



UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks
and adjoining land, Bedford

Appendix 5.1 Transport Assessment Report – Executive Summary

Report reference: 4.5.1.1.0

Revision number: 00

Date: June 2025

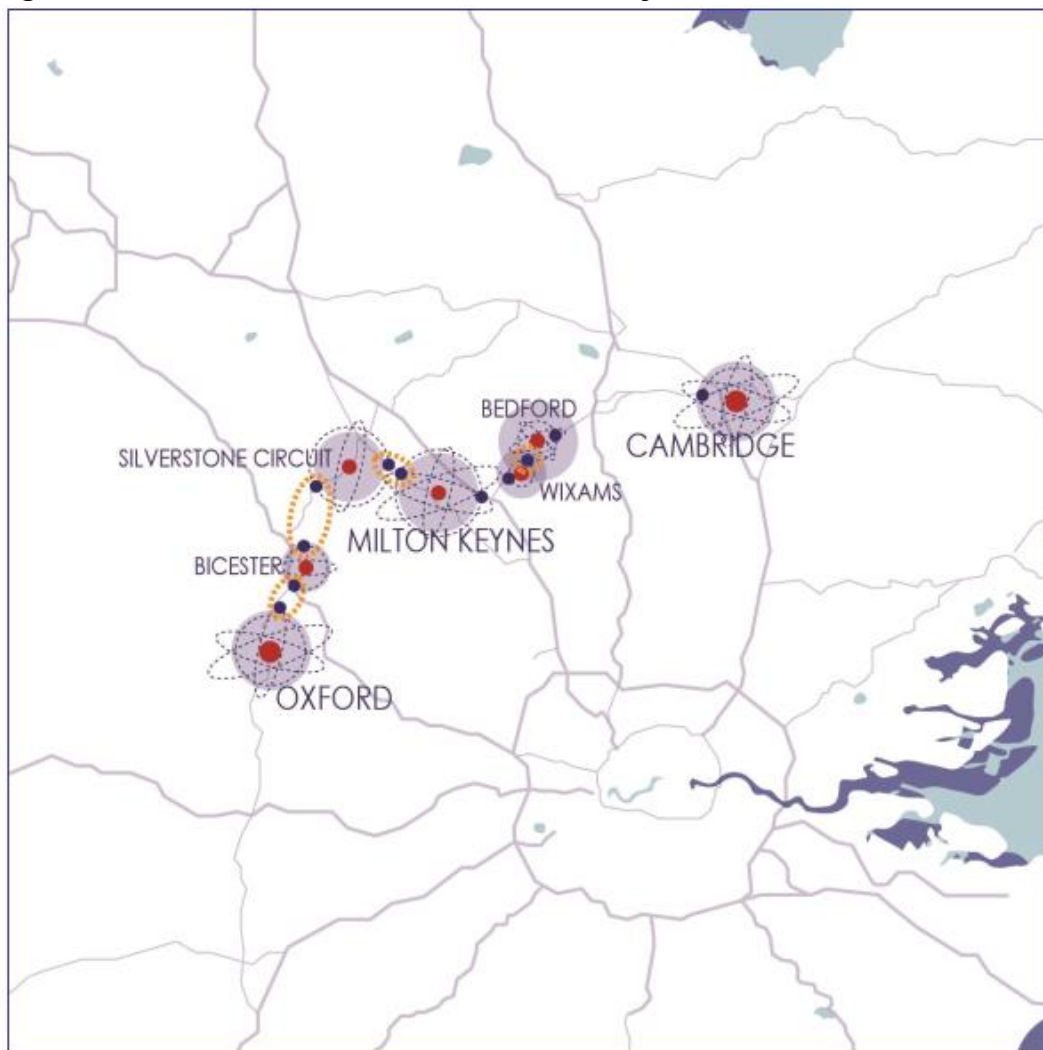


Executive Summary

- 1.1 This Transport Assessment Report Executive Summary has been prepared on behalf of Universal Destinations & Experiences (UDX) which is seeking planning permission for the construction and operation of a Universal Entertainment Resort Complex (ERC), and associated development, in Bedford (“the Proposed Development”). The proposal is sponsored by the Department for Culture Media and Sport (DCMS). The Department for Transport (DfT) and its associated arm’s-length bodies have assisted in the development of the highways and rail related elements of the proposal with Bedford Borough Council (Bedford BC). The proposal intends to provide sufficient information to enable the Secretary of State for Housing, Communities and Local Government (MHCLG) to consult on and consider making a planning decision.
- 1.2 The Site is located south-west of Bedford, Bedfordshire and is broadly to the east of the A421 and west of the Midland Main Line and is on the former Kempston Hardwick brickworks and agricultural land. The Site is divided into four main land areas referred to in the planning proposal as the Core Zone, Lake Zone, West Gateway Zone, and East Gateway Zone. The proposed ERC lying within these zones would allow a theme park and associated uses including retail, dining, entertainment; visitor accommodation; sport, recreation, leisure and spa facilities; venues with conference and convention spaces; associated services and uses for any operational or administrative functions; utilities generation, storage, collection, treatment, and processing facilities associated with the ERC; vehicle and cycle parking, maintenance and servicing, and transportation hubs; access routes and circulation spaces; landscaping; utility infrastructure; and use of land necessary to support construction.
- 1.3 The planning proposal also includes road and rail-related development including:
 - a. a new A421 Junction;
 - b. an expanded railway station on the Thameslink/Midland Main Line at Wixams;
 - c. improvements to Manor Road; and
 - d. improvements to certain other local roads.
- 1.4 It also safeguards land for a potential new railway station on the proposed EWR Bletchley to Bedford line, should this come forward in the future.
- 1.5 At the time of writing, the East West Rail (EWR) project has consent to deliver new rail services between Oxford and Milton Keynes. UDX are aware of further expansion plans by EWR Co including the provision of EWR services to Bedford and then Cambridge, with the possibility of a new Stewartby Station which would have the potential to serve the Proposed Development. Such a new station serving the site on an expanded EWR service would bring benefits in terms of non-car accessibility to the Proposed Development. However, these further improvements are not committed. Therefore, the Proposed Development does not rely on the line continuing further, and it does not rely on a new EWR Station at the Site. However, it strongly supports an extension of EWR beyond Milton Keynes, and the delivery of a new East West Rail Station at the Site through the safeguard of land.

- 1.6 Many factors have aligned to make this Site UDX's chosen location for its new European resort destination.
- 1.7 One of the most significant is its superb transport accessibility. This is accessibility from across the UK, and the excellent connectivity with the rest of Europe.
- 1.8 Major national and local transport infrastructure already exists to the area. The task is to maximise the benefits of the location and the infrastructure by connecting into it strategically and seamlessly and ensuring that it has the ability to accommodate the demand.
- 1.9 In doing so, this Site can be made highly accessible from both the north-south, and east-west UK railway networks. It can be made highly accessible to the UK's high quality strategic road network. It will be within easy reach of many of the UK's major airports and will have a direct rail connection to London's Eurostar terminal, the UK hub for rail connections throughout Europe.
- 1.10 This UDX team has worked hand in hand with the DfT to develop these infrastructure connection solutions, and to assess the effects and needs of the scheme. In particular, the DfT teams have worked with phenomenal enthusiasm, speed and discretion to deliver ideas and to get to a position where MHCLG can have confidence that the scheme can be delivered. A substantial part of this transport work has been informed by the DfT teams.
- 1.11 The Proposed Development will form an additional nucleus of activity within the Oxford and Cambridge Arc, connected and complementary to existing and future centres of excellence such as the Cambridge Biomedical Campus of the motor racing hub around Milton Keynes. As such it is considered a catalyst for further investment within the Arc, cementing the Arc as a world-wide destination for investment.

Figure 1-1: An Additional Nucleus of Activity in the Oxford and Cambridge Arc

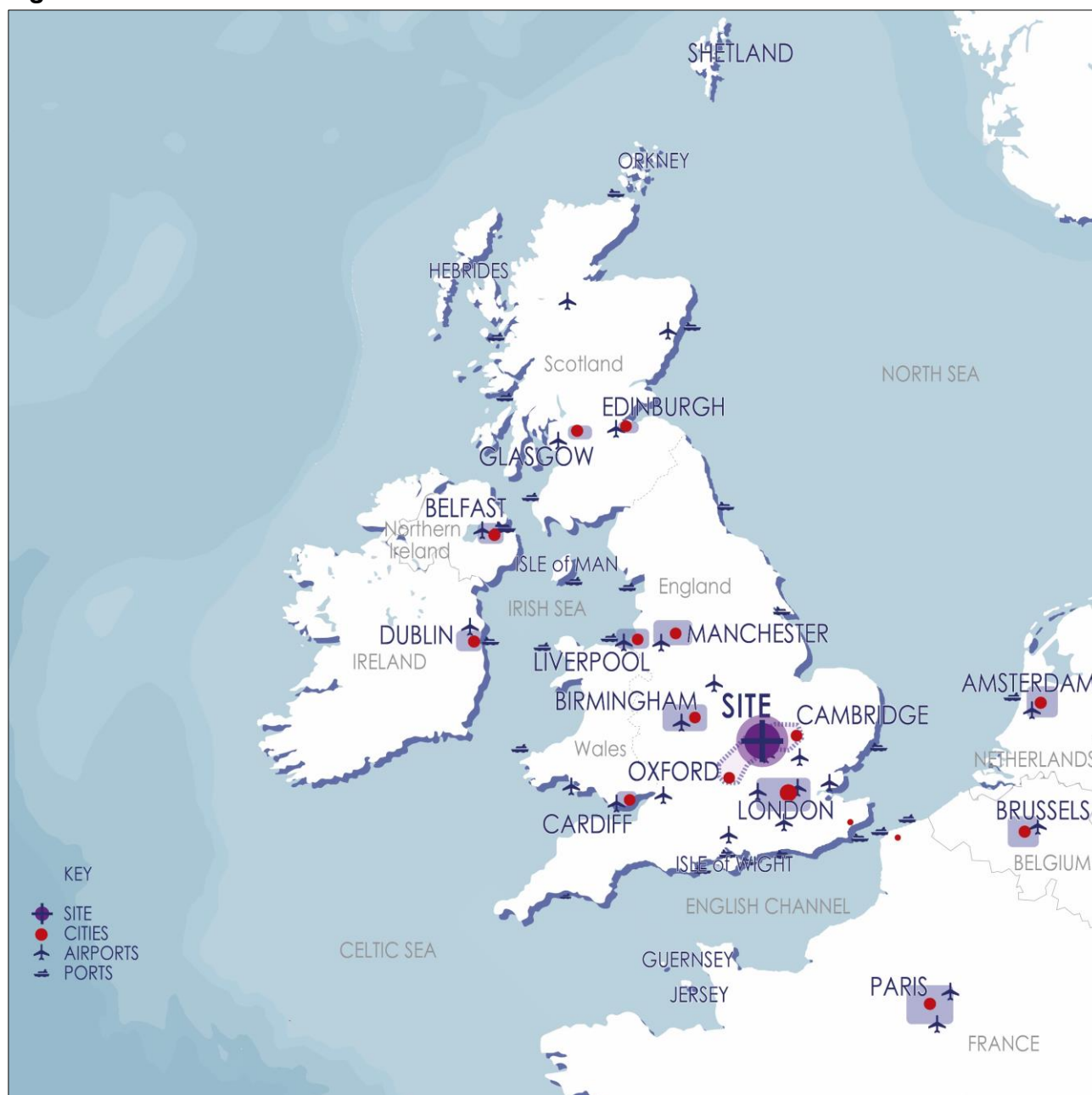


- 1.12 The upshot is that MHCLG and UDX can have suitable confidence that this scheme can be delivered in transport terms with the associated substantial transport and wider benefits, and with little adverse transport consequence.
- 1.13 MHCLG can have confidence that there will be good connections at the local scale, and that ‘team members’ and construction workers are able to get access by a choice of means of transport, whilst at the same time local towns and villages are protected from inappropriate traffic and traffic volumes.

Location and Accessibility

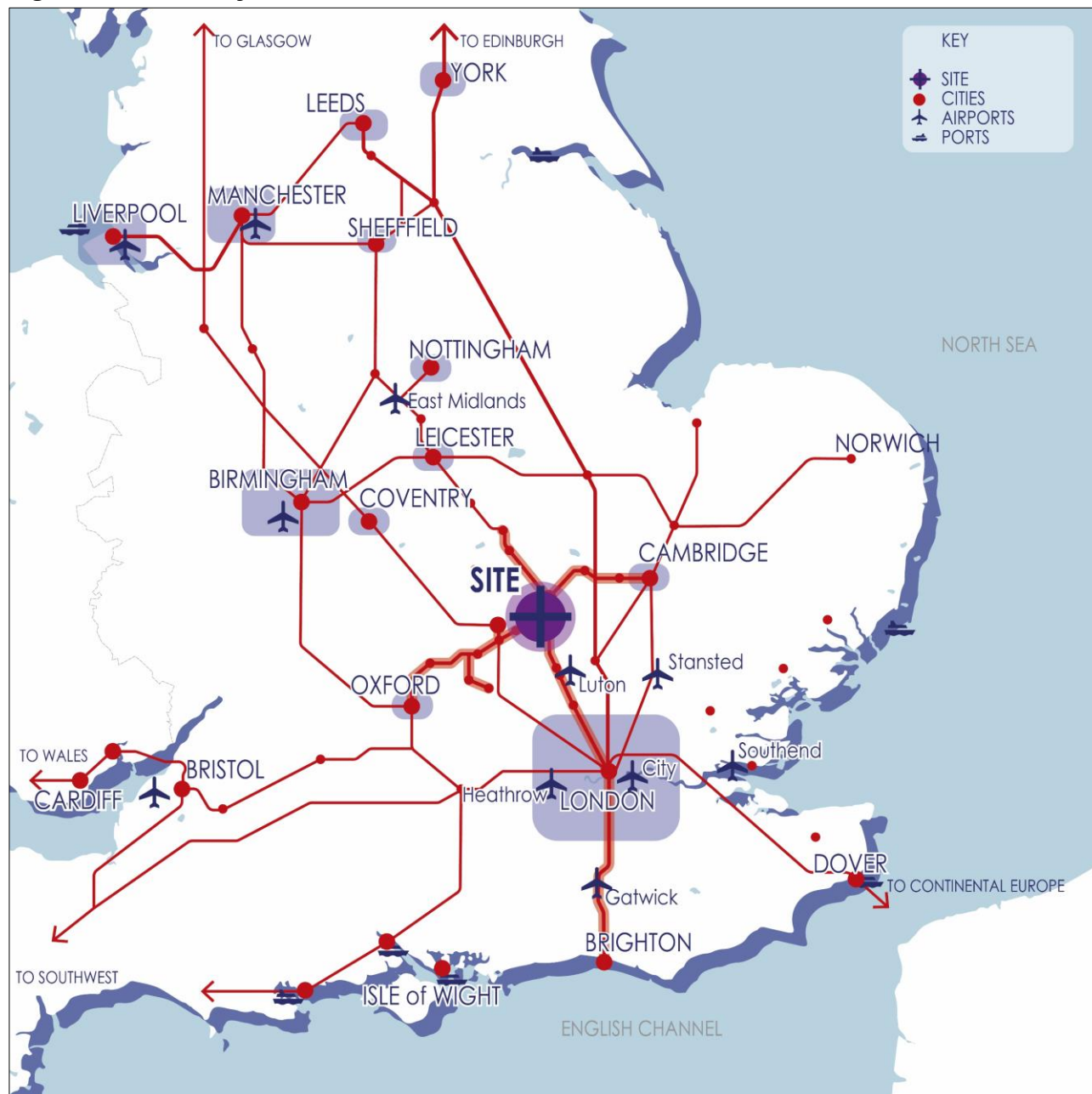
- 1.14 The Site is in the middle of the UK’s economic heartland, and central to the Oxford and Cambridge Arc.

Figure 1-2: Site Location



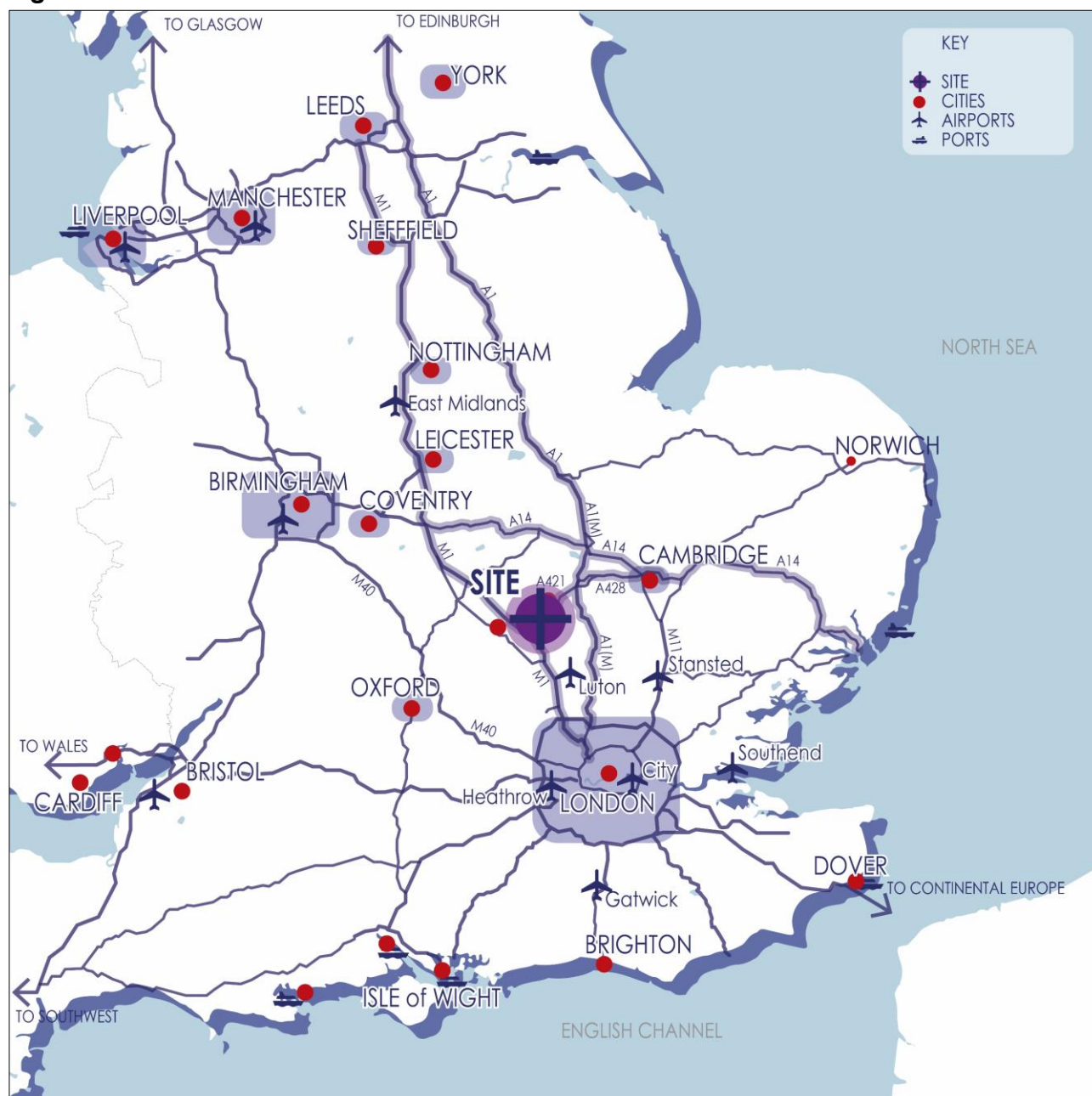
- 1.15 It lies at the confluence of the UK's strategic north-south railway network, with connections from London and the South East, to the Midlands, Northern England, North Wales and Scotland; and the potential future EWR line connecting Cambridge and East Anglia, with Oxford, and from there on to South West England and South Wales.

