Oxford Flood Alleviation Scheme (OFAS)

Prepared for
Environment Agency

March 2018

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Document history

Oxford Flood Alleviation Scheme
Transport Assessment

This document has been issued and amended as follows:

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<td>01</td>
<td>November 2017</td>
<td>Draft</td>
<td>Gethin Thomas</td>
<td>Corinna Morgan</td>
<td>PJM</td>
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<tr>
<td>02</td>
<td>March 2018</td>
<td>Final</td>
<td>Jeff Evans</td>
<td>Corinna Morgan</td>
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Introduction

1.1 Background

CH2M have been appointed by the Environment Agency 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 1000 homes and businesses currently at risk in Oxford;
- Reduce flood impacts on transport infrastructure and utilities in Oxford, particularly to Botley and Abingdon Roads, the railway line and the sewerage system;
- Safeguard Oxford’s reputation as a thriving centre of commerce that is open for business; and
- Create and maintain new recreational amenities, wildlife habitat, and naturalised watercourses accessible from the centre of Oxford.

The Scheme will consist of the construction of a two-stage channel as shown in Figure 1.1. The first stage channel will replace some of the existing watercourses and ditches and will flow all year. When river levels are normal, or lower, the second stage of the channel will be mostly dry although when river levels are sufficiently high, water will flow along it.

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.
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. Copies of this documentation are provided in Appendix A.

The main items identified in the pre-planning application for consideration were:
Oxfordshire County Council (OCC)

- It was confirmed that most of construction vehicles would use the A34 slip road at Hinksey Village for access and use the haul road alongside the Scheme. There would be a short period where Botley Road would be used to access the sections of the Scheme north of Botley Road and around Osney Mead as well as Abingdon Road (near the 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 detailed;
- Detail of the construction trip generation would be provided including the timing. The local roads in Hinksey Village are sensitive to any increase in traffic;
- A need to consider the emerging Hinksey Hill project which could impact the Scheme with potential works around Old Abingdon Road; and
- The temporary closure of Old Abingdon Road will have a significant impact on the operation of the network within this area and on local bus services. These effects will need to be considered within the TA.

The pre-planning application response also identified a need for a Construction Traffic Management Plan (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 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 comments; and
- Residents to be kept informed throughout the works.

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 site.

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 32 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;
SECTION 1 – INTRODUCTION

- Road trip generation and trip distribution methodologies and assumptions about the development proposal;
- Measures to promote sustainable travel;
- Safety implications of the development/scheme; and
- 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; and
- 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 sections:

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

2.1 Introduction

This Section 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 Scheme is aligned to priorities and policies.

The pertinent polices being:

**National**
- National Planning Policy Framework (NPPF);
- Planning Practice Guidance; and
- Circular 02/2013: Strategic road network and the delivery of sustainable development.

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

2.2 National Policy and Strategies

2.2.1 National Planning Policy Framework (NPPF) (March 2012)

The NPPF published by the Department for Communities and Local Government (DCLG) 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 policies within the NPPF:

- Policy 7 requiring good design – 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;
- Policy 8 promoting healthy communities – Developments can contribute towards promoting healthy communities by providing safe environments with good access while protecting and enhancing walking and cycling routes; and
- Policy 10 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 4 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.

There is a presumption in the NPPF in favour of sustainable development, which is underpinned by several core principles as follows:
• To proactively drive and support sustainable economic development to deliver the infrastructure that the country needs;
• To contribute to conserving and enhancing the natural environment and reducing pollution; and
• To actively manage patterns of growth to make the fullest possible use of sustainable transport.

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 (March 2014)

Supporting the NPPF is planning practice guidance. A separate document has been published on Travel Plans, Transport Assessments and Statements which summarise 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; and
• 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 2015-2031 (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; and
• 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; and

• 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 Oxford Transport Strategy (OTS)

Forming a part of the Oxfordshire 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 include meeting the needs of a growing population, economic growth and new housing. The strategy notes Oxford’s travel to work to modal split with over 50% of people walking and cycling representing a 30% increase in these 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.

