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Network Rail

Oxford Corridor Phase 2 Capacity Improvement Scheme

Environmental Impact Assessment – Environmental Statement: Chapter 13 – Traffic and Transport

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13. TRAFFIC AND TRANSPORT

13.1 Introduction

13.1.1 This chapter of the Environmental Statement presents an assessment of the likely effects on traffic and transportation during the construction and operation of the Oxford Corridor Phase 2 Capacity Improvement Scheme (the "Scheme"), which includes effects on traffic movements as well as public transport, pedestrians, and cyclists.

13.1.2 The assessment has taken the following approach:

- Identification of relevant baseline conditions.
- Details of relevant mitigation embedded within the Scheme and construction management measures.
- Assessment of potential traffic and transport impacts during the construction effects from the Scheme.
- Proposals for appropriate additional mitigation measures if possible.
- Conclusions on the likely significant residual effects of the Scheme for traffic and transportation.

13.1.3 A full description of the Scheme is given in Chapter 2 – Description of the Scheme.

13.1.4 This chapter is supported by the following figures within Volume 3:

- Figure 13.1 – Local highway network;
- Figure 13.2 – Public rights of way and local cycle routes; and
- Figure 13.4 – Park and ride locations.

13.1.5 A comprehensive Transport Assessment has also been carried out by Jacobs and is provided Volume 4 – Appendix 13.1 that forms part of this Environmental Statement.

13.2 Legislation, Policy and Guidance

13.2.1 There is no legislation directly applicable to the assessment of traffic and transport impacts. The following section outlines the relevant national, regional and local planning policies, and guidance relevant to this assessment.

13.2.2 Table 13.1 sets out a summary of the relevant planning policy for traffic and transport whilst Table 13.2 provides a summary of relevant guidance for this traffic and transport assessment. More information on these policies can be found in Appendix 13.1 - Transport Assessment.

13.2.3 The legislation, policies and guidance listed have been taken into account in the assessment of the likely significant effects on traffic and transportation as a result of the Scheme. Appropriate mitigation measures have also been developed.

Table 13.1: Planning policy relevant to traffic and transportation

Policy document	Description in relation to traffic and transportation	Relevance to the Scheme
The National Planning Policy Framework (NPPF)	The NPPF published by the Ministry of Housing, Communities and Local Government (MHCLG) sets out the government's planning policies for England and how they should be applied.	Policy 8 (Promoting healthy and safe communities); Policy 9 (Promoting sustainable transport); and Policy 12 (Achieving well designed places).
Oxford Local Plan 2036	The Oxford Local Plan 2036 forms the main planning policy document for Oxford.	Policy SP1 (Sites in the West End) notes that the Council will only grant planning permission for the redevelopment of the station and Beckett Street station car park if it improves the station for passengers and creates a strong sense of arrival to Oxford, and is in accordance with the Oxford Station Supplementary Planning Document
Oxford City Core Strategy	Oxford City Council's Core Strategy was adopted in March 2011 and sets out the Councils strategy on how to develop Oxford over the 15-year plan period (2011 – 2026).	One of the key aims is to see the capacity of the station increased to include a new bay platform, better facilities, and improved interchange with other sustainable modes of transport. The document further refers to the West End Area Action Plan 2007-2016.
West End Area Action Plan 2007-2016	The West End Area Action Plan was adopted by the Council in June 2008 and provides the basis for the determination of all planning applications in the West End. The document was produced to inspire and guide the transformation and renaissance of the West End area.	Oxford Station is identified as being part of the West End, with improvements being sought by the Council to create an attractive environment, and helping people travel to and from the area.
Oxford Local Plan 2001-2016	The saved policies of the Oxford Local Plan set out the strategy the City Council apply in promoting and controlling development throughout Oxford.	Policy TR.10 which confirms the Council will support and, where relevant, grant planning permission for appropriate increases in capacity for stopping train services in Oxford.
Oxford Strategic Partnership's	Sets out the policy framework for economic development in the city of Oxford.	Within the immediate environment of Oxford Station there are major regeneration Schemes planned or being implemented in the West End of Oxford City. In addition, there are

Policy document	Description in relation to traffic and transportation	Relevance to the Scheme
Economic Growth Strategy		proposals for comprehensive redevelopment of sites in the ownership of Nuffield college (Park End Street and Island sites).
Connecting Oxfordshire: Local Transport Plan (LTP4) 2015 - 2031	Developed to ensure that the country's transport systems are fit to support population and economic growth in the area.	Sections 111 and 112 of Oxfordshire's adopted LTP4 sets their relevant strategic rail policies
Connecting Oxfordshire: Oxford Transport Strategy	Sets out Oxfordshire County Council's transport vision and strategy for the city of Oxford as part of the LTP4	Lists improvements to the Oxford Station as one of various mass transit schemes outlined for future capital investment. Includes details of the proposed scheme.
Oxford Station Supplementary Planning Document (SPD)	Provides Oxford City Council's guide to development proposals as part of an overarching vision to create a new transport interchange and a distinctive gateway to Oxford	Chapter 4 of the SPD outlines the key design principles covering proposals for the station. Chapter 5 outlines individual key components of the station.

Table 13.2: Guidance relevant to traffic and transportation

Guidance document	Description in relation to traffic and transportation
Planning Practice Guidance (PPG) (MHCLG, 2014)	The PPG, a web-based resource, brings together planning guidance on various topics into one place. Launched in March 2014, the PPG adds further context to the NPPF, as it is intended that both the PPG and NPPF are read together.

13.3 Methodology

Introduction

13.3.1 This section reports the consultation undertaken, defines the study area, temporal scope, the sources of baseline data, and the methodology and significance criteria. The limitations and assumptions of the study are also described.

13.3.2 The scope and method for this traffic and transportation assessment was presented in the Environmental Impact Assessment Scoping Report (Network Rail, 2020). Oxford City Council issued a Scoping Opinion in response to the Scoping Report in January 2021. The Scoping Opinion included a requirement for traffic and transportation to be included in the Environmental Impact Assessment (EIA) and further direction on the content of the assessment

13.3.3 The assessment follows the general methodology outlined in the Scoping Report (Network Rail, 2020) and described in Chapter 4 – Approach to Environmental Assessment. It considers whether potential effects are likely to be significant based on the sensitivity of the receptors and the magnitude of the impact.

13.3.4 The methodology employed in this assessment and in the Transport, Assessment was developed from guidance given in the Institute of Environmental Management and Assessment (IEMA) Guidelines, the Institution of Highways and Transport (IHT) Guidelines and Volume 11 of the Design Manual for Roads and Bridges, which covers Environmental Assessment.

Consultation

13.3.5 An overview of consultation undertaken on the Scheme is summarised in Chapter 4 – Approach to Environmental Assessment. In relation to the traffic and transportation assessment there has been engagement with the following stakeholders:

- Oxford County Council (Highways Team); and
- Highways England

13.3.6 Table 13.3 summarises the consultation responses that were received in response to the Scoping Report, regarding the scope and methodology to be applied in the EIA. The Scoping Opinion can be found within Volume 4 – Appendix 1.1.

Table 13.3: Summary of Scoping Report consultation responses for traffic and transportation scope and methodology

Consultee	Issues raised in response to the Scoping Report	Summary of the response to issues raised
Oxfordshire County Council	The Environmental Statement needs to consider the impacts on the road network, public transport, pedestrians, and cyclists. It was also recommended that the impacts on the local road network need to be carefully considered and Oxfordshire County Council highways need to be consulted with throughout as they are the Local Highway Authority.	Jacobs has been working with Oxfordshire County Council who confirmed that as the Scheme is not proposing any additional parking then currently trip demand is likely to be via walking/cycling and bus which cannot be captured in a traffic model. Oxfordshire County Council confirmed that there is no need to undertake traffic modelling or future assessment when the station is fully operational.
Highways England	Specific comments have been received from Highways England, in relation to the impact of the Scheme on the Strategic Road Network. Highways England are concerned with proposals that have the potential to impact the safe and efficient operation of the Strategic Road Network, in this case the A34.	Network Rail has been working with Oxfordshire County Council on the proposal and the scope to the Transport Assessment. Oxfordshire County Council has confirmed that they are happy with the scope of the Transport Assessment that has been agreed and do not require capacity assessments of the A34 junction. Officers suggest that Network Rail engages with Highways England to ensure their concerns are considered.