Figure 1-3: Railway Network Context



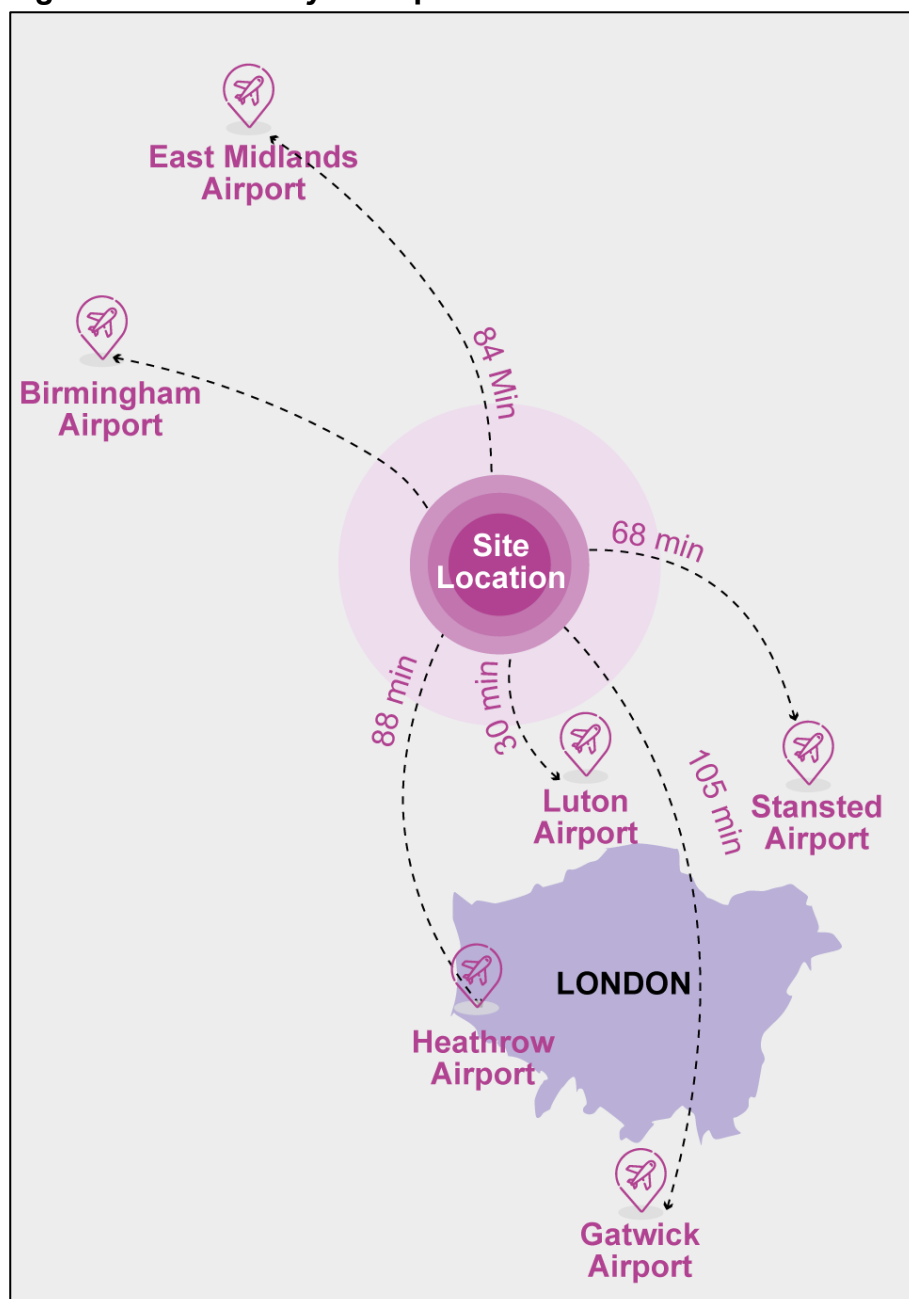
- 1.16 With the right new infrastructure, which forms part of the planning proposal, it will connect directly into the UK's strategic road network at the A421. The A421 in turn provides high-capacity connections with the M1 motorway and the A1, both of which provide connections with London and the rest of the UK in all directions.

Figure 1-4: Road Network Context



- 1.17 London Luton airport is 30 minutes away by road and rail. London Heathrow, the UK's biggest airport, is an hour away by road. London Stansted is just over an hour away by road, and London Gatwick is connected via a direct railway line from the airport to the Site.
- 1.18 All London Airports have long-running plans for expansion that are at various stages of development. Although local airport expansion plans benefit the Site's accessibility, the Proposed Development does not rely on, nor is it the trigger for, any of these expansion plans.

Figure 1-5: Proximity of Airports to Site



- 1.19 This, combined, makes the location accessible by a choice of means of travel. It means that 30 million people in the UK can reach the Site in two hours either by car or from their local railway station, and 50 million people are similarly within three hours of the Site.

Figure 1-6: Rail Station Catchment

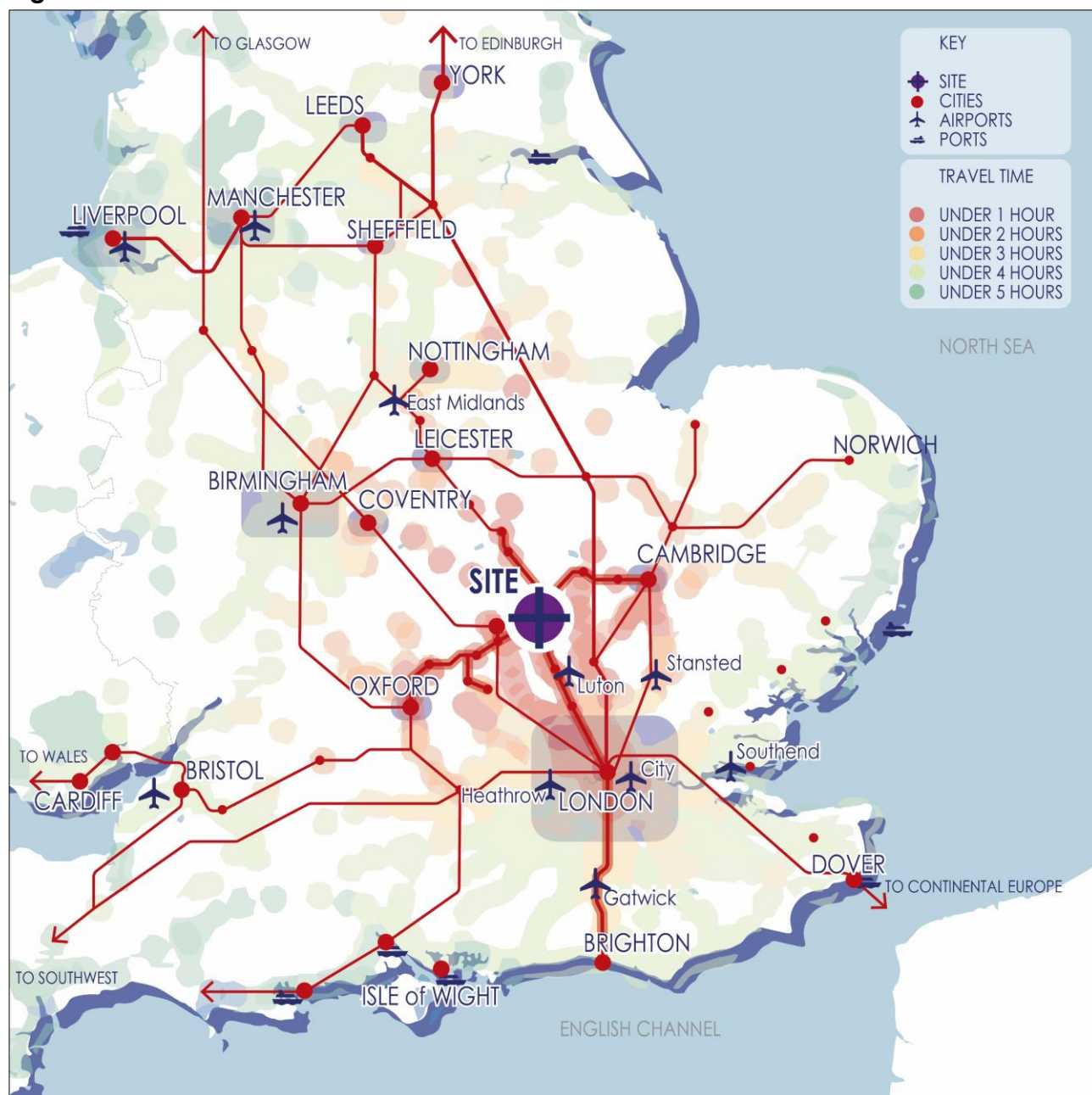
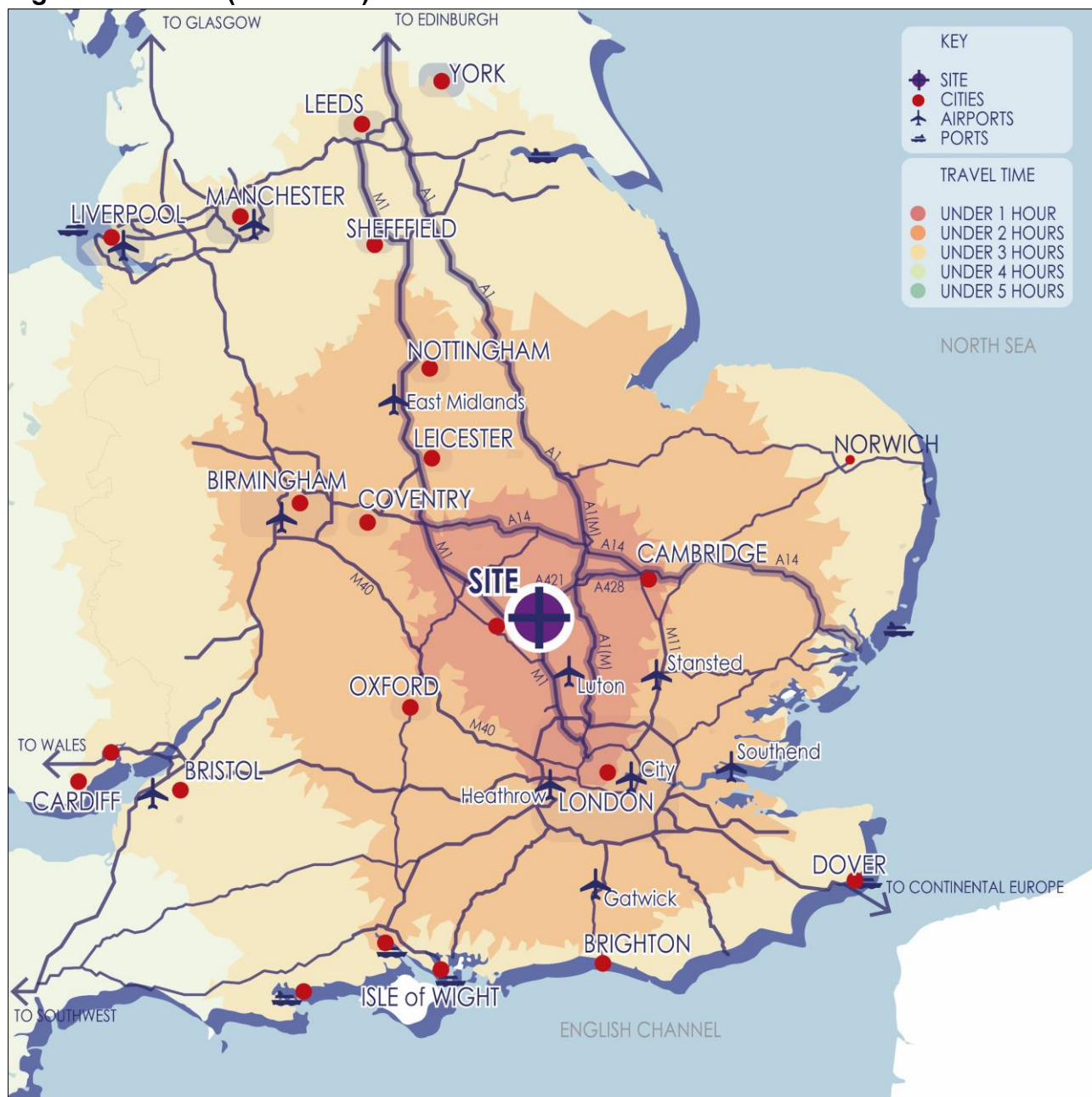
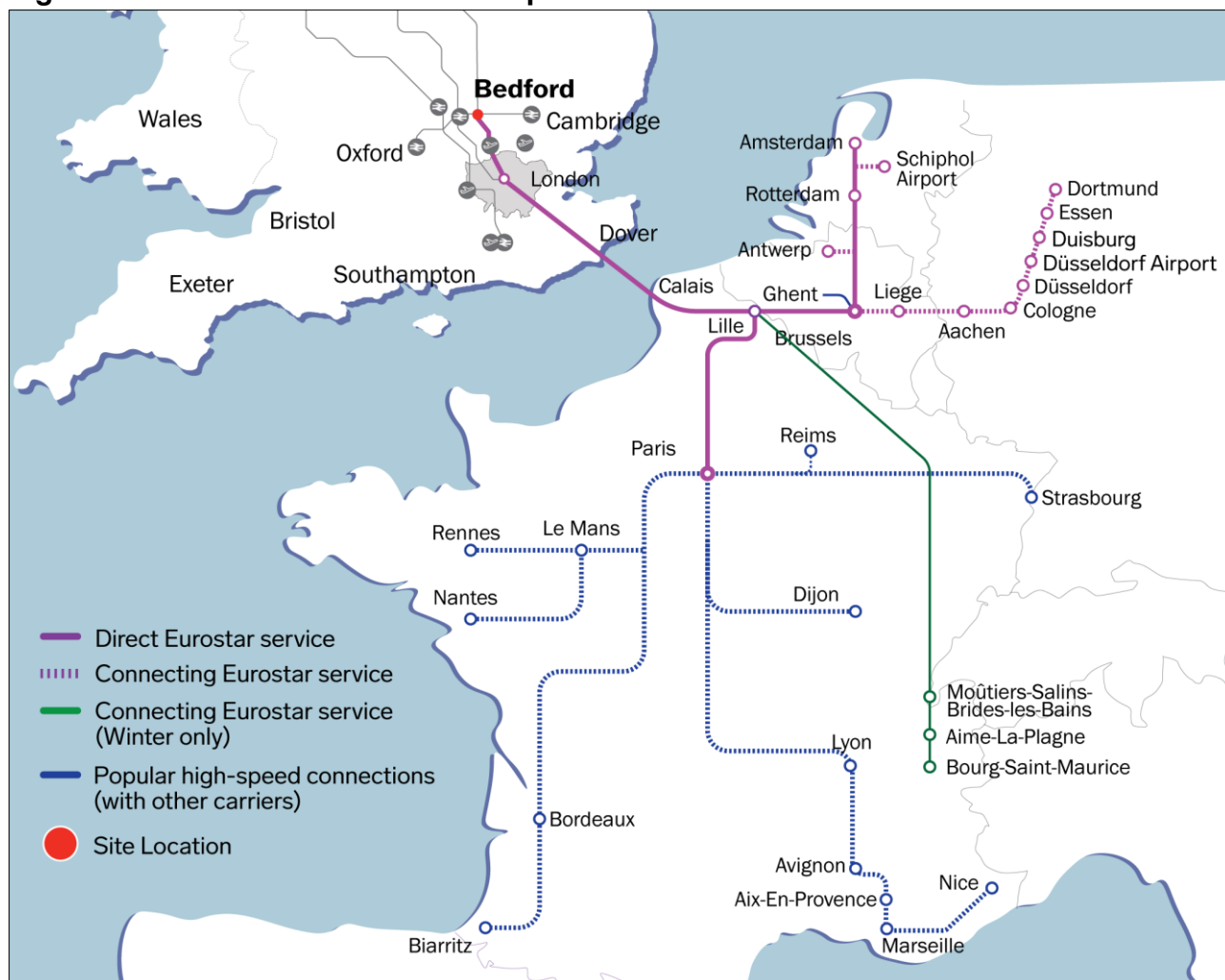


Figure 1-7: Road (car/coach) Catchment



- 1.20 Wixams Station once enhanced can be reached in just over 30 minutes from London St Pancras. London St Pancras is the UK terminal for Eurostar, which in turn is a two hour and 15-minute train journey from Paris, and a two-hour train journey from Brussels.

Figure 1-8: Rail Connections to Europe



Scheme Overview

- 1.21 The Proposed Development encompasses four zones of land known as Core Zone, Lake Zone, West Gateway Zone and East Gateway Zone, which includes the Full Wixams Rail. **Document Reference 1.08.0** presents a Zonal Plan for the Proposed Development.

- 1.22 The Description of Development by Land Use (**Appendix 2.4: Description of Development by Land Use (Volume 3)**) sets out in detail the variety of uses and infrastructure that will be delivered as part of the Proposed Development.
- 1.23 There are two major new pieces of transport infrastructure in the planning proposal:
- a. A new station at Wixams, that enlarges the currently planned and consented new station at Wixams which itself serves the new Wixams settlement of circa 5,000 homes that is currently under construction. The larger station includes additional platforms and a western plaza to serve the Proposed Development, in addition to the currently planned settlement-facing eastern plaza.
 - b. A new road junction on the A421, including a new eastbound off slip into the Site, a new westbound off slip into the Site and a new westbound on slip away from the Site.
- 1.24 The planning proposal also includes the safeguard of land within the Site for the potential delivery by EWR Co of a potential new railway station on what will be the EWR line. A new station in broadly this location, on what the EWR Co expects is the new EWR line, is an aspiration of EWR Co. The Proposed Development does not rely upon this station or this line coming forward, however, if EWR Co is successful in its aspiration to provide both the line and the station then UDX will work closely with it on delivery. Therefore, the Proposed Development facilitates this by including safeguarding land for a new station within its proposal

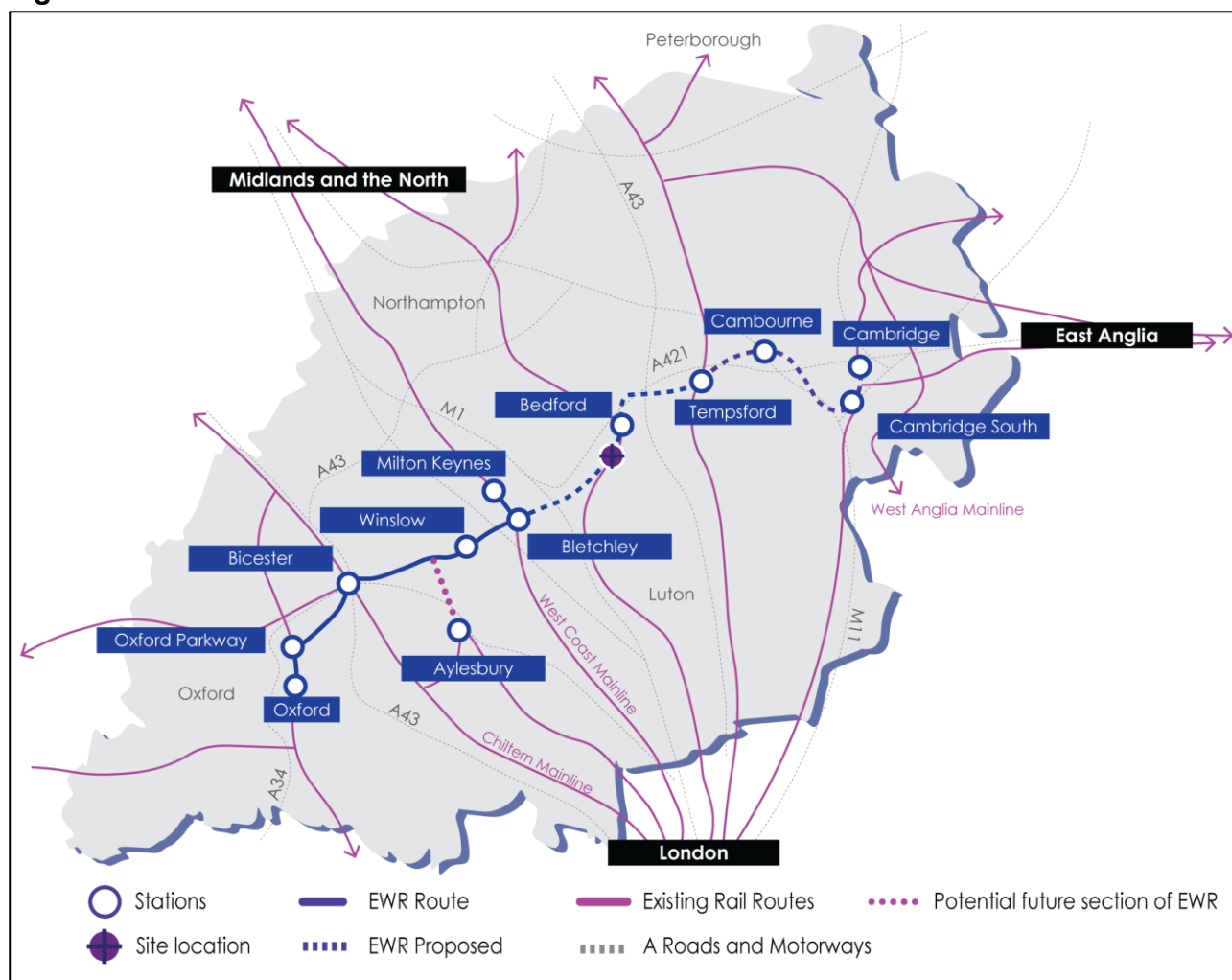
Figure 1-9: Access Parameter Plan



- 1.25 It is reasonable to assume there will be changes to operational train patterns and potentially train size to accommodate the specific demands of the schemes, including for weekend travel, holiday period peaks and late-night movement.
- 1.26 The public road network connects across the Site between Ampthill Road in the east to Woburn Road/Bedford Road and the new A421 Junction in the west. To provide an attractive access between the Full Wixams Station in the east, particularly for shuttle bus working and local team member access, Manor Road will be realigned and improved.
- 1.27 The proposed realignment of Manor Road east of the Marston Vale Line (MVL) will tie in with Manor Road west of the scheme. Network Rail (NR) has plans and planning consent for the delivery of a road bridge over the MVL in place of the existing Manor Road level crossing. We are advised by the DfT that we should consider this to be committed development. Therefore, the planning proposal considers three options in relation to connecting back to Manor Road: Option A takes account of the committed NR road bridge, Option B considers a situation whereby no road bridge would be delivered and the level crossing still closed with the provision of an active travel bridge across the MVL and two U-turning facilities on each side of the railway, and Option C considers the level crossing remains as existing but including an active travel bridge over the railway. Option B is the preferred option.

