



## Oxford Flood Alleviation Scheme

Transport Assessment

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## Oxford Flood Alleviation Scheme

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## Acronyms and Abbreviations

ADT	Average Daily Traffic
CTMP	Construction Traffic Management Plan
EA	Environment Agency
FORS	Fleet Operator Recognition Scheme
NH	National Highways (formerly Highways England)
LTP4	Oxfordshire Local Transport Plan 4
NCR	National Cycle Route
NPPF	National Planning Policy Framework
NTEM	National Trip End Model
OCC	Oxfordshire County Council
OFAS	Oxford Flood Alleviation Scheme
OTS	Oxford Transport Strategy
P&R	Park and Ride
PCU	Passenger Car Unit
TA	Transport Assessment
TEMPRO	Trip End Model Presentation Programme
TMWG	Transport Management Working Group
TP	Travel Plan
TSRGD	Traffic Signs Regulations and General Directions

# 1. Introduction

## 1.1 Background

Jacobs have been appointed by the Environment Agency (EA) to deliver the design, statutory Environmental Impact Assessment and planning elements of the Oxford Flood Alleviation Scheme (OFAS) (known as 'The Scheme').

The Scheme aims to:

- Reduce flood damages to at least 1,000 homes and businesses currently at risk in Oxford.
- Reduce flood impacts on transport infrastructure and utilities in Oxford, particularly to A420 Botley Road and A4144 Abingdon Road, the railway line and the sewerage system.
- Safeguard Oxford's reputation as a thriving centre of commerce that is open for business.
- Create and maintain new recreational amenities, wildlife habitat, and naturalised watercourses accessible from the centre of Oxford.

The Scheme will comprise of the following key elements:

- Construction of a new two-stage channel running from Botley Road/West Way south-easterly to downstream of the A423 (southern ring road). For the main part, this will be approximately parallel to the A34 to its west and the railway to its east. The new channel, which will carry excess flow from the Seacourt Stream, Bulstake Stream and Hinksey Stream with the aim of reducing the water level in the main River Thames and so reducing the frequency of flooding in built-up areas, will comprise two stages: -
- New channel, which will carry water flowing all of the time; and
- Second stage (or 'two-stage') channel, which will be dry for most of the time, and will fill during flood flows, along with the surrounding existing floodplain.
- New flood embankments and walls will defend properties, which would otherwise continue to flood even with the reduced river levels.
- Utilise the additional flow capacity created by the proposed replacement A423 bridge proposed by Oxfordshire County Council; and
- New culverts and bridges will maintain other access routes.

The works involve the construction of various new defences such as bunds and walls together with many new culverts, bridges and other small structures that are required to maintain access routes.

As part of the planning application and consenting process, it has been confirmed a Transport Assessment (TA) is required along with a Construction Traffic Management Plan (CTMP) and a Travel Plan (TP) for construction workers.





Figure 1.1: An overview of the OFAS

## 1.2 Scoping and pre-planning application

As part of the preparation of this TA and following a meeting with Oxfordshire County Council (OCC), a scoping TA document was submitted to the local highway authority and Oxford City Council. Copies of this documentation are provided in Appendix A. National Highways (NH) have also been consulted in the preparation of this TA.

### 1.2.1 Oxfordshire County Council

The main items identified in the pre-planning application for consideration were:

- It was confirmed that most construction vehicles would use the A34 slip roads at South Hinksey village to access and use the haul road alongside the Scheme. There would be a short period where A420 Botley Road would be used to access the sections of the Scheme north of A420 Botley Road and around Osney Mead as well as A4144 Abingdon Road (near the Oxford Spires Four Pillars Hotel). The TA should set out the routes that would be used as well as any modifications to existing roads or junctions to allow larger construction vehicles to access these points of the Scheme. Details of any traffic management should also be provided.



- Detail of the construction trip generation would be provided including the timing. The local roads in South Hinksey village are sensitive to any increase in traffic.
- Consultation with Thames Valley Police that have agreed to support a temporary reduction in the speed limit along the A34
- A need to consider the emerging Hinksey Hill Interchange project which could impact the Scheme with potential works around Old Abingdon Road. It is understood that this scheme is now on hold.
- The temporary closure of Old Abingdon Road and its impact on the local road network, further narrative is provided on this item in Section 4.2.

The pre-planning application response also identified a need for a CTMP which should include:

- The proposed route of construction traffic including accesses to the site.
- Details of traffic management and road closures during the works.
- Timing of the arrival and departure of construction works vehicles which must be outside network peak and school peak hours.
- Provision for pedestrians during the works including diversions where appropriate.
- Contact details of the project manager and site supervisors.
- Layout plans showing aspects such as access arrangements, compounds, site storage, structures, roads and pedestrian routes.
- No construction related parking near the sites.
- The need for a highway condition survey with necessary approvals before work commence.
- Residents to be kept informed throughout the works.

### 1.2.2 Oxford City Council

The main comments from Oxford City Council related to the assessment of air quality, ecology, land quality and flood mitigation. There were transport related concerns about identifying access routes, entry and exit points, quantifying the level of HGV movements given existing air quality monitoring and the need to take into account the planning application for the expansion of the Seacourt Park and Ride (P&R) site.

### 1.2.3 Old Abingdon Road & Kennington Road Closure

The original scheme proposals involved temporarily closing Old Abingdon Road and Kennington Road at different times with a disruption of up to 15 months to enable culvert works to be progressed. OCC and NH were consulted on these proposals and raised concerns regarding the impact of the closure.

OCC expressed concerns regarding the impact of the closure on the operation of the local road network and local bus services, especially relating to the expected duration of disruption.

NH expressed absolute concerns regarding the potential for additional queuing at the A34 Hinksey Hill Interchange and A34 mainline, and its subsequent impacts in terms of highway capacity and safety.

The proposal to construct a temporary carriageway at Old Abingdon Road, as discussed in Section 4.2, is a direct result of the unacceptable impacts that the closure of the road was expected to have on the strategic highway network. These impacts were identified in consultation with NH and concerned the potential for queuing along the A34 mainline by traffic diverted due to any closure. The temporary carriageway will maintain a connection along Old Abingdon Road and Kennington Road during their closures, thus eliminating the need for traffic to divert and consequently result in any additional queuing along the A34.

Following these concerns a traffic modelling exercise of the road closure was completed by OCC's term consultants which indicated some impacts could be expected, a revised proposal has been developed to

construct a temporary carriageway between Old Abingdon Road and Kennington Road. Appendix B provides a report based on the outputs from the traffic modelling exercise. The temporary carriageway will enable the Scheme construction works to progress whilst maintaining a two-way flow of traffic along Old Abingdon Road and Kennington Road. Discussions relating to the design and implementation of the temporary carriageway have been held with both OCC and NH who have both accepted the principal of it.

It is noted that NH are responsible for the traffic signal timing of the Hinksey Hill Interchange and can amend the timings to clear any additional queuing which occurs on the A34, this could be used for some additional mitigation if required. Although doing so would likely increase queuing along OCC's local roads they have accepted this short term disturbance is necessary to bring the OFAS scheme forward.

### **1.3 Approach to this Transport Assessment**

Where possible, published guidance and standards have informed the structure of this TA. The National Planning Policy Framework (NPPF) in paragraph 113 sets out that all developments or schemes that generate significant amounts of transport movement should be supported by a TA.

In identifying a need, the scale and level of detail should be established early in the process and should be proportionate to the size and scope of the proposal. This may include:

- The planning context of the development/scheme proposal.
- The area, scope and duration of the study.
- Assessment of public transport capacity, walking and cycling provision and highway network capacity.
- Road trip generation and trip distribution methodologies and assumptions about the development proposal.
- Measures to promote sustainable travel.
- Safety implications of the development/scheme.
- Mitigation measures where applicable including scope and implementation strategy.

The scope and level of detail in a TA will vary but the following should be considered in defining the scope:

- Information about the proposed development/scheme, site layout including the proposed transport access and layout across all modes of transport.
- Information about neighbouring uses, amenity and character, existing functional classification of the nearby highway network.
- Data about the existing public transport provision including the provision and frequency of services and the proposed public transport changes.
- A qualitative and quantitative description of the travel characteristics of the proposed scheme, including movements across all modes of transport that would result from the development and near the site.
- Data about current traffic flows on links and at junctions within the study area and the identification of critical links and junctions
- An analysis of injury accident records in the most recent five-year period.
- Measures to improve the accessibility of the location (such as footway and cycleway links).
- Description of parking facilities in the area.
- Ways of improving sustainability by reducing the need to travel; and measures to mitigate the residual impacts of the development.

## 1.4 Structure of this Transport Assessment

This TA comprises the following chapters:

- **Chapter 2 Policy Context** – This chapter outlines the national and local transport and planning policies that the Scheme will need to consider.
- **Chapter 3 Existing Conditions** – This chapter considers the existing transport network including collision data and traffic flows.
- **Chapter 4 Scheme Proposals** – This chapter provides a general overview of the Scheme proposal, the component parts and the scheduling of the works.
- **Chapter 5 Methodology and Assessment** – This chapter outlines the approach and methodologies to assess the transport impacts of the Scheme.
- **Chapter 6 Assessment of Impacts** – This chapter assesses the overall impacts of the Scheme on the transport network.
- **Chapter 7 Mitigation** – This chapter outlines and assesses the measures that will be required to mitigate the identified impacts.
- **Chapter 8 Conclusions and Recommendations** – This chapter reviews the assessment presented and concludes with the recommendation of the TA.

## 2. Policy Context

### 2.1 Introduction

This chapter outlines the national and local transport and planning policies that the Scheme will need to consider. The emphasis throughout is to demonstrate the extent to which the Scheme is aligned to these priorities and policies.

The pertinent policies being:

#### National

- National Planning Policy Framework (NPPF)
- Planning Practice Guidance

#### Local

- Oxfordshire Local Transport Plan 4 (LTP4) including the Oxford Transport Strategy (OTS)
- Vale of White Horse Local Plan
- Oxford City Council Local Plan

### 2.2 National Policy and Strategies

#### 2.2.1 National Planning Policy Framework (NPPF) (July 2021)

The NPPF published by the Ministry of Housing, Communities and Local Government sets out the planning policies expected to achieve sustainable development. The NPPF seeks to promote growth whilst creating a high-quality environment underpinned by vibrant communities.

This proposal needs to be considered against the following relevant chapters within the NPPF:

- Chapter 8 Promoting healthy and safe communities - Developments can contribute towards promoting healthy and safe communities by providing safe and accessible environments that promote social interaction and healthy lifestyles, such as layouts that encourage walking and cycling.
- Chapter 12 Achieving well-designed places - Good design is a key aspect of sustainable development and indivisible from good planning. Good design applies to public and private spaces and wider area development schemes. It should not only enhance the aesthetic appearance of the development but ensure that the development functions well and creates safe and accessible environments for all.
- Chapter 14 Meeting the challenge of climate change, flooding and coastal change - This includes using opportunities offered by new development to reduce the causes and impacts of flooding and safeguarding land that is required for current and future flood management.
- In addition to the above, policy 9 promoting sustainable transport is pertinent in that it supports the use of sustainable modes of transport and the development of strategies for the provision of viable infrastructure.

In order to ensure that sustainable development is pursued in a positive way, the NPPF contains a presumption in favour of sustainable development. This is underpinned by three overarching interdependent objectives that seek to achieve sustainable development:

- An economic objective, to proactively build a competitive economy by delivering the infrastructure that the country needs.

- A social objective, to support strong, vibrant and healthy communities by providing a well-designed and safe built environment with accessible services and opens spaces that support communities' health, social and cultural well-being.
- An environmental objective, to contribute to enhancing our natural environment by making effective use of land, minimising waste and pollution and transitioning to a low carbon economy.

The Scheme will achieve the goals of NPPF by protecting existing and future development along the area's floodplain while enhancing the designated walking and cycling routes along it. This will encourage the use of active travel modes leading to healthier lifestyles, which will help to address the problems of obesity and ill health related to inactivity.

### 2.2.2 Planning Practice Guidance (July 2021)

The Planning Practice Guidance, a web-based resource, brings together planning guidance on various topics into one place. Launched in March 2014, and updated regularly, the Planning Practice Guidance adds further context to the NPPF, as it is intended that both are read together.

It includes the 'Travel Plans, Transport Assessments and Statements' guidance document which summarises the considerations that planning authorities need to assess to satisfy the requirements of NPPF.

It sets out how a Transport Assessment's "scale, scope and level of detail" should be established as early as possible; a process which has been completed with the local highway authority.

It continues to set out the key issues that should be considered in a TA as follows:

- The planning context of the development proposal.
- Appropriate study parameters (such as the area, scope and duration of study).
- Assessment of public transport capacity, walking/cycling capacity and road network capacity.
- Road trip generation and trip distribution methodologies and/ or assumptions about the development proposal.
- Measures to promote sustainable travel.
- Safety implications of development.
- Mitigation measures (where applicable) – including scope and implementation strategy.

These principles have been used during the scoping stage of this TA to determine the extent of the necessary assessment and will continue to be used to guide the final TA agreed with the relevant authorities.

## 2.3 Local Policy and Strategies

### 2.3.1 Oxfordshire Local Transport Plan 4 (LTP4) 2015-2031 (Adopted September 2013, Updated 2016)

The Oxfordshire Local Transport Plan 4 (LTP4) 2015-2031 was adopted in September 2013. The LTP4 has the following goals, which could be achieved through improvements to transport networks:

- To support jobs and housing growth and economic vitality.
- To support the transition to a low carbon future.
- To support social inclusion and equality of opportunity.
- To protect and where possible enhance Oxfordshire's environment and improve quality of life.
- To improve public health, safety and individual wellbeing.

The following points are pertinent to the Scheme:

- To ensure that the environmental impacts of the LTP4 are considered fully, a Strategic Environmental Assessment was carried out (the findings of which are contained in the Environmental Report, which forms part of Connecting Oxfordshire).
- Flood risk will be managed by OCC through their statutory role to coordinate flood risk management for surface water, groundwater and smaller watercourses in the county. The Environment Agency remains responsible for main-river flooding. Details of plans can be found in the Oxfordshire Local Flood Risk Management Strategy.
- The completed Scheme will support the LTP4 Active Health and Travel Strategy, which sets out ambitions for walking, cycling and Door to Door integrated travel. This includes better integration of rail/bus and cycling/walking as well as developing a network of cycling routes and improving walking options. This Strategy aims to encourage walking and cycling by reviewing and improving routes and enhancing the environment for pedestrians and cyclists. This in turn would improve accessibility, support economic growth, reduce car use and make routes safer for all users, as well as enhancing the environment for pedestrians and cyclists.

### 2.3.2 OCC's Local Transport and Connectivity Plan (yet to be adopted)

A new long-term countywide transport strategy known as 'OCC's Local Transport and Connectivity Plan' that aims to set a vision of the direction for transport in Oxfordshire and outlines clear long-term ambitions for transport until 2050, is currently under revision. OCC are currently consulting on the draft vision and supporting key themes so that residents and stakeholders can provide feedback regarding the direction the Local Transport and Connectivity Plan is heading in. This plan has yet to be adopted.

### 2.3.3 Oxford Transport Strategy (OTS)

Forming a part of the LTP4, the Oxford Transport Strategy (OTS) outlines the challenges and transport interventions required within the Oxford area. The OTS identifies a total of eight challenges in Oxford, which includes meeting the needs of a growing population, economic growth and new housing amongst others. The strategy notes Oxford's travel to work modal split with over 50% of people walking and cycling. Investment in transport infrastructure has contributed to a 30% increase in walking and cycling modes between 2001 and 2011.

Sustainable transport forms the heart of the proposed measures with walking and cycling interventions having prominence. This includes the development of segregated and semi-segregated cycle routes including Botley Road and along the "Electric Road". Walking improvements will be undertaken on a phased basis and where opportunities emerge.

### 2.3.4 Vale of White Horse Local Plan 2031 Part 1: Strategic Sites and Policies (Adopted December 2016)

The 'Vale of White Horse Local Plan Part 1: Strategic Sites and Policies', adopted in 2016, has a total of 46 core policies geared towards the delivery of sustainable development in the district up to 2031. The pertinent core policies in terms of this Scheme are:

- Core Policy 8 – Spatial Strategy for Abingdon and Oxford Fringe Sub-Area
- Core Policy 33 – Promoting Sustainable Transport and Accessibility
- Core Policy 34 – A34 Strategy
- Core Policy 42 – Flood Risk
- Core Policy 43 – Natural Resources
- Core Policy 45 – Green Infrastructure

Core Policy 8 is to maintain the function and roles for Abingdon and Botley and ensure growth is managed to minimise pressure on the highway network, whilst protecting the Oxford Green Belt.



Core Policy 33 aspires to ensure the impacts of new development on the strategic and local road network are minimised and are designed in a way to promote sustainable transport access. It also aims to ensure transport improvements are designed to minimise any effects on the amenities, character and special qualities of the surrounding area. Finally, it seeks to support improvements that increase safety, improve air quality and make areas more attractive.

Core Policy 34 seeks to implement a Route Based Strategy for the A34 which enables it to function as a major strategic route, thereby reducing consequential congestion on the local road network.

Core Policy 42 aims to minimise the risk and impact of flooding. This means directing new development to areas with lower risk of flooding, ensuring flood risk is managed, ensuring that new development does not lead to an increased risk of flooding elsewhere and maximising the wider environmental benefits.

Core Policy 43 on Natural Resources encourages the effective use of natural resources where applicable. This includes, amongst many aspects, taking account of any Air Quality Management Area and ensuring no deterioration and where possible, improvements in water quality.

The final relevant Core Policy 45 aims to improve Green Infrastructure through on-site provision or off-site contributions. Proposals for new development must provide adequate Green Infrastructure and must be accompanied by a statement how such infrastructure will be retained and enhanced.

### 2.3.5 Vale of White Horse Local Plan 2031 Part 2: Detailed Policies and Additional Sites (Adopted in October 2019)

The 'Vale of White Horse Local Plan 2031 Part 2: Detailed Policies and Additional Sites' was adopted in October 2019 and complements Part 1 of the Plan by setting out:

- policies and locations for the new housing to meet the Vale's proportion of Oxford's housing need, which cannot be met within the city boundaries;
- policies for the part of Didcot Garden Town that lies within the Vale of White Horse District;
- detailed development management policies to complement the strategic policies as set out in the Part 1 plan, and where appropriate replaces the remaining saved policies of the Local Plan 2011; and
- additional site allocations for housing.