13.3.7 The methodology for this assessment has considered the feedback received and where appropriate the scope and method has been revised.

Study Area

13.3.8 The study area comprises the area within the red line boundary and primary routes which may be impacted upon by the Scheme during the construction period only. The study area of the Scheme has been agreed with the local highway authority. It is based upon the routeing of construction traffic between the site and the Strategic Road Network. It is assumed that construction traffic would access to the site using the following route:

- Western By-Pass Road (A34)
- A420;
- West Way (B4044);
- Botley Road (A420);
- Roger Dudman Way;
- Cripley Road; and

- Beckett Street.

13.3.9 The local highway network and the main link roads surrounding the site are shown on Figure 13.1 within Volume 3.

13.3.10 Daily traffic, Heavy Goods Vehicles (HGV)s, vehicles used by construction staff Light Goods Vehicles (LGV) travelling to the site and the potential increases across the local road network form the basis of this assessment.

Temporal Scope

13.3.11 Baseline conditions are described using available data sources, including consideration of how this baseline may change from present day to the year of construction (i.e. the future baseline in the absence of the Scheme). This EIA has been prepared during the 2020/2021 global COVID-19 coronavirus pandemic. As a result of the pandemic it is considered that 2020 would not be a true baseline for this topic. This is because travel restrictions have caused lower than normal traffic volumes.

13.3.12 Therefore, traffic flow data (from automatic traffic counts) for the study area were obtained for 2018 from Oxfordshire County Council. These were used to assess the impact of severance, driver delay, pedestrian/ cyclist/ public transport delay and pedestrian/cyclist amenity. It should be noted that the data provided for assessments only covered a small number of junctions.

13.3.13 These data indicate the typical weekday peak flows as well as the average 12-hour flows on the local and Strategic Road Network. Traffic flow data for Roger Dudman Way and Cripley Road were not available, therefore these specific roads have been excluded from any assessments on this basis.

13.3.14 The following scenarios have been considered;

- Baseline year: 2022 – consists of using the 2018 survey data and then applying a traffic growth forecast using the software programme TEMPro.

- Future baseline year (main first full year construction): 2023 – the construction period for the site works begin in November 2022 and would be completed within the same month in 2024.

- Future baseline year (first year operation): 2025 – during consultation Oxfordshire County Council expressed the opinion that "*as the* [Scheme] *is not proposing additional parking … the trip demand is largely likely to be via walking/cycling and bus'* and *'we do not see a need to undertake traffic modelling or future assessment when the station is fully operational*". Therefore, on this basis no assessment for the opening year of the Scheme has been undertaken.

Baseline Data

13.3.15 The traffic and transport baseline has been established using the following sources of information. For more information, please refer to the Transport Assessment Appendix 13.1 in Volume 4:

- road traffic flow data; and
- personal injury accident records.

Significance Criteria

13.3.16 The potential impacts arising from changes in traffic volumes and composition are defined below as:

- Severance - Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. It may result from the difficulty of crossing a heavily trafficked existing road or as a result of a physical barrier created by the road itself;
- Driver delay - Delays to non-development (background) traffic can occur on the network due to the additional traffic generated by the Scheme;
- Pedestrian/cyclist/public transport user delay - Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads which could impact on pedestrians, public transport users and cyclists. In addition, increases in traffic flows which lead to increased queuing would impact upon bus users waiting for buses and on-road cyclists where there are designated cycle lanes. In general terms, increases in traffic are likely to lead to greater increases in delay;
- Amenity - Amenity is broadly defined as the relative pleasantness of a journey, which is affected by traffic flow, traffic composition and pavement width/separation from traffic; and
- Accidents and safety - Increases in levels of road traffic can lead to an increase in the rate of recorded personal injury accidents (PIAs).

Assessment of Sensitivity

13.3.17 The assessments have been undertaken in accordance with the Institute of Environmental Assessment guidance document 'Guidance Note Number 1: Guidelines on the Environmental Assessment of Road Traffic' (IEMA, 1993, hereafter referred to as 'the IEMA guidelines'). The likely environmental transport impacts of the Scheme are considered for the construction phase. The sensitivity of the affected receptors to traffic changes is set out in Table 13.4.

Table 13.4: Assessment criteria for determining the sensitivity for traffic and transport

Sensitivity	Criteria
High	Sections of highway close to schools and colleges. Collision clusters. Residential areas with poor / no pavements
Medium	Congested junctions, hospitals, community centres, Conservation Areas
Low	Public open space, nature conservation areas, residential areas with adequate pavements. Areas of low sensitivity to traffic flows i.e. isolated sites or areas with a high standard road network

13.3.18 The study area has been characterised for sensitivity as follows:

- A420 West Way: Low due to the high standard of the road network in this location;
- A420 Botley Road: Low due to the high standard of the road network in this location;
- A420 Botley Road (Binsey Lane – Ferry Hinksey Road): Low due to its partly residential nature, but also a generally high standard of network;
- A420 Botley Road (Ferry Hinksey Road - Oxford Station): Low due to its partly residential nature, but also a generally high standard of network;
- Frideswide Square: Medium as this location provides access to the rail station facilities and businesses;
- Sheepwash Bridge: Low as this is a residential area with adequate pavements; and
- Osney Lane Footbridge: Low as this is a residential area with adequate pavements with an alternative crossing at Botley Road.

Assessment of Magnitude

13.3.19 The magnitude of impacts associated with the Scheme have been measured using criteria set out in Table 13.5.

Table 13.5: Assessment criteria for determining the magnitude of the impact for traffic and transport

Impact	High	Medium	Low	Negligible
Severance	Change in total traffic or HGV flows over 90% compared to baseline.	Change in total traffic or HGV flows of 50-90% compared to baseline.	Change in total traffic or HGV flows of less than 50% compared to baseline.	No change in flows.

Impact	High	Medium	Low	Negligible
Driver delay	A judgement based upon the changes in traffic flows along key routes			
Pedestrian / cyclist / public transport delay	A judgement based on the road links with two-way traffic flow exceeding 1,400 vehicles per hour in context of the individual characteristics.		No change in vehicle flow.	
Amenity	A judgement based on the routes with >100% change in context of their individual characteristics.		No change in flows	
Accidents and safety	A judgement based on quantitative analysis of collision data.			

Assessment of Significance

13.3.20 The assessment of the significance of effects is outlined within Table 13.6.

Table 13.6: Factors in the assessment of significance of effect

Magnitude	Sensitivity		
	Low	Medium	High
High	Moderate (Significant)	Moderate / Major (Significant)	Major (Significant)
Medium	Minor	Moderate (Significant)	Moderate / Major (Significant)
Low	Negligible	Minor	Moderate (Significant)
Negligible	Negligible	Negligible	Minor

13.3.21 Effects are adverse where there is an increase in predicted traffic flow associated with the Scheme, and beneficial where there is a predicted decrease. Effects are also assessed as being either temporary or permanent, and a spatial significance is assigned where appropriate (i.e. site wide, local, district, regional etc.).

Matters Scoped Out of the Assessment

13.3.22 The scope of the Traffic Assessment was agreed with Oxfordshire County Council. The assessment was conducted in accordance with the Department for Transport (DfT) Guidance on Transport Assessments, which although now archived, remains the most recent detailed guidance on this topic.

13.3.23 This assessment only considers the construction period, an approach which has been agreed with Oxfordshire County Council. The completed Scheme fundamentally would not generate any additional vehicle trips onto the

network. Therefore, only the temporary use by construction deliveries would impact upon the highway.

13.3.24 A number of additional potential traffic and transport matters have been scoped out on the basis that they would not be likely to result in a significant effect on traffic and transport.

13.3.25 No 'committed developments' traffic data were available directly from Oxfordshire County Council and it was agreed that they would not form any part of any of the assessments within this chapter. This chapter has therefore solely focused upon the impacts which would be caused by the Scheme itself during the construction period only. Further information regarding cumulative effects can be found in Chapter 15.

