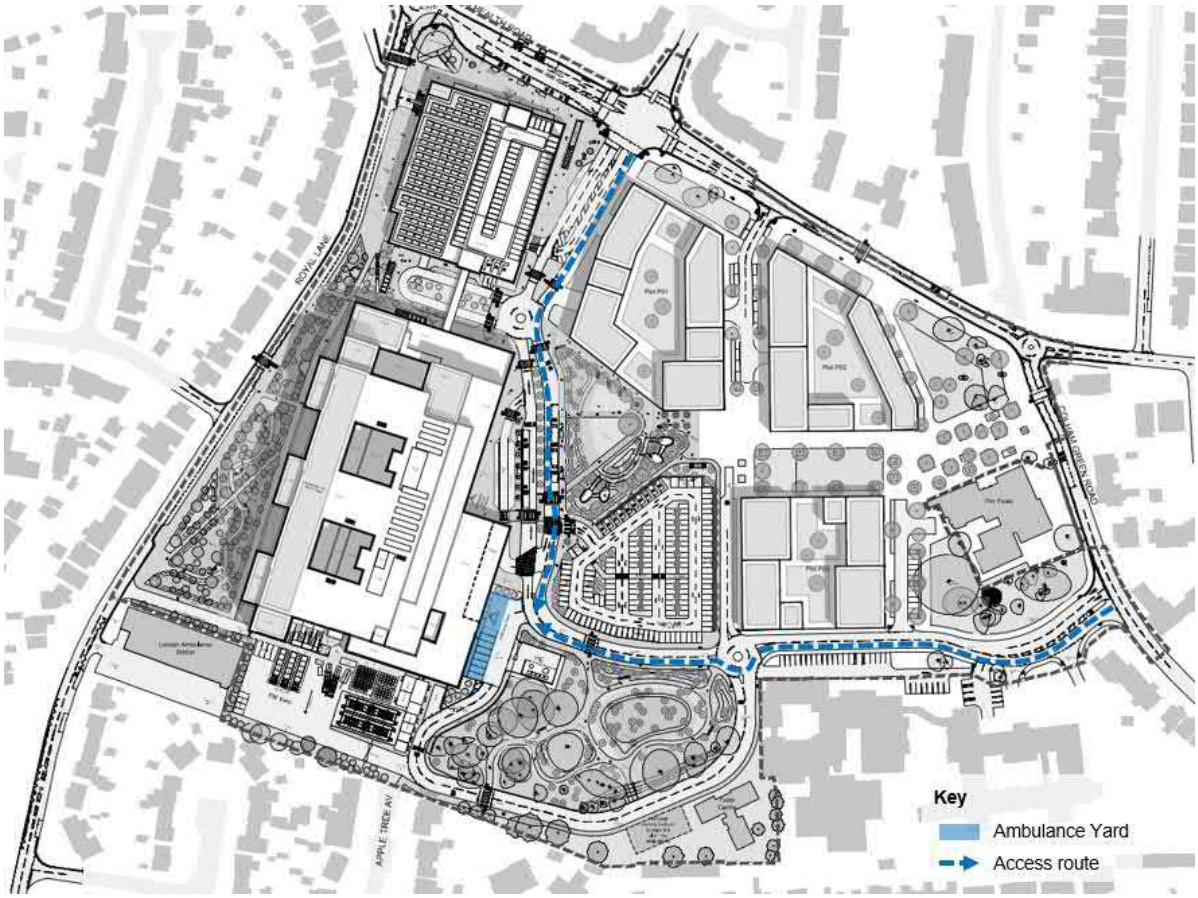
4.7.9 Once the new hospital site is completed, the current A&E entrance will be closed off, and the internal layout in the eastern area of the site will be revised as Phase 1c and 2 is built out.

4.7.10 The internal link from Colham Green Road will be updated to include a mini-roundabout junction. As mentioned previously, this will allow a new restricted access link to be formed running west from the new mini-roundabout into the ambulance yard, for emergency ambulances and TfL buses only. It should be noted that ambulances will still be able to access the ambulance yard using the southern service route, as per Phase 1b if ever needed though this is unlikely.

4.7.11 Ambulances accessing the site from Pield Heath Road will be able to utilise the same access point as Phase 1b.

4.7.12 The Phase 2 access arrangements for ambulances is shown in Figure 4.28.

Figure 4.28: Phase 2 Ambulance Access



Source: IBI Group/Mott MacDonald

4.8 Deliveries and Servicing

Existing

4.8.1 The existing Hospital site does not have a dedicated delivery and servicing vehicle access from the highway network. The site has a dedicated service yard, in the centre of the site, which is accessed via the network of internal roads. There is no direct access to the service yard from Pield Heath Road.

4.8.2 The existing service yard and waste compound along with current access route is shown in Figure 4.29. Colham Green Road is currently utilised as the primary route for servicing and delivery vehicles. This access is substandard, limited visibility for the volume and types of vehicles that use it.

Figure 4.29: Existing Service Yard

Source: Open Street Map

Proposed – Phase 1b

4.8.3 The new hospital will have a dedicated service yard south of the hospital building and adjacent to the London Ambulance Station depot. Service vehicles accessing the service yard will enter the site via the Colham Green Road access.

4.8.4 Within the site the southern service route will be an industrial standard road, generally 7.3m width and over widened on bends to allow two HGVs to pass if needed.

4.8.5 The service yard has adequate provision for future servicing activity at the hospital based on a future forecast of demand. Further, a Delivery and Servicing plan has been developed alongside this TA and sets out measures to enable the Trust to operate more efficiently in terms of planning for, scheduling and managing delivery and servicing activity. A future Waste Strategy has been prepared for the Site which seeks to manage waste more efficiently in the future.

4.8.6 The proposed service yard will comprise the following:

- Four enlarged bays (for use by hearse vehicles and LGVs);
- Four fleet vehicle bays;
- Three HGV bays (which can also be used by LGVs);
- Clear turning area to facilitate HGVs entering, turning and leaving in the service yard;
- Twin generator compound;

- Waste compound; and
- Emergency access gate.

4.8.7 Further fleet vehicle parking is allocated north of the Woodlands Centre. This contains a small row of parking bays that are being retained from the existing estate in Phase 1b and Phase 2. There are 20 parking bays. 10 of the bays will be allocated to the Children's Nursery. The remainder of the bays will be allocated to the Trust and will be used as overspill fleet vehicle parking only.

4.8.8 EV charging provision for the Trust fleet vehicles, and other vehicle if needed, will be provided in the service yard. In total, the following EV charging infrastructure will be installed:

- 1 no. 43kW+ EV charging bay (service yard);
- 3 no. 22kW EV charging bays (service yard);
- 3 no. 22kW EV charging bays (Woodlands Centre); and
- 5 no. 7kW EV charging bays (Woodlands Centre).

4.8.9 There will be a small retail unit on the ground floor in the north-eastern corner of the MSCP. A dedicated inset loading bay is proposed on the main access route on exit from the site on approach to the Main Entrance junction. This will be marked 'LOADING ONLY' and will provide a dedicated space for infrequent deliveries and servicing at the retail unit. Cars or LGVs delivering or collecting to/from the unit will be able to enter the site from Pield Heath Road and U-turn at the internal roundabout south-east of the MSCP. HGVs will be able to enter the site from the Colham Green Road access and will route via the southern service route and ambulance yard, approaching via the boulevard. Such movements will be very infrequent.

4.8.10 The forecast two-way delivery and servicing trips at the hospital are summarised in Table 4.3 showing arrivals and departures by LGV and HGV. The accumulation of delivery and servicing vehicles is also reflected in Table 4.4. This is based on seven vehicles being present in the service yard at the start of the day.

Table 4.3: Two-Way Delivery and Servicing Trips

Time	LGV	HGV	Total
Total	266	34	300
00:00-00:59	0	0	0
01:00-01:59	0	0	0
02:00-02:59	0	0	0
03:00-03:59	1	0	1
04:00-04:59	0	0	0
05:00-05:59	20	3	23
06:00-06:59	7	1	8
07:00-07:59	15	2	17
08:00-08:59	18	2	20
09:00-09:59	30	4	33
10:00-10:59	29	4	32
11:00-11:59	25	3	28
12:00-12:59	25	3	28
13:00-13:59	31	4	34
14:00-14:59	15	2	17

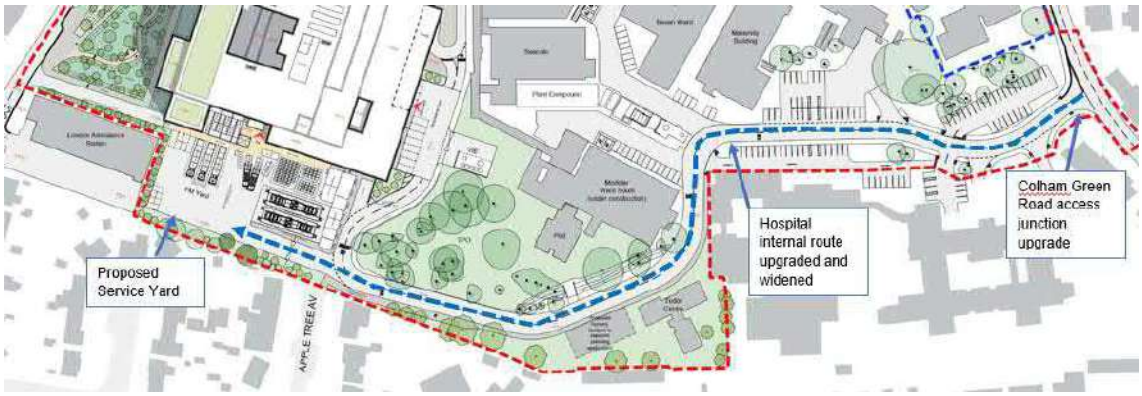
Time	LGV	HGV	Total
15:00-15:59	22	3	25
16:00-16:59	15	2	17
17:00-17:59	4	1	5
18:00-18:59	4	1	5
19:00-19:59	2	0	2
20:00-20:59	2	0	2
21:00-21:59	3	0	3
22:00-22:59	0	0	0
23:00-23:59	0	0	0

Table 4.4: Parking Accumulation at the Service Yard

Time	Arrivals	Departures	Service Yard Accumulation
00:00-00:59	0	0	7
01:00-01:59	0	0	7
02:00-02:59	0	0	7
03:00-03:59	1	0	8
04:00-04:59	0	0	8
05:00-05:59	10	10	8
06:00-06:59	4	3	10
07:00-07:59	8	7	11
08:00-08:59	7	11	7
09:00-09:59	14	15	6
10:00-10:59	15	14	8
11:00-11:59	14	11	10
12:00-12:59	10	14	6
13:00-13:59	15	15	6
14:00-14:59	8	7	8
15:00-15:59	11	11	8
16:00-16:59	8	8	8
17:00-17:59	2	3	7
18:00-18:59	3	2	8
19:00-19:59	1	1	8
20:00-20:59	1	1	8
21:00-21:59	1	2	7
22:00-22:59	0	0	7
23:00-23:59	0	0	7

4.8.11 The Phase 1b access arrangements for deliveries and servicing are shown in Figure 4.30.

Figure 4.30: Phase 1b Deliveries and Servicing Access



Source: IBI Group/Mott MacDonald

Proposed – Phase 2

4.8.12 The updates for delivery and servicing from Phase 1b, including the adjustment of the internal link road from Colham Green Road, will remain in Phase 2.

4.8.13 Further changes to the internal service route from Colham Green Road will take place in Phase 1c and 2. This includes the introduction of a mini-roundabout junction to the south east of the surface car park. This junction removes all other vehicles from the internal network and provides a safe access to the Service Yard for Delivery and Servicing vehicles.

4.8.14 Servicing of residential areas and deliveries for residents and occupiers at Plot P01 and Plot P02 will be undertaken on the residential access road from Pield Heath Road. There will be space at the end of the access road for delivery and servicing vehicles to stop and unload without conflict with other site users. These vehicles can then carry straight on through the Plaza on a road restricted to delivery and servicing vehicles only. This allows vehicles to exit the site via the Colham Green Road access without having to turn around.

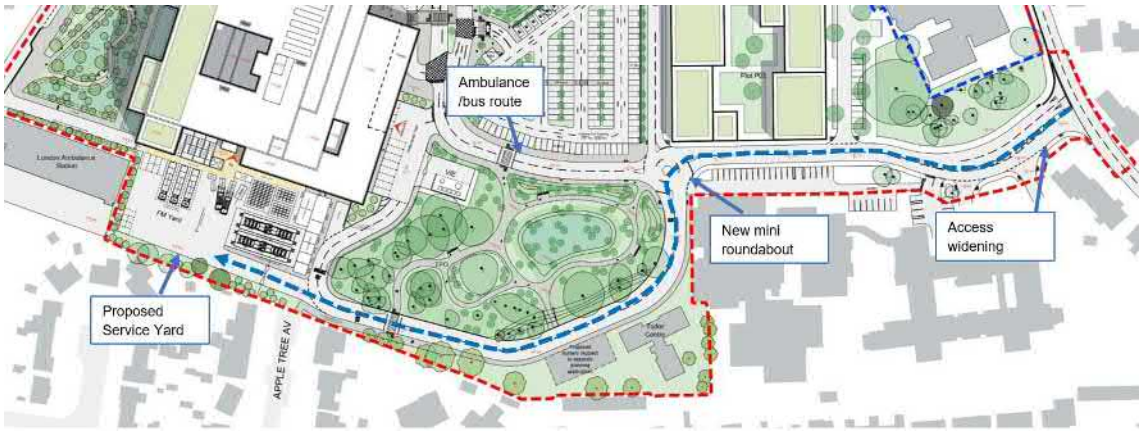
4.8.15 Servicing of residential areas and deliveries for residents and occupiers at Plot P03 will be undertaken on the access road off Colham Green Road. There will be space at the end of the access road for delivery and servicing vehicles to stop and unload without conflict with other site users. There is space provided for a large vehicle to turn around on this access road, so they can then exit the site via Colham Green Road.

4.8.16 The internal road layout will be designed to accommodate all typical service, refuse collection vehicles and fire tenders and to ensure drivers are able to turn around without the need to reverse long distances.

4.8.17 Further information on delivery and servicing is included in the accompanying Delivery and Servicing Plan (DSP). The DSP has been prepared as part of the wider application documents.

4.8.18 The Phase 2 access arrangements for deliveries and servicing are shown in Figure 4.31.

Figure 4.31: Phase 2 Deliveries and Servicing Access



Source: IBI Group/Mott MacDonald

4.9 Access by Car

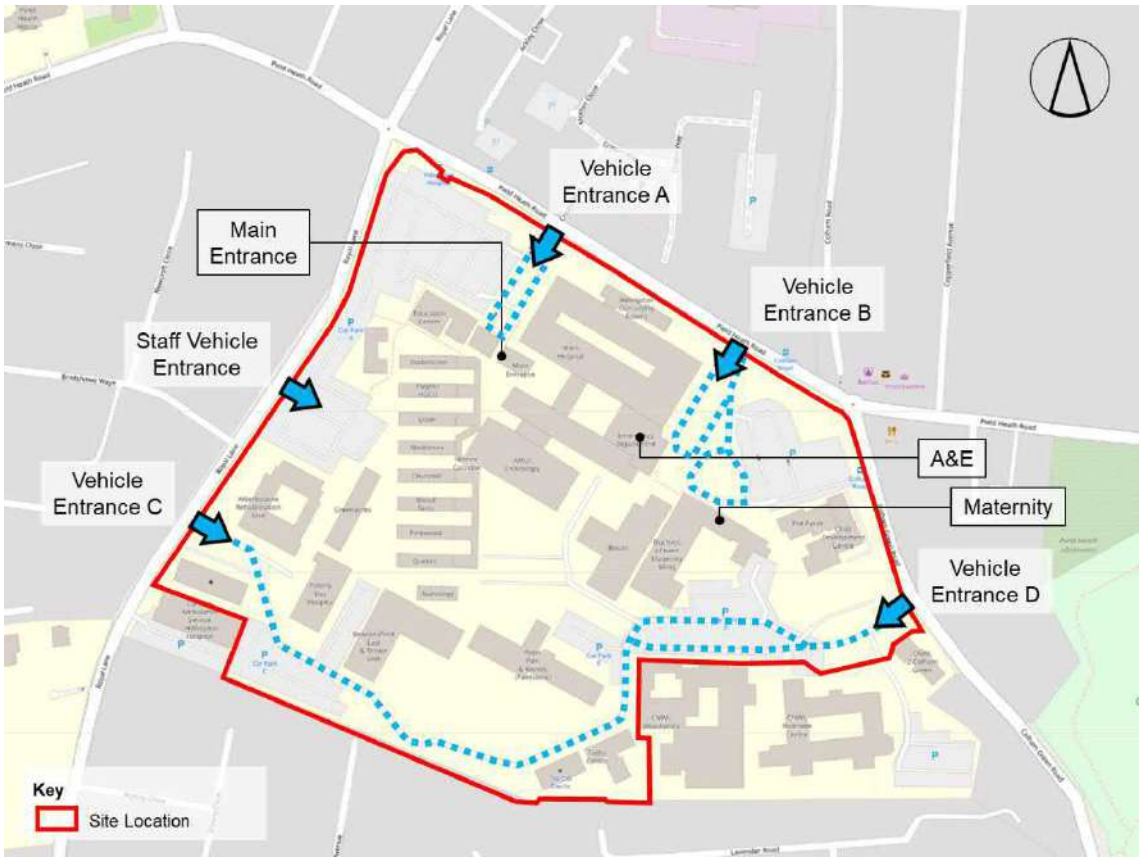
Existing

4.9.1 There are currently five vehicular access points to the hospital:

- Vehicle Entrance A – leads to the Main Entrance drop off and short stay patient parking area in the north-west of the site
- Vehicle Entrance B – leads to the A&E and Maternity drop off and to a mixed parking area in the north-east of the site
- Vehicle Entrance C – leads to various departments and mixed parking areas along the south of the site (also links through the Vehicle Entrance D)
- Vehicle Entrance D - leads to various departments and mixed parking areas along the south of the site (also links through the Vehicle Entrance C)
- Staff Vehicle Entrance – leads to a restricted staff parking area on the west of the site

4.9.2 The existing car access provision is shown in Figure 4.32.

Figure 4.32: Existing Car Access



Source: Open Street Map

4.9.2.1 All vehicle entrances are simple priority-controlled T-junctions, except for the Main Entrance, Vehicle Entrance A, which is a signalised crossroads junction.

4.9.2.2 Vehicle Entrance C and the staff vehicle entrance will be stopped up as part of the Phase 1a works.

4.9.2.3 Vehicle Entrance A and Vehicle Entrance D are proposed to be maintained and improved as part of the Phase 1a works. Vehicle Entrance B will be relocated to the west in Phase 2.

4.9.2.4 Vehicle Entrance A is located on the northern frontage on Pield Heath Road. The junction is currently signed as the Main Entrance. The current junction is a signalised crossroads. On the Pield Heath Road main arms (east and west) the road is single carriageway on the approach, widening to provide:

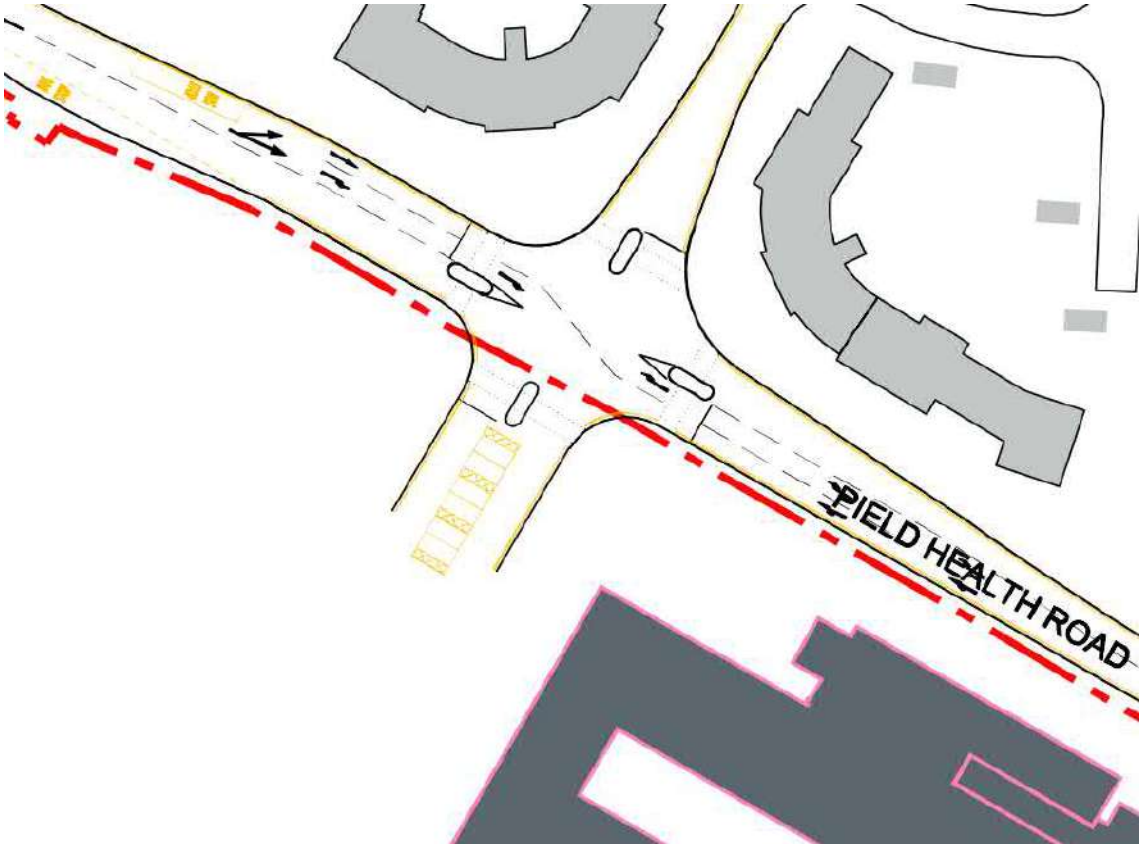
- an ahead/left and a right turn lane on the eastbound approach; and
- a left/ahead and a right turn lane on the westbound approach.

4.9.3 Within the hospital the southern arm has two lanes on entry to the hospital, one for the patient/visitor car park and one for the Main Entrance drop-off area. On exit from the hospital the northbound approach is one lane for left/ahead and right turning vehicles.

4.9.4 All four arms of the junction have signalised pedestrian crossing facilities with a central refuge area.

4.9.5 The existing Main Entrance junction arrangement is shown in Figure 4.33.

Figure 4.33: Existing Main Entrance Junction Arrangement



Source: Mott MacDonald

4.9.5.1 Vehicle Entrance D is located on the eastern frontage on Colham Green Road. The junction will be the future delivery and servicing route and will also provide a route for emergency ambulances. The existing junction is a priority junction arrangement; and although the junction provides access to the existing service yard, the junction geometry does not lend itself to accommodating concurrent HGV/LGV movements. Imagery of the existing junction is shown in Figure 4.34.

Figure 4.34: Existing Vehicle Entrance D Image

Source: Mott MacDonald

Proposed – Phase 1b

Main Entrance

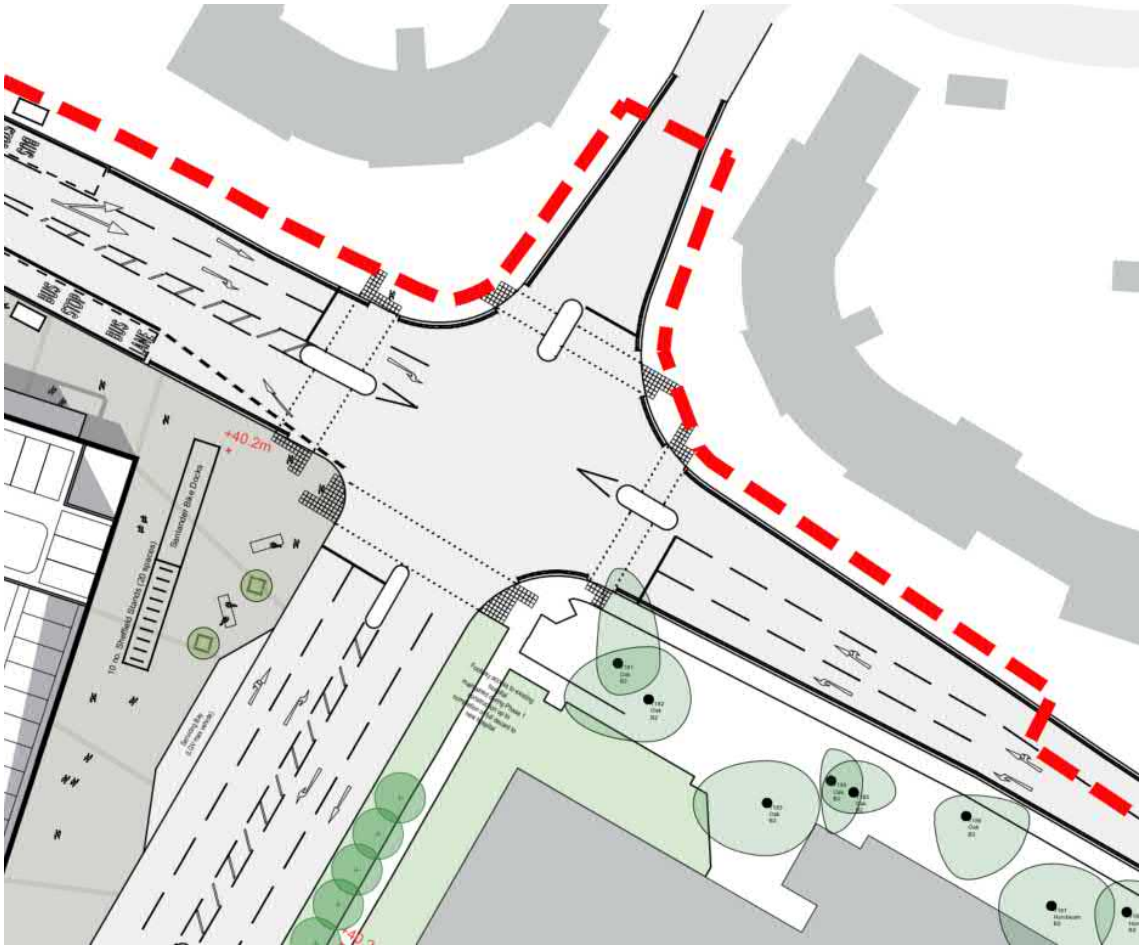
4.9.6 In Phase 1b most staff and patient/visitor car-based trips will arrive and depart via the Pield Heath Road Main Entrance junction. The Main Entrance will also provide a route for emergency ambulances, with an 'Ambulance Only' link within the site to access the ambulance yard.

4.9.7 The Main Entrance junction will be amended to provide two lanes on entry to an exit from the hospital site whilst the western Pield Heath Road arm will be widened to facilitate two-way traffic between the eastbound on-carriageway bus stop and the proposed westbound bus lane and bus stops. The lane configuration at the junction will be as follows:

- Crispin Way – one lane
  - Ahead, left and right
- Pield Heath Road (east) – two lanes
  - Nearside lane – left turn only
  - Offside lane – ahead and right
- Hospital Access arm – two lanes
  - Nearside lane – ahead and left
  - Offside lane – right turn only
- Pield Heath Road (west) – two lanes
  - Nearside Lane – ahead and left
  - Offside lane – right turn only

4.9.8 The proposed Main Entrance junction arrangement to be delivered in Phase 1b is shown in Figure 4.35.

Figure 4.35: Phase 1b Pield Heath Road Main Entrance Junction Arrangement



Source: IBI Group/Mott MacDonald

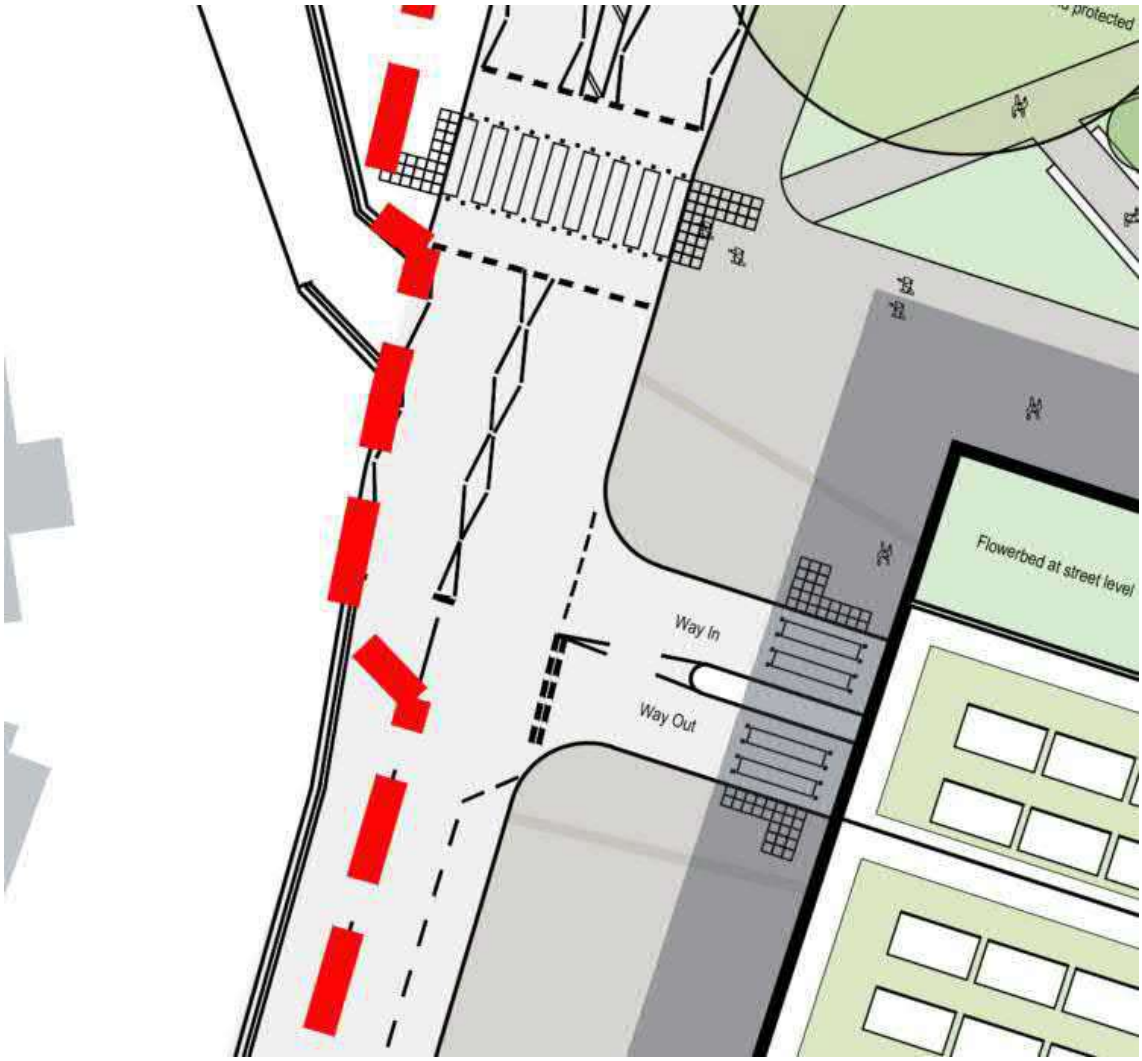
Royal Lane MSCP Entrance

4.9.9 In Phase 1b a proportion of staff and patient/visitor car-based trips will arrive and depart via the Royal Lane MSCP Access junction. This secondary access has been provided to reduce congestion on the Pield Heath Road corridor and improve the operation of the Main Entrance junction on Pield Heath Road.

4.9.10 The junction will be a priority controlled T-junction with a zebra crossing on the MSCP access arm and is located approximately 30m to the south of the Pield Heath Road/Royal Lane mini roundabout. Traffic can use this access to enter or exit the MSCP car park only which provides a convenient access for traffic travelling to/from the west.

4.9.11 The proposed Royal Lane MSCP Access junction is shown in Figure 4.36.

Figure 4.36: Proposed Royal Lane MSCP Access junction

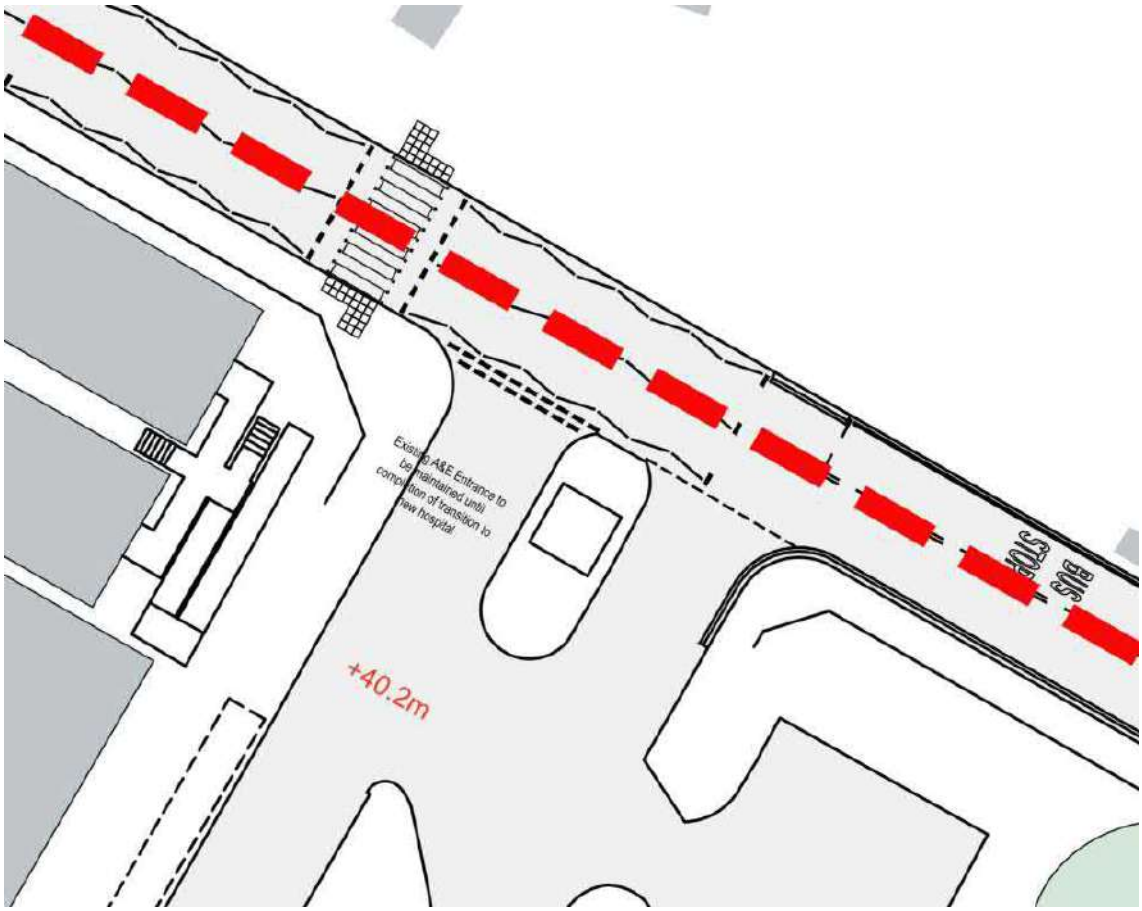


Source: IBI Group/Mott MacDonald

Maintained A&E Entrance

4.9.12 In Phase 1b patient/visitor car-based trips will also arrive and depart via the maintained A&E Entrance. The A&E Entrance will be maintained as it currently exists providing access to car parking spaces that will be maintained to a degree through Phase 1b and withdrawn once all operations have transitioned to the new hospital. The layout of the maintained A&E access is shown in Figure 4.37.

Figure 4.37: Phase 1b Maintained A&E Entrance



Source: IBI Group

Colham Green Road Entrance

4.9.13 In Phase 1b delivery and servicing trips and patient/visitor car-based trips will arrive and depart via an upgraded Colham Green Road Entrance. The Colham Green Road Entrance will also provide a route for emergency ambulances to access the ambulance yard.

4.9.14 The hospital access from Colham Green Road will be widened to facilitate HGV access to the existing hospital service yard (centrally located in the site) and access to the new hospital service yard.

4.9.15 The route within the site from the Colham Green Road Entrance has been designed to accommodate maximum design vehicles to ensure safety and offer flexibility. The design vehicles utilised are:

- 7.0m van/LGV;
- 12m rigid truck/HGV;
- 11.2m refuse vehicle/HGV; and
- 16.5m maximum legal length articulated HGV.

4.9.16 The road within the site will be:

- minimum 7.3m width within the site; and
- minimum 10.0m corner radii at the Colham Green Road Entrance.