### 2.3.6 Oxford Local Plan 2016-2036 (Adopted June 2020)

Adopted in 2020, the Oxford Local Plan joins a series of policy documents to form Oxford's statutory Development Plan, against which planning decisions are made. The Development Plan consists of the following documents:

- Oxford Local Plan 2016-2036 (Adopted June 2020)
- Barton Area Action Plan (Adopted December 2012)
- Northern Gateway Area Action Plan (Adopted July 2015)
- Headington Neighbourhood Plan (Adopted July 2017)
- Summertown and St Margaret's Neighbourhood Plan (April 2019)

The Oxford Local Plan sets out the spatial planning framework for the development of Oxford up to 2036. The Local Plan sets out the provision of homes, employment, community facilities and infrastructure for the next 20 years. It sets out policies and proposals relating to many of the Council's priorities. These include:

- New housing and regeneration at Barton.
- Economic growth and supporting employment at the Northern Gateway.

- The continuing renaissance of the West End of the City Centre.
- A new district centre at the heart of Blackbird Leys and upgrading of the Cowley centre.

The Local Plan seeks to address climate change by promoting low and zero carbon developments and renewable energy. Policy M1 details how planning permission will only be granted for developments that minimise the need to travel and prioritise walking, cycling and public transport. Policy RE 3 refers specifically to flooding and control of development within the functional flood plain while Section 4 iii details how this Scheme will bring considerable benefits to the city in terms of reduced flood risk.

## **2.4 Summary of Key Issues**

This review confirms that the Scheme is well aligned as follows:

- It will contribute towards the promotion of healthy communities as it will enhance walking and cycling routes by reducing flood risk and improving bridges.
- Will support the objectives of the OTS in increasing the number of walking and cycling journeys.
- It will help underpin sustainable development by making the fullest possible use of sustainable transport.
- It will assist in protecting and enhancing the local environment and improving the quality of life.
- It will ensure the impacts of development are minimised on the road network and on local amenities and character.
- It will ensure that the proposals improve safety, air quality and make areas more attractive.

### 3. Existing Conditions

#### 3.1 Introduction

This chapter outlines the conditions of the existing transport network surrounding the Scheme. The aim is to understand the elements of the transport network that are likely to be impacted and the constraints and conditions that need to be factored into the Scheme design.

#### 3.2 Existing Highway Network

Figure 3.1 shows the lengths of highway that will be considered, this was agreed during the scoping stage of the TA.

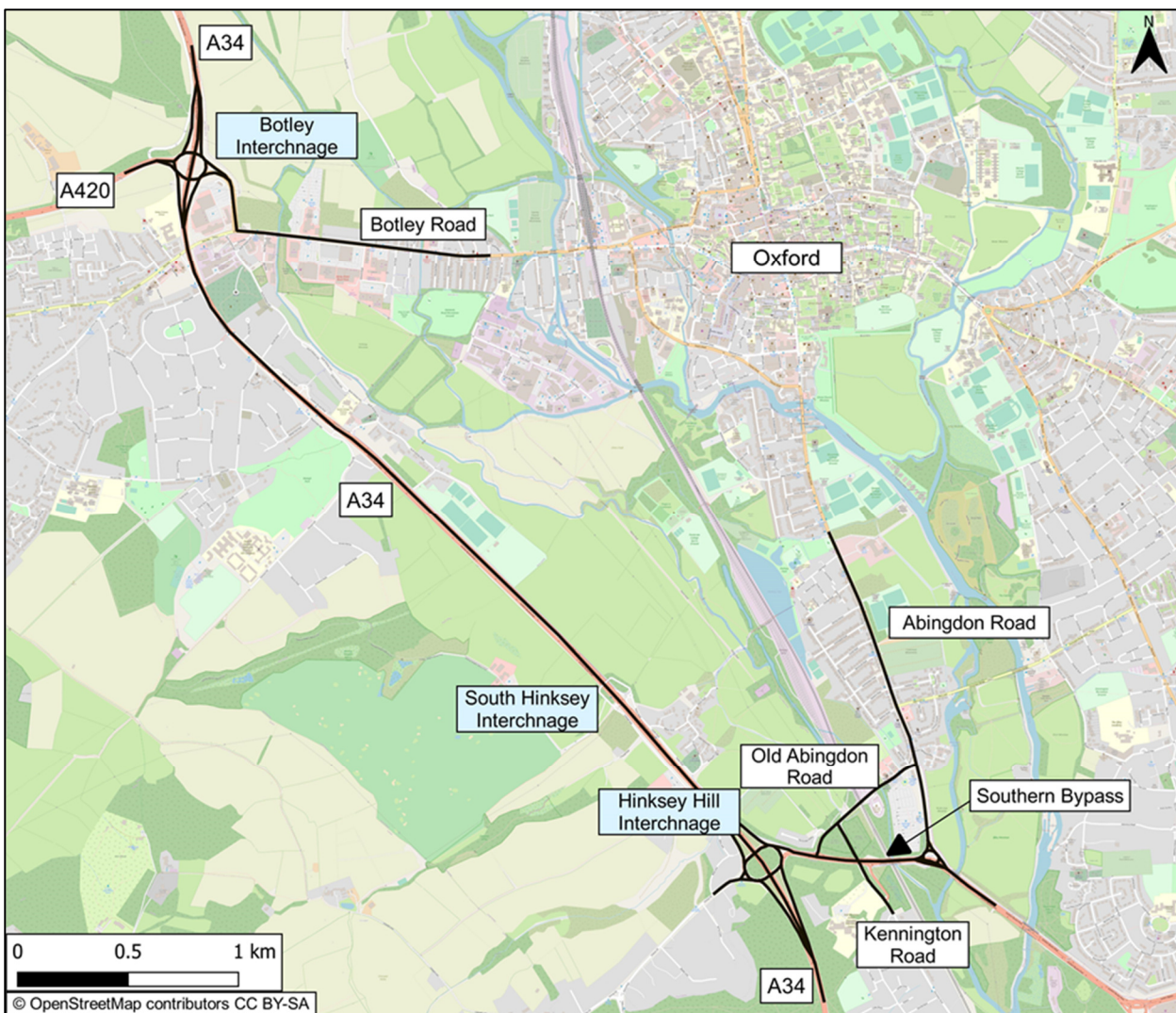


Figure 3.1: Extent of the Assessed Highway Network

The extent of the highway network considered in this assessment is as follows:

## Links

- The A34 Southern By-Pass Road from Botley Interchange in the north to Hinksey Hill Interchange in the south
- The A420 Botley Road / West Way from Henry Road in the east to Botley Interchange in the west
- Parker Road and South Hinksey Bridge accessed off the South Hinksey Interchange
- The A423 Southern By-Pass Road from Hinksey Hill Interchange in the west to A423 / A4144 Kennington Roundabout in the east
- The A4144 Abingdon Road from the access to Hinksey Park in the north to A423 / A4144 Kennington Roundabout in the south
- Old Abingdon Road between A423 Southern By-Pass Road and A4144 Abingdon Road
- Kennington Road from its junction with Old Abingdon Road in the north to its junction with Upper Road in the south

## Junctions

- The A34 / A420 Botley Interchange
- The A34 South Hinksey Interchange
- The A34 / A423 Hinksey Hill Interchange
- A423 / A4144 Kennington Roundabout
- Junction between the A423 Southern By-Pass Road and Old Abingdon Road
- Junction between Old Abingdon Road and Kennington Road
- Junction between Old Abingdon Road and A4144 Abingdon Road

### 3.2.1 Links

#### **The A34 Southern By-Pass Road from Botley Interchange in the north to Hinksey Hill Interchange in the south**

The A34 is a major strategic route that runs from Winchester in Hampshire to the M40 at Bicester, with additional lengths through the Midlands to the North West. As well as performing a long-distance strategic function such as providing access to the major shipping port at Southampton, the A34 also forms part of the western bypass around Oxford.

Within the Oxford area, there are three principal grade separated major interchanges. In the north, near the Pear Tree P&R site providing access to the A40 and northern Oxford. In the west, the Botley Interchange provides access to the A420, Botley and Oxford city centre. In the south, the Hinksey Hill Interchange provides access on to the A423 Southern By-Pass Road as well as southern and eastern Oxford.

There are four minor junctions along the A34 Southern By-Pass Road. In Botley, on-slip and off-slip access and egress is provided on and from Westminster Way for northbound traffic, whilst a similar arrangement is provided on and from North Hinksey Lane for southbound traffic. Next to the small village of South Hinksey, on-slip and off-slip access and egress is provided on and from Parker Road for southbound traffic, whilst a similar arrangement is provided on and from South Hinksey Bridge for northbound traffic. South Hinksey Bridge includes an overbridge that crosses over the A34 Southern By-Pass Road linking together the east and west areas of South Hinksey.

Between the Botley and Hinksey Hill Interchanges, the layout of the A34 slightly differs. In the Botley area, the A34 dual carriageway strays from a traditional arrangement to one with no hard shoulder and a lower speed limit of 50 mph. There is also a bus layby in the northbound direction.

South of Botley and within the South Hinksey area, higher national speed limits apply, and laybys are available for use by general traffic.

### **The A420 Botley Road / West Way from Henry Road in the east to Botley Interchange in the west**

The A420 Botley Road / West Way is one of the principal access routes from the A34 to Oxford city centre and is subject to a 30mph speed limit for the section of carriageway considered in this TA. Beyond these lengths, the A420 continues past the A34 in a south west direction towards Faringdon and Swindon.

From an east to west direction, the A420 Botley Road / West Way is largely a single lane carriageway until it reaches the B4044 with bus lanes and filter lanes at several locations. The main layout characteristics of the road are:

- Between Henry Road and Binsey Lane, the A420 Botley Road is a single carriageway with cycle lanes on each side of the road. There are no waiting parking restrictions in place, whilst there is also a signalised pedestrian crossing near Henry Road.
- Between Binsey Lane and the Seacourt P&R site, there is an eastbound bus lane and turning filter lanes for both directions, one of which provides access to a local superstore. A combination of on-road cycle lanes and off-road cycle tracks are provided in both directions. There is also an eastbound signalised controlled bus priority measure near Binsey Lane.
- Between the Seacourt P&R site and the B4044 West Way, the A420 West Way crosses over an existing water channel and includes two westbound lanes for general traffic, and two eastbound lanes, one for general traffic and the other as a designated bus lane. An off-road cycle tracks is present on the south side of the carriageway. There are signalised junctions providing access to the P&R site as well as between A420 and B440 roads.

### **Parker Road and South Hinksey Bridge**

Parker Road is a single carriageway that serves the village of South Hinksey, that can be accessed from either the southbound lanes of the A34 Southern By-Pass Road or from South Hinksey Bridge, both via a small roundabout positioned immediately west of the A34 corridor. Parker Road has a straight alignment until it loops into the village and has a footway on its north eastern side. Given its relative isolated nature, the road principally serves the village of South Hinksey.

South Hinksey Bridge is a single carriageway that provides access for northbound traffic leaving the A34 Southern By-Pass Road towards the village of South Hinksey via an overbridge section that crosses over the A34 dual carriageway. Traffic using South Hinksey Bridge to access South Hinksey village will continue on to Parker Road (details above) via a small roundabout located immediately west of the A34 Southern By-Pass Road.

### **The A423 Southern By-Pass Road from Hinksey Hill Interchange in the west to the A423 / A4144 Kennington Roundabout in the east**

The A423 Southern By-Pass Road connects with the A423 Eastern By-Pass Road and is the principal route for accessing the eastern and southern parts of Oxford, as well as continuing on towards the A40 and M40. This stretch of dual carriageway between the Hinksey Hill Interchange and the A423 / A4144 Kennington Roundabout is relatively short at approximately 700m in length.

The A423 Southern By-Pass Road crosses over the Didcot to Oxford railway line, and includes on/off slip roads to and from Old Abingdon Road for eastbound traffic as well as on/off slip roads to and from Kennington Road for westbound traffic

The full length considered in this TA is subject to the national speed limit.



### **The A4144 Abingdon Road from the access to Hinksey Park in the north to A423 / A4144 Kennington Roundabout in the south**

The A4144 Abingdon Road is one of the major thoroughfares towards Oxford city centre. It connects the A423 Southern and Eastern By-Pass Roads in the south and is the principal access route to the New Hinksey area of Oxford. The A4144 Abingdon Road has a junction with Weirs Lane which provides a link to the Iffley area of the city.

The A4144 Abingdon Road has many junctions with the residential side streets that make up New Hinksey. North of A423 / A423 Kennington Roundabout is the Redbridge P&R site. The principal entry point into the site is from A4144 Abingdon Road whilst the exit point is onto Old Abingdon Road.

From Redbridge P&R site to Canning Crescent, a northbound bus lane is present but terminates at this point. A southbound filter lane for buses is located near the Redbridge P&R site.

The road is a single carriageway with double yellow line and no waiting parking controls for most of its length. A section of on-road cycleway is also present although there are off-road sections at certain locations such as within the vicinity of the Redbridge P&R site.

The carriageway is subject to a 30mph speed limit.

### **Old Abingdon Road between A423 Southern By-Pass Road and A4144 Abingdon Road**

Old Abingdon Road connects the A423 Southern By-Pass Road with the A4144 Abingdon Road, and includes a junction with Kennington Road. There is a mix of land uses along the road including residential, a traveller site, a caravan park, a P&R site, retail and a commercial waste depot.

From its north east junction in a southerly direction, the single carriageway comprises:

- A signalised junction with A4144 Abingdon Road with controlled crossing points. The junction also acts a principal route from the Redbridge P&R site, which has its main exit onto Old Abingdon Road close to this junction.
- An eastbound bus lane near A4144 Abingdon Road including a designated turning lane at Bertie Place.
- No waiting at any time along both sides of the carriageway eastbound from the railway bridge.

The section of Old Abingdon Road to the west of the railway bridge is subject to the national speed limit while the eastern most section has a 30mph speed limit.

Footways are provided along both sides of the carriageway over much of its length.

### **Kennington Road from its junction with Old Abingdon Road in the north to its junction with Upper Road in the south**

Kennington Road is the principal road through the village of Kennington. The road provides a link to Radley and the north eastern parts of Abingdon.

60m north of Upper Road lies a two-way single carriageway that connects Kennington Road with the A423 Southern By-Pass Road

Kennington Road is a single carriageway with a straight alignment and a footway located on the east side. As the road enters the village, the speed limit reduces to 30 mph reinforced by additional road markings and signage. A mini roundabout is present at the junction with Upper Road.



### 3.2.2 Junctions

#### **A34 / A420 Botley Interchange**

This is a major interchange on the A34 road that provides access towards Oxford city centre via the A420 road (West Way and Botley Road).

The grade-separated interchange has a signalised gyratory. Each of the slip roads onto the A34 are single-lane while both off-slips have two lanes. The A420, which forms the east and west arms of the junction, has 2-lanes in both directions except for the exit lane on the eastern arm where there is a third lane allocated for traffic travelling towards the Seacourt P&R site. The junction between A420 and West Way, approx. 300m south west of Botley Interchange, is signalised allowing traffic to turn right from the A420 towards Botley or left towards Oxford city centre.

A toucan crossing on the A420 west arm of the junction links a pedestrian/cycle path on both sides of the carriageway. The path runs from the B4044 to the south along the east side of Botley Primary School before joining the on-slip from the A34. After crossing the A420, the path continues northwards along the A34 off-slip before deviating away further north. There are no dedicated pedestrian or cycle facilities elsewhere across the junction. There are uncontrolled pedestrian crossing facilities with refuges across the A420 and West Way at the A420/West Way junction.

#### **A34 South Hinksey Interchange**

The A34 South Hinksey Interchange is a small interchange that serves the village of South Hinksey. The interchange has both northbound and southbound on/off slips on the A34 and is linked by a single overbridge. On the east side, the interchange has a roundabout arrangement that connects to Parker Road. The merge and diverge lengths of this junction with the A34 have been identified as potential issues during construction. The southbound on slip has a merge length of 90m while the northbound on slip has a merge length of 95m. Diverge lengths are 145m southbound and 95m northbound respectively.

Pedestrian and cyclist provision is limited to a footpath along the south east side of the overbridge and the east side of the roundabout.

#### **A34 / A423 Hinksey Hill Interchange**

This is a major interchange on the A34 which connects with the A423 and major employment and residential areas of eastern and southern Oxford (with further connections to the A40 and the M40). The interchange also connects to the A4183 allowing traffic an alternative route between Oxford and Abingdon.

The grade separated interchange has a signalised gyratory. Each of the slip roads on and off the A34 has two lanes with a similar arrangement for the A423 Southern Bypass arm. On the Hinksey Hill arm there are two entry lanes whereas one exit lane is present.

There are pedestrian facilities across the interchange which include footpaths along both sides of the A423 Southern Bypass Road, over the A34 on both sides of the interchange, and along the south side of Hinksey Hill. The networks of paths are linked by five uncontrolled crossing points i.e. across Hinksey Hill and across both A34 on-slip roads and off-slip roads. There are no crossing facilities on the east arm of the junction.

It should be noted the local highway authority and NH have plans to improve capacity at this junction. The plans are designed to reduce pressure along a congested section of the A34 as well as unlocking capacity for express bus services. At present, these proposals are on hold and not likely to coincide with the construction of the Scheme.

### **A423 / A4144 Kennington Roundabout**

This is a three-arm signalised 'through-about' junction (also referred to as 'hamburgers' or 'fly-through roundabouts') with two through-lanes for east-bound traffic on A423 Southern By-Pass Road accessing A423 Eastern By-Pass Road. The 'through-about' takes the major through traffic movements from the A423 off the circulatory carriageway and routes them directly across the central island of the roundabout. Traffic signal control is used at some conflict points around the junction to ensure efficient and safe operation of this unusual arrangement.

The A423 Southern By-Pass Road (west arm) approach consists of 3 lanes; one dedicated to left-turning traffic onto the A4144 Abingdon Road and two dedicated to traffic accessing the A423 Eastern By-Pass Road (south-east arm) via the through-road as described above.

There are two lanes on the north-westbound approach to the junction from the A423 Eastern By-Pass Road, which extends to four lanes at the junction; two dedicated to left-turning traffic accessing the A423 Southern By-Pass Road and two dedicated to straight ahead traffic travelling towards the A4144 Abingdon Road. These lanes are separated by a splitter island.