13.3.26 Table 13.7. provides a summary of traffic and transport scope and rationale for the Scheme in accordance with the Scoping Opinion (Volume 4 – Appendix 1.1).

Table 13.7: Scope and rationale for EIA traffic and transport

Source	Rationale	Scoped IN / OUT
Construction		
Road network	Increased traffic due to construction vehicles deliveries and removing material from the site.	In
Public transport (bus routes)	Increased traffic due to construction vehicles deliveries and removing material from site. As well as number of potential road closures and one-lane operation i.e. Botley Road.	In
Non-motorised users (footpaths, cycle ways)	Footpath diversions during construction. Road Network and it's Traffic Delay Public Transport – Bus Delay	In
Operation		
Road network	Minimal change to existing road layouts would not impact upon efficiency and safety of network.	Out
Public transport (bus routes)	Minimal change to existing road layouts would not impact upon efficiency and safety of network.	Out
Non-motorised users (footpaths, cycle ways)	Footpaths and cycleways would be reinstated following construction with no likely negative operational impacts.	Out

Limitations and Assumptions

13.3.27 Where existing traffic levels are exceptionally low (e.g. <1,000 'annual average daily traffic' (AADT) any increase in traffic flow is likely to trigger a 'substantial' magnitude assessment. This is based on the volumetric increase calculated as a percentage. Where existing traffic flows are already very high, a further

increase in traffic may only result in a very small percentage increase, which could trigger a 'negligible' magnitude assessment. This could nonetheless be significant, as roads operating near or at capacity become more sensitive to an increase in traffic.

13.3.28 Due to the current climate surrounding the global Coronavirus (COVID-19) pandemic no traffic survey work was undertaken. However, limited traffic data were obtained from Oxfordshire County Council for 2018.

13.3.29 The assessment of impacts on traffic and transport has been undertaken based upon the latest information available at the time of the Transport Assessment being written, (time of writing being March 2021). Due to the application of traffic growth, calculated using the TEMPro database, the impact assessment undertaken actually considers more onerous traffic predictions than those taken from the 2018 dataset.

13.3.30 As noted by Oxfordshire County Council the number of major construction schemes likely to operate concurrently in the near future means an estimate of future traffic volumes suitable for traffic modelling during this phase could not be established.

13.3.31 At this time, it is assumed that the Construction Traffic Management Plan (CTMP) would restrict HGV movements during the peak highway hours and thus HGVs would only operate outside of the designated peak hours.

13.3.32 There remain uncertainties regarding the precise number of vehicles required (and associated road trip generation figures) during the construction of the Scheme. Therefore, a precautionary approach has been used within the Transport Assessment based on estimated construction trip generation figures provided from similar Network Rail projects.

13.3.33 It has been assumed that trips related to labour and on-site staff would occur outside of peak highway hours due to the shift nature of the construction. Furthermore, measures within the CTMP would aim to reduce these trips as far as practicable.

13.3.34 Like most sites of this nature, there is potential for scheme design change following the consent applications. This may alter the volume of traffic associated with the Scheme. Should this occur any increases would be managed through the CTMP to ensure effects are limited so far as possible.

13.4 Baseline Conditions

13.4.1 Oxford Station is a mainline station serving the city of Oxford. It is approximately 0.5 miles west of the city centre, northwest of Frideswide

Square and the towards the eastern end of Botley Road. It is on the line between London Paddington and Hereford via Worcester Shrub Hill. The station is a starting point for fast and local trains to London Paddington and for local trains to Reading, Worcester and Bicester Town. It is also on the Cross-Country Route linking Reading to Manchester Piccadilly and/or Newcastle Central via Birmingham New Street.

13.4.2 Oxford Station itself comprises a main station building to the east of the tracks, north and south bound platforms, associated buildings and structures, and a station forecourt which provides a taxi rank and bus interchange. To the north of the station building is a staff and short stay car park with 32 spaces, 8 of which for disabled users. The station's main cycle parking area is located between the station forecourt and Botley Road to the south. This is partially screened from the highway by an area of trees and shrubs.

13.4.3 The area located just outside the existing station entrance 'Frideswide Square' has been subject to a major transformation to create an attractive, welcoming public space and improve its functions as major traffic junction. Frideswide Square is of strategic importance in Oxfordshire's road network and a major route into the City, handling an average of 35,000 movements a day including car, bus, cycle, and pedestrian. Frideswide Square is also the main point of arrival and departure of an estimated 6.6 million people per year commuting via Oxford Station per year.

13.4.4 Botley Road (A420) to the southern end of the Scheme is the main route into Oxford from the west. The road is a single two-lane carriageway with footway provision on both sides. Botley Road passes beneath the Botley Road Bridge. This bridge currently has insufficient clearance to allow a normal height double decker bus to pass underneath. The potential for widening of the highway and improvements for pedestrians and cyclists are limited by the current bridge span.

13.4.5 Located south of Botley Road, Becket Street station car park provides circa 556 additional parking spaces and caters for rail users. It is linked to the main station building by a pedestrian footbridge which crosses over Botley Road. The rectangular car park runs parallel between the railway line and Becket Street.

13.4.6 There are further disabled and permitted parking spaces available along Roger Dudman Way.

<u>Highway Network</u>

13.4.7 The highway baseline conditions are set out below in terms of links and junctions. The main links and junctions are shown on Figure 13.1 within

Volume 3. Further description of the key links and junctions within the study area on the western approach towards Oxford Station and the city centre are contained within Volume 4 - Appendix13.1.

Links

- Link 1 – A420 West Way
- Link 2 – A420 Botley Road
- Link 3 – A420 Botley Road (Binsey Lane – Ferry Hinksey Road)
- Link 4 – A420 Botley Road (Ferry Hinksey Road – Oxford Station)
- Link 5 – Frideswide Square

Junctions

- West Way (B4044) / A420 West Way Signalised Junction
- A420 West Way / Access to Seacourt P&R / A420 Botley Road Signalised Junction
- A420 Botley Road / Ferry Hinksey Road Signalised Junction
- A420 Botley Road / Access to Oxford Station / A420 Park End Street / Becket Street Roundabout
- Frideswide Square – A420 Park End Street / A4144 Hythe Bridge Street / A420 Hollybush Row Double Roundabout

Pedestrian Access

13.4.8 Figure 13.2 displays the local Public Rights of Way (PRoW) near Oxford Station.. Three of the most frequently used footpaths include the:

- Thames Path, a national trail of approximately 184 miles long that follows the River Thames from its source in Gloucestershire to the Thames Barrier in south-east London; and
- Oxford Canal Walk, a walk connecting the cathedral cities of Oxford and Coventry using the canal towpath and passing a total of 43 locks.
- Sheepwash Bridge and PRoW, a link for pedestrians over Sheepwash Channel, which forms part of the Thomas Path.

13.4.9 Oxford Station is within walking distance from Oxford city centre. The main route to the station is through Frideswide Square, along Park End Street and

New Road. Frideswide Square has recently been redeveloped (December 2015) to provide a non-vehicular friendly environment.

13.4.10 To the south of the station the footbridge over Botley Road provides a safe route from the Becket Street station car park towards the station.

13.4.11 A further pedestrian crossing of the rail line is provided by Osney Lane footbridge which is located towards the south of Beckett Street car park at the point where the rail line severs Osney Lane.

13.4.12 Pedestrian footpaths are provided on both sides of the A420 corridor for people approaching the city centre from the west. Pedestrians travelling from the west to the station can access the site through the underbridge footway on Botley Road.

Cycle Access

13.4.13 The areas surrounding the Scheme are served by a network of on-road and connecting 'quiet' cycle routes that provide cycling connectivity to the city centre and surrounding employment zones. These are illustrated on Figure 13.2 within Volume 3.

13.4.14 Cycling is central to the ethos of Oxford, with a high percentage of residents and visitors cycling. The recent Census data suggest approximately 15-20% of commuter trips are undertaken by cycling within the City boundary. The appetite for cycling is reflected in a large area of cycle parking located in the existing station forecourt (approx. 600 spaces) and this is expected to increase.

13.4.15 New, improved shared cycle/ footway arrangements have been installed within Frideswide Square, which provides an enhanced environment for part of the strategic east-west Oxford dual cycle route along Botley Road.