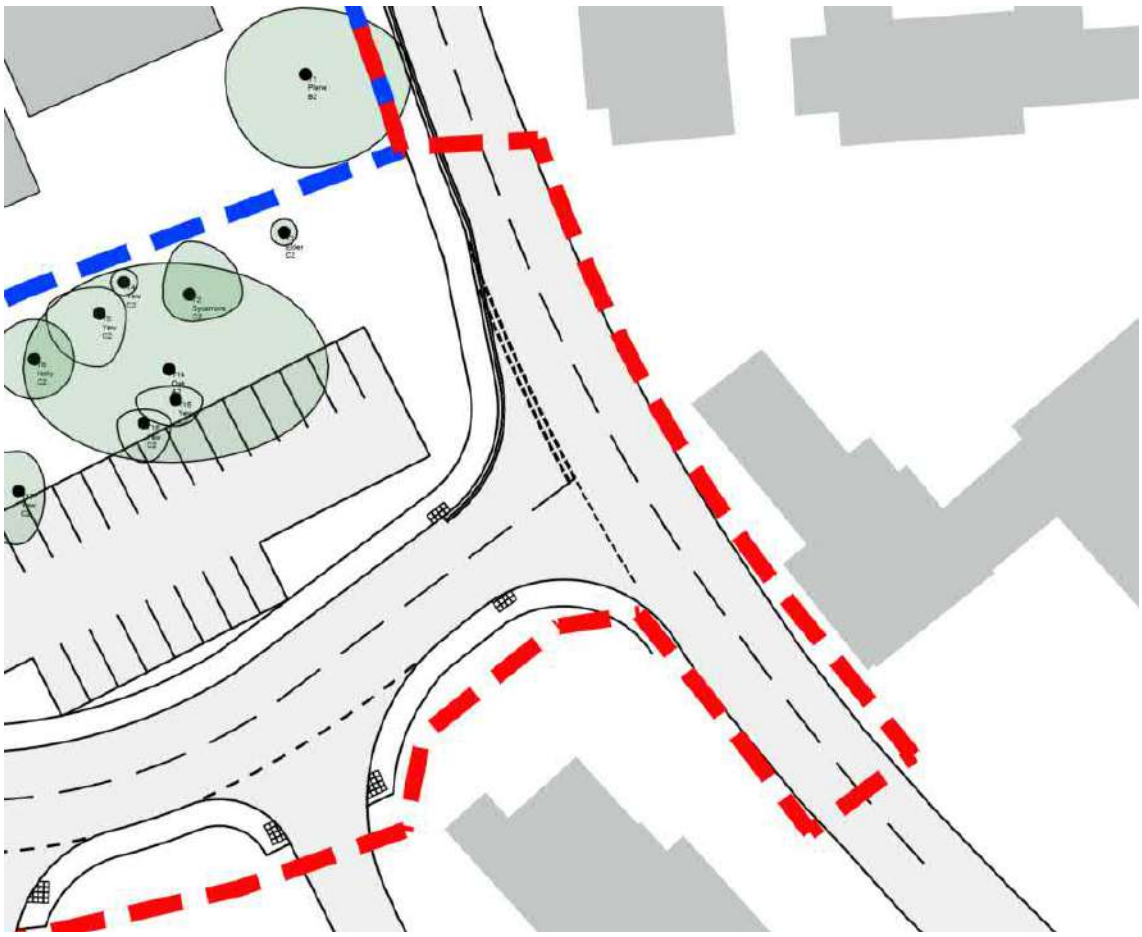
4.9.17 Swept path analysis has been undertaken of the proposed scheme and demonstrates that the appropriate design vehicles (rigid HGV and articulated HGV) can access and egress the site in a forward gear with no conflict.

4.9.18 Vehicles accessing the Children's Nursery will also utilise the Colham Green Road access. The Old Creche is subject of a separate application for the replacement of the current modular building with a new two-storey modular building and will be the location of a relocated children's nursery.

At all times during construction and upon occupation in Phase 1 and Phase 2, allocated parking will be provided to ensure safe access to and from the nursery for children and staff. In Phase 1b a newly formed footway will connect allocated nursery drop-off bays with the nursery entrance without the need for any road crossings.

Figure 4.38 shows the Colham Green Road access in Phase 1b.

Figure 4.38: Phase 1b Colham Green Road Access



Source: IBI Group/Mott MacDonald

Proposed – Phase 2

4.9.19 In Phase 2, the Main Entrance from Pield Heath Road and the MSCP entrance from Royal Lane remain the same as described in Phase 1b.

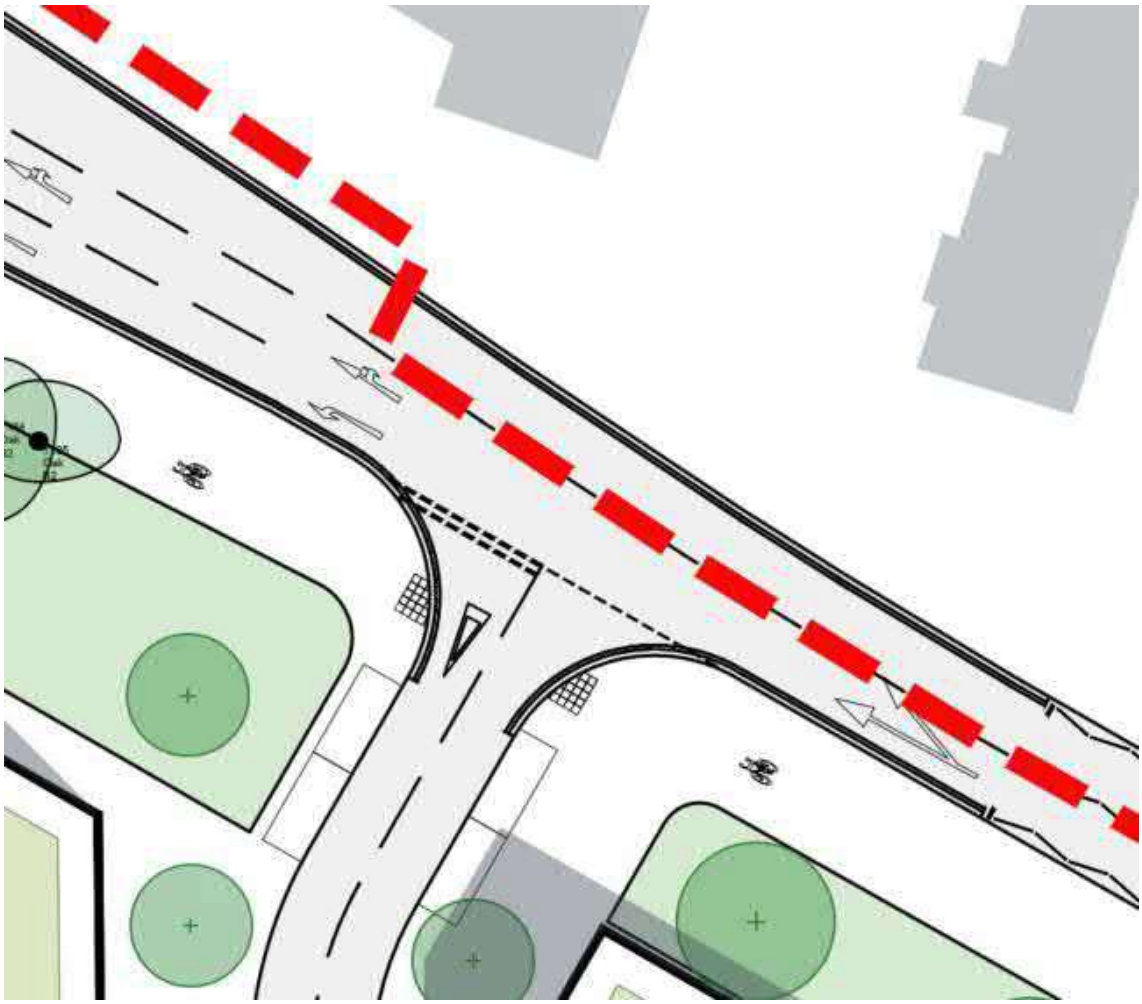
4.9.20 Upon clearance of the Phase 2 area and once the new hospital is fully occupied, Vehicle Entrance B will be closed and reinstated as footway. A new priority junction will be formed approximately 35m west of the existing Vehicle Entrance B. The new priority junction will provide access to Plots P01 and P02, both residential blocks. The internal access road will be a cul-de-sac, with onward access to the pedestrianised spine for service vehicles and emergency vehicles only.

4.9.21 The road within the site will be:

- minimum 6.0m width;
- minimum 8.0m corner radii

4.9.22 The new residential access junction from Pield Heath Road to Plots P01 and P02 is shown in Figure 4.39.

Figure 4.39: Phase 2 Pield Heath Road Residential Access Junction Arrangement



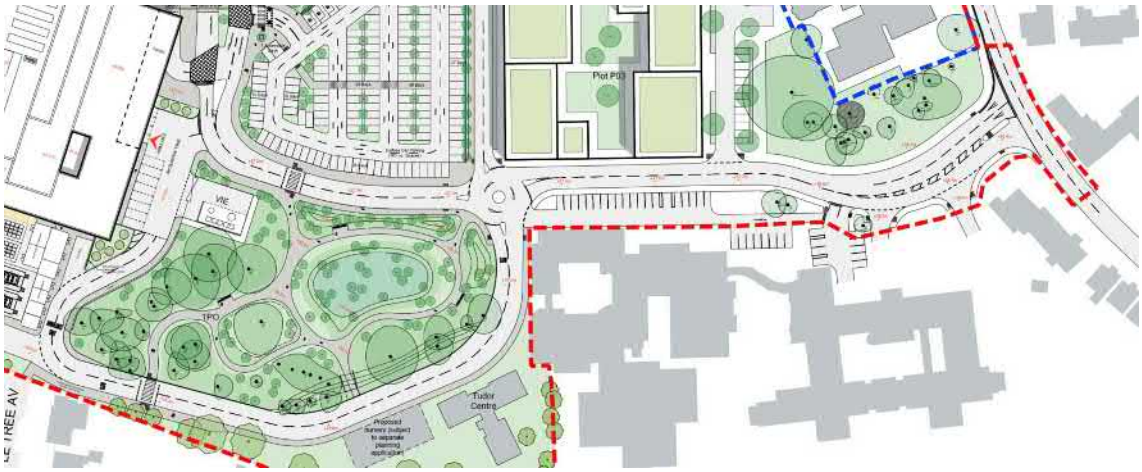
Source: IBI Group/Mott MacDonald

4.9.23 The Colham Green Road site access junction will be upgraded further in Phase 2, owing to land that will become available once parking near the Colham Green Road access is vacated and cleared. The proposed arrangement will see the Colham Green Road approach within the site widened to two-lanes to facilitate improved HGV movement, particularly to enable HGVs to make the left turn out of the side with minimal centreline overrun on Colham Green Road. The widened Colham Green Road access is shown in Figure 4.40.

4.9.24 Two new junctions will be created within the site accessing east and west of Plot P03. The eastern route will provide two cul-de-sacs for access to the podium parking in Plot P03 and The Furze car parking spaces. The western route will provide a route out of the central pedestrianised area for delivery and servicing vehicles routeing in a forward gear via the central area from Plots P01, P02 and P03.

4.9.25 At the south-western corner of Plot P03, a mini-roundabout will be formed where the southern service route will be the southern arm, a new restricted access will be the western arm (one-way westbound into the ambulance yard and bus stops) and the vehicular route from the central pedestrian area will be the northern arm. The Phase 2 junctions and access routes along the internal route from Colham Green Road are shown in Figure 4.40.

Figure 4.40: Phase 2 Internal Access Arrangements from Colham Green Road Access



Source: IBI Group/Mott MacDonald

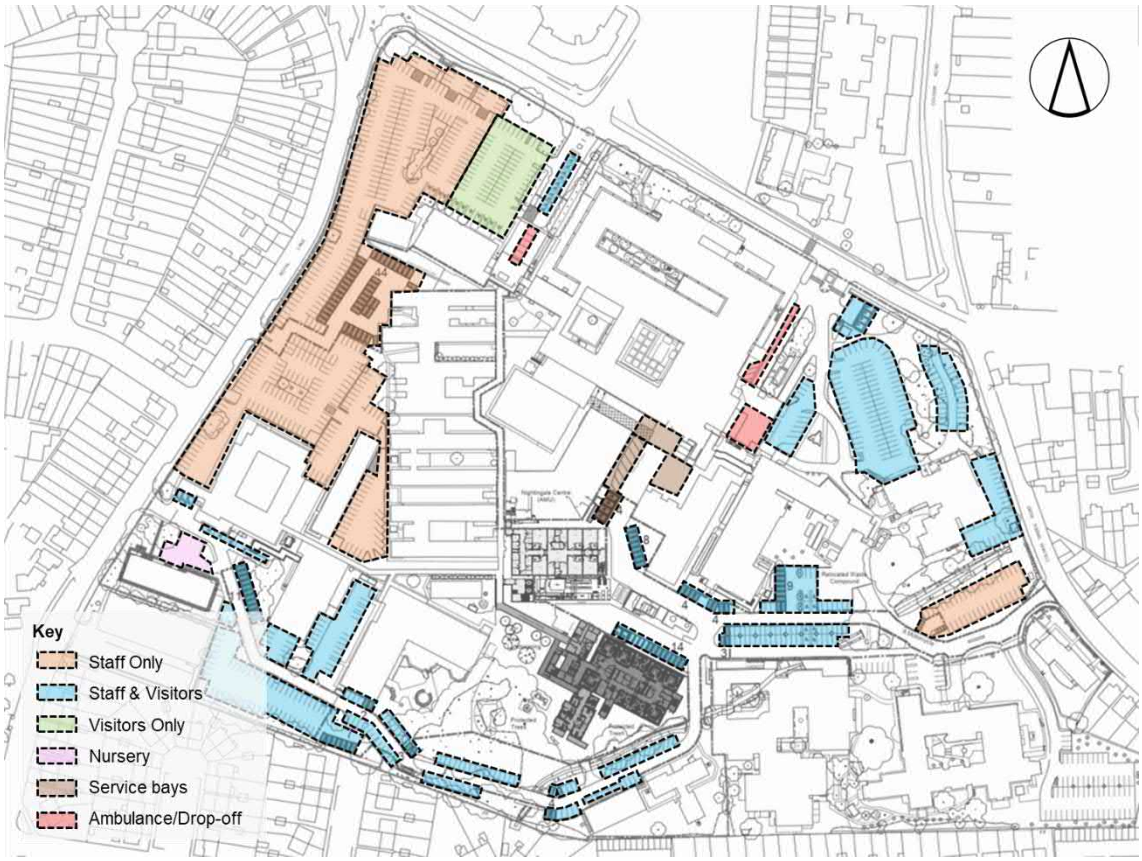
4.10 Car Parking

Existing Parking

On-Site Parking

4.10.1 Car parking is currently spread across the site. Due to the nature of development, over time parking has been added and rearranged over the years, resulting in a fragmented layout in terms of both access roads within the site and physical car parking spaces. Figure 4.41 shows parking locations across the site along with broad allocations, noting some more intricate allocations which are reflected in Table 4.5.

Figure 4.41: On-Site Car Parking



Source: Mott MacDonald

4.10.2 The allocation of on-site car parking is strictly controlled and enforced by parking wardens. The visitor only car park accessed internally from Vehicle Entrance A is barrier controlled. All other areas are either controlled by staff permit or pay and display. A summary of car park allocations across the site is shown in Table 4.5.

Table 4.5: On-Site Car Park Allocation Summary

Parking Type	Current Spaces (No.)	Committed Spaces (No.)	Total Spaces	Comments
Visitor (pay & display)	56	0	56	
Visitor Disabled	8	0	8	
Mixed Staff and Visitor (pay & display)	320	67	387	
Mixed Disabled	40	6	46	
Staff Standard	391	44	435	
Staff Disabled	4	0	4	
Nursery Standard	8	0	8	
Drop-off (20 mins)	17	0	17	
Ambulance only	7	0	7	
Consultant only	12	0	12	

Parking Type	Current Spaces (No.)	Committed Spaces (No.)	Total Spaces	Comments
Fleet/servicing only	7	0	7	
Motorcycle	0	8	8	
Ambulance yard	0	0	0	Hatched area in ambulance yard with capacity for five emergency ambulances parked perpendicular to the A&E access.
Service yard	0	0	0	Hatched area in service yard with capacity for four 10m rigid HGVs parked perpendicular to the service yard access road
Total	870	125	995	

4.10.3 A summary of the current car park tariffs at Hillingdon Hospital is shown in Table 4.6.

Table 4.6: Current Car Park Tariffs

Duration	Charge
0 - 10 minutes	No charge
1 hour	£1.70
2 hours	£3.20
3 hours	£4.70
4 hours	£6.20
5 hours	£7.70
6 hours	£9.20
7 hours	£10.70
8 hours	£12.20
9 hours	£13.70
10 hours	£15.20
11 hours	£16.70
12 hours to 24 hours	£18.20
Each extra 24-hour period	£18.20

4.10.4 The Trust supports the NHS ‘fair for all, not free for all’ principles for hospital car parking. To make regular trips to our hospitals easier, the Trust provides the following concessions for patients and their primary visitors to reduce the costs:

- Free parking for disabled Blue Badge holders in either designated disabled parking spaces or if these are not available, in general parking spaces
- Free 20-minute drop off points
- Weekly visitor parking permits for £12 (equivalent to £1.71 per day)
- Monthly visitor parking permits for £25 (equivalent of 82p per day)
- Reduced cost parking for cancer patients at £1 a day
- Patients who have arrived for their outpatient appointment to find it has been cancelled are entitled to free exit

Off-Site Car Parking

4.10.5 For a variety of reasons, including reductions in parking on-site due to development and other interruptions, the Trust currently leases additional off-site parking. The locations of these car parks in context of the site are shown in Figure 4.42.

Figure 4.42: Off-Site Car Parking

Source: Open Street Map

4.10.6 The parking available at each location is:

- 75 at the Brunel University Campus (not shown in Figure 2.5)
- 75 at Brunel Sports Park
- 25 at Walter Pomeroy Hall

4.10.7 A designated list of staff permit holders have been allocated spaces at these off-site locations. These car parks are all used by the designated users on weekdays, and access is restricted to those designated to park in these locations. These car parks are not used as overflow parking.

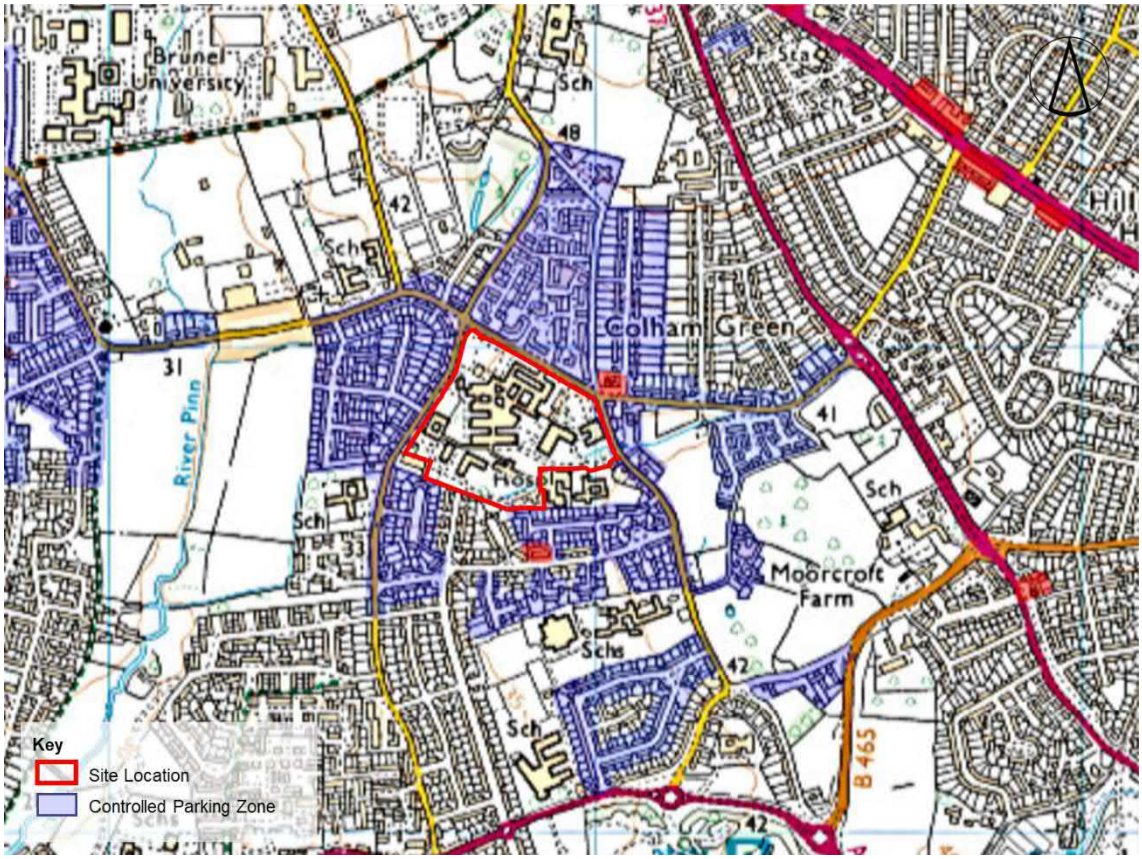
4.10.8 The total level of car parking currently used by the hospital is therefore 1,162 car spaces, not including space within the service yard or the ambulance yard for deliveries/servicing or emergency ambulances. This level of car parking is subject to fluctuation due to ongoing construction works on the hospital site.

Local Parking Restrictions

4.10.9 The site is located within a Controlled Parking Zone (CPZ), residents parking zone 'HH'. The extents of the HH zone are shown in Figure 4.43. During operating hours (9am to 5pm, Monday

to Friday), any person parking in this zone is required to display a residents parking permit. The operating hours and permit zone are shown on signs at each parking bay. Outside the operating hours, anyone can park in a permit holder only bay.

Figure 4.43: HH Residents Parking Zone



Source: London Borough of Hillingdon

4.10.10 The HH CPZ allows residents to secure on-street parking near their homes by preventing overflow parking on-street that could otherwise be generated by the hospital. This assists with safe operation of the local highway network and also assists the Trust in taking proactive measures to reduce car reliance, particularly amongst staff.

Trust Car Park Policy

4.10.11 The Trust has an active Car Park Policy (v 5.1, dated 26 September 2021) which regulates all car parking and associated activities within the Trust's sites. It is applicable to all patients, visitors, and staff who are users of the Trusts Car Parks, but not those individually managed by tenants or other organisations. Car Parking is managed by the Facilities department who ensure through this policy that the Car Parks are run effectively and safely. The policy supports the Trust's Environmental Responsibilities and dovetails with the Green Travel Plan. The policy ensures that access is fair for all staff, visitors, and patient users of the Car Park.

4.10.12 The Policy has been developed in accordance with the 'Fair for All Not Free for All' guidance prepared by the NHS, along with HTM 07-03.

4.10.13 More recently the NHS People Plan committed that "NHS organisations should continue to give their people [staff] free car parking at their place of work for the duration of the pandemic." This

guidance has now been withdrawn, NHS Standard Contract requires that NHS trusts and NHS foundation trusts must comply, where applicable, with NHS car parking guidance.

4.10.14 Though the policy is somewhat fluid, given the timescales over which the new hospital will be constructed and until it becomes operational, it is unlikely that there will be fundamental changes that would significantly shift parking at NHS sites. Moreover, Trusts are more intensively looking to reduce parking demand and pressures by implementing more sustainable measures such as travel planning and digital delivery/agile working.

4.10.15 The policy states that any changes to the total number of parking spaces due to site development are communicated to staff, patients, and visitors regularly through signage, the Trust public website and through staff communications.

4.10.16 Further information in relation to parking proposals for car park management are contained in the Car Park Management Plan (CPMP). This is a framework document which sets out how the Trust can best manage car parking on the estate.

Phase 1 Construction Parking

4.10.17 The western area of the site will be cleared to enable Phase 1a and Phase 1b construction to begin, which is broadly the footprint of the new hospital. Figure 4.44 shows the parking that will be lost on-site to enable construction.

Figure 4.44: On-Site Parking Lost for Phase 1a and b Construction

Source: Mott MacDonald

4.10.18 The exact level of parking removed on-site will be subject to confirmation upon contractor appointment and construction planning. At this stage it would appear that the total loss will be in the region of 675 spaces, though this number may reduce slightly depending on construction traffic routing and phasing of the upgraded southern service route. This leaves up to 322 spaces on-site that can be maintained through construction, though phasing and the construction boundary may affect this slightly.

4.10.19 To offset the spaces to be removed, the Trust has developed a strategy to enable the decant of some operations from Hillingdon Hospital to Mount Vernon Hospital. A planning application for the use of existing car parking at the site has been submitted to LBH (planning ref: 3807/APP/2021/3328).

4.10.20 The planning application at Mount Vernon Hospital seeks permission for the use of the Car Park A Overflow car park and the Chapel Car Park, along with the Trust's use of car parking spaces at Mount Vernon that were previously utilised by third party tenants. In total this will see an additional 127 parking spaces being able to be utilised by the Trust at Mount Vernon Hospital.

4.10.21 Further work has been undertaken to enable the decant of hospital car parking which will remain in proximity of Hillingdon Hospital. The Trust engaged a team of specialist consultants to advise on the decant of hospital parking. This consultation identified a potential temporary car parking site on land adjacent to Moorcroft Lane, approximately 600m to the west of the main hospital entrance. The site has the potential for approximately 400 to 450 temporary car parking spaces. The decant car park is being reviewed as part of a separate workstream and will be submitted as a temporary application. Full details of the proposals at the temporary car park will be provided in a Transport Technical Note prepared in support of the temporary application.

4.10.22 Starting from the current maximum level of parking available both on-site and off-site (1,162). The balance of parking removed (-675) against parking provided at Mount Vernon (+127) and in the temporary car park (+400) will leave a total of 1,014 spaces. This is 148 spaces less than compared to the current estate.

4.10.23 As parking will be managed through the decant and construction phase of the new hospital, there will be no sudden drop in provision. The key period for managing parking demand and reducing travel by car is through the period as the new hospital footprint is cleared and parking is relocated to the off-site temporary car park.

4.10.24 The Trust is working with specialist car club and car share providers to establish pilot schemes during the decant phase. This will be supplemented by a decant of some hospital staff roles to Mount Vernon Hospital, continuing to utilise virtual appointments for some patients and encourage remote and hybrid working where staff roles can be partially or fully undertaken from home.

Future Hospital Parking Demand Assessment

4.10.25 The level of car parking demand has been determined using the central case CTDM (Scenario 2) forecast of car parking accumulation at the site. The CTDM has been developed using a range of data sources and information to forecast travel demand by mode over a typical 24-hour period. The CTDM breaks down users into staff, patient and visitors, then uses specific information such as staff shift patterns, patient appointment profiles and visitor times to generate demand profiles by mode by user. The profiles for car driver for all user groups have then been overlaid to generate a daily arrival and departure profile for cars, including an allowance for overnight parking amongst staff (night shift) and residual patient and visitor parking on-site. The parking accumulation for the site has been calculated based on this information

4.10.26 The car parking accumulation over a 24-hour period for staff is shown in Table 4.7, which assumes that there are 152 cars parked at the start of the 24-hour period.

Table 4.7: Scenario 2 Staff Car Parking Accumulation

Time period	Arrivals	Departures	Parking Accumulation
24-hour	585	577	
00:00-00:59	3	6	149
01:00-01:59	0	3	146
02:00-02:59	3	3	146
03:00-03:59	0	0	146
04:00-04:59	3	3	146
05:00-05:59	17	8	154
06:00-06:59	72	4	222
07:00-07:59	160	32	351
08:00-08:59	140	31	460
09:00-09:59	35	28	466
10:00-10:59	12	9	469
11:00-11:59	8	10	467
12:00-12:59	20	17	470
13:00-13:59	8	19	459
14:00-14:59	12	23	449
15:00-15:59	6	43	412
16:00-16:59	12	97	327
17:00-17:59	4	96	235
18:00-18:59	8	35	208
19:00-19:59	36	24	220
20:00-20:59	14	41	193
21:00-21:59	7	20	181
22:00-22:59	5	23	163
23:00-23:59	0	3	160

4.10.27 This shows that the maximum parking accumulation for staff is 470 spaces, which occurs between 11:00 and 11:59.

4.10.28 The car parking accumulation over a 24-hour period for patients and visitors is shown in Table 4.8, which assumes that there are 47 cars parked at the start of the 24-hour period.

Table 4.8: Scenario 2 Patient and Visitor Car Parking Accumulation

Time period	Arrivals	Departures	Parking Accumulation
24-hour	3496	3480	
00:00-00:59	14	13	48
01:00-01:59	12	11	49
02:00-02:59	10	10	49
03:00-03:59	9	9	49
04:00-04:59	9	9	49
05:00-05:59	9	10	49

Time period	Arrivals	Departures	Parking Accumulation
06:00-06:59	26	17	58
07:00-07:59	277	117	218
08:00-08:59	343	195	366
09:00-09:59	238	286	318
10:00-10:59	229	252	295
11:00-11:59	217	231	281
12:00-12:59	224	225	281
13:00-13:59	274	232	323
14:00-14:59	272	287	308
15:00-15:59	272	284	296
16:00-16:59	235	279	252
17:00-17:59	225	236	242
18:00-18:59	215	225	232
19:00-19:59	140	215	157
20:00-20:59	134	135	157
21:00-21:59	73	125	104
22:00-22:59	22	64	63
23:00-23:59	17	17	64

4.10.29 This shows that the maximum parking accumulation for patients and visitors is 366 spaces, which occurs between 08:00 and 08:59.

4.10.30 The total parking accumulation over a 24-hour period is shown in Table 4.9, which assumes that there are already 199 cars parked on site at the start of the 24-hour period.

Table 4.9: Scenario 2 Total Car Parking Accumulation

Time period	Arrivals	Departures	Parking Accumulation
24-hour	4081	4057	
00:00-00:59	17	19	197
01:00-01:59	12	14	195
02:00-02:59	13	12	195
03:00-03:59	9	9	195
04:00-04:59	11	11	195
05:00-05:59	26	18	203
06:00-06:59	98	21	280
07:00-07:59	437	149	568
08:00-08:59	483	226	825
09:00-09:59	272	314	784
10:00-10:59	241	261	764
11:00-11:59	225	241	748
12:00-12:59	245	242	751
13:00-13:59	282	251	782
14:00-14:59	285	309	757
15:00-15:59	278	327	708
16:00-16:59	248	377	579

Time period	Arrivals	Departures	Parking Accumulation
17:00-17:59	230	332	477
18:00-18:59	223	260	440
19:00-19:59	176	239	377
20:00-20:59	149	175	350
21:00-21:59	80	145	285
22:00-22:59	27	87	225
23:00-23:59	17	19	224

4.10.31 This shows that the maximum parking accumulation is 825 spaces, which occurs between 08:00 and 08:59. For the car parks to operate effectively, 10% more spaces need to be provided that the maximum demand. Therefore, the total number of car parking spaces for staff, patients, and visitors that need to be provided in hospital redevelopment is 917.

Proposed – Phase 1b Completion

4.10.32 The new hospital parking will be provided in a new multi storey car park and a surface level car park. The proposals will see 781 spaces provided in the multi storey car park, with a further 161 surface level spaces to be delivered at a later date, upon clearance of the area east of the new hospital during the construction of Phase 2. This total parking provision of 942 spaces is sufficient to provide for the forecast demand set out above.

4.10.33 Not all parking will be dedicated for general or mixed use. The multi storey car park is in essence an expansion of the proposed Mobility Hub. Spaces on the ground floor of the multi storey car park will provide capacity for four Car Club cars, a short stay drop-off area, patient transport services minibuses and dedicated car sharing bays all being provided in convenient locations within the lower floors of the multi storey car park.

4.10.34 The proposed allocation for the multi storey car park is shown in Table 4.10.

Table 4.10: Multi storey car park allocation

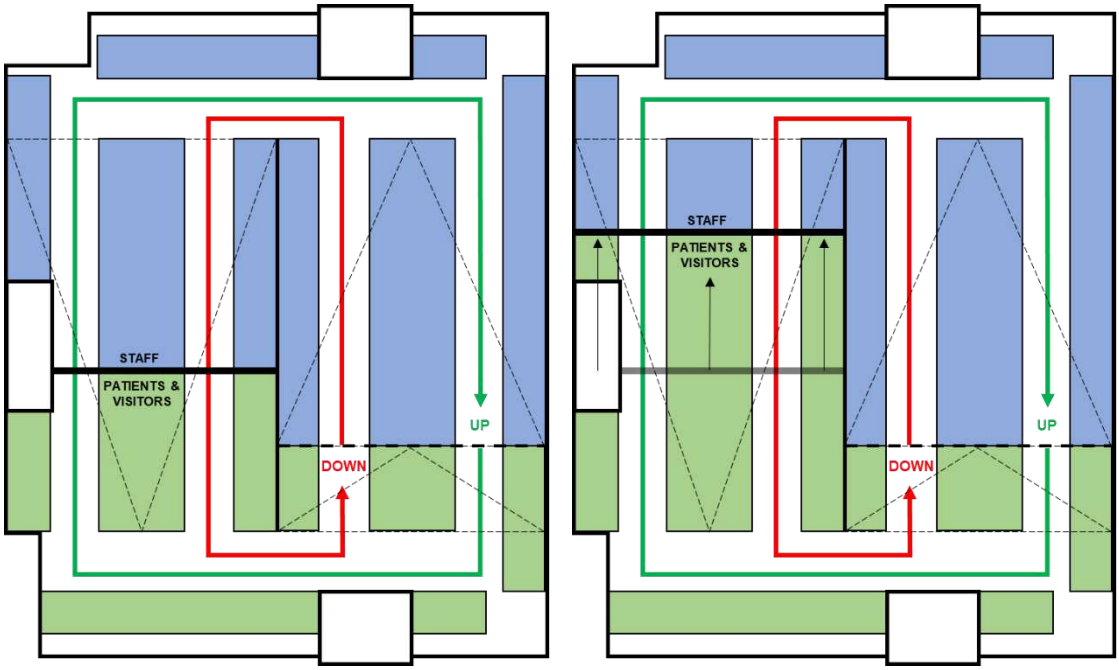
Car Park	Level	Spaces (Disabled)	Staff	Patients	Disabled	EV Active (Passive)	Comments
MSCP (Phase 1a)	0	98 (6)	0	94	6% Disabled 4% Accessible	15 (9)	Inc. 4 Car Club spaces on GF
	1	152 (9)	0	152		18 (15)	
	2	157 (9)	133	24		33 (15)	Inc. staff car share spaces on 2F
	3	157 (9)	157	0		34 (16)	
	4	157 (9)	157	0		34 (16)	
	5	60 (4)	60	0		13 (6)	
Total		**781 (46)**	**507**	**270**		**147 (77)**	

4.10.35 The MSCP will provide patient parking on floors 0, 1, and 2, which will include four car club spaces on the ground floor. Staff parking will be provided on floors 2, 3, 4, and 5, which will include two car share spaces on the 2nd floor. In total, 507 staff spaces, and 270 patient and visitor spaces will be provided in the MSCP. 6% of spaces will be disabled spaces and 4% will be accessible spaces in line with The London Plan standards.

4.10.36 As the Travel Plan is implemented and travel demand, including parking demand monitored, the objective will be to manage down parking demand over time. The MSCP layout has been

designed with the flexibility to reallocate parking between staff, patients and visitors if needed. This flexible layout is shown in Figure 4.45, which shows that reallocation of spaces can be done on a reactive basis by relocation of hanging signage and relocation of markings and/or wall signage.

Figure 4.45: Flexible Allocation



Source: Mott MacDonald

4.10.37 Therefore, flexibility can be used to reallocate parking from staff to patients and visitors, subject to the success of the Travel Plan, and concurrently withdraw some parking spaces in the surface car park in the future.

4.10.38 The idea of the flexible car park also sits well with the surface car park that will be delivered in Phase 2. The surface car park will be fully allocated to patients and visitors (except for a small rapid charge hub open to any hospital user).

4.10.39 The car park will be supplemented with EV charging provision, in line with the London Plan standards. 22% of all staff parking will be fitted with EV charging stations, and 10% will be fitted with passive EV charging provision. After consultation with Enterprise Car Club, it has been decided that four car club bays will be provided in the multi-storey car park, which can be increased depending on future demand. All car club bays will be fitted with 22kW EV charging stations. Further information on electric vehicle charging is set out in Section 4.11.

4.10.40 Once the multi-storey car park is in operation, the site will have over 100 spaces more than the existing parking provision.

Proposed - Phase 1c Completion

Hospital Parking

4.10.41 The 100 spaces of excess parking allows the withdrawal of parking on the site to the east of the new hospital, to facilitate demolition operations that will require the space surrounding the existing hospital and therefore decommissioning a large amount of existing parking.

4.10.42 During Phase 1c, the surface park will be provided upon clearance of the footprint in the area east of the new hospital. This will provide approximately 161 spaces, which are summarised in Table 4.11.

Table 4.11: Phase 1c Surface Parking Summary

Car Park	Level	Spaces (Disabled)	Staff	Patients	Disabled	EV Active (Passive)	Comments
Surface (Phase 1c)	N/A	161 (10)	0	161	6% Disabled 4% Accessible	25 (15)	Inc. 6 Rapid Charge Hub spaces
Total		**161 (10)**	**0**	**161**		**25 (15)**	

4.10.43 Upon completion of the surface car park, all off-site car parking currently used by the hospital will be withdrawn. This means that here will be a total of 932 hospital car parking spaces, which will all be provided on site. This is a reduction of 230 (20%) spaces when compared to the existing parking situation.

4.10.44 A monitor and manage framework for on site car parking will be used to review whether the surface car parking is still required once travel planning measures to reduce the number of car trips have been successful. This will determine whether the surface car park is still needed, or whether it can be repurposed as green space or used for hospital expansion.

Proposed - Phase 2 Completion

Residential Parking

4.10.45 Phase 2 is subject to the outline element of the application, so full details on parking will be provided in future reserved matters applications. The London Plan specifies the requirement for residential car parking, as follows:

- 0.75 spaces per 1 to 2 bedroom dwelling;
- 1 space per 3+ bedroom dwelling;
- Accessible:
  - Adequate parking spaces for disabled people must be provided preferably on-site.
- EV Charging:
  - All residential car parking spaces must provide infrastructure for electric or Ultra-Low Emission vehicles. At least 20 per cent of spaces should have active charging facilities, with passive provision for all remaining spaces.

4.10.46 On the basis of 327 one bedroom residential dwellings, 245 spaces would be provided. Parking associated with the residential units will be provided as podium parking within each residential parcel. Visitor parking and delivery and servicing parking will be provided within the residential streets. All parking provided in the residential area will be in-line with the standards as included in the London Plan.