2.3.3 Vale of White Horse Local Plan 2031 ( Adopted December 2016)

The Vale of White Horse Local Plan 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; and
• 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 networking, 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 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 (AQMA) 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.

2.3.4 City of Oxford Local Plan (2001-2016)

Once adopted the Oxford Local Plan 2016-2036 will replace the existing Local Plan, the Core Strategy 2026 and the Sites and Housing Plan. The Local Plan 2036 will become the main planning policy document for Oxford.

Consultation on the Oxford Local Plan 2036 Preferred Options was undertaken from 30 June to 25 August 2017 with comments currently under review.

The term 'Local Plan' can also be used to refer to many policy documents that have been prepared and adopted separately. Even though work is commencing on the new Local Plan, the existing planning policies remain relevant and will continue to be used for determining planning applications while the new Local Plan is being drafted. The City Council's various 'local plan' documents that are being used to determine planning applications are:

- Core Strategy 2026 (adopted in 2011);
- Westend Area Action Plan;
- Barton Area Action Plan;
- Northern Gateway Area Action Plan;
- Sites and Housing Plan;
- Oxford Local Plan 2001-2016; and
- Policies Map 2013.

The Core Strategy for Oxford was adopted in 2011 and sets out the spatial planning framework for the development of Oxford up to 2026 and is the principal document in Oxford’s Local Development Framework (LDF). The Core Strategy sets out the scale and general location of future development, and policies to deliver the Core Strategy vision and objectives 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; and
- A new district centre at the heart of Blackbird Leys and upgrading of the Cowley centre.

To address the issues relating to climate change, the Core Strategy promotes low and zero carbon developments. The Strategy ensures that the twin challenges of mitigation and adaptation to climate change are central to the spatial strategy and its policies. Besides providing for a built environment that can cope and respond to future climate impacts, the Strategy aims to reduce the risk of flooding to existing properties, and avoid building in inappropriate areas. Policy CS11 refers specifically to flooding and control of development within the functional flood plain while Policy CS17 outlines key strategic infrastructure improvements required to support development in the city which includes this Scheme.
2.4 Summary of key issues

This review confirms the Scheme is well aligned as follows:

- It will contribute towards the promotion of healthy communities as it will enhance walking and cycling routes;
- Will support the objectives of the Oxford Transport Strategy 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; and
- It will ensure that improvements improve safety, air quality and make areas more attractive.
SECTION 3

Existing Conditions

3.1 Introduction

This section 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 5.1 shows the lengths of highway that will be considered and that were agreed during the scoping stage of the TA.

**FIGURE 3.1**
Extent of the Highway Network Assessment

These are:

**Links**
- The A34 between the A420 to the north and Southern By-Pass Road to the south;
3. The A420 Botley Road/West Way from Henry Road in the east to the A34/A420 junction;
4. Parker Road between the South Hinksey Interchange and the village of South Hinksey;
5. The Southern By-Pass road from its junction with the A34 to the junction with the A4144 Abingdon Road;
6. The A4144 Abingdon Road from its junction with Hinksey Park in the north to the junction with the Southern By-Pass Road;
7. Old Abingdon Road; and
8. Kennington Road from its junction with Old Abingdon Road in the north to its junction with Upper Road.

Junctions
- The A34/A420 Botley interchange;
- The A34 South Hinksey Interchange;
- The A34 Hinksey Hill interchange including slip roads;
- The A423 Southern By-Pass with the A4144 Abingdon Road (Kennington Roundabout);
- The A4144 Abingdon Road and Old Abingdon Road;
- Old Abingdon Road with Kennington Road; and
- A423 Southern By-Pass Road and Old Abingdon Road.

3.2.1 Links

The A34 between the A420 to the north and the southern By-Pass road to 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 by-pass around Oxford.

Within the Oxford area, there are three principal grade separated major interchanges. In the north, near the Pear Tree Park and Ride 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 and in the south, the Hinksey Hill interchange. This links with the A423 the Southern By-Pass for Oxford and provides access to southern and eastern Oxford and another link to the A40 and the M40.