13.4.16 The OXONbike mixed fleet (pedal / electric) cycle hire scheme is now rolling out across the city. There are currently 8 cycle hire stands available at the Oxford Station, with many other locations around the City. A Brompton Cycle hire docking station is also located at the station providing an alternative to OXONbike and further reflecting the appetite and changing face of cycling as an integrated multi-modal transport choice for stations.

13.4.17 The reviewed links include cycling facilities with either on-road cycle lanes or off-road cycle tracks in both directions. They also have advanced stop lines at certain junctions.

Public Transport Access

Bus Services

13.4.18 Buses are also an important mode of transport within Oxford and the surrounding area. Most bus services currently travel into and through Oxford City centre.

13.4.19 There are currently five different bus stops outside the eastern entrance of the Oxford Station. Two further bus stops are positioned along A420 Park End Street in Frideswide Square for both eastbound and westbound movements. A total of ten bus stops are located along the A420 corridor, between the A420 link road that connects to the A34 Western By-Pass Road, and Oxford Station.

13.4.20 Full details of bus services can be found within Volume 4 – Appendix 13.1.

Park and Ride

13.4.21 Figure 13.3 shows the five Park and Ride (P&R) sites positioned at the perimeter of the city of Oxford. Appendix 13.1 details the services available at these locations.

13.4.22 Three P&R bus services are provided between sites. These include:

- 300 P&R – an express bus service connecting Oxford city centre with Redbridge and Pear Tree P&R car parks (average frequency: approximately every 10 minutes);
- 400 P&R – an express bus service connecting Oxford city centre with Seacourt and Thornhill P&R car parks (average frequency: approximately every 15 minutes); and
- 500 P&R – an express bus service connecting Oxford Station, city centre, Summertown, Oxford Parkway, Blenheim Palace and Woodstock with minimal stops on its route (average frequency: approximately every 15 minutes, apart from Sundays in which its approximately every 30 minutes).

Rail Services

13.4.23 Oxford Station is managed by Great Western Railway, although it also serves Chiltern Railways and Cross Country. Great Western Railway run two high speed trains per hour to London Paddington via Reading and two stopping services to Didcot Parkway or Reading per hour. The stopping trains mainly originate and terminate at Oxford (a small number come from Banbury). Some fast trains continue to and from Worcester and Hereford.

13.4.24 Chiltern Railways run two high speed trains per hour to London Marylebone via High Wycombe. These also call at the nearby Oxford Parkway. Chiltern Railways also provide a limited peak-hour service to Stratford-upon-Avon.

13.4.25 Cross-country run trains twice per hour to Reading, of which three trains per two hours continue to Southampton Central and one train per hour continues from Southampton Central to Bournemouth. These trains originate at either Manchester Piccadilly or Newcastle via Birmingham New Street.

13.4.26 A summary of the key services that stop at Oxford Station can be found in Volume 4 – Appendix 13.1.

Road Safety

13.4.27 Personal injury collision (PIC) data were obtained from Oxfordshire County Council for a five-year period between 01/01/2015 to 29/02/2020. The data obtained relate to those collisions that resulted in a personal injury and which were reported to the police.

13.4.28 These data (known as STATS19 statistics) are generally recognised to be the most complete record of road collisions occurring on the local highway network. For the avoidance of doubt, as is normal practice STATS19 statistics do not include collisions resulting in ‘damage-only’ to vehicles.

13.4.29 Each collision resulting in a personal injury is classed as either ‘Slight’, ‘Serious’ or ‘Fatal’ by the police depending on the most serious injury resulting from the collision (i.e. a collision resulting in two ‘Slight’ injuries and one ‘Serious’ injury would be classed as a ‘Serious’ collision).

13.4.30 Table 13.8 provides a breakdown of the vehicle collisions during the period of 2015-2020 for the identified study area. Table 13.8 also identifies the key locations within the study area at which a cluster of PICs have been reported. These include junctions as well as specific stretches of road at which a high density of PICs have occurred. None of these locations displayed more than two PICs per year on average.

Table 13.8: Personal injury accident record (2015-2020)

Location	PIC Incidents	Severity of Casualties				Non-motorised Users (NMU) [1]Casualties	
		Slight	Serious	Fatal	Total	Cyclist	Pedestrian
B4044 / A420 West Way	5	3	1	1	5	4	1
A420 West Way / North Hinksey Lane	6	8	0	0	8	0	1
A420 West Way / Minns Industrial Estate	5	4	1	0	5	4	0
A420 Botley Road / Lamarsh Road	3	3	0	0	3	2	0
A420 Botley Road / Riverside Road / Waitrose Car Park	6	7	0	0	7	5	1
A420 Botley Road / Bridge Street	4	4	0	0	4	2	1
A420 Botley Road / Mill Street / Cripley Road	5	4	1	0	5	4	1
A420 Botley Road / Oxford Station / A420 Park End Street / Becket Street (Roundabout)	9	9	0	0	9	6	1
A420 Park End St / A4144 Hythe Bridge St / Park End St / A420 Hollybush Row (Double Roundabout)	8	8	0	0	8	6	2
A4144 Hythe Bridge Street / Rewley Road	3	3	1	0	4	3	1
Stretches of Road							
50m of A420 Botley Road (Earl St to Duke St)	6	4	2	0	6	3	1
160m of A420 Botley Road (Binsey Lane to Ferry Hinksey Road)	9	11	1	0	12	6	2

13.4.31 In total, 69 PIC incidents occurred within the study area during the 62-month analysis period. These resulted in 76 casualties, of which 45 (or 59%) were cyclists, and 16% were pedestrians. The high percentage of cyclist casualties along the A420 corridor and within the newly redeveloped shared space area of Frideswide Square, raises concerns regarding the safety of cyclists. It

[1] NMU is used within this assessment rather than 'walkers, cyclists, horse-riders' (WCH) used within DMRB GG142. This is due to the greater inclusivity of the term NMU which includes greater regard to the less able or visually impaired

appears the roundabout junction layout is providing uncertainty to some road users, resulting in these collisions.

Future Baseline

13.4.32 Traffic flow data available for the local road network are limited to the pre COVID-19 traffic counts. In the absence of any reliable long-term data, traffic growth has been calculated using the Trip End Model Presentation Program software known as TEMPro. The site itself falls within the area known as Oxford 008 MSOA.

13.4.33 Appropriate growth factors have been applied to the calculated baseline traffic year i.e. 2022 and the two construction years of 2023 and 2024. As discussed previously no opening year has been assessed following discussions with Oxfordshire County Council.

13.4.34 The following growth factors for the Scheme are provided for reference within Table 13.9.

Table 13.9: TEMPro – Traffic Growth, Oxford 008

Year	Vehicle Type	Growth Factor (AM Peak)	Growth Factor (PM Peak)	Growth Factor (Average Weekday)
2018-2022	ALL	1.0606	1.0614	1.0579
2022-2023	ALL	1.0124	1.0124	1.0128
2022-2024	ALL	1.0248	1.0248	1.0256

Identification of Sensitive Receptors

13.4.35 The following traffic and transport sensitive receptors have been identified:

- Motorists;
- Public transport users;
- Residents and visitors;
- Local businesses;
- Non-motorised users (NMU); and
- Human health.

13.5 Design and Best Practice Measures

Design

13.5.1 The Scheme has been designed, as far as possible, to avoid and reduce impacts and effects on traffic and transport through the process of design-development and considering good design principles. Embedded mitigation

is defined within the DMRB as '*Design measures which are integrated into a project for the purpose of minimising environmental effects.'* The embedded mitigation is reported as part of the Scheme description in Chapter 2 – Description of the Scheme.

13.5.2 The assessment of whether significant effects would be likely to occur has been based on the Scheme as described in Chapter 2 – Description of the Scheme and taken account of measures embedded within the design.