- 1.28 The EWR Co team is considering the delivery of improved rail services under the EWR branding between Oxford and Cambridge. EWR is already committed west of Milton Keynes and EWR Co plans to open the line between Oxford and Milton Keynes in 2025.

Figure 1-10: EWR Route

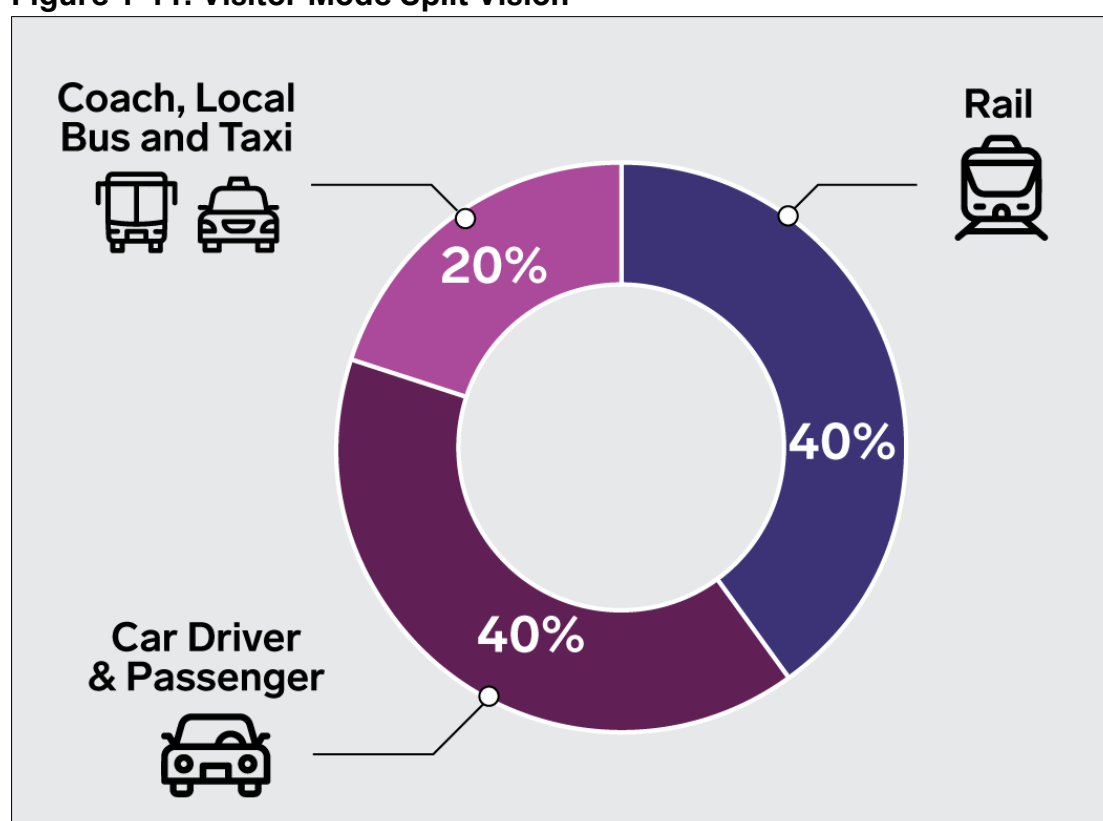


The Demand

- 1.29 The fundamental building block for assessment and determining the needs of infrastructure, is 'likely demand', and the degree to which it can and would be influenced.
- 1.30 We have adopted a Vision Led approach to this in line with the requirements of the National Planning Policy Framework. A Vision Led Planning approach seeks to establish a vision for a Proposed Development. Then, the approach works towards ensuring that the vision becomes a reality. Adopting a Vision Led Planning approach at the Site will have a number of benefits.

- 1.31 A Vision Led Planning approach prevents transport strategies and proposals from embedding historical trends and outcomes, such as traffic growth, pollution and inaccessibility, which are not consistent with future sustainability ambitions. Setting a clear vision at an early stage also makes it much easier to identify opportunities when they arise and to spot early signs of progress to be built upon.
- 1.32 To establish the parameters for the vision we started with a broad assessment of demand. Broad demand profiles for access at the Theme Park gate were provided by UDX as it best knows its business.
- 1.33 For UK (Domestic) demand, the country was divided into 62 zones. For each of these zones, judgements were made, informed by travel website data, on likely proportions of movement by mode. For International demand, judgements were made about airport, onward travel and accommodation stay.
- 1.34 This led to the Transport Vision. The Transport Vision is that, for UK travel, it is reasonable to design for a 40:40:20 split of visitor movement between road, rail and ‘other’ modes respectively, where ‘other’ modes include dedicated coach travel, local bus and taxi travel.

Figure 1-11: Visitor Mode Split Vision



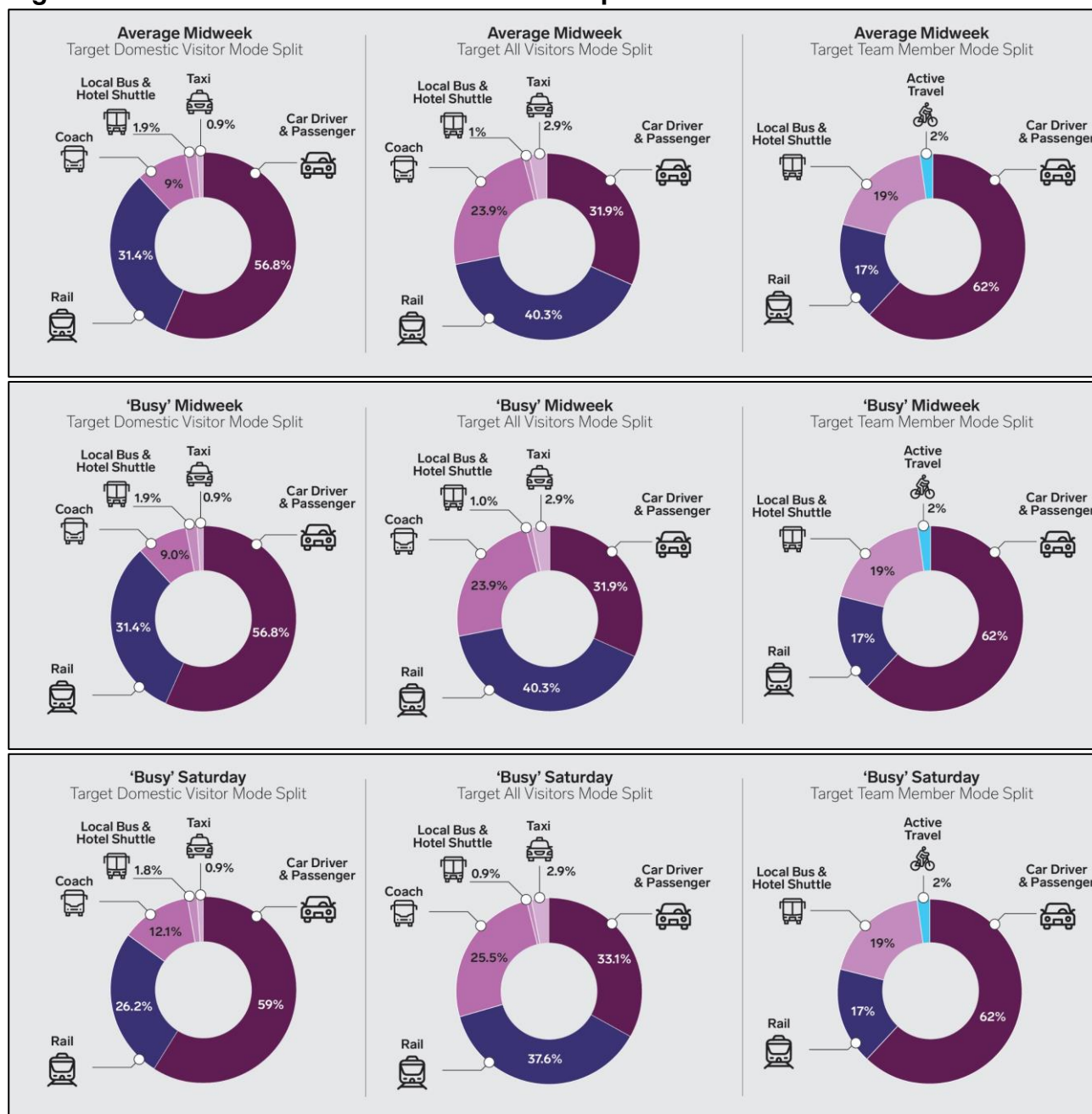
- 1.35 Armed with this ‘Transport Vision’ as the starting point, we developed a far more sophisticated assessment of demand using a logit model. A logit model is a type of statistical model that estimates the probability of an event occurring based on sets of independent variables. Essentially, it estimates the likelihood of people travelling by a particular mode given certain criteria.

1.36 The criteria applied to the model included:

- a. The UK broken down into 70 areas;
- b. Group size (in ten separate categories from five-person families to individuals);
- c. Distance;
- d. Road travel time by time of day and day of week;
- e. Train travel time by time of day and day of week;
- f. The number of interchanges if travelling by public transport;
- g. Transfer time from the Proposed Development's railway station to the ERC;
- h. The generalised cost of travel;
- i. Off-peak rail fares for rail travel;
- j. Coach fares;
- k. The parking charge at the Site; and
- l. The likelihood of visitors travelling from further afield to stay in accommodation both on Site and within the local area, with consequent onward travel from there.

1.37 The detail associated with this model was scrutinised and iterated by the UDX team and the DfT team working together. The result is a model that both parties are satisfied provides good estimates of demand for the purpose of assessment.

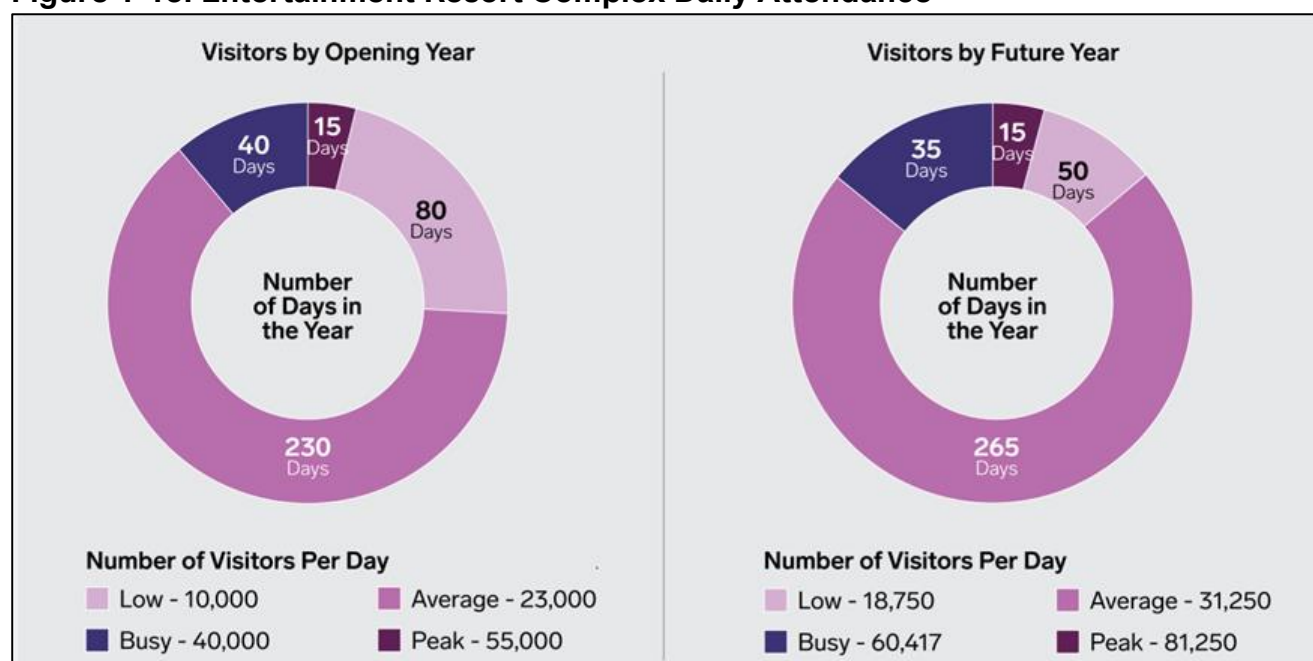
Figure 1-12: Visitor and Team Member Mode Split



- 1.38 Based on evidence at other large leisure attractions, typical car park occupancy is in the order of 3.6 people per car. The logit model approximates to 3.3 to 3.5 persons per car depending on the scenario, which is within reasonable bounds.
- 1.39 The logit model validates well to UK National Travel Survey data.
- 1.40 Demand forecasts were created for the year of opening (Primary Opening Year) assuming visitor levels of 8.5 million a year. Demand forecasts were also created for a notional situation in a Future Year, 20 years after Primary Opening Year. This assumed 12.5 million visitors a year to the Core Zone, along with associated trips to development on Lake Zone and West Gateway Zone.

- 1.41 The nature of the demand is such that it makes good use of the massive transport infrastructure in the area.
- 1.42 The peak periods for demand to the Proposed Development will be outside of the times at which background travel peaks. The demands are largely complementary, meaning an increase in efficiency of the transport infrastructure.
- 1.43 The Proposed Development will typically be busiest at weekends, during holiday periods and outside of the traditional UK commuter peaks. Easter and Christmas are also likely to be periods of peak attendance at the Theme Park.
- 1.44 There will also be ‘event days’ organised at the ERC. These event days would coincide with specific events during the calendar year such as Easter or Halloween, but also could be related to the promotion of a specific element of the ERC. These ‘event days’ would run over several days in each event period. For example, the Halloween event days may run over several weeks either side of Halloween day itself. As such event days will not necessarily correspond to peak days in attendance at the ERC.
- 1.45 Looking ahead to demands in the Future Year scenario, and based on the operation of other similar Theme Parks around the world, the transport assessment considers that there will be in the order of 15 peak days, there will be about 35 days of ‘busy’ period, and the remainder, about 315 days, the Proposed Development will operate at its ‘average’ intensity or lower.

Figure 1-13: Entertainment Resort Complex Daily Attendance



- 1.46 UDX and DfT have collectively agreed that the peak of the peak is an unusual situation which can be specifically managed, similar in the UK to major concerts and cup finals. Therefore, UDX are not designing specifically to accommodate these, except in so far that UDX will be providing special measures for when they occur. Ultimately, trip making to and from the ERC will be controlled by the Monitor and Manage Plan (included within the Travel Plan (**Appendix 5.6: Travel Plan of the ES (Volume 3)**)).
- 1.47 The 'busy' periods will be largely at weekends, bank holidays and school holidays.
- 1.48 This leaves the 'average' demand scenario, which is the scenario that exists for most of the time. We have assessed this against typical background road and rail movement on a weekday, adjusted to take into account growth associated with committed development.

Figure 1-14: Graph of 'Midweek Proposed Development Traffic' Vs Traffic Flow on the M1 (North of Junction 13) On A Weekday

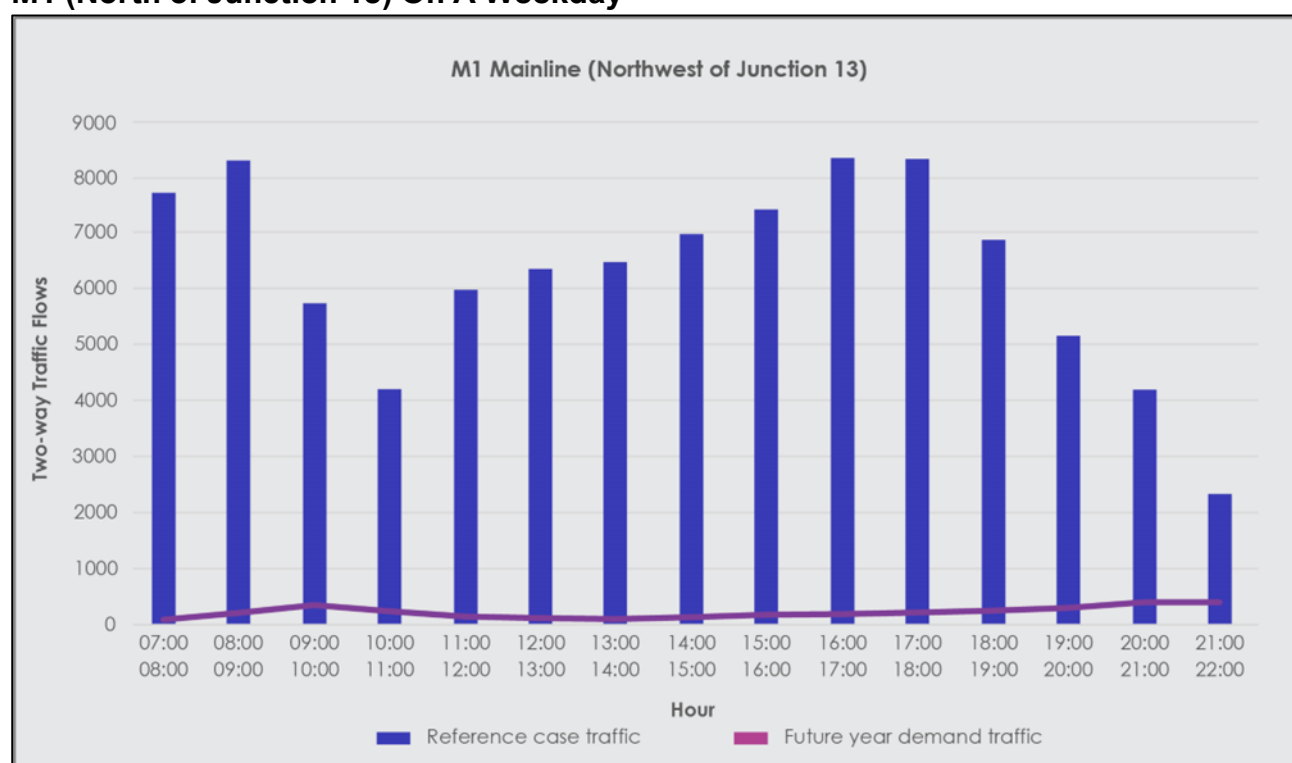
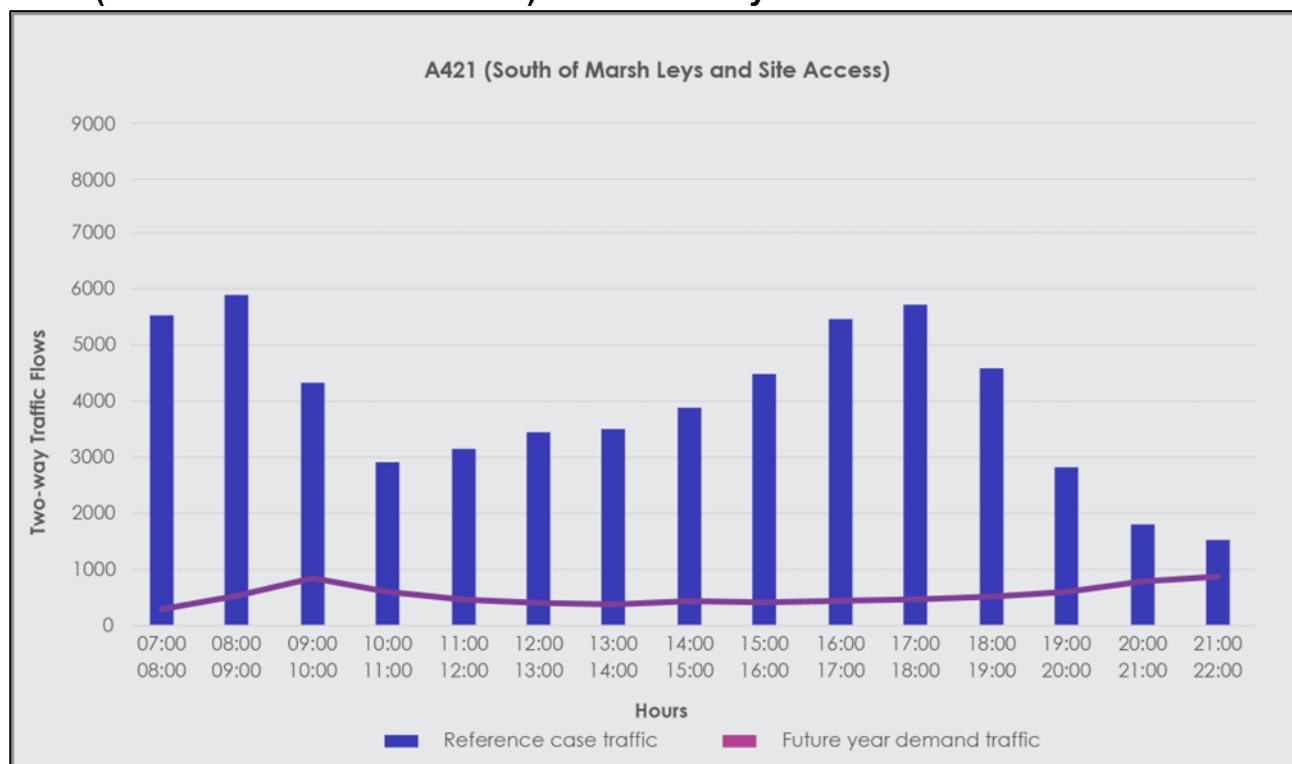