In addition to the grade separated interchanges, there are three minor junctions. In Botley, in the northbound direction, there is on-slip and off-slip access to Westminster Way. In the southbound direction, there is a similar arrangement to North Hinksey Lane. However, there is no grade separation allowing for two way movements at these two junctions. A third junction, is located near the small hamlet of South Hinksey. In both directions, there are on/off slip roads to the hamlet along with an overbridge that links the areas east and west of the A34.

Between the A420 and the A423 Southern By-Pass, the layout of the A34 slightly differs. In the Botley area, the A34 dual carriageway strays from a traditional arrangement 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 the A34/A420 junction

The A420 Botley Road/West Way is one of the principal access routes from Oxford City Centre to the A34 and is subject to a 30 mph speed limit for the full length considered in this TA. Beyond these lengths, the A420 itself links Faringdon and Swindon to the South West and the speed limit changes.
From an east to west direction, the A420 Botley Road/West Way is largely a single 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, a single carriageway with a cycle lane on each side and no waiting at any time parking restrictions in place. There is also a controlled crossing point near Henry Road;
- From Binsey Lane to the bridge over the existing channel, there is an eastbound bus lane and turning filter lanes for both sides of the carriageway including into a superstore. Stretches of the eastbound cycle route are diverted away from the carriageway onto off road provision, although this could be used in either direction. There is also an eastbound signalled controlled bus priority measure;
- At the Seacourt Park and Ride Site, the highway widens but essentially remains a single carriageway with an eastbound bus lane and turning filter lanes into neighbouring retail areas. The carriageway benefits from no waiting at any time parking restrictions to maintain vehicle flow. There are stretches of segregated cycle route largely shared with the footway; and
- From the Seacourt Park and Ride site to the B4044 West Way, there is a signalised junction with the Park and Ride site (Please refer to section 3.4.2 for details of the Park and Ride site). There is a bridge over the existing water channel with two westbound lanes. Eastbound, there is one lane for general traffic with another designated as a bus lane. An off-road cycle lane is present on the south side of the carriageway.

**Parker Road**

Parker Road is a single carriageway that serves the small village of South Hinksey from the A34. The road has a straight alignment until it loops into the village and has a footway on the one side. Given its relative isolated nature, the road principally serves the village only.

**The Southern By-Pass road from its junction with the A34 to the junction with the A4144 Abingdon Road**

The A423 Southern By-Pass connects with the Eastern By-Pass and is the principal route for accessing the eastern and southern parts of Oxford and also the A40 and M40. This stretch of dual carriageway between the Hinksey Hill interchange and the A4144 Abingdon Road is relatively short at approximately 700m in length.

Although the carriageway has a bridge over the Didcot to Oxford Railway line, there are on/off slip roads in both directions to Old Abingdon Road and Kennington Road.

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

**The A4144 Abingdon Road from its junction to Hinksey Parks in the north to the junction with the Southern By-Pass Road**

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

Abingdon Road has many junctions with the residential side streets that make up New Hinksey. Close to the junction with the Southern By-Pass, is the Redbridge Park and Ride site (refer to section 3.4.2 for details of the site). The principal entry point into the site is from Abingdon Road whilst the exit point is onto Old Abingdon Road.

From the Park and Ride site to Canning Road, a northbound bus lane is present but terminates at this point. A southbound filter lane for buses is located near the Redbridge site.
The road is a single carriageway with double yellow line, no waiting at any time 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 the vicinity of the Redbridge Park and Ride site.

The length is subject to a 30 mph speed limit.

**Old Abingdon Road**

Old Abingdon Road connects Kennington with the A4144 Abingdon Road to Oxford City Centre. It also provides access to the A423 Southern and Eastern By-Pass. There is a mix of land uses along the road including residential, a traveller site, a caravan park, a park and ride site, retail and a commercial waste depot.

From a north east to a south direction, the single carriageway comprises:

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

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

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

The length of Kennington Road from Old Abingdon Road to Upper Road has two access points to the A423 Southern By-Pass. The principal eastbound exit and entry point from Kennington Road is from Old Abingdon Road whereas the westbound entry and exit point is from Kennington Road itself.

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 which provides a link between Western By-Pass Road (A34) and Oxford City Centre via the A420, West Way and Botley Road. The A420 (east arm) links the interchange with West Way to the south.