13.5.3 The Scheme has the embedded mitigation shown in Table 13.10 specific to traffic and transportation.

Table 13.10: Design measures for this traffic and transport assessment

Measure	Outcome / Benefit
Enhanced access arrangements (including new western entrance) and provision for cycling and walking	Reduces the use of private car travel to the station and areas close to the station.
Improved capacity at Oxford Station increasing journeys by rail.	Reduces the number of journeys by car and associated congestion and air quality issues.
The Botley Road has been realigned including lowering of the road.	Allows standard double decker buses (with a chord length of 12m) to use the Botley Road underpass, thus promoting sustainable transport use for passengers accessing the station.
Provision of a duel pedestrian cycleway on both sides of the Botley Road under Botley Road Bridge.	Removes pedestrians and cyclists from traffic under the Botley Road Bridge. Encourages sustainable modes of travel and reduces potential for road accidents.
Provision of new footpath along the length of Roger Dudman Way connecting to the Sheepwash Bridge.	Provides a safe route for pedestrians, also reducing the need to drive.
Provision of additional bike stands on the western entrance forecourt.	The new facilities promote sustainable transport use. This aligns with Oxford County Council policy and supports carbon reduction targets within the city.

Construction Management Measures

13.5.4 The Scheme would be constructed in accordance with a Code of Construction Practice (CoCP), a draft of which can be found in Appendix 2.1. The CoCP sets out the principles for environmental mitigation, which would then be used as the basis for the Construction Environmental Management Plan (CEMP).

13.5.5 The CEMP would outline measures to be put in place to ensure that the quality of traffic and transportation does not deteriorate during the construction phase of the Scheme. In particular, the CoCP and CEMP would confirm use of a Construction Traffic Management Plan (CTMP) to control the movement of construction and construction staff vehicles during the

construction period. An outline CTMP is contained within Volume 4 - Appendix 13.1.

13.5.6 Furthermore, it is intended to move as much material and waste as practicable to and from the site using the rail network, thus lessening the impact on the external transport infrastructure.

13.5.7 Chapter 7 of the Transport Assessment (See Appendix 13.1) provides summary of the mitigation measures proposed as part of the Scheme. As part of these measures an outline CTMP has been provided until a contractor is officially appointed by Network Rail.

13.5.8 As part of these measures, construction and directional signage would be provided in line the Traffic Signs Regulations and General Directions 2016 that would help navigate vehicles, cyclists and pedestrians safely around any proposed site works. Additionally, the needs of Persons with Reduced Mobility (PRM) and other groups in need of additional support would be considered appropriately when planning temporary traffic management measures.

13.6 Assessment of Traffic and Transport Effects

13.6.1 It has been agreed between Network Rail and Oxfordshire County Council that traffic generation during the operational phase of the Scheme would remain the same as the current vehicle/travel demand.

13.6.2 "as the development is not proposing additional parking at the site, then the trip demand will likely continue to be via walking/cycling and bus, with no potential change along the highway network in terms of vehicle trips".

13.6.3 Therefore, the operational phase has been scoped out of this assessment. However, the Scheme may lead to positive effects on traffic and transport as a result from the improved rail infrastructure and enhanced walking and cycling provision. Potential traffic and transport improvements during operation would include:

- An increase in trips by active travel modes accessing the station.
- An increase in public transport trips by those using the rail network as part of an onward journey.

13.6.4 Therefore, this assessment only concerns the construction phase of the Scheme.

13.6.5 The entire site preparation and construction programme is anticipated to take approximately 24 months from commencement to commissioning (November

2022 to November 2024). There would be various degrees of intensity of works during the construction programme timeline. Information has been obtained from similar Network Rail development sites, such as the previous construction phases that have been undertaken at the station.

13.6.6 Traffic flows would change in the vicinity of the Scheme as materials and waste would be transported to and from the site. Construction staff would also access the site. Estimates of the likely frequency of new trips to and from the site have been based on similar recent construction works undertaken by Network Rail.

13.6.7 There is the potential for disruption arising from the additional vehicle movements during construction. It is anticipated that emergency and residential access could be maintained except during the Sheepwash Bridge works.

13.6.8 The Traffic Assessment in Appendix 13.1 contains information on the construction programme, the construction hours, the routes for construction traffic, the number of construction trips, details on construction personnel and details on construction management to reduce the negative impacts of this phase. A CTMP would be required as mitigation for this stage. Further details are provided within Section 13.7 of this chapter.

<u>Sheepwash Bridge</u>

13.6.9 The Sheepwash Bridge replacement programme is described in more detail within the 'Oxford Corridor Phase 2 (2019)' document and would have a total construction timeline from November 2022 to August 2023. During construction of the Sheepwash Bridge, there would be a requirement to close Roger Dudman Way to traffic overnight for plant access for a period of 5 days. During these periods, there will be no vehicle access to the flats to the north of Roger Dudman Way' including for emergency vehicle access.

13.6.10 During these overnight closures, an alternative vehicle route to the flats would be provided. The traffic would likely travel along Walton Well Road, over the railway bridge and down through Walton Well Road car park. From the car park, access is required over the river bridge which leads to the Cripley Meadow allotments and through to the north end of Roger Dudman Way.

13.6.11 During November to December 2022, Sheepwash Bridge would incorporate a traffic light management system to allow Sheepwash Road Bridge to be used by vehicles and pedestrians and close-off the footbridge to traffic. It should however be noted that due to a lack of data i.e. traffic and pedestrian surveys no detailed assessments/assumptions can be made and the scale of the potential impact is unknown.

Botley Road

13.6.12 During the construction timeline, the most notable impact would be along Botley Road. It is expected that single way working would be in operation for six months under the bridge whilst highway works are carried out. Potential traffic and transport impacts during construction would include:

- Traffic management causing increased traffic and increased journey times on other routes.
- Increase in vehicle movements on existing routes.
- Changes in journey length (duration) for pedestrians and cyclists, as a result of any temporary closures or diversion of roads and footpaths.
- Footpath diversions causing temporary severance impacts.
- Increase in driver stress due to lengthened journey times.
- Disturbance to users of Oxford Station.

13.6.13 Discussions between Network Rail and Oxfordshire County Council relating to the management of this scenario, along with potential short-term closures of this route are ongoing.

13.6.14 The outline CTMP within Appendix 13.1 identifies that the only potential for likely significant effects on traffic and transportation during construction of the Scheme would arise from:

- HGV movements;
- staff/operatives;
- temporary road closures;
- temporary and permanent parking restrictions;
- severance;
- driver delay;
- public transport delay;
- pedestrian and cycle delay;
- amenity; and
- accidents and safety.

HGV Movements

13.6.15 Construction would generate additional traffic in the vicinity of the site due to HGV movements, however these trips would be low in number. This is

because of the large percentages (by volume) of material being re-used or handled by train. This shows a conscious effort to reduce the environmental impact of the Scheme construction and reduce traffic volumes/emissions within Oxford itself. It is anticipated that the site would generate approximately 6 HGV (two-way journeys) per day.

13.6.16 The designated route for all construction HGV trips approaching the site would be via the A34 then south along the A420 slip towards the junction with West Way (B4044). It would then head east along Botley Road (A420) roughly 1.37 km away, to Roger Dudman Way. HGVs leaving the site would make the reverse journey. Route is shown on Figure 13.1 within Volume 3.

13.6.17 As is standard practise, HGV traffic anticipated during the construction phase of the Scheme is expected to arrive and depart the site equally distributed throughout the working day and would not impact either AM or PM peaks.

13.6.18 The responsibility would be placed on the appointed contractor to ensure that the construction traffic routing requirement is adhered to. The designated route would use roads which have few sensitive residential receptors and would pass mainly along roads that are classed as A and B.

13.6.19 The route is currently used by HGVs thus the network is considered appropriate to accommodate any proposed HGV movements. This route is therefore considered to be of 'very low' sensitivity and the magnitude of impact is low. This would result in a minor significance of effect.

Staff/Operatives

13.6.20 The assumptions underpinning the numbers of staff are based on works previously undertaken by Network Rail for Oxford Corridor Phase 0 and Phase 1. For these two phases the sites had an average of approximately 60 staff on site throughout the main construction period. This included an office establishment as well as the site construction teams.

13.6.21 It has been assumed a workforce of roughly 45-50 throughout the build period. Using data collected previously, it has been assumed that some staff would arrive by rail and some would use the local park & ride facilities. Parking would be limited to no more than 15-20 cars on site to accommodate those staff who are required to bring heavy tools or machinery.