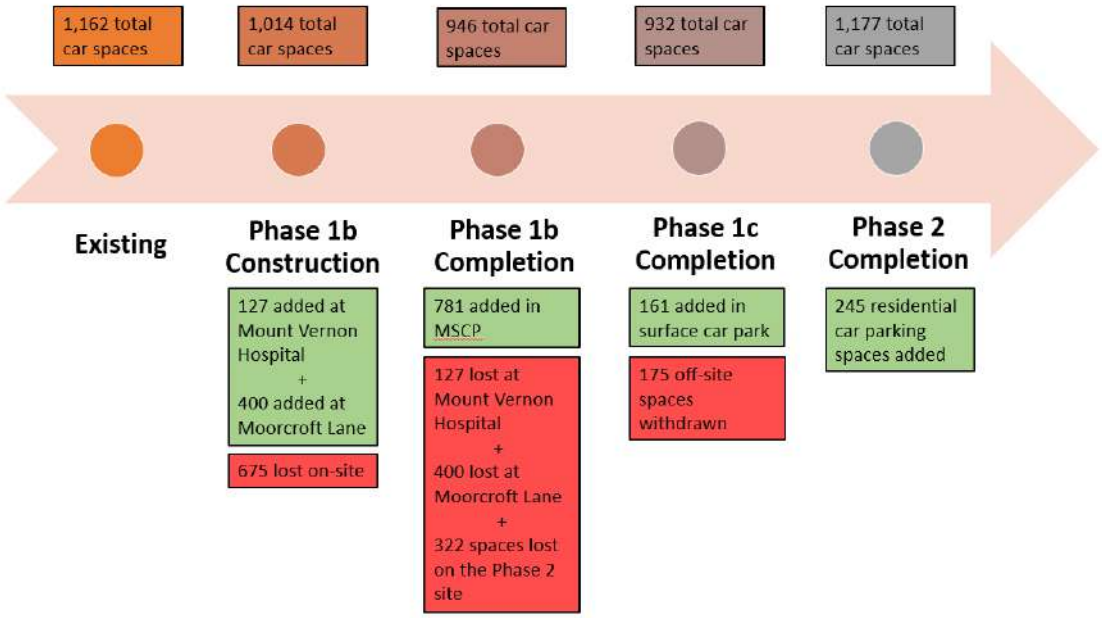
Parking Timeline

4.10.47 Given the vital importance of parking for the hospital to operate effectively and to allow staff and patients access to the hospital, the Trust has appointed a team dedicated to planning for the decant and construction phase of the project.

4.10.48 Mott MacDonald has been supporting the team with analysis of parking impacts throughout the project from commencement to completion. The Future Hospital Car Parking Demand section sets out the need for 917 car parking spaces in order to provide sufficient parking at the site.

Figure 4.46 shows the parking timeline, which shows that more than this amount of car parking space will be available for staff, patients and visitors throughout the construction and operation of the redevelopment.

Figure 4.46: Parking Timeline



Source: Mott MacDonald

4.11 Electric Vehicle Charging

4.11.1 The car park will be supplemented with EV charging provision, in line with the London Plan standards. 22% of staff car parking and 12% of patient parking will have EV charging provision.

4.11.2 10% of all EV charging spaces provided will be passive provision, where spaces are ducted for wiring ready for future installation of the EV charger and sub-station capacity is provided for future demands. For staff 30% of all EV charging spaces will have 22kW fast charging capacity, and the remaining 70% will have 7kW chargers. 100% of patient EV charging spaces will have 22kW fast charging capacity.

4.11.3 The amount of fast charging spaces allocated to staff/patient car parking is based on the expected length of stay. Staff have been observed to spend approximately 4-8 hours parked on site, so fast charging is not necessary. Patients and visitors are more likely to spend 1-4 hours parked on site, so fast charging is necessary.

4.11.4 Most EV charging spaces will be located within the multistorey car park. The Ambulance Yard and Service Yard will have fast 22kW fast charging capacity in all spaces. Therefore, all EV charging spaces will be in place upon completion of Phase 1c.

4.11.5 All electric vehicle charging docks will be wall mounted and bays will be at a reduced height, to allow accessibility for disabled users.

4.12 Mobility Hub

Introduction

4.12.1 The Mobility Hub forms a key element of the transport offering and its success will be key in delivering a net zero NHS by 2040. The Mobility Hub will encourage staff and patients to travel sustainably, to facilitate a mode shift away from the car. The aim of the Mobility Hub is to provide the information and opportunity for people to use sustainable modes of transport to access the hospital.

Proposed Phase 1b

4.12.2 During the development of the scheme proposals and through detailed analysis of the current situation in terms of travel, and particularly parking, along with analysis of future travel demand, it was apparent that more is needed to enable and promote a shift towards more sustainable modes.

4.12.3 From the outset the transport solutions have been developed around an overarching evidence based and strategy led solution. At the centre of this is the enabling and promotion of sustainable transport through delivery of a Mobility Hub, which will serve the hospital, opportunity site and nearby community.

4.12.4 The Mobility Hub is designed to facilitate the target modal shift. The Mobility Hub is centred around the multi storey car park, with physical infrastructure, and digital capability to enable access to sustainable transport facilities, as follows:

- Secure internal cycle parking
- External cycle stands
- Bus stops
- Live bus timetable information
- Journey planning information
- Help points
- Bike hire (Santander, Brompton, e-bikes)
- Car club
- Car sharing
- EV Charging
- Accessible and disabled parking bays
- Patient parking and drop-off area
- Staff parking bays
- Wayfinding

4.12.5 A separate Mobility Hub Vision Paper has been prepared and can be read in the associated application documents. When considering how the Mobility Hub would function, the end user was considered. Through consultation with potential delivery partners, it was apparent that opportunities are sometimes missed through the lack of accessibility and convenience being overlooked in such solutions. When the digital aspects of Mobility Hubs/multi modal transport are looked at, it is clear why users fail to engage on a long-term basis. Often solutions still require users to create multiple accounts for each mode, buy different tickets, hold different payment methods, and join the dots themselves. That is why it is extremely important that a future ‘Mobility App’ is developed to accompany the Mobility Hub, putting transport choices at users’ fingertips. This is shown conceptually in Figure 4.47.

Figure 4.47: Mobility App Concept

4.12.6 The Mobile App, also accessible on Mac or PC, has the opportunity to integrate all of the following, as has been explored with multiple potential delivery partners:

- Login/sign up to Mobility account (including all components within app)
- Access to secure cycle parking
- Access to cycle hire booking/payment
- Access to car club booking/payment
- Access to car sharing information
- Access to public transport timetables/tickets/payment
- Access to car park information, tariffs, permit validation system (for staff) and payment
- Access to journey planner
- Ability to integrate direct payment method with Mobility App
- Rewards system to promote sustainable choices

4.12.7 The intention of the Mobility Hub and Mobility App, along with the opportunities presented by this solution, are discussed in further detail in the Mobility Hub Vision Paper.

Wayfinding

4.12.8 TfL has developed ‘Legible London’ to help both residents and visitors walk to their destination quickly and easily, as illustrated in Figure 4.48.

4.12.9 The signs offer a consistent experience and information about distances between areas.

Figure 4.48: Legible London Product Range

Source: TfL

4.12.10 The Legible London wayfinding system is most commonly seen in the Central London area. Wayfinding was discussed in pre-application discussions with LBH, with a need identified between the site and key nearby trip origins and attractors and transport hubs.

4.12.11 Clear and legible wayfinding signage is key to showing people how they can travel shorter distances by active travel. This will certainly apply to trips between the Hillingdon Hospital and Brunel University. With the new Elizabeth Line arriving at West Drayton, and Uxbridge Underground Station only 2.8km (walked distance) there is an opportunity to enable and encourage walking and cycling trips in the local area.

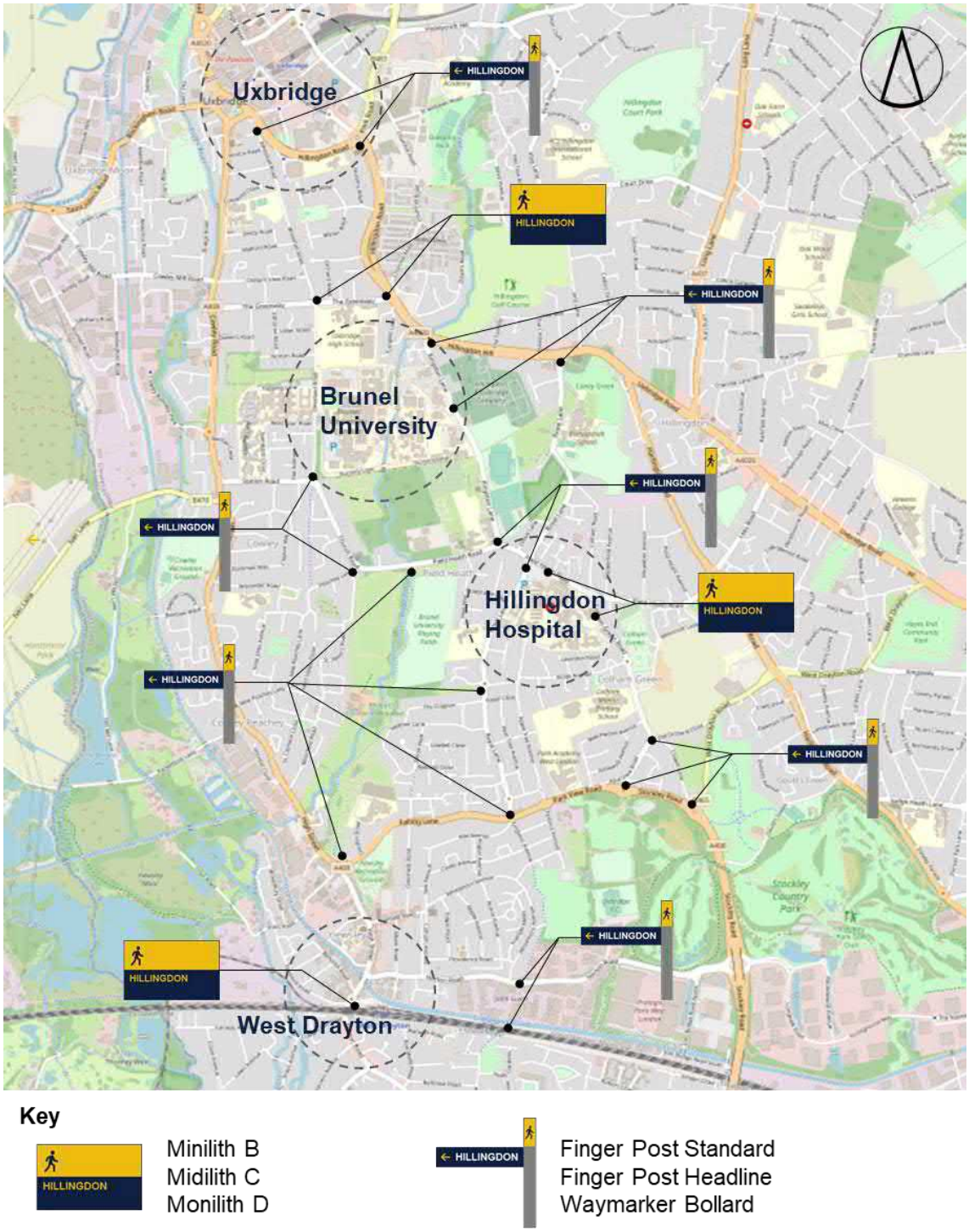
4.12.12 The Legible London wayfinding system is also integrated with other transport modes so, for example, when people are leaving the bus, they can quickly identify the route to their destination.

4.12.13 The Legible London wayfinding system already covers Uxbridge and extends to cover key locations at Brunel University, as shown in Figure 4.49.

Figure 4.49: Legible London at Brunel University

4.12.14 The coverage of the Legible London signage appears to be relatively thin at and around Brunel University. Further, the signage does not extend to Hillingdon Hospital. It is recommended that new Minilith, Midilith and/or Monilith signage is added at key junctions/decision points between Hillingdon Hospital and Uxbridge/Brunel University (north) and West Drayton (south). Finger Posts and Waymarker Bollards should be added to supplement this and provide clear and continuous wayfinding signage along the key corridors. This is illustrated in Figure 4.50.

Figure 4.50: Legible London Recommended Locations



4.12.15 The addition of clear wayfinding will provide recognisable and consistent signage for all hospital users. This can be integrated with a wider wayfinding package covering other key areas or destinations.

4.12.16 Figure 4.50 shows the recommended signage area and includes a recommendation for 16 Finger Post signs and five Minilith, Midilith or Monilith totems. It is anticipated that a financial

contribution towards the introduction of further Legible London wayfinding signage will be secured via condition.

Proposed Phase 2

4.12.17 In Phase 2 the Mobility Hub, as described previously, will be maintained. Upon completion of Phase 2, the hospital will also be supported by a new surface car park in proximity of the A&E department. This will provide parking in a convenient location for patients and visitors accompanying vulnerable and disabled users, and people in need of emergency treatment. The surface car park will also be covered by ANPR and will integrate with the Mobility App via an update to the system to enable current usage/occupancy to be seen by users and Facilities Management on a real time basis.

4.12.18 The residential element of the scheme will also be delivered in Phase 2. The Mobility Hub will also be accessible for use by future residents and the wider community, offering convenient access to all users.

4.12.19 Further facilities can be added within the residential area of the site, subject to demand being evidenced and future agreement with stakeholders, including:

- Secure internal cycle parking
- External cycle stands
- Expansion of on-site car club

4.12.20 These offerings within the residential area of the site will also be accessible via the Mobility App; which residents will be able to access just as with the wider community for localised and specific information on sustainable travel choices and transport.

4.13 Healthy Streets Check

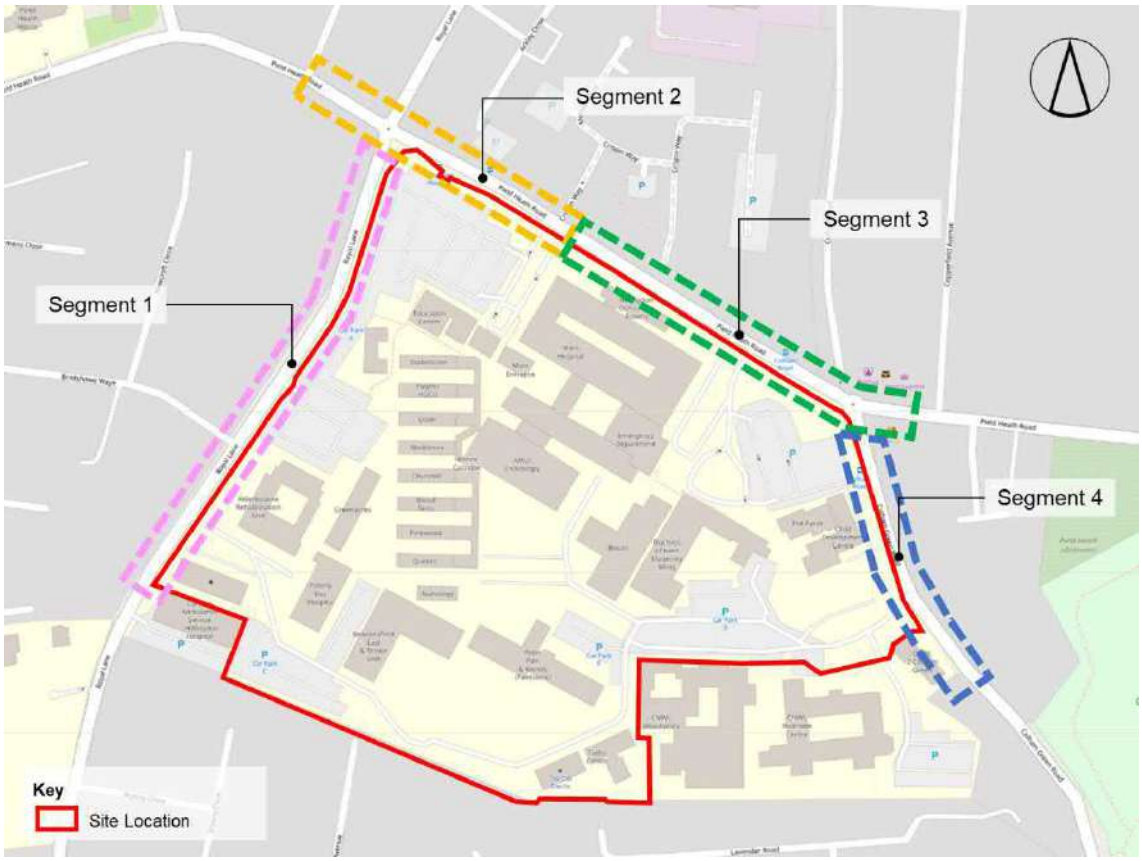
4.13.1 TfL's Healthy Streets check for designers has been used to consider how the proposed changes to environments around the site will result in improvements to site users and the nearby communities.

4.13.2 TfL's Heathy Streets check involves a review of the scheme proposals against the 10 Healthy Streets indicators (comparing it with the existing conditions). The 10 Healthy Streets indicators are shown in Figure 4.51.

Figure 4.51: The Healthy Streets Indicators

4.13.3 The street segments surrounding the site have been split up to enable the TfL Healthy Streets Check to be applied to respective schemes. The street segments are shown in Figure 4.52.

Figure 4.52: Healthy Streets Check Street Segments



Source: Open Street Map

4.13.4 The segments are as follows:

- Segment 1 – Royal Lane between Pield Heath Road and London Ambulance Station, along the western site frontage where two existing site access junctions will be stopped up. A new MSCP access approximately 30m south of the junction with Pield Heath Road will be provided, and a new minor access for access to a discreet patient transfer area (patient transport services minibuses only) will be formed;
- Segment 2 – Pield Heath Road from new pedestrian crossing on Pield Heath Road (west of Royal Lane) to the Hospital Main Entrance on Pield Heath Road. The existing hospital main entrance will be upgraded to improve traffic operation and enhance the pedestrian crossing facilities for access between eastbound and westbound bus stops;
- Segment 3 – Pield Heath Road from the Hospital Main Entrance to Colham Green Road along the northern site frontage. In Phase 2, the footway along the southern side of the carriageway will be upgraded to enable sufficient space for a 6.0m pedestrian and cycle corridor;
- Segment 4 – Colham Green Road from Pield Heath Road to Colham Green Road entrance along eastern site frontage. Due to an historic wall being retained along the eastern site boundary, the existing footway and carriageway alignment will be maintained as existing, changes to widen the Colham Green Road entrance will improve pedestrian crossing facilities across the entrance junction.

4.13.5 The Healthy Streets Check has been undertaken for each segment for both Phase 1b and Phase 2 and is summarised below. Phase 1b is detailed in Table 4.12 and Phase 2 is detailed in Table 4.13. Full outputs of the Healthy Streets Check for each segment for both phases are contained in Appendix D.

Summary of Phase 1b results

Table 4.12: Healthy Streets Check for Designers – scoring outputs for Phase 1b

Healthy Streets Indicators' scores (%)	Segment 1	Segment 2	Segment 3	Segment 4
Pedestrians from all walks of life	70	67	58	56
Easy to cross	70	63	67	56
Shade and Shelter	83	67	50	50
Places to stop and rest	78	89	78	72
Not too noisy	73	53	53	53
People choose to walk, cycle, and use public transport	70	67	58	56
People feel safe	71	63	62	59
Things to see and do	80	87	60	53
People feel relaxed	70	68	59	57
Clean Air	75	50	50	50
Overall Healthy Streets Check Score	72	67	60	57
Number of 'Zero' scores	0	4	2	2

Phase 1b Segment 1

4.13.6 Segment 1 generally scored best overall. The lowest scores were for 'pedestrians from all walks of life', 'easy to cross', 'people choose to walk, cycle, and use public transport', and 'people feel relaxed', mainly due to the volume of traffic on Royal Lane and due to the fact that there are no bus stops located in this segment.

4.13.6.1 The highest scores were for the categories 'shade and shelter', 'things to see and do' and 'places to stop and rest', due to the distance between shelters being less than 50m, and due to closely spaced tree canopies (less than 15m apart on average).

4.13.7 No 'zero' scores were obtained which only occur where there is a known high-risk road danger.

Phase 1b Segment 2

4.13.8 Segment 2 received the second best scores overall in general. The lowest scores were for 'easy to cross', 'not too noisy', 'people feel safe', and 'clean air'. This is mainly due to the number of vehicles on the road, no separate cycle lane and lack of trees. It also scored low on 'clean air' due to high concentrations of NO21 and due to no access restrictions for motorised traffic.

4.13.9 The highest scores were from the categories 'places to stop and rest' and 'things to see and do' due to multiple factors combined together, such as cyclists being separated from pedestrians and natural surveillance.

4.13.10 Four 'zero' scores were obtained; this is due to there being no cycle lane and the interaction between large vehicles and people and cycling is greater than 5% of motorised traffic.

Phase 1b Segment 3

4.13.11 Segment 3 scores were in general the third best. The lowest scores were for 'not too noisy', 'shade and shelter', 'pedestrians from all walks of life', 'people choose to walk, cycle and use public transport', and 'people feel relaxed'. This is due to the number of vehicles on the road and there being no cycle lane. It also scored low on 'clean air' due to high concentrations of NO21 and due to no access restrictions for motorised traffic.

4.13.12 The highest score was from the category 'places to stop and rest'. Included in this category are 'width of clear continuous walking space', 'surveillance of public spaces, 'street trees', 'planting at footway-level', and 'walking distance between resting points'. All of these categories scored high except for 'walking distance between resting points'.

4.13.13 Two 'zero' scores were obtained, this is due to there being no cycle lane and the interaction between large vehicles and people and cycling is greater than 5% of motorised traffic.

Phase 1b Segment 4

4.13.14 Segment 4 scored lowest in all of the categories except 'places to stop and rest'. This is due to the speed of the motorised traffic, traffic noise, high concentrations of NO21, no restrictions for motorised traffic, side roads only having dropped kerbs, no additional features to support people using controlled crossings, no resting points and no bus lane.

4.13.15 The highest score was from the category 'places to stop and rest'. Included in this category 'width of clear continuous walking space', 'surveillance of public spaces, 'street trees', 'planting at footway-level', and 'walking distance between resting points'. All of these categories scored high except for 'walking distance between resting points'.

4.13.16 Two 'zero' scores were obtained, this is due to there being no cycle lane and the interaction between large vehicles and people and cycling is greater than 5% of motorised traffic.

Summary of Phase 2 results

Table 4.13: Healthy Streets Check for Designers – scoring outputs for Phase 2

Healthy Streets Indicators' scores (%)	Segment 1	Segment 2	Segment 3	Segment 4
Pedestrians from all walks of life	70	67	64	56
Easy to cross	70	63	56	48
Shade and Shelter	83	67	50	50
Places to stop and rest	78	89	78	67
Not too noisy	73	53	60	53
People choose to walk, cycle, and use public transport	70	67	64	56
People feel safe	71	63	68	59
Things to see and do	80	87	60	53
People feel relaxed	70	68	65	57
Clean Air	75	50	50	50
Overall Healthy Streets Check Score	72	67	64	56
Number of 'Zero' scores	0	4	0	0

Phase 2 Segment 1

4.13.17 There are no changes to the Healthy Streets Check of Segment 1 between Phase 1b and 2.

Phase 2 Segment 2

4.13.18 There are no changes to the Healthy Streets Check of Segment 2 between Phase 1b and 2.

Phase 2 Segment 3

4.13.19 There is a slight increase in the overall Healthy Streets Check Score for Segment 3 in Phase 2. This is predominantly due to the decrease in HDV% due to the diversion of buses, and the provision of a pedestrian/cycle corridor on the southern side of the carriageway.

Phase 2 Segment 4

4.13.20 There is a slight increase in the overall Healthy Streets Check Score for Segment 3 in Phase 2. This is predominantly due to the decrease in HDV% due to the diversion of buses and the improved crossing provision on the Colham Green Road Hospital access junction.

4.14 Road Safety Audits

4.14.1 A stage 1 Road Safety Audit (RSA) has been carried out on all proposed highway network changes in the first week of April 2022.

5 Active Travel Zone Assessment

5.1 Introduction

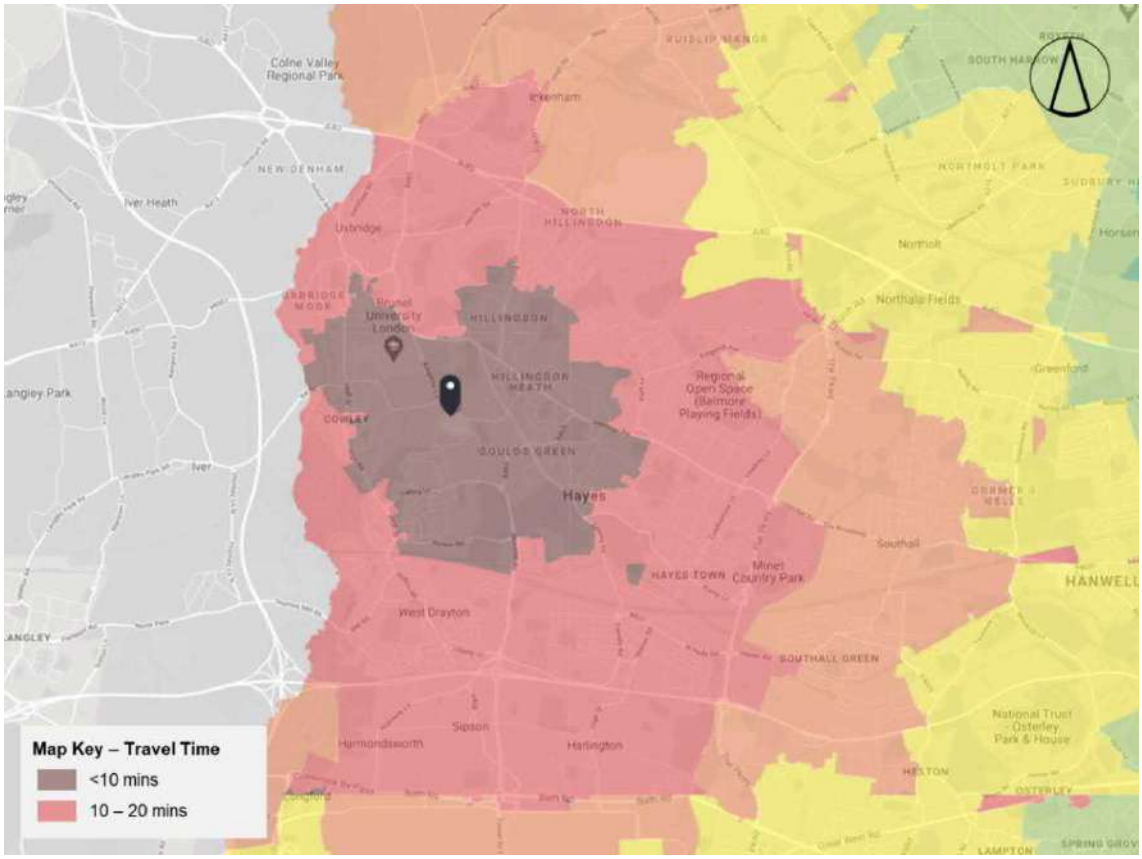
5.1.1.1 This section provides a summary of the ATZ assessment which has been undertaken in the local area. The full assessment, including observations and recommendations for improvement are included in Appendix E.

5.1.2 The Active Travel Zone (ATZ) assessment is a qualitative analysis of the walking and cycling network surrounding the site. The methodology has been developed by TfL to support Healthy Streets and Vision Zero. The ATZ assessment considers improvements that can be made to the surrounding key routes, that will contribute to enabling and promoting sustainable travel for people of all abilities.

5.1.3 The ATZ process that has been followed is detailed in TfL's ATZ Assessment Instructions.

5.1.4 Figure 5.1 shows a 20-minute cycle catchment surrounding the hospital, taken from TfL's WebCAT tool.

Figure 5.1: WebCAT 20-Minute Cycle Journey Time



Source: TfL WebCAT

5.1.5 As indicated by the 20-minute cycle catchment in Figure 5.1, the area examined under the ATZ assessment focuses on key routes and key trip attractors, which includes:

- Brunel University London
- Uxbridge Town Centre
- Uxbridge Underground
- Uxbridge Bus Station
- West Drayton Station
- Hayes and Harlington Station
- Nearby schools
- Nearby facilities and amenities

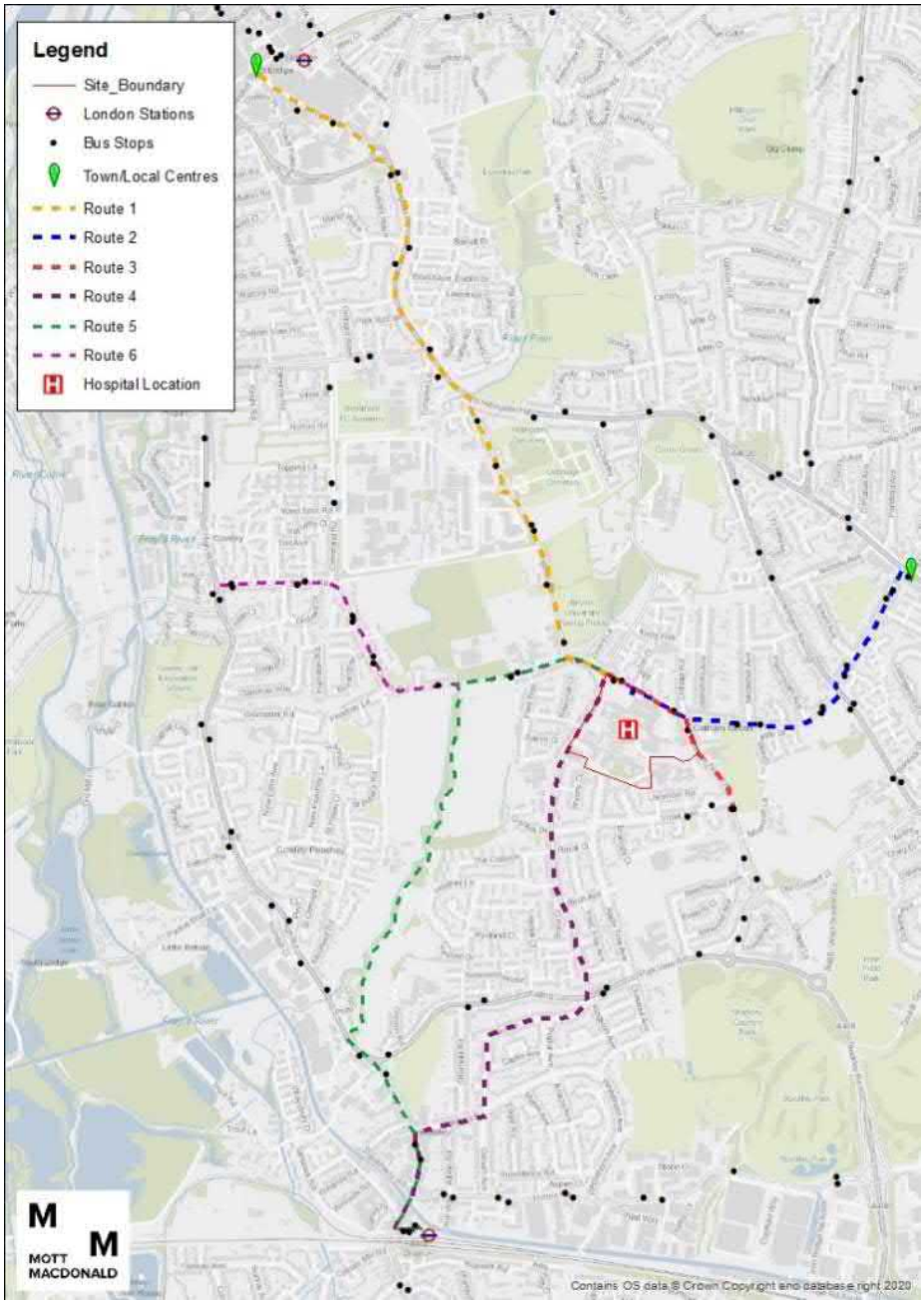
5.2 ATZ Assessment

5.2.1 A localised ATZ map has been produced, identifying six key routes for the assessment. Figure 5.2 below details the routes classified for the ATZ assessment. The routes are broken down in Table 5.1.

Table 5.1: ATZ Route Identification

Route Number	Route Name
Route 1	Walking and Cycling Route to Uxbridge Station
Route 2	Walking and Cycling route to Hillingdon Convenience Stores
Route 3	Walking route to Colham Green Bus Stops
Route 4	Walking route to West Drayton Station
Route 5	Cycling Route to West Drayton Station
Route 6	Exploratory Route to Cowley

Figure 5.2: ATZ Neighbourhood Mapping



5.3 Summary

5.3.1.1 The observations and recommendations of the six routes are summarised below in Table 5.2.

Table 5.2: ATZ Observations and Recommendations

Route No.	Observation	Healthy Street Indicator	Recommendations
1	No dedicated cycle crossing facilities/provision – cyclists to turn with vehicle movements No visible pedestrian crossing facilities, slight change of route to cross safely.	*Pedestrians from all walks of life* *People feel relaxed* *People feel safe* *Easy to cross*	Provide on road cycle symbols and turn areas to alert other road users to the presence of cyclists and for way finding. Provide dropped kerbs/ramps to enable crossing across the junction.
2	No dedicated cycle provisions – either at traffic signals or on road. Pedestrians have to cross four times to reach other side of carriageway. Minimal barriers from vehicle traffic.	*Clean Air* *Easy to cross* *Not too noisy* *People feel safe*	Provide cycle signage on road, to indicate cyclists are moving and dedicated crossing boxes, to reduce interaction with vehicles. Potential for green infrastructure to reduce noise and vehicle emissions.
3	Half on/half off road parking restricting footway width and effectiveness. Residential Bollards reducing footway width capacity (also reducing risk of on road parking).	*Pedestrians from all walks of life*	Improve parking management and restrict on-kerb parking along Colham Green Road. Potential to increase footway with bollards in place, to reduce impact of footway disruptions (bin collections).
4	Obstructions in footway, to reduce available footway width to all users. Vehicles parked on the footway. Levels of on-street parking. No wayfinding information.	*Pedestrians from all walks of life* *Easy to cross* *Not too noisy*	Reduce the amount of on-footway parking to enable all road users to access. Reduce the number of obstructions in the footway. Provide better wayfinding information (station info and things to see and do).
5	No clear junction and provision for cycle movements turning left or right. No clear lighting for vision in early mornings/late evenings. No wayfinding information (which way to which amenities).	*People feel safe* *Easy to cross* *People choose to walk and cycle*	Improve junction access to Celadine Way, with clear cycle markings on road and in junction. This will alert cyclists to the entrance, and also vehicles to the presence of cyclists. Add lighting bollards to junction and to the route to enable clearer vision and movements to feel safer. Add in additional wayfinding information on road infrastructure. Highlights available routes and could encourage additional cyclist if given more information.

6	Clear cycle infrastructure, with dedicated lanes. This makes it noticeable for both pedestrians and vehicle movements. Tactile Paving between cycle lanes, accessible for pedestrians of all backgrounds. No tactile crossing to other side of carriageway.	*Easy to cross* *People choose to walk and cycle* *Everyone feels welcome*	Highlight and promote infrastructure and connectivity more widely, if route is known, more people can utilise it. Add additional pedestrian crossing alongside cycle infrastructure.

6 Travel Demand

6.1 Introduction

6.1.1 This section describes how multi-modal travel demand has been recorded at the current hospital and how future travel demand for the new hospital is forecast. This section also describes how trips are distributed and assigned, again based on existing catchment data.

6.1.2 As a new hospital will be provided in place of the existing hospital through the redevelopment, data on hospital-based travel demand has been thoroughly investigated as part of the development of a baseline Clinical Travel Demand Model (CTDM).

6.1.3 The spreadsheet based CTDM provides the foundations of the assessment, enabling current travel demand associated with the hospital to be forecast based existing staff and patient numbers. The future redevelopment travel demand has then been forecast based on corresponding staff and patient number changes (Scenario 1) and based on the development and implementation of a comprehensive, tailored, and targeted transport strategy (Scenario 2).

6.1.4 The different scenarios examined for travel demand generated by the site are shown in Figure 6.1.

Figure 6.1: Travel Demand Scenarios

Trip generation	Phase 1	Phase 2
Scenario 1 travel demand representing no significant changes to travel and accessibility at the site	New Hospital operational	New Hospital operational and residential development fully occupied
Scenario 2 travel demand representing the implementation of a targeted sustainable transport strategy and mobility enhancements which aid to increase the sustainable mode share.	New Hospital operational	New Hospital operational and residential development fully occupied

6.1.5 As part of the redevelopment of the hospital, residential dwellings are proposed for the opportunity site. The travel demand for the residential development is an addition to the current hospital baseline demand. The travel demand for residential are calculated using TRICs and expanded in Section 6.6.

Future Site Uses

6.1.6 The proposals comprise the redevelopment of the site to deliver a new hospital, enabling full demolition of the existing hospital and construction of a new mixed-use development. Table 6.1 below explains the site areas and the description of each use type.

Table 6.1: Future Site Uses

Site Area	Use Type	Description	Indicative Quantum
New Hospital	Hospital	Hospital	79,603.6 sqm GIA
Opportunity Site	Residential	Residential	327 dwellings

6.2 Scoping

6.2.1 Mott MacDonald consulted on the proposed approach with LBH and TfL, which included surveys undertaken in February 2021. This was a time when the UK was in national lockdown due to the COVID 19 pandemic which suppressed traffic and general travel demand. Results from the February 2021 surveys show that daily traffic volumes were at roughly 50% lower than the pre-COVID period (2018/19 DfT data). Therefore, it was agreed with TfL and LBH that these surveys could not be used as a post covid baseline for the assessment.

6.2.2 Upon consultation with various stakeholders, it was requested that new surveys be carried out in November 2021. It was clarified by TfL that the November 2021 surveys would be accepted as a post covid baseline and assessment could be developed on a 2021 baseline year.

6.2.3 On this basis, a survey specification note was prepared and agreed with LBH and TfL, and surveys were carried out in November 2021.