Figure 1-15: Graph of ‘Midweek Proposed Development Traffic’ Vs Traffic Flow on The A421 (South of new A421 Junction) On A Weekday



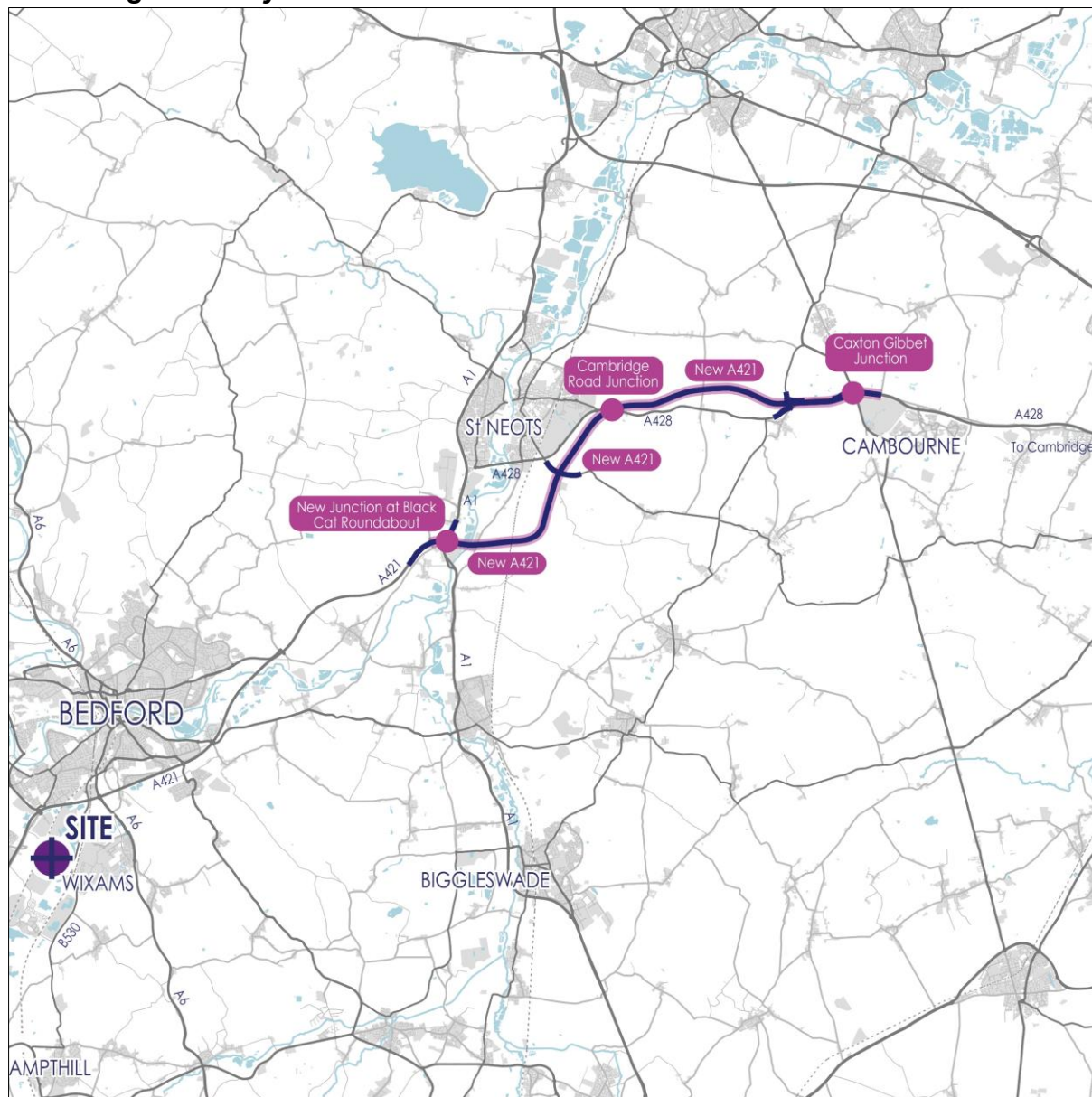
- 1.49 For the purpose of assessing the road network, in addition to Proposed Development traffic forecasts, we have undertaken a Cumulative Assessment of future demand, taking into account committed developments, and committed infrastructure. Our approach to modelling also sought to release potential capacity constraints on the perimeter of the model in order to maximise the release of traffic into our local area within our model. This is set out below.
- 1.50 For the rail network, a major positive effect is the substantial counter tidal flow in the morning from London. At present, the morning movement by train on the Midland Main Railway Line (MMRL) is commuters heading to London. These trains make the return journey almost empty. In contrast, the peak movement for the scheme is out of London at the end of the morning ‘rush hour’ and can go a long way to filling the seating capacity of those trains. This is a very substantial benefit for the efficient operation of the railway infrastructure.

Roads and Car Parking

- 1.51 Being able to take access to the strategic road network is critically important to the scheme. It provides for an excellent arrival experience, and it means that visitor traffic stays away from local roads.

- 1.52 In the course of developing the solution, the DfT and UDX undertook optioneering, investigating ideas and assessing options. The Proposed Development includes the delivery of road and access infrastructure as illustrated in Figure 1-10. Design work was undertaken to identify a possible general arrangement for this proposed road and access infrastructure that would be deliverable and able to accommodate the Proposed Development. This illustrative general arrangement is shown in **Annex 6 of Appendix 5.1: Transport Assessment (Volume 3) of the ES**.
- 1.53 This solution draws traffic into the Site from the new A421 Junction, which in turn connects with the M1 and Milton Keynes in the west, and the A1 and Cambridge in the east. Vehicles exiting the Site and heading west towards the M1 have a dedicated slip road onto the A421. Vehicles exiting and heading east towards Cambridge join Woburn Road, and then the A421 via the Marsh Leys grade separated interchange.
- 1.54 The peak period for the exit movement from the Site is late at night, at around 21:00 to 22:00 when the background flow at the Marsh Leys interchange is light.
- 1.55 There is currently a DfT funded scheme on Site to the east, upgrading the A421/A1 interchange, and providing the 'missing link' dual carriageway to Cambridge and beyond (A428 Black Cat to Caxton Gibbet). This is due to complete in 2027.

Figure 1-16: A421 Upgrade Providing the ‘Missing Link’ Dual Carriageway to Cambridge and Beyond



- 1.56 In the west, the M1 Junction 13 is known to experience congestion, particularly in the morning peak commuter period. In the main, Site traffic will avoid this background peak. However, there will inevitably be some effect. This is set out later.
- 1.57 The proposed new A421 Junction will connect to roads through the West Gateway Zone. At this point, the illustrative road layout allows for an access to the potential East West Rail Station.
- 1.58 The road carries on across a new bridge over the EWR line, and via a series of junctions, it passes through the Core Zone to connect with the Lake Zone and a realigned Manor Road.

- 1.59 Network Rail has plans to upgrade the level crossing over the railway at Manor Road. Network Rail has consent to close the crossing and provide a new bridge on the current alignment of the road. The DfT has advised us that for the purpose of assessment we should consider this as committed development. In addition, and as sensitivity tests, we have also considered two alternatives, namely the closure of Manor Road to vehicles at the MVL along with an active travel bridge, and a simple upgrade of the level crossing.
- 1.60 As part of the scheme, Manor Road heading east from the Site will be upgraded to provide a safe, more direct and convenient route, to the junction with Ampthill Road. The junction with Ampthill Road will be traffic signal controlled to maximise capacity, allow for the shuttle bus movement between the Full Wixams Station and the Site, and to enable convenient active travel movement.
- 1.61 In the Future Year scenario there will be a maximum of 16,699 non rail related parking spaces across the Site. Theme Park visitor parking will be charged. The logit model assesses on the basis of a parking charge of £35 per day for this, which is consistent with parking charges at other major resorts around the world.
- 1.62 The principle is that parking will be managed so that there is always space for the entirety of the parking demand. For efficiency, and in some circumstances, parking in one area may be used flexibly for purposes elsewhere within the Site.
- 1.63 A minimum parking number is proposed on the principle that there will always be enough parking to satisfy demand.
- 1.64 Parking numbers are not allocated specifically to areas of the Site in order that flexibility in design and operation is maintained.
- 1.65 As it is inefficient in space and planning terms to provide too much parking, the number of spaces is expressed as a maximum for the Future Year with the principle of minimum levels of parking applying from Primary Opening Year.
- 1.66 The proposed minimum and maximum numbers for the ERC are in Table 1-1 below.

Table 1-1: Proposed Minimum and Maximum Parking Provision

	Minimum Spaces	Maximum Spaces
Site-wide Non-Rail Parking ¹	11,197 spaces	16,661 spaces

¹Car parking associated with the Core Zone, Lake Zone and West Gateway Zone

Midland Main Railway Line and Wixams Station

- 1.67 A new railway station has been consented as part of the Wixams settlement scheme and now under construction. This includes two new platforms on the Midland Main Railway Line (MMRL) for 12-car Thameslink services to stop at. As consented, the station is entirely east facing.

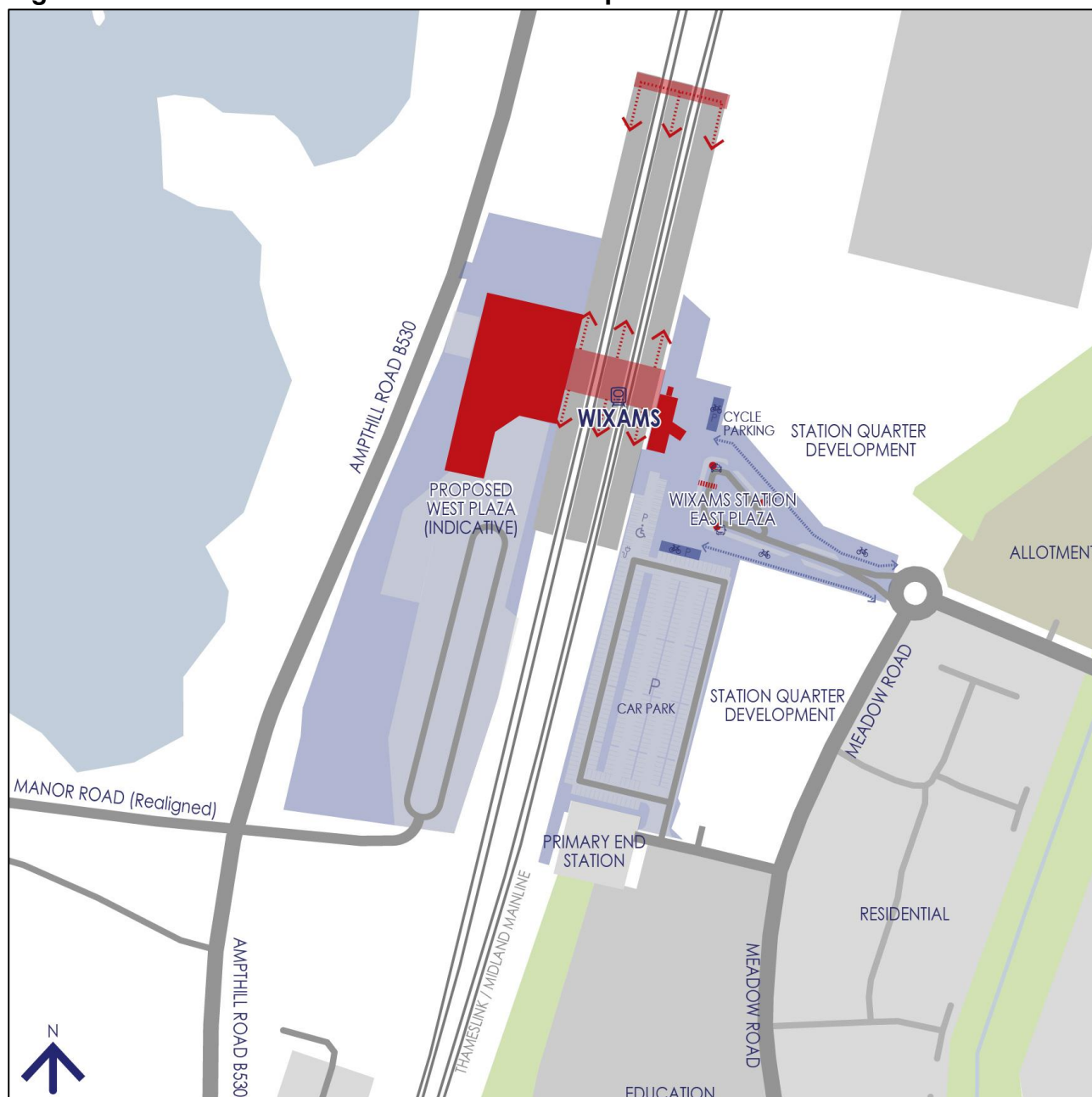
Figure 1-17: Wixams East Station - Consented Scheme



- 1.68 This station, as currently consented, is intended to serve Wixams.

- 1.69 As consented, the station is incapable of accommodating stopping trains all of the time. The maintenance regime for the MMRL requires regular closure of two of the four railway lines. With just two platforms, being served by two railway lines, there will be periods, often at weekends, where the platforms will not be in use, and therefore trains will not be able to stop at Wixams. This is not appropriate for the Proposed Development.
- 1.70 In any event, the use of Wixams Station as a major interchange for the Proposed Development will dwarf the currently consented station. With several thousand people per hour in the peak alighting or departing at this station and heading to and from the Proposed Development, alongside a need for reliable and continuous provision, the station design itself needs upgrading.
- 1.71 The proposal is that the level of service at Wixams Station is extended to four platforms. Four platforms enable continuous use of the station by Thameslink services and additionally it allows for East Midlands Railway (EMR) services. The EMR 'fast' services currently bypass Bedford on the way to Sheffield and Nottingham from St Pancras. The EMR 'connect' services operate between Corby and London St Pancras and call at Bedford. Thameslink operates through London and up to Bedford.
- 1.72 A suitable Wixams Station upgrade has been investigated by the DfT rail team. This provides the four platforms, retaining the four rail lines on a new alignment. It encompasses sufficient space to stop trains on both the 'fast' and 'slow' lines.
- 1.73 The consequence will be more trains stopping at Wixams Station than would otherwise be the case, and faster travel times to and from London than would otherwise be the case, with the fastest trains taking just over 30 minutes as opposed to likely 55 minutes without the expanded station.

Figure 1-18: Full Wixams Station Indicative Proposed Scheme



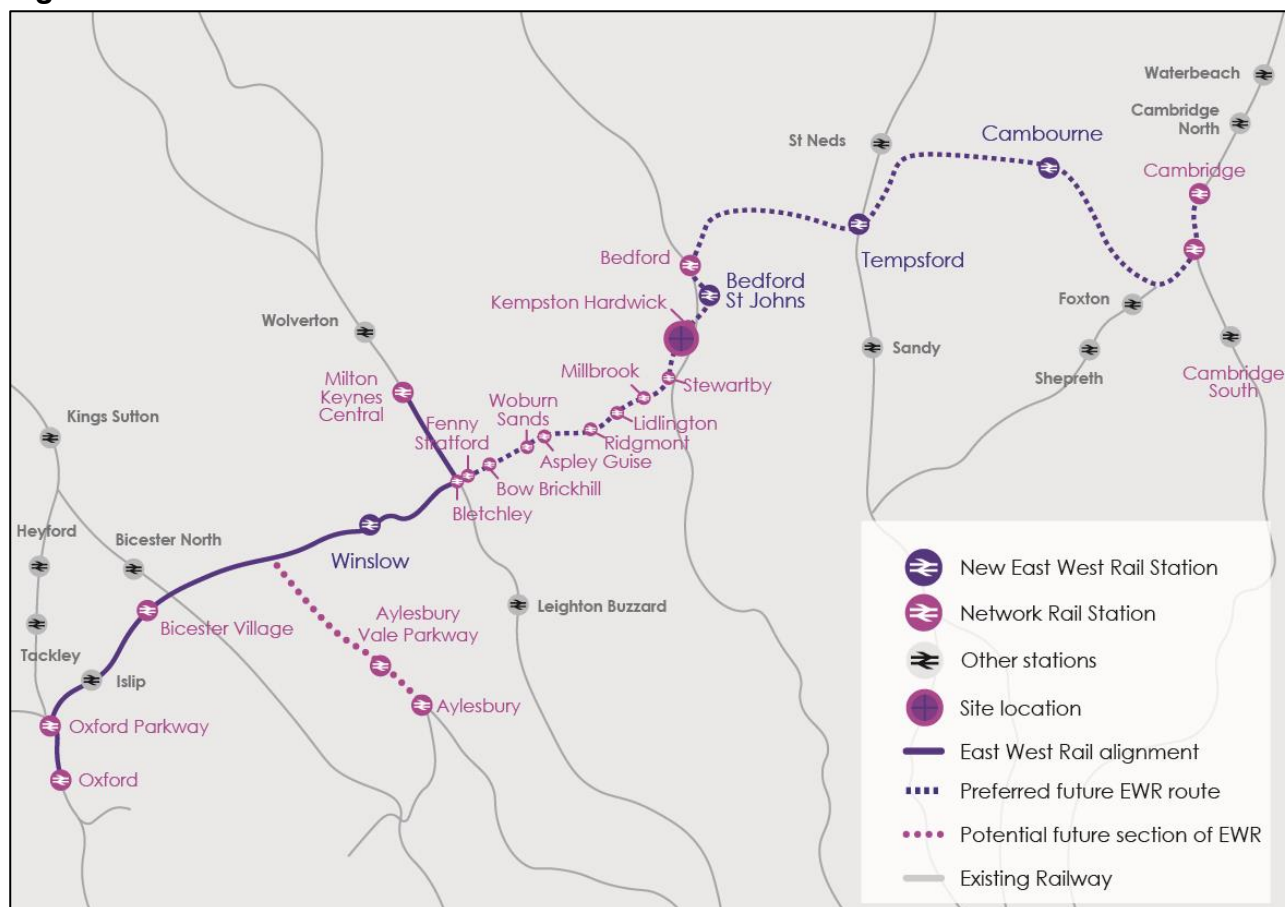
- 1.74 A new western plaza, which is a Proposed Development facing space, is to be created. The currently consented eastern plaza, serving local movement, remains, separated from this Proposed Development visitor space to the west.
- 1.75 The western plaza will have space for the fleet of branded shuttles running from the Full Wixams Station to the Theme Park entrance via the realigned Manor Road. This journey will take about 8 to 10 minutes.
- 1.76 The DfT and UDX teams have assessed the platform widths necessary to accommodate the demands, along with the space required for pedestrian movement and forecourt capacity. They are satisfied that a suitable station design can be contained within the planning proposal red line.

- 1.77 The logit model provides forecasts of train passengers by direction, route and time of day. It also estimates movement at stations along the route, including stations within London.
- 1.78 The DfT team has assessed the ability of the entirety of the network, including train capacity and station capacity, to accommodate the demand. It is satisfied that the network on this line can accommodate the demand. Its advice is that some deliverable changes to train frequency, timing and stops will be necessary to accommodate the change in demand by day of week, season and year, and that these are readily achievable.
- 1.79 The DfT has analysed the effect of stopping trains at the Full Wixams Station on journey time service levels for other users of the network (trade-offs for other rail users).
- 1.80 There is minimal difference for Thameslink users. Thameslink trains are due to stop at Wixams in any event.
- 1.81 For EMR trains, there will be a slowing of between 3 to 4 minutes for all services, including those not stopping at Wixams Station. This is deemed a 'significant trade off' by the DfT. However, it is also considered an acceptable trade off by the DfT.
- 1.82 The DfT has highlighted a potential capacity constraint at St Pancras for movement up and down the escalators to the EMR platforms, and the limited space at the forecourt area in front of the EMR ticket barriers. This was a concern for the DfT prior to its knowledge of the UDX scheme, and it is an issue for which the DfT is forming a working group to consider.
- 1.83 The DfT advice is that the fall back, with no upgrade to St Pancras, forms the capacity constraint for the EMR trains, with the remaining demand capable of being accommodated in any event by the St Pancras Thameslink trains, for which there is no such station constraint.