13.6.22 Although office staff may arrive in the peak it is likely that a large proportion of the construction workforce would be on site by 07.00 or 07.30, so would not affect the peak traffic on Botley Road. However, to provide a more robust assessment it has assumed that all staff/operatives would vacate the Beckett Street Compound during the weekday PM peak. The AM, PM, and daily traffic

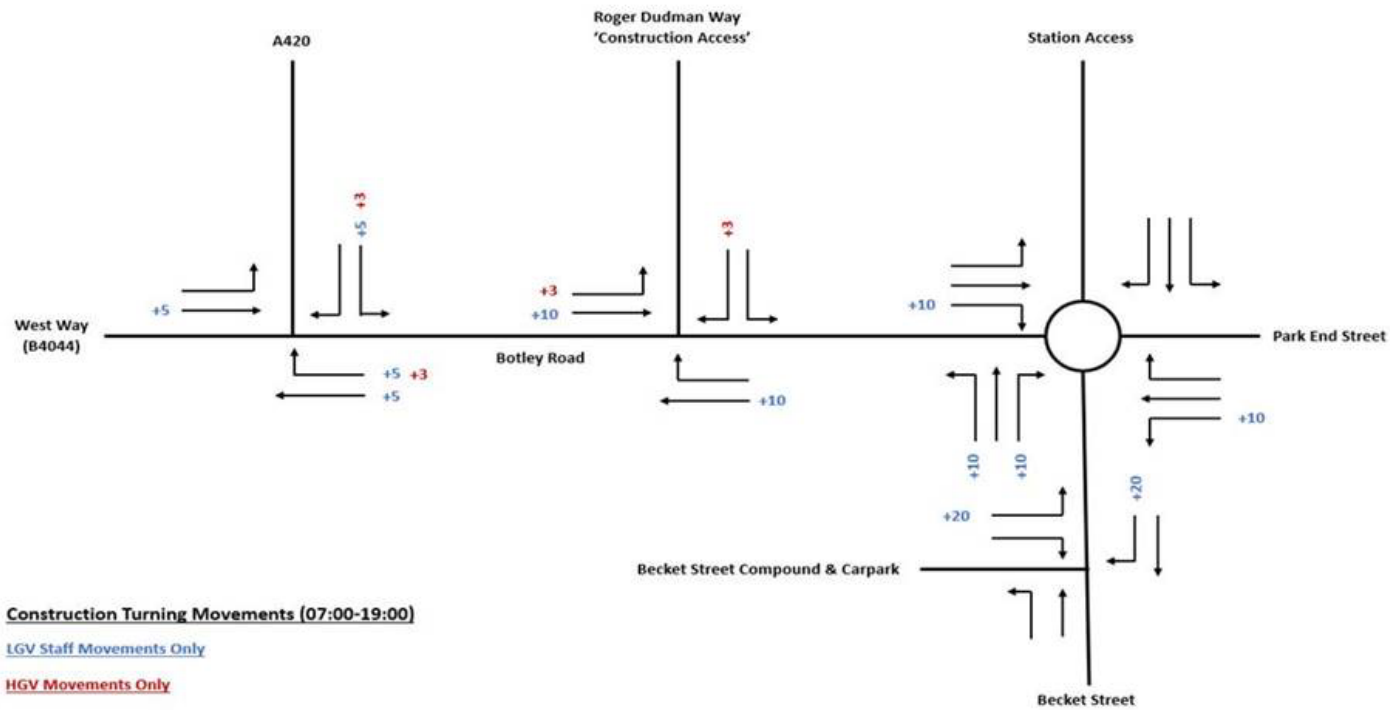
flow that the construction traffic would generate on a typical weekday during the construction period is summarised in Table 13.11.

Table 13.11: Construction Phase – Weekday AM, PM, and Daily Vehicle Trips

Road	AM Peak (08:00-09:00		PM Peak (17:00-18:00)		Daily Traffic (07:00-19:00)	
	Staff (LGV)	HGV	Staff (LGV)	HGV	Staff (LGV)	HGV
West Way (B4044)	0	0	+5	0	+10	0
A420	0	0	+5	0	+10	+6
Botley Road	0	0	+10	0	+20	+6
Station Access	0	0	0	0	0	0
Park End Street	0	0	+10	0	+20	0
Becket Street	0	0	+20	0	+40	0

13.6.23 To demonstrate how the above construction vehicles would be distributed along the highway network, the traffic movement diagram shown on Plate 13.1 has been provided for reference for the period of (07:00-19:00).

Plate 13.1: Construction Traffic Flow – Daily Weekday Flow (07:00-19:00)



13.6.24 The sensitivity of these routes is considered very low and the magnitude of the impact is also low. The significance of the effect on the roads would therefore be considered minor.

Temporary Road Closures

13.6.25 During construction, the most notable impact would occur along Botley Road where a signalised shuttle working system would be required for six months whilst highway works are carried out. A number of options are currently still under investigation to facilitate these works and could consist of the following options;

- single lane working using traffic lights;
- one-way flow during peak traffic periods (into Oxford in the AM peak and away from Oxford in the PM peak);
- access for buses and taxis only under Botley Road Bridge; and
- one-way flow towards the city for the duration of the works

13.6.0 During construction of the Sheepwash Bridge, the recommended diversion to allow access into the northern part of Roger Dudman Way would be along Walton Well Road to the north. Traffic would travel westwards over the railway bridge and down through Walton Well Road car park. From the car park access is required over the Castle Mill Stream bridge which leads to the Cripley Meadow allotments. This connects to the north end of Roger Dudman Way.

13.6.1 An assessment of Castle Mill Stream Bridge would be required to establish whether it can carry the weight of larger vehicles such as emergency vehicles. It should also be noted that the Castle Mill Stream bridge is currently restricted to 7.5 tonnes. The path connecting the bridge and Roger Dudman Way would also be widened and made suitable for road vehicles.

13.6.2 A number of additional temporary road closures would also be in place during the construction period. These would mainly consist of overnight closures or specific traffic light management systems to manage both vehicles and pedestrians safely. A schedule of the temporary road closures has been provided to Oxfordshire County Council by Network Rail. Network Rail has also engaged with Oxfordshire County Council to consult on these measures and will continue to do so following appointment of a contractor and during the works.

13.6.3 Given the numerous local construction schemes which could run concurrently with the Scheme, and the associated difficulties in predicting traffic patterns (as identified by Oxfordshire County Council) it is inappropriate to determine a method of control before more data on this matter are available. Therefore, consultation between Network Rail and Oxfordshire County Council on these

options would continue to establish the most suitable method of traffic management at the time of construction.

13.6.4 The closures would have a temporary impact upon various road users. Roger Dudman Way junction access would cease to connect with Botley Road due to the location of the western entrance for the station. It would instead connect directly onto Cripley Road.

13.6.5 A desktop review has been undertaken to identify if there would be any negative impact on bus services, pedestrians, cyclists, and road vehicles as a result of these closures. This review is summarised in Table 13.12.

13.6.6 The potential impacts due to road closures are difficult to define due to ongoing discussions between Network Rail and Oxford County Council in relation to the embedded mitigation. Nevertheless, as access for all users would be maintained and diversionary routes put in place where necessary, effects of the closures are not expected to exceed Minor.