The southbound approach arm on the A4144 Abingdon Road has three lanes; one dedicated to straight-ahead traffic accessing the A423 Eastern By-Pass Road and one for vehicles accessing the A423 Southern By-Pass Road with the middle lane used by traffic destined for either arm.

The provision of pedestrian and cycle facilities is more difficult than at a signalised roundabout as the central island is severed by a major traffic flow. In this instance, pedestrian and cycle facilities have been provided across the junction by means of subways beneath the circulatory carriageway linking paths along all three arms.

### **A4144 Abingdon Road and Old Abingdon Road**

This is a signalised three arm junction with controlled pedestrian crossings across Old Abingdon Road and A4144 Abingdon Road (south arm).

The Old Abingdon Road approach consists of two lanes; one for left-turning traffic and one from right-turning traffic onto the A4144. There is also an advance stop line for use by cyclists. The signalised pedestrian crossing across Old Abingdon Road has a pedestrian refuge splitting opposing traffic flows.

The north arm of the A4144 consists of two lanes for southbound traffic on approach to the junction and a single lane for traffic travelling north. One of the southbound lanes is dedicated to straight ahead traffic while the other is for right-turning traffic onto Old Abingdon Road. There is also an advance stop line for cyclists. On the southern arm of the junction, there are two lanes for northbound traffic with the outside lane being a dedicated bus lane. The south-bound lane splits into two lanes immediately south of the junction with the inside lane being a dedicated bus lane.

There is a signalised pedestrian crossing across the southern arm of the junction with two pedestrian refuges.

### **Old Abingdon Road with Kennington Road**

This is an uncontrolled priority junction with traffic on Old Abingdon Road having priority over vehicles on Kennington Road. There are off-road pedestrian and cycle facilities at and on-approach to the junction from the northeast. While the footpath continues south from the junction along Kennington Road, cyclists are prohibited from using the path from this point and are required to use the carriageway. The footpath along the north side of Old Abingdon Road continues onto the A423 to the southwest.

### A423 Southern Bypass Road and Old Abingdon Road

This is a limited movement priority-controlled junction allowing for left turns only. It connects the A423 Southern By-Pass Road and Old Abingdon Road providing access to facilities along the later. It has limited pedestrian provision along its northern and eastern quadrant in the form of a narrow footway. Traffic entering and exiting the A423 are provided with short deceleration and acceleration lanes to ensure the safe diverge and merge of traffic

## 3.3 Existing Pedestrian, Cycling and Equestrian Networks

### 3.3.1 Rights of way and pedestrian links

There are several rights of way within the Scheme area or adjacent to it, as shown in Figure 3.2.

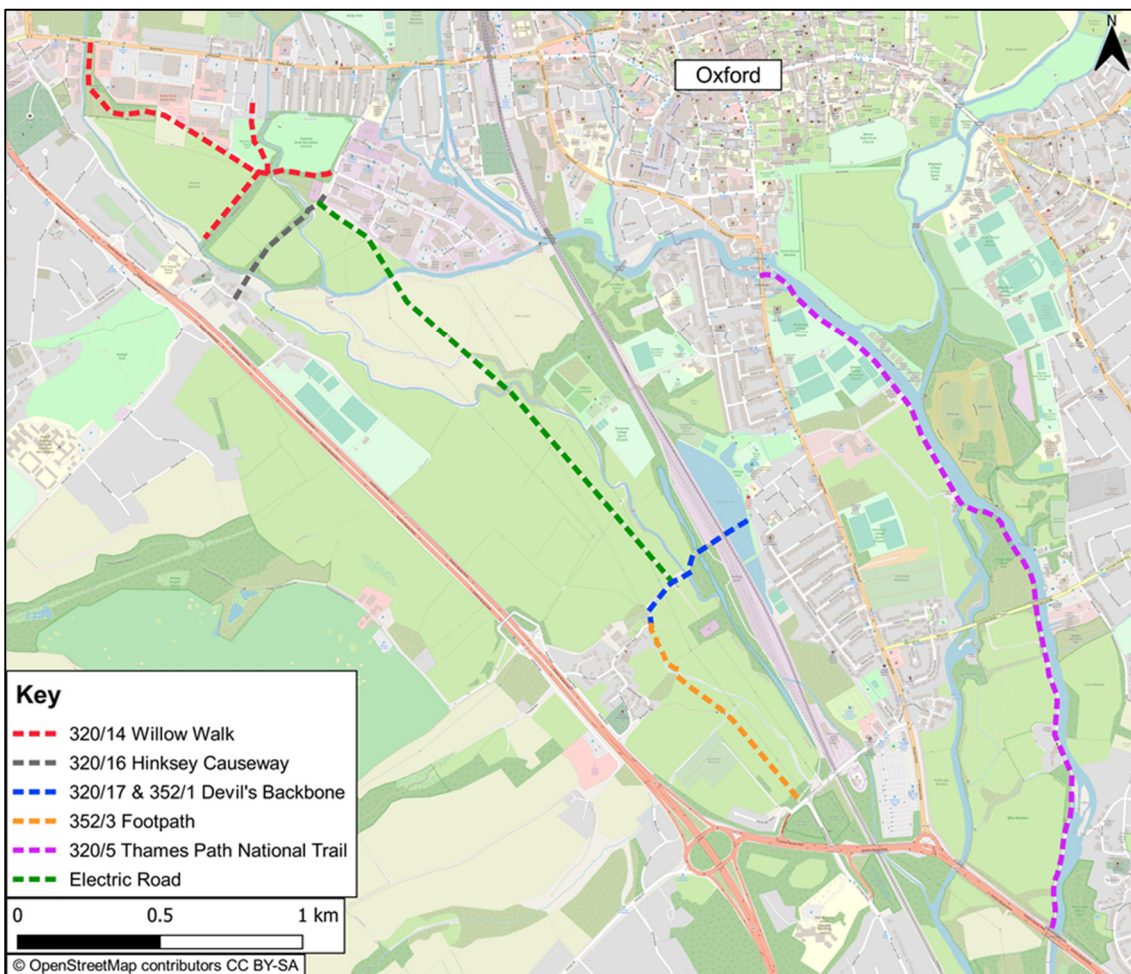


Figure 3.2: Pedestrian, Cycling and Equestrian Networks

The rights of way are:

- 320/14 Willow Walk forms a bridleway that runs south of the A420 Botley Road/West Way corridor. Accessible also for cyclists and equestrians, it links the junction of Ferry Hinksey Road and Osney Mead Road in the east to North Hinksey Lane in the west. The bridleway has a branch that connects to Marlborough Court, Duke Street and Botley Road.
- 320/16 Hinksey Causeway is a footpath to the immediate south east of Willow Walk and links Ferry Hinksey Road in the north east to North Hinksey in the south west.

- 320/17 and 352/1 Devils Backbone is a footpath that runs from the suburb of New Hinksey in the north east across a watercourse and the Didcot to Oxford railway line to the village of South Hinksey in the south west.
- 352/3 is a footpath that links South Hinksey to Old Abingdon Road.
- 320/5 is a footpath that runs alongside the River Thames from A4144 Abingdon Road bridge in the north to south of the A423 Eastern By-Pass Road.

In addition to above, it should be noted that the 'electric road' which runs from South Hinksey to the Osney Mead Industrial Estate, although not a right of way, provides informal access. Elsewhere, there is a comprehensive footway network, reflecting the urban area of Oxford, with a mix of controlled and uncontrolled crossing points at key junctions and along main links.

### 3.3.2 Cycling links

There are several cycling links as follows:

- National Cycle Route (NCR) 5 runs from Oxford city centre in a north-south direction along Marlborough Road and Wytham Street before accessing the A4144 Abingdon Road at its junction with Old Abingdon Road. The NCR5 continues through A423 / A4144 Kennington Roundabout on to the A423 Eastern By-Pass Road before deviating right along the River Thames towards Kennington and Abingdon.
- 320/14 Willow Walk (see above).
- Cycle lanes and tracks along the A420 Botley Road/West Way. This infrastructure links together the railway station, Jericho and Oxford city centre in the east with Botley in the west.
- Cycle lanes and tracks along the A4144 Abingdon Road. This infrastructure is in addition to the NCR5 and provides a segregated cycle route between Oxford city centre and the New Hinksey area, whilst similar cycle infrastructure is provided across the River Thames provided a link towards the Iffley area of the city.
- Cycle tracks (off-road) along the A423 Southern By-Pass Road. Connecting with NCR5, this is a shared use section that links together with Kennington Road.

### 3.3.3 Bridleways

As identified previously, 320/14 Willow Walk which runs to the south of the A420 Botley Road/West Way is a bridleway and accessible to equestrians (as well as walkers and cyclists).

## 3.4 Existing public transport

### 3.4.1 Bus Services

Table 3.1 details existing bus services in the vicinity of the Scheme.

Service	Link	Route	Typical daytime frequency (Mon-Fri)
4/4A/4B/4C	Botley Road/West Way	Abingdon - Wootton - Cumnor - Oxford City Centre	1 per hour
63	Botley Road/West Way	Southmoor - Cumnor - Oxford City Centre	6 per day
S1	Botley Road/West Way	Carterton - Witney - Oxford City Centre	4 per hour
S9	Botley Road/West Way	Wantage - Grove - Oxford City Centre	2 per hour
S6	Botley Road/West Way	Swindon - Faringdon - Oxford City Centre	3 per hour
ST2	Botley Road/West Way	Wytham - Oxford City Centre - John Radcliffe Hospital	1 per hour
U1 BROOKESbus	Botley Road/West Way	Wheatley - Headington - City Centre - Harcourt Hill	4 per hour
35A	A34 Southern Bypass/Kennington Road	Kennington - Botley	4 per school day
16/16A	Abingdon Road	Minchery Farm - Cowley centre - Oxford City Centre	2 per hour
S8/34/AC/NS8	Abingdon Road/Old Abingdon Road	Wantage - Abingdon - Oxford City Centre	1 per hour
35	Abingdon Road/Old Abingdon Road/Kennington	Abingdon - Oxford City Centre - Wolvercote	3 per hour
ST1	Abingdon Road/A34 Southern Bypass	Harwell Campus - Oxford City Centre	2 per hour
X2/NX2	Abingdon Road	Didcot - Abingdon - Oxford City Centre	3 per hour
X13	Abingdon Road	Abingdon - Oxford City Centre - John Radcliffe Hospital	4 per hour
X32	Abingdon Road	Wantage - Didcot - Oxford City Centre - John Radcliffe Hospital	2 per hour
X38/X39/X40	Abingdon Road	Reading/Henley - Wallingford - Oxford City Centre	3 per hour

Table 3.1: Summary of Existing Bus Services (As of November 2020)

### 3.4.2 Park and Ride

The proposed Scheme is near two P&R sites. Access to the Seacourt P&R site is provided off A420 Botley Road, whilst access to the Redbridge P&R site is provided off A4144 Abingdon Road. A summary of the bus services to these P&R sites is provided in Table 3.2.

Service	Site	Route	Typical daytime frequency (Mon-Fri)
300	Redbridge	Redbridge P&R – Oxford City Centre – Peartree P&R	5 per hour
400	Seacourt	Seacourt P&R – Oxford City Centre – Thornhill P&R	4 per hour

Table 3.2: Summary of Existing P&R Services (As of November 2020)



Seacourt P&R has recently had an expansion which increased the number of spaces to 1,389, of which 10 will be designated for disabled users. The site now benefits from a single storey building to provide a waiting area and toilet for users, cycle parking, lighting, CCTV, ticket machines and new pedestrian and cycle access.

Redbridge P&R has 1,412 spaces, of which 19 are for disabled use. Based on entry and exit data of the car park, collected between January 2017 and July 2018, the P&R has an average maximum usage of 57%, which equates to 799 spaces in use. A summary of the data is presented in Appendix C, where it was assumed that the week started with no spaces occupied.

There are plans to develop part of the Redbridge Park and Ride site which may lead to further traffic intensification in this area however the details and the programme for this is unknown.

### 3.4.3 Rail Services

The Didcot to Oxford railway line runs parallel to part of the proposed Scheme. In 2016, Network Rail raised the tracks in the Hinksey area and constructed several culverts beneath the line to overcome closures associated with flooding. Apart from Oxford Station itself, there are no railway stations near the Scheme that will be impacted by the construction works while those work alongside the line are not expected to interfere with services.

### 3.4.4 Collision Data

Collision data has been obtained for the study area for the period 1 January 2012 to 31 August 2017 (see Appendix D). Due to confidentiality requirements set out by OCC, it is not possible to breakdown the collision by possible cause.

The collision and injury data by year and severity for each link are detailed in Table 3.3 and Table 3.4 respectively. In addition, Table 3.4 presents the proportion of total injuries made up by pedestrians and cyclists. For ease of reference, collisions at the Botley Interchange and Hinksey Hill Interchange are combined with the figures for the A34.

Link	Severity	2012	2013	2014	2015	2016	2017	Total
A34	Fatal	0	0	0	0	1	0	1
	Serious	2	2	1	0	2	1	8
	Slight	13	12	16	11	6	6	64
A423 Southern Bypass	Fatal	0	0	0	0	0	0	0
	Serious	0	0	1	0	0	1	2
	Slight	1	1	7	1	1	5	16
A420 Botley Road / West Way	Fatal	0	0	0	0	1	0	1
	Serious	0	1	1	1	2	1	6
	Slight	2	6	9	10	10	9	46
A4144 Abingdon Road	Fatal	0	0	0	0	0	0	0
	Serious	0	0	1	0	2	0	3
	Slight	2	2	6	5	6	5	26
Old Abingdon Road	Fatal	0	0	0	0	0	0	0
	Serious	0	0	0	0	1	0	1
	Slight	0	0	1	1	3	1	6
Kennington Road	Fatal	0	0	0	0	0	0	0
	Serious	0	0	0	0	0	0	0
	Slight	0	0	1	1	1	1	4

Table 3.3: Total Number of Collisions by Severity



Link	Severity	2012	2013	2014	2015	2016	2017	Total	Pedestrians & Cyclists
A34	Fatal	0	0	0	0	1	0	1	0 (0%)
	Serious	2	1	1	0	3	1	8	1 (13%)
	Slight	22	17	22	12	10	9	92	0 (0%)
A423 Southern Bypass	Fatal	0	0	0	0	0	0	0	0 (0%)
	Serious	0	0	1	0	0	1	2	1 (50%)
	Slight	1	2	7	1	2	7	20	0 (0%)
A420 Botley Road / West Way	Fatal	0	0	0	0	1	0	1	0 (0%)
	Serious	0	1	1	1	2	1	6	5 (83%)
	Slight	3	6	12	10	12	10	53	29 (55%)
A4144 Abingdon Road	Fatal	0	0	0	0	0	0	0	0 (0%)
	Serious	0	0	0	0	1	0	1	1 (100%)
	Slight	0	0	1	1	5	1	8	5 (63%)
Old Abingdon Road	Fatal	0	0	0	0	0	0	0	0 (0%)
	Serious	0	0	0	0	1	0	1	1 (100%)
	Slight	0	0	1	1	3	1	6	5 (83%)
Kennington Road	Fatal	0	0	0	0	0	0	0	0 (0%)
	Serious	0	0	0	0	0	0	0	0 (0%)
	Slight	0	0	1	1	1	1	4	2 (50%)

Table 3.4: Total Number of Injuries by Severity including Pedestrians and Cyclists

Table 3.3 and Table 3.4 reveal the following broad trends and clusters:

- A total of two fatalities recorded over the five-year period – one along the A34 and a second on the A420 Botley Road/West Way.
- A higher level of collisions with cyclists and pedestrians on links within the urban area (A420 Botley Road/ West Way, A4144 Abingdon Road, Old Abingdon Road and Kennington Road) compared to strategic and principal links (the A34 and the A423 Southern Bypass).
- The numbers of cyclist incidents reflect that Oxford is currently the second highest area of the UK where people cycle at least five times a week.
- Except for one pedestrian/cyclist incident along each, all collisions on the A34 and the A423 involved motor vehicles only.

### 3.5 Existing Operation of the Highway

As agreed with OCC at the scoping stage of the TA, traffic data has been obtained from three sources for the immediate highway network (permanent counters operated by OCC and NH, and manual classified counts (MCC) counts used to inform the Hinksey Hill Interchange VISSIM model) as follows:

- Location: A420 Botley Road (west of Seacourt P&R); Source: OCC; Data: Average Daily Traffic (ADT) estimated for 2016
- Location: A420 Botley Road (Osney Bridge); Source: OCC; Data: ADT estimated for 2016
- Location: A34 South of Botley; Source: HE; Data: AADT estimated for 2016
- Location: A34 Road to North Hinksey Lane; Source: HE; Data: ADT estimated for 2016
- Location: Hinksey Hill; Source: OCC; Data: Classified Automatic Traffic Count for January 2017
- Location: A34 Hinksey Interchange (northbound and southbound off slip); Source: OCC; Data: Automatic Traffic Count for January 2017

- Location: A423 Southern By-Pass Road (east of junction with Old Abingdon Road); Source: OCC; Data: Automatic Traffic Count for January 2017
- Location: Old Abingdon Road (east of junction with Kennington Road); Source: OCC; Data: Automatic Traffic Count for January 2017
- Location: A4144 Abingdon Road (south of junction with Old Abingdon Road); Source: OCC; Data: Automatic Traffic Count for January 2017

Due to the variety of sources available, only the Average Daily Traffic (ADT) flow can be calculated consistently. The ADT has been calculated as an average of the 24-hour traffic flow across the range of data available.

Figure 3.3 presents locations of the traffic count data. Table 3.5 provides the count ID alongside a summary of the ADT flows at these locations.