East West Rail (EWR)

- 1.84 EWR is a planned east to west railway line connecting Oxford with Cambridge via Milton Keynes and Bedford. Oxford is connected by rail to South West England and to South Wales. Milton Keynes and Bletchley are connected by the West Coast Mainline to the Midlands, the North of England, North Wales and Scotland.

Figure 1-19: East West Rail



- 1.85 The section of EWR to Bletchley and Milton Keynes is currently under construction and will be open by 2025.
- 1.86 For the purpose of assessment, the Proposed Development assumes that the EWR line is completed from Oxford to Milton Keynes by Opening Day. It is aware of further expansion plans including EWR services to Bedford and then Cambridge, with the possibility of a new Stewartby Station potentially serving the Proposed Development. Such a new station serving the Site on expanded EWR service would bring benefits in terms of non-car accessibility to the Proposed Development. However, these further improvements are not committed. Therefore, the Proposed Development does not rely on the line continuing further, and it does not rely on a new EWR Station at the Site. However, it strongly supports an extension of EWR beyond Milton Keynes, and the delivery of a new EWR Station at the Site.
- 1.87 Therefore, the Proposed Development safeguards land that would enable a new station to be constructed. The construction assessment allows for the effects of construction of a new station concurrent with construction of the Proposed Development.
- 1.88 The Proposed Development would add significant numbers of passengers to this route, whether the line stops at Milton Keynes, or proceeds all the way to Cambridge.

- 1.89 EWR Co advises that without the expansion of EWR beyond Milton Keynes that there is likely to be a rail service operating between Oxford and Bedford at one train per hour, using the Marston Vale line between Bletchley and Bedford, and which may stop at Stewartby, but not Kempston Hardwick.
- 1.90 Our professional judgement is that this is both an unattractive service for visitors (it is unlikely to be promoted), and that it does not provide sufficient capacity to make a significant difference to the assessments.
- 1.91 In the absence of a new EWR station serving the Site with new expanded EWR service to Bedford and/or Cambridge, the assessment accounts for buses to connect Milton Keynes railway station with the Site. The bus passengers will be largely made up of rail passengers on EWR, rail passengers on the West Coast Mainline and visitors starting from Milton Keynes. This forms the basis of the case considered for the purpose of assessment. It is a realistic prospect that the Proposed Development will generate a significant increase in travel demand to/from Milton Keynes station and, accordingly, it is reasonable to assume that commercial shuttle bus services between Milton Keynes station and the Site will be delivered by market operators. The assessment also considers a situation whereby the EWR service would be extended to Cambridge and a new EWR station delivered on Site.
- 1.92 Ultimately, the trip forecast for the Proposed Development is controlled by the Monitor and Manage Plan (included within the Travel Plan (**Appendix 5.6: Travel Plan of the ES (Volume 3)**)), that sets out trip generation thresholds for the entire Proposed Development. Those trip thresholds assume that EWR passengers access the site from Milton Keynes Central Station through this shuttle bus service. The provision mechanism of the Milton Keynes shuttle is set out within the Travel Plan (**Appendix 5.6: Travel Plan of the ES (Volume 3)**).
- 1.93 There is no unique solution for bus passengers pick up and drop off at Milton Keynes. As is typical when considering bus services and solutions, the most appropriate solution is best determined closer to the time. It is though fair to conclude that there is a solution. For instance, the existing bus station at Milton Keynes Station is operating well below potential capacity. The 24 buses in the peak hour that would typically be associated with the Proposed Development can be readily accommodated within this additional capacity assuming an efficient operation. The Site's transport hubs will have sufficient capacity to accommodate this demand.
- 1.94 The working assumption is that there will be no change to Stewartby Station and Kempston Hardwick Station. The scheme has no effect on Stewartby Station. Access to Kempston Hardwick Station could be affected by the Network Rail Manor Bridge proposal, and the Proposed Development's road proposal and is considered in the options assessed for Manor Road.

Transport Interchanges

- 1.95 East of the MVL will be the primary Transport Interchange and the entrance to the Theme Park. This Transport Interchange is where dedicated bus and shuttle passengers alight and load. Shuttles run from the Full Wixams Station. In the absence of a new EWR station serving the site, it is expected that shuttle bus services will deliver visitors from Milton Keynes Station to this part of the site. Passengers will be able to walk, with convenience and without hinderance, between the Interchange and the Theme Park's front door public realm.

- 1.96 Pick up and drop off by Ride Share, Taxi or other shared vehicle services will be from a dedicated area at the south of the Core Zone, to the west of the visitor car park.
- 1.97 Secondary interchanges will be spaced around the Site, for instance at visitor accommodation, with shared travel connections into the primary Transport Interchange.

Coaches and Buses

- 1.98 With such a high demand for movement from across the UK, running coaches from specific locations that are less well served by rail, but well connected with the strategic road network, is particularly efficient from both carbon and fiscal perspectives. The logit model has been based on coaches with realistic pricing as part of an integrated ticketing strategy to match.
- 1.99 Locally, the movement of circa 8,000+ team members will drive a demand for more shared travel facilities, which we expect to emerge based on market forces. In addition, the Proposed Development's travel planning will target locations where movement of team members at the beginning and end of shifts to common destinations is easily and efficiently undertaken by bespoke bus services. This will be developed closer to the time at which it is needed, to reflect conditions and characteristics at that time.

Active Travel

- 1.100 Development of the Site opens up opportunity for more local movement by active travel.
- 1.101 Excellent active travel corridors will be provided within the Site's Red Line Boundary. Many of these will segregate cyclists from walkers from vehicles.
- 1.102 There is a core active travel corridor within Bedford connecting the town centre and the hospital, along Ampthill Road, past residential, retail and employment locations, to Interchange Retail Park, just north of the location where the Lake Zone meets Ampthill Road.
- 1.103 When the Proposed Development delivered, there will be an excellent and segregated active travel corridor through the Lake Zone, connecting in turn with Manor Road, the Core Zone and the West Gateway Zone. UDX will in addition deliver an active travel link between the Lake Zone and Interchange Retail Park, within the highway along Ampthill Road. The consequence will be a joined up active travel corridor connecting from the West Gateway Zone, through the Site into Bedford, from where active travel connections are plentiful, including to key destinations and residential areas.
- 1.104 For clarity, the road through the Lake Zone will be opened when there is sufficient development within the Lake Zone to justify the need for access from two directions. This is likely when the first development happens in the Lake Zone after Theme Park opening. Concurrent with the opening of the road in the Lake Zone, the connection to the Interchange Retail Park will be completed.
- 1.105 In addition, whilst it has been agreed with Bedford BC that it is not necessary for the delivery of the Proposed Development, there is also potential to fill in the current gaps in footway provision for local movement beyond the Red Line Boundary, for example to enable continuous links between Wootton and Stewartby.

- 1.106 Bedford BC has stated its aspiration to provide local links. These opportunities are related to factors beyond the remit of the Proposed Development and are linked in part to the delivery of a potential new EWR station in the vicinity of the Site, and progress relating to the consented housing scheme on the Stewartby Brickworks site.
- 1.107 UDX supports these aspirations.

The Construction Plan

- 1.108 Construction of the scheme will start in 2025 and continue to the Primary Opening Year. After that there will be a juxtaposition of construction for the Future Year scenario combined with operation of the Site.
- 1.109 The construction of the Entertainment Complex Resort itself will run in parallel with construction of the road accesses, the EWR station (if provided within this period), Wixams Station, and Network Rail's construction of the Manor Road railway bridge (if provided within this period). In addition, there will be overlap with National Highways' Black Cat scheme.
- 1.110 There will be careful integration between all of these works. A Construction Traffic Management Plan (CTMP) (see **Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3)** of the ES) forms part of the scheme's management documents. The CTMP sets out the phasing and strategy, the management measures, the monitoring approach and the compliance structure. Construction of the new A421 Junction, including the roads across the West Gateway Zone and the associated bridge over the railway line, will start in 2025 and access for this will be taken from Woburn Road. At this time, and following some preliminary works accessed from Ampt Hill Road and Manor Road, construction of the Proposed Development itself will be accessed via Woburn Road/Bedford Road and Broadmead Road until such time as the new access over the MVL line is in place in 2028. Some local construction team member vehicles will access the area from Ampt Hill Road and Manor Road.

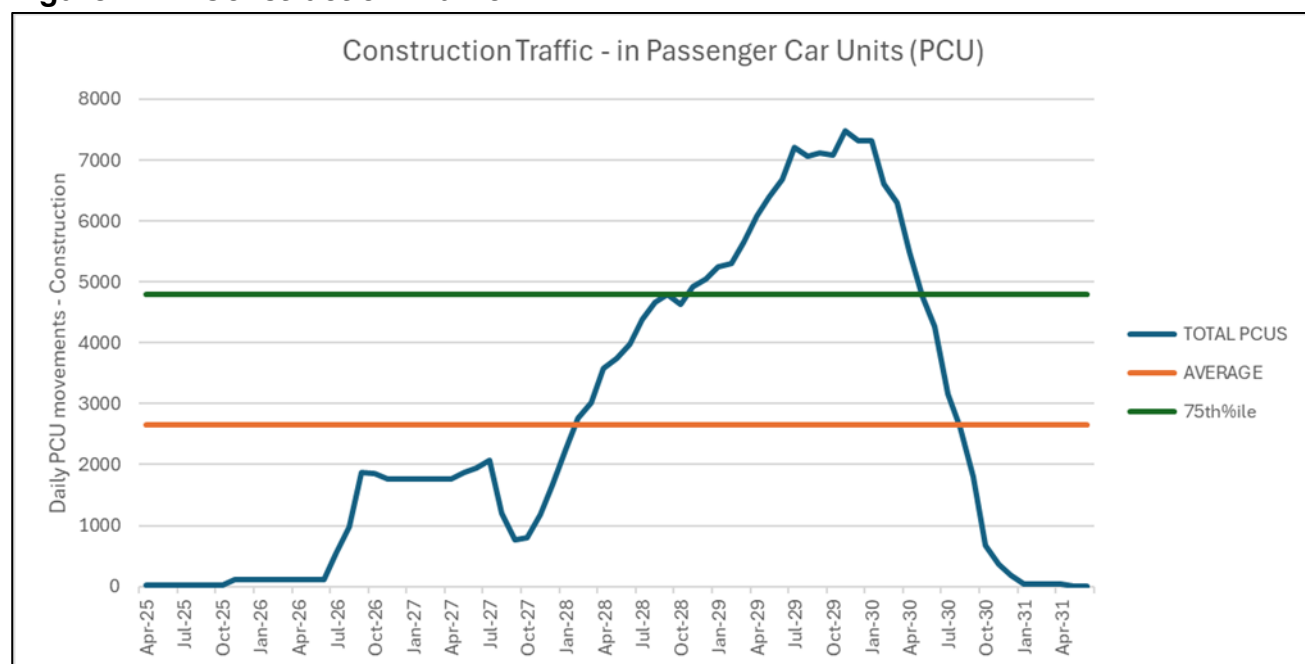
Figure 1-20: Construction Programme

P320 Integrated High Level Timeline 27 May 2025	2025				2026				2027				2028				2029				2030			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Enabling Works																								
Design																								
Construction & Installation																								
Roads																								
Wixams Station																								
Utility Connections																								

- 1.111 The junction of Broadmead Road and Woburn Road/Bedford Road will be signalised to accommodate the forecast movement of construction vehicles. This junction will remain signalised in the operational phase of the Proposed Development, addressing a key local concern, raised by Stewartby Parish Council, in relation to the future operation of the highway network.

1.112 The construction programme is such that there will be a defined peak for about 7 months (within 10% of the Peak). Outside of that peak, construction movement will average 35% of that peak. The following chart shows the expected profile of construction vehicle movement in Passenger Car Units (PCUs), as assessed in the Transport Assessment. A PCU is a method for standardising the effects of larger and smaller vehicles. A car equals one PCU, and a large HGV equals two PCUs.

Figure 1-21: Construction Traffic

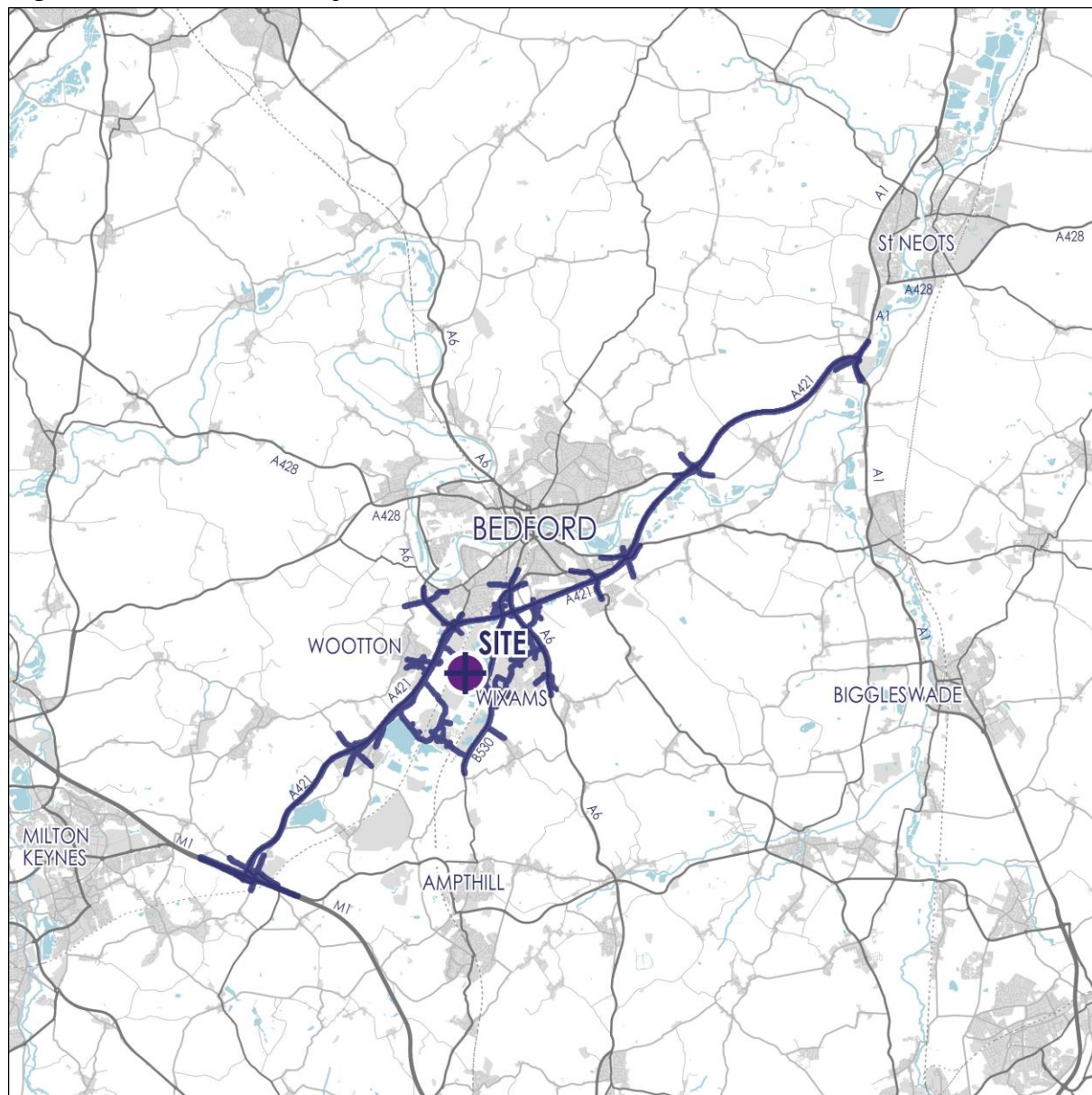


The Effects - Highways

Microsimulation Model

1.113 To inform judgement about effect on the highways a microsimulation model was built spanning the A421 corridor between the M1 and the A1, with local roads north and south of the corridor in the vicinity of the Site.

Figure 1-22: Model Study Area



- 1.114 To build and calibrate the model, data on journey time, traffic flow, and junction type and performance was collected. This was collected in March 2023.
- 1.115 The model was assessed by National Highways, and, following iteration, was agreed by both UDX and DfT to be fit for purpose.
- 1.116 The benefit of a model with this degree of sophistication is that it provides good estimates of junction and network performance for future scenarios. In this case, we have used journey time as a useful metric to understand the real-world effects of the scheme.
- 1.117 The model has been built to cover 14 hours of a weekday and 14 hours of a weekend day so that there is a wide picture of performance from which to make judgements.

- 1.118 The model is capable of providing videos showing the movement of vehicles, the ebb and flow of queuing and general changes in the character of performance of the network. For the purpose of this static report we have summarised journey times, comparing Reference Case (measured traffic plus committed growth) times with Development Case (Reference Case plus Proposed Development) times.
- 1.119 The model is a tool that informs judgements. Those judgements are cognisant of the benefits and limitations of models, and the model inputs. These inputs include:
- a. Cumulative assessment of background changes in unfettered demand and infrastructure;
 - b. Forecasts of unfettered demand from the Proposed Development; and
 - c. Based on a policy compliant Vision Led approach, the effect of changing conditions on those demands.

Cumulative Assessment

- 1.120 The cumulative assessment is an estimate of the character of the transport network in the future based on what happens now and what the changes and effects are 'likely' to be between now and then.
- 1.121 There are four major building blocks to this assessment:
- a. The observed character of the network now (this comes with substantial certainty as it is measured and validated);
 - b. The 'likely' change in traffic demands from developments that are 'committed' in planning terms, of which there is some uncertainty;
 - c. The 'likely' change in traffic demands and distributions resulting from 'likely' changes in transport infrastructure, of which there is some uncertainty; and
 - d. The 'likely' change in traffic demand as a result of the Proposed Development.
- 1.122 In addition is the effect that each of these have on each other.
- 1.123 The basic premise of UK transport planning policy, and on which it relies, is that traffic volumes and demands are influenced by many factors. The policy basis is a Vision Led basis, as opposed to what it used to be which was a Predict & Provide basis. In traffic terms, it means that demands are affected by road capacity, and changes in convenience or congestion. In the limit traffic volumes are a function of available road space.

- 1.124 Traffic models in isolation are not always good ways to forecast future reality and often need a human brain interface in order that appropriate judgements are made. Without this degree of caution, traffic models used inappropriately have the tendency to forecast greater congestion and chaos than will occur in reality. Therefore, any assessment needs to be cognisant of the limitations and make judgements in that context.
- 1.125 Most individual development transport assessments tend to look in greater detail close to the location of the development, and less detail further afield. Therefore, when using individual development transport assessments to look at committed developments in a wide area it is often the case that traffic demands are overestimated as traffic can be forecast as extending into infinity in the wider network beyond the individual areas of interest, whereas in reality they do have trip ends and 'internalisation' within specific regions.
- 1.126 Furthermore, some developments use what is sometimes referred to as a 'worst case' assessment of demand, which assumes something beyond likely reality in terms of local internalisation in order to test a higher volume of traffic on the network. When taken cumulatively that is unhelpful, as planning policy requires a 'likely' scenario, not a scenario which is in danger of tending towards overestimates on a 'just in case' basis.
- 1.127 Furthermore, any such assessment must be cognisant that it is not a one-way street, in that additional traffic demand is loaded onto the network without either new infrastructure, or that demand is not affected by the constraints of infrastructure.
- 1.128 All of this means that the assessments and models are tools from which judgements should be made, as opposed to mathematical boxes of absolute truth.
- 1.129 This is the way that we have approached cumulative assessment. We have used the evidential basis, along with checks and balances, to make judgements of likely future character in various scenarios.

Committed Developments Horizon

- 1.130 The Transport Assessment adopts the convention that committed development traffic is taken into account for all future year scenarios, which means that this is the additional (over measured) background demand for both the Opening Day scenario and the Future Year scenarios. Background growth is derived from committed development noting that this is greater than the TEMPro derived growth to a notional year of 2030.
- 1.131 This is because:
 - a. Looking that far ahead, it is highly uncertain what growth looks like. Policy encourages little growth or in some instances negative growth. It would be unreasonable to fetter this position for something not related to the Proposed Development and which is highly uncertain.
 - b. Allowing for notional additional traffic from unknown sources would prioritize future development over the Proposed Development, which is unreasonable and not sensible.

- c. Any growth beyond committed would come with its own mitigation. Loading traffic on the network, without the mitigation that comes with it, creates an unreasonable and unlikely position.

Committed Developments Trip Forecasting

- 1.132 This exercise was undertaken in early 2024 by the UDX team in consultation with National Highways. At the time it was not possible to involve the planning authorities in this process. This exercise was then reviewed in February 2025 to confirm the appropriateness of the committed development list considered in the assessment in light of updated planning data.
- 1.133 Between UDX and National Highways, a total of 66 developments in the Milton Keynes, Central Bedfordshire and Bedford areas were identified for consideration in the cumulative assessment scenario. In a meeting between National Highways and UDX all of these were considered, and it was determined how to treat them in the assessment. Some were attributed a 'zero' effect on cumulative demand. For others, the demands set out in their respective Transport Assessments were applied to the network, cognisant of the limitations set out above.
- 1.134 As a sense check the eventual uplift in demand flows was considered against TEMPRo. TEMPRo draws on a national database, linked to economic growth, population growth and other factors such as the forecast and effect of fuel prices, and latterly the Vision Led approach of minimising traffic through capacity constraint, to forecast local changes in traffic demand over time.
- 1.135 The direct and local look at cumulative assessment provided a forecast that was higher than the TEMPRo forecast. Therefore, the judgement was made to continue with that local and more detailed assessment, but cognisant that it may overestimate raw demand.