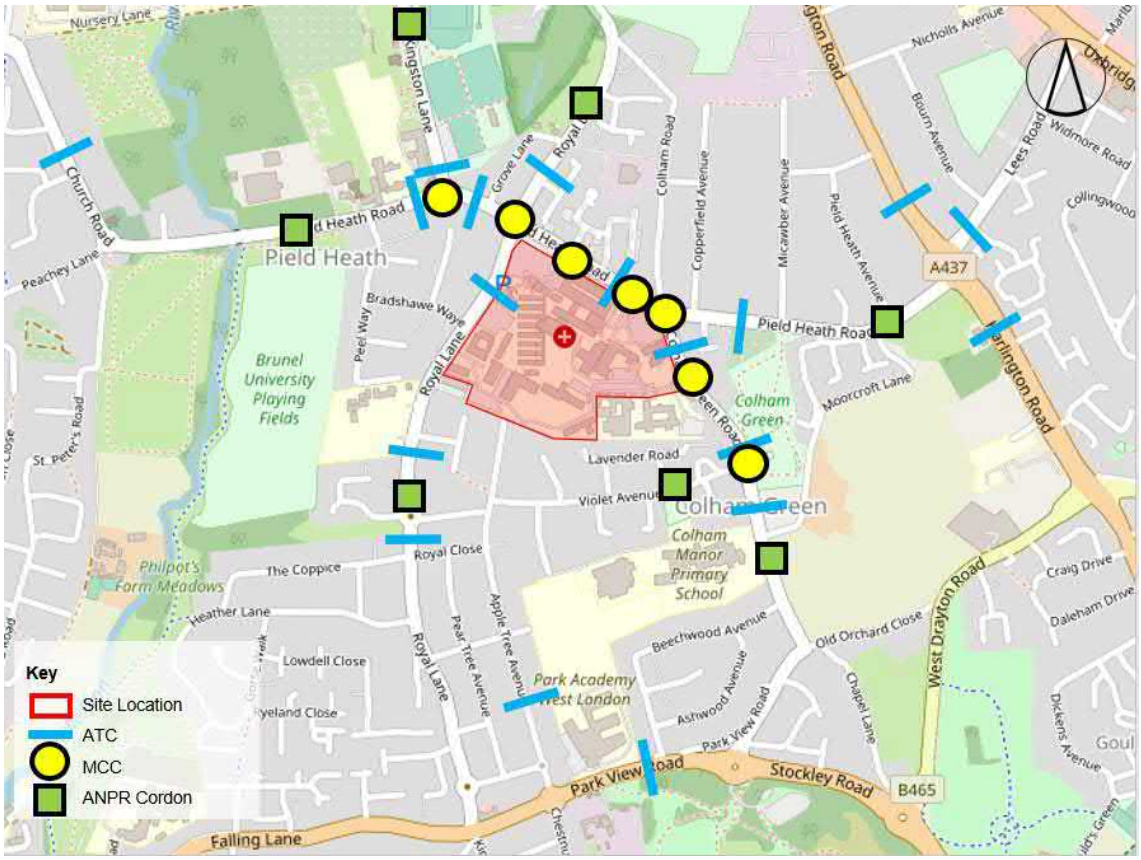
6.2.4 Traffic surveys were collected in November 2021 to understand the current traffic flow levels on the highway network surrounding the hospital. TRICs surveys were also carried out in 2018, which provides hospital trip generation data for the pre-COVID period. This more accurately represents ‘typical’ hospital operation and associated vehicle movements.

6.2.5 As a result of this, a Clinical Travel Demand Model (CTDM) has been developed to forecast travel demand at the hospital. The baseline approach utilises existing data provided by the Trust through both past and on-going monitoring of clinical travel demand. The baseline CTDM has then been validated against the November 2021 surveys and 2018 TRICs survey data. The future assessment scenarios are based on analysis of how clinical demand is expected to differ compared to current activity levels.

6.3 November 2021 Surveys

6.3.1 The November 2021 surveys were scoped to verify the baseline Clinical Travel Demand Model (CTDM), which represents typical travel patterns at the site. The data gathered covers the wider study area and captures 24-hour turning movements, link flows, speeds, and origin destination data. This has been gathered at the Automatic Traffic Counters (ATC), Manual Classified Counts (MCC) and Automatic Number Plate Recognition (ANPR) survey sites shown in Figure 6.2.

Figure 6.2: November 2021 MCC, ATC, and ANPR Survey Scope



6.3.2 Several additional surveys were undertaken, which are set out below:

- Ambulance Yard link count
- Delivery and Servicing observations
- Pedestrian flows
- Queue lengths
- Saturation flows
- Vehicle occupancy counts
- Waste Compound link counts

6.3.3 The ATCs report on volumes of traffic, mean speeds, and 85th percentile speeds, at the specified points on the local highway network. The ATCs report the volume of traffic of each of the following vehicle classifications:

- Bicycle
- Motorcycle
- Car
- Bus
- LGV
- HGV
  - 2 Axled Rigid Lorry
  - 3 Axled Rigid Lorry

- 4 Axled Rigid Lorry
- 3 Axled Articulated Lorry
- 4 Axled Articulated Lorry
- 5+ Axled Articulated Lorry

6.3.4 MCCs were also undertaken and report the turning flows at each specified junction. The MCCs surveyed the same types of vehicles as the ATCs, as well as ambulance vehicles and patient transport vehicles.

6.3.5 ANPR surveys were also undertaken, which report on the origin and destination of vehicles trips within the study area, the journey times for vehicle trips within the study area, and the dwell time of vehicles on the hospital site.

6.3.6 The surveys showed 4,423 vehicles arriving at the hospital site, and 4,383 vehicles departing over a 24-hour period. Of these, 29 of the arrivals, and 26 of the departures were HGV trips.

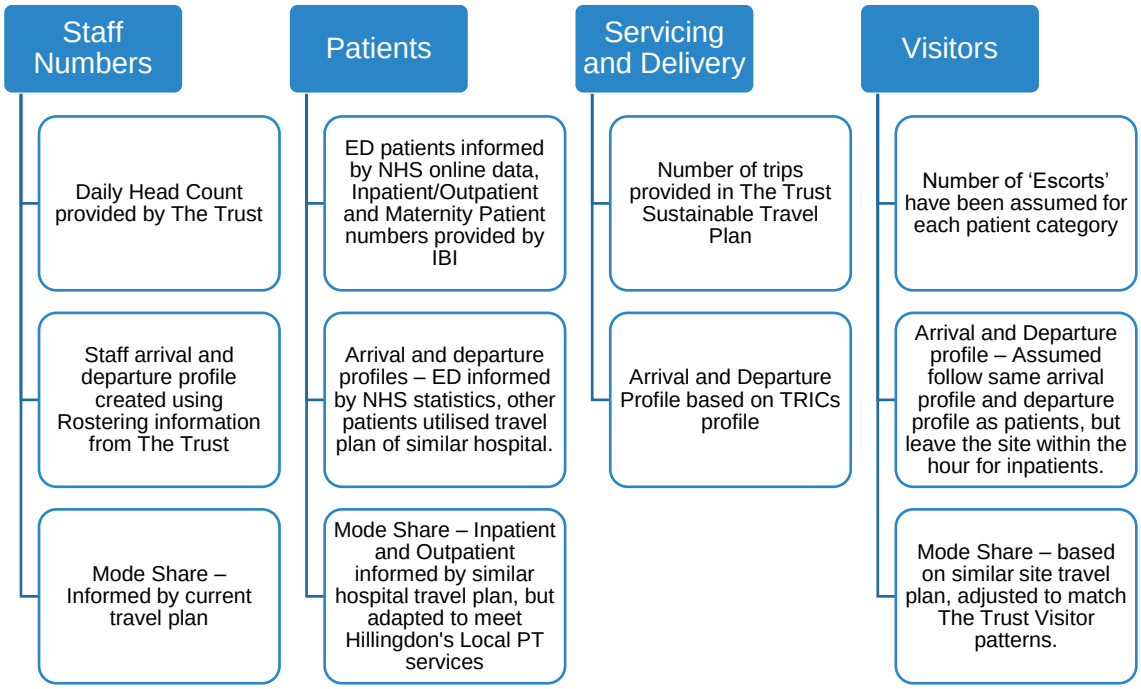
6.4 Baseline Hospital Travel Demand

6.4.1 A baseline Clinical Travel Demand Model (CTDM) has been developed incorporating the most recent and available data. The model has used a variety of data sets provided by The Trust, IBI and sourced from the NHS Hospital Activity Statistics.

6.4.2 The CTDM has been built from the ground up, beginning with coarse input data and applying various statistics on mode share, arrival times, dwell times and servicing and delivery patterns for both patients and staff, all based on information provided by The Trust. This has enabled the development a 24-hour multi-modal person-based travel demand profile representing current hospital operation.

6.4.3 A breakdown of the input data for different hospital user groups and trip types is provided below and shown in Figure 6.3.

Figure 6.3: Baseline CTDM Inputs Summarised



Source: Mott MacDonald

- Staff
  - Total staff number on-site on a typical weekday (from The Trust)
    - Total person trips
  - Breakdown of staff numbers per role (nurses, doctors, clerical, and admin etc.) (from The Trust)
  - Typical breakdown of shift times per role (from The Trust)
    - Arrival and departure profile, assumption made staff arrive at The Trust 30 minutes before the designated shift start time.
  - Mode share from (from The Trust)
    - Mode Share arrival and departure profiles (fluctuates over a 24hr period to reflect Public Transport Operation Hours)
- Patients
  - Breakdown of Patients into broad a category to reflect needs and profiles
    - Inpatients, Outpatients, Accident and Emergency patients (including Urgent Treatment Centre) and Maternity Patients.
  - Total Number of Patients (provided by IBI)
    - Breakdown of monthly/weekly daily profiles informed by NHS Statistics
  - Arrival and Departure Profiles
    - Differ for each patient category and informed using York Hospital Travel Plan and NHS Statistics
  - Mode Share (informed by York Travel Plan and NHS Statistics)

        - Mode Share of patients differ per category, Accident and Emergency uses number of ambulance arrivals to The Trust to provide a mode share choice. Inpatients, Outpatients and Maternity all use York Travel Plan mode share.
- Visitors
  - Visitors split to correlate with patient breakdown
    - Number of visitors per patient has been assumed.
    - Inpatients and Maternity Patients have additional 'Visitor Escort' trips which follow the same profile as the patients, but utilise a different mode share (these are primarily car drivers)
  - Arrival and Departure Profiles
    - Visitor times per patient type (from The Trust)
  - Mode Share Profiles
    - Mode share split per visitor type across all patient type. This has been based in York Travel plan but manipulated to become more representative
- Facilities Management
  - Total number of servicing trips per day (provided by The Trust)
  - Mode Share profile
    - Number of trips per mode (LGV/HGV/Car) informed using TRICs 2018 survey on site.
  - Arrival and Departure Profile
    - Assumed the same arrival and departure profile captured in TRICs 2018 survey.

6.4.4 The baseline CTDM has been validated against the 2018 TRICs surveys and November 2021 surveys, and is considered to represent hospital activity prior to the implications of the COVID-19 pandemic.

6.4.5 Table 6.2 details the arrival movements, by mode for the hospital. There is a total of 10,033 arrival trips within a 24hr period, with Car Driver primary mode share at 46%, with 4,597 trips. Active and sustainable travel modes (walk, cycle and bus) have a combined percentage of 27%, with 2,708 trips. The busiest arrival period is between 08:00-08:59 with 14% of arrivals and 1,399 trips. 07:00-07:59 is second busiest with 1,307 arrivals (13%). The predominate arrival periods is between 06:00-20:59, with 96% of arrivals. 4% of arrivals, 402 trips, arrive during the early morning or late evening hours.

6.4.6 The corresponding departure mode is displayed in Table 6.3. There is a total of 10,093 departure trips within a 24hr period. The difference between arrival and departure figures are inpatient and accident and emergency patients. Accident and Emergency patients' departures can be the day after they arrive at the hospital, depending on their arrival and treatment times. Information from NHS Summary Data has been used to calculate the departure profiles. Car Driver is the primary mode choice, utilised for 45% of all trips, with 4,579 trips. The busiest period for departures is 16:00-16:59, with 10% and 973 movements. This is primarily related to staff shift timings. The primary departure period is between 07:00-20:59, 93% of all departures and 9,414 movements. The early morning and late evening witness 679 movements.

6.4.7 Total movements by mode for the hospital are shown in Table 6.4. There is a total of 20,126 trips within a 24hr period. Again 'Car Driver' is the primary mode of transport to the site, with 46% mode share. The busiest hour on a typical day is between 08:00-08:59, with a total of 2,001 movements, 10% of all trips in a 24 hour period. The primary period for hospital trips is between 07:00 and 20:59, with 94% of the trips in this period. 4% of all trips are in the in the early morning and late evening period.

Table 6.2: Baseline Hospital Demand Total Arrivals by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	10,033	1,014	59	4,597	2,207	1,635	203	93	71	133	17	4
00:00-00:59	0%	31	0	0	18	9	0	1	3	0	0	0	0
01:00-01:59	0%	23	0	0	13	7	0	1	3	0	0	0	0
02:00-02:59	0%	22	0	0	14	6	0	1	3	0	0	0	0
03:00-03:59	0%	19	0	0	10	5	0	0	2	0	1	0	0
04:00-04:59	0%	20	0	0	12	7	0	0	0	0	0	0	0
05:00-05:59	0%	48	0	0	28	5	0	0	2	0	10	1	0
06:00-06:59	2%	220	21	5	97	50	38	2	2	0	4	1	0
07:00-07:59	13%	1,307	166	17	533	305	244	21	3	10	8	1	0
08:00-08:59	14%	1,399	170	15	577	333	255	25	5	12	7	1	0
09:00-09:59	7%	730	76	4	312	175	120	15	4	7	14	2	0
10:00-10:59	6%	641	62	2	272	161	101	14	4	7	15	2	0
11:00-11:59	6%	595	56	1	255	149	93	14	5	6	14	2	0
12:00-12:59	6%	605	60	2	270	141	96	13	5	5	10	1	0
13:00-13:59	6%	647	64	1	304	131	105	14	5	5	15	2	0
14:00-14:59	7%	652	66	2	308	134	108	14	5	5	8	1	0
15:00-15:59	6%	633	63	1	300	127	104	14	5	5	11	1	0
16:00-16:59	6%	552	55	2	265	111	89	12	5	4	8	1	0
17:00-17:59	5%	496	48	1	246	99	80	11	5	3	2	0	0
18:00-18:59	5%	490	47	1	243	98	78	11	6	3	3	0	0
19:00-19:59	4%	377	27	4	218	57	58	7	5	0	1	0	0
20:00-20:59	3%	289	23	2	167	42	44	6	4	0	1	0	0
21:00-21:59	2%	151	10	0	86	27	19	3	4	0	1	0	0
22:00-22:59	1%	52	0	0	29	16	2	1	4	0	0	0	0
23:00-23:59	0%	36	0	0	19	12	0	1	4	0	0	0	0

Table 6.3: Baseline Hospital Demand Total Departures by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	10,093	1,017	53	4,579	2,277	1,646	202	93	70	133	17	4
00:00-00:59	0%	35	0	0	20	11	0	1	3	0	0	0	0
01:00-01:59	0%	28	0	0	15	9	0	1	3	0	0	0	0
02:00-02:59	0%	24	0	0	13	8	0	1	3	0	0	0	0
03:00-03:59	0%	20	0	0	10	7	0	0	2	0	0	0	0
04:00-04:59	0%	20	0	0	12	7	0	0	0	0	0	0	0
05:00-05:59	0%	42	0	0	20	8	0	1	2	0	10	1	0
06:00-06:59	1%	53	4	0	22	14	6	1	2	0	3	0	0
07:00-07:59	4%	422	48	3	171	102	75	8	3	4	7	1	0
08:00-08:59	6%	602	63	3	256	145	100	12	5	5	11	1	0
09:00-09:59	8%	843	85	3	359	209	138	18	4	8	15	2	0
10:00-10:59	7%	682	65	1	295	171	108	15	4	7	14	2	0
11:00-11:59	6%	646	62	1	275	164	104	15	5	7	11	1	0
12:00-12:59	7%	660	66	2	276	166	108	14	5	7	14	2	0
13:00-13:59	6%	641	64	2	279	148	105	14	5	6	15	2	0
14:00-14:59	7%	737	77	3	339	158	125	16	5	6	7	1	0
15:00-15:59	8%	802	86	5	360	176	136	16	5	5	11	1	0
16:00-16:59	10%	973	113	10	420	225	169	17	5	5	8	1	0
17:00-17:59	8%	850	100	10	369	197	147	14	5	4	3	0	0
18:00-18:59	6%	614	65	4	297	121	103	12	6	3	2	0	0
19:00-19:59	6%	557	54	1	283	104	94	11	5	3	1	0	0
20:00-20:59	4%	385	35	2	221	53	62	7	4	0	1	0	0
21:00-21:59	3%	269	20	0	158	36	43	5	4	0	2	0	0
22:00-22:59	1%	147	9	0	88	23	20	3	4	0	0	0	0
23:00-23:59	0%	41	0	0	21	14	1	1	4	0	0	0	0

Table 6.4: Baseline Hospital Demand Total Movements by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	20,126	2,031	112	9,176	4,484	3,281	405	186	141	266	34	8
00:00-00:59	0%	67	0	0	39	20	0	2	6	0	0	0	0
01:00-01:59	0%	51	0	0	28	16	0	1	6	0	0	0	0
02:00-02:59	0%	47	0	0	27	13	0	1	5	0	0	0	0
03:00-03:59	0%	38	0	0	19	12	0	1	5	0	1	0	0
04:00-04:59	0%	40	0	0	25	14	0	1	0	0	0	0	0
05:00-05:59	0%	89	0	0	48	13	0	1	5	0	20	3	0
06:00-06:59	1%	273	25	5	118	64	44	3	5	0	7	1	0
07:00-07:59	9%	1,728	214	20	704	406	318	29	6	14	15	2	0
08:00-08:59	10%	2,001	233	18	833	478	355	37	9	17	18	2	0
09:00-09:59	8%	1,573	161	7	671	384	259	33	9	15	30	4	1
10:00-10:59	7%	1,322	126	3	566	332	210	30	9	14	29	4	1
11:00-11:59	6%	1,241	119	3	530	314	197	28	9	13	25	3	1
12:00-12:59	6%	1,265	126	5	546	307	205	27	10	12	25	3	1
13:00-13:59	6%	1,288	128	4	584	279	210	28	10	10	31	4	1
14:00-14:59	7%	1,389	143	4	647	293	233	30	10	10	15	2	1
15:00-15:59	7%	1,435	149	6	660	304	241	30	10	10	22	3	1
16:00-16:59	8%	1,525	168	12	685	336	258	29	11	9	15	2	1
17:00-17:59	7%	1,346	148	11	615	296	227	26	10	7	4	1	1
18:00-18:59	5%	1,104	112	5	540	219	182	23	11	6	4	1	1
19:00-19:59	5%	934	82	5	501	161	152	18	9	3	2	0	1
20:00-20:59	3%	674	59	3	388	95	106	12	8	0	2	0	1
21:00-21:59	2%	420	30	1	244	64	62	9	8	0	3	0	0
22:00-22:59	1%	199	9	0	117	38	22	4	8	0	0	0	0
23:00-23:59	0%	77	0	0	40	26	1	2	7	0	0	0	0

6.4.8 The CTDM has been developed to include car park accumulation, service yard utilisation and ambulance yard movements, to inform the proposed design so that it can provide sufficient provision in each area of the site.

6.4.9 Table 6.5 displays the combined car park accumulation for a typical 24-hr period. Overnight parking accumulation is calculated to be 209 spaces, this includes night staff and overnight patients. Parking accumulation is at its highest in the 08:00-08:59 period, where it peaks at 971 vehicles. This is a combination of staff, inpatients, and outpatients, being the primary contributors. Car Driver is the primary mode share, with car park accumulation primarily following the arrival and departure profiles for total movements.

Table 6.5: Car parking accumulation

24Hr Parking Demand - Total

Time Period	Arrivals	Departures	Parking Accumulation
24-hour	4597	4579	
00:00-00:59	18	20	207
01:00-01:59	13	15	204
02:00-02:59	14	13	204
03:00-03:59	10	10	204
04:00-04:59	12	12	204
05:00-05:59	28	20	213
06:00-06:59	97	22	288
07:00-07:59	533	171	650
08:00-08:59	577	256	971
09:00-09:59	312	359	924
10:00-10:59	272	295	901
11:00-11:59	255	275	881
12:00-12:59	270	276	875
13:00-13:59	304	279	900
14:00-14:59	308	339	869
15:00-15:59	300	360	810
16:00-16:59	265	420	656
17:00-17:59	246	369	532
18:00-18:59	243	297	478
19:00-19:59	218	283	414
20:00-20:59	167	221	359
21:00-21:59	86	158	287
22:00-22:59	29	88	228
23:00-23:59	19	21	226

6.4.10 Table 6.6 displays the total service yard accumulation over a typical 24-hr period. The number of trips, 150, has been calculated using the trusts sustainable travel plan with the profile based on the TRICs 2018 surveys. The service yard movements start at 03:00, but most activity is between 05:00 and 18:59, when there are 146 arrivals and 146 departures. The busiest hour for service yard movements is 13:00-13:59, when there is 17 arrivals and 17 departures. The service yard parking reaches a maximum peak of 12 vehicles in the 07:00-07:59 hour.

Table 6.6: Service Yard Accumulation

24Hr Service Yard Demand

Time Period	Arrivals	Departures	Service Yard Accumulation
Total	150	150	
00:00-00:59	0	0	7
01:00-01:59	0	0	7
02:00-02:59	0	0	7
03:00-03:59	1	0	8
04:00-04:59	0	0	8
05:00-05:59	11	11	8
06:00-06:59	5	3	10
07:00-07:59	10	8	12
08:00-08:59	8	12	7
09:00-09:59	16	17	6
10:00-10:59	17	15	8
11:00-11:59	15	12	11
12:00-12:59	11	16	6
13:00-13:59	17	17	6
14:00-14:59	10	8	8
15:00-15:59	12	12	8
16:00-16:59	9	9	8
17:00-17:59	2	3	7
18:00-18:59	3	2	8
19:00-19:59	1	1	8
20:00-20:59	1	1	8
21:00-21:59	1	2	7
22:00-22:59	0	0	7
23:00-23:59	0	0	7

6.4.11 Table 6.7 displays the total ambulance yard movements. An average of 93 ambulances arrive at Hillingdon Hospital each day, over a 24-hr period. This has been calculated from the NHS Summary data for Hillingdon and average ambulance arrivals across the day. It has been assumed that the departures are within the hour of arrival. The busiest period is between 18:00-18:59 with 6 ambulance arrivals, and 6 departures. The maximum yard accumulation is 4, this is consistent throughout the day.

Table 6.7: Ambulance Yard Movements

24Hr Ambulance Parking Demand

Time Period	Arrival	Departures	Ambulance Yard Parking
Total	93	93	
00:00-00:59	3	3	4
01:00-01:59	3	3	4
02:00-02:59	3	3	4
03:00-03:59	2	2	4
04:00-04:59	0	0	4
05:00-05:59	2	2	4
06:00-06:59	2	2	4
07:00-07:59	3	3	4
08:00-08:59	5	5	4
09:00-09:59	4	4	4
10:00-10:59	4	4	4
11:00-11:59	5	5	4
12:00-12:59	5	5	4
13:00-13:59	5	5	4
14:00-14:59	5	5	4
15:00-15:59	5	5	4
16:00-16:59	5	5	4
17:00-17:59	5	5	4
18:00-18:59	6	6	4
19:00-19:59	5	5	4
20:00-20:59	4	4	4
21:00-21:59	4	4	4
22:00-22:59	4	4	4
23:00-23:59	4	4	4

6.5 Hospital Redevelopment Future Travel Demand Scenarios

Scenario 1

6.5.1 Scenario 1 represents no significant changes to travel and accessibility at the site, with the trip generation based on forecast changes in staff and patient numbers from IBI. The purpose of this scenario is to identify the traffic generation forecast if the hospital was redeveloped with no new interventions beyond those which are currently in place. This is named the Predict and Provide approach.

6.5.2 According to 2018/19 numbers supplied by IBI, there are 3,544 WTEs (Whole Time Equivalents) staff at the existing hospital. This is expected to rise to 3,597 WTEs with the redevelopment, which is an increase of 1.4%. It has also been forecast that approximately 200 staff will work from home or remotely with the redevelopment. Therefore, it is forecast that there will be 3,397 WTEs that work on-site, which is an overall reduction when compared to the existing hospital. These staff number changes have been used to forecast the staff trip generation in the Scenario 1 CTDM.

6.5.3 The forecast patient trip generation in the Scenario 1 CTDM has been calculated using the forecast change in patient numbers for the redevelopment supplied by IBI. This change has been calculated using 2019 (pre-covid) patient numbers compared to IBI's 2028 forecast numbers. The change in patient numbers for each patient group has been summarised in Table 6.8.

Table 6.8: Forecast Patient Number Changes

Category	2019	2028	Difference
ED Patients	199,783	180,034	-9.9%
Inpatients	107,250	110,541	3.1%
Outpatients	349,175	294,628	-15.6%
Maternity Patients	4,231	4,338	2.5%
Total	**660,440**	**589,541**	**-10.7%**

Scenario 1 Mode Share

6.5.4 The Scenario 1 mode share is consistent with the one produced in the baseline to demonstrate the impacts of the redevelopment if no modal shift or mitigation measures are put in place. Table 6.9 below displays the Total mode share (combined all patients, staff and visitors, arrivals, and departures) for both the baseline CTDM and Scenario 1 CTDM.

Table 6.9: Scenario 1 Mode Share

Mode	Baseline	Scenario 1
Walk	10%	10%
Cycle	1%	1%
Car Driver	46%	46%
Car Passenger	22%	22%
Bus	16%	16%
Taxi	2%	2%
Emergency Ambulance	1%	1%
Patient Transfer Services	1%	1%
LGV	1%	1%
HGV	0%*	0%*
Rail Users	0%*	0%*

*: 0% shown when mode share <0.5%

Scenario 1 Summary

6.5.5 Table 6.10 details the forecast arrival movements by mode for the hospital in Scenario 1. There is a total of 9,100 arrival trips within a 24hr period. Car Driver is the primary mode share at 46%, with 4,197 trips. Active and sustainable travel modes (walk, cycle and bus) have a combined percentage of 27%, with 2,453 trips. The busiest arrival period is between 08:00-08:59 with 14% of arrivals, with 1,239 trips. 07:00-07:59 is second busiest with 1,152 arrivals (13%). The predominant arrival periods is between 06:00-20:59, with 96% of arrivals. 4% of arrivals, 375 trips, arrive during the early morning or late evening hours.

6.5.6 The Scenario 1 forecast departure trips by mode are displayed in Table 6.11. There is a total of 9,144 departure trips within a 24hr period. The difference between arrival and departure figures are inpatient and accident and emergency patients. Accident and Emergency patients'

departures can be the day after they arrive at the hospital, depending on their arrival and treatment times. Car Driver is the primary mode choice, utilised for 46% of all trips, with 4,176 trips. The busiest period for departures is 16:00-16:59, with 10% and 885 movements. This is primarily related to staff shift timings. The primary departure period is between 07:00-20:59, 93% of all departures and 8,500 movements. The early morning and late evening witness 644 movements (7%).

6.5.7 Table 6.12 displays the combined and total trips by mode for the typical 24-hr period. There is a total of 18,244 trips within a 24hr period. As discussed above, Car Driver is the highest mode share, resulting in 8,373 vehicle trips. The trips for the hospital site are low between the hours of 00:00-05:59, which is expected. The busiest hour for hospital trips in scenario 1 is 08:00-08:59, when there are 1,783 trips in total.

Table 6.10: Scenario 1 Arrival Trips by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	9100	919	54	4197	1967	1480	184	84	62	133	17	4
00:00-00:59	0%	28	0	0	17	8	0	1	3	0	0	0	0
01:00-01:59	0%	21	0	0	12	6	0	1	3	0	0	0	0
02:00-02:59	0%	21	0	0	13	5	0	1	2	0	0	0	0
03:00-03:59	0%	17	0	0	9	5	0	0	2	0	1	0	0
04:00-04:59	0%	18	0	0	11	6	0	0	0	0	0	0	0
05:00-05:59	0%	45	0	0	26	4	0	0	2	0	10	1	0
06:00-06:59	2%	200	19	4	88	45	35	2	2	0	4	1	0
07:00-07:59	13%	1152	146	15	470	267	215	18	3	8	8	1	0
08:00-08:59	14%	1239	150	13	512	294	225	22	4	10	7	1	0
09:00-09:59	7%	654	68	4	279	156	107	13	4	6	14	2	0
10:00-10:59	6%	570	55	2	242	143	89	13	4	6	15	2	0
11:00-11:59	6%	525	49	1	225	131	81	12	4	5	14	2	0
12:00-12:59	6%	548	54	2	246	126	87	12	4	4	10	1	0
13:00-13:59	7%	596	59	1	282	117	97	13	4	4	15	2	0
14:00-14:59	7%	599	61	2	286	120	99	13	5	4	8	1	0
15:00-15:59	6%	582	58	1	279	114	96	13	5	4	11	1	0
16:00-16:59	6%	513	51	2	249	100	83	11	5	3	8	1	0
17:00-17:59	5%	460	45	1	230	89	74	10	5	3	2	0	0
18:00-18:59	5%	452	43	1	226	88	73	10	5	3	3	0	0
19:00-19:59	4%	358	27	4	208	53	56	7	4	0	1	0	0
20:00-20:59	3%	278	23	2	161	39	43	5	4	0	1	0	0
21:00-21:59	2%	145	10	0	82	25	19	3	4	0	1	0	0
22:00-22:59	1%	48	0	0	27	14	2	1	4	0	0	0	0
23:00-23:59	0%	33	0	0	17	11	0	1	3	0	0	0	0

Table 6.11: Scenario 1 Departure Trips by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	9144	921	49	4176	2028	1488	183	84	61	133	17	4
00:00-00:59	0%	32	0	0	19	10	0	1	3	0	0	0	0
01:00-01:59	0%	26	0	0	14	9	0	1	3	0	0	0	0
02:00-02:59	0%	22	0	0	12	7	0	0	2	0	0	0	0
03:00-03:59	0%	18	0	0	9	7	0	0	2	0	0	0	0
04:00-04:59	0%	19	0	0	11	6	0	0	0	0	0	0	0
05:00-05:59	0%	39	0	0	18	7	0	0	2	0	10	1	0
06:00-06:59	1%	51	4	0	21	13	6	1	2	0	3	0	0
07:00-07:59	4%	383	44	3	155	92	67	7	3	4	7	1	0
08:00-08:59	6%	545	57	3	232	130	90	11	4	5	11	1	0
09:00-09:59	8%	748	75	3	319	184	122	16	4	7	15	2	0
10:00-10:59	7%	603	57	1	261	150	95	14	4	6	14	2	0
11:00-11:59	6%	569	54	1	242	144	91	13	4	6	11	1	0
12:00-12:59	6%	581	57	2	243	145	94	13	4	6	14	2	0
13:00-13:59	6%	575	58	2	252	131	94	12	4	5	15	2	0
14:00-14:59	7%	670	70	2	311	141	114	14	5	5	7	1	0
15:00-15:59	8%	732	79	4	331	157	124	14	5	5	11	1	0
16:00-16:59	10%	885	103	9	385	201	154	15	5	4	8	1	0
17:00-17:59	8%	776	91	9	340	177	134	13	5	3	3	0	0
18:00-18:59	6%	560	60	4	274	107	94	11	5	3	2	0	0
19:00-19:59	6%	507	50	1	260	92	86	10	4	3	1	0	0
20:00-20:59	4%	366	34	2	210	49	60	6	4	0	1	0	0
21:00-21:59	3%	260	20	0	153	34	42	5	4	0	2	0	0
22:00-22:59	2%	140	9	0	84	21	20	3	4	0	0	0	0
23:00-23:59	0%	37	0	0	19	13	1	1	3	0	0	0	0

Table 6.12: Scenario 1 Total Trips by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	18244	1839	103	8373	3994	2969	366	168	123	266	34	8
00:00-00:59	0%	61	0	0	36	18	0	1	6	0	0	0	0
01:00-01:59	0%	47	0	0	26	15	0	1	5	0	0	0	0
02:00-02:59	0%	43	0	0	25	12	0	1	5	0	0	0	0
03:00-03:59	0%	35	0	0	18	12	0	1	4	0	1	0	0
04:00-04:59	0%	37	0	0	23	13	0	1	0	0	0	0	0
05:00-05:59	0%	84	0	0	44	12	0	1	4	0	20	3	0
06:00-06:59	1%	251	23	5	109	58	41	3	4	0	7	1	0
07:00-07:59	8%	1535	190	18	626	359	282	25	5	12	15	2	0
08:00-08:59	10%	1783	207	16	744	424	316	33	9	15	18	2	0
09:00-09:59	8%	1402	143	7	599	340	229	29	8	13	30	4	1
10:00-10:59	6%	1173	111	3	503	292	184	26	8	12	29	4	1
11:00-11:59	6%	1093	104	2	467	275	172	25	8	11	25	3	1
12:00-12:59	6%	1130	112	4	489	271	182	24	9	10	25	3	1
13:00-13:59	6%	1171	116	3	534	248	191	25	9	9	31	4	1
14:00-14:59	7%	1269	131	4	597	261	213	27	9	9	15	2	1
15:00-15:59	7%	1314	137	5	609	271	220	27	9	9	22	3	1
16:00-16:59	8%	1398	154	11	633	302	236	26	10	8	15	2	1
17:00-17:59	7%	1235	136	10	570	266	209	23	9	6	4	1	1
18:00-18:59	6%	1012	103	5	500	195	167	21	10	5	4	1	1
19:00-19:59	5%	865	76	5	468	144	141	17	8	3	2	0	1
20:00-20:59	4%	644	57	3	371	88	102	12	7	0	2	0	1
21:00-21:59	2%	404	30	1	235	59	61	8	8	0	3	0	0
22:00-22:59	1%	187	9	0	111	35	21	4	7	0	0	0	0
23:00-23:59	0%	70	1	0	36	24	1	2	6	0	0	0	0

6.5.8 As per the Baseline CTDM, Scenario 1 has modelled car park, ambulance, and service yard accumulation.

6.5.9 Table 6.13 below displays the forecast parking accumulation for Scenario 1. The Scenario 1 parking accumulation is based on the assumption that 199 vehicles are parked on-site at the start of the 24-hour period. Parking accumulation peaks at 08:00-08:59, when there is an accumulation of 866 vehicles. Therefore, the 932 spaces provided upon completion of Phase 1c is sufficient to accommodate the forecast maximum amount of parking.

Table 6.13: Scenario 1 Parking Accumulation

Time Period	Arrivals	Departures	Parking Accumulation
24-hour	4197	4176	
00:00-00:59	17	19	197
01:00-01:59	12	14	195
02:00-02:59	13	12	195
03:00-03:59	9	9	195
04:00-04:59	11	11	195
05:00-05:59	26	18	203
06:00-06:59	88	21	271
07:00-07:59	470	155	586
08:00-08:59	512	232	866
09:00-09:59	279	319	826
10:00-10:59	242	261	806
11:00-11:59	225	242	789
12:00-12:59	246	243	793
13:00-13:59	282	252	823
14:00-14:59	286	311	797
15:00-15:59	279	331	745
16:00-16:59	249	385	609
17:00-17:59	230	340	499
18:00-18:59	226	274	451
19:00-19:59	208	260	398
20:00-20:59	161	210	349
21:00-21:59	82	153	279
22:00-22:59	27	84	221
23:00-23:59	17	19	220

6.5.10 Table 6.14 displays the accumulation of vehicles in the hospitals service yard. The Scenario 1 Service Yard accumulation is based on the assumption that there are seven vehicles parked in the service yard at the start of the 24-hour period. The servicing and delivery profile has been based on the TRICs 2018 survey. Service Yard accumulation peaks at 07:00-07:59, when there is an accumulation of 12 vehicles.

Table 6.14: Scenario 1 Service Yard Accumulation

24Hr Service Yard Demand

Time Period	Arrival	Departures	Parking Accumulation
Total	150	150	7
00:00-00:59	0	0	7
01:00-01:59	0	0	7
02:00-02:59	0	0	7
03:00-03:59	1	0	8
04:00-04:59	0	0	8
05:00-05:59	11	11	8
06:00-06:59	5	3	10
07:00-07:59	10	8	12
08:00-08:59	8	12	7
09:00-09:59	16	17	6
10:00-10:59	17	15	8
11:00-11:59	15	12	11
12:00-12:59	11	16	6
13:00-13:59	17	17	6
14:00-14:59	10	8	8
15:00-15:59	12	12	8
16:00-16:59	9	9	8
17:00-17:59	2	3	7
18:00-18:59	3	2	8
19:00-19:59	1	1	8
20:00-20:59	1	1	8
21:00-21:59	1	2	7
22:00-22:59	0	0	7
23:00-23:59	0	0	7

6.5.11 Table 6.15 displays the ambulance yard accumulation for Scenario 1. The Scenario 1 Ambulance Yard accumulation is based on the assumption that there are three ambulances parked in the service yard at the start of the 24-hour period. It has been assumed that the departures are within the hour of arrival. Therefore, there is a maximum accumulation of three ambulances in the ambulance yard, which stays consistent throughout the 24-hr period.