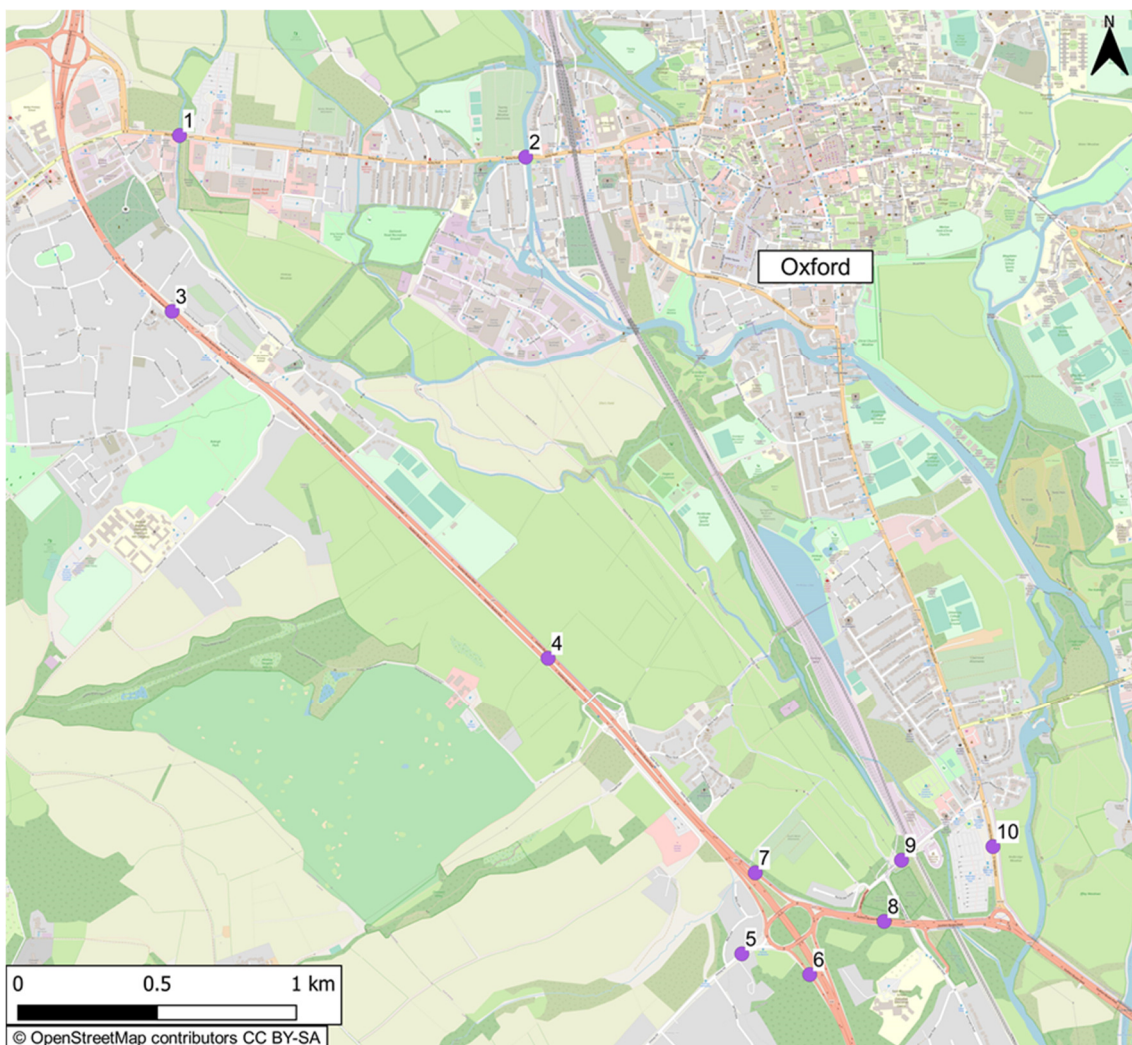


Figure 3.3: Traffic Count Locations

Count ID	Location	Direction	ADT
1	A420 Botley Road (west of Seacourt P&R)	EB/WB Combined	24,400
2	A420 Botley Road (Osney Bridge)	EB/WB Combined	16,500
3	A34 Southern By-Pass Road (south of Botley)	NB/SB Combined	65,746
4	A34 Southern By-Pass Road (north of South Hinksey)	NB/SB Combined	70,256
5	Hinksey Hill	NB/SB Combined	9,064
6	A34 Hinksey Hill Interchange (northbound off-slip road)	NB Off Slip	9,752
7	A34 Hinksey Hill Interchange (southbound off-slip road)	SB Off Slip	10,563
8	A423 Southern By-Pass Road (east of junction with Old Abingdon Road)	EB/WB Combined	45,900
9	Old Abingdon Road (east of junction with Kennington Road)	NB/SB Combined	7,769
10	A4144 Abingdon Road (south of junction with Old Abingdon Road)	NB/SB Combined	14,799

Table 3.5: Summary of Average Daily Traffic Flows

The data from Table 3.5 reveals that:

- The highest traffic flows are along the strategic A34 corridor.
- The A423 Southern By-Pass Road has the second largest flows after the A34 corridor.
- There are similarities in the volume of traffic accessing and leaving Oxford city centre along the A420 Botley Road and A4144 Abingdon Road.
- Land uses along the A420 Botley Road (Seacourt P&R, retail parks) intercept a portion of flows along this western corridor to Oxford city centre).
- The lowest flows were recorded along Old Abingdon Road.

The original traffic count data is provided in Appendix E.

In addition to the above, further information about the characteristics of traffic flows was gathered from classified automatic turning counts, which were undertaken in January 2017 at the following key junctions:

- A4144 Abingdon Road / Weir Lane
- A4144 Abingdon Road / Old Abingdon Road
- Old Abingdon Road / Kennington Road
- A423 / A4144 Kennington Roundabout
- A423 Southern By-Pass Road / Kennington Road

Figure 3.4 to Figure 3.9 show the turning flows at each junction for a 12-hour period between 07:00 to 19:00. The figure in the white box is the total number of vehicles whereas the figure in the blue box is the passenger car unit (PCU) equivalent (the figures in the grey box are a data collection reference number).

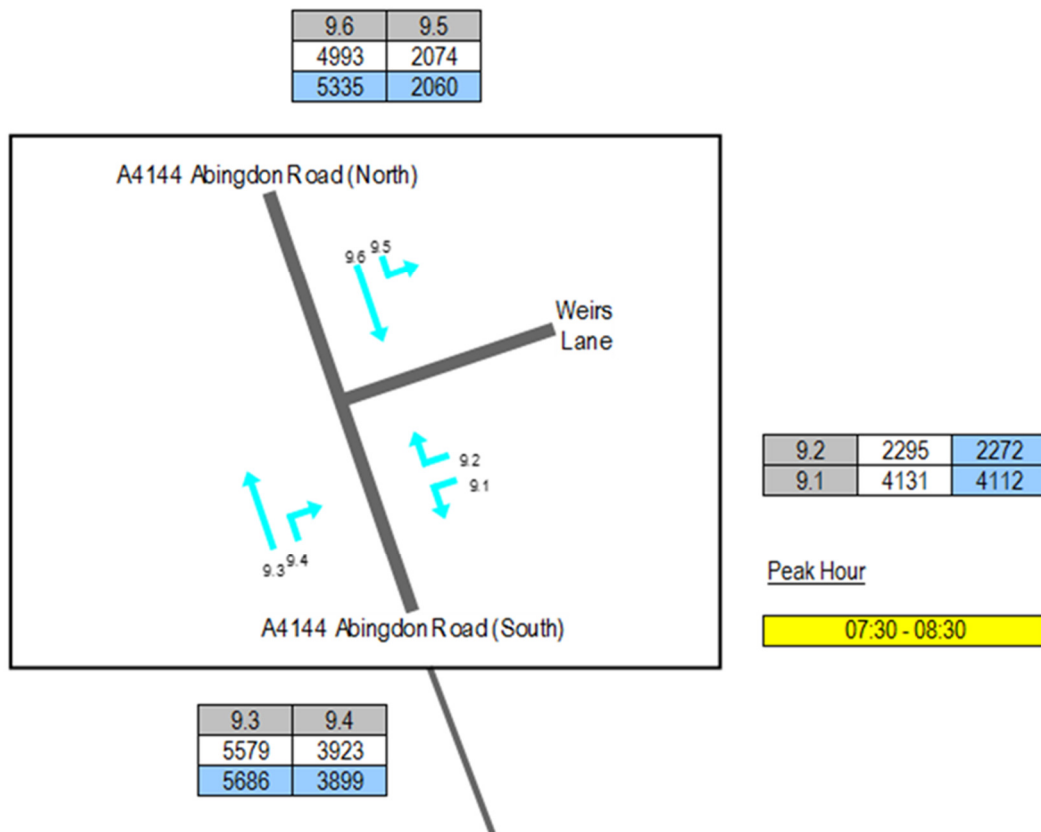


Figure 3.4: Turning Count at A4144 Abingdon Road and Weirs Lane (Key: Reference number; White – Vehicle number; Blue – PCUs)

Figure 3.4 presents the turning movements at the A4144 Abingdon Road and Weirs Lane junction. Turning movements at this junction reflect the intensity of flows along the A4144 Abingdon Road to and from Oxford city centre. Flows into and out of Weirs Lane reflect its role as an important link between the A34 and A423 roads to the Iffley area of the city.

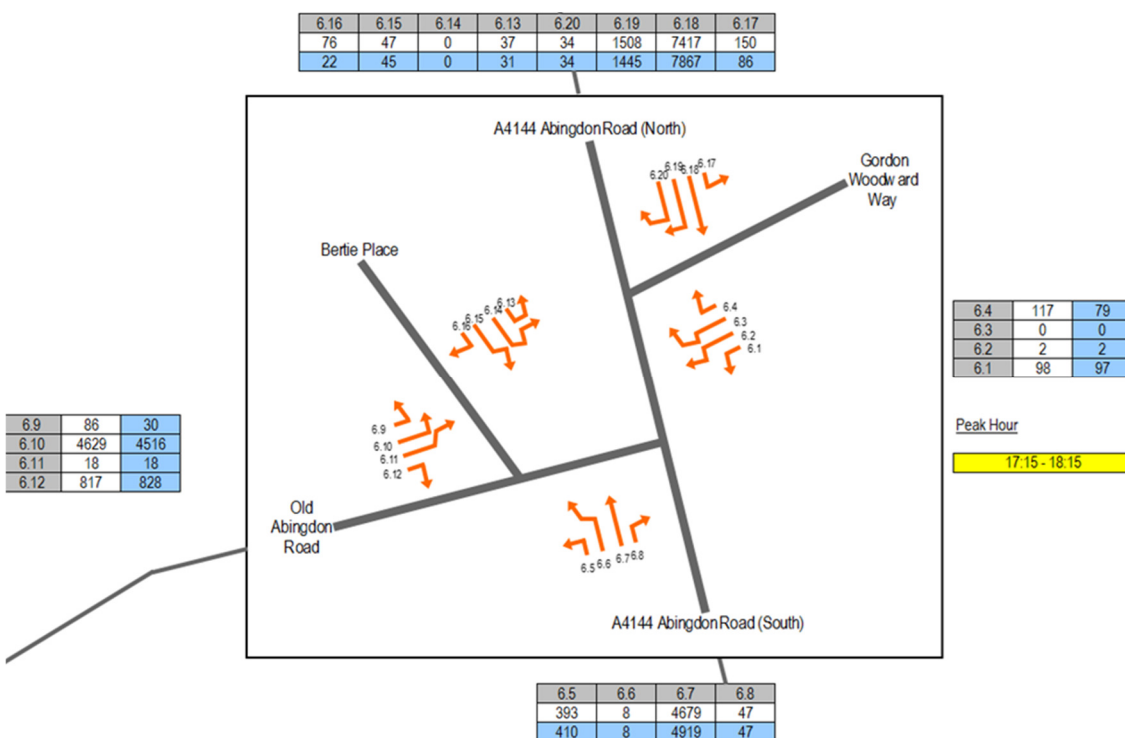


Figure 3.5: Turning Count at A4144 Abingdon Road and Old Abingdon Road (Key: Reference number; White – Vehicle number; Blue – PCUs)

Figure 3.5 presents the turning movements at the junction of A4144 Abingdon Road and Old Abingdon Road. The turning movements at this junction also reflect the flows along the A4144 Abingdon Road. There is also a strong one-way directional movement along Old Abingdon Road with 5,550 vehicular exit movements compared to 1,945 vehicular entry movements.

The difference in vehicular exit and entry movements along Old Abingdon Road may reflect that the link acts as a 'rat run' between the A423 Southern By-Pass Road and A4144 Abingdon Road in a northbound direction. The same movement in a southbound direction is difficult to replicate as all vehicles exiting Old Abingdon Road are forced to travel eastbound towards Kennington Roundabout rather than westbound towards Botley Interchange along the A423 Southern By-Pass Road as it's a dual carriageway. Therefore, it offers little benefit in terms of perceived journey time saving. A second potential explanation is that the exit for the Redbridge P&R site is on Old Abingdon Road, whereas the main entrance to the site is on A4144 Abingdon Road.

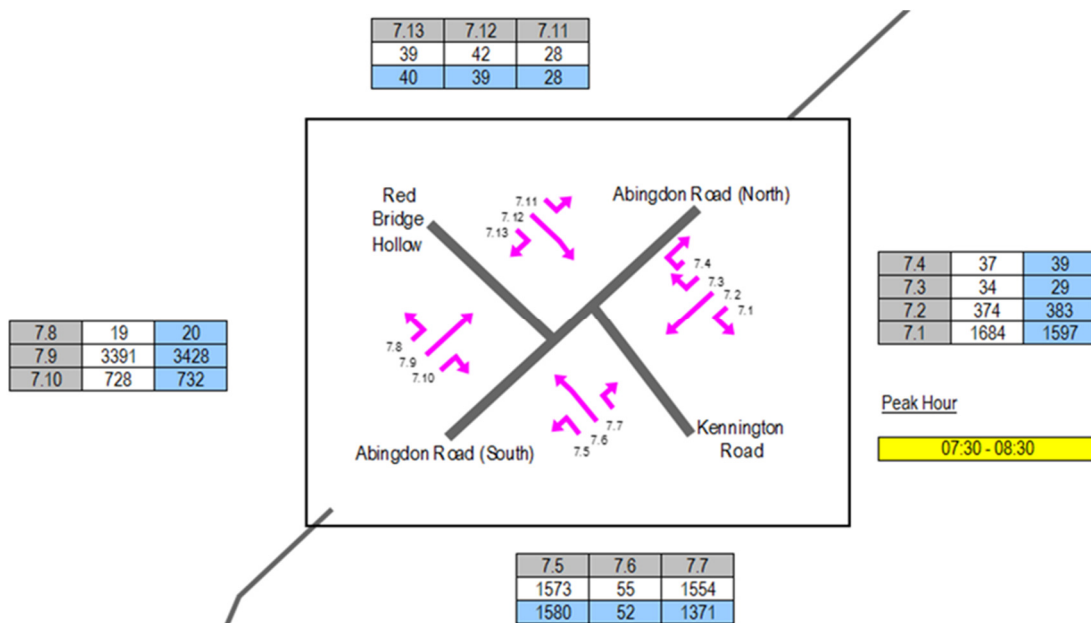


Figure 3.6: Turning Count at Old Abingdon Road and Kennington Road (Key: Reference number; White – Vehicle number; Blue – PCUs)

Figure 3.6 presents the turning movements at the junction between Old Abingdon Road and Kennington Road. As outlined previously, north-eastbound traffic along Old Abingdon Road is higher than the traffic in the opposite direction. Approximately two thirds of the north-eastbound traffic along Old Abingdon Road comes from the A423 Southern By-Pass Road, whilst the remaining traffic comes from the village of Kennington. In the opposite direction, most of the traffic is using Old Abingdon Road to access the village of Kennington. This is reflected by the flows in and out of Kennington Road.



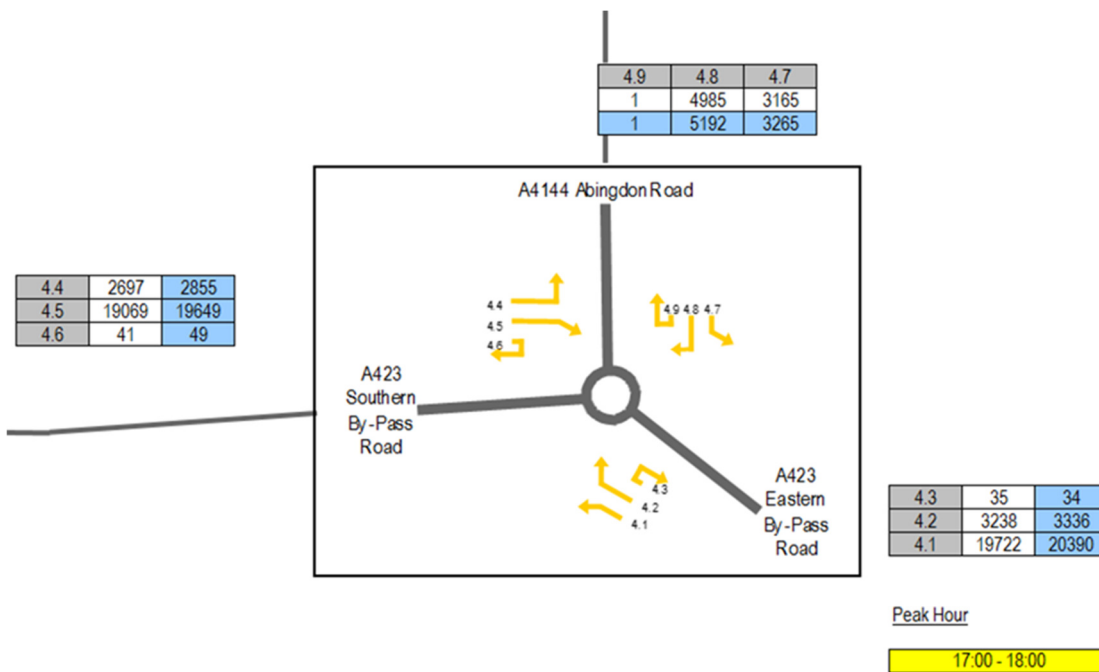


Figure 3.7: Turning Count at Kennington Roundabout (Key: Reference number; White – Vehicle number; Blue – PCUs)

Figure 3.7 presents the turning movements at Kennington Roundabout. This roundabout is a key junction on the south side of Oxford which is reflected in the overall traffic volume. The largest movements occur along the A423 which links on to the A34, the southern and eastern parts of Oxford and the M40. The turning movements out of the A4144 Abingdon Road indicate that 61% of vehicles travel towards the A34.