Constraint Release

- 1.136 To maximise the volume of traffic passing into our local network for the purpose of assessment we have released constraints on the edge of the model, notably at the A1, the M1 and on the A6 at Ridge Road. This enables us to assess the capacity implications of the proposed new road infrastructure in a reasonable maximum traffic flow scenario.
- 1.137 The way in which we have achieved this is to assume delivery of the Black Cat improvements at the A1, which are currently under construction. At the M1, the capacity constraint was released through amendments to the network within the model.
- 1.138 On the A6 at Ridge Road, minor amendments to the junctions have been applied to the model that release the constraint observed at this junction.

M1 Junction 13

- 1.139 M1 Junction 13 is known to currently experience congestion, particularly in the morning and evening peak commuter periods. Although the Proposed Development traffic for the main part will avoid these background peak periods, as a result of the Theme Park's opening and closing times, the Proposed Development is still expected to result in changes in traffic flows through the junction albeit not to a degree that would result in a change to the nature of the existing congestion at the junction or the performance of the junction.
- 1.140 The Future Year traffic demand at M1 J13 for a weekday and Saturday are presented in **Figure 1.23** and **Figure 1.24**.

Figure 1.23: Future Year Traffic Demand at M1J13 – Weekday

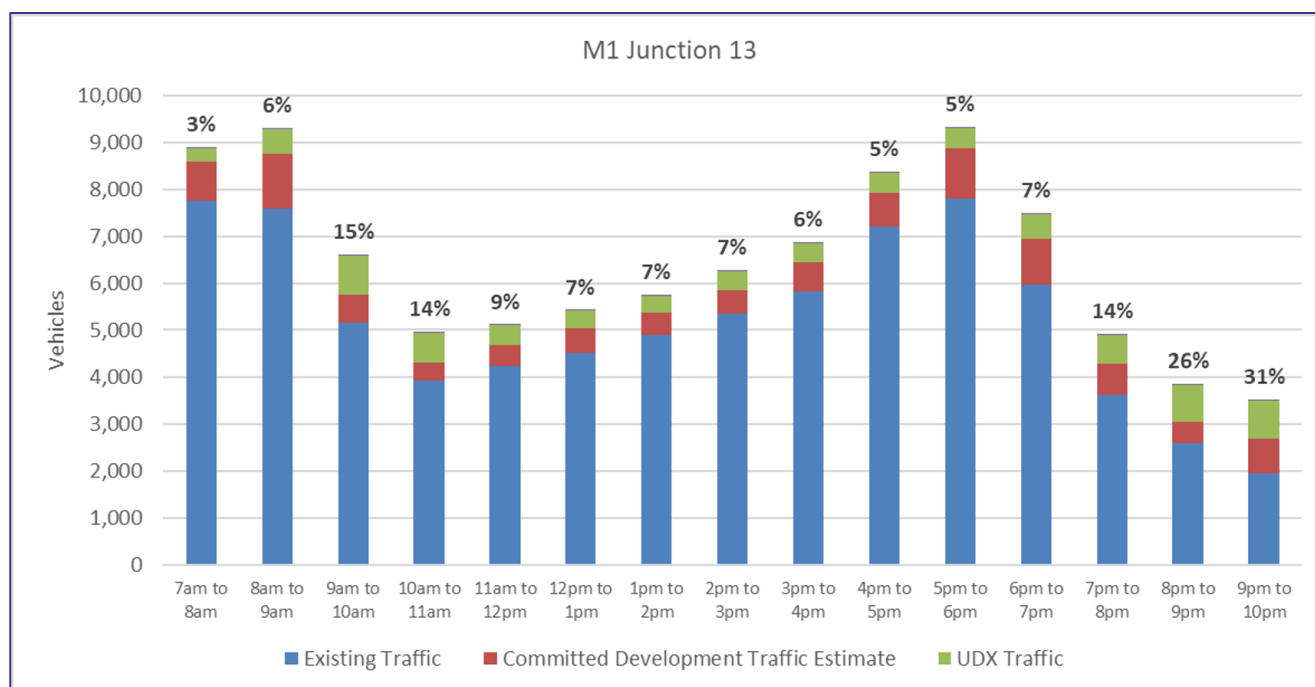
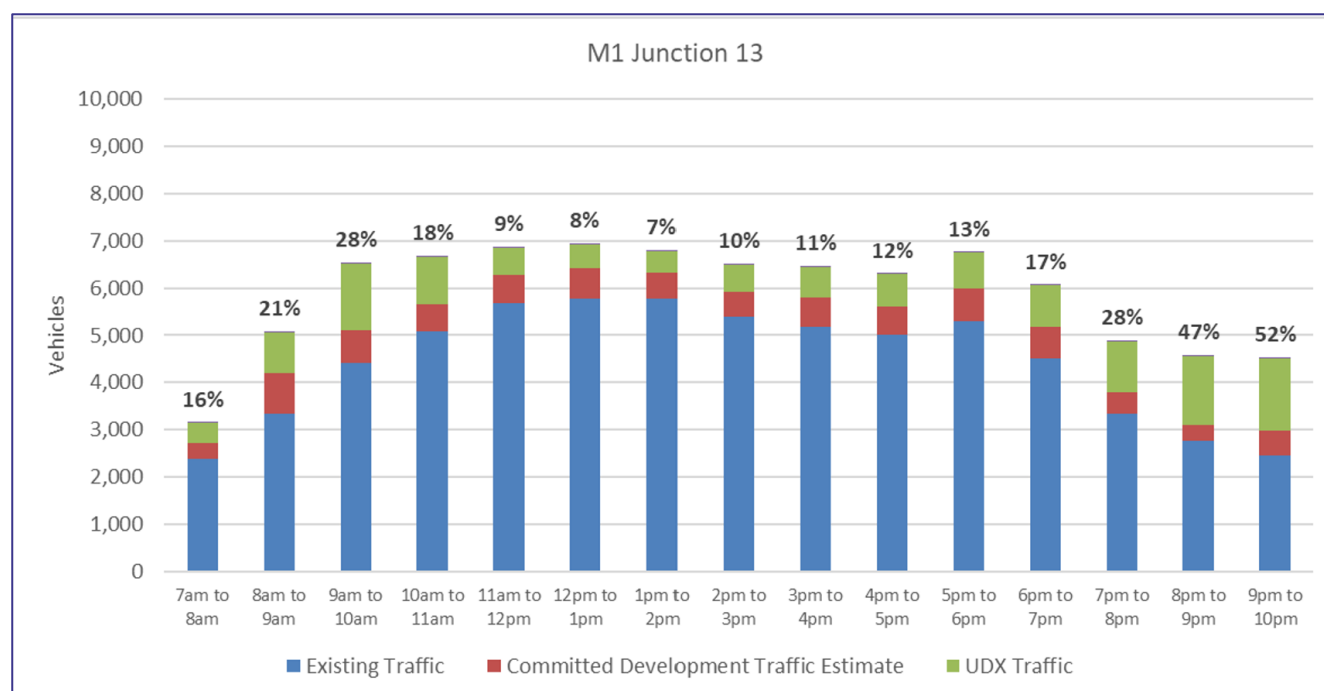


Figure 1.24: Future Year Traffic Demand at M1J13 – Saturday



- 1.141 It is understood that the DfT and National Highways are working on identifying capacity improvements at the M1J13 to address the existing congestion issues there and further pressures at the junction from allocated growth in Milton Keynes and Central Bedfordshire. It is not known at this stage precisely what these improvements entail, but there is a reasonable prospect that future improvements will come forward that will improve the performance of the network.
- 1.142 It must be noted that the DfT/NH studies at M1J13 are not linked to the Proposed Development. These studies predate any suggestion of a development of the nature proposed at the Site. Furthermore, any capacity improvement schemes at M1J13 are not necessary in NPPF policy terms to make the Proposed Development acceptable and it is not reliant upon future improvements to M1 J13.

The Tests

- 1.143 The primary Development case scenarios (Scenario 4 and Scenario 5), reflecting a cautious worst case that provides a robust assessment, is this:
- Background traffic demand as per the Reference Case;
 - The Black Cat highway improvements are in place – These are committed;
 - The Proposed Development road infrastructure comprising the new A421 Junction, the road through the Site, Manor Road improvements and realignment and a new junction with Ampthill Road – in line with the description of development, and considering a possible and illustrative general arrangement as shown in **Annex 6 of Appendix 5.1: Transport Assessment (Volume 3)**;

- d. Traffic signals at the junction of Broadmead Road with Woburn Road – as an identified embedded mitigation;
- e. EWR up to Milton Keynes is in place – This is a committed scheme;
- f. Shuttle buses accommodate the demand for rail-based movement from Milton Keynes station to and from the Site;
- g. The Full Wixams Station as an integral part of the Proposed Development;
- h. Shuttle buses accommodate the demand for rail-based movement between the Full Wixams Station and the Site – related to the Full Wixams Station;
- i. All rail fares are ‘off-peak’ fares, and visitor parking charges are £35 per day (at Primary Opening Year);
- j. Traffic demands for Primary Opening Year and Future Year scenarios as per the Logit model; and
- k. Traffic constraints on the edge of the model at the A1, at the M1 Junction 13 and A6 Ridge Road are released.

1.144 In addition, various sensitivity tests have been run. They include:

- a. EWR to Cambridge along with a new EWR station at the Site for the Future Year scenario;
- b. Peak rail fares applied at peak times; and
- c. Various construction phase scenarios with adjusted assumptions.

1.145 **Table 1-2** summarises the reported model run scenarios.

Table 1-2: Reported Model Run Scenarios

Scenario Number	Scenario Name	Test	Description
1	2023 Existing	Core Scenario	This is assessing the existing road network and existing traffic.
2	2023 Existing plus Peak Construction	Core Scenario	This is the existing road network and traffic plus traffic associated with peak construction.. The assessment is made against the 2023 Existing traffic flows as this represents the greatest proportional increase in traffic and because peak construction traffic could occur at any time before 2029. In addition, by 2029 other mitigation infrastructure improvements may have come forward which could offset the potential impacts of construction traffic

Scenario Number	Scenario Name	Test	Description
2a	2023 Existing plus Average Construction	Core Scenario	This is the existing road network and traffic plus traffic associated with average construction. This has also been assessed against 2023 Existing traffic flows for the reasons set out above.
3	Reference Case	Core Scenario	This is the existing road network and traffic plus traffic associated with agreed committed developments.
4	Primary Opening Year – Reference Case plus Development	Core Scenario	This is the existing road network and traffic plus traffic associated with agreed committed developments plus Primary Opening Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario does not include trip generating development on either the Lake Zone or West Gateway Zone (There may be some drainage or other infrastructure works required on the Lake Zone and West Gateway Zone to support the delivery of development on the Core Zone). This is a cautious worst case in terms of the Primary Opening Year, as EWR is assessed to Milton Keynes only, and not to Bedford, as is proposed by EWR.
4a	Primary Opening Year – Reference Case plus Development plus Construction	Core Scenario	This is the existing road network and traffic plus traffic associated with agreed committed developments plus Primary Opening Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers construction activities in the Core Zone, Lake Zone and West Gateway Zone. This represents a cautious worst case in relation to the potential impact on the study area, as it includes operational trips associated with Scenario 4, plus construction traffic. In addition, in reality, there would not be any further construction occurring on the Core Zone, Lake Zone and West Gateway Zone, without the Theme Park operating in the Core Zone, and therefore the traffic associated with Scenario 4 forms a reasonable baseline to compare Scenario 4a traffic against. Equally, Scenario 5 represents a position where impacts as well as infrastructure are maximised, and as such forms another relevant Scenario to compare Scenario 4a to. This is because, for the purpose of the Transport Assessment, it is important to confirm that the infrastructure in place at Scenario 4 and Scenario 5 is sufficient to accommodate Scenario 4a conditions.

Scenario Number	Scenario Name	Test	Description
5	Future Year – Reference Case plus Development	Core Scenario	This is the existing road network and traffic plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone and West Gateway Zone.
5a	Future Year – Reference Case plus Development plus full EWR	Sensitivity Test	This is the existing road network and traffic plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Cambridge with a new station within the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone and West Gateway Zone. This has been undertaken as a sensitivity test, rather than a core scenario as there is no certainty regarding the completion of EWR.
5b	Future Year – Reference Case plus Development plus removal of Rail Discount	Sensitivity Test	This is the existing road network and traffic plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone or West Gateway Zone. In this scenario, there is no rail discount applied for visitors. This has been undertaken as a sensitivity test rather than a core scenario as the high volume of new rail passengers to the network serving the Proposed Development means that assuming a form of rail discount for visitors is a cautious worst-case assessment. Assessing the removal of this discount has simply been undertaken to examine the potential impacts of any resultant mode shift.
5c	Future Year – Reference Case plus Development plus M1 Junction 13 as a constraint	Sensitivity Test	This is the existing road network and traffic plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone or West Gateway Zone. This scenario is based on a version of the micro-simulation model that considers likely suppressed demand that would naturally occur at M1J13 as a response to existing and predicted capacity constraints at the junction.

Construction Prior to Primary Opening Year

- 1.146 The construction related traffic effects will be noticeable, and at times substantial. We are planning for concurrent construction of the Full Wixams Station, the new A421 Junction, the roads through the Site, the realignment of Manor Road, construction by Network Rail of Manor Road railway bridge, the potential for EWR to be constructing a new station on Site, and construction of the ERC and associated facilities.
- 1.147 There is a Construction and Traffic Management Plan (CTMP) within the OCEMP (**Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3)** of the ES) that sets out likely programme and how that will be managed.
- 1.148 Prior to significant construction works commencing, preliminary works will be undertaken using accesses on Manor Road.
- 1.149 Following that, and during that, at an early stage, construction accesses will be formed on Broadmead Road into the West Gateway Zone and the Core Zone. These will form the main construction accesses for road works, the EWR station works (should they proceed at this time) and the ERC until such time as the road works have been completed from Woburn Road, across the West Gateway Zone and over the Marston Vale Line into the Core Zone.
- 1.150 To facilitate this, Broadmead Road will be upgraded, and traffic signals will be installed at the junction of Woburn Road with Broadmead Road. When this is available, except in exceptional circumstances, construction vehicles will largely access and egress via Broadmead Road and then Woburn Road.
- 1.151 The consequence of using Broadmead Road means construction vehicles will cross the Marston Vale Line at the Broadmead Road level crossing.
- 1.152 The most significant construction effects are limited to relatively short periods due to the peaky nature of the programme. The peak construction period takes up about 9% of the overall construction programme.
- 1.153 The traffic model has been employed to assess the effects of construction traffic during the various phases of construction.
- 1.154 During the weekday morning Peak Period (07:00 to 10:00) the network experiences a small increase (circa 11% change) in average delay during the Peak Construction period of circa 37 seconds per vehicle with a reduction in the mean vehicle speed of 5 kilometres per hour. This would have a minor change in driver experience. During the Average Construction period this is reduced significantly to an increase of 13 seconds per vehicle which equates to less than 5% change which results in a reduction in the mean vehicle speed of 1 kilometre per hour. This would not be perceptible across the road network.

- 1.155 During the weekday evening Peak Period (16:00 to 19:00) the network experiences a moderate increase (circa 27% change) in average delay during the Peak Construction period of circa 88 seconds per vehicle with a reduction in the mean vehicle speed of 17 kilometres per hour. During the Average Construction period this is reduced to an increase of 18 seconds per vehicle which equates to a 5% change in delay which results with a reduction in the mean vehicle speed of 3 kilometres per hour. This may be noticeable at times, but in the round is not a significant effect.
- 1.156 Therefore, there will be some effects on driver convenience as a result of the Proposed Developments construction leading up to the Primary Opening Year. However, these are not significant or long lived.
- 1.157 The effects associated with construction will be managed through a Construction Traffic Management Plan (CTMP) and a Construction Workers Travel Plan (CWTP) (see **Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3)** of the ES).

Rail Safety

- 1.158 The Broadmead Road level crossing is a 'protected crossing'. It will only allow trains to pass when the barriers are down. It is one of the safest forms of level crossing. The only way to make it any safer is to add a physical human presence (a banksman). The characteristic of this type of crossing is 'low risk' in the context of standard risk profile (ALCRM risk profile).
- 1.159 The increase in traffic during construction will increase the risk but it will not alter the risk characteristic, which will remain low risk. In any event, the proposal during construction is to undertake the following:
- 1.160 provision of a Banksman;
- a. grading on the approaches to the level crossing;
 - b. Red Light Safety Equipment (Home Office Approved);
 - c. Vehicle Activated Lights showing level crossing ahead; and
 - d. Count Down Marker on the downside approach of the level crossing due to the curve on the road to mitigate such high upsurge in risk.
- 1.161 Post the use of Broadmead Road as a construction route, the level of change on Broadmead Road as a result of the Proposed Development either in Primary Opening Year or Future Year is not such that the risk characteristic changes. It remains low risk.
- 1.162 If a new EWR Station is provided on land safeguarded as part of the planning proposal it will do so with associated upgrades to the lines and signalling systems. This is capable of being designed and delivered to a suitably safe characteristics for both the Station and the surrounding infrastructure.
- 1.163 Network Rail has considered the effect of the Proposed Development in terms of rail safety, including, but not limited to, rail strikes and effect on level crossings. It has not identified any reason to prevent delivery of the Proposed Development.

Future Year Development Case Traffic Effect

1.164 **Figures 1-25 to 1-27** summarise the differences in modelled journey time along Route ES1 between the Reference Case and Development Case (Future Year) scenarios between the M1 and the A1 along the A421.

Figure 1-25: Route ES1 (M1 to A1)



Figure 1-26: Route ES1 Northbound - Comparing Reference Case to Future Year Development Case (Weekday)

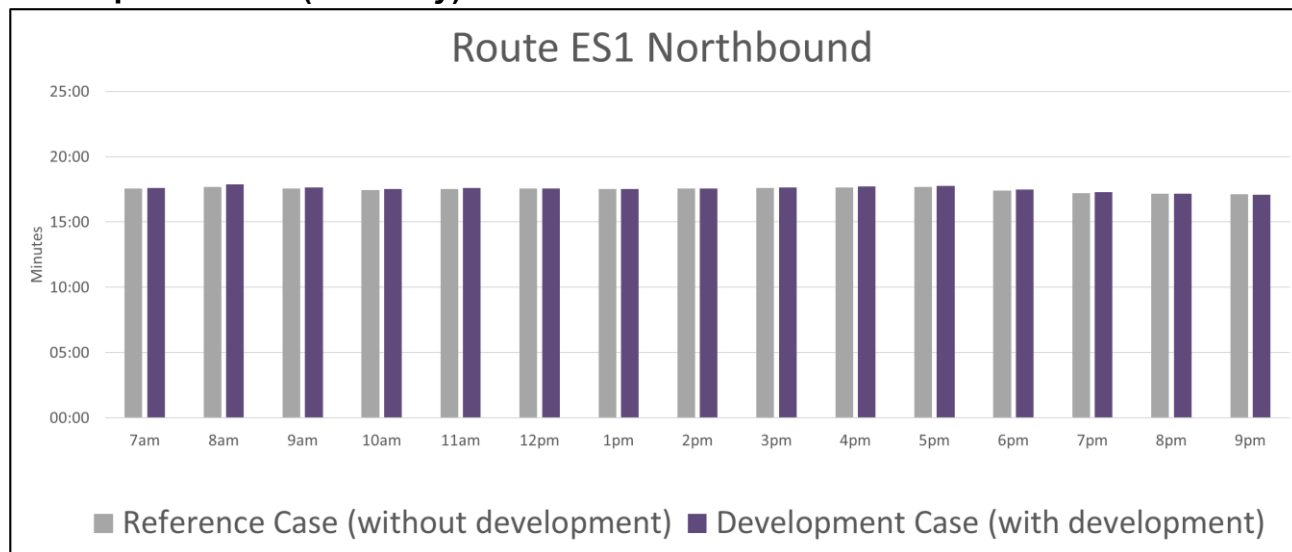
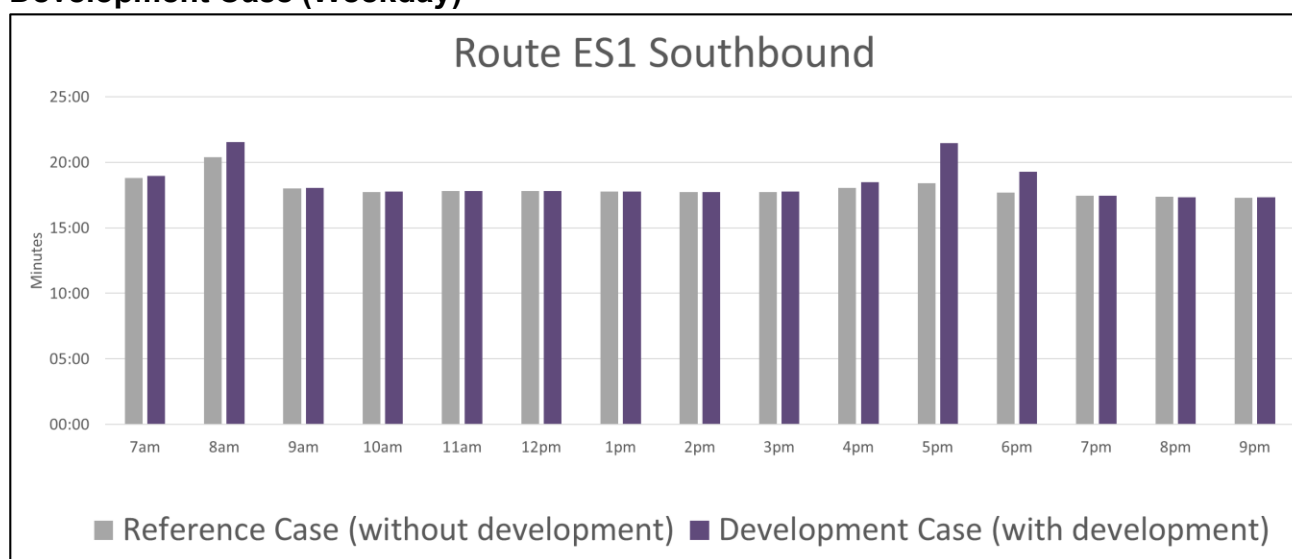


Figure 1-27: Route ES1 Southbound - Comparing Reference Case to Future Year Development Case (Weekday)



1.165 **Figures 1-28 to 1-30** summarise the journey time differences along Route ES2, the A6, which takes in the Elstow Junction, the intermediate section of the A421, and the Marsh Leys junction.