Table 6.15: Scenario 1 Ambulance Yard Accumulation

24Hr Ambulance Parking Demand

Time Period	Arrival	Departures	Parking Accumulation
Total	84	84	
00:00-00:59	3	3	3
01:00-01:59	3	3	3
02:00-02:59	2	2	3
03:00-03:59	2	2	3
04:00-04:59	0	0	3

24Hr Ambulance Parking Demand

05:00-05:59	2	2	3
06:00-06:59	2	2	3
07:00-07:59	3	3	3
08:00-08:59	4	4	3
09:00-09:59	4	4	3
10:00-10:59	4	4	3
11:00-11:59	4	4	3
12:00-12:59	4	4	3
13:00-13:59	4	4	3
14:00-14:59	5	5	3
15:00-15:59	5	5	3
16:00-16:59	5	5	3
17:00-17:59	5	5	3
18:00-18:59	5	5	3
19:00-19:59	4	4	3
20:00-20:59	4	4	3
21:00-21:59	4	4	3
22:00-22:59	4	4	3
23:00-23:59	3	3	3

Scenario 2

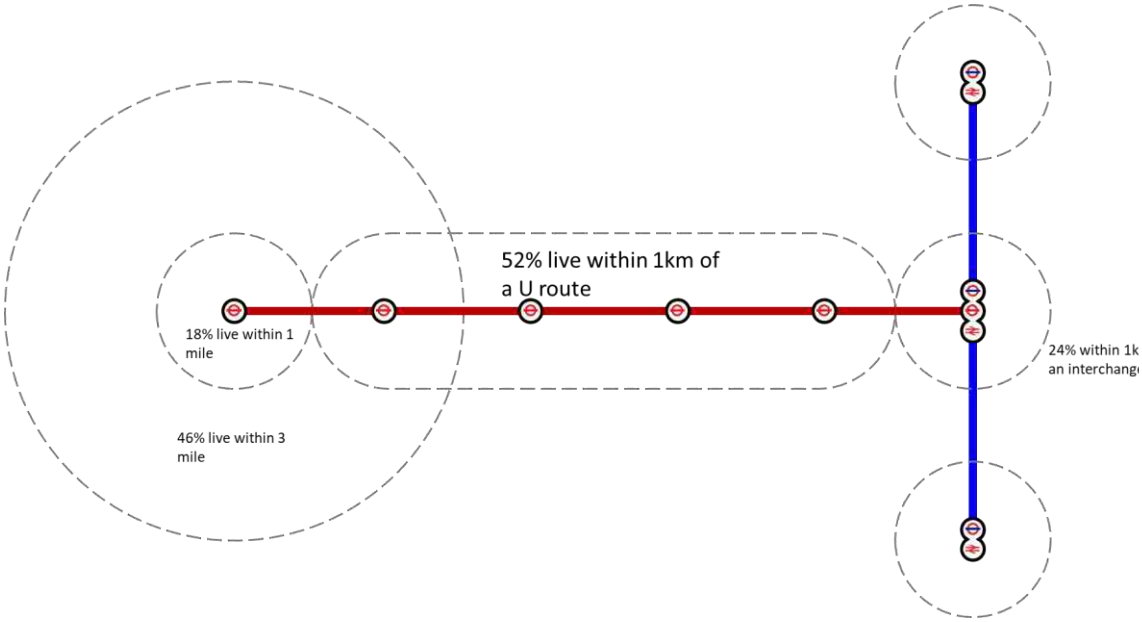
6.5.12 Scenario 2 has been developed to represent the implementation of a targeted sustainable transport strategy and mobility enhancements which aid to increase the sustainable mode share. This scenario is based on the Decide and Provide guidance, with a calculated mode shift based on achievable targets.

6.5.13 The CTDM has been used to develop the future travel patterns based on analysis of postcode data, which has enabled an understanding of modal shift with hospital expansion. Scenario 2 utilises the same staff and patient numbers as Scenario 1, but with a focus on staff mode shift, as the group can be specifically targeted and has the greatest impact on parking demand. The following two key metrics have been used to measure potential modal shift:

- Staff postcode data utilised to map which staff are within 1km of a bus or underground station, or within walking and cycling distance of the hospital site.
- Staff who do not live within a 1km (10-minute walk) of public transport services, or within walking and cycling distances are considered as residual private car users, with car sharing being the most feasible opportunity to reduce car use.

6.5.14 Figure 6.4 below demonstrates the method used to understand the percentage of staff who live within walking and cycling distance of the hospital (1 mile and 3 miles respectively), within 1km of a TfL U-service bus stop, and within 1km of an interchange station (rail or underground). This process will be refined to understand how many staff live within 1km of a service to an interchange station (such as West Drayton Station).

Figure 6.4: Future Staff Mode Shift Opportunities



Source: Mott MacDonald

6.5.15 Figure 6.5 below displays the total number of staff that live within 1km of a U-service bus stop, which provides frequent and direct bus services to the hospital site. The 1km buffer has been calculated using a bird's eye view and could result in a slightly longer walk for patrons. The combinations of U-routes cover a large percentage of local area and connect the hospital to key interchanges such as Uxbridge and West Drayton. The volume of staff within 1km of a service to an interchange station is shown in Figure 6.6.

Figure 6.5: Staff Postcodes within 1km of bus stop

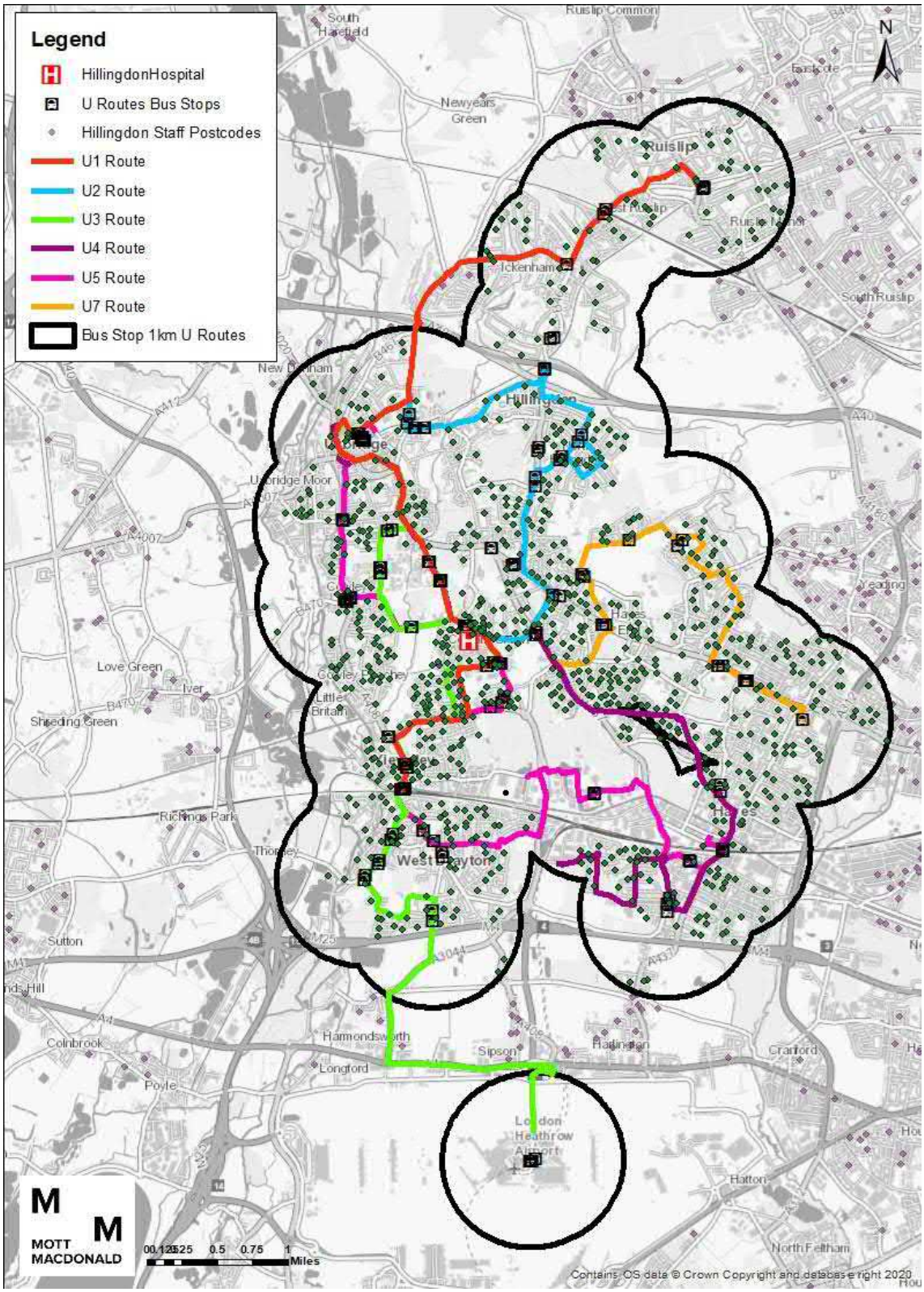
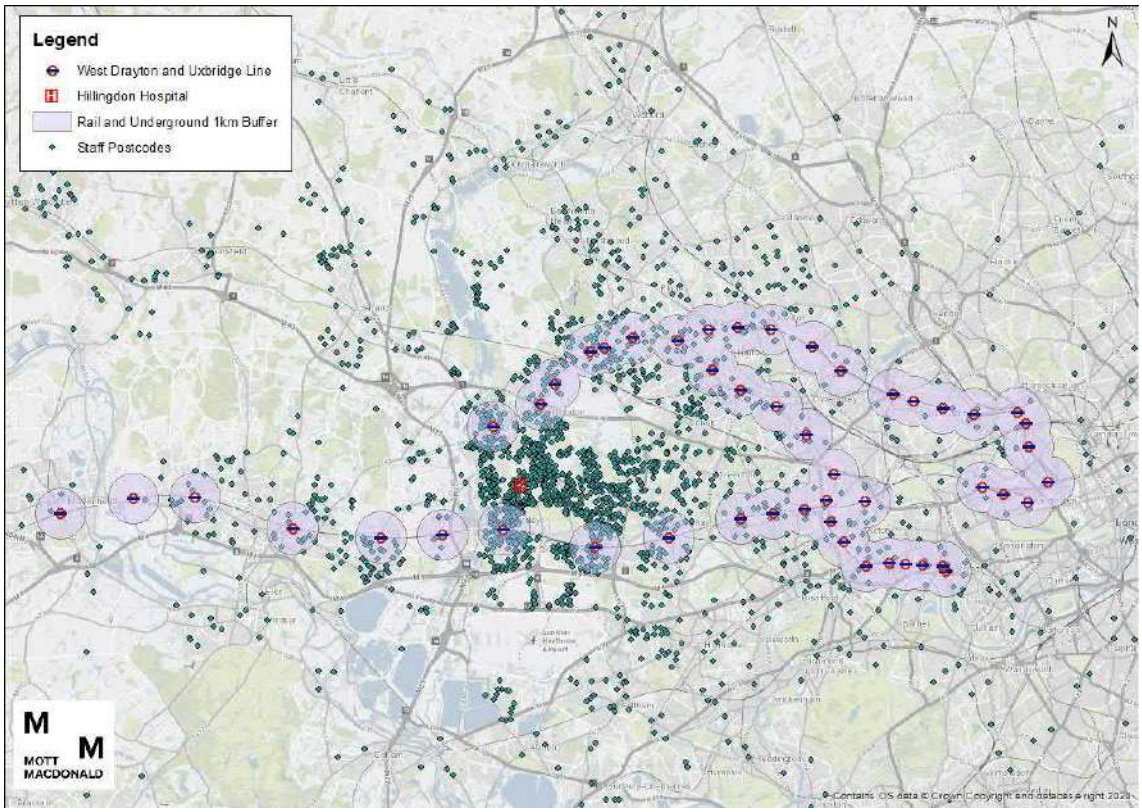


Figure 6.6: Uxbridge and West Drayton Staff Postcodes



Scenario 2 Mode Share

6.5.16 The combination of staff that are within a walking and cycling distance, has been assessed alongside those that can access the hospital via U-routes and the train/underground systems. This assessment has assisted the opportunity for a staff mode shift, which would utilise both hard and soft measures.

6.5.17 Table 6.16 below details the staff modal shift set for the redevelopment of the hospital site. This focuses on a shift towards sustainable and active travel, with a significant decrease in car drivers. Through the mobility hub and hospital travel plan, measures will be put in place to support the shift away from individual private car trips.

Table 6.16: Scenario 2 Staff Modal Shift

Mode	Baseline	Scenario 2
Walk	13%	16%
Cycle	3%	5%
Car Driver	42%	35%
Car Passenger	23%	24%
Bus	18%	20%
Taxi	1%	0%
Emergency Ambulance	0%	0%
Patient Transfer Services	0%	0%
LGV	0%	0%
HGV	0%	0%
Rail Users	0%	0%

6.5.18 Table 6.17 displays the combined modal shift for the overall hospital development. Staff comprise a small percentage of total hospital site users, resulting in a similar total mode share to the baseline scenario.

Table 6.17: Scenario 2 Modal Shift Total

Mode	Baseline	Scenario 2
Walk	10%	11%
Cycle	1%	1%
Car Driver	46%	45%
Car Passenger	22%	22%
Bus	16%	17%
Taxi	2%	2%
Emergency Ambulance	1%	1%
Patient Transfer Services	1%	1%
LGV	1%	1%
HGV	0%*	0%*
Rail Users	0%*	0%*

*: 0% shown when mode share <0.5%

Scenario 2 Summary

6.5.19 Table 6.18 details the forecast arrival movements by mode for the hospital in Scenario 2. There is a total of 9,100 arrival trips within a 24hr period. Car Driver is the primary mode share at 45%, with 4,087 trips. Active and sustainable travel modes (walk, cycle and bus) have a combined percentage of 28%, with 2,554 trips. The busiest arrival period is between 08:00-08:59 with 14% of arrivals, and 1,239 trips. 07:00-07:59 is second busiest with 1,152 arrivals (13%). The predominate arrival periods is between 06:00-20:59, with 96% of arrivals. 4% of arrivals, 375 trips, arrive during the early morning or late evening hours.

6.5.20 The Scenario 2 forecast departure trips by mode are displayed in Table 6.19. There is a total of 9,142 departure trips within a 24hr period. The difference between arrival and departure figures are inpatient and accident and emergency patients. Accident and Emergency patients' departures can be the day after they arrive at the hospital, depending on their arrival and treatment times. Car Driver is the primary mode choice, utilised for 4,057 (44%) of all trips. The

busiest period for departures is 16:00-16:59, with 10% and 885 movements. This is primarily related to staff shift timings. The primary departure period is between 07:00-20:59, 93% of all departures and 8,498 movements. The early morning and late evening witness 644 movements (7%).

6.5.21 Table 6.20 displays the combined and total trips by mode for the typical 24-hr period in Scenario 2. There is a total of 18,242 trips within a 24hr period. As discussed above, Car Driver is the highest mode share, resulting in 8,138 vehicle trips. The trips for the hospital site are low between the hours of 00:00-05:59, which is expected. The busiest hour for hospital trips in scenario 1 is 08:00-08:59, when there are 1,783 trips in total.

Table 6.18: Scenario 2 Arrival Trips by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	9100	967	82	4081	1992	1505	172	84	62	133	17	4
00:00-00:59	0%	28	0	0	17	8	0	1	3	0	0	0	0
01:00-01:59	0%	21	0	0	12	6	0	1	3	0	0	0	0
02:00-02:59	0%	21	0	0	13	5	0	1	2	0	0	0	0
03:00-03:59	0%	17	0	0	9	5	0	0	2	0	1	0	0
04:00-04:59	0%	18	0	0	11	6	0	0	0	0	0	0	0
05:00-05:59	0%	45	0	0	26	4	0	0	2	0	10	1	0
06:00-06:59	2%	200	19	3	98	46	26	1	2	0	4	1	0
07:00-07:59	13%	1152	156	25	437	272	226	15	3	8	8	1	0
08:00-08:59	14%	1239	159	22	483	298	235	19	4	10	7	1	0
09:00-09:59	7%	654	70	6	272	157	110	13	4	6	14	2	0
10:00-10:59	6%	570	55	2	241	142	90	13	4	6	15	2	0
11:00-11:59	6%	525	50	2	225	130	82	12	4	5	14	2	0
12:00-12:59	6%	548	56	4	245	124	89	11	4	4	10	1	0
13:00-13:59	7%	595	59	2	282	117	97	13	4	4	15	2	0
14:00-14:59	7%	599	62	2	285	119	100	13	5	4	8	1	0
15:00-15:59	6%	582	58	1	278	113	96	13	5	4	11	1	0
16:00-16:59	6%	513	52	2	248	99	84	11	5	3	8	1	0
17:00-17:59	5%	460	45	1	230	89	75	10	5	3	2	0	0
18:00-18:59	5%	452	45	2	223	88	73	10	5	3	3	0	0
19:00-19:59	4%	358	40	6	176	66	58	6	4	0	1	0	0
20:00-20:59	3%	278	29	2	149	44	44	5	4	0	1	0	0
21:00-21:59	2%	145	11	0	80	28	18	3	4	0	1	0	0
22:00-22:59	1%	48	0	0	27	14	1	1	4	0	0	0	0
23:00-23:59	0%	33	0	0	17	11	0	1	3	0	0	0	0

Table 6.19: Scenario 2 Departure Trips by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	9142	966	85	4057	2046	1519	171	84	61	133	17	4
00:00-00:59	0%	32	0	0	19	10	0	1	3	0	0	0	0
01:00-01:59	0%	26	0	0	14	9	0	1	3	0	0	0	0
02:00-02:59	0%	22	0	0	12	7	0	0	2	0	0	0	0
03:00-03:59	0%	18	0	0	9	7	0	0	2	0	0	0	0
04:00-04:59	0%	19	0	0	11	6	0	0	0	0	0	0	0
05:00-05:59	0%	39	0	0	18	7	0	0	2	0	10	1	0
06:00-06:59	1%	51	4	0	21	14	6	1	2	0	3	0	0
07:00-07:59	4%	383	46	5	149	93	70	6	3	4	7	1	0
08:00-08:59	6%	545	59	5	226	131	93	10	4	5	11	1	0
09:00-09:59	8%	748	77	5	314	185	124	15	4	7	15	2	0
10:00-10:59	7%	603	57	2	261	149	96	13	4	6	14	2	0
11:00-11:59	6%	568	55	2	241	143	92	13	4	6	11	1	0
12:00-12:59	6%	581	59	3	242	143	96	12	4	6	14	2	0
13:00-13:59	6%	575	59	3	251	129	95	12	4	5	15	2	0
14:00-14:59	7%	670	71	4	309	138	116	14	5	5	7	1	0
15:00-15:59	8%	732	81	7	327	153	127	13	5	5	11	1	0
16:00-16:59	10%	885	109	16	377	192	160	13	5	4	8	1	0
17:00-17:59	8%	776	97	15	332	168	141	11	5	3	3	0	0
18:00-18:59	6%	560	62	6	260	115	97	10	5	3	2	0	0
19:00-19:59	6%	507	55	4	239	103	87	10	4	3	1	0	0
20:00-20:59	4%	366	43	7	175	68	62	5	4	0	1	0	0
21:00-21:59	3%	260	24	1	145	40	40	5	4	0	2	0	0
22:00-22:59	2%	140	9	0	87	21	17	3	4	0	0	0	0
23:00-23:59	0%	37	0	0	19	13	1	1	3	0	0	0	0

Table 6.20: Scenario 2 Total Trips by Mode

Time Period	Time period %	Total	Walk	Cycle	Car Driver	Car Passenger	Bus	Taxi	Ambulance (Emergency)	Ambulance (PTS)	LGV	HGV	Rail Users
24-hour	100%	18242	1933	167	8138	4038	3024	343	168	123	266	34	8
00:00-00:59	0%	61	0	0	36	18	0	1	6	0	0	0	0
01:00-01:59	0%	47	0	0	26	15	0	1	5	0	0	0	0
02:00-02:59	0%	43	0	0	25	12	0	1	5	0	0	0	0
03:00-03:59	0%	35	0	0	18	12	0	1	4	0	1	0	0
04:00-04:59	0%	37	0	0	23	13	0	1	0	0	0	0	0
05:00-05:59	0%	84	0	0	44	12	0	1	4	0	20	3	0
06:00-06:59	1%	251	23	3	119	60	32	2	4	0	7	1	0
07:00-07:59	8%	1535	202	30	586	365	296	21	5	12	15	2	0
08:00-08:59	10%	1783	218	27	709	429	328	29	9	15	18	2	0
09:00-09:59	8%	1402	147	11	586	342	234	28	8	13	30	4	1
10:00-10:59	6%	1173	113	4	501	290	186	26	8	12	29	4	1
11:00-11:59	6%	1093	105	4	466	273	173	24	8	11	25	3	1
12:00-12:59	6%	1129	114	7	486	267	184	24	9	10	25	3	1
13:00-13:59	6%	1171	118	5	532	246	193	25	9	9	31	4	1
14:00-14:59	7%	1269	133	6	594	257	216	26	9	9	15	2	1
15:00-15:59	7%	1314	140	8	605	267	224	26	9	9	22	3	1
16:00-16:59	8%	1398	161	18	624	291	244	24	10	8	15	2	1
17:00-17:59	7%	1235	142	16	561	257	216	21	9	6	4	1	1
18:00-18:59	6%	1011	107	7	483	203	170	20	10	5	4	1	1
19:00-19:59	5%	865	95	10	415	169	146	16	8	3	2	0	1
20:00-20:59	4%	644	71	9	324	113	106	11	7	0	2	0	1
21:00-21:59	2%	404	35	1	225	68	58	8	8	0	3	0	0
22:00-22:59	1%	187	9	0	114	35	19	4	7	0	0	0	0
23:00-23:59	0%	70	1	0	36	24	1	2	6	0	0	0	0

6.5.22 The accumulation for the car park, ambulance, and service yard have also been modelled in Scenario 2. No changes have been made to the patient or delivery and servicing mode share; therefore, the service yard and ambulance profile are identical to Scenario 1.

6.5.23 Table 6.21 below displays the forecast parking accumulation for Scenario 2. The Scenario 2 parking accumulation is based on the assumption that 199 vehicles are parked on-site at the start of the 24-hour period. Parking accumulation peaks at 08:00-08:59, when there is an accumulation of 825 vehicles. Therefore, the 932 spaces provided upon completion of Phase 1c is sufficient to accommodate the forecast maximum amount of parking.

Table 6.21: Scenario 2 Parking Accumulation

24Hr Parking Demand - Total

Time Period	Arrivals	Departures	Parking Accumulation
24-hour	4081	4057	
00:00-00:59	17	19	197
01:00-01:59	12	14	195
02:00-02:59	13	12	195
03:00-03:59	9	9	195
04:00-04:59	11	11	195
05:00-05:59	26	18	203
06:00-06:59	98	21	280
07:00-07:59	437	149	568
08:00-08:59	483	226	825
09:00-09:59	272	314	784
10:00-10:59	241	261	764
11:00-11:59	225	241	748
12:00-12:59	245	242	751
13:00-13:59	282	251	782
14:00-14:59	285	309	757
15:00-15:59	278	327	708
16:00-16:59	248	377	579
17:00-17:59	230	332	477
18:00-18:59	223	260	440
19:00-19:59	176	239	377
20:00-20:59	149	175	350
21:00-21:59	80	145	285
22:00-22:59	27	87	225
23:00-23:59	17	19	224

6.6 Residential Travel Demand

6.6.1 The residential dwellings form part of the ‘Opportunity’ Site, and any travel demand is an addition to the current hospital movements in Phase 2. The TRICS database v7.8.2 has been used to make people trip generation estimates for the proposed residential development. Trip rates have been derived according to the following principles:

- Suitability for sites needs to be clearly determined, with a focus on London Sites.
- Survey days for Weekdays only, to be in line with the combined assessment which includes the hospital site.

Residential Trip Generation

6.6.2 Survey sites were selected from the TRICS database using the following parameters:

- Land use: 03 – Residential
- Category: M – Mixed private/affordable housing
- Survey types: Multi Modal
- Selected regions: Greater London
- No. dwellings: 50 to 500
- Parking spaces per dwelling range: 0.5 to 1.25
- Date range: 01/01/2010 to 19/10/2020
- Survey days: Weekdays
- Selected locations: Suburban area, edge of town and neighbourhood centre
- PTAL rating: 1a to 3

6.6.3 Only Greater London Sites were included to ensure suitability to the area, as the number of sites was sufficient to provide a reflective result. These parameters yield seven survey sites, with their suitability detailed in Table 6.22. All sites provide a mixture of flats only, or flats and houses.

6.6.4 The full trip rate output can be seen in Appendix F.

Table 6.22: Site Selection

Ref	Type	PTAL	Quantum	Parking	Parking Ratio	Suitable
BE-03-M-01	Flats & semi detached	1b	343	317	0.92	✓
EG-03-M-06	Blocks of flats	3	143	91	0.64	✓
EN-03-M-01	Blocks of flats & terraced	1b	220	234	1.06	✓
GR-03-M-02	Blocks of flats	1b	455	287	0.63	✓
HD-03-M-05	Terraced & flats	1b	261	299	1.15	✓
HO-03-M-01	Blocks of flats	2	336	388	1.15	✓
RD-03-M-01	Mixed flats & houses	1a	76	70	0.92	✓

6.6.5 The residential trip generation has developed based on the above trips rates as one single scenario, applied/assessed consistently alongside the Scenario 1 and Scenario 2 hospital trip generation. This is considered to be appropriate given that the newly extracted trip rates already account for reduced parking provision and sites selected have similar PTAL ratings (below 3).

6.6.6 Table 6.23 presents a summary of the multi-modal peak hour arrival trips, derived according to the methodology described above, for residential arrivals, and Table 6.24 displays the departure movements.

6.6.7 The TRICS Surveys cover a 14-hr period, between 07:00-21:00, detailing the primary daily travel movements. There is a total of 900 arrival movements to the development site, based on 327 dwellings. Residential arrivals peak from15:00-19:59, with 57% and 516 person trips. Car

driver is the primary mode with 54% of arrival trips and walking is the secondary mode share with 25% of arrival trips.

6.6.8 There are a total of 938 departure trips from the development site between 07:00 and 21:00. Residential departures peak at 07:00-08:59 with 34% of departures, and 314 trips. Car driver is the primary mode share, with 53% of departure trips and walking is the secondary mode share, with 25% of departure trips

6.6.9 Table 6.25 shows the total residential trips between 07:00 and 21:00. There are a total of 1,839 trips generated by the development site. Residential trips peak at 08:00-08:59 with 12% of the trips (228). Car driver is the primary mode share, with 54% of trips and walking is the secondary mode share, with 25% of trips

6.6.10 The rates discussed above are representative of PTAL and parking standards. Any additional scenarios are not considered to be appropriate. The trip rates and volumes will be applied consistently to Scenario 1 and Scenario 2 of future hospital demand.

Table 6.23: Residential Trip Generation (Arrivals)

	Total Vehicles		OGVs		Cyclists		Vehicle Occupants		Pedestrians		PT Users		Total People	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
00:00-01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00-02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00-03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00-04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00-05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00-06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00-07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00-08:00	0.04	13	0	1	0	1	0.05	16	0.01	5	0	0	0.07	21
08:00-09:00	0.06	21	0	1	0	1	0.07	24	0.04	13	0.01	3	0.12	40
09:00-10:00	0.06	19	0	0	0	1	0.07	22	0.04	13	0.01	4	0.12	40
10:00-11:00	0.06	18	0	0	0	0	0.07	22	0.03	8	0.01	3	0.1	34
11:00-12:00	0.06	20	0	1	0	1	0.08	25	0.03	9	0.01	5	0.12	39
12:00-13:00	0.07	23	0	0	0	1	0.09	31	0.03	9	0.01	5	0.14	45
13:00-14:00	0.07	23	0	1	0	1	0.09	28	0.04	13	0.02	7	0.15	48
14:00-15:00	0.06	18	0	0	0	1	0.07	23	0.04	14	0.03	9	0.14	48
15:00-16:00	0.1	33	0	0	0.01	2	0.16	52	0.12	41	0.07	22	0.36	117
16:00-17:00	0.1	33	0	0	0.01	3	0.16	53	0.07	24	0.08	25	0.32	106
17:00-18:00	0.11	35	0	0	0.01	2	0.15	48	0.07	22	0.07	22	0.29	94
18:00-19:00	0.13	43	0	0	0	1	0.18	59	0.06	21	0.09	29	0.34	111
19:00-20:00	0.11	35	0	0	0	1	0.14	46	0.05	17	0.07	24	0.27	88
20:00-21:00	0.08	26	0	0	0	1	0.11	35	0.05	17	0.05	16	0.21	69
21:00-22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00-23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00-24:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6.24: Residential Trip Generation (Departures)

	Total Vehicles		OGVs		Cyclists		Vehicle Occupants		Pedestrians		PT Users		Total People	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
00:00-01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00-02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00-03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00-04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00-05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00-06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00-07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00-08:00	0.12	41	0	1	0.01	3	0.19	62	0.06	20	0.13	43	0.38	127
08:00-09:00	0.17	55	0	1	0.01	3	0.28	92	0.14	47	0.14	46	0.57	188
09:00-10:00	0.08	25	0	0	0	1	0.1	33	0.04	14	0.05	16	0.19	64
10:00-11:00	0.06	21	0	0	0	1	0.08	26	0.03	10	0.03	10	0.14	46
11:00-12:00	0.07	22	0	0	0	1	0.09	28	0.03	11	0.02	7	0.14	47
12:00-13:00	0.08	27	0	0	0	1	0.1	34	0.04	13	0.03	9	0.17	57
13:00-14:00	0.07	23	0	0	0	1	0.09	29	0.03	11	0.02	7	0.14	48
14:00-15:00	0.07	24	0	0	0	1	0.09	29	0.05	15	0.04	12	0.17	57
15:00-16:00	0.07	23	0	0	0.01	2	0.08	26	0.07	22	0.03	9	0.18	59
16:00-17:00	0.08	26	0	0	0	1	0.1	34	0.04	14	0.03	8	0.18	58
17:00-18:00	0.07	24	0	0	0	1	0.09	29	0.05	17	0.02	7	0.17	55
18:00-19:00	0.07	22	0	0	0.01	2	0.08	28	0.05	16	0.02	5	0.15	50
19:00-20:00	0.07	23	0	0	0	1	0.09	29	0.04	14	0.01	4	0.14	47
20:00-21:00	0.05	17	0	0	0	1	0.06	20	0.04	13	0	1	0.11	36
21:00-22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00-23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00-24:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6.25: Residential Trip Generation (Total trip generation)

	Total Vehicles		OGVs		Cyclists		Vehicle Occupants		Pedestrians		PT Users		Total People	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
00:00-01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00-02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00-03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00-04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00-05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00-06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00-07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00-08:00	0.16	53	0	1	0.01	4	0.24	78	0.07	25	0.13	43	0.45	148
08:00-09:00	0.23	77	0	1	0.01	4	0.35	116	0.18	59	0.15	49	0.69	228
09:00-10:00	0.14	45	0	1	0	2	0.17	55	0.04	26	0.06	20	0.31	104
10:00-11:00	0.12	40	0	1	0	1	0.08	49	0.06	18	0.04	13	0.24	80
11:00-12:00	0.13	42	0	1	0	1	0.17	53	0.06	20	0.03	12	0.26	86
12:00-13:00	0.15	50	0	1	0	2	0.19	65	0.07	22	0.04	14	0.31	102
13:00-14:00	0.14	47	0	1	0	1	0.18	57	0.07	23	0.04	14	0.29	96
14:00-15:00	0.13	43	0	1	0	2	0.16	52	0.09	29	0.07	20	0.31	104
15:00-16:00	0.17	56	0	1	0.02	3	0.24	79	0.19	63	0.1	31	0.54	177
16:00-17:00	0.18	59	0	0	0.01	4	0.26	88	0.11	39	0.11	33	0.5	164
17:00-18:00	0.18	60	0	0	0.01	4	0.24	78	0.12	40	0.09	29	0.46	149
18:00-19:00	0.2	65	0	1	0.01	3	0.26	87	0.11	36	0.11	34	0.49	161
19:00-20:00	0.18	59	0	0	0	2	0.23	74	0.09	31	0.08	28	0.41	135
20:00-21:00	0.13	44	0	1	0	3	0.17	55	0.09	30	0.05	17	0.32	105
21:00-22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00-23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00-24:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.7 Summary of total multi modal travel demand for Scenario 1 and Scenario 2

6.7.1 A summary of arrivals, departures and total movements by mode covering a 24-hour period for the combined hospital and opportunity site travel demand is displayed below for both Scenario 1 and Scenario 2. The tables below detail the total expected forecast travel demand for the development site, combining hospital patients, visitors, staff, residential demand and servicing and delivery trips.

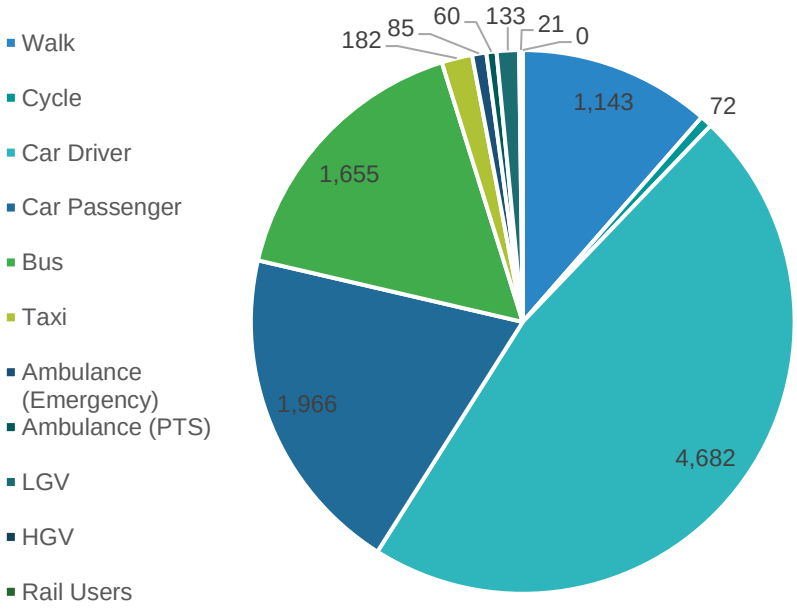
6.7.2 These have been presented in total person trips, and total vehicle trips. This enables the increase in mode shares of car drivers and Patient Transfer Services (PTS) numbers to be reviewed.

Residential and Scenario 1 Demand

6.7.3 This sub section displays the residential and Scenario 1 combined travel demand to the development site. Scenario 1 is 'Predict and Provide'. No assumptions have been made in travel demand or modal shift. This provides an example of the future travel to and from the development site. Figure 6.7, Figure 6.8, and Figure 6.9 display the combined trips within a pie chart for a typical 24-hour period. An hourly breakdown of traffic over 24 hours is provided in Appendix G.

6.7.4 Figure 6.7 shows the combined arrival trips for residential and hospital demand. The primary mode of travel is as Car Driver, with 47% of total mode share and 4,682 trips. Car Passengers account for 1,966 trips and 20% mode share. Bus trips account for 17% of total mode share and 1,655 trips. The peak period is between 08:00-08:59, with 13% of total arrivals and 1,279 trips. The arrivals profile is consistent throughout the hours of 09:00-18:59 with 6-7% of daily trips per hour. The hours between 22:00-05:59 have less than 100 calculated movements per hour.

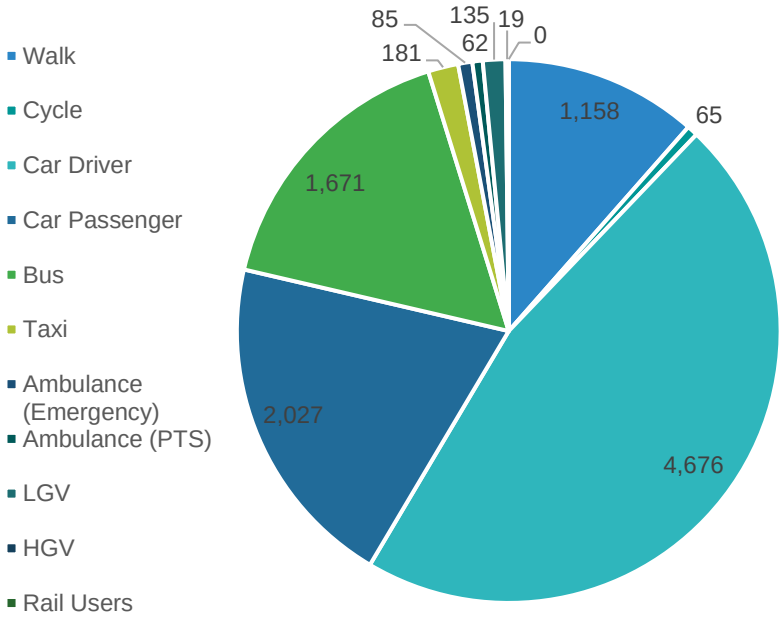
Figure 6.7: Combined Arrival Trips (Residential and Scenario 1)



6.7.5 Figure 6.8 shows the combined departure trips for residential and hospital demand. The mode share is similar to the arrival trips. The primary mode of travel is Car Drivers, with 46% total

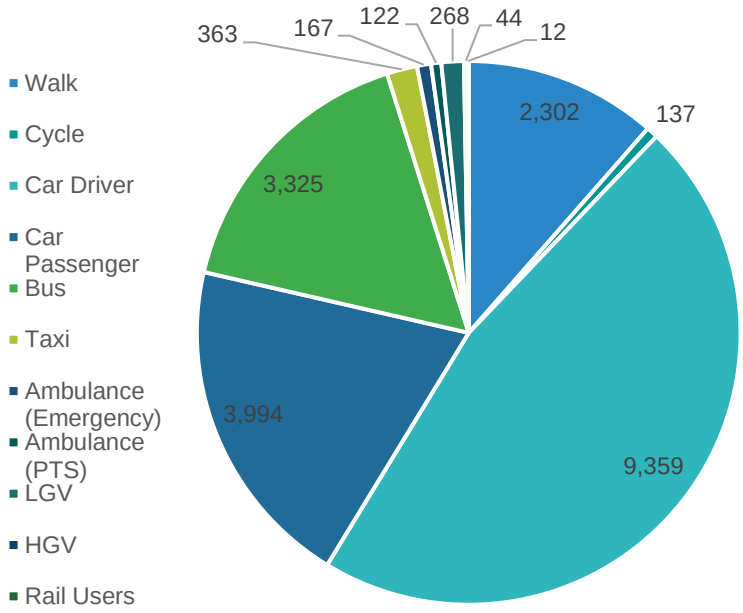
mode share and 4,676 trips. Car Passengers account for 2,027 trips and 20% mode share. Bus accounts for 17% total mode share and 1,671 trips. The peak period is between 16:00-16:59, with 9% of total departures and 943 trips. The departure profile is consistent throughout the hours of 07:00-15:59, with 5-8% of daily trips per hour. The hours between 23:00-06:59 have less than 100 calculated movements per hour.