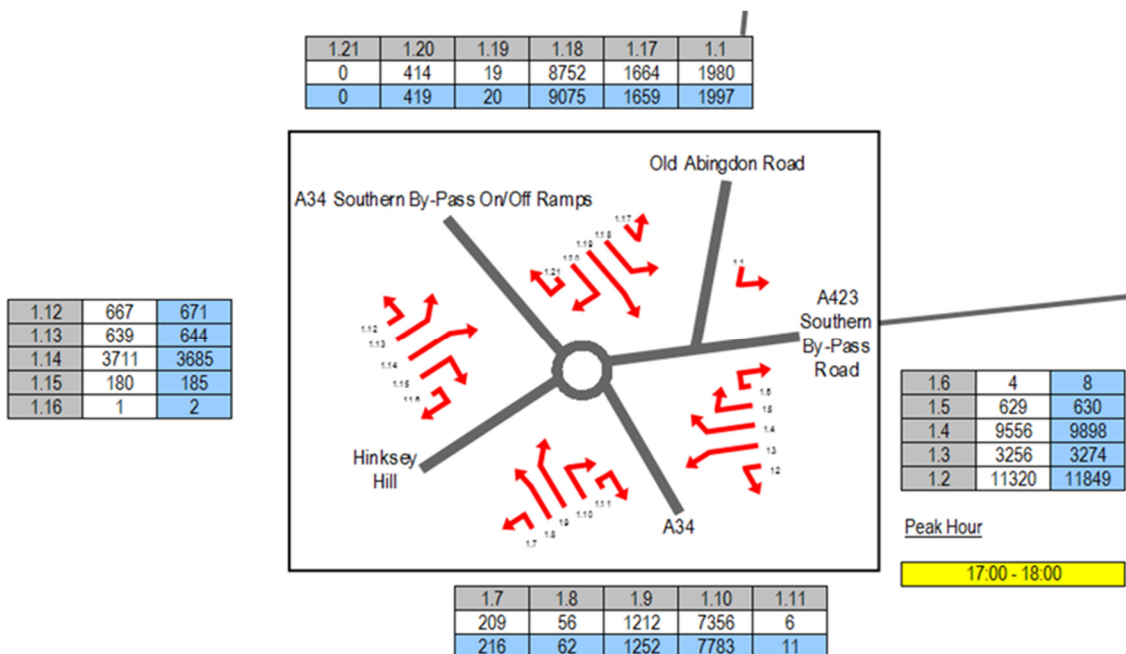


Figure 3.8: Turning Count at A34 Hinksey Hill Interchange (Key: Reference number; White – Vehicle number; Blue – PCUs)

Figure 3.8 presents the turning movements at the Hinksey Hill Interchange. Flows on the off-slip roads between the A34 and the Hinksey Hill Interchange were captured separately by NH and are displayed in Table 3.5.

The main trends observed in Figure 3.8 include:



- The largest turning movement is between the A34 (South) to/from the A423 Southern By-Pass Road.
- The second largest movement occurs between the A34 (North) to/from the A423 Southern By-Pass Road.
- Directional one-way flows from the Hinksey Hill Interchange towards Old Abingdon Road.
- The largest proportion of flows from Hinksey Hill are towards the A423 Southern By-Pass Road.

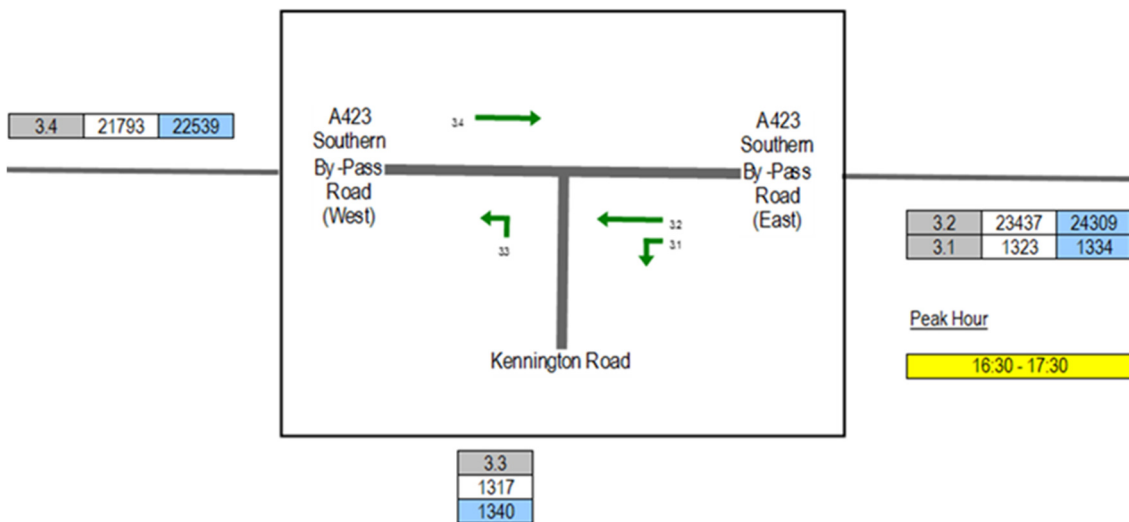


Figure 3.9: Turning Count at A423 Southern Bypass and Kennington Road (Key: Reference number; White – Vehicle number; Blue – PCUs)

Figure 3.9 presents the turning movements at the junction of the A423 Southern By-Pass Road and Kennington Road. The count data indicates the flows in both directions are similar and very low. This suggests it provides only a local access route to and from the village of Kennington.

### 3.6 Summary

This chapter reviewed the baseline transport network and its conditions. The main transport related conclusions include:

- The higher traffic flows along the A34 reflect its strategic nature in linking the Midlands and the north with the south coast, therefore undertaking the function for which it was designed.
- The A423 Southern and Eastern By-Pass Roads are an important link around Oxford, connecting the A34 with the A40 and M40, and performing the function for which they were designed.
- The A420 Botley Road / West Way and A4144 Abingdon Road are major corridors providing access into and out of Oxford city centre, as well as acting as major bus routes.
- Old Abingdon Road is a local road that links Kennington Road with the A4144 Abingdon Road but is often used as an eastbound 'rat run' between the A423 Southern By-Pass Road and A4144 Abingdon Road to avoid the A423/A4144 Kennington Roundabout.
- In terms of collision data, there is a high proportion of cyclist and pedestrian related collisions on the local highway network. This partially reflects a higher level of cycle use in Oxford.
- The Scheme is dissected by a network of footpaths and cycleways, which are likely to be impacted during construction works.

## 4. Scheme Proposals

### 4.1 Background

The EA and its partners are working together to develop a flood alleviation scheme to reduce flood risk to properties, transport links and infrastructure in Oxford. The partners include OCC, Oxford City Council, Vale of White Horse District Council, Oxfordshire Local Enterprise Partnership, Thames Water, University of Oxford, Oxford Flood Alliance and Thames Regional Flood and Coastal Committee.

The OFAS essentially aims to:

- Reduce flood damages to homes and businesses currently at risk in Oxford.
- Reduce flood impacts on transport infrastructure and utilities in Oxford, particularly to A420 Botley Road and A4144 Abingdon Road, the railway line and the sewerage system.
- Safeguard Oxford's reputation as a thriving centre of commerce that is open for business.
- Create and maintain new recreational amenities, wildlife habitat, and naturalised watercourses accessible from the centre of Oxford.

The Scheme will involve a two-stage channel. Over much of the channel length there will be a new first stage channel, which will replace some of the existing watercourses and ditches and will flow all year. When river levels are normal, or lower than normal, the second stage of the channel will be dry. When river levels are sufficiently high, water will flow through the second stage channel.

There will also be a series of low-level flood embankments and walls which will act to divert water into nearby watercourses. This will create more space for flood water and redirect it away from properties currently at risk of flooding.

### 4.2 Summary of Construction Works

Appendix F shows the extent of the planned construction works. Overall, it is envisaged that approximately 360,000m<sup>3</sup> of topsoil, alluvium, sand and gravel will be removed from site. However, some of the material excavated will be reused within the Scheme, for example to construct the flood embankments at A420 Botley Road, South Hinksey and New Hinksey, and to provide environmental features within the new channel. It is proposed much of the material to be removed will be done so by HGV along the A34 to local restoration sites that have planning permission for environmental and conservation improvements.

During construction, there will be a need to close some sections of public footpaths, which will be temporarily diverted where possible. These paths will be re-instated after works with improvements to surfaces, fencing, new vegetation and signage.

Overall, the Scheme has been split into four areas as follows:

- Area 1 - North of Botley Road/West Way
- Area 2 - Botley Road/West Way to Willow Walk
- Area 3 - Willow Walk to Devil's Backbone
- Area 4 - Devil's Backbone to confluence with the River Thames

The Scheme will include an extensive internal haul road through the main body of the site (Areas 2, 3 and part of 4). Once complete this haul road will allow any site traffic wishing to access the highway network from these works areas to do so via the Area 3 entrance/exit providing straightforward access to the A34. This arrangement will also act to limit the volume of vehicles travelling along locally sensitive highway routes such as A420 Botley Road and A4144 Abingdon Road.

#### 4.2.1 Area 1 - North of Botley Road/West Way

Drawing IMSE500177-CH2-B00-A1-DR-C-1010 in Appendix F shows the proposed works north of A420 Botley Road/West Way. The main works involve the construction of the first stage channel with raised flood embankments and floodgates. One compound area will be required and will be accessed via the Seacourt P&R site on A420 Botley Road.

#### 4.2.2 Area 2 - Botley Road/West Way to Willow Walk

Drawing IMSE500177-CH2-B00-A1-DR-C-2010 in Appendix F shows the proposed works south of A420 Botley Road/West Way. The main works revolve around the construction of the additional channel and raised defences at Osney Island. The main transport related elements include the construction of a new Westway foot and cycle bridge and a new bridge at Willow Walk. Two small compounds are proposed south of A420 corridor, one near the existing Wickes store and the other at Buxton Court. Of the construction traffic generated by Area 2 and the Oatlands area of Area 3 it has been assumed for a worst-case scenario for traffic assessment that, 50% will access and egress the site using the A420 Botley Road whilst the remaining 50% will access and egress the site using Parker Road in South Hinksey village. In reality it is anticipated that the majority all vehicles from Area 2 will utilise the access via Parker Road.

#### 4.2.3 Area 3 - Willow Walk to Devil's Backbone

Drawings IMSE500177-CH2-B00-A1-DR-C-3010 and IMSE500177-CH2-B00-A3-DR-PL-3011 in Appendix F shows the proposed works between Willow Walk and Devil's Backbone. Major works include the two channels, a new flow control structure at Eastwyke Ditch and new flood defences at South Hinksey. The main transport related elements include the replacement of four existing bridges at New Hinksey Causeway, near The Fishes public house, for the National Grid and the Devil's Backbone. The Devil's Backbone will be built with increased parapets to enable the path to be upgraded to a cycleway in future. A proposed compound at South Hinksey with a temporary storage area to serve Areas 2, 3 and part of 4 will be included with access taken from Parker Road.

#### 4.2.4 Area 4 - Devil's Backbone to confluence with the River Thames

Drawings IMSE500177-CH2-B00-A1-DR-C-4010, IMSE500177-CH2-B00-A4-DR-PL-4011 and IMSE500177-CH2-B00-A1-DR-C-4015 in Appendix F show the proposed works in these areas. The works include raised defences along the River Thames east of A4144 Abingdon Road and new bridges underneath Old Abingdon Road and Kennington Road.

As discussed earlier, the original proposals involved temporarily closing Old Abingdon Road and Kennington Road at different times to enable bridge works under the carriageways. Following the absolute concerns expressed by NH regarding the potential of additional queuing at the A34 Hinksey Hill Interchange and along the A34 dual carriageway due to the closure of Old Abingdon Road and Kennington Road, a new proposal has been developed to construct a temporary carriageway to enable the culvert works to be undertaken without having a significant impact on existing traffic movements.

Drawing IMSE500177-CH2-BAR-A4D-DR-C-0001 in Appendix F presents the proposed layout of the temporary carriageway which will be utilised in two phases:

- Phase 1 – The construction of temporary carriageway from Old Abingdon Road, south west of its junction with Redbridge Hollow, to Kennington Road, will enable the closure of the northern most section of Kennington Road, in order to undertake Scheme works on this section of Kennington Road including the construction of a new culvert. A temporary shared use footway and cycleway will be constructed on the east side of Kennington Road in order to divert non-motorised users around the construction works.
- Phase 2 – The temporary carriageway will tie in with the completed works on the northern most section of Kennington Road with the route joining Old Abingdon Road south west of the railway

bridge. This will enable the closure of Old Abingdon Road between Red Bridge Hollow and Kennington Road, in order to undertaken Scheme works including the construction of a new culvert. A temporary shared use footway and cycleway will be constructed on the north side of Old Abingdon Road in order to divert non-motorised users around the construction works.

During construction works a lower speed limit of 20mph will be imposed on the temporary section of carriageway, to ensure the safety of construction workers and road users.

This phased construction and the temporary carriageway will ensure that a two-way flow of traffic along Old Abingdon Road and Kennington Road is maintained at all times.

Four compounds are proposed for Area 4:

- East of the University College Boathouse.
- North of Old Abingdon Road, west of the Didcot to Oxford Railway Line located within the proposed temporary working area.
- Redbridge P&R site. This will entail a temporary displacement of 306 parking spaces and the permanent loss of 21 spaces.
- Kendall Copse (part of the temporary working area for the temporary carriageway)

### 4.3 Programme of Works

Table 4.1 shows the provisional programme of the main works. This is based on an indicative programme and summarises the main elements of the works, it should be noted the commencement of Area 4 to the south of Old Abingdon Road is subject to the delivery of the A423 Kennington Rail Bridge replacement by Oxfordshire County Council to ensure that we do not put any unnecessary pressure on the local road network.

Area	2024	2025	2026	2027	2028	2029
Area 1 Botley Road						
Area 2 Botley Road to Willow Walk						
Area 3 Willow Walk to South Hinksey						
Area 4 Devils Backbone to Old Abingdon Road						
Area 4 South of Old Abingdon Road						

Table 4.1: Provisional Construction Programme

The main transport related components of the works are scheduled to take place as follows:

- Construction of access roads – April 2024 to July 2024
- Construction of compound areas – March 2024 to July 2024
- Footpath diversions – April 2024 onwards
- Construction of minor access points – April 2024 to scheme completion as required

### 4.4 Summary of Construction Access Points

Due to the large area covered by the works, a significant number of accesses will be required; most of which will be small and temporary in nature. A total of 23 access points will be needed over the four works areas; these being:

**Area 1:**

- Existing gated field access positioned next to the southbound lane of the A420 link road between Botley Interchange and A420 / B4044 West Way.
- Existing minor access to a small parking area positioned next to the eastbound lane of A420 West Way, approx. 50m east of the A420 / B4044 West Way junction.
- New access to be provided next to the eastbound lane of A420 West Way opposite Minns Business Park.
- Shared use of the Seacourt P&R site main access. Works entrance/exit to extend from the car park entrance/exit.
- Emergency only access through the P&R Emergency Access point north of A420 Botley Road between Seacourt P&R and dwellings.
- Emergency only access via field gate north of Bullstake Close at 90-degree bend in the street.
- New access at northern terminus of Helen Road.
- New access at northern terminus of Henry Road.

**Area 2:**

- South of A420 Botley Road directly from the southern end of Minns Business Park access road.
- South of A420 Botley Road via existing grassed pedestrian path between Minns Business Park and Wickes retail store.
- Directly along Willow Walk from point of closure east of North Hinksey Lane.

**Area 3:**

- Continued use of existing field access on eastern side of Parker Road 30m south of the A34 slip road roundabout.

**Area 4:**

- Direct access along Old Abingdon Road to working areas for new bridges from point of closure after installation of temporary carriageway.
- North side of Old Abingdon Road at or directly adjacent to the existing Crest Limited Oxford depot.
- Northern side of Old Abingdon Road east of Hinksey Stream.
- Southern side of Old Abingdon Road at existing car park access (exit only).
- East of Kennington Road using existing field gate between Old Abingdon Road and the A423 Southern By-Pass Road bridge section.
- West of Kennington Road using existing field gate between Old Abingdon Road and the A423 Southern By-Pass Road bridge section.
- East of Kennington Road using existing field gate at mini roundabout with Upper Road.
- West of A4144 Abingdon Road, south of Redbridge P&R access (entrance only).
- Cycle track east side of A4144 Abingdon Road using existing access opposite junction with Old Abingdon Road (limited one off use to access river at bridge over Weirs Mill Stream).
- Upgraded path off eastern side of A4144 Abingdon Road opposite Hinksey Park (Eastwyke Lane).
- Track to railway off Whitehouse Road.

Of the accesses outlined above, the TA addresses the three which form the major highway interfaces for the bulk of construction traffic, as agreed with OCC. These are:

- Shared use of the Seacourt P&R site main access.
- Continued use of existing field access on the eastern side of Parker Road 30m south of the A34 slip road roundabout.
- Upgraded path off eastern side of A4144 Abingdon Road opposite Hinksey Park (Eastwyke Lane).

The TA also addresses the impact the construction works will have on the capacities of Seacourt and Redbridge P&R sites.

The remaining accesses will be temporary in nature and only used during critical construction periods when access to specific works areas and compounds are required. It is considered that these can be agreed with the local highway authority as the need arises and dealt with as typical construction highway interfaces. Where this is the case, the contractor will consult with OCC and NH as necessary to establish the need and formation of accesses. Further detail in this regard can be found in the outline CTMP and will be expanded upon in its full version, to be agreed prior to the commencement of the construction of the Scheme.

#### **4.5 Area 1 Access: Seacourt Park and Ride**

The main access to works Area 1 to the north of A420 Botley Road will be taken from an existing field entrance off the slip road from the A34 to Botley Road and from within the Seacourt P&R site, as shown on drawing IMSE500177-CH2-B00-A1-DR-C-1010 in Appendix F. As such there will be no direct interface between the access and the public highway. This arrangement will assist in restricting, as far as possible, the number of access points required along A420 Botley Road. In turn, this will limit the disruption to traffic flow along the key link to the Oxford city centre and direct access to many business units, which could be caused through creation of a new access point.

As the access currently hosts large vehicles in the form of service buses, its present arrangement will enable its use by site traffic with little or no alteration. This will also serve to limit the disruption caused by the construction works. As a result, no bespoke drawings of this access have been provided at this stage.