Figure 1-28: Route ES2 (A6)



Figure 1-29: Route ES2 (Northbound) Comparing Reference Case to Future Year Development Case (Weekday)

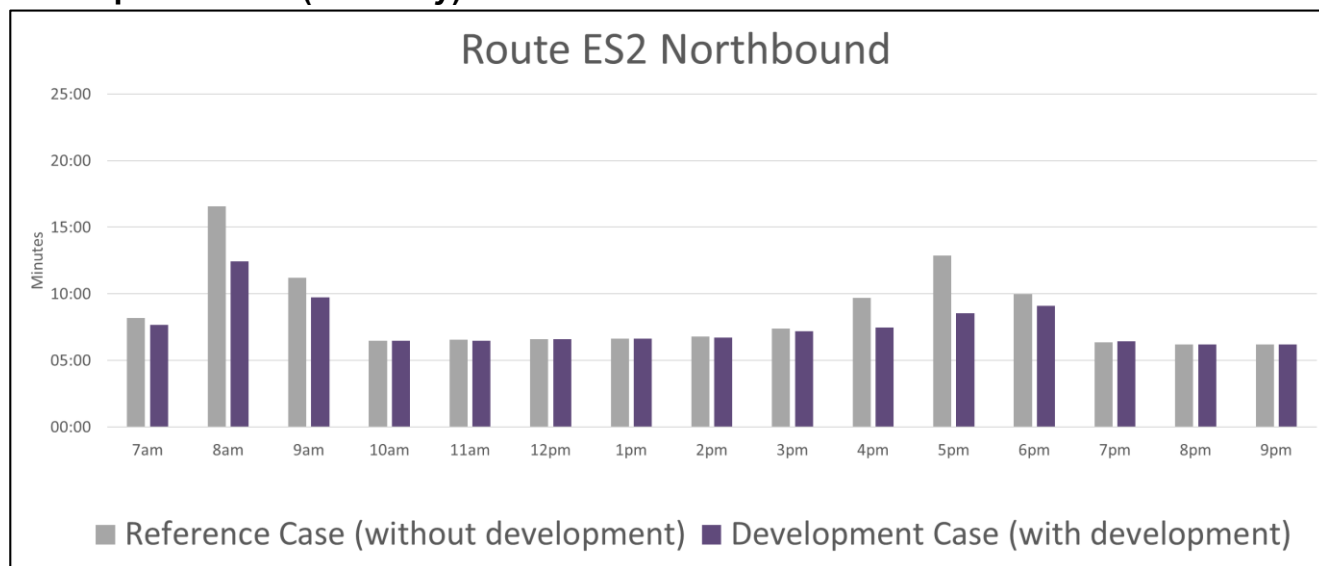
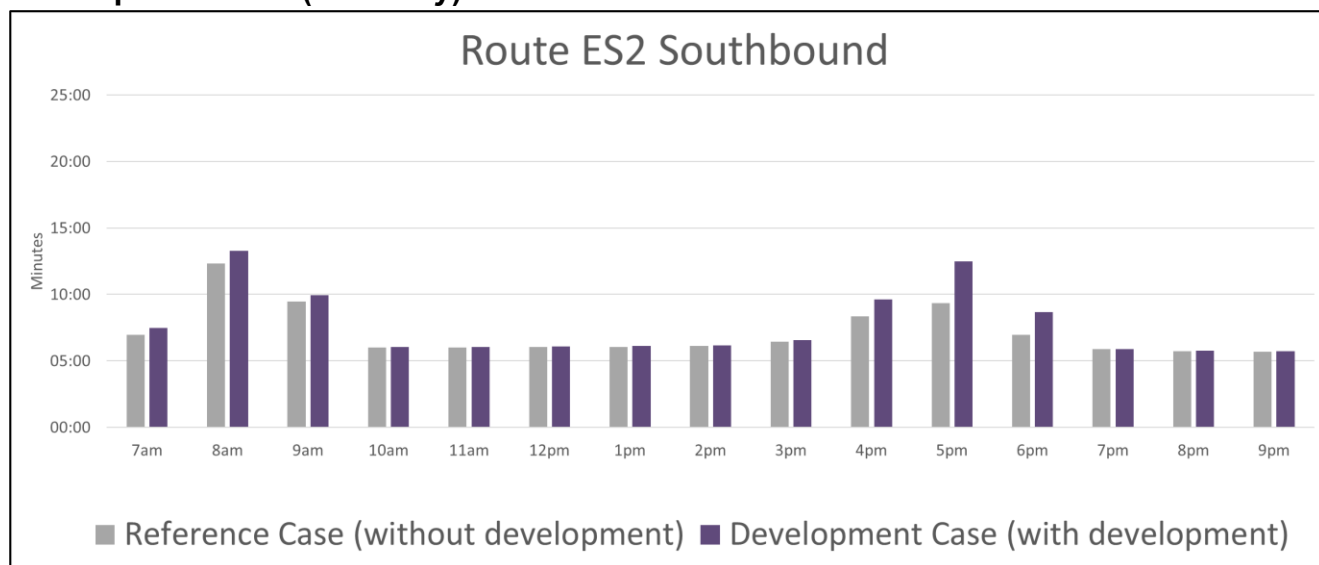


Figure 1-30: Route ES2 (Southbound) Comparing Reference Case to Future Year Development Case (Weekday)



- 1.166 At the pre-engagement stage, members of the local community asked about the change in convenience on the route between Stewartby and Wootton via Broadmead Road.
- 1.167 **Figures 1-31 to 1-33** are Route ES3 which is between Stewartby and Wootton via Broadmead Road.

Figure 1-31: Route ES3 (Stewartby to Wootton)



Figure 1-32: Route ES3 (Northbound) Comparing Reference Case to Future Year Development Case (Weekday)

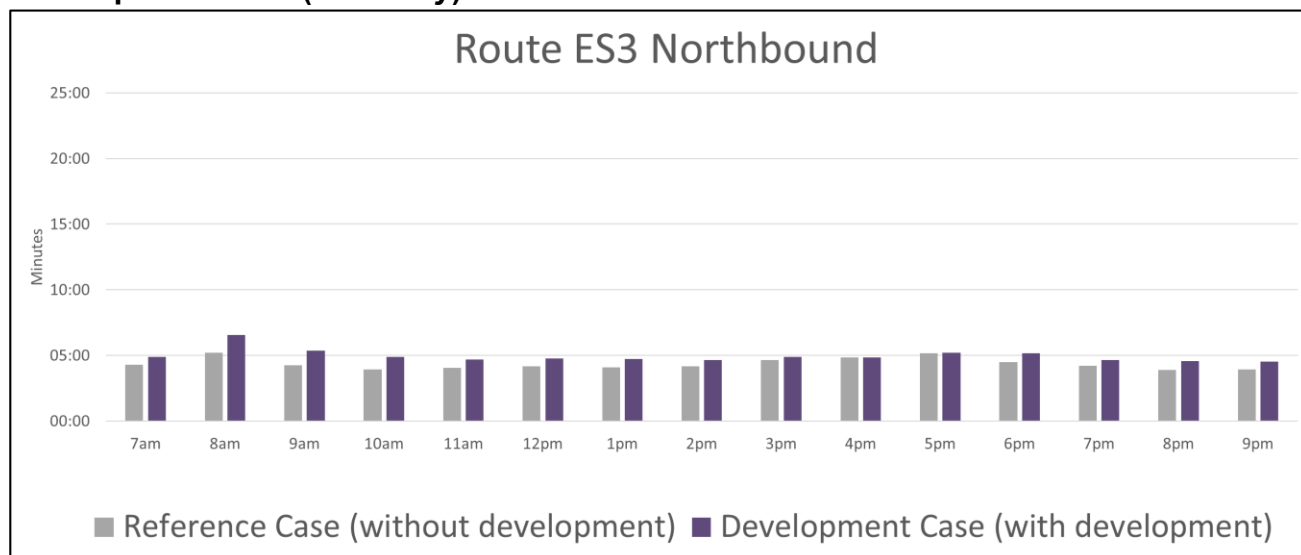
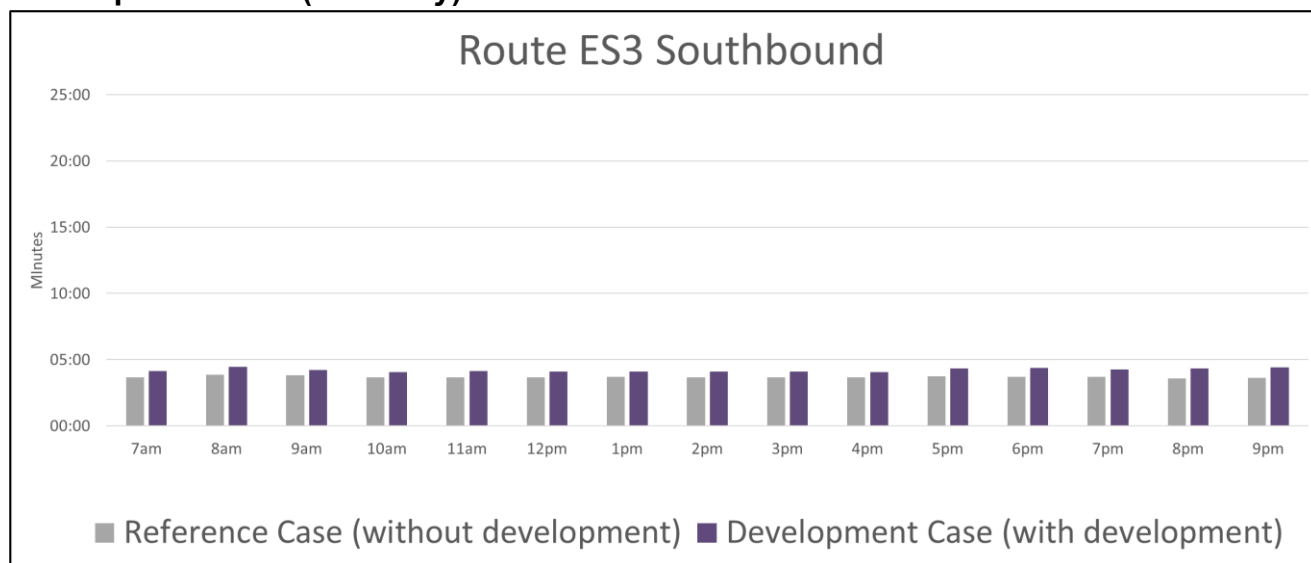


Figure 1-33: Route ES3 (Southbound) Comparing Reference Case to Future Year Development Case (Weekday)



- 1.168 Our professional judgement is that, with the inclusion of the associated transport infrastructure, there is no significant difference in strategic or local journey times as a result of the Proposed Development.
- 1.169 In planning policy terms, the bar is set high for a traffic impact to be a material matter. The NPPF at paragraph 116 sets a threshold test of ‘severe’ residual cumulative impact on the road network to be met before traffic impact becomes a matter of substantial weight in the planning balance. The definition of ‘severe’ has often been interpreted in Secretary of State planning decisions to be ‘very great’. In addition, the context, also common in Secretary of State planning decisions, is that it is not the purpose of planning policy to protect the convenience of the commuting car driver. Hence the traffic model spanning the day, not just the commuter peak periods.
- 1.170 Journey time has been adopted in planning policy interpretation as a reasonable metric from which to judge ‘impact’ and therefore to be used in the judgement of whether an ‘impact’ is ‘severe’ or not.
- 1.171 In this case, many of the journey time differences will not be discernible. They are negligible or insignificant, and therefore, the impacts fall well below the threshold for planning ‘severe’ and hence material effect.
- 1.172 As part of the development of highway designs in support of the Proposed Development, both UDX and National Highways have scrutinised the microsimulation videos related to the illustrative highway design identified for the A421 Junction to the Site. Both are satisfied that the illustrative design tested accords suitably with guidance on junction design and can accommodate the likely traffic demands in the Future Year demand scenario. There is no indication, or expectation, of queuing occurring at the slip roads back to the A421, with the illustrative design considered.

Sensitivity Tests

Rail Fares

- 1.173 **Figures 1-34 and 1-35** compare journey times on Route ES1 (the A421 between the M1 and the A1) for the scenario where all rail fares are purchased at off peak rates, and where normal peak and off-peak period fares apply. The volume of traffic increases when the rail tickets become more expensive.

Figure 1-34: Route ES1 (Northbound) Future Year Development Case Journey Time Comparison with and without Rail Fare Discount (Weekday)

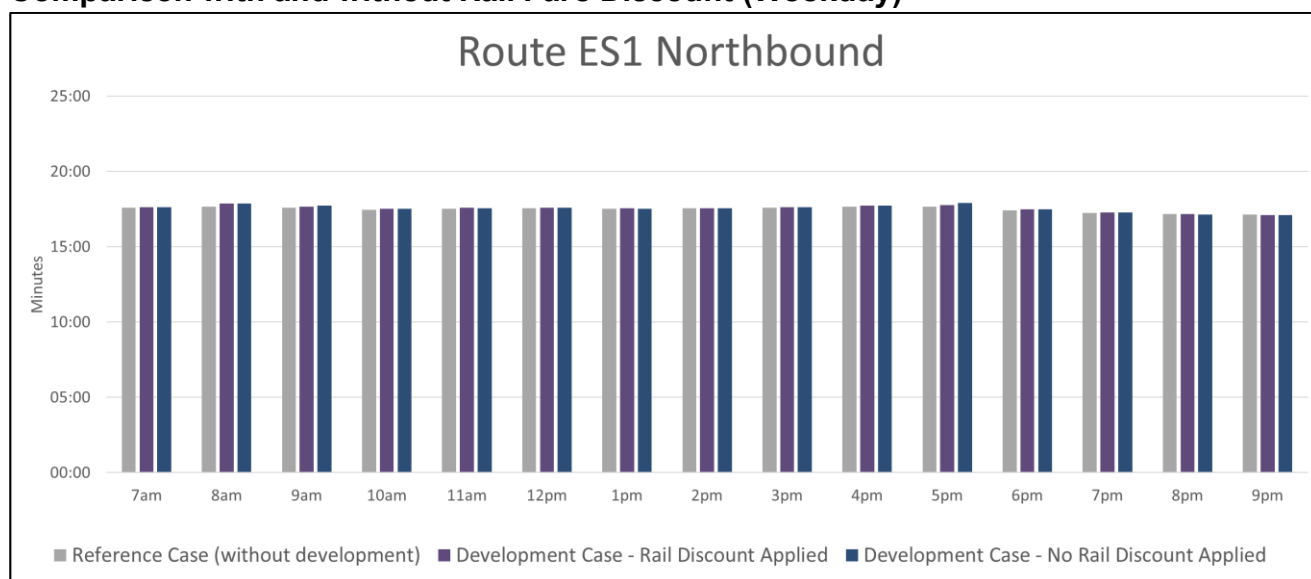
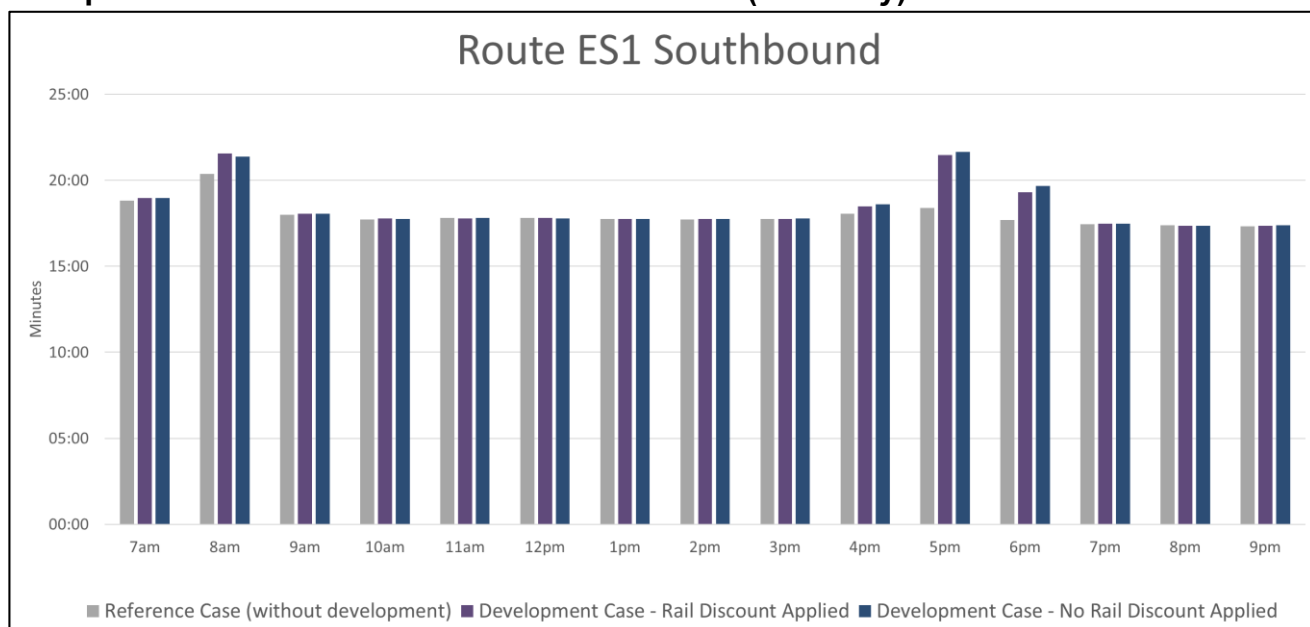
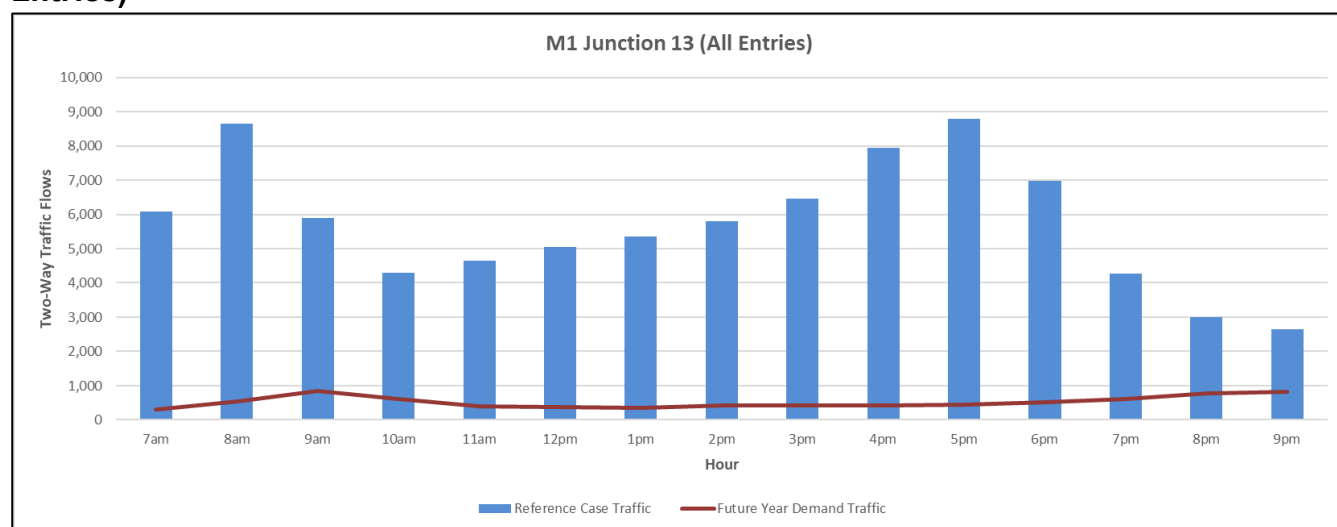


Figure 1-35: Route ES1 (Southbound) Future Year Development Case Journey Time Comparison with and without Rail Fare Discount (Weekday)



- 1.174 The differences in journey time are negligible. This is in part because the traffic associated with the Proposed Development makes up only a small proportion of traffic on the M1 and at Junction 13, such that relatively large percentage changes in development traffic only constitute a small proportion of overall traffic on the strategic network beyond the slip roads (i.e., the strategic road network is not sensitive to significant changes in development traffic demand).
- 1.175 To illustrate this, **Figure 1-36** shows that proportion (in the Development Case Future Year scenario) at M1 Junction 13.