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 save for the exit lane on the east arm where there is a third lane allocated to traffic accessing the Seacourt Park and Ride. The A420 (west arm)/West Way junction is signalised allowing traffic to turn right from the A420 towards Botley or east 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 on/off slips both northbound and southbound 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 one side of the overbridge and the east side of the roundabout.

A34 Hinksey Hill interchange including slip roads

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 By-Pass 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 By-Pass 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 Highways England have plans to improve capacity at this junction. The Scheme is designed to reduce pressure along a congested section of the A34 as well as unlocking capacity for express bus services. The proposal entails:

- An extended A34 northbound off-slip road with bus priority on the approach to the Hinksey Hill Interchange;
- A widened circulatory carriageway (additional traffic lane) around the Interchange for North East inbound trips; and
- A widened A423 eastbound approach to Old Abingdon Road for all traffic.

At the current time, construction of the Hinksey Hill interchange scheme will likely coincide with, at least partially, with this proposed Scheme.

A423 Southern By-Pass with the A4144 Abingdon Road (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 Eastern By-Pass Road. The ‘through-about’ which was recently created 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 Eastern By-Pass Road (south-east arm) via the through-road as described above.

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

The approach arm on the A4144 has three lanes; one dedicated to straight-ahead traffic accessing the Eastern By-Pass Road and one for vehicles accessing the A423 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 Abingdon Road (south arm).

The Old Abingdon 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 south-bound traffic on approach to the junction and a single lane for traffic travelling north. One the of south-bound 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 north-bound 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 north-east. 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 south-west.

**A423 Southern By-Pass Road and Old Abingdon Road**

This is a limited movement priority controlled junction allowing for left turns only. It connects the Southern By-Pass 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:

- **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 southwest.
- **352/3** is a footpath that links South Hinksey to Old Abingdon Road.
3.3.2 Cycling links

There are several cycling links as follows:

- National Cycle Network 5 which runs from Oxford City Centre and west of the A4144 Abingdon Road corridor. The route crosses the A420 in Oxford City Centres and continues south on Marlborough Road and onto Wytham Street before accessing the A4144 Abingdon Road at its junction with Old Abingdon Road. The NCR continues past the A423/A4144 ‘through-about’ junction along Eastern By-Pass Road before deviating right along the Thames towards Kennington and Abingdon.
- 320/14 Willow Walk. See above.
- On and off road sections of cycle route along the A420 Botley Road/West Way. These link the railway station, Jericho and Oxford City Centre in the east with Botley in the west.
- On and off road sections of cycle route along the A4144 Abingdon Road. The cycle route is additional route to National Cycle Network route 5 and links Oxford City Centre in the north to the New Hinksey area and links across the River Thames to the Iffley area of the City. The southbound section is large on-road but segregated whereas northbound is on-road and is advisory.
- Off road sections of cycle route along the A423 Southern By-Pass Road. Connecting with National Cycle Network Route 5, this is a shared use section that links 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 including park and ride

3.4.1 Bus services

Table 3.1 details existing bus services. For ease of the reference, the table presents the services in a north to south direction.

<table>
<thead>
<tr>
<th>Link</th>
<th>Service</th>
<th>Route</th>
<th>Typical Monday to Friday daytime Frequency in each direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botley Road/West Way</td>
<td>4</td>
<td>Abingdon to Oxford City Centre to Wood Farm</td>
<td>6 per hour</td>
</tr>
<tr>
<td>Botley Road/West Way</td>
<td>U1</td>
<td>Harcourt Hill Campus to Oxford City Centre to Wheatley Campus</td>
<td>Every 30 mins during University term time</td>
</tr>
<tr>
<td>Botley Road/West Way</td>
<td>11</td>
<td>Witney to Oxford City Centre</td>
<td>5 buses per day</td>
</tr>
<tr>
<td>Botley Road/West Way</td>
<td>66</td>
<td>Swindon to Oxford City Centre</td>
<td>3 per hour</td>
</tr>
<tr>
<td>Botley Road/West Way</td>
<td>S1</td>
<td>Carterton to Witney to Oxford City Centre</td>
<td>4 per hour</td>
</tr>
</tbody>
</table>
### Table 3.1
*Summary of Existing Public Transport (As of September 2017)*