As construction traffic will share the access with bus services, HGV movements will be carefully controlled so as not to interfere with public transport efficiency and punctuality. However, should any conflicts arise, bus services will always take priority over site traffic.

HGV movements will be broadly confined to the west of the P&R site and thus will not conflict with movements of the general public. As no changes are proposed to the access arrangement a Road Safety Audit of this access is not necessary.

Access is also required to the east of the P&R site to construct the flood defences north of A420 Botley Road. The access is expected to result in the temporary loss of 223 number of parking spaces.

#### **4.6 Areas 2 and 3 Access: Parker Road**

While it is assumed that approximately 50% of HGV traffic generated by Area 2 will exit on to A420 Botley Road, the remainder, along with all traffic for Area 3 and the main site compound and office, will use an existing field gate along Parker Road 30m south of the roundabout of the A34 slip roads and Parker Road. This access will be connected to the internal haul road and will thus take a large portion of site traffic from Areas 2, 3 and part of 4.

The access has been used by the OFAS team to enter and exit the site for preparatory works such as surveys. This entrance/exit benefits from providing easy access to the A34 for the distribution of excavated material while avoiding the need for HGV movements through South Hinksey village.



Given the somewhat compact nature of the current access arrangements a vehicle tracking exercise has been undertaken to establish whether the largest vehicles that will regularly attend site can safely and efficiently use the junction. Drawings IMSE500177-CH2-LAT-A4A-VS-PL-0006 and IMSE500177-CH2-LAT-A4A-VS-PL-0007 showing this assessment can be found in Appendix G. The vehicle tracking indicates that to facilitate the access, the existing field gate next to the farm access track off Parker Road needs to be widened slightly to facilitate access to the compound field. The track to Manor Farm will not be used for access to the works.

As the tracking has demonstrated that vehicles can only enter and exit the site in single file access, controls will be in place to ensure conflicts do not arise. In these instances, vehicles will be held within the site compound until such a time where a sufficient window is available to exit onto the public highway.

The drawings in Appendix G also demonstrate that visibility splays of 2.4m by 43m can be achieved from the access. However, for the splays to be acceptable, a temporary reduction in speed limit to 30 mph will be required for the duration of the works. Such a reduction would also assist in improving road safety at the access and reduce the variability of speed of vehicles when comparing through traffic and slowing HGVs. The implementation of this limit will form part of the CTMP and be agreed between the contractor responsible for the works and the Local Highway Authority.

Although only very limited physical changes are proposed to the interface of the access and the public highway, a Stage One Road Safety Audit (RSA) has been undertaken. This, along with the Road Safety Audit Response Report can be found in Appendix H.

On leaving the site vehicles will proceed along Parker Road before joining the A34 and South Hinksey Junction. Due to the potential issues surrounding slow vehicles joining fast moving traffic on the A34 it has been agreed with NH that a reduced speed limit will be enforced during construction of the scheme. A reduction to 40 mph has been discussed with both NH, OCC Highways and Thames Valley Police that all support such a measure and an application for a Temporary Traffic Regulation Order (TTRO) will be submitted.

#### **4.7 Area 4 Access: A4144 Abingdon Road**

The portion of works Area 4 to the north of Old Abingdon Road and Kennington Road will be accessed via a combination of routes depending on the timing within the programme. Initially the works could be accessed via the haul road and the access described in section 4.6 above. Later in the programme which ties in with the completion of the A423 bridge rebuilding works the area will be accessed from the west end of Old Abingdon Road and the proposed temporary carriageway. The area south of Old Abingdon Road will be accessed from a combination of various smaller accesses as works progress.

To install the temporary carriageway and divert a variety of utilities we will access the west side of Kendall Copse from the existing field gate on Kennington Road. This may be used for welfare and storage depending on our construction programme.

The portion of the works located southwest of the Redbridge P&R will be accessed via its car park and a compound will be situated at the southern end of the P&R site. Larger vehicles will use the entrance off Old Abingdon Road and access the compound via a cordoned off route along the northern and western edges of the car park. The reverse route will be used to exit the site. This means cars exiting the P&R will need to merge with the coach park exit. This access is shown in drawing IMSE500177-CH2-B00-A1-DR-C-4011 in Appendix F.

Smaller vehicles will access the site via the main car park entrance off A4144 Abingdon Road. The compound access is contained within the P&R site such that all entry lanes to the P&R will be available and not blocked by construction traffic.

The access routes and compound within the P&R is currently thought to occupy 306 spaces which would be temporarily lost during the construction period at this location.

An additional access point to a remote area of the works alongside the River Thames, east of A4144 Abingdon Road, is also required to construct new flood defences. This is discussed below.

Access to the works and compound east of A4144 Abingdon Road will be taken from A4144 Abingdon Road via the existing route to the University College Boathouse. At the point where the path meets the highway, opposite Hinksey Park, the junction will be significantly upgraded in order to support two-way flow over a short length. This will ensure that vehicles waiting to exit the access do not block incoming vehicles and vice versa, minimising the risk of disruption to general traffic. The type of access control measures suggested at other sites to manage vehicle movements are difficult to be implemented at this location due to the fact the compound is somewhat distant from the access junction. However, it is expected that some form of vehicle and access control will be implemented. To facilitate the access the existing pedestrian refuge opposite Hinksey Park will require relocation to the north. This is shown indicatively on the plan with the precise location to be determined during detailed design. Tactile paving is included across the access to ensure visually impaired pedestrians are aware of the potential for oncoming vehicles.

Drawing IMSE500177-CH2-LAT-A4A-VS-PL-0008 showing the upgraded access junction can be found in Appendix G and a Stage One RSA of the design and accompanying RSA Response Report in Appendix H. Drawing IMSE500177-CH2-LAT-A4A-VS-PL-0008 shows vehicle tracking for both an articulated vehicle and large tipper lorry travelling to and from the south only. This is due to the fact all construction traffic will travel to or from this direction thus avoiding the City centre.

## 5. Methodology and Assessment

### 5.1 Introduction

This chapter outlines the methodology that has been used to assess the transport related impacts of the Scheme. It was agreed at the TA scoping stage that the main impacts of the Scheme will occur during the construction works and thus will be temporary. It was also agreed that capacity modelling of the highway network will not be required.

Transport related impact can be split into two categories, those that occur after the completion of the Scheme and those that arise during construction works. To assess the impact of the construction works, construction related trip generation, location of access points, impact on existing transport users, temporary closures and diversions, and location of compounds and storage are to be considered.

### 5.2 Scoping

Section 1.2 outlines the scoping process that informed this TA and the requirements of the local highway authority. The main requirements include:

- The TA needs to set out routes to be used by larger construction vehicles to access the construction site, whilst also providing any modifications to existing roads or junctions. Details of any traffic management should also be detailed.
- Detail of the construction trip generation including expected arrival and departure times.
- To consider the emerging Hinksey Hill Interchange project, which could impact the Scheme with potential works around Old Abingdon Road.
- The impact on traffic due to the construction of a temporary carriageway between Old Abingdon Road and Kennington Road. The purpose of which is to remove the need for a temporary closure on Old Abingdon Road.

### 5.3 Assessed Impacts

Table 5.1 outlines the impacts that have been assessed within the TA.

Scheme Phase	Mode	Impacts
Post construction	Highway Bus Walking, Cycling and Equestrians	The Scheme itself is unlikely to lead to additional trip generation other than the need for regular servicing and maintenance of the infrastructure. As part of the Scheme, minor improvements to walking, cycling and equestrian provision are proposed.
Construction	Highway	Access routes to construction sites and compounds. Identification of recommended access routes and tracking of HGVs in/out of construction sites and compounds. Additional HGV construction traffic on the highway network. Analysis of the percentage change in HGVs on links for both the start/end of the construction period.
	Bus	On existing routes.
	Walking, Cycling and Equestrians	On existing routes.

Table 5.1: Assessment of Impacts

## 5.4 Baseline Traffic

To assess the level of construction related trips on baseline traffic flows, it is necessary to apply traffic growth figures to existing traffic flows in order to factor them up to represent the years construction will start and end. TEMPro traffic growth figures have been obtained from the National Trip End Model (NTEM) and have been applied to the existing traffic flows detailed in Table 3.5.

Given the construction traffic is likely to impact two of the main road corridors into Oxford as well as the peripheral distributor roads, traffic growth for the Vale of White Horse district rather than the City of Oxford has been applied. It should be noted that the Vale of White Horse traffic growth figures are generally higher than both the City of Oxford and Oxfordshire as a whole.

Growth factors were obtained for the year 2022 and 2025 to represent the start and end of construction, respectively (since this work was undertaken our programme of works has changed however, because of the Covid-19 pandemic effects on traffic figures during the intervening period there is no further reliable data available to update these figures and we do not expect a significant change over this delay period). Table 5.2 outlines the traffic growth figures that have been applied to the baseline traffic flows collected in 2016 and 2017. The NTEM growth figure outputs from TEMPro are presented in Appendix I.

Base Year	Future Year	Factor
2016	2022	1.0918
2016	2025	1.1351
2017	2022	1.0752
2017	2025	1.1178

Table 5.2: Traffic Growth Figures

## 5.5 Construction Trip Generation

The construction works are likely to result in three main types of trip generation:

- Movements by construction workers to and from the site.
- Delivery of plant and equipment.
- Removal and delivery of materials.

### 5.5.1 Construction workers

It is envisaged that a total number of 100 construction workers will be deployed across all sites. Given the phasing of the Scheme and the location of the works and compounds, there will be a shifting of construction staff movements through the duration of the works. To reduce the impact of staff movements on the operation of the highway network, it is proposed that these trips will largely take place at off-peak periods (i.e. not 08:00 to 09:00 and 17:00 to 18:00) and from identified sites by bus in a P&R type operation. The identified sites will include the P&R sites at Seacourt and Redbridge, whilst in addition construction workers will also be collected from public transport locations such as Oxford railway station. Based on site accessibility from public transport locations as well as the combined last leg of the journey, trip generation from construction workers is likely to be somewhat limited.

### 5.5.2 Delivery of plant and equipment

At this stage, it is not possible to quantify precisely the amount of plant and equipment that is required at each construction site. On this basis, plant and equipment related movements are not included in the trip generation calculations. However, the timing and logistics of plant and equipment, such as the timings of deliveries at off-peak periods on the highway network and the delivery of abnormal loads subject to prior consultation and agreement with both the local highway network and NH, are considered in the CTMP in section 7.2. It should also be noted that plant and equipment delivery movements will only form a small part of the overall trip generation and will likely be imperceptible, in terms of network delay to users.

### 5.5.3 Removal and delivery of material

The Materials Management Plan, published in November 2021, calculates approximately 360,000m<sup>3</sup> of material will need to be moved. At all sites, the following material will need to be moved:

- Topsoil
- Made ground
- Landfill
- Alluvium
- Organic rich alluvium/peat
- Sands and gravels
- Firm Oxford Clay

Based on a 440-working day construction period between 2024 and 2027 there would be a need to remove up to 900m<sup>3</sup> per day. With movements restricted to inter peak periods (10:00 to 16:00) and given that a typical three axle HGV can carry 8m<sup>3</sup> of material per load, a total number of 111 HGVs in each direction per day or 19 per hour can be expected. This is based on peak traffic movements which will occur during the earthworks periods which are expected to be between April to October over two calendar years not the whole construction period.

Table 5.3 outlines the number of trips required per day based on estimates from the Early Involvement Contractor VBA. It is assumed that the journeys to and from Area 2 will be split 50/50 between those accessing and egressing via A420 Botley Road and Parker Road in South Hinksey village, to create a worst-case scenario when distributing journey along A420 Botley Road.

Location	% of Overall HGV Trips	Estimated HGV Journeys per Day (access & egress)	Access & Egress (for distribution design)
Area 1 – North of Botley Road	8.2%	16	A420 Botley Rd
Area 2 – Botley Walk to Willow Walk	20.6%	40	A420 Botley Rd (50%, 20 journeys)
			Parker Rd, off the A34 (50%, 20 journeys)
Area 3 – Willow Walk to South Hinksey	36.1%	70	Parker Rd, off the A34
Area 4 (part) – Devil’s Backbone to Old Abingdon Road	12.4%	24	Parker Rd, off the A34
Area 4 (part)- Old Abingdon Road to Munday’s Bridge	15.5%	30	Western end of Old Abingdon Road
Area 4 (part) – Works to existing channels	7.2%	14	A4144 Abingdon Rd

Table 5.3: Construction HGV Movements as provided by contractor

## 5.6 Construction Trip Distribution and Assignment

The average number of HGV movements for Area 3 has been estimated to be 70 per day by the contractor. Using this number and the estimated number of HGV movements per day for the other areas in Table 5.3, the distribution and assignment of HGV trips for removal and delivery of material purposes on the immediate highway network has been calculated. The distribution of HGVs is shown in Figure 5.1 and assignment of HGV trips per day is shown in Figure 5.2.

Whilst Section 4.4 outlines the main accesses for the bulk of construction traffic, Figure 5.1 and Figure 5.2 include a number of the minor access points. With the construction works at the different areas expected to occur concurrently, including the minor access points provides a more accurate analysis of the impact of the HGV trips on the highway network. The access at Redbridge P&R has been excluded from this analysis of HGV trips. The site will be used as a construction compound for the parking of staff and smaller construction vehicles.

It has been assumed that of the HGV traffic heading towards the A34, 80% will come from/head north whereas the other 20% will be from/to the south. This assumption is based on the likely destinations that will be receiving the excavated material for filling operations

Figure 5.1 and Figure 5.2 indicate:

- The bulk of HGV movements will be along the A34 corridor and to a lesser extent along the A423 Southern By-Pass Road.
- One-way HGV daily movements along A420 Botley Road and A4144 Abingdon Road is estimated to be 18 and 7 respectively. Given these movements are being timed at off-peak periods between 10:00 to 16:00, this approximately equates to 3 and 1 movements per hour in each direction.
- HGV daily movements at the South Hinksey field access via Parker Road and South Hinksey Bridge is estimated to be 45 movements in both directions, this approximately equates to 8 per hour in each direction.