Figure 1-36: Future Year Weekday Development Case Traffic at M1 Junction 13 (All Entries)



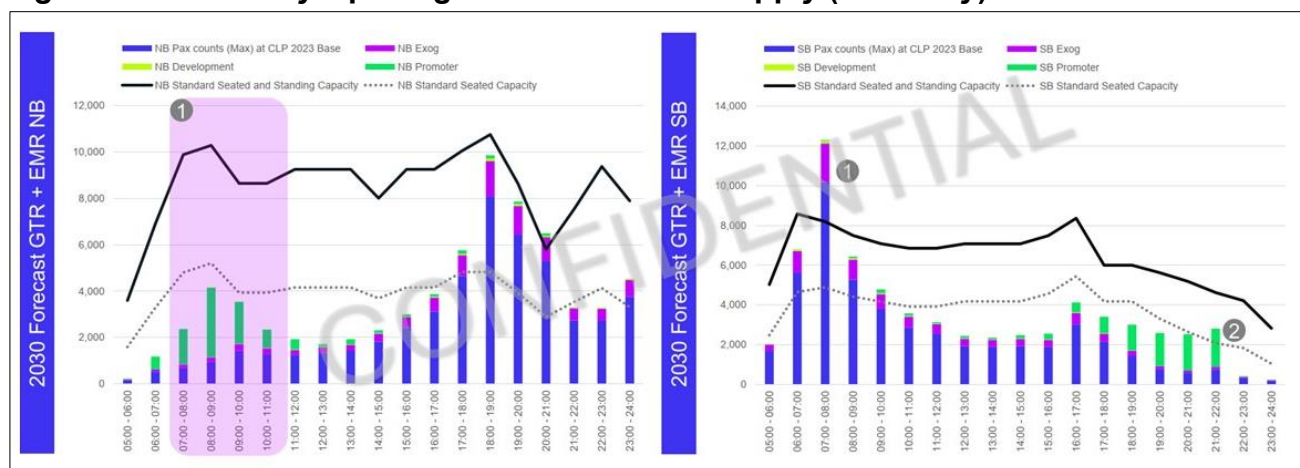
Construction During Operation

- 1.176 Following the year of opening, there will be a period of time when there is ongoing construction relating to the Lake Zone, West Gateway Zone and/or Core Zone in the lead up to the Future Year scenario.
- 1.177 A scenario for this has been run through the model which assumes a midpoint in growth of the ERC plus construction activities in two locations.
- 1.178 The effect of construction is not noticeable for most of the time, however, there is a noticeable effect for a short period in the evening commuter peak when a departing workforce coincides with the background peak. This increases journey times by at most just over two minutes along the A421 compared with the Future Year scenario forecast. This is a matter of convenience and is not so significant as to cause a 'severe' effect in the planning context, and therefore has limited weight in the planning balance.

The Effects - Railways

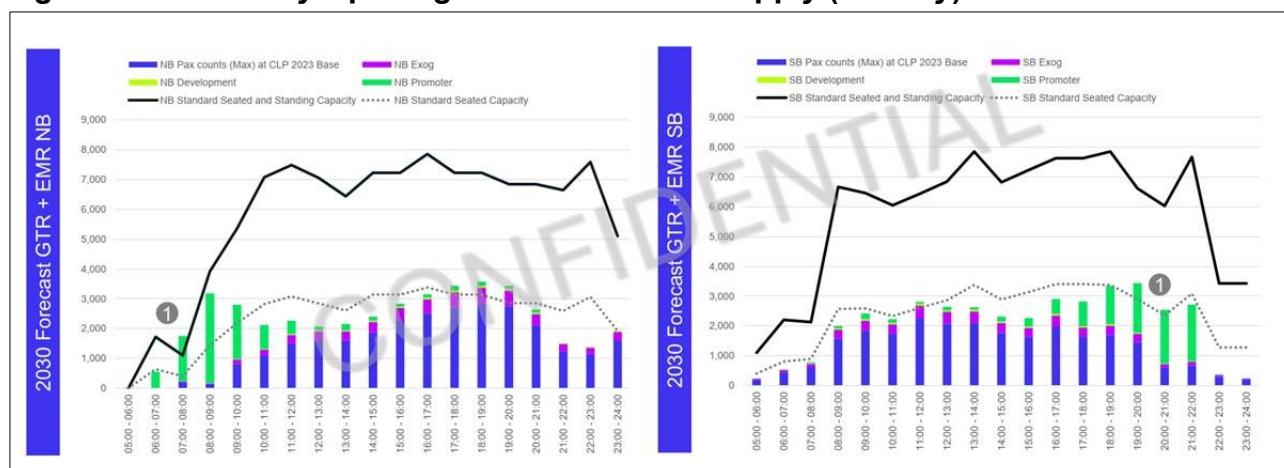
- 1.179 The work undertaken by AtkinsRealis on behalf of the DfT, based on early demand forecasts from the logit model, and their own data for rail patronage, provides level of service results for the EMR and Thameslink services on the MML by time of day. The Transport Assessment details an update on the study considering a final set of rail passenger forecasts encompassing further stakeholders' feedback. This update does not affect the conclusions reached by DfT as set out below.
- 1.180 The DfT has considered various scenarios, from use of Thameslink services alone, use of EMR services alone, to the likely and preferred scenario of use of both EMR and Thameslink services, including the use of additional services in late evening, which DfT considers achievable. This takes into account 'exogenous growth', which is expected growth from a variety of external and unrelated factors.
- 1.181 Applying the predicted ERC's demand to a typical UK weekday on the railway line in the Primary Opening Year, the DfT forecasts that AM peak demand can be accommodated well within existing seated capacity when combined across both GTR and EMR services for Northbound services.
- 1.182 Likewise in the southbound direction it advises that the ERC demand is deliverable within total available capacity but would require some passengers to stand in late evening without additional services. At this time in the evening the existing services are less than during the day as background demand is low. The DfT advise that there is flexibility to provide additional Thameslink services in the evening and this could be operated as required taking into account seasonal demand variations.
- 1.183 The DfT has identified a southbound crowding issue in the AM peak due to exogenous growth. This is forecast commuter demand, and is not affected by, and does not affect, ERC demand.

Figure 1-37: Primary Opening Year Demand vs Supply (Weekday)



- 1.184 The Proposed Development demand will substantially change the pattern of movement across the week on EMR and Thameslink trains. Notably, the Proposed Development will add substantially to passenger demand at weekends, where currently there are reduced levels of service and low passenger demand. For instance, there is a high demand from the Proposed Development northbound from London on a Sunday morning, where at present there is a reduced level of service compared with during the week.

Figure 1-38: Primary Opening Year Demand vs Supply (Sunday)



- 1.185 The DfT advises that there is flexibility to add services as necessary to comfortably accommodate these hitherto unusual demands.
- 1.186 In addition, the maintenance pattern on this rail network has been to undertake works at weekends, when background flows are light. This will need to change, as the Proposed Development demand will be substantial at weekends. The DfT advises that this change to the maintenance regime is achievable.
- 1.187 By the Future Year, the forecast exogenous growth exceeds the capacity of the rail line in the commuter peak periods in the commuter directions. However, looking forward as far as 2050 substantially increases the uncertainty associated with the forecasts. The DfT advises that by 2050 the rolling stock fleets will have been replaced, and the replacements will reflect the forecast demands at those times.
- 1.188 Nevertheless, the Proposed Development demand remains complementary to the commuter peak demand, and so the commuter peak issue neither affects, nor is affected by, the Proposed Development demand.
- 1.189 On the basis of the existing supply of seats and standing capacity being perpetuated to 2050, the DfT still forecasts that the Proposed Development demand can be accommodated, albeit with some visitors standing in the peak Theme Park hour.

Figure 1-39: Future Year Demand vs Supply (Weekday)

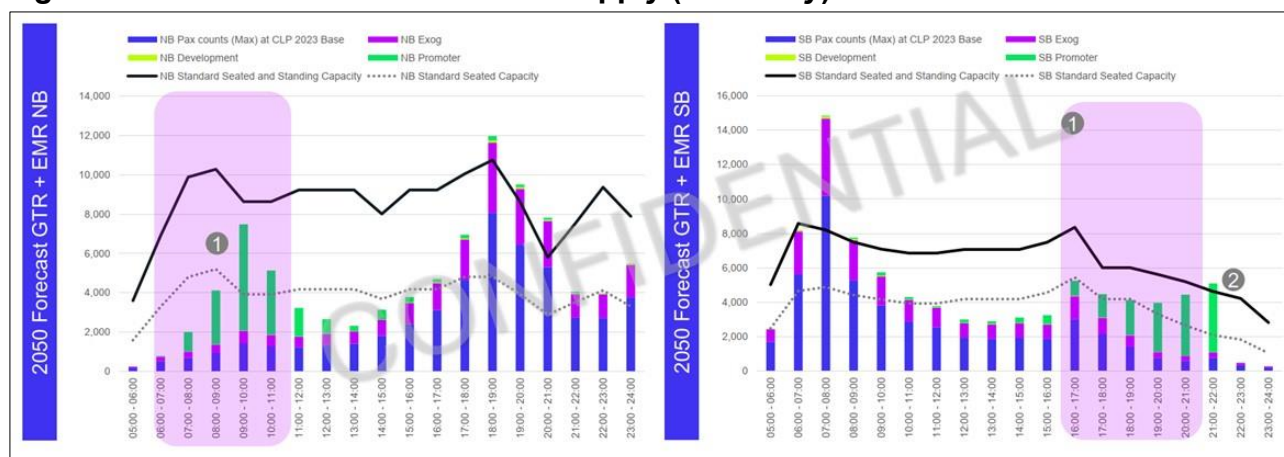
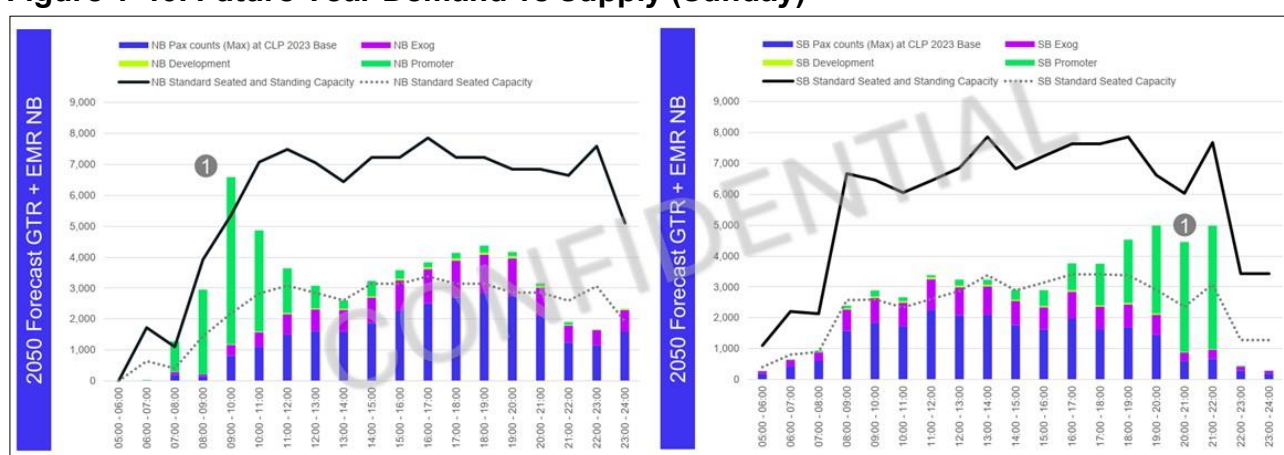


Figure 1-40: Future Year Demand vs Supply (Sunday)



1.190 The DfT is satisfied that the Proposed Development demands can be accommodated by this rail network.

The Effects – Airports

- 1.191 In the Primary Opening Year, the expectation is that 30% of visitors will be international visitors, the majority of which will arrive at London airports. London airports for this purpose include Luton, Stansted, Heathrow and Gatwick.
- 1.192 In the Future Year, the expectation is 48% will be international visitors, with again most arriving by air to the London airports.
- 1.193 Not all of these visitors will be travelling exclusively to visit the Site. UDX expect about 40% of international visitors to be exclusive to the Site. Other international visitors will be attracted to the UK, having not otherwise come, because of the Proposed Development. Others will have been travelling to the UK anyway and will take in the Proposed Development as part of their UK experience.

- 1.194 The current annual passenger number for the London's main airports (Heathrow, Gatwick, Stansted and Luton) is approximately 168 million. However, these airports have plans in place for expansion some of which are approved, and some being considered by the Government as they are Nationally Significant Infrastructure Projects (NSIP's) and have submitted Development Consent Orders. Taking those into account, the London airports would have capacity for 240 million passengers per annum by 2040. In addition, longer term there are approved expansions at Heathrow Airport for a new runway which has government approval. However, the timescales are largely dependent on the funding of the infrastructure works which were delayed by COVID.
- 1.195 In the Primary Opening Year, assuming all of the Proposed Development dedicated international visitors arrive by air into London airports (circa 1 million visitors), this would constitute 0.6% of current airport passengers arriving into London's main airports. If it were 100% of all International Proposed Development visitors, it would be 1.5% of current airport passengers.
- 1.196 For the Future Year scenario, compared against the forecast annual passenger limit on London airports, the percentages are 1.0% and 2.5% respectively.
- 1.197 This is good for the UK economy. However, none of these percentages are material in the context of the character of operation of London airports. Therefore, it is reasonable to conclude that this planning proposal has no significant adverse effect on airports.

Monitor & Manage

- 1.198 There are two key pieces of transport infrastructure associated directly with the Proposed Development. The new A421 Junction and Manor Road infrastructure, and the Wixams Rail Station (and the stopping of at least Thameslink trains at that station). The potential EWR Station on Site can arguably be considered a third important piece of infrastructure and the planning proposal safeguards land for its delivery by EWR Co, albeit that the Proposed Development is not dependant on it.
- 1.199 The Wixams Rail Station are required by UDX by Grand Opening. If there is a delay in the delivery of the Wixams Rail Station, there is a condition in place that requires UDX to identify and agree with the Secretary of State an alternative temporary bus scheme delivering access from other railway stations.
- 1.200 There are multiple options and techniques for influencing movement ranging from pricing and integrated ticketing to provision of bespoke coaches. These are methods of management that would ordinarily be employed as part of everyday business.

Monitor & Manage

- 1.201 As a backstop to the operation of the Site, a Monitor & Manage Plan (included within the Travel Plan (**Appendix 5.6: Travel Plan of the ES (Volume 3)**)) will be applied, with triggers, methods of monitoring, assessment criteria, actions and overarching targets.
- 1.202 The demands of the Site are largely complementary to the peak use of the road network by non-Site traffic, and in this respect the Site makes efficient use of the available infrastructure. The time of greatest tension is the traditional commuter peak period on a weekday during school term time.

- 1.203 Therefore, the Monitor & Manage trigger points, the points which when breached in a pre-determined way trigger further action, relate to what the Transport Assessment within the planning proposal assesses in the Future Year scenario at those times of greatest tension.
- 1.204 The actions and consequences of exceedance of those trigger points are set out in the Monitor & Manage Plan. In principle they require actions to draw the demands back to, or below, those assessed in the Transport Assessment.

Summary

- 1.205 The DfT teams have moved quickly to work with UDX and rigorously investigate all transport aspects of bringing an ERC to the UK.
- 1.206 The upshot is that two major pieces of transport infrastructure, including on one hand, roadworks, including a new A421 Junction, roads through the Site and a realignment of Manor Road, and, on the other hand, a larger station on the MMRL at Wixams, can deliver the forecast transport demands to and from the Proposed Development with effects that are either substantially positive, or within reasonable bounds.
- 1.207 This new infrastructure, along with existing infrastructure and infrastructure that is committed, including Black Cat highway improvements and EWR to Milton Keynes are the connections to the existing and high capacity national and international infrastructure that make this location one of the best for reaching the UK's population, and one of the best for access to international airports. In the order of 50 million people are within three hours of this Site, and London St Pancras is just over a 30-minute train ride away.
- 1.208 The Vision is a 40:40:20 split between road, rail and coach, and bus and taxi, for visitors. Working with the team at National Highways, a probability model was constructed to forecast the detail of journey demand and travel type. This validated the 40:40:20 vision. It determined the actions to be taken to achieve that vision. It forecast movement by direction and time.
- 1.209 A separate forecasting exercise was undertaken for local movement by team members and added to the demand forecast for assessment. Likewise international travellers.
- 1.210 Working with National Highways, the UDX team built an area wide microsimulation model to assess the effects of traffic demand on the road network. The model informed professional judgements that, including because of the off-peak nature of visitor demand to the Proposed Development, with peaks at weekends, daily arrivals peaking mid-morning, and daily departures late evening, that traffic impact would not be significant. The judgement is that the Proposed Development will make efficient use of the road network, adding most to it at times when it is less busy.
- 1.211 Being able to provide access to the strategic road network for the majority of visitors and team members minimises any effects on the local road network. The journey time analysis corroborates this.
- 1.212 Taking in the proposed infrastructure, and management of movement, all traffic impacts are within reasonable bounds.

- 1.213 The new A421 Junction provides the road-based gateway to this major ERC. Likewise, the Full Wixams Station is the mass transit gateway to this major European ERC.
- 1.214 The Full Wixams Station will incorporate a new western plaza, from where shuttles will always be on hand to make the 8 to 10-minute journey to the ERC. The Full Wixams station that the Proposed Development includes, improves the level of rail service to Wixams, as well as satisfying the strong London based demand for access to the Proposed Development.
- 1.215 The demand on this MMRL to Wixams from London is particularly efficient for the railway network. The background demand is heavily tidal, with full trains running into London in the morning, and almost empty trains running back out. The Proposed Development passengers will make good and efficient use of this currently empty space.
- 1.216 The DfT has analysed the demands and is satisfied that the rail networks, including other stations on the lines, are capable of accommodating the demands.
- 1.217 The EWR line is committed from Oxford to Milton Keynes and is due to be complete by 2025. The core scenario for the Proposed Development is EWR to Milton Keynes Central station and a shuttle bus service between that station and the Site, which is considered a reasonable prospect, delivered by commercial operators, and forms the basis of a cautious worst case for the purpose of assessment.
- 1.218 EWR Co is considering further expansion of the EWR scheme, between Bletchley and Bedford first, and then to Cambridge. This creates the opportunity for a new EWR station potentially on site for which land is safeguarded within the Proposed Development. A new EWR station serving the Proposed Development would have obvious benefits in terms of non-car accessibility.
- 1.219 However, the Proposed Development is not dependant on the delivery of future phases of the EWR scheme. The expectation is that, in the absence of a new EWR station serving the site on expanded EWR services to Bedford and/or Cambridge, there will be sufficient travel demand to create the opportunity for shuttle bus services to be set up between Milton Keynes and the Proposed Development. This forms a robust position that is the basis for the core scenarios assessed in the Transport Assessment. It will be for EWR Co to account for the Proposed Development in their future scheme planning and as and when future EWR phases come forward.
- 1.220 Development of the Site provides the opportunity to improve active travel connectivity in the local area, and to connect the Site with Bedford. This is especially beneficial for team members working at the Site and provides Bedford BC with greater opportunity to comprehensively improve local active travel networks.
- 1.221 In overview, there are many factors that make this Site an excellent location for a Universal ERC. One of the most significant is its almost unparalleled accessibility to the population of the UK, and its ease of access to European visitors.
- 1.222 With the new infrastructure connecting it into the strategic road network that passes by, and the north-south and potentially east-west railway lines, it fulfils that potentially admirably.

- 1.223 The Proposed Development will form an additional nucleus of activity within the Oxford and Cambridge Arc, connected and complementary to existing and future centres of excellence such as the Cambridge Biomedical Campus and the motor racing hub around Milton Keynes. As such it is considered a catalyst for further investment within the Arc, cementing the Arc as a world-wide destination for investment.
- 1.224 We, and in that we include the DfT, have demonstrated that those connections are deliverable and will achieve what they set out to do. There is no transport reason to resist this scheme, and good transport reason to conclude that if this ERC can be attracted into the UK, that this is the place to put it.