Figure 6.8: Combined Departure Trips (Residential and Scenario 1)



6.7.6 The combined total residential trips are displayed in Figure 6.9. The development has a forecast trip generation of 20,093 movements per day. The primary mode share is Car Driver with 47% of total mode share and 9,359 trips. Car Passengers account for 20% total mode share and 3,994 trips. Bus accounts for 17% total mode share and 3,325 trips. The peak period is between 08:00-08:59 with 10% of movements and 2,014 trips. The hours between 23:00-05:59 have less than 100 calculated movements per hour.

Figure 6.9: Combined Total Trips (Residential and Scenario 1)

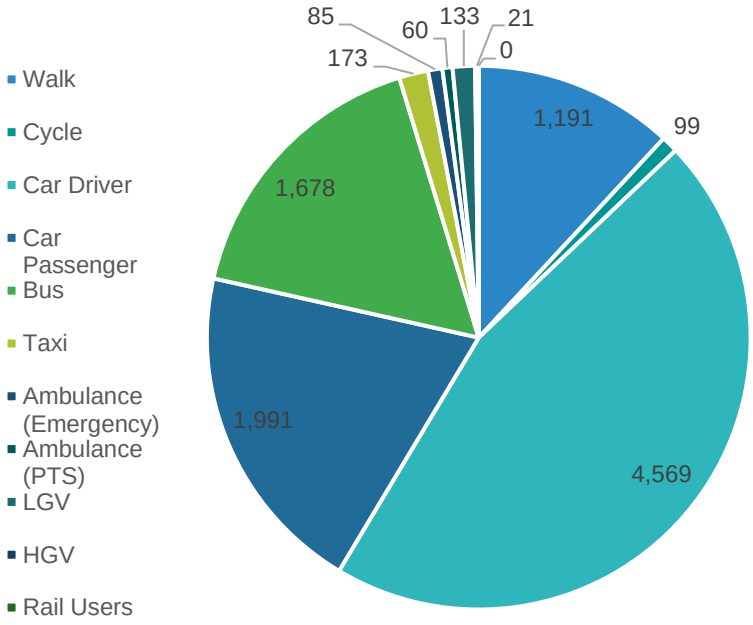


Residential and Scenario 2 Demand

6.7.7 This section explains the anticipated forecast travel demand for the residential and Scenario 2 hospital operations. Scenario 2 is 'Decide and Provide'. A modal shift to staff travels patterns has been calculated based on achievable targets. Figure 6.10, Figure 6.11, and Figure 6.12 display the combined trips within a pie chart for a typical 24-hour period. An hourly breakdown of traffic over 24 hours is provided in Appendix G.

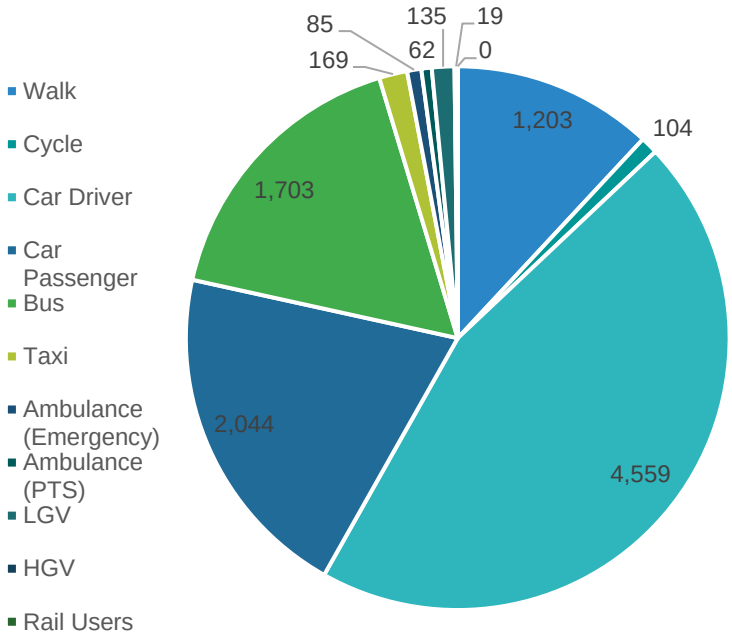
6.7.8 Figure 6.10 shows the combined arrival trips for residential and hospital demand. The primary mode of travel is 'Car Driver' with 46% mode share and 4,569 trips. Car Passenger account for 20% mode share and 1,991 trips. Bus accounts for 17% mode share and 1,678 trips. The peak arrival period occurs between 08:00-08:59, with 13% of total arrivals and 1,279 trips. The arrival profile does not peak again in the afternoon/evening periods and the hours between 22:00-05:59 have less than 100 calculated movements per hour.

Figure 6.10: Combined Arrival Trips (Residential and Scenario 2)



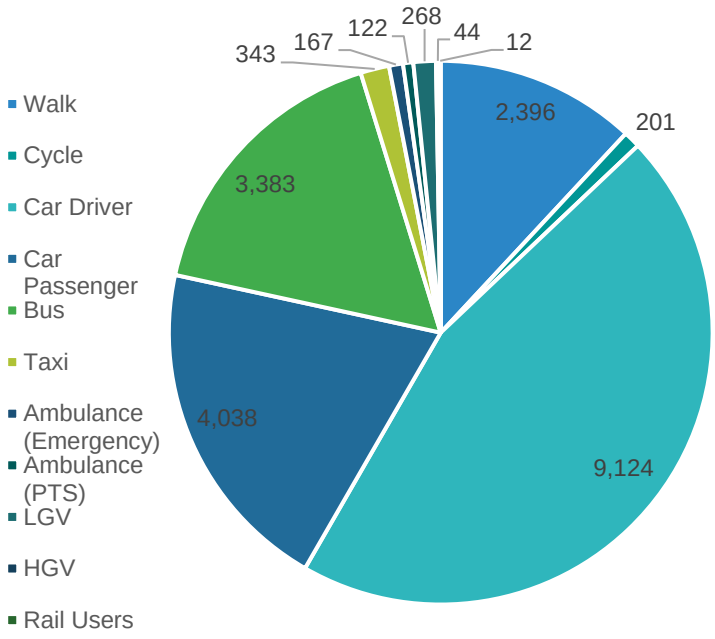
6.7.9 Figure 6.11 shows the combined departure trips for residential and hospital demand. The primary mode of travel is Car Driver, with a 45% mode share and 4,559 trips. Car Passenger accounts for 20% of the mode share and 2,044 trips. Bus accounts for 17% of the mode share and 1,703 trips. The peak departure period occurs between 16:00-16:59, with 9% of total departures and 943 trips. The hours between 23:00-05:59 have less than 100 calculated movements per hour.

Figure 6.11: Combined Departure Trips (Residential and Scenario 2)



6.7.10 The combined total residential trips for Scenario 2 hospital demand is shown in Figure 6.12. the development has a forecast trip generation of 20,098 total movements per day. The primary mode of travel is Car Driver with 45% and 9,124 trips. Car Passenger account for 20% of mode share, with 4,038 trips. Bus accounts for 17% mode share and 3,383 trips. The peak period occurs between 08:00-08:59 with 10% of movements and 2,014 trips. The hours between 23:00-05:59 have less than 100 calculated movements per hour.

Figure 6.12: Combined Total Trips (Residential and Scenario 2)



6.8 Sustainable Trip Distribution

6.8.1 This section of the TA describes the sustainable trip distribution from the new hospital site. The distribution focuses on the uplift in trips, and no reassignment of current sustainable movements. TfL data has been used to distribute sustainable trips across the London network, based on the rolling Origin and Destination survey.

Bus Passengers

6.8.2 In order to distribute bus passengers onto the local bus network, an analysis of staff postcode data was completed. The following steps were undertaken to establish the distribution of bus passengers from the site onto each bus route.

1. All six U Routes (U1,2,3,4,5,7) were mapped with their respective bus stops on ArcGIS;
2. A 1km buffer around each stop was established as an acceptable walking area (based on permit eligibility at the current hospital);
3. All staff postcodes within each U route corridor were extracted (duplication occurred where more than one service serves a corridor/area);
4. For each route, it was calculated how many other services the staff member could use (i.e. analysis to determine if postcodes accessible using the U1 service, were also accessible using any/all other services);
5. The number of staff who can only access their postcode using one service was determined as a percentage of all staff who travel by bus (Postcode accessible by one service only in Table 4.7);
6. The number of staff who can access their postcode using more than one service was determined as a result of step 5; and

7. The percentages from step 6 (percentage of staff who can access their home postcode using more than one service) were then applied to total number of staff which can use more than one service, for each U route, based on the catchment of stops along each service route and the frequency of services (Postcode accessible from more than one service in Table 6.26).

Table 6.26 shows the assignment proportions to each TfL bus service based on staff postcode data.

Table 6.26: Proportion of Staff With Only One Accessible Bus Route and Alternatives

		U1	U2	U3	U4	U5	U7
Postcode accessible by one service only		6.0%	4.2%	2.5%	0.2%	0.1%	9.1%
Postcode accessible from more than one service	U1		2.1%	2.8%	2.1%	2.7%	2.1%
	U2	2.0%		1.9%	2.2%	1.9%	2.4%
	U3	2.9%	2.1%		2.3%	3.1%	2.2%
	U4	2.5%	2.7%	2.6%		3.4%	3.5%
	U5	3.2%	2.4%	3.5%	3.5%		2.7%
	U7	2.4%	2.7%	2.3%	3.2%	2.5%	
Total service assignment		**19.1%**	**16.1%**	**15.6%**	**13.5%**	**13.7%**	**22.0%**

Underground passengers

6.8.3 All underground and rail trips are assumed to be from West Drayton or Uxbridge Station, being the closest stations to the proposed development.

6.8.4 The estimated increase in rail passengers as part of the redevelopment is negligible, with less than 1% of mode share, the volume of additional trips will be minor. This is regardless of the time of day or week.

6.8.5 It is assumed that as underground and rail trips are part of a multi-modal journey, and all trips will begin/end as a bus trip. Therefore, all rail trips are assigned to the network as bus trips.

6.8.6 The impact on travel demand to the hospital development will negligible so on adverse Underground Impacts are anticipated as a result of the proposed development.

West Drayton Station Improvements

6.8.7 West Drayton station has benefitted from major improvements in preparation for the new Elizabeth line services, as follows:

- A redeveloped main ticket office, improved ticket hall layout
- New platform canopies
- New customer information screens and signage
- 200+ metre long platforms
- Accessible by lifts
- Step-free from platform to street
- Improvements to the area around the station in partnership with Hillingdon Council

6.8.8 Crossrail is expected to open to passengers from as early as 2022. This will provide an additional high frequency and rapid public transport mode that will enable sustainable travel to and from the development site.

6.8.9 The impact on travel demand to the hospital development from the increase in the rail capacity will be negligible.

Pedestrian Trips

6.8.10 A number of pedestrian improvements have been made within the site and in close proximity to the site. The environment for pedestrians has been carefully considered, and facilities on site provide capacity for increased volumes of pedestrian trips. The location of these improvements and facilities have been decided based on assumed pedestrian desire lines between access points, bus stops, and amenities.

6.8.11 Pedestrian trips have been considered in regard to local capacity in the immediate site and surroundings. Therefore, no distribution across a wider network is necessary.

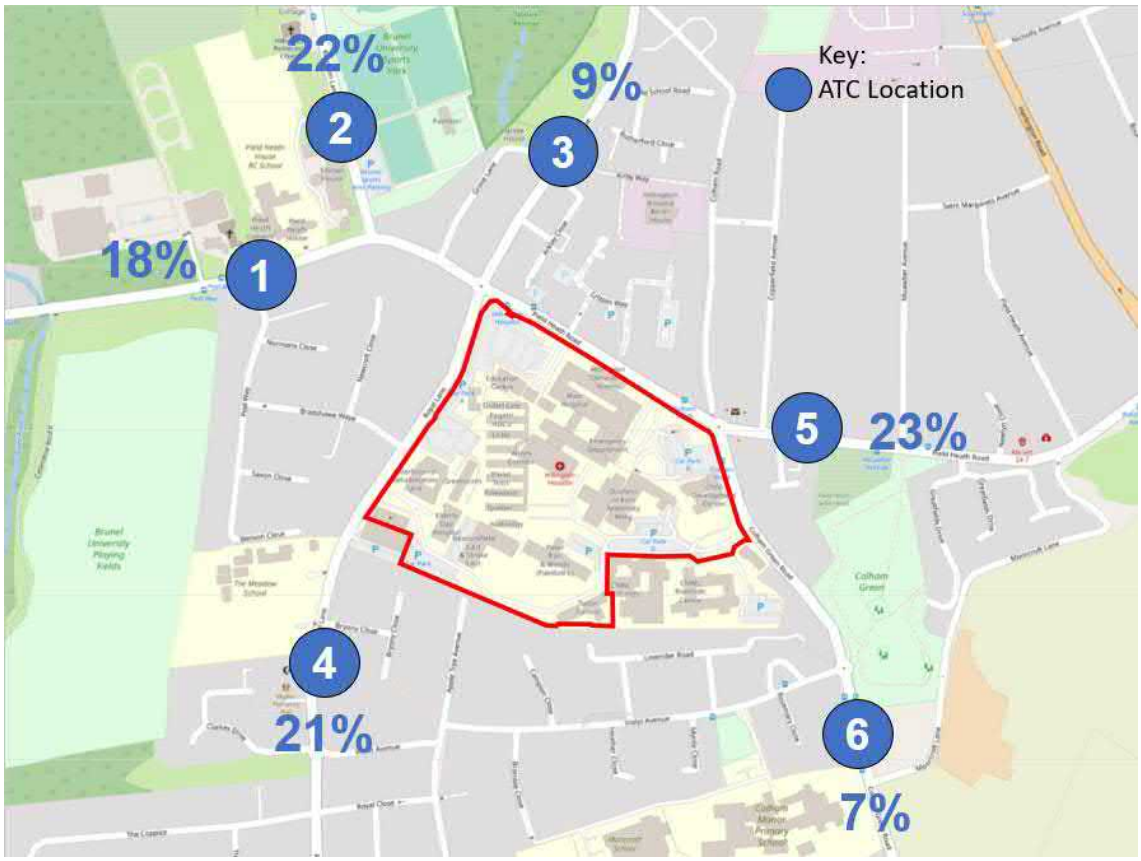
Cycle Trips

6.8.12 The recommended cycle improvements to the local network and on-site provision set out in Section 0 are based on key desire lines between the site and local trip attractors, which are identified in the ATZ assessment.

6.8.13 ATC data from the November 2021 surveys has been analysed to distribute the cycle trips generated by the proposed redevelopment. It is assumed that cycle trips will have the same distribution as the existing hospital.

6.8.14 A number of ATCs were undertaken in the local area, represented by points 1-6 in Figure 6.13. The amount of cycle trips surveyed at each individual ATC location have been compared against the total amount of cycle trips surveyed at all ATC locations to calculate a percentage. This cycle trips at each ATC has been used to distribute cycle trips onto the local network, and is shown in Figure 6.13.

Figure 6.13: Cycle Trip Distribution



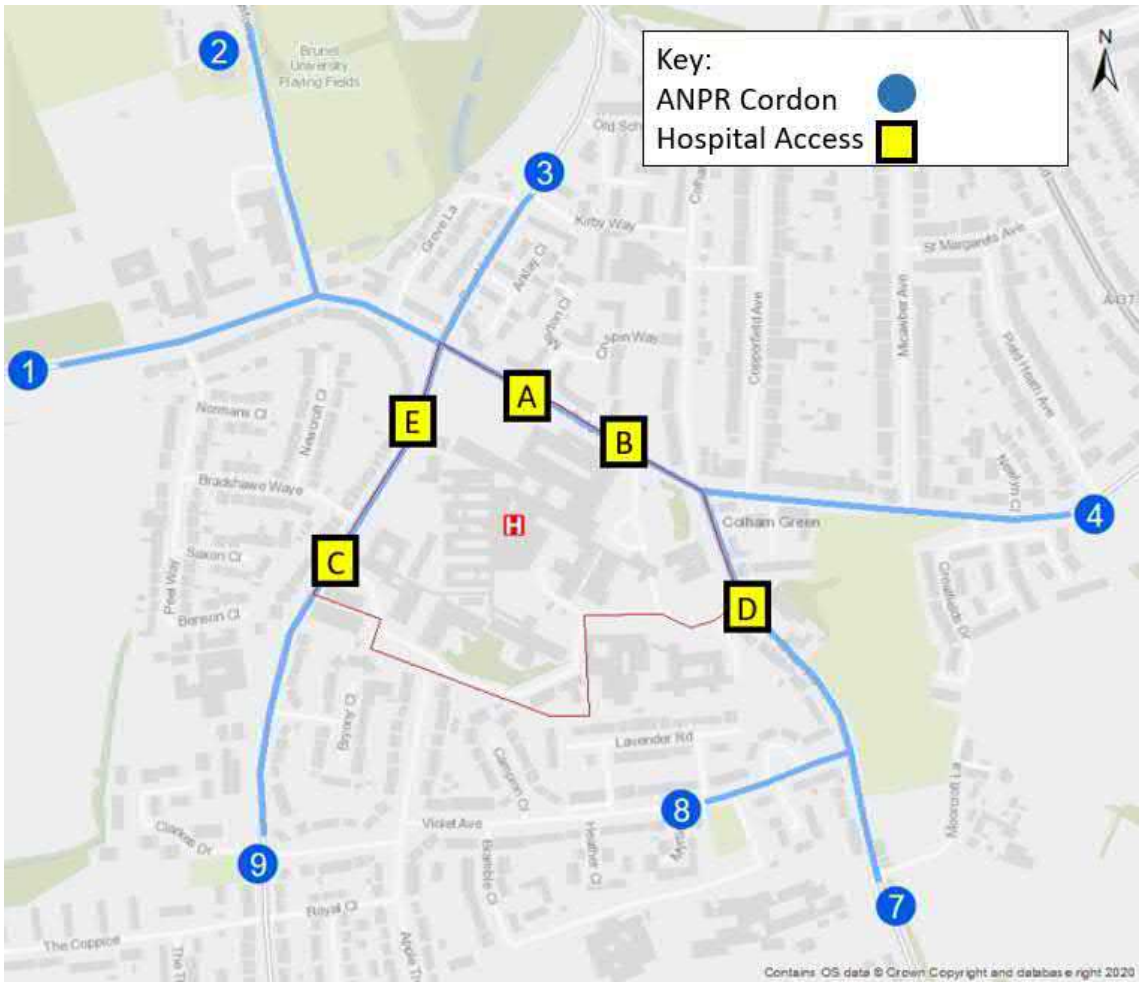
6.9 Traffic Distribution

6.9.1 The distribution of existing hospital traffic has been calculated using ANPR data. The baseline distribution has been calculated separately for all five accesses. The observed traffic distribution has then been used to calculate the forecast redevelopment traffic distribution as described in the sections below.

Baseline Traffic Distribution

6.9.2 The ANPR distribution has been calculated separately for each of the five accesses using ANPR data from the November 2021 surveys. An ANPR cordon has been used on the local road network to count the number of trips made between each hospital access and the ANPR cordon. This data has been used to calculate the baseline traffic distribution from each hospital access. The ANPR cordon locations and hospital access points are shown in Figure 6.14.

Figure 6.14: ANPR Camera Locations



6.9.3 The existing hospital traffic distribution from the November 2021 surveys has been calculated for each site access point and is reported in Table 6.27.

Table 6.27: ANPR Distribution by Access

	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
	Access A		Access B		Access C		Access D		Access E	
1	12%	14%	10%	11%	16%	16%	10%	11%	16%	16%
2	23%	25%	19%	20%	30%	30%	19%	20%	31%	29%
3	3%	3%	2%	2%	13%	21%	2%	2%	13%	21%
4	49%	46%	55%	54%	15%	8%	32%	33%	16%	8%
7	12%	11%	14%	13%	4%	2%	35%	31%	4%	2%
8	0%	1%	0%	1%	0%	0%	0%	2%	0%	0%
9	0%	0%	0%	0%	23%	23%	0%	0%	20%	24%

Forecast Hospital Traffic Distribution

6.9.4 The redevelopment of the site consists of a number of changes to how vehicles can access the hospital. Upon completion of Phase 1b of the redevelopment, Access A will be the main hospital access for staff, patients, and visitors, and Access D will be used to access the Service Yard and Ambulance Yard. There will also be an access to the MSCP on Royal Lane, to the north the existing Staff Car Park Access (Access E). Access B, C and E will be removed upon the completion of Phase 1b. These changes to site access have an impact on the distribution of hospital traffic on the local highway network. Therefore, the existing hospital traffic was removed from the local highway network, before being redistributed to/from the proposed accesses accordingly.

6.9.5 The ANPR survey data has been used to forecast hospital traffic distribution. This data shows the proportion of all hospital arrival and departure traffic at each of the ANPR cordons shown in Figure 6.14. The resulting distribution is shown in Table 6.28.

Table 6.28: ANPR Traffic Distribution

ANPR Cordon	Arrivals	Departures
1	12%	13%
2	23%	24%
3	5%	8%
4	39%	36%
7	15%	13%
8	0%	1%
9	6%	6%

6.9.6 Initially, the corresponding proportion of hospital traffic was distributed between these cordons and the main hospital access (Access A). The impact of this traffic distribution to/from a singular hospital access was assessed. It was found that funnelling all hospital traffic through a singular access on Pield Heath Road had significant negative impact on the operation of the local highway network. Therefore, it was decided that a secondary access to the MSCP was provided on Royal Lane.

6.9.7 In order to calculate a final traffic distribution, with two accesses to the hospital, it has been assumed that 80% of all traffic from ANPR cordons 1, 2, and 3 access/egress the hospital via the MSCP access on Royal Lane. The remaining 20% of hospital traffic entering/leaving the local network at these cordons is distributed to/from the Main Hospital Access.

6.9.8 This methodology provides the forecast traffic distribution between the two site accesses and each cordon on the local highway network, shown in Table 6.29.

Table 6.29: Forecast Hospital Traffic Distribution

Cordon	Main Hospital Access		Royal Lane MSCP Access	
	Arrivals	Departures	Arrivals	Departures
1	2%	3%	10%	10%
2	5%	5%	18%	19%
3	1%	2%	4%	6%
4	39%	36%	0%	0%
7	15%	13%	0%	0%
8	0%	1%	0%	0%

Cordon	Main Hospital Access		Royal Lane MSCP Access	
	Arrivals	Departures	Arrivals	Departures
9	6%	6%	0%	0%

6.9.9 The traffic distribution set out above does not include delivery and servicing hospital traffic. All LGV and HGV hospital traffic has been attributed to deliveries and servicing, and therefore needs to access the Service Yard in the south-west corner of the site. Entrance D on Colham Green Road is the only access which can be used to get to the Service Yard. Therefore, all LGV and HGV hospital traffic has been distributed to/from Entrance D on Colham Green Road.

6.9.10 The existing ANPR data set out above has been used to calculate the distribution of hospital delivery and servicing traffic. This methodology provides the forecast delivery and servicing traffic distribution between Entrance D and each cordon on the local highway network, shown in Table 6.30.

Table 6.30: Forecast Delivery and Servicing Traffic Distribution

Cordon	Delivery and Servicing Arrivals	Delivery and Servicing Departures
1	12%	13%
2	23%	24%
3	5%	8%
4	39%	36%
7	15%	13%
8	0%	1%
9	6%	6%

Forecast Residential Development Traffic Distribution

6.9.11 In Phase 2 of the development, three residential plots consisting of 327 dwellings will be developed on the eastern part of the site. 67% of these dwellings will be accessed via a new access on Pield Heath Road approximately 50m to the east of the main hospital access. The remaining 33% of the residential dwellings will be accessed via Entrance D on Colham Green Road.

6.9.12 The distribution of residential traffic has been forecast based on existing ANPR data, is the same for each residential access. This methodology provides the forecast residential traffic distribution between the residential site and each cordon on the local highway network, shown in Table 6.31.

Table 6.31: Forecast Residential Development Traffic Distribution

Cordon	Residential Traffic Distribution
1	12%
2	26%
3	7%
4	38%
7	14%
8	1%

Cordon	Residential Traffic Distribution
9	2%

Forecast Total Traffic Distribution

6.9.13 The forecast traffic distribution for hospital and residential traffic has been applied to the trip generation set out in early in this section. This results in a total distribution of all traffic generated by both the hospital and residential sites, in both Scenario 1 and 2. The distribution of arrivals, departures, and total traffic is set out below in Tables 6.38, 6.39 , and 6.40.

Table 6.32: Total Arrivals Traffic Distribution

Cordon	Scenario 1				Scenario 2				Residential				Scenario 1 Total				Scenario 2 Total			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV
1	68	0	31	0	65	0	31	0	2	0	4	0	71	0	35	0	67	0	35	0
2	127	0	57	0	120	0	57	0	6	0	9	0	133	0	66	0	125	0	66	0
3	29	0	13	0	27	0	13	0	1	0	2	0	30	0	15	0	28	0	15	0
4	219	0	99	0	207	0	98	0	8	0	13	0	227	1	112	0	215	1	112	0
7	80	0	36	0	76	0	36	0	3	0	5	0	83	0	41	0	79	0	41	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	31	0	14	0	30	0	14	0	0	0	0	0	31	0	14	0	30	0	14	0

Table 6.33: Total Departures Traffic Distribution

Cordon	Scenario 1				Scenario 2				Residential				Scenario 1 Total				Scenario 2 Total			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV
1	34	0	47	0	33	0	45	0	6	0	3	0	40	0	49	0	39	0	48	0
2	63	0	87	0	61	0	84	0	15	0	6	0	77	1	93	0	76	1	91	0
3	20	0	27	0	19	0	26	0	4	0	2	0	23	0	29	0	23	0	28	0
4	95	1	133	0	93	1	129	0	21	0	9	0	116	1	142	0	113	1	138	0
7	33	0	46	0	32	0	45	0	8	0	3	0	41	0	49	0	40	0	48	0
8	2	0	2	0	2	0	2	0	0	0	0	0	2	0	3	0	2	0	2	0
9	15	0	22	0	15	0	21	0	0	0	0	0	15	0	22	0	15	0	21	0

Table 6.34: Total Arrivals & Departures Traffic Distribution

Cordon	Scenario 1				Scenario 2				Residential				Scenario 1 Total				Scenario 2 Total			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV	All veh	HGV
1	102	0	77	0	98	0	76	0	9	0	7	0	111	0	84	0	106	0	83	0
2	190	1	144	0	181	1	141	0	20	0	16	0	210	1	159	0	201	1	157	0
3	48	0	40	0	46	0	39	0	5	0	4	0	53	0	44	0	51	0	43	0
4	314	1	232	0	299	1	228	0	29	0	22	0	343	1	254	0	328	1	250	0
7	114	0	82	0	108	0	81	0	11	0	9	0	125	0	91	0	119	0	89	0
8	2	0	2	0	2	0	2	0	0	0	0	0	2	0	3	0	2	0	3	0
9	47	0	36	0	44	0	35	0	0	0	0	0	47	0	36	0	44	0	35	0

7 London Wide Network

7.1 Introduction

7.1.1 This section provides a summary of trips made by all sustainable modes (walking, cycling, bus users and rail/underground passengers). A description of how impacts are assessed or considered in relation to each mode is given below. The below have been assessed utilising the Clinical Travel Demand Model (CTDM) and residential impacts for each scenario. The impacts are based on the development site scenario 1 or 2, compared to the current baseline assessment.

7.2 Summary of the change in trips by all sustainable modes

Scenario 1

7.2.1 There is an overall decrease in sustainable trips is because of the reduced patient and staff numbers in Scenario 1 when compared to the baseline. Therefore, there are fewer hospital trips for all modes in Scenario 1.

Table 7.1 details the difference in sustainable trips between the baseline and Scenario 1 plus residential trips. Scenario 1 includes the forecast change in staff and patient numbers, but no observed changes in modal shift

7.2.2 There is a decrease in trips across all sustainable modes.. Bus has the largest decrease, with 312 less trips across a 24-hr period. This reaches a maximum decrease of 39 movements between 08:00-08:59. Walking has the second largest decrease, with 192 less trips across a 24-hr period. This reaches a maximum decrease of 26 movements between 08:00-08:59. The walking profile between 10:00-17:59 is fairly consistent with a decrease between 12-15 movements per hour. Cyclists have a decrease of 9 less trips across a 24-hr period. The cycling profile decreases over short peak periods, in the AM peak between 07:00-08:59, over midday between 11:00-13:59 and in the PM peak between 15:00-17:59. There are no cycle movements outside of these times. As explained previously, Rail and Underground trips are assigned to bus for the purposes of this analysis.

Table 7.1: Scenario 1 – Sustainable Mode Impact

	Walking			Cycling			Bus			Rail/Underground		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
24-hour	-95	-96	-192	-5	-4	-9	-155	-158	-312	0	0	0
00:00-00:59	0	0	0	0	0	0	0	0	0	0	0	0
01:00-01:59	0	0	0	0	0	0	0	0	0	0	0	0
02:00-02:59	0	0	0	0	0	0	0	0	0	0	0	0
03:00-03:59	0	0	0	0	0	0	0	0	0	0	0	0
04:00-04:59	0	0	0	0	0	0	0	0	0	0	0	0
05:00-05:59	0	0	0	0	0	0	0	0	0	0	0	0
06:00-06:59	-2	0	-2	-1	0	0	-3	0	-3	0	0	0
07:00-07:59	-20	-4	-24	-2	0	-2	-29	-8	-36	0	0	0
08:00-08:59	-20	-6	-26	-2	0	-2	-30	-10	-39	0	0	0
09:00-09:59	-8	-10	-18	0	0	0	-13	-16	-30	0	0	0
10:00-10:59	-7	-8	-15	0	0	0	-12	-13	-26	0	0	0
11:00-11:59	-7	-8	-15	0	0	-1	-12	-13	-25	0	0	0
12:00-12:59	-6	-9	-14	0	0	-1	-9	-14	-23	0	0	0
13:00-13:59	-5	-6	-12	0	0	-1	-8	-11	-19	0	0	0
14:00-14:59	-5	-7	-12	0	-1	0	-9	-11	-20	0	0	0
15:00-15:59	-5	-7	-12	0	-1	-1	-8	-12	-21	0	0	0
16:00-16:59	-4	-10	-14	0	-1	-1	-6	-15	-22	0	0	0
17:00-17:59	-3	-9	-12	0	-1	-1	-6	-13	-18	0	0	0
18:00-18:59	-4	-5	-9	0	0	0	-5	-9	-15	0	0	0
19:00-19:59	0	-4	-6	0	0	0	-2	-8	-11	0	0	0
20:00-20:59	0	-1	-2	0	0	0	-1	-2	-4	0	0	0
21:00-21:59	0	0	0	0	0	0	0	-1	-1	0	0	0
22:00-22:59	0	0	0	0	0	0	0	0	-1	0	0	0
23:00-23:59	0	0	+1	0	0	0	0	0	0	0	0	0

Scenario 2

7.2.3 Table 7.2 details the difference in sustainable trips between the baseline and Scenario 2 plus Residential demand. Scenario 2 is a decide and provide scenario, with the forecast change in staff and patient numbers, as well as a mode share shift towards more sustainable modes of transport. Again, there is an overall decrease in trips made by sustainable modes caused by the overall decrease in staff and patient numbers

7.2.4 Cycling is the only sustainable mode with an increase in trips, with 55 additional movements across a condensed profile of 14-hours. This reaches a maximum increase of 10 additional movements between 07:00-07:59. This is due to an increase in the cycling mode share which will be supported by a number of measures set out earlier in this TA.

7.2.5 Walking and Bus have a decrease in movements across a 24-hr period. Bus has the largest decrease in trips, with 257 less trips across a 24-hr period, although this is a smaller decrease than Scenario 1. This reaches a maximum decrease of 27 movements between 08:00-08:59. Walking has a smaller decrease in trips in Scenario 2, with 98 less trips across a 24-hr period. The walking profile fluctuates and reaches a maximum decrease of 15 movements between 08:00-08:59. Rail/Underground remains unchanged with 0 total trips.

7.2.6 . Whilst the mode share for sustainable modes increases in Scenario 2, the actual number of trips made by sustainable modes decreases due to the decrease in overall trips in Scenario 2 compared to the baseline.

Table 7.2: Scenario 2 – Sustainable Mode Impact

	Walking			Cycling			Bus			Rail/Underground		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
24-hour	-47	-51	-98	+23	+32	+55	-130	-127	-257	0	0	0
00:00-00:59	0	0	0	0	0	0	0	0	0	0	0	0
01:00-01:59	0	0	0	0	0	0	0	0	0	0	0	0
02:00-02:59	0	0	0	0	0	0	0	0	0	0	0	0
03:00-03:59	0	0	0	0	0	0	0	0	0	0	0	0
04:00-04:59	0	0	0	0	0	0	0	0	0	0	0	0
05:00-05:59	0	0	0	0	0	0	0	0	0	0	0	0
06:00-06:59	-2	0	-2	-2	0	-2	-12	0	-12	0	0	0
07:00-07:59	-10	-2	-12	+8	+2	+10	-18	-5	-22	0	0	0
08:00-08:59	-11	-4	-15	+7	+2	+9	-20	-7	-27	0	0	0
09:00-09:59	-6	-8	-14	+2	+2	+4	-10	-14	-25	0	0	0
10:00-10:59	-7	-8	-13	0	+1	+1	-11	-12	-24	0	0	0
11:00-11:59	-6	-7	-14	+1	+1	+1	-11	-12	-24	0	0	0
12:00-12:59	-4	-7	-12	+2	+1	+2	-7	-12	-21	0	0	0
13:00-13:59	-5	-5	-10	+1	+1	+1	-8	-10	-17	0	0	0
14:00-14:59	-4	-6	-10	0	+1	+2	-8	-9	-17	0	0	0
15:00-15:59	-5	-5	-9	0	+2	+2	-8	-9	-17	0	0	0
16:00-16:59	-3	-4	-7	0	+6	+6	-5	-9	-14	0	0	0
17:00-17:59	-3	-3	-6	0	+5	+5	-5	-6	-11	0	0	0
18:00-18:59	-2	-3	-5	+1	+2	+2	-5	-6	-12	0	0	0
19:00-19:59	+13	+1	+13	+2	+3	+5	0	-7	-6	0	0	0
20:00-20:59	+6	+8	+12	0	+5	+6	0	0	0	0	0	0
21:00-21:59	+1	+4	+5	0	+1	0	-1	-3	-4	0	0	0
22:00-22:59	0	0	0	0	0	0	-1	-3	-3	0	0	0
23:00-23:59	0	0	+1	0	0	0	0	0	0	0	0	0

7.3 Analysis by mode of impact of additional trips

7.3.1 The sustainable trip impact of the development has been considered per mode as described in the following sections.

Footway infrastructure (widths and crossings)

7.3.2 Pedestrian facilities within and around the site will be designed to sufficient widths to cater for forecast pedestrian flows in peak periods (people per hour (pph)), for each Scenario 1 and Scenario 2.

7.3.3 The Active Travel Zone assessment (ATZ, Section 5) highlighted the key walking and cycling routes to local convenience stores and transport hubs. The results indicated that some footways within the local area would impede on walking trips. The issues included obstructions, narrowing and unsuitable crossing points.

7.3.4 Scenario 1 has an overall decrease in walking trips to the site. There is a decrease of 24 two-way pedestrian trips between 07:00-07:59. Therefore, it is unlikely that there will be an impact on the Pedestrian Level of Comfort (PLoC).

7.3.5 Scenario 2 has an overall decrease in walking trips to the site. There is a decrease of 15 two-way pedestrian trips between 08:00-08:59. There is an increase in pedestrian trips between 19:00-21:00, with a maximum increase of 13 two-way pedestrian trips per hour. This level of increase in trips is unlikely to have an impact on the PLoC.

7.3.6 The internal pavement network has been designed to reflect the number of staff and patients walking internally, with recommended footway widths taken from TfL's PLoC guidance for London.

Cycle infrastructure and routes

7.3.7 The proposed development has been designed to provide cyclists to have a high-quality environment to travel to the hospital. The proposed layout, defined in the masterplan provides a new mobility hub, which will provide high quality cycle facilities. The mobility hub is discussed in detail in Section 4.12.

7.3.8 The infrastructure along Pield Heath Road, running parallel to the hospital site, will be upgraded to include a 6m movement corridor, which will contain both pedestrian and cycle provision. The shared provision runs from the junction with Royal Lane, to the proposed residential access junction, and continues to the junction with Colham Green Road.

7.3.9 The internal hospital link, accessed by Colham Green Road, will have an upgraded shared use foot/cycle way on one side of the highway. The upgraded provision will be 3m wide, to enable free and safe movement for all users, and will connect to the new hospital and the central 'green corridor'.

7.3.10 Additional cycle parking is proposed in line with The London Plan, with both long and short stay spaces calculated on final land classes and development quanta. This results in 56 Short stay and 336 long stay spaces.

7.3.11 Scenario 1 has an overall decrease in cycling trips to the site. There is a maximum decrease of 2 cyclists per hour between 07:00-08:59. Therefore it is unlikely that there will be an impact on the cycling infrastructure.

7.3.12 Scenario 2 has an overall increase in cycling trips to the site. There is a maximum increase of 10 two-way cycling trips between 07:00-07:59. The proposed improvements to cycling infrastructure will provide sufficient provision for the forecast increase in cycle trips.

7.3.13 Off-site infrastructure will be considered in terms of forecast demand and key desire lines, as described in the ATZ assessment (Section 5).

Bus capacity (infrastructure and services)

7.3.14 The travel demand forecast scenarios provide a forecast of additional bus passengers with a profile throughout the day. This will enable additional demand per hour to be understood. Initial information on typical daily bus patronage at the hospital has been provided by TfL. This includes information on the number of passengers who bars, alight and the number of board but passing through the hospital.

7.3.15 In order to understand the distribution of additional trips on the network, staff postcode analysis was undertaken, utilising each U-route corridor, and the associated bus stops. Each route was analysed to understand how many other services each staff member could use, and a percentage was applied to each u-route. The resulting values were factored against the total number of staff who can access the hospital by bus. A total service assignment of available staff routes resulted in a proportion service assignment applicable to each u-route. Table 7.3 displays the proportion of service assignment.