Table 13.12: Summary of temporary and permanent road closures

Name	Management/ Mitigation	Duration (weeks)	Bus Impact	Cycle Impact	Pedestrian Impact	Vehicle Impact
Roger Dudman Way	Permanent closure of access onto Botley Road	61 weeks	No impact	Potential increase to journey times.	Potential that less-desirable routes would need to be used if footway is closed.	Potential increase to journey times.
Botley Road	Lane closures under Traffic Management	26	Potential increase to bus journey times during the 26 weeks of single lane span. Night closures to have potentially no effect	Potential increase to journey times	Potential increase in journey times	Diversion may cause increased journey times depending on the diversion route.
Station Access	N/A	Full construction period	Potential increase to bus journey times.	Potential increase to journey times	Potential increase in journey times	Potential increase to journey times
Park End Street	N/A	Full construction period	Potential increase to bus journey times.	Potential increase to journey times	Potential increase in journey times	Potential increase to journey times
Beckett Street	N/A	Full construction period	Potential increase to bus journey times.	Potential increase to journey times	Potential increase in journey times	Potential increase to journey times
Cripley Road	Lane closures under Traffic Management as Junction arrangement is modified	61 weeks	No impact	Potential increase to journey times	Potential distribution to desire lines if footway is closed.	Potential increase to journey times
Sheepwash Bridge	A series of overnight closures will be required to remove the current bridge and install the	Disruption will be during the period of	No impact to bus services due to the	Potential increase to journey times	Potential increase in journey times	Diversion may cause increased journey times

Name	Management/ Mitigation	Duration (weeks)	Bus Impact	Cycle Impact	Pedestrian Impact	Vehicle Impact
	new bridge. During this constriction phase, there will be a series of night time closures and a traffic light management system will be in place to allow Sheepwash Road Bridge to be used by vehicles and pedestrians before a full close-off to traffic and pedestrians in order to open the new bridge.	November 2022 to August 2023	main road closures happening overnight.			depending on the final diversion route.

Temporary & Permanent Parking Restrictions

13.6.7 A number of potential permanent and temporary parking restrictions would be required during the construction and operation periods. The western entrance would require the permanent loss of number of car parking spaces (including two disabled bays) on Roger Dudman Way and Cripley Road, such as the six 'pay & display' bays that are situated adjacent to the cafe. There are also several areas of parking along Cripley Road which are variously time restricted and for permit holders only. These areas of parked cars could potentially conflict with the proposed modified carriageway that forms part of the new Cripley Road layout. Given the enhancements to sustainable travel generated by the Scheme, and that the focus of Oxford as a city is to reduce dependence on car travel, the loss of a small number of parking spaces can be classed as a Minor effect.

13.6.8 It is likely that a temporary traffic regulation order (TTRO) would be required to restrict people from parking along Cripley Road to allow for construction. The restrictions may become more permanent as a result in the change of the Cripley Road layout.

13.6.9 During the construction phase a number of public car parking bays would be temporarily removed due to the placement of a construction compound at the Beckett Street station car park. The exact details of what TTRO would be required and where it should be enforced should be agreed Oxford County Council.

Severance

13.6.10 The severance impacts of the Scheme have been assessed using criteria set out in Table 13.13 for each of the links that have been assigned a high or low sensitivity. Existing traffic flow and construction movements for the site are for the Construction Year of 2023.

Table 13.13: Severance / Amenity impacts

Road	Change in total flow (2023) Construction Trips Only		Change in HGV flow compared to baseline	Magnitude of Impact
	AM Peak	PM Peak		
West Way (B4044)	0%	0.4%	CTMP would not permit HGV traffic before 10:00 and after 16:00 thus there would be no change during critical AM and PM periods	**Low**
A420	0%	0.3%		**Low**
Botley Road	0%	0.3%		**Low**
Station Access	0%	0.0%		**Low**
Park End Street	0%	1.0%		**Low**

Road	Change in total flow (2023) Construction Trips Only		Change in HGV flow compared to baseline	Magnitude of Impact
	AM Peak	PM Peak		
Beckett Street	0%	6.5%		**Low**

13.6.11 Table 13.13 indicates that the magnitude of all severance related construction impacts would be Low. Applying the sensitivities set out in Section 13.3 the following significance of impact can be derived:

- A420 West Way: Low sensitivity leads to a Negligible effect in relation to severance.
- A420 Botley Road: Low sensitivity leads to a Negligible effect relation to severance.
- A420 Botley Road (Binsey Lane – Ferry Hinksey Road): Low sensitivity leads to a negligible effect relation to severance.
- A420 Botley Road (Ferry Hinksey Road - Oxford Station): Low sensitivity leads to a negligible effect relation to severance.
- Frideswide Square: Medium sensitivity leads to a Minor effect in relation to severance.

13.6.12 These effects would be direct and derive from construction of the Scheme and therefore be temporary.

Driver Delay

13.6.13 Due to the limited impacts of the Scheme in terms of HGV traffic volumes and that, when operational, there would be no additional parking at the site, the local highway network would likely see no change in terms of vehicle trips. Therefore, capacity assessments of the network have not been required by Oxfordshire County Council.

13.6.14 Proposals for shuttle working beneath Botley Road Bridge may cause driver delay. Discussions relating to the most appropriate way of managing this aspect of the works are ongoing between Network Rail and Oxfordshire County Council. This allied to advice from Oxfordshire County Council that ongoing construction elsewhere in the city means that traffic flows for this period are difficult to estimate, means that an accurate assessment of these impacts cannot be made at this time.

13.6.15 However, it should be noted that all impacts on driver delay due to construction of the Scheme would likely be minor and temporary only.

Public Transport Delay

13.6.16 The impacts of the Scheme on public transport delay have been assessed for each of the links. The magnitude of the impact of traffic increases on public transport delay for each road is presented in Table 13.14.

Table 13.14: Pedestrian / cycle / public transport delay magnitude

Road	2022 Base Flow (two way)		2023 Total flow including traffic growth and construction traffic		Magnitude of increase in traffic
	AM Peak	PM Peak	AM Peak	PM Peak	
West Way (B4044)	1225	1383	1240	1405	**Low**
A420	1939	1855	1963	1883	**Low**
Botley Road	1732	1937	1753	1971	**Low**
Station Access	285	324	289	328	**Low**
Park End Street	907	960	918	981	**Low**
Beckett Street	307	286	314	313	**Low**

13.6.17 Table 13.14 shows that the magnitude of impacts on public transport delay, which would occur due to potential traffic increases would be Low.

- A420 West Way: Low sensitivity leads to a Negligible effect in relation to public transport delay.
- A420 Botley Road: Low sensitivity leads to a Negligible effect relation to public transport delay.
- A420 Botley Road (Binsey Lane – Ferry Hinksey Road): Low sensitivity leads to a negligible effect relation to public transport delay.
- A420 Botley Road (Ferry Hinksey Road - Oxford Station): Low sensitivity leads to a negligible effect relation to public transport delay.
- Frideswide Square: Medium sensitivity leads to a Minor effect in relation to public transport delay.

13.6.18 It should also be noted that these minor impacts would be temporary during the construction period.

13.6.19 There would be a noticeable change when Botley Road is operating with single lane working for six months. Without traffic data a level of significance cannot be assigned. The effect would however be temporary.

Pedestrian and Cycle Delay

13.6.20 DMRB guidance (Ref 7.2) recommends that assessments should be based on judgement rather than specific thresholds to determine whether or not there is significant pedestrian delay.

13.6.21 A number of footpath diversions would be present during construction. However, this would be of only minor magnitude and temporary thus can be considered only a slight impact.

13.6.22 Several on-road cycle routes and adjacent pedestrian routes may be temporarily closed during the construction phase again causing a minor impact with significances as follows:

- A420 West Way: Low sensitivity leads to a Negligible effect in relation to pedestrian and cycle delay.
- A420 Botley Road: Low sensitivity leads to a Negligible effect relation to pedestrian and cycle delay.
- A420 Botley Road (Binsey Lane – Ferry Hinksey Road): Low sensitivity leads to a negligible effect relation to pedestrian and cycle delay.
- A420 Botley Road (Ferry Hinksey Road - Oxford Station): Low sensitivity leads to a negligible effect relation to pedestrian and cycle delay.
- Frideswide Square: Medium sensitivity leads to a Minor effect in relation to pedestrian and cycle delay.

13.6.23 Temporary closures of pedestrian bridges would be required during construction, specifically, Sheepwash Bridge and Osney Lane Bridge. The duration of these closures would be shortened as far as practicable. Temporary measures and diversions would be put in place to ensure alternative routes are provided. Therefore, the effects of these impacts are expected to be temporary and minor.

Amenity

13.6.24 Impacts of the Scheme on amenity have been assessed for each of the links. The results of this assessment are presented in Table 13.13 above.

- A420 West Way: Low sensitivity leads to a Negligible effect in relation to amenity.
- A420 Botley Road: Low sensitivity leads to a Negligible effect relation to amenity.
- A420 Botley Road (Binsey Lane – Ferry Hinksey Road): Low sensitivity leads to a negligible effect relation to amenity.