<table>
<thead>
<tr>
<th>Link</th>
<th>Service</th>
<th>Route</th>
<th>Typical Monday to Friday daytime Frequency in each direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botley Road/West Way</td>
<td>X30</td>
<td>Wantage to Oxford City Centre</td>
<td>Every 30 mins</td>
</tr>
<tr>
<td>A34 Southern By-Pass</td>
<td>35A</td>
<td>Botley to Kennington</td>
<td>3 buses per school day</td>
</tr>
<tr>
<td>Abingdon Road</td>
<td>31/34/31</td>
<td>Wantage to Abingdon to Oxford City Centre</td>
<td>Every hour</td>
</tr>
<tr>
<td>Abingdon Road</td>
<td>35</td>
<td>Abingdon to Kennington to Oxford City Centre</td>
<td>3 per hour</td>
</tr>
<tr>
<td>Abingdon Road</td>
<td>X2</td>
<td>Wallingford to Abingdon to Oxford City Centre</td>
<td>Every 30 mins</td>
</tr>
<tr>
<td>Abingdon Road</td>
<td>X3/X13</td>
<td>Abingdon to Oxford City Centre to John Radcliffe Hospital</td>
<td>6 per hour</td>
</tr>
<tr>
<td>Abingdon Road</td>
<td>X32</td>
<td>Wallingford to Abingdon to Oxford City Centre</td>
<td>Every hour</td>
</tr>
<tr>
<td>Abingdon Road</td>
<td>X39/A40</td>
<td>Reading to Wallingford to Oxford</td>
<td>Every 30 mins</td>
</tr>
<tr>
<td>Old Abingdon Road</td>
<td>35</td>
<td>Abingdon to Kennington to Oxford City Centre</td>
<td>3 per hour</td>
</tr>
<tr>
<td>Kennington Road</td>
<td>35</td>
<td>Abingdon to Kennington to Oxford City Centre</td>
<td>3 per hour</td>
</tr>
<tr>
<td>Kennington Road</td>
<td>35A</td>
<td>Botley to Kennington</td>
<td>3 buses per school day</td>
</tr>
</tbody>
</table>

### 3.4.2 Park and Ride

The proposed Scheme is near two park and ride sites. The Seacourt Park and Ride is located on Botley Road/West Way and has 786 parking spaces including 8 designated for disabled users. Meanwhile, the Redbridge Park and Ride on Abingdon Road has 1070 spaces, of which 20 are for disabled use.

Table 3.2 outlines the typical frequency of buses from the park and ride sites.

### Table 3.2
*Summary of Existing Park and Ride (As of September 2017)*

<table>
<thead>
<tr>
<th>Park and Ride site</th>
<th>Service</th>
<th>Route</th>
<th>Typical Monday to Friday daytime Frequency in each direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seacourt (Botley Road/West Way)</td>
<td>400</td>
<td>Seacourt Park Ride to Oxford City Centre to Thornhill</td>
<td>5 per hour</td>
</tr>
<tr>
<td>Redbridge (Abingdon Road)</td>
<td>300</td>
<td>Redbridge Park and Ride to Oxford City Centre to Peartree Park and Ride</td>
<td>6 per hour</td>
</tr>
</tbody>
</table>

A planning application (16/02475 yet to be determined) has been lodged with Oxford City Council to expand the existing Seacourt Park and Ride site. The aim is to expand the number of car spaces to 1,452, of which 10 will be designated for disabled users. The improvements will include 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. The proposal will also involve a reconfiguration of the existing layout,
the repositioning of turning circle and the bus pick up and drop off areas. Dependent upon securing the necessary approvals, it is proposed to time the construction around the OFAS works.

In addition, there is also a proposal to open a Household Waste and Recycling Centre (HWRC) at the Redbridge Park and Ride site. The detail and timing of the HWRC is not known at the time of writing (November 2017) although it is currently expected to be operational in March 2019.

3.4.3 Rail Services

The Didcot to Oxford railway line runs parallel to part of the proposed Scheme works. 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.