Table 7.3: Proportion of Staff with only one accessible bus route an alternative

		U1	U2	U3	U4	U5	U7
Postcode accessible by one service only		6.0%	4.2%	2.5%	0.2%	0.1%	9.1%
Postcode accessible from more than one service	U1		2.1%	2.8%	2.1%	2.7%	2.1%
	U2	2.0%		1.9%	2.2%	1.9%	2.4%
	U3	2.9%	2.1%		2.3%	3.1%	2.2%
	U4	2.5%	2.7%	2.6%		3.4%	3.5%
	U5	3.2%	2.4%	3.5%	3.5%		2.7%
	U7	2.4%	2.7%	2.3%	3.2%	2.5%	
Total service assignment		**19.1%**	**16.1%**	**15.6%**	**13.5%**	**13.7%**	**22.0%**

7.3.16 A service assignment has been undertaken to understand the impact that Scenario 2 has on each service. Table 7.4 details the uplift as a result of Scenario 2, combined with the residential trip generation. This is compared to the baseline current hospital operation. The largest nominal increase is five additional trips per service, with some services reducing the number of passengers from the baseline scenario.

Table 7.4: Hourly Assigned Uplift in Bus Passenger Trips

	U1		U2		U3		U4		U5		U7		
	Alight	Board	Alight	Board	Alight	Board	Alight	Board	Alight	Board	Alight	Board	Total Impact
0000-0100	0	0	0	0	0	0	0	0	0	0	0	0	0
0100-0200	0	0	0	0	0	0	0	0	0	0	0	0	0
0200-0300	0	0	0	0	0	0	0	0	0	0	0	0	0
0300-0400	0	0	0	0	0	0	0	0	0	0	0	0	0
0400-0500	0	0	0	0	0	0	0	0	0	0	0	0	0
0500-0600	0	0	0	0	0	0	0	0	0	0	0	0	0
0600-0700	-2	0	-2	0	-2	0	-2	0	-2	0	-3	0	-12
0700-0800	-3	+7	-3	+6	-3	+6	-2	+5	-2	+5	-4	+8	+20
0800-0900	-3	+7	-3	+6	-3	+6	-2	+5	-2	+5	-4	+8	+21
0900-1000	-1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-5
1000-1100	-2	-1	-1	-1	-1	0	-1	0	-1	0	-2	-1	-11
1100-1200	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-12
1200-1300	-1	-1	-1	-1	0	-1	0	0	0	0	-1	-1	-7
1300-1400	0	-1	0	0	0	0	0	0	0	0	0	-1	-4
1400-1500	+0	0	0	0	0	0	0	0	0	0	0	0	+3
1500-1600	+3	0	+2	0	+2	0	+2	0	+2	0	+3	0	+14
1600-1700	+4	0	+3	0	+3	0	+3	0	+3	0	+4	0	+19
1700-1800	+3	0	+3	0	+3	0	+2	0	+2	0	+4	0	+17
1800-1900	+5	0	+4	0	+4	0	+3	0	+3	0	+5	0	+22
1900-2000	+5	-1	+4	0	+4	0	+3	0	+3	0	+5	-1	+21
2000-2100	+3	0	+3	0	+2	0	+2	0	+2	0	+3	0	+17
2100-2200	0	-1	0	0	0	0	0	0	0	0	0	-1	-4
2200-2300	0	-1	0	0	0	0	0	0	0	0	0	-1	-3
2300-0000	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Impact	+8	+10	+7	+9	+7	+8	+6	+7	+6	+7	+9	+12	+96

7.3.17 All bus trips are assumed to be assigned to one of the 7 u-route bus services, from the nearest stops to the proposed redevelopment on Pield Heath Road (U1/U2/U3/U4/U5/U7) and Colham Green Road (U1/U3/U5).

7.3.18 It is recognised that passengers may ultimately be distributed more widely i.e., Uxbridge/West Drayton interchanges where more routes are available. The assumption stated means that a worst-case impact is assessed.

7.3.19 The analysis highlights the number of bus services that already serve the Hillingdon Hospital site, along a number of routes. It is not anticipated that additional service provision is necessary to accommodate the nominal increases per service. The proposed development offers the opportunity for a TfL bus route to through the development site in Phase 2 of the redevelopment. If such service was added, additional staff, patients and visitors may utilise the service, without an increase in capacity.

7.3.20 On this basis, therefore, no adverse bus impacts are anticipated as a result of the proposed development.

Rail and underground demand summary

7.3.21 The combined travel demand for rail and underground services is analysed in this section. This enables an understanding of the impacts of the redevelopment.

7.3.22 The most recent data from Office of Rail and Road (ORR) 2018-2019 for West Drayton shows a total yearly usage of 2,197,016, equating to approximately 42,250 entries and exits per week. This equates to approximately 6,000 daily entrances and exits. Working on an 18hr working day, this totals 333 hourly trips.

7.3.23 The forecast trip generation shows that there will be no change in the number of rail/underground trips. Therefore, it is anticipated that there will be no impact on rail/underground services as a result of the proposed development.

7.3.24 On this basis, no adverse Underground/Rail impacts are anticipated as a result of the proposed development.

7.4 Design and Mitigation Solutions

7.4.1 The proposed pedestrian and cycle infrastructure requirements have been developed following the assessment and in-line with guidance to provide suitable capacity for forecast demand. These proposals will be fully described in the Site and Surroundings Section 4.

7.4.2 Concept design drawings have been provided in Appendix H and a full Healthy Streets Check has been carried out in Section 4.13, along the Pield Heath Road corridor along the northern site frontage. Associated Stage 1 Road Safety Audits have been undertaken and accompanied by a design team response, detailed in Section 4.14.

8 Local Network Assessment

8.1 Introduction

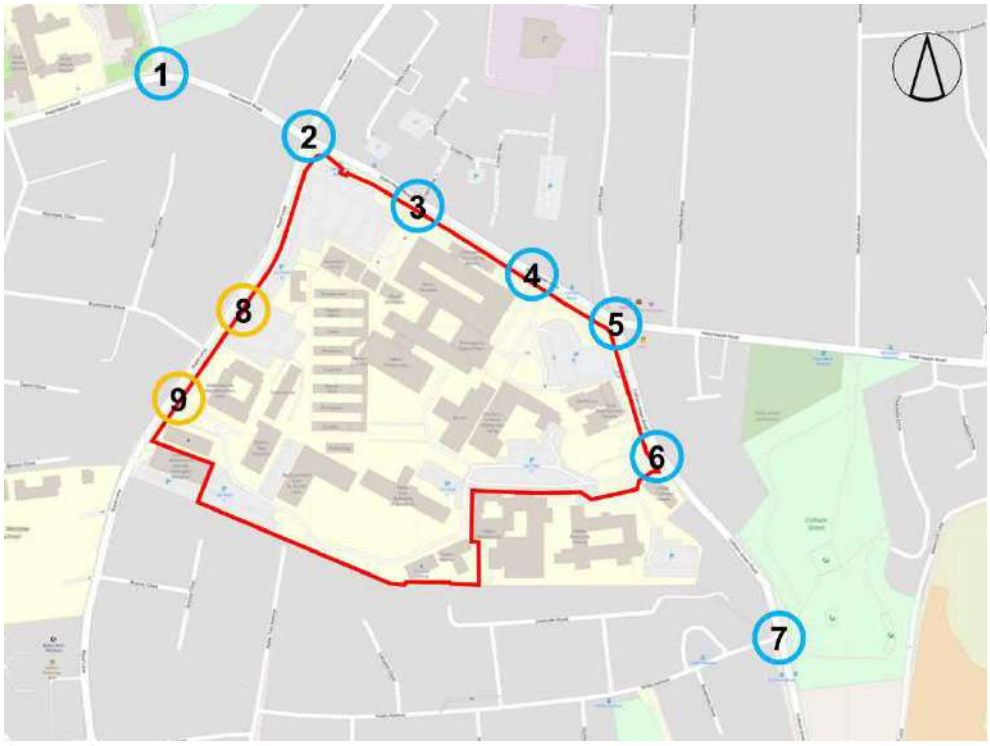
8.1.1 This section details the traffic modelling that has been undertaken to assess the operation of the local network. The network extents considered in the local network assessment were agreed with London Borough of Hillingdon and TfL through extensive pre-application engagement.

8.2 Scope of assessment

8.2.1 The geographic scope of the local network assessment will focus on Pield Heath Road and Colham Green Road. Figure 8.1 below displays the extent of the model, with the following junctions highlighted for assessment.

8. Pield Heath Road/Kingston Lane
9. Pield Heath Road/Royal Lane
10. Existing and Proposed Hospital Main Entrance
11. Existing Hospital A&E Entrance/Proposed Opportunity Site Entrance
12. Pield Heath Road/Colham Green Road
13. Colham Green Road/Hospital Through Road
14. Colham Green Road/Violet Avenue

Figure 8.1: Geographic Scope of Traffic Impact Assessment



Source: Openstreetmap

8.2.2 A description of each junction in terms of its current and proposed arrangement is shown below in Table 8.1.

Table 8.1: Local Junction Descriptions

Junction	Existing	Proposal	Proposed Delivery Phase
1 - Pield Heath Road/Kingston Lane	Simple priority junction at intersection of Pield Heath Road and Kingston Lane	No changes proposed	N/A
2 - Pield Heath Road/Royal Lane	Mini-roundabout junction at intersection of Pield Heath Road and Royal Lane	Minor realignment of eastern arm to accommodate bus lane merge. Pedestrian crossings added on the western and southern arms.	Phase 1b
3 - Existing and Proposed Hospital Main Entrance	Signalised junction at intersection of Pield Heath Road, Crispin Way and Hospital Main Entrance	Junction enlargement to facilitate two-lane entry and exit to hospital/car park and widening on Piled Heath Road west to facilitate westbound bus lane. Lane allocation and signal specification changed.	Phase 1b
4 - Existing Hospital A&E Entrance/Proposed Opportunity Site Entrance	Simple priority junction at intersection of Pield Heath Road and A&E Entrance	Relocation of existing priority junction further west to facilitate northern residential access road (cul-de-sac)	Phase 2
5 - Pield Heath Road/Colham Green Road	Mini-roundabout junction at intersection of Pield Heath Road and Colham Green Road	Minor realignment of southern arm to facilitate footway to south-east and new signalised crossing of southern arm	Phase 1b
6 - Colham Green Road/Hospital Through Road	Simple priority junction at intersection of Colham Green Road and SE Hospital Entrance	Widening of existing junction to facilitate HGV traffic	Phase 1c
7 - Colham Green Road/Violet Avenue	Mini-roundabout junction at intersection of Colham Green Road and Violet Avenue	No changes proposed	N/A
8 – Royal Lane Staff Car Park Access	Simple priority junction at intersection of Royal Lane and Staff Car Park Entrance	Junction to be stopped Up	N/A
9 – Royal Lane/Hospital Through Road	Simple priority junction at intersection of Royal Lane and SW Hospital Entrance	Junction to be stopped Up	N/A

8.2.3 The local network has been assessed in 2026 and 2031, using the scenario 1 and 2 hospital traffic in 2026, as well as the residential development traffic in 2031. The description of scenario 1 and 2 is set out in Section 6.1. The scenarios in which the local network has been assessed are set out in Table 8.2.

Table 8.2: Scenarios Assessed

Scenario	Highway Layout	Traffic
2021 Baseline	Existing	November 2021 Surveyed Background Traffic + Baseline CTDM Hospital Traffic
2026 Future Baseline	Existing	(November 2021 Surveyed Background Traffic x 2026 TEMPro growth) +Baseline CTDM Hospital Traffic
2031 Future Baseline	Existing	(November 2021 Surveyed Background Traffic x 2031 TEMPro growth) +Baseline CTDM Hospital Traffic
2026 Scenario 1	Proposed	November 2021 Surveyed Background Traffic x 2026 TEMPro growth) +Scenario 1 CTDM Hospital Traffic
2026 Scenario 2	Proposed	November 2021 Surveyed Background Traffic x 2026 TEMPro growth) +Scenario 2 CTDM Hospital Traffic
2031 Scenario 1 + Residential Development	Proposed	(November 2021 Surveyed Background Traffic x 2031 TEMPro growth) +Scenario 1 CTDM Hospital Traffic + Residential Traffic
2031 Scenario 2 + Residential Development	Proposed	(November 2021 Surveyed Background Traffic x 2031 TEMPro growth) +Scenario 2 CTDM Hospital Traffic + Residential Traffic

8.3 Background Traffic Growth

8.3.1 Background traffic growth has been calculated in order to forecast future background traffic on the local highway network. This has been done by multiplying the background traffic surveyed in November 2021 by the TEMPro growth factors set out in Table 8.3.

Table 8.3: TEMPro Growth Factors

Year	Time Period	Origin	Destination	Average
2021-2026	**AM**	1.0306	1.0432	**1.0369**
	PM	1.0443	1.0329	**1.0386**
2021-2031	**AM**	1.0662	1.0847	**1.0755**
	PM	1.0879	1.0699	**1.0789**

8.3.2 The TEMPro factors used show that background traffic is expected to increase between 2021 and 2031. However, this is not in line with the Mayors Transport Strategy targets of negative traffic growth by 2041. Therefore, the TEMPro factors used may not be appropriate for calculating background traffic growth in London. However, this methodology gives a ‘worst case’ scenario for background traffic growth between 2021 and 2031, and the use of TEMPro growth factors within this assessment is considered to be a robust approach.

8.4 Committed Developments

8.4.1 A review of the Hillingdon Planning Portal has been undertaken. As a result, we are not aware of any committed developments within the locality of the Hospital Development, which will have an additional impact on the local traffic network, alongside the hospital redevelopment.

8.5 VISSIM Modelling

8.5.1 To accurately assess the impact of the proposed development on the local network, the use of a VISSIM model has been proposed. A VISSIM model provides the ability to model activity within and around the site across all modes of travel. This is proposed to include pedestrians and cyclists, buses and private car on the local network.

8.5.2 The model also enables an analysis of car park access flows and interaction with pedestrian flows entering and leaving the hospital across the car park access route and could extend into the site. These additional capabilities enable an in-depth analysis and comparison of the above scenarios to occur and to validate or influence design decisions through the assessment as masterplan development continues.

8.5.3 Using VISSIM is recommended in TfL's Traffic Modelling Guidelines (version 3, 2010), particularly for modelling networks in urban areas. VISSIM can model individual vehicles to reflect a proxy of 'real life' scenarios, and is the software used in London's Traffic Control Centre.

8.5.4 The VISSIM model has been built following TfL guidance on developing a VISSIM Model (Section 5 in the TfL Guidelines) and is appropriate for use in Hillingdon due to the necessity to model the surrounding network across all modes and demonstrate how the network, particularly Pield Heath Road, is forecast to operate in the future.

8.5.5 Developing an accurate VISSIM model of the local area is an iterative process, including factors such as traffic schemes and driver route choices. The model would need to be optimised using the following structure and guidance from TfL, following their VMAP process which in summary is:

- Phase 1 – Initial optimisation, used to enhance signal timings after the major design decisions have been made within the proposal
- Phase 2 – fine tuning and Impact Assessment, used to hone signal timings which maximise performance within the proposal prior to impact assessment against the base
- Phase 3 – on street controller timings, and optimal stage based on model scope to derive signal timings for direct implementation onto the street

8.5.6 The VMAP process has been delayed due to issues of identifying reviewing resource within TfL. The TfL Traffic Modelling Guidelines indicate that VISSIM should be used to complement modelling undertaken using standalone models, such as LinSig and Junctions 9. The standalone junction models are set out in the following sections and demonstrate junction by junction operation.

8.5.7 A topic specific Technical Note will be prepared and issued on the Vissim model, in close consultation with both TfL and LBH, in advance of any determination of the planning application.

8.6 Standalone Junction Modelling

8.6.1 Standalone LinSig and Junctions 9 models have been prepared for all seven junctions set out in Section 8.1. The following model outputs are presented in this report and can be used to assess the impact of the proposals on each junction. Where possible, and where data has been

available, baseline 2021 model outputs have been validated against observed queue data collected during site visits.

- Junctions 9
  - Queue
  - Delay
  - Ratio of Flow to Capacity (RFC)
- LinSig
  - Queue
  - Delay
  - Degree of Saturation (DoS)

8.6.2 Phase 1b of the development includes the redevelopment of the proposed hospital. This is included in the Do-Something assessment in 2026. Phase 2 includes the redevelopment of the hospital and the residential development on the eastern part of the site. This is included in the Do-Something assessment in 2031.

8.6.3 Full outputs for each junction and each scenario will be appended to the Transport Assessment, in Appendix I.

Junction 1 – Pield Heath Road/Kingston Lane

8.6.4 This junction is located north-west of the hospital along Pield Heath Road and Kingston Lane. The junction is a three-arm priority controlled (give way) T-junction with no controlled pedestrian crossing facilities. The existing geometries have been measured using OS base mapping and modelled using Junctions 9 software.

8.6.5 There are no proposed changes to this junction in Phase 1b and Phase 2 as part of the redevelopment.

Baseline and Future Baseline

8.6.6 The 2021 baseline results are shown in Table 8.4.

Table 8.4: Junction 1 – Pield Heath Road/Kingston Lane 2021 Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Kingston Lane	7.3	66.06	0.91	4.1	37.80	0.81
Pield Heath Road (East)	7.2	25.54	0.83	4.5	16.30	0.74

8.6.7 The assessment shows that this junction is at capacity in the 2021 baseline with a maximum RFC of 0.91 on the Kingston Lane approach in the AM peak hour with an associated queue length of 7.3 PCU. In the PM peak hour, the maximum RFC of 0.81 is on the Kingston Lane approach with a queue length of 4.1 PCU.

8.6.8 The 2026 future baseline results are shown in Table 8.5.

Table 8.5: Junction 1 – Pield Heath Road/Kingston Lane 2026 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Kingston Lane	10.5	90.70	0.96	5.3	48.49	0.86
Pield Heath Road (East)	9,1	31.23	0.86	5.3	18.11	0.77

8.6.9 The assessment shows that this junction is at capacity in the 2026 future baseline with a maximum RFC of 0.96 on the Kingston Lane approach in the AM peak hour with an associated queue length of 10.5 PCU. In the PM peak hour, the maximum RFC of 0.86 is on the Kingston Lane approach with a queue length of 5.3 PCU.

8.6.10 The 2031 future baseline results are shown in Table 8.6.

Table 8.6: Junction 1 - Pield Heath Road/Kingston Lane 2031 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Kingston Lane	16.0	128.20	1.01	7.4	65.52	0.91
Pield Heath Road (East)	12.0	40.10	0.90	6.3	20.57	0.80

8.6.11 The assessment shows that this junction is over capacity in the 2031 future baseline with a maximum RFC of 1.01 on the Kingston Lane approach in the AM peak hour with an associated queue length of 16.0 PCU. In the PM peak hour, the maximum RFC of 0.91 is on the Kingston Lane approach with a queue length of 7.4 PCU.

2026 Scenario 1

8.6.12 The 2026 Scenario 1 results are shown in Table 9.4.

Table 8.7: Junction 1 - Pield Heath Road/Kingston Lane 2026 Scenario 1 Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Kingston Lane	7.4	67.26	0.91	5.4	48.75	0.86
Pield Heath Road (East)	7.1	24.98	0.82	4.6	16.54	0.75

8.6.13 The assessment shows that this junction is at capacity in 2026 Scenario 1 with a maximum RFC of 0.91 on the Kingston Lane approach in the AM peak hour with an associated queue length of 7.4 PCU. In the PM peak hour, the maximum RFC of 0.86 is on the Kingston Lane approach with an associated queue length of 5.4 PCU.

8.6.14 This junction has a slightly improved capacity in the 2026 Scenario 1 compared to the 2026 future base year scenario. The Kingston Lane approach has a 0.05 RFC decrease in the AM peak hour with a decrease in associated queue length of 3.1 PCU.

8.6.15 In the PM peak hour there are negligible changes in the junction capacity in the 2026 Scenario 1 compared to the 2026 future base year scenario.

2026 Scenario 2

8.6.16 The 2026 Scenario 2 results are shown in Table 8.8.

Table 8.8: Junction 1 - Pield Heath Road/Kingston Lane 2026 Scenario 2 Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Kingston Lane	6.4	60.12	0.89	5.4	48.31	0.86
Pield Heath Road (East)	6.8	24.21	0.82	4.4	16.22	0.74

8.6.17 The assessment shows that this junction is at capacity in 2026 Scenario 2 with a maximum RFC of 0.89 on the Kingston Lane approach in the AM peak hour with an associated queue length of 6.4 PCU. In the PM peak hour, the maximum RFC of 0.86 is on the Kingston Lane approach with an associated queue length of 5.4 PCU.

8.6.18 This junction has a slightly improved capacity in the 2026 Scenario 2 compared to the 2026 future base year scenario. The Kingston Lane approach has a 0.07 RFC decrease in the AM peak hour with a decrease in associated queue length of 4.1 PCU. In the PM peak hour the Pield Heath Road (east) approach has a 0.03 RFC decrease with a decrease in associated queue length of 0.9 PCU.

8.6.19 The improvements in capacity in 2026 Scenario 2 and slightly greater than the improvements in 2026 Scenario compared to the 2026 future base year.

Scenario 2031 + Resi

8.6.20 The 2031 Scenario 1 + Resi results are shown in Table 9.6.

Table 8.9: Junction 1 - Pield Heath Road/Kingston Lane 2031 Scenario 1 + Resi Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Kingston Lane	13.1	110.36	0.99	9.0	75.78	0.93
Pield Heath Road (East)	11.3	38.02	0.89	5.9	19.54	0.79

8.6.21 The assessment shows that this junction is at capacity in 2031 Scenario 1 + Resi with a maximum RFC of 0.99 on the Kingston Lane approach in the AM peak hour with an associated queue length of 13.1 PCU. In the PM peak hour, the maximum RFC of 0.93 is on the Kingston Lane approach with an associated queue length of 9.01 PCU.

8.6.22 This junction has a slightly improved capacity in the AM peak hour in the 2031 Scenario 1 + Resi compared to the 2031 future base year. The Kingston Lane approach has a 0.02 RFC decrease with a decrease in associated queue length of 2.9 PCU.

8.6.23 In the PM peak hour, the junction has a slightly worsened capacity on the Kingston Lane approach with an increase of 0.02 RFC with an increase in associated queue length of 1.6 PCU. However, the Pield Heath Road (East) approach has a slightly improved capacity with a decrease of 0.01 RFC with a decrease in associated queue length of 0.4 PCU.

2031 Scenario 2 + Resi

8.6.24 The 2031 Scenario 2 + Resi results are shown in Table 9.7.

Table 8.10: Junction 1 - Pield Heath Road/Kingston Lane 2031 Scenario 2 + Resi Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Kingston Lane	11.3	98.43	0.97	8.8	74.93	0.93
Pield Heath Road (East)	10.8	36.36	0.88	5.8	19.24	0.78

8.6.25 The assessment shows that this junction is at capacity in 2031 Scenario 2 + Resi with a maximum RFC of 0.97 on the Kingston Lane approach in the AM peak hour with an associated queue length of 11.3 PCU. In the PM peak hour, the maximum RFC of 0.93 is on the Pield Heath Road (East) approach with an associated queue length of 5.8 PCU.

8.6.26 This junction has a slightly improved capacity in the AM peak hour in the 2031 Scenario 2 + Resi compared to the 2031 future base year. The Kingston Lane approach has a 0.04 RFC decrease with a decrease in associated queue length of 4.7 PCU.

8.6.27 In the PM peak hour, the junction has a slightly worsened capacity on the Kingston Lane approach with an increase of 0.02 RFC with an increase in associated queue length of 1.4 PCU. However, the Pield Heath Road (East) approach has a slightly improved capacity with a decrease of 0.02 RFC with a decrease in associated queue length of 0.5 PCU.

8.6.28 The difference in capacity between 2031 Scenario2 + Resi and 2031 Scenario 1 + Resi are negligible.

Junction 2 - Pield Heath Road/Royal Lane

8.6.29 This junction is located to the north-west corner of the hospital site along Pield Heath Road and Royal Lane. The junction is a four-arm priority controlled (give way) mini-roundabout with no controlled pedestrian crossing facilities. The existing geometries have been measured using OS base mapping and modelled using Junctions 9 software.

8.6.30 The traffic flows at this mini roundabout are ‘unbalanced’, with 70% of the total flow through the roundabout being on the Pield Heath Road approaches. This means that the junction may operate similar to a priority-controlled crossroads rather than a mini roundabout. When mini roundabouts behave like this, Junctions 9 software cannot accurately forecast the operation of the junction due to a number of software limitations. Therefore, the results set out below should be interpreted with caution.

8.6.31 The baseline junction model has been validated against observed queue lengths, and the results for the VISSIM model will provide more information on the operation of this junction.

8.6.32 In Phase 1b, there is to be a minor realignment of the eastern arm to accommodate the bus lane merge as well as new pedestrian crossings on the western and southern arms.

Baseline and Future Baseline

8.6.33 The 2021 baseline results are shown in Table 8.11.

Table 8.11: Junction 2 – Pield Heath Road/Royal Lane 2021 Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Royal Lane (North)	2.8	34.49	0.75	0.5	14.44	0.36
Pield Heath Road (East)	53.0	295.90	1.16	40.7	195.39	1.10
Royal Lane (South)	3.1	23.68	0.77	1.8	16.62	0.65
Pield Heath Road (West)	59.5	244.93	1.13	14.6	70.70	0.97

8.6.34 The assessment shows that this junction is over capacity in the 2021 baseline with a maximum RFC of 1.16 on the Pield Heath Road (east) entry approach in the AM peak hour with an associated queue length of 53.0 PCU. In the PM peak hour, the maximum RFC of 1.10 is also on the Pield Heath Road (east) entry approach with a queue length of 40.7 PCU.

8.6.35 The 2026 future baseline results are shown in Table 8.12.

Table 8.12: Junction 2 – Pield Heath Road/Royal Lane 2026 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Royal Lane (North)	3.1	37.36	0.77	0.6	15.25	0.38
Pield Heath Road (East)	65.6	386.46	1.20	53.6	261.09	1.14
Royal Lane (South)	3.5	26.22	0.79	2.0	17.54	0.67
Pield Heath Road (West)	73.0	319.25	1.17	21.5	96.17	1.01

8.6.36 The assessment shows that this junction is over capacity in the 2026 future baseline with a maximum RFC of 1.20 on the Pield Heath Road (east) approach in the AM peak hour with an associated queue length of 65.6 PCU. In the PM peak hour, the maximum RFC of 1.14 is also on the Pield Heath Road (east) approach with a queue length of 53.6 PCU.

8.6.37 The 2031 future baseline results are shown in Table 8.13.

Table 8.13: Junction 2 - Pield Heath Road/Royal Lane 2031 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Royal Lane (North)	3.5	41.58	0.79	0.6	15.98	0.40
Pield Heath Road (East)	78.1	477.23	1.24	67.8	360.94	1.19
Royal Lane (South)	4.1	29.67	0.82	2.1	18.45	0.69
Pield Heath Road (West)	87.4	399.00	1.20	31.0	128.70	1.04

8.6.38 The assessment shows that this junction is over capacity in the 2031 Scenario 1 future baseline with a maximum RFC of 1.24 on the Pield Heath Road (east) approach in the AM peak hour with an associated queue length of 78.1 PCU. In the PM peak hour, the maximum RFC of 1.19 is also on the Pield Heath Road (east) approach with a queue length of 67.8 PCU.

2026 Scenario 1

8.6.39 The 2026 Scenario 1 results are shown in Table 9.4.

Table 8.14: Junction 2 - Pield Heath Road/Royal Lane 2026 Scenario 1 Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Royal Lane (North)	2.5	30.33	0.72	0.6	13.99	0.36
Pield Heath Road (East)	46,4	285.86	1.15	28.4	153.87	1.06
Royal Lane (South)	4.1	29.17	0.82	2.5	20.53	0.73
Pield Heath Road (West)	58.0	237.44	1.13	19.5	88,21	1.00

8.6.40 The assessment shows that this junction is over capacity in 2026 Scenario 1 with a maximum RFC of 1.15 on the Pield Heath Road (east) approach in the AM peak hour with an associated queue length of 46.4 PCU. In the PM peak hour, the maximum RFC of 1.06 is on the Pield Heath Road (east) approach with a queue length of 28.4 PCU.

8.6.41 This junction has an improved capacity in the 2026 Scenario 1 compared to the 2026 future base year. The Pield Heath Road (East) approach has a decrease of 0.05 RFC in the AM peak hour with a decrease in associated queue length of 19.2 PCU. In the PM peak hour the Pield Heath Road (East) approach has a decrease of 0.08 RFC with a decrease in associated queue length of 25.2 PCU.

2026 Scenario 2

8.6.42 The 2026 Scenario 2 results are shown in Table 8.15.

Table 8.15: Junction 2 - Pield Heath Road/Royal Lane 2026 Scenario 2 Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Royal Lane (North)	2.4	29.69	0.72	0.6	14.00	0.36
Pield Heath Road (East)	44.8	270.17	1.14	28.0	152.17	1.05
Royal Lane (South)	4.1	28,84	0.81	2.5	20.01	0.72
Pield Heath Road (West)	52.0	207.96	1.11	19.3	87.62	0.99

8.6.43 The assessment shows that this junction is over capacity in 2026 Scenario 2 with a maximum RFC of 1.14 on the Pield Heath Road (East) approach in the AM peak hour with an associated queue length of 44.8 PCU. In the PM peak hour, the maximum RFC of 1.05 is on the Pield Heath Road (East) approach with an associated queue length of 28.0 PCU.

8.6.44 This junction has an improved capacity in the 2026 Scenario 2 compared to the 2026 future base year. The Pield Heath Road (East) approach has a decrease of 0.06 RFC in the AM peak hour with a decrease in associated queue length of 20.8 PCU. In the PM peak hour, the Pield Heath Road (East) approach has a decrease of 0.09 RFC with a decrease in associated queue length of 24.8 PCU.

8.6.45 The improvements in junction capacity are slightly greater in 2026 Scenario 2 compared to 2026 Scenario 1.

2031 Scenario 1 + Resi

8.6.46 The 2031 Scenario 1 + Resi results are shown in Table 8.16.

Table 8.16: Junction 2 - Pield Heath Road/Kingston Lane 2031 Scenario 1 + Resi Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Royal Lane (North)	2.9	33.95	0.75	0.6	15.00	0.39
Pield Heath Road (East)	73.4	495.75	1.25	44.2	227.19	1.12
Royal Lane (South)	5.0	34.22	0.85	2.9	22.89	0.75
Pield Heath Road (West)	76.5	339.34	1.18	34.9	140.37	1.05

8.6.47 The assessment shows that this junction is over capacity in 2031 Scenario 1 + Resi with a maximum RFC of 1.25 on the Pield Heath Road (east) approach in the AM peak hour with an associated queue length of 73.4 PCU. In the PM peak hour, the maximum RFC of 1.12 is on the Pield Heath Road (east) approach with an associated queue length of 44.2 PCU.

8.6.48 This junction has a slightly improved capacity in the AM peak hour in the 2031 Scenario 1 + Resi compared to the 2031 future base year. The Pield Heath road (West) approach has a decrease of 0.02 RFC with a decrease in associated queue length of 10.9 PCU. However, the Royal Lane (South) approach has a decrease in capacity in the AM peak hour with an increase in RFC of 0.03 and in increase in associated queue length of 0.9 PCU.

8.6.49 In the PM peak hour, the junction has a slightly worse capacity in the 2031 Scenario 1 + Resi compared to the 2031 future base year. The Pield Heath Road (West) approach has a 0.01 increase in RFC with an increase in associated queue length of 3.9 PCU.

2031 Scenario 2 + Resi

8.6.50 The 2031 Scenario 2 + Resi results are shown in Table 8.17.

Table 8.17: Junction 2 - Pield Heath Road/Royal Lane 2031 Scenario 2 + Resi Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Royal Lane (North)	2.8	33.33	0.75	0.6	15.02	0.39
Pield Heath Road (East)	71.3	476.95	1.24	44.1	226.49	1.12
Royal Lane (South)	4.8	33.46	0.84	2.8	22.21	0.75
Pield Heath Road (West)	69.7	302.51	1.16	34.6	139.49	1.05

8.6.51 The assessment shows that this junction is over capacity in 2031 Scenario 2 + Resi with a maximum RFC of 1.24 on the Pield Heath Road (east) approach in the AM peak hour with an associated queue length of 71.3 PCU. In the PM peak hour, the maximum RFC of 1.12 is on the Pield Heath Road (east) approach with an associated queue length of 44.1 PCU.

8.6.52 This junction has a slightly improved capacity in the AM peak hour in the 2031 Scenario 2 + Resi compared to the 2031 future base year. The Pield Heath road (West) approach has a decrease of 0.04 RFC with a decrease in associated queue length of 17.7 PCU. However, the Royal Lane (South) approach has a decrease in capacity in the AM peak hour with an increase in RFC of 0.02 and in increase in associated queue length of 0.7 PCU.

8.6.53 In the PM peak hour, the junction has a slightly worse capacity in the 2031 Scenario 2 + Resi compared to the 2031 future base year. The Pield Heath Road (West) approach has a 0.01 increase in RFC with an increase in associated queue length of 3.6 PCU.

8.6.54 The improvements in junction capacity are slightly greater in the 2031 Scenario 2 + Resi compared to the 2031 Scenario 1 + Resi.

Junction 3 - Existing and Proposed Hospital Main Entrance

8.6.55 This junction is located to the north of the hospital site along Pield Heath Road. The junction is a four-arm signal controlled crossroadswith controlled pedestrian crossing facilities on all four arms. The existing geometries have been measured using OS base mapping and modelled using LinSig software.

8.6.56 The junction is to be enlarged to facilitate two-lane entry and exit to the hospital/car park and Pield Heath Road is to be widened to the west of the junction to facilitate a westbound bus lane.

There are also proposed changes to the lane configuration on the Pield Heath Road westbound approach, with the nearside lane becoming left turn only, and the offside lane becoming ahead and right. The proposed signal specification has also been optimised in order to improve the operation of this junction.

Baseline and Future Baseline

8.6.57 The 2021 baseline results are shown in Table 8.18.

Table 8.18: Junction 3 - Hillingdon Hospital Main Entrance 2021 Baseline Results

	AM			PM		
Lane	**Mean Max Queue (PCU)**	**Total Delay (PCU/Hr)**	**DOS (%)**	**Mean Max Queue (PCU)**	**Total Delay (PCU/Hr)**	**DOS (%)**
Crispin Way	1.0	0.5	20.4%	0.5	0.2	6.3%
Pield Heath Road (East)	21.6	10.3	92.8%	20.9	9.9	91.4%
Hospital Access Arm	2.2	1.3	47.1%	2.7	1.3	35.1%
Pield Heath Road (West)	16.0	7.2	85.1%	15.1	6.3	79.6%

8.6.58 The assessment shows that this junction is at capacity in 2021 Baseline with a maximum DOS of 92.8% on the Pield Heath Road (East) approach in the AM peak hour with an associated mean maximum queue length of 21.6 PCU. In the PM peak hour, the maximum DOS of 91.4% is also on the Pield Heath Road (East) approach with an associated mean maximum queue length of 20.9 PCU.

8.6.59 The 2026 future baseline results are shown in Table 8.19.

Table 8.19: Junction 3 - Hillingdon Hospital Main Entrance 2026 Future Baseline Results

	AM	PM	
	Mean Max Queue (PCU)		
			0.5

	AM	PM
		23.4
		2.7
		16.0

8.6.60 The assessment shows that this junction is at capacity in 2026 future baseline with a maximum DOS of 95.2% on the Pield Heath Road (East) approach in the AM peak hour with an associated mean maximum queue length of 24.2 PCU. In the PM peak hour, the maximum DOS of 94.3% is also on the Pield Heath Road (East) approach with an associated mean maximum queue length of 23.4 PCU.

8.6.61 The 2031 future baseline results are shown in Table 8.20.

Table 8.20: Junction 3 - Hillingdon Hospital Main Entrance 2031 Future Baseline Results

	AM			PM		
Lane	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**
Crispin Way	1.0	49.9	22.1%	0.5	39.8	6.6%
Pield Heath Road (East)	22.6	55.1	93.8%	22.4	22.4	93.2%
Hospital Access Arm	2.2	59.3	47.1%	2.7	2.7	35.1%
Pield Heath Road (West)	16.0	40.0	85.2%	15.4	15.4	80.9%

8.6.62 The assessment shows that this junction is at capacity in 2031 future baseline with a maximum DOS of 93.8% on the Pield Heath Road (east) entry approach in the AM peak hour with an associated mean maximum queue length of 22.6 PCU. In the PM peak hour, the maximum DOS of 93.2% is also on the Pield Heath Road (east) entry approach with an associated mean maximum queue length of 22.4 PCU.

2026 Scenario 1

8.6.63 The 2026 Scenario 1 results are shown in Table 8.21.

Table 8.21: Junction 3 - Hillingdon Hospital Main Entrance 2026 Scenario 1 Results

	AM			PM		
Lane	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**
Crispin Way	1.0	0.5	21.5%	0.5	0.3	12.3%
Pield Heath Road (East)	10.6	4.8	69.6%	11.3	4.4	67.1%
Hospital Access Arm	3.5	2.1	54.1%	5.0	3.0	64.4%
Pield Heath Road (West)	9.6	3.3	58.0%	10.2	3.6	60.8%

8.6.64 The assessment shows that this junction is within capacity in 2026 Scenario 1 with a maximum DOS of 69.6% on the Pield Heath Road (East) approach in the AM peak hour with an associated mean maximum queue length of 10.6 PCU. In the PM peak hour, the maximum DOS of 67.1% is also on the Pield Heath Road (East) approach with an associated mean maximum queue length of 11.3 PCU.

8.6.65 This junction has a significantly improved capacity in 2026 Scenario 1 compared to the 2026 future base year scenario. The Pield Heath Road (East) approach has a decrease in DOS of 25.6% in the AM peak hour with a decrease in associated mean maximum queue length of 13.6

PCU. In the PM peak hour, the Pield Heath Road (East) approach has a decrease in DOS of 27.2% and a decrease in associated mean maximum queue length of 12.1 PCU.