Oxford Flood Alleviation Scheme  
Distribution of Construction Traffic

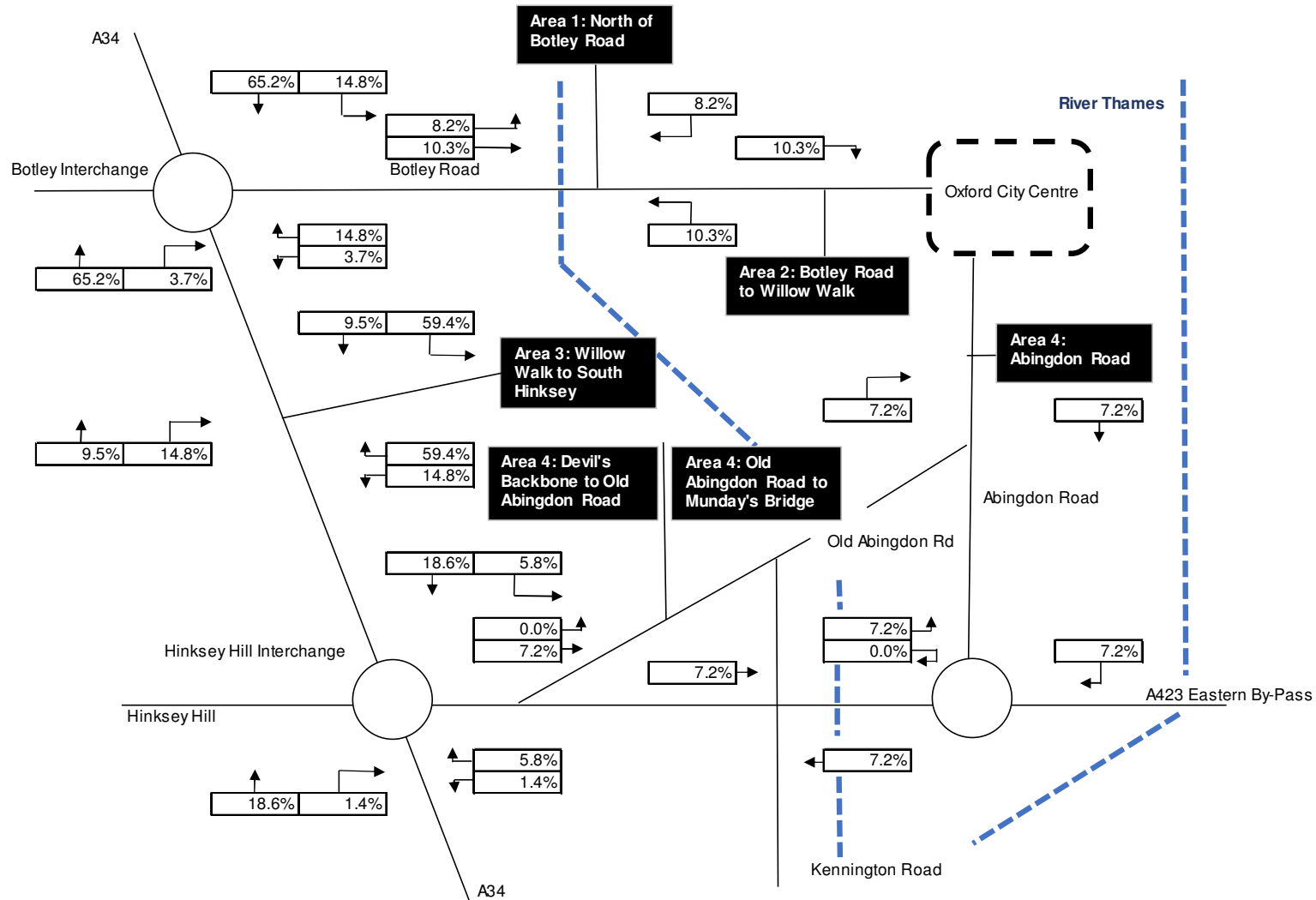


Figure 5.1: Distribution of Construction Traffic

Oxford Flood Alleviation Scheme  
Assignment of Construction Traffic

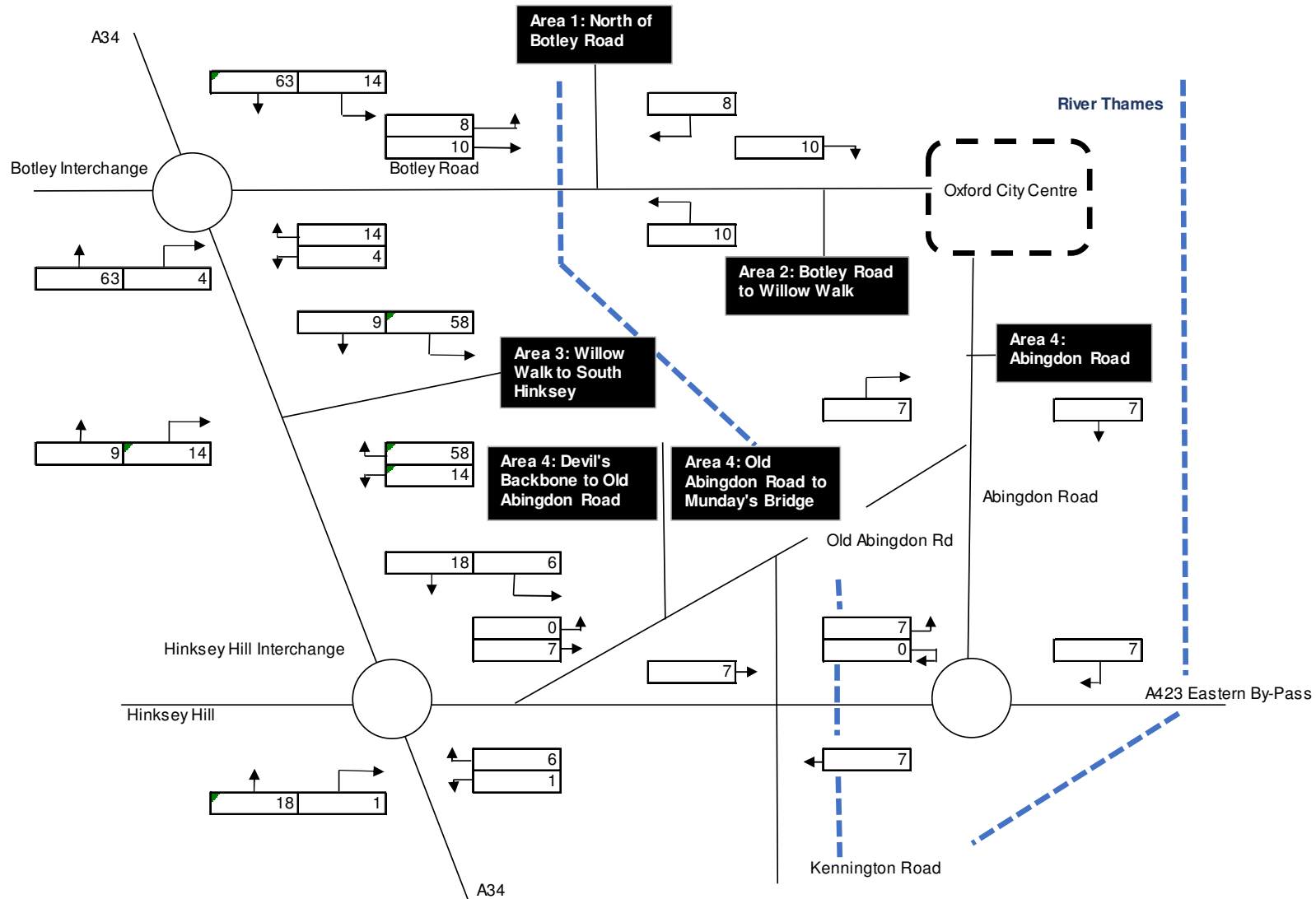


Figure 5.2: Assignment of Construction Traffic (Number of HGVs; rounding may occur)

## 6. Assessment of Impacts

### 6.1 Introduction

This section assesses the following impacts:

- Post Scheme completion including any additional trip generation and improvements to transport infrastructure.
- Short-term, temporary impacts relating to construction works. This includes construction related trip generation, access points, potential for conflict with existing users and a need for diversions.

### 6.2 Post Scheme Completion Impacts

#### 6.2.1 Impacts on the Highway Network

Changes to the highway network are expected to be minimal, other than the replacement of a bridge at Old Abingdon Road and some improved access points for servicing arrangements. The Scheme itself is unlikely to generate additional traffic on the highway network.

#### 6.2.2 Impacts on Local Bus Services

There will be no long-term impacts on any bus services after the completion of works.

#### 6.2.3 Impacts on Redbridge Park and Ride Site

The Scheme will lead to the permanent loss of 21 car park spaces at the Redbridge P&R. This is to allow access to the compound and for maintenance of the channel post construction. The loss of 21 spaces is expected to have negligible impact on the performance of Redbridge P&R car park as there is currently a total of 1,412 spaces and there are usually more than 21 spaces available each day. Further detail on this can be found in the P&R technical note in Appendix C.

#### 6.2.4 Impacts on Seacourt Park and Ride Site

The scheme will not lead to a permanent loss of any parking spaces Seacourt Park and Ride.

#### 6.2.5 Impacts on Pedestrians, Cyclists and Equestrians

The Scheme is likely to lead to minor improvements to provision for non-motorised users. The construction of a new shared use bridge south of the A420 Botley Road/West Way will improve the quality of cycling provision and safety along this corridor, particularly given the number of collisions involving cyclists. Other improvements include replacement of other bridges, which will incorporate enhancements to surfaces, fencing, new vegetation and signage. These improvements are all likely to lead to increased numbers of pedestrians, cyclists and equestrians which may act to alleviate pressure on the highway network.

In addition, is proposed to open up the maintenance track for the scheme as a permissive footpath to enable pedestrians to walk from Willow Walk to the Devil's Backbone and connect with existing paths to Old Abingdon Road. Cyclists will also be permitted to use the section from Osney Mead Industrial Estate to the Devil's Backbone.

## 6.3 Construction Impacts

### 6.3.1 Construction Impacts on the Highway Network

The following impacts will arise from the Scheme construction works on the highway network:

- Changes to access routes and points to construction sites and compounds.
- Additional construction HGV movements on links and junctions.
- Temporary carriageway at Old Abingdon Road.

### 6.3.2 Access Routes and Points to Construction Sites and Compounds

As discussed in earlier sections, the construction of the Scheme will require several highway accesses, many of which will only be required for limited periods of the works programme. While the majority of these access points, and the routes to them, will be dealt with via the CTMP and liaison between the contractor and the local highway authority, it is pertinent that the TA considers access routes to the three main accesses discussed in sections 4.5, 4.6, and 4.7. All these accesses are taken from main highway routes and thus limit potential impacts on the surrounding residents and businesses.

In order to access Area 1, construction traffic will exit the A34 at Botley Interchange, continue along the A420 link road, turn left at the junction on to the A420 West Way/Botley Road corridor, and finally turn left into Seacourt P&R site through its main entrance. Once within the Seacourt P&R site, construction traffic will typically access the site compound via a gate on the western side of the P&R site. The reverse of this route will be taken by traffic exiting the site. Access to and from the site will be controlled so that disruption to P&R traffic is minimised as far as possible.

Access to the works to the east of the Seacourt P&R site will entail in the temporary loss of 223 parking spaces. Given current observed usage levels the impact is considered to be minor. The number of parking spaces and the duration period for which the parking spaces will be temporarily removed is to be limited as far as reasonably possible in order to minimise the impact on the P&R site.

The main access for Areas 2 and 3 will be taken at the existing gated field entrance along Parker Road, 30m south of a small roundabout positioned immediately west of the A34 Southern By-Pass Road near South Hinksey village. In order to access this entrance southbound construction traffic will exit the A34 Southern By-Pass Road via the short slip lanes on the east side of the dual carriageway, whilst northbound construction traffic will exit the A34 Southern By-Pass Road on to South Hinksey Bridge located to the west of the dual carriageway before crossing over the dual carriageway via its overbridge section. Both sets of traffic will continue on to Parker Road via the small roundabout, before turning left at the existing gated field entrance into a site compound. Access into the site compound will be controlled via a simple priority arrangement. HGV traffic will be controlled within the compound at this access to ensure opposing traffic do not restrict movements. As with access to Area 1, the reverse of this route will be used by vehicles leaving the site.

Area 4's main access will be via an upgraded access path from A4144 Abingdon Road opposite Hinksey Park. In order to reach this access, construction traffic will exit the A34 at Hinksey Hill Interchange, travel eastwards along the A423 Southern By-Pass Road, turn left at Kennington Roundabout, travel for approximately 1.5km in a northbound direction along A4144 Abingdon Road before turning right at the access road entrance. Again, the reverse of this route will be followed by those vehicles leaving the site.

A minor access point in Area 4 of note will be via the Redbridge P&R site. Construction traffic will use the P&R site entrance off A4414 Abingdon Road to enter the P&R site. Once in the site, works traffic will follow a cordoned off path on the northern and western edges of the car park to the compound. The reverse of this will form the exit route for all works traffic. Smaller vehicles will also be able to enter the P&R via the main car park entrance and enter the compound once inside. Access to and from the site will be controlled so that disruption to P&R traffic is minimised so far as possible.

Access to and from the proposed compound in Kendall Copse will be via the western end of Old Abingdon Road and the temporary carriageway to the existing field gate location off Kennington Road into the west side of Kendall Copse. This access will form part of the CTMP for the overall works in this location.

### 6.3.3 Construction Impacts on Redbridge Park & Ride Site

The compound and access routes are expected to result in the temporary loss of 306 spaces at the Redbridge P&R site. Work has been undertaken to minimise the number of spaces temporarily lost and the time for which they will be lost will also be minimised as far as reasonably possible. It is acknowledged that this would temporarily reduce the car park capacity by approximately 20%. Given the calculated average maximum usage of 57% (Jan 2017-June 2018), it is considered that the temporary loss of spaces will not have an adverse impact on the performance of Redbridge P&R. Additional analysis has been undertaken on the construction impacts of reducing the available spaces at Redbridge P&R and the shared use of the access to Seacourt P&R, this has been detailed in Appendix J. It should be noted that this technical note suggests the temporary loss of spaces at Redbridge P&R could be 380 which represents a worst case based on a previous design. As the number of spaces to be lost is now less than suggested by this note the impacts of the scheme, which were previously considered acceptable, will be smaller.

### 6.3.4 Construction Impacts on Seacourt Park & Ride Site

The works at Seacourt Park and Ride are expected to result in the temporary loss of 223 spaces. Work has been undertaken to minimise the number of spaces temporarily lost and the time for which they will be lost will also be minimised as far as reasonably possible. It is acknowledged that this would temporarily reduce the car park capacity by approximately 25%. Given that, since the submission of the original application, the car park has increased in size by 595 spaces, significantly more than the 223 being lost the impact is not expected to be material.

### 6.3.5 Additional Construction HGV Movements on Links

Table 6.1 details the impacts arising from Scheme construction related HGVs on the highway network at the beginning of the construction works (originally assumed 2022). It is noted that the actual start of the works has now been delayed until 2024 however due to the effects of the Covid-19 pandemic on traffic figures during the intervening period there is no further reliable data available to update these figures and we do not expect a significant change in the baseline over this period. This assessment is based on the distribution and assignment of construction HGVs as outlined in Section 5.6.

Count ID	Location	Do Nothing Scenario			HGV Construction Traffic (two-way flows)	
		ADT (2016/17)	ADT (2022)	% of HGVs	HGVs (2022)	% of HGVs
1	A420 Botley Rd (west of Seacourt P&R)	24,400	26,640	-	+36	+0.14%
3	A34 Southern By-Pass Rd (south of Botley)	65,746	71,781	9.75%	+134	+0.19%
4	A34 Southern By-Pass Rd (north of South Hinksey)	70,256	76,706	8.56%	+134	+0.17%
6	A34 Hinksey Hill Interchange (northbound off-slip road)	9,752	10,485	11.95%	+1	+0.01%
7	A34 Hinksey Hill Interchange (southbound off-slip road)	10,563	11,357	10.04%	+6	+0.05%
8	A423 Southern By-Pass Rd (east of junction with Old Abingdon Rd)	45,900	49,352	EB: 11.82% WB: 11.36%	+14	+0.03%
9	Old Abingdon Rd (east of junction with Kennington Rd)	7,769	8,353	NB: 6.53% SB: 7.41%	+0	+0.00 %

Count ID	Location	Do Nothing Scenario			HGV Construction Traffic (two-way flows)	
		ADT (2016/17)	ADT (2022)	% of HGVs	HGVs (2022)	% of HGVs
10	A4144 Abingdon Rd (south of junction with Old Abingdon Rd)	14,799	15,912	NB: 11.39% SB: 9.13%	+14	+0.09%

Table 6.1: Additional HGV Movements on Links at Start of Construction (2022/2024)

Table 6.1 reveals that the proportion of HGV movements to and from the Scheme’s construction sites to be very low in comparison to the future estimated ADT flows and the existing proportion of HGVs. The highest percentage of construction related HGVs in comparison to the future estimated ADDT flows is recorded along Old Abingdon Road. However, this is in part due to the relatively low existing ADDT flows along this link.

Table 6.2 details the impacts arising from Scheme construction related HGVs on the highway network at the end of the construction period (assumed 2025). The actual completion of the works has now been delayed until 2029 however due to the effects of the Covid-19 pandemic on traffic figures during the intervening period there is no further reliable data available to update these figures and we do not expect a significant change to predicted traffic growth during the construction period. This is based on the distribution and assignment of construction HGVs as outlined in section 5.6. Table 6.2 shows that the percentage of construction related HGVs at the end of the construction period is slightly lower than the percentage of construction related HGVs at the start of the construction period (Table 6.1), as a result of the continued traffic growth.

Count ID	Location	Do Nothing Scenario			HGV Construction Traffic (two-way flows)	
		ADT (2016/17)	ADT (2025)	% of HGVs	HGVs (2025)	% of HGVs
1	A420 Botley Rd (west of Seacourt P&R)	24,400	27,696	-	+36	+0.13%
3	A34 Southern By-Pass Rd (south of Botley)	65,746	74,628	9.75%	+134	+0.18%
4	A34 Southern By-Pass Rd (north of South Hinksey)	70,256	79,748	8.56%	+134	+0.17%
6	A34 Hinksey Hill Interchange (northbound off-slip road)	9,752	10,901	11.95%	+1	+0.01%
7	A34 Hinksey Hill Interchange (southbound off-slip road)	10,563	11,807	10.04%	+6	+0.05%
8	A423 Southern By-Pass Rd (east of junction with Old Abingdon Rd)	45,900	51,307	EB: 11.82% WB: 11.36%	+14	+0.03%
9	Old Abingdon Rd (east of junction with Kennington Rd)	7,769	8,684	NB: 6.53% SB: 7.41%	+0	+0.00%
10	A4144 Abingdon Rd (south of junction with Old Abingdon Rd)	14,799	16,542	NB: 11.39% SB: 9.13%	+14	+0.08%

Table 6.2: Additional HGV Movements on Links at End of Construction (2025/2029)

It is recognised there is potential for issues with traffic merging with the A34 at South Hinksey Interchange due to the short merge lengths. It is noted that during busy periods delays can be caused for merging traffic. While it is recognised that the merge lengths are below modern standards (set out in DMRB 6.2.1 TD 22/06), the temporary impacts associated with the Scheme are unlikely to justify lengthening works. Also, given that HGV movements will be limited to off peak periods, when traffic flows are lower, additional delays are not expected to be caused by the works.

Nevertheless, the potential for issues is acknowledged and it is proposed to introduce a temporary 40 mph speed limit between Botley Interchange and Hinksey Hill Interchange to assist the merge in operating in a safe and efficient manner. Furthermore, should any either highway authority, OCC or NH, have concerns over this



operation during the works these issues can be raised and resolved via the Transport Management Working Group (TMWG) set out in paragraph 7.2.6 of this TA.

## **6.4 Temporary Carriageway at Old Abingdon Road**

The proposal to construct a temporary carriageway at Old Abingdon Road, as discussed in Section 4.2, is a direct result of the unacceptable impacts that the closure of Old Abingdon Road and Kennington Road was expected to have on the A34. Microsimulation modelling of Hinksey Interchange and the surrounding network, a model owned and operated by OCC, indicated that during the closures there was a potential for increased queuing along the A34 mainline during AM and PM peak periods.

Working with NH as OCC a number of potential solutions to the closures were tested using the model. These focused on keeping both Old Abingdon Road and Kennington Road at least partially open during construction using, for example, single lane shuttle working. However, the options tested did not eliminate the potential issue of additional queuing along the A34 mainline during this phase of the works. Thus, the temporary carriageway option has been developed and will be taken forward.

The temporary carriageway, a general arrangement drawing of which can be found in Appendix F along with a technical note comparing it with existing network, will maintain a connection along Old Abingdon Road and Kennington Road during their closures, thus eliminating the need for traffic to divert and consequently result in any queuing along the A34. It is expected to be in place for approximately two years. It forms a link between Old Abingdon Road and Kennington Road near Oxford and is to allow local traffic to continue along these links when construction works are taking place on the Oxford Flood Alleviation Scheme. It is approximately 100m in length, has street lighting and includes temporary diversions of shared footway/cycleway following the desire lines of NMU travel. The scheme has a minimal impact on the operation of the local highway network. A Road Safety Audit of the design is also included within Appendix H.

The reduction in speed from national speed limit down to 20 mph is expected to result in marginally longer journey times; but given the reduced speed limit covers a length of carriageway approximately 270 metres long, the impact on journey times is likely to be imperceptible to road users.

## **6.5 Construction Impacts on Local Bus Services**

There are three main construction related impacts on local bus services:

- The increase of construction HGVs on existing bus corridors.
- Use of P&R sites for construction access and compounds.
- Temporary carriageway at Old Abingdon Road.

Previous sections showed the impact of HGVs on the main bus corridors such as the A420 Botley Road/West Way, A4144 Abingdon Road and Old Abingdon Road. It concluded the proportional change to existing flows from the construction was low with the largest impact being on Old Abingdon Road. It is important to note that bus services will have priority over HGVs during the construction works.

The P&R site at Seacourt will be used as the main access point for Area 1 works north of Botley Road. The construction plans will ensure HGVs are controlled and do not interfere with the bus movements on site. At Redbridge, a small compound is also proposed but construction traffic will also be controlled to limit the impact on bus travel.