3.5 Collision data

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

Tables 3.3 and 3.4 provide an outline of collision data and injuries by year and severity for each link. In addition, Table 3.4 provides an indication of numbers involving pedestrians and cyclists. For ease of reference, collisions at the Botley Interchange and Hinksey Hill Interchange are combined with the figures for the A34.

The tables 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 By-Pass);
- The numbers of cyclist incidents reflect Oxford is currently the third highest area of the UK where people cycle at least three times a week; and
- Except for one pedestrian/cyclist incident along each, all collisions on the A34 and the A423 involved vehicles only.

**TABLE 3.3**

<table>
<thead>
<tr>
<th>Link</th>
<th>Severity</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A34</td>
<td>Fatal</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Serious</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Slight</td>
<td>13</td>
<td>12</td>
<td>16</td>
<td>11</td>
<td>6</td>
<td>6</td>
<td>64</td>
</tr>
<tr>
<td>A423 Southern By-Pass</td>
<td>Fatal</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>1</td>
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<td>1</td>
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<th>2016</th>
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<td>A4144 Abingdon Road</td>
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<td>0</td>
<td>0</td>
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<td>5</td>
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<td>Serious</td>
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</tr>
</tbody>
</table>

### 3.6 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 Highways England, and manual classified counts (MCC) counts used to inform the Hinksey Hill Interchange VISSIM model) as follows and as shown in Figure 3.3:

- A420 Botley Road (West of Seacourt Park and Ride) (OCC) Annual Average Daily Traffic estimated for 2016;
- A420 Botley Road (Osney Bridge) (OCC) Annual Average Daily Traffic estimated for 2016;
- A34 South of Botley (Highways England) Annual Average Daily Traffic estimated for 2016;
• A34 Road to North Hinksey Lane (Highways England) Annual Average Daily Traffic estimated for 2016;
• Hinksey Hill (Oxfordshire County Council) Classified Automatic Traffic Count for January 2017;
• A34 Hinksey Interchange (OCC) Northbound and Southbound slip off Automatic Traffic Count for January 2017;
• A423 Southern By-Pass (East of junction with Old Abingdon Road) (OCC) Automatic Traffic Count for January 2017;
• Old Abingdon Road (East of junction with Kennington Road) (OCC) Automatic Traffic Count for January 2017; and
• A4144 Abingdon Road (South of junction with Old Abingdon Road) (OCC) Automatic Traffic Count for January 2017.

Only the Annual Average Daily Traffic (AADT) was reported consistently in the variety of sources used, and therefore this measure has been used as a reporting tool for the TA.

FIGURE 3.3
Location of the Traffic Counts

Table 3.5 provides a summary of the Average Daily Traffic at these locations.
TABLE 3.5
Summary of Annual Average Daily Traffic on the Immediate Highway Network

<table>
<thead>
<tr>
<th>Location</th>
<th>Direction</th>
<th>Period</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>A420 Botley Road (West of Seacourt Park and Ride)</td>
<td>EB/WB Combined</td>
<td>24 hour</td>
<td>24,400</td>
</tr>
<tr>
<td>A420 Botley Road (Osney Bridge)</td>
<td>EB/WB Combined</td>
<td>24 hour</td>
<td>16,500</td>
</tr>
<tr>
<td>A34 South of Botley</td>
<td>NB/SB Combined</td>
<td>24 hour</td>
<td>65,746</td>
</tr>
<tr>
<td>A34 Road to North Hinksey Lane</td>
<td>NB/SB Combined</td>
<td>24 hour</td>
<td>70,256</td>
</tr>
<tr>
<td>Hinksey Hill</td>
<td>NB/SB Combined</td>
<td>24 hour</td>
<td>9,064</td>
</tr>
<tr>
<td>A34 Hinksey Hill Interchange</td>
<td>NB Slip Off</td>
<td>24 hour</td>
<td>9,752</td>
</tr>
<tr>
<td>A34 Hinksey Hill Interchange</td>
<td>SB Slip off</td>
<td>24 hour</td>
<td>10,563</td>
</tr>
<tr>
<td>A423 Southern By-Pass (East of junction with Old Abingdon Road)