2026 Scenario 2

8.6.66 The 2026 Scenario 2 results are shown in Table 8.22.

Table 8.22: Junction 3 - Hillingdon Hospital Main Entrance 2026 Scenario 2 Results

	AM			PM		
Lane	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**
Crispin Way	1.3	0.7	26.9%	0.7	0.4	15.5%
Pield Heath Road (East)	10.6	3.9	62.3%	12.7	4.1	61.2%
Hospital Access	4.4	2.7	60.1%	5.7	3.2	58.6%
Pield Heath Road (West)	9.7	2.7	48.3%	11.1	3.3	53.3%

8.6.67 The assessment shows that this junction is within capacity in 2026 Scenario 2 with a maximum DOS of 62.3% on the Pield Heath Road (East) approach in the AM peak hour with an associated mean maximum queue length of 10.6 PCU. In the PM peak hour, the maximum DOS of 61.2% is also on the Pield Heath Road (East) approach with an associated mean maximum queue length of 12.7 PCU.

8.6.68 This junction has a significantly improved capacity in 2026 Scenario 2 compared to the 2026 future base year scenario. The Pield Heath Road (East) approach has a decrease in DOS of 32.9% in the AM peak hour with a decrease in associated mean maximum queue length of 13.6 PCU. In the PM peak hour, the Pield Heath Road (East) approach has a decrease in DOS of 33.1% and a decrease in associated mean maximum queue length of 10.7 PCU

8.6.69 The 2026 Scenario 2 has slightly greater improvements in RFC than the 2026 Scenario 1 with marginal improvements in associated mean maximum queue length.

2031 Scenario 1 + Resi

8.6.70 The 2031 Scenario 1 + Resi results are shown in Table 8.23.

Table 8.23: Junction 3 - Hillingdon Hospital Main Entrance 2031 Scenario 1 + Resi Results

	AM			PM		
Lane	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**
Crispin Way	1.1	0.6	22.6%	0.5	0.3	12.3%
Pield Heath Road (East)	10.1	4.6	67.9%	10.7	4.3	65.3%
Hospital Access	3.6	2.9	58.3%	5.1	3.6	66.0%
Pield Heath Road (West)	9.2	3.8	59.2%	10.6	4.2	64.8%

8.6.71 The assessment shows that this junction is within capacity in 2031 Scenario 1 + Resi with a maximum DOS of 67.9% on the Pield Heath Road (East) approach in the AM peak hour with an associated mean maximum queue length of 10.1 PCU. In the PM peak hour, the maximum DOS of 66.0% is on the Hospital Access approach with associated mean maximum queue length of 5.1 PCU.

8.6.72 This junction has an improved capacity in 2031 Scenario 1 + Resi compared to the future base year scenario. The Pield Heath Road (East) approach has a decrease in DOS of 25.9% in the AM peak hour with a decrease in associated mean maximum queue length of 12.5 PCU. In the PM peak hour, the Pield Heath Road (East) approach has a decrease in DOS of 27.9% and a decrease in associated mean maximum queue length of 11.7 PCU.

2031 Scenario 2 + Resi

8.6.73 The 2031 Scenario 2 + Resi results are shown in Table 8.24.

Table 8.24: Junction 3 - Hillingdon Hospital Main Entrance 2031 Scenario 2 + Resi Results

	AM			PM		
Lane	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**	**Mean Max Queue (PCU)**	**Max Delay (PCU/Hr)**	**DOS (%)**
Crispin Way	1.4	0.8	28.3%	0.7	0.4	12.5%
Pield Heath Road (East)	10.2	3.7	60.8%	12.1	4.2	61.3%
Hospital Access	4.4	3.5	60.3%	5.5	3.7	59.7%
Pield Heath Road (West)	9.4	3.1	49.8%	12.0	4.2	59.2%

8.6.74 The assessment shows that this junction is within capacity in 2031 Scenario 2 + Resi with a maximum DOS of 60.8% on the Pield Heath Road (East) approach in the AM peak hour with an associated mean maximum queue length of 10.2 PCU. In the PM peak hour, the maximum DOS of 61.3% is on the Pield Heath Road (East) approach with an associated mean maximum queue length of 12.1 PCU.

8.6.75 This junction has an improved capacity in 2031 Scenario 2 + Resi compared to the future base year scenario. The Pield Heath Road (East) approach has a decrease in DOS of 33% in the AM peak hour with a decrease in associated mean maximum queue length of 12.4 PCU. In the PM peak hour, the Pield Heath Road (East) approach has a decrease in DOS of 31.9% and a decrease in associated mean maximum queue length of 10.3 PCU.

8.6.76 The 2031 Scenario 2 has slightly greater improvements in RFC than the 2031 Scenario 1 with marginal improvements in associated mean maximum queue length.

Junction 4 - Existing Hospital A&E Entrance/Proposed Opportunity Site Entrance

8.6.77 This junction is located to the north east of the hospital site along Pied Heath Road. The junction is a three-arm priority controlled (give way) mini-roundabout with zebra crossings on the east and westbound arms. The existing geometries have been measured using OS base mapping and modelled using Junctions 9 software.

8.6.78 The existing priority junction is to be stopped up in Phase 1b as all access/egress to the hospital is through the main hospital access junction on Pield Heath Road or the MSCP car park on Royal Lane. Therefore, no assessment of 2026 Do Something scenarios have been included. In Phase 2, the junction is relocated further west to facilitate the northern residential access road .

Baseline and future baseline

8.6.79 The 2021 baseline results are shown in Table 8.25.

Table 8.25: Junction 4 - Existing Hospital A&E Entrance 2021 Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
A&E Access	0.4	14.57	0.28	0.6	16.62	0.38
Pield Heath Road (West)	0.9	5.98	0.27	0.2	4.96	0.09

8.6.80 The assessment shows that this junction is within capacity in the 2021 base year with a maximum RFC of 0.28 on the A&E Access approach in the AM peak hour with an associated queue length of 0.4 PCU. In the PM peak hour, the maximum RFC of 0.38 is on the A&E Access approach with an associated queue length of 0.6 PCU.

8.6.81 The 2026 future baseline results are shown in Table 8.26.

Table 8.26: Junction 4 - Existing Hospital A&E Entrance Junction 2026 Future Baseline Results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
A&E Access	0.4	15.11	0.29	0.6	17.39	0.39
Pield Heath Road (West)	0.9	5.97	0.27	0.2	4.92	0.10

8.6.82 The assessment shows that this junction is within capacity in the 2026 future baseline with a maximum RFC of 0.29 on the A&E Access approach in the AM peak hour with an associated

queue length of 0.4 PCU. In the PM peak hour, the maximum RFC of 0.39 is on the A&E Access approach with an associated queue length of 0.6 PCU.

8.6.83 The 2031 future baseline results are shown in Table 8.27.

Table 8.27: Junction 4 – Existing Hospital A&E Entrance Junction 2031 Future Baseline Results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
A&E Access	0.4	15.73	0.30	0.7	18.27	0.40
Pield Heath Road (West)	1.0	5.97	0.28	0.2	4.89	0.10

8.6.84 The assessment shows that this junction is within capacity in the 2031 future baseline with a maximum RFC of 0.30 on the A&E Access entry approach in the AM peak hour with an associated queue length of 0.4 PCU. In the PM peak hour, the maximum RFC of 0.40 is on the A&E Access approach with an associated queue length of 0.7 PCU.

2031 Scenario 1 + Resi

8.6.85 The 2031 Scenario 1 + Resi results are shown in Table 8.28.

Table 8.28: Junction 4 - Proposed Residential Site Entrance Junction 2031 Scenario 1 + Resi Results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
A&E Access	0.1	11.64	0.12	0.0	9.87	0.05
Pield Heath Road (West)	0.0	4.75	0.03	0.1	4.43	0.04

8.6.86 The assessment shows that this junction is within capacity in the 2031 Scenario 1 + Resi with a maximum RFC of 0.12 on the A&E Access approach in the AM peak hour with an associated queue length of 0.1 PCU. In the PM peak hour, the maximum RFC of 0.05 is on the A&E Access entry approach with no associated queue.

8.6.87 This junction has an improved capacity in the 2031 Scenario 1 + Resi compared to the 2031 future base year scenario. The A&E Access approach has a 0.18 RFC decrease in the AM peak with a decrease in associated queue length of 0.3 PCU. In the PM peak hour, the A&E Access approach has a 0.35 RFC decrease resulting in no associated queue.

2031 Scenario 2 + Resi

8.6.88 The 2031 Scenario 2 + Resi results are shown in Table 8.29.

Table 8.29: Junction 4 - Proposed Residential Site Entrance Junction 2031 Scenario 2 + Resi Results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
Residential Access	0.1	11.41	0.12	0.0	9.85	0.05
Pield Heath Road (West)	0.0	4.75	0.03	0.1	4.44	0.04

8.6.89 The assessment shows that this junction is within capacity in the 2031 Scenario 2 + Resi with a maximum RFC of 0.12 on the Residential Access approach in the AM peak hour with an associated queue length of 0.1 PCU. In the PM peak hour, the maximum RFC of 0.05 is also on the Residential Access approach with no associated queue length.

8.6.90 This junction has an improved capacity in the 2031 Scenario 2 + Resi compared to the 2031 future base year scenario.

8.6.91 The difference in capacity between the 2031 Scenario 1 + Resi and 2031 Scenario 2 + Resi is negligible.

Junction 5 - Pield Heath Road/Colham Green Road

8.6.92 This junction is located to the north east of the hospital site along Pied Heath Road. The junction is a three-arm priority controlled (give way) mini-roundabout with no controlled pedestrian crossing facilities. The existing geometries have been measured using OS base mapping and modelled using Junctions 9 software.

8.6.93 There is to be a realignment of the southern arm to facilitate a footway to the south-east of the junction and a new signalised crossing of the southern arm. The proposed layout will be operational in both Phase 1b and 2.

8.6.94 The results are shown in Table 8.30.

Table 8.30: Junction 5 - Pield Heath Road/Colham Green Road 2021 Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Pield Heath Road (East)	8.3	46.32	0.91	3.0	19.73	0.76
Colham Green Road	3.9	35.44	0.81	3.3	27.71	0.77
Pield Heath Road (West)	2.6	15.28	0.71	4.1	22.80	0.81

8.6.95 The assessment shows that this junction is at capacity in the 2021 baseline with a maximum RFC of 0.91 on the Pield Heath Road (East) approach in the AM peak hour with an associated queue length of 8.3 PCU. In the PM peak hour, the maximum RFC of 0.81 is on the Pield Heath Road (West) approach with an associated queue length of 4.1 PCU.

8.6.96 The 2026 future baseline results are shown in Table 8.31.

Table 8.31: Junction 5 - Pield Heath Road/Colham Green Road 2026 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Pield Heath Road (East)	10.5	56.97	0.94	3.5	22.45	0.78
Colham Green Road	4.8	42.21	0.84	4.0	32.80	0.81
Pield Heath Road (West)	2.9	16.54	0.74	4.8	26.14	0.83

8.6.97 The assessment shows that this junction is at capacity in the 2026 future baseline with a maximum RFC of 0.94 on the Pield Heath Road (East) approach in the AM peak hour with an associated queue length of 10.5 PCU. In the PM peak hour, the maximum RFC of 0.83 is on the Pield Heath Road (West) approach with an associated queue length of 4.8 PCU.

8.6.98 The 2031 future baseline results are shown in Table 8.32.

Table 8.32: Junction 5 - Pield Heath Road/Colham Green Road 2031 Future FaselineResults

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Pield Heath Road (East)	13.5	70.89	0.97	4.2	25.91	0.81
Colham Green Road	5.8	50.31	0.87	4.9	39.49	0.85
Pield Heath Road (West)	3.2	18.18	0.76	5.8	30.67	0.86

8.6.99 The assessment shows that this junction is at capacity in the 2031 future baseline with a maximum RFC of 0.97 on the Pield Heath Road (East) approach in the AM peak hour with an associated queue length of 13.5 PCU. In the PM peak hour, the maximum RFC of 0.86 is on the Pield Heath Road (West) approach with an associated queue length of 5.8 PCU.

2026 Scenario 1

The 2026 Scenario 1 results are shown in

8.6.100 Table 8.33.

Table 8.33: Junction 5 - Pield Heath Road/Colham Green Road 2026 Scenario 1 results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Pield Heath Road (East)	8.7	48.12	0.92	3.6	22.68	0.79
Colham Green Road	6.6	56.99	0.89	3.3	28.38	0.77
Pield Heath Road (West)	2.2	12.54	0.68	3.5	18.01	0.78

8.6.101 The assessment shows that this junction is at capacity in 2026 Scenario 1 with a maximum RFC of 0.92 on the Pield Heath Road (East) approach in the AM peak hour with an associated queue length of 8.7 PCU.

8.6.102 In the PM peak hour this junction is nearing capacity with a maximum RFC of 0.79 on the Pield Heath Road (East) approach with an associated queue length of 3.6 PCU.

8.6.103 This junction has a slightly improved capacity in the 2026 Scenario 1 compared to the 2026 future base year scenario. The Pield Heath Road (East) approach as a 0.02 RFC decrease in the AM peak hour with a decrease in associated queue length of 1.8 PCU. In the PM peak hour the Pield Heath Road (West) approach has a decrease of 0.05 RFC with a decrease in associated queue length of 1.3 PCU.

2026 Scenario 2

8.6.104 The 2026 Scenario 2 results are shown in Table 8.34.

Table 8.34: Junction 5 - Pield Heath Road/Colham Green Road 2026 Scenario 2 results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Pield Heath Road (East)	7.4	41.73	0.90	3.6	22.71	0.79
Colham Green Road	5.7	49.65	0.87	3.3	28.50	0.77
Pield Heath Road (West)	2.2	12.41	0.68	3.4	17.53	0.77

8.6.105 The assessment shows that this junction is at capacity in 2026 Scenario 2 with a maximum RFC of 0.90 on the Pield Heath Road (East) approach in the AM peak hour with an associated queue length of 7.4 PCU.

8.6.106 In the PM peak hour this junction is nearing capacity with a maximum RFC of 0.79 on the Pield Heath Road (East) approach with an associated queue length of 3.6 PCU.

8.6.107 This junction has a slightly improved capacity in the 2026 Scenario 2 compared to the 2026 future base year scenario. The Pield Heath Road (East) approach has a 0.04 RFC decrease in the AM peak hour with a decrease in associated queue length of 3.1 PCU. In the PM peak hour the Pield Heath Road (West) approach has a decrease of 0.06 RFC with a decrease in associated queue length of 1.4 PCU.

8.6.108 The difference in capacity between the 2026 Scenario 1 and Scenario 2 is negligible.

2031 Scenario 1 + Resi

8.6.109 The 2031 Scenario 1 + Resi results are shown in Table 8.35.

Table 8.35: Junction 5 - Pield Heath Road/Colham Green Road 2031 Scenario 1 + Resi results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Pield Heath Road (East)	10.4	55.31	0.94	4.3	26.08	0.82
Colham Green Road	11.2	85.61	0.96	3.9	32.05	0.80
Pield Heath Road (West)	1.9	11.73	0.66	3.2	17.46	0.76

8.6.110 The assessment shows that this junction is at capacity in 2031 Scenario 1 + Resi with a maximum RFC of 0.96 on the Colham Green Road approach in the AM peak hour with an associated queue length of 11.2 PCU. In the PM peak hour, the maximum RFC of 0.82 is on the Pield Heath Road (East) approach with a queue length of 4.3 PCU.

8.6.111 This junction has a slightly improved capacity in the 2031 Scenario 1 + Resi compared to the 2031 future base year scenario. The Pield Heath Road (East) approach has a 0.03 RFC decrease in the AM peak hour with a decrease in associated queue length of 3.1 PCU. In the PM peak hour, the Pield Heath Road (West) approach is has a 0.10 RFC decrease and a decrease in associated queue length of 2.6 PCU and operates at nearing capacity. However in the AM peak hour, the Colham Green Road approach has an increase of 0.09 RFC and an increase in associated queue length of 5.4 PCU and operates at capacity.

2031 Scenario 2 + Resi

8.6.112 The 2031 Scenario 2 + Resi results are shown in Table 8.36.

Table 8.36: Junction 5 - Pield Heath Road/Colham Green Road 2031 Scenario 2 + Resi results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Pield Heath Road (East)	8.8	48.13	0.92	4.3	25.92	0.82
Colham Green Road	9.3	73.38	0.94	3.9	32.17	0.80
Pield Heath Road (West)	1.9	11.63	0.66	3.0	16.40	0.76

8.6.113 The assessment shows that this junction is at capacity in 2031 Scenario 2 + Resi with a maximum RFC of 0.94 on the Colham Green Road approach in the AM peak hour with an associated queue length of 9.3 PCU.

8.6.114 In the PM peak hour this junction is nearing capacity with a maximum RFC of 0.82 on the Pield Heath Road (East) approach with an associated queue length of 4.3 PCU.

8.6.115 This junction has a slightly improved capacity in the 2031 Scenario 2 + Resi compared to the 2031 future base year scenario. The Pield Heath Road (East) approach has a 0.05 RFC decrease in the AM peak hour with a decrease in associated queue length of 4.7 PCU. In the PM peak hour, the Pield Heath Road (West) approach is has a 0.10 RFC decrease and a decrease in associated queue length of 2.8 PCU and operates at nearing capacity. However in the AM peak hour, the Colham Green Road approach has an increase of 0.07 RFC and an increase in associated queue length of 3.5 PCU and operates at capacity.

8.6.116 These improvements are slightly better than the 2031 Scenario 1 + Resi scenario.

Junction 6 - Colham Green Road/Hospital Access Road

8.6.117 This junction is located to the east of the hospital site on Colham Green Road. The junction is a three-arm priority controlled (give way) T-junction with no controlled pedestrian crossing facilities. The existing geometries have been measured using OS base mapping and modelled using Junctions 9 software.

8.6.118 The existing junction is to be widened to facilitate HGV traffic and provide increased capacity. The proposed layout will be operational in both Phase 1b and 2.

Baseline and future baseline years

8.6.119 The results for the 2021 baseline year are shown in Table 8.37.

Table 8.37: Junction 6 - Colham Green Road/Hospital Access Road 2021 Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Hospital Access	0.1	9.26	0.12	0.2	8.6	0.15
Colham Green Road (North)	0.3	5.75	0.15	0.1	5.34	0.07

8.6.120 The assessment shows that this junction operates within capacity in the 2021 baseline year with a maximum RFC of 0.15 on the Colham Green Road (North) approach in the AM peak hour with an associated queue length of 0.3 PCU. In the PM peak hour, the maximum RFC of 0.15 is on the Hospital Access approach with an associated queue length of 0.2 PCU.

The results for the 2026 future baseline year are shown in

8.6.121 Table 8.38.

Table 8.38 Junction 6 - Colham Green Road/Hospital Access Road 2026 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Hospital Access	0.1	9.36	0.12	0.2	8.70	0.15
Colham Green Road (North)	0.3	5.72	0.15	0.1	5.32	0.07

8.6.122 The assessment shows that this junction operates within capacity in 2026 future baseline year with a maximum RFC of 0.15 on the Colham Green Road (North) approach in the AM peak hour with an associated queue length of 0.3 PCU. In the PM peak hour, the maximum RFC of 0.15 is on the Hospital Access approach with an associated queue length of 0.2 PCU.

8.6.123 The results for the 2031 future baseline year are shown in Table 8.39

Table 8.39: Junction 6 - Colham Green Road/Hospital Access Road 2031 Future Baseline Results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
Hospital Access	0.1	9.47	0.12	0.2	8.81	0.15
Colham Green Road (North)	0.3	5.69	0.15	0.1	5.32	0.07

8.6.124 The assessment shows that this junction operates within capacity in 2031 future baseline year with a maximum RFC of 0.15 on the Colham Green Road (North) approach in the AM peak hour with an associated queue length of 0.3 PCU. In the PM peak hour, the maximum RFC of 0.15 is on the Hospital Access approach with a queue length of 0.2 PCU.

2026 Scenario 1

8.6.125 The results for the 2026 Scenario 1 are shown in Table 8.40.

Table 8.40: Junction 6 - Colham Green Road/Hospital Access Road 2026 Scenario 1 Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Hospital Access	0.0	8.71	0.02	0.0	0.00	0.00
Colham Green Road (North)	0.0	5.39	0.03	0.0	5.28	0.01

8.6.126 The assessment shows that this junction operates within capacity in 2026 Scenario 1 with a maximum RFC of 0.03 on the Colham Green Road (North) approach in the AM peak hour with no associated queue. In the PM peak hour, the maximum RFC of 0.01 is also on the Colham Green Road (North) approach with no associated queue.

8.6.127 This junction has an improved capacity in 2026 Scenario 1 compared to the 2026 future base year scenario. The Colham Green Road (North) approach has a 0.12 RFC decrease in the AM peak hour with a decrease in associated queue length resulting in no queue. In the PM peak hour, the Hospital Access approach has a decrease of 0.15 RFC with a decrease in associated queue length resulting in no queue.

2026 Scenario 2

8.6.128 The results for the 2026 Scenario 2 are shown in Table 8.41.

Table 8.41: Junction 6 - Colham Green Road/Hospital Access Road 2026 Scenario 2 Results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
Hospital Access	0.0	8.68	0.02	0.0	0.00	0.00
Colham Green Road (North)	0.0	5.38	0.03	0.0	5.30	0.01

8.6.129 The assessment shows that this junction operates within capacity in 2026 Scenario 1 with a maximum RFC of 0.03 on the Colham Green Road (North) approach in the AM peak hour with no associated queue. In the PM peak hour, the maximum RFC of 0.01 is also on the Colham Green Road (North) approach with no associated queue.

8.6.130 Compared to the 2026 future base year scenario this junction has the same improved capacity in 2026 Scenario 2 as it does in the 2026 Scenario 1.

2031 Scenario 1 + Resi

8.6.131 The results for 2031 Scenario 1 + Resi are shown in Table 8.42.

Table 8.42: Junction 6 - Colham Green Road/Hospital Access Road Scenario 1 + Resi

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
Hospital Access	0.6	17.96	0.26	0.4	18.71	0.19
Colham Green Road (North)	0.3	7.02	0.13	0.3	6.95	0.12

8.6.132 The assessment shows that this junction operates within capacity in 2026 Scenario 2 with a maximum RFC of 0.26 on the Hospital Access approach in the AM peak hour with an associated queue length of 0.6 PCU. In the PM peak hour, the maximum RFC of 0.19 is also on the Hospital Access approach with an associated queue length of 0.4 PCU.

8.6.133 This junction has a slightly worsened capacity in the 2031 Scenario 1 + Resi compared to the 2031 future baseline year. The Hospital Access approach has a 0.14 increase in RFC in the AM peak hour with an increase in associated queue length of 0.5 PCU. In the PM peak hour the Hospital Access approach has a 0.04 RFC increase with an increase in associated queue length of 0.2 PCU. However, the junction still operates well within capacity in the 2031 Scenario 1 + Resi.

2031 Scenario 2 + Resi

8.6.134 The results for 2031 Scenario 2 + Resi are shown in Table 8.43

Table 8.43: Junction 6 - Colham Green Road/Hospital Access Road Scenario 2 + Resi results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
Hospital Access	0.6	17.88	0.26	0.4	18.70	0.19
Colham Green Road (North)	0.3	7.02	0.13	0.3	6.95	0.11

8.6.135 The assessment shows that this junction operates within capacity in 2026 Scenario 2 + Resi with a maximum RFC of 0.26 on the Hospital Access approach in the AM peak hour with an associated queue length of 0.6 PCU. In the PM peak hour, the maximum RFC of 0.19 is on the Hospital Access approach with an associated queue length of 0.4 PCU.

8.6.136 The junction has negligible difference in the 2031 Scenario 2 + Resi compared to the 2031 Scenerio 1 + Resi and therefore operates at a slightly worsened capacity compared to the 2031 future base year. However, the junction still operates well within capacity in the 2031 Scenario 2 + Resi.

Junction 7 - Colham Green Road/Violet Avenue

8.6.137 This junction is located to the south east of the hospital site along Colham Green Road. The junction is a three-arm priority controlled (give way) mini-roundabout with no controlled pedestrian crossing facilities. The existing geometries have been measured using OS base mapping and modelled using Junctions 9 software.

8.6.138 There are no proposed changes at this junction in Phase 1b and Phase 2 as part of the redevelopment.

Baseline and future baseline

8.6.139 The results for the 2021 baseline year are shown in Table 8.44.

Table 8.44: Junction 7 - Colham Green Road/Violet Avenue 2021 Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Colham Green Road (North)	0.4	4.41	0.29	0.4	4.26	0.30
Colham Green Road (South)	1.3	10.99	0.56	0.9	8.57	0.46
Violet Avenue	0.5	11.65	0.34	0.3	10.15	0.21

8.6.140 The assessment shows that this junction operates within capacity in the 2021 baseline with a maximum RFC of 0.56 on the Colham Green Road (South) approach in the AM peak hour with

an associated queue length of 1.3 PCU. In the PM peak hour, the maximum RFC of 0.46 is also on the Colham Green Road (South) approach with a queue length of 0.9 PCU.

8.6.141 The results for the 2026 future baseline year are shown in Table 8.45.

Table 8.45: Junction 7 - Colham Green Road/Violet Avenue 2026 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Colham Green Road (North)	0.5	4.48	0.30	0.5	4.33	0.31
Colham Green Road (South)	1.4	11.48	0.58	0.9	8.87	0.48
Violet Avenue	0.6	12.07	0.36	0.3	10.43	0.22

8.6.142 The assessment shows that this junction operates within capacity in the 2026 future baseline with a maximum RFC of 0.58 on the Colham Green Road (South) approach in the AM peak hour with an associated queue length of 1.4 PCU. In the PM peak hour, the maximum RFC of 0.48 is also on the Colham Green Road (South) approach with an associated queue length of 0.9 PCU.

8.6.143 The results for the 2031 future baseline year are shown in Table 8.46.

Table 8.46: Junction 7 - Colham Green Road/Violet Avenue 2031 Future Baseline Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Colham Green Road (North)	0.5	4.56	0.31	0.5	4.40	0.32
Colham Green Road (South)	1.5	12.05	0.60	1.0	9.19	0.49
Violet Avenue	0.6	12.55	0.38	0.3	10.75	0.23

8.6.144 The assessment shows that this junction operates within capacity in the 2031 future baseline with a maximum RFC of 0.60 on the Colham Green Road (South) approach in the AM peak hour with an associated queue length of 1.5 PCU. In the PM peak hour, the maximum RFC of 0.49 is also on the Colham Green Road (South) approach with an associated queue length of 1.0 PCU.

2026 Scenario 1

8.6.145 The results for the 2026 Scenario 1 are shown in Table 8.47

Table 8.47: Junction 7 - Colham Green Road/Violet Avenue 2026 Scenario 1 Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Colham Green Road (North)	0.4	4.43	0.30	0.5	4.31	0.30
Colham Green Road (South)	1.2	10.75	0.55	0.9	8.79	0.47
Violet Avenue	0.6	11.59	0.35	0.3	9.90	0.22

8.6.146 The assessment shows that this junction operates within capacity in the 2026 Scenario 1 with a maximum RFC of 0.55 on the Colham Green Road (South) approach in the AM peak hour with an associated queue length of 1.2 PCU. In the PM peak hour, the maximum RFC of 0.47 is also on the Colham Green Road (South) approach with an associated queue length of 0.9 PCU.

8.6.147 This junction has a slightly improved capacity in the 2026 Scenario 1 compared to the 2026 future base year scenario. The Colham Green Road (South) approach has a 0.03 decrease in RFC in the AM peak hour with a decrease in associated queue length of 0.2 PCU. In the PM peak hour the Colham Green Road (South) approach has a decrease of 0.01 RFC with no change in associated queue length.

2026 Scenario 2

8.6.148 The results for the 2026 Scenario 2 are shown in Table 8.48

Table 8.48: Junction 7 - Colham Green Road/Violet Avenue 2026 Scenario 2 Results

	AM			PM		
Approach	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**	**Max Queue (PCU)**	**Max Delay (s)**	**RFC**
Colham Green Road (North)	0.4	4.43	0.29	0.5	4.30	0.30
Colham Green Road (South)	1.2	10.58	0.54	0.9	8.77	0.47
Violet Avenue	0.6	11.47	0.35	0.3	10.36	0.22

8.6.149 The assessment shows that this junction operates within capacity in the 2026 Scenario 2 with a maximum RFC of 0.54 on the Colham Green Road (South) approach in the AM peak hour with an associated queue length of 1.2 PCU. In the PM peak hour, the maximum RFC of 0.47 is on the Colham Green Road (South) approach with an associated queue length of 0.9 PCU.

8.6.150 This junction has a slightly improved capacity in 2026 Scenario 1 compared to the 2026 future base year scenario. There are negligible improvements between 2026 Scenario 1 and 2026 Scenario 2 in the AM peak hour and no difference in results in the PM peak hour.

2031 Scenario 1 + Resi

8.6.151 The results for the 2031 Scenario 1 + Resi are shown in Table 8.49.

Table 8.49: Junction 7 - Colham Green Road/Violet Avenue 2031 Scenario 1 + Resi Results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
Colham Green Road (North)	0.5	4.56	0.31	0.5	4.39	0.32
Colham Green Road (South)	1.4	11.35	0.57	1.0	9.21	0.49
Violet Avenue	0.6	12.11	0.37	0.3	10.78	0.23

8.6.152 The assessment shows that this junction operates within capacity in the 2031 Scenario 1 + Resi with a maximum RFC of 0.57 on the Colham Green Road (South) approach in the AM peak hour with an associated queue length of 1.4 PCU. In the PM peak hour, the maximum RFC of 0.49 is on the Colham Green Road (South) approach with an associated queue length of 1.0 PCU.

8.6.153 This junction has a slightly improved capacity in the 2031 Scenario 1 + Resi compared to the 2031 future base year scenario. The Colham Green Road (South) approach has a 0.03 decrease in RFC in the AM peak hour with a decrease in associated queue length of 0.1 PCU. In the PM peak hour the 2031 Scenario 1 + Resi operates at the same capacity as the 2031 future base year scenario.

2031 Scenario 2 + Resi

8.6.154 The results for the 2031 Scenario 2 + Resi are shown in Table 8.50

Table 8.50: Junction 7 - Colham Green Road/Violet Avenue 2031 Scenario 2 + Resi results

	AM			PM		
Approach	**Queue (PCU)**	**Delay (s)**	**RFC**	**Queue (PCU)**	**Delay (s)**	**RFC**
Colham Green Road (North)	0.5	4.55	0.31	0.5	4.39	0.32
Colham Green Road (South)	1.3	11.20	0.57	1.0	9.19	0.49
Violet Avenue	0.6	12.01	0.37	0.3	10.76	0.23

8.6.155 The assessment shows that this junction operates within capacity in the 2031 Scenario 2 + Resi with a maximum RFC of 0.57 on the Colham Green Road (South) approach in the AM peak hour with an associated queue length of 1.3 PCU. In the PM peak hour, the maximum RFC of 0.49 is on the Colham Green Road (South) approach with a queue length of 1.0 PCU.

8.6.156 This junction has a slightly improved capacity in the 2031 Scenario 2 + Resi compared to the 2031 future base year scenario. There are no improvements between 2031 Scenario 1 + Resi and 2031 Scenario 2 + Resi.

8.7 Summary

8.7.1 The Local Network Assessment shows that the proposals either improve congestion on the local network or have a negligible impact on specific junctions. The design and mitigation solutions at the main hospital access junction (Junction 3) significantly improve the operation of the junction and the currently congested corridor of Pield Heath Road. The Pield Heath Road/Kingston Lane and Pield Heath Road/Colham Green Road junctions are both at capacity in the future baseline scenarios, however the operation of these junctions is slightly improved due to the proposed development.

8.7.2 The Pield Heath Road/Royal Lane junction is over capacity in all existing and proposed scenarios. However, this is likely to be due to the modelling software limitations set out above and the results should be interpreted with caution. The results of the VISSIM assessment should be used to strengthen the local network assessment set out above. This will provide greater clarity on the operation of the local network, particularly at the Pield Heath Road/Royal Lane junction. However the local junction modelling does again show improved operation of this junction with the development.

9 Construction

9.1 Introduction

9.1.1 Construction impacts have been considered through the preparation of an outline Construction Logistics Plan (CLP). The CLP includes:

- A full assessment of the construction phase using the TfL CLP spreadsheet tool
- Details of the levels of construction traffic generated
- Routes the traffic will use
- Significant traffic management for the construction phase

9.1.2 The purpose of the CLP is to reduce:

- Environmental impact – providing a plan to minimise vehicle emissions and noise levels from construction traffic
- Road risk – improving safety for all road users around the development site, and on routes used by construction traffic
- Congestion – minimising the amount of vehicle trips generated by the construction of the proposed development, particularly during peak periods
- Cost – using efficient working practices so that fewer vehicle trips have to be made, reducing the cost of construction

9.1.3 The CLP and this section of the TA focus on the construction of Phase 1b only. An assessment of the construction of Phase 2 cannot be undertaken at this early stage due to the limited information available

9.2 Hospital Operation During Construction

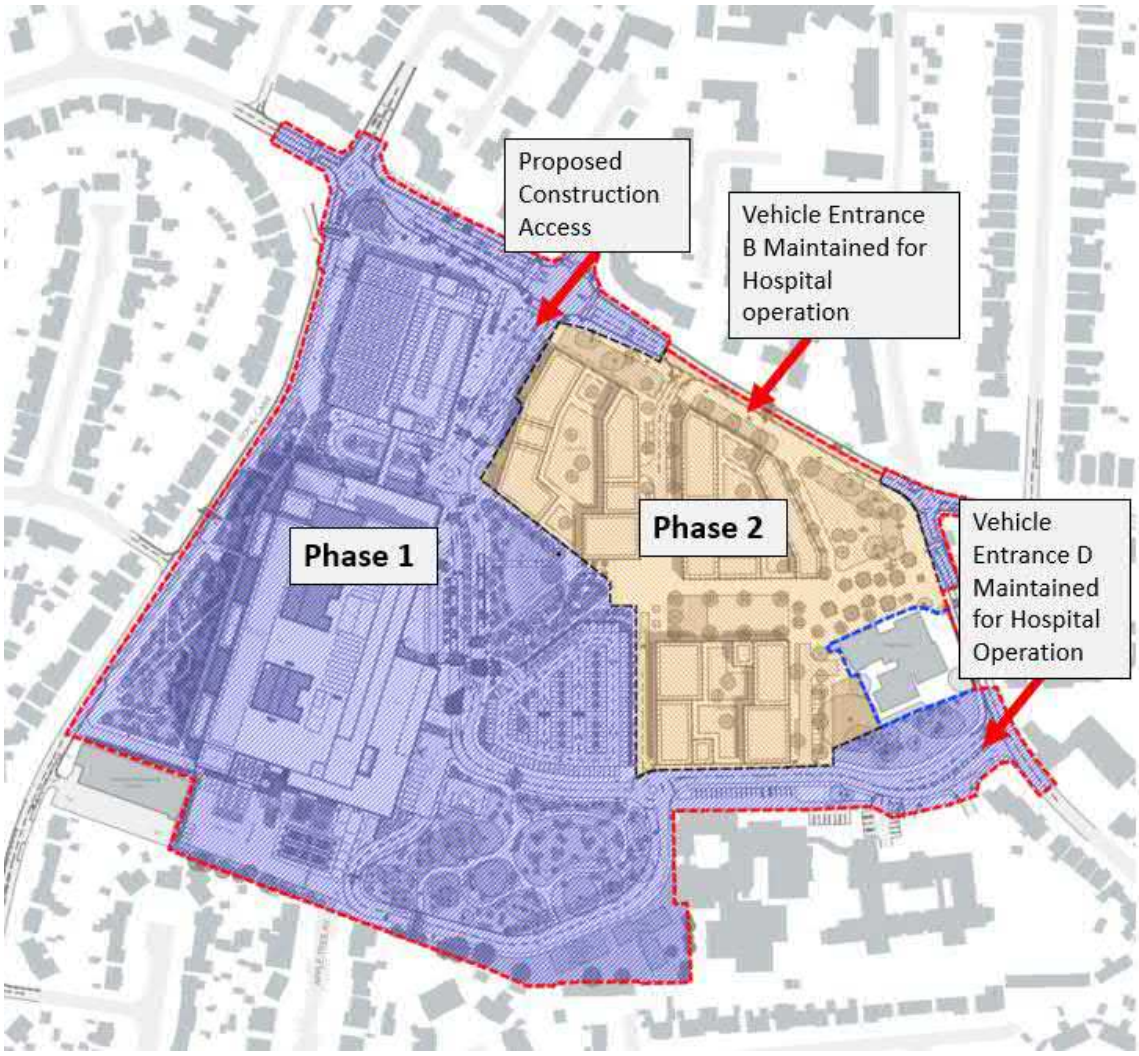
9.2.1 During the construction of Phase 1b, the existing hospital will need to remain operational. Some of the services will be relocated to off-site locations to enable the demolition of the Phase 1b site and construction of the new hospital. This will result in the removal of some buildings and parking from the Phase 1b construction area.

9.2.2 The key decant moves have been captured through other minor projects, as follows:

- Decant of some staff roles to Mount Vernon Hospital (off-site);
- Relocation of the Children's Nursery to The Old Creche (on site within the Phase 2 boundary); and
- Formation of an off-site temporary decant car park.

9.2.3 During the construction of Phase 1b, the existing hospital will remain operational on the Phase 2 site. Therefore, vehicle accesses B and D will remain open for staff, patient and visitor use during Phase 1b construction. Construction vehicles will access the Phase 1b construction site via the existing main hospital access. The other two access points on Royal Lane will be closed upon the commencement of Phase 1b construction. The access arrangements during the construction of Phase 1b are shown in Figure 9.1.

Figure 9.1: Vehicle accesses during construction



Source: IBI Group/Mott MacDonald

9.3 Construction Traffic Generation

9.3.1 The current construction programme is at an early stage of development and detailed information is not available. The construction Stages have therefore been estimated based on the best information available from the wider design team at the time of preparing this report. A full review of the programme, construction stages and vehicle estimates will be undertaken by the main contractor upon appointment. A Detailed Construction Logistics Plan will be prepared and submitted by the main contractor, and agreed with LBH and TfL as necessary, prior to commencement of construction on-site.

The preliminary estimated number of vehicle trips across each construction stage are summarised in Table 9.1.