- A420 Botley Road (Ferry Hinksey Road - Oxford Station): Low sensitivity leads to a negligible effect relation to amenity.
- Frideswide Square: Medium sensitivity leads to a Minor effect in relation to amenity.

13.6.25 It should be noted that, as with other impacts during construction those on amenity would again be temporary only.

Accidents and Safety

13.6.26 Section 13.1 of the Traffic Assessment considers the impacts of the Scheme on road safety by considering the current collision record of the highway network. It determines that given the relatively low traffic flows generated by the Scheme during construction, no road safety issues, which may be exacerbated by the Scheme, have been identified. Therefore, it can be inferred that the magnitude of impacts with regards to accidents and safety would be Low.

13.6.27 The predicted increases in construction traffic can easily be accommodated by the proposed construction traffic route (i.e. A420 and Botley Road).

- A420 West Way: Low sensitivity leads to a Negligible effect in relation to road safety.
- A420 Botley Road: Low sensitivity leads to a Negligible effect relation to road safety.
- A420 Botley Road (Binsey Lane – Ferry Hinksey Road): Low sensitivity leads to a negligible effect relation to road safety.
- A420 Botley Road (Ferry Hinksey Road - Oxford Station): Low sensitivity leads to a negligible effect relation to road safety.
- Frideswide Square: Medium sensitivity leads to a Minor effect in relation to road safety.

13.6.28 Professional judgement and discretion have necessarily been applied to assess the impacts associated with increased traffic on accidents and safety. There would be a temporary impact for around six months along Botley Road.

13.7 Mitigation Measures

13.7.1 A key mitigation measure during the construction phase would be the development of a CTMP. This would form a fundamental part of the construction methodology and is likely to form a requirement by the highway authorities.

13.7.2 Therefore, this assessment does not consider the CTMP as separate mitigation for any impacts of the Scheme, but as a core part of the proposals.

13.7.3 An Outline CTMP is provided within the Transport Assessment and is summarised below. It provides a framework for which the appointed contractor would consider the following requirements:

- Preparation of site plans.
- Construction access routes and movement including signage.
- Traffic Management and Road Closures (i.e. those necessary when making alterations to the existing highway network). Traffic management measures would be specific to each access as required.
- Site management (including site access, vehicle and pedestrian access arrangements, boundary demarcations, on-site parking and management of deliveries).
- Construction vehicle requirements.
- Debris and damage to the highway network (including pre-construction condition surveys and monitoring arrangements).
- Staff travel (including a series of measures set out within a Travel Plan).
- Diversions of NMU/ pedestrian, cyclist, and equestrian routes.

13.7.4 A construction Travel Plan would be produced and implemented as part of the CTMP. This would encourage construction staff to use sustainable modes of travel (i.e. public transport, walking and cycling) wherever possible. Also, the Travel Plan would further reduce the traffic impact of the Scheme during construction, by encouraging a change in mode from the private car to sustainable travel.

13.7.5 A Transport Management Working Group (TMWG) would be established prior to commencement of construction and maintained for the duration of the works. The main responsibility of the group would be to monitor to the CTMP. It would also allow direct communication between, amongst others the contractor, the Local Highway Authority and Highways England. Parking would be monitored during construction and reported to the TMWG as required.

13.7.6 The CTMP would serve to maximise efficiencies of construction traffic movement and limit the impact on the surrounding highway and PRoW networks.

13.8 Summary of Residual Traffic and Transport Effects

13.8.1 All transport mitigation is inbuilt as core features of the Scheme; thus, no further mitigation is required. Therefore, the residual impacts remain as those identified in the assessment in Section 13.6.

13.8.2 A summary of the potential effects on traffic and transport is provided in Table 13.15. It is considered that the Scheme can be implemented without any significant effects on the identified traffic and transport receptors. Furthermore, following completion of the Scheme, there are expected to be positive effects on traffic and transport as a result from the improved rail infrastructure and enhanced walking and cycling provision.

Table 13.15: Summary of effects on traffic and transport

Potential Effect	Receptor and impact	Sensitivity of receptor(s)	Magnitude of impact before mitigation	Significance and duration of effect before mitigation (all effects are direct)	Mitigation	Magnitude of impact after mitigation	Significance and duration of residual effect
Construction	All receptors: Temporary road closures	-	-	Minor	Discussions ongoing	-	Minor, temporary
	All receptors: Parking restrictions	-	-	Minor	None	-	Minor temporary Minor, permanent
	All receptors: increase in HGV traffic related to construction increase in severance for users	Low Medium	Low Low	Minor Minor	None	-	Minor, temporary
	All receptors: Driver delay due to increase in HGV movements	Low Medium	Low Low	Minor Minor	None	-	Minor, temporary
	All receptors: Delays to public transport due to increase in HGV movements	Low Medium	Low Low	Minor Minor	None	-	Minor, temporary

Potential Effect	Receptor and impact	Sensitivity of receptor(s)	Magnitude of impact before mitigation	Significance and duration of effect before mitigation (all effects are direct)	Mitigation	Magnitude of impact after mitigation	Significance and duration of residual effect
	All receptors: Delays to pedestrians and cycles due to increase in HGV movements	Low Medium	Low Low	Minor Minor	None	-	Minor, temporary
	All receptors: Reductions in amenity of routes for both vehicles and non-motorised users due to additional HGV movements	Low Medium	Low Low	Minor Minor	None	-	Minor, temporary
	All receptors: increase in HGV traffic leading to increased risk of collision	Low Medium	Low Low	Minor Minor	None	-	Minor, temporary

13.9 Conclusions

13.9.1 This chapter concludes the effects of the Scheme on the operation of Traffic and Transportation in the vicinity of the site.

13.9.2 The western entrance to Oxford Station facing onto Botley Road would provide an alternative, easier access to the station from the west for both pedestrians and cyclists. The Botley Road Bridge replacement, with its 4m wide combined footpath and cycle path routes, would benefit the area by improving pedestrian and cycle flows under the bridge. These improvements would provide more convenient cycle and pedestrian access, encouraging existing Oxford Station passengers to choose more sustainable travel options.

13.9.3 The Scheme would provide additional cycle parking outside the western entrance, thus further encouraging travel by bike both to and from Oxford Station. The Scheme would, once operational, allow a vertical clearance of 4.5m under Botley Bridge allowing access for standard double decker buses which can't currently pass underneath.

13.9.4 There has been shown to be no obvious highway safety concerns following the opening of the Scheme. This includes removal of a junction onto Botley Road and provision of a new junction onto Cripley Road.

13.9.5 Works would be undertaken at Botley Road Bridge for a period of six months including a single lane closure. Botley Road is the main arterial route into Oxford and closing this road for even a short duration would potentially cause significant city-wide traffic distribution. However, due to the current lack of traffic data for the area and the uncertainty surrounding other major construction projects in the area, traffic modelling has not been carried out at this stage of the project. Operational traffic was scoped out by Oxfordshire County Council.

13.9.6 Therefore, on the basis of the above, no microsimulation modelling (VISSIM) work has been undertaken to see how the local network would operate during construction. Network Rail has however provided Oxfordshire County Council with the Construction Staging Plan, the Traffic Management & Road Closure Plan (prepared by the Traffic Management Company 'Centurion') and the proposed construction HGV and LGV vehicle numbers.

13.9.7 Based on the calculated construction vehicle traffic produced by the Scheme, there would be a slight impact during the construction period. This would cause potential traffic re-distribution, notably to both local bus services as well as increased journey times.

13.9.8 The Scheme and its package of mitigations is based upon the main principle to reduce the need to travel by car while providing improved pedestrian and cycle infrastructure. Journeys made on foot and by cycling bring with them the advantage of health benefits, as discussed further in Chapter 12 – Human Health, and reduced congestion on the surrounding local highway network.

13.9.9 The impact of the Scheme is expected to be beneficial in terms of sustainable travel for the area and neutral in terms of vehicular travel. This is due to no change in current parking provision and the improved pedestrian and cycle infrastructure located along Botley Road. This is considered to provide an overall beneficial impact on the transport network once fully operational in 2025.

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