At Old Abingdon Road, two bus services will use the proposed temporary carriageway. Route 35 operates between Abingdon, Kennington, Oxford City Centre and Wolvercote with a typical 20-minute frequency in both directions during the daytime. Route 35A is a school service operating between Kennington, South Hinksey and Matthew Arnold School with two services at both the start and end of the school day. The lower speed limit

imposed on the temporary carriageway is expected to have negligible negative impact on the journey times for these services.

## 6.6 Construction Impacts on Pedestrians, Cyclists and Equestrians

The footways and bridleways within the Scheme area are likely to require temporary closure for part of the construction period. Since the highways will not need to close diversion routes for pedestrians and cyclists will mainly be via the highway network as described in chapter 7.

The main impacts are outlined in Table 6.3.

Link	Construction Impact
320/14 Willow Walk	Temporary closure and diversion
320/16 Hinksey Causeway	Temporary closure and diversion
320/17 and 352/1 Devils Backbone	Temporary closure and diversion
352/3 South Hinksey to Old Abingdon Road	Temporary closure and diversion
320/5 West of River Thames	No identified impact at this stage
Old Abingdon Road and junction with Kennington Road	Temporary closure and diversion

Table 6.3: Construction Impacts on Pedestrians, Cyclists and Equestrians

## 6.7 Summary of the key issues

This chapter has identified the following impacts as a result of the Scheme:

- After completion, there will be minimal changes to traffic and the road network, which will be largely confined to a localised increase in occasional maintenance traffic for the new Scheme. The improvements to walking and cycling provision is likely to increase the number of people travelling by sustainable and active modes.
- The analysis indicates that although there will be an increase in HGV traffic during construction of the Scheme. It will remain proportionally low against predicted traffic flows and future HGV movements. The proposed CTMP will also time HGV movements away from peak periods on the network.
- The temporary carriageway at Old Abingdon Road will maintain a two-way flow of traffic throughout the works but will result in marginally slower journey times due to the imposition of a 20mph speed limit.
- There will be certain negative impacts on local bus services including the P&R sites at Seacourt and Redbridge. These will largely be mitigated by the measures contained within the CTMP.
- There will be a need for temporary closures of a number of Public Rights of Way at various times during the works. Most will involve a temporary diversion of routes around construction works.

## 7. Mitigation

### 7.1 Introduction

Chapter 6 identified the likely impacts arising from the Scheme. After completion, the Scheme will have enhanced walking and cycling provision with a minimal level of maintenance traffic. However, the largest impacts will be associated with the construction works. This section outlines the recommended mitigation, which will reduce some of the overall negative effects of the Scheme.

### 7.2 Outline Construction Traffic Management Plan (CTMP)

#### Scoping

At the TA scoping stage OCC outlined that the CTMP should contain:

- The proposed route of construction traffic including accesses to the site.
- Details of traffic management and road closures during the works.
- Timing of construction works which must be outside network peak and school peak hours.
- Provision for pedestrians during the works including diversions where appropriate.
- Contact details of the project manager and site supervisors.
- Layout plans showing aspects such as access arrangements, compounds, site storage, structures, roads and pedestrian routes.
- No construction related parking near the sites.
- The need for a highway condition survey with necessary approvals before work commences.
- Residents to be kept informed throughout the works.

Subsequent consultations with NH and OCC following this initial scoping has led to further expansions of those items to be included in the CTMP. These are also included where appropriate. Whilst the outline CTMP considers each of these points as far as possible, a number of items will be confirmed in more detail at later stages of the programme.

Section 7.2.12 below discusses the bespoke provision that is possible for staff travel. It should be noted that these measures sit alongside existing sustainable transport options such as bus services, as well as walking and cycling routes.

#### 7.2.1 Overview

A CTMP will form the central part of the mitigation against development impacts as almost all will occur during the construction phase. All contractors and their supply chain will be required to agree a suitable form of governance to control the following:

- Preparation of block and layout plans;
- Construction access routes and movement including signage;
- Site management;
- Construction vehicle requirements;
- Debris and damage to the highway network; and
- Staff travel.

### 7.2.2 Contact Information

The CTMP will contain details relating to contact information for the chosen contractor when known. These details will be relevant to a dedicated member or members of staff and will be made available to the general public. The details will include:

- Name
- Address
- Telephone number
- Email address
- Social media account (such as Twitter)
- Any other relevant contact information deemed appropriate

### 7.2.3 Transport Management Working Group

A Transport Management Working Group (TMWG) will be established for the duration of the works. The main responsibility of the group will be to monitor to the CTMP but it will also allow direct communication between, amongst others, the contractor, the local highway authority and NH and will allow a flexible approach to mitigation. The group will be available to meet on site to discuss pertinent issues should the need arise. It is suggested the TMWG is made up of representatives from:

- Contractor
- Local Highway Authority
- National Highways
- Public transport operators
- Parish councils
- Environment Agency

### 7.2.4 Communications Construction Action Group

A Communications Construction Action Group (CCAG) is being re-established for the duration of the construction of infrastructure projects in the Oxford Area, including OFAS. The main responsibility of the group will be to ensure that the public are kept well informed of ongoing works and that advanced warning is provided of works that may cause disruption to travellers. The group's aim will be to influence the patterns of public behaviour and travel patterns through messaging, both virtual and physical, to reduce the number of those travelling and the way in which they travel. The group will focus on forewarning people and providing them with information before any disruption occurs. Some of the publicity methods it is envisaged they will use includes advertising through local radio, advertising on buses, static and mobile signage on the A34 and local road network, social media and links through local businesses. It is likely the CCAG is comprised of some of the same organisations as the TMWG. In the first instance the group will include:

- Contractor
- Local Highway Authority
- National Highways
- Public transport operators
- Oxford City Council
- Vale of White Horse District Council
- Emergency Services – Thames Valley Police, Ambulance Service, Fire and Rescue Service.

### 7.2.5 Preparation of Block and Layout Plans

The contractor will be required to prepare block and layout plans of each construction site. Although the level of information will vary from site to site, the plans will include as a minimum, the following:

- Access/egress arrangements including visibility splays onto the public highway and vehicle tracking.
- Vehicle tracking within the site especially for articulated HGVs where appropriate so that vehicles enter and leave the site in a forward direction.
- Internal parking arrangements for staff and visitors.
- Storage of materials and waste on site.
- Pedestrian/circulation routes within the compound.
- Rules and regulations for banksmen.
- Site boundaries / hoardings / temporary structures on the public highway.

### 7.2.6 Construction Access Routes and Movement including Signage

In consultation with the highway authorities, the CTMP will identify the permitted access routes for construction traffic and the highways which will not be prohibited or have restrictions. The expected routes to the main access points are outlined in section 6.3 of the TA. It is expected that routes to the minor accesses will be similar to those identified in section 6.3 although this will be confirmed via the CTMP.

Movements will be timed outside peak periods (usually considered to be 08:00 to 09:00 and 17:00 to 18:00). Abnormal load routes and movements will be agreed and timed in consultation with highway authorities and the local police.

Although not expected to present an issue, movements onto the A34 at the South Hinksey Interchange will be monitored due to the short length of the on slips. Should concerns arise, close working with NH to determine an appropriate course of action will be instigated via the TMWG.

The contractor will provide temporary signage to control site traffic and reinforce identification of the permitted routes for construction traffic. The signage will be provided in line with the Traffic Signs Regulations and General Directions (TSRGD) 2016 and the requirements of the local highway authority. Figure 7.1 shows an example of a typical construction traffic sign.



Figure 7.1: Example of a Construction Sign

To ensure that accidents along the route due to HGVs are minimised, discussions with the local highway authority will be undertaken to determine appropriate signage. Critically in close to each site, signs will be erected to warn HGVs accessing/leaving the site that turning movements should be undertaken with caution.

Where pedestrian and cycle routes are closed to facilitate the works, diversion signs will be provided. Again, these will be provided in line with the TSRGD 2016 and the requirements of the local highway authority.

### 7.2.7 Minor Accesses

The works will require numerous minor access for short periods as the work progresses. The use of these accesses will be agreed with the local highway authority prior to any movements by works traffic.

A procedure for agreeing the use of these accesses will be approved and enshrined within the CTMP. The procedure will include consultation with representatives of key stakeholders which may vary from access to access depending on their location. Indicatively these are likely to include:

- The Local Highway Authority (OCC and/or NH)
- The Police
- Local Businesses
- Local resident's groups/Councillors
- Bus operators
- Utilities providers
- The Environment Agency
- The chosen contractor

### 7.2.8 Traffic Management and Road Closures

Where required, the CTMP will propose traffic management measures specific to each access as they are required. This will include those necessary when making alterations to the existing highway network to facilitate their construction. All temporary traffic management will be in accordance with Chapter 8 of the Traffic Signs Manual.

The CTMP will also propose that a temporary speed limit of 40mph, via a Temporary Traffic Regulation Order (TTRO), is applied to the A34 between Botley Interchange and a point south of South Hinksey Interchange. This is necessary to ensure HGVs entering the A34 from Parker Road can access the main carriageway safely and provide more opportunity to do so by reducing gap acceptance.

The CTMP will also set out a methodology for agreeing the temporary 30mph speed limit proposed along Parker Road. This speed reduction will enhance road safety at the main site access of Area 3. Critically such a reduction would act to reduce the speed difference between through traffic and HGVs slowing to enter the site.

During the closures of Old Abingdon Road and Kennington Road, when the temporary carriageway is in place, a 20mph speed limit will be proposed by the CTMP. This will cover the length along Old Abingdon Road between the junction with the A423 Southern By-Pass Road and the railway bridge, including the temporary carriageway and junction with Kennington Road. The speed reduction will ensure the safety of road users along the temporary carriageway which will allow two-way traffic to be maintained.

Furthermore, should the scheme have any unforeseen impacts which create additional queuing along the A34 mainline at Hinksey Hill Interchange NH can amend the signal timings to prioritise the A34 and address this. Although this would mean less time for, and thus longer queues along, the local road approaches controlled by OCC. OCC have accepted such actions may be required to allow construction of the scheme and that the wider benefits of the scheme will outweigh the short term disruption.

### 7.2.9 Site Management

Maintaining site safety is paramount together with minimising the impacts of each site on the operation of the highway network. Many measures will be used to manage these impacts, which are detailed in the following paragraphs.



**Site Access:** All site accesses will be well lit, clean, robust level hard-standings, well signed and controlled by experienced gatemen. Doors and gates will be closed at all times when access is not required. Appropriate signage will be fixed to the gates and where vehicles meet pedestrians and cyclists, arrangements such as barriers put into place to denote vehicle and pedestrian crossover areas. If they cannot reasonably be avoided, traffic marshalls will be in attendance.

**Vehicle and Pedestrian Access Arrangements:** Wherever vehicles and pedestrians are required to use adjacent accesses during construction, suitable physical segregation with signage shall be installed to demarcate safe pedestrian routes. The entrance gates will be isolated from site pedestrians by use of designated pedestrian routes and physical barriers. This arrangement will be reviewed as the Scheme progresses to ensure that any construction activity does not present any additional risks. Should any additional risk be identified, then appropriate action will be taken to eliminate or minimise the risks and hazards.

**Boundaries:** All sites will be appropriately fenced off and made secure. The contractor will be responsible for maintaining the fencing throughout the works. Supports will either be concreted into the ground or a kentledge system used where movement needs to occur to facilitate construction activity at the boundary edge. Any site cabins will be located at ground floor level within the confines of the site and may be stacked up to three storeys where space is limited. Any cranes that will be incorporated onsite, will be equipped with limit switches to prevent load being carried beyond the site limits. If any over-sailing is deemed required, this will be negotiated and agreed with the relevant parties prior to works being undertaken and suitable precautions made.

**Pedestrian and cycle routes:** These will be maintained around each site throughout the construction programme. Where interfacing with pedestrian and cycle routes, hoardings will enclose the work area to contain construction activities. Where hoarding will need to encroach onto the existing footpath to provide working space for construction activities, a general minimum footpath width of 2m will be maintained. These widths will be suitable to allow pedestrians to pass each other in either direction including those with wheelchairs and pushchairs.

**On-site parking:** It is intended that this will be limited to workers who need to carry heavy equipment or materials to site. Others will be encouraged to travel by sustainable modes (see section 7.2.12 below). However, due to the Covid-19 pandemic car sharing and shuttle transport may be limited (see section 7.2.32). This being the case additional on-site parking than that currently envisaged may be required. This is to be reviewed as part of the full CTMP prior to the start of construction.

**Management of deliveries:** As vehicles approach the site, they will be directed to their relevant designated delivery gate and marshalled into the site by logistics personnel to avoid waiting or stacking on the public highway. Delivery vehicles arriving to site unannounced may create congestion on the highway network as well as on-site management issues. To prevent this, electronic delivery management systems such as 'Datascope' would be used to manage the deliveries. Its implementation will ensure that all deliveries arrive at the right time and ensure that the space available is used as effectively as possible. Daily delivery schedules should be displayed in prominent locations (notice boards, hoists, goods lift, etc.) and distributed to relevant parties (Logistic Manager and his distribution team, contractors, Main Contractor's team, etc.). These schedules will incorporate contractor information and contact details to ensure that the recipient may be contacted promptly when a delivery arrives.

#### 7.2.10 Construction Vehicle Requirements

When considering construction vehicle types, a balance is needed between the size of vehicles and the number of vehicular trips to be carried out.

The most heavily used HGVs on the site will be tipper trucks to facilitate the removal of excavated material. Sections 5 and 6 of this TA outlines the likely number of HGV movements together with the impacts on the highway network.

All freight vehicles travelling to the site will be low emission<sup>1</sup> vehicles where feasible, and regular fleet maintenance will take place to reduce emissions. All vehicles will be required to comply with the current Fleet Operator Recognition Scheme (FORS) guidance with respect to visibility, audibility of reversing/turning warnings and measures to detect blockages during difficult manoeuvres such as reversing sensors.

To address cycle safety issues which have been identified in this TA, HGVs will be required to be fitted with side bar protection to avoid cyclists being pulled beneath the vehicle.

### 7.2.11 Debris and Damage to the Highway Network

The detailed CTMP will list the measures that will be used to reduce dust, air pollution and other debris on the highway network. This will include for example, measures such as wheel wash as vehicles leave the various construction sites.

The CTMP will also include both the measures and procedures that will be used to ensure the condition of highways including public rights of way and permissive footpaths do not deteriorate due to construction traffic. This will include pre-construction condition surveys and monitoring arrangements with highway authorities.

### 7.2.12 Staff Travel

The detailed CTMP will include a construction travel plan that will encourage construction staff to use sustainable transport wherever possible. Both the Seacourt and Redbridge P&R sites are directly adjacent to the construction sites as well as Oxford railway station and other public transport locations. The use of public transport will be reinforced using shuttle services where appropriate, as well as car sharing. It should be noted that car parking on construction sites will be limited and there will be no provision for overspill parking onto neighbouring streets. However, this is subject to Covid-19 safe ways of working, which may limit the number of staff that can be shuttled around sites and may require more single car journeys than anticipated. This is to be reviewed as part of the full CTMP prior to the start of construction.

## 7.3 Diversion of Pedestrian, Cyclist and Equestrian Routes

Section 6 also identified existing pedestrian, cyclist and equestrian routes that may need to be temporarily diverted. Table 7.1 identifies the routes with the proposed mitigation.

Impact	Mitigation	Effect on Impact
320/14 Willow Walk	Temporary closure of bridleway and diversion	The diverted route runs parallel to the existing 320/14 Willow Walk. Closure times and distances involved to be confirmed.
320/16 Hinksey Causeway	Temporary closure of footpath and diversion	The diverted route is via the Hinksey Meadow footpath to the north west. Closure times and distances involved to be confirmed.
320/17 and 352/1 Devils Backbone	Temporary closure of footpath and diversion	Although sections of the Devils Backbone will be closed and there will be minor diversion, the closure of the bridge will mean a diversion to Old Abingdon Road. Closure times and distances involved to be confirmed.

<sup>1</sup> In this context, low emission vehicles are defined as the latest Euro VI standard. The Euro VI standard aims to lower the limit of several pollutants (CO, THC, NMHC, CH<sub>4</sub>, NO<sub>x</sub>, NH<sub>3</sub>) and adopts harmonised drive cycles. New durability requirements to cover greater distances and measures to access vehicle repair and maintenance information.

Impact	Mitigation	Effect on Impact
Electric Footway	Temporary closure of footpath	Footway use is subject to approval of landowners. Existing routes via Devils Backbone to the New Hinksey area.
352/3 South Hinksey to Old Abingdon Road	Temporary closure of footpath	There will be two minor diversions along the existing alignment. Closure times and distances involved to be confirmed.
Temporary carriageway at Old Abingdon Road	Temporary shared use footway and cycleway	Minor diversion around the construction works, with the level of service expected to be similar.

Table 7.1: Mitigation for the Diversion of Pedestrian, Cyclist and Equestrian Routes

## **8. Conclusions and Recommendations**

### **8.1 Review of the Evidence Presented**

The proposed Scheme will deliver long term benefits to residents and businesses by reducing the flood risk in the future. The Scheme will help to underpin aspirations for economic growth and will also protect important natural and recreational areas.

In terms of the transport, the impacts of the Scheme are largely confined to the construction stage. There will be longer term benefits particularly to walking and cycling provision which will help reduce the adverse impacts of traffic growth and increased congestion.

The analysis indicates the construction related trip generation is likely to be very low against both existing general traffic and HGV flows. On all of the links assessed, the change in HGVs will not be significant and as such, there are unlikely to be any adverse impacts. The CTMP will play a central role in limiting construction HGV movements to off peak periods on the highway network and ensuring just in time deliveries and removal of material from sites. Active traffic management of the sites including the use of banksmen should further mitigate against adverse impacts. The TMWG will provide an appropriate forum to raise any potential impacts identified during the works period.

The construction works will entail the use of a temporary carriageway between Old Abingdon Road and Kennington Road. The phased approach to the construction works and use of the temporary carriageway will enable a flow of two-way traffic at a reduced speed of 20mph, throughout the Scheme construction works. This is the most appropriate solution that maintains two way traffic flow during construction works in the vicinity of Old Abingdon Road and Kennington Road.

The works will also impact on existing rights of way and footpaths. Most of this will entail temporary diversions close to existing alignments or nearby on the highway network.

### **8.2 Recommendation**

Based on the evidence presented and the analysis undertaken, the OFAS is aligned with local policy and is recommended be approved on highways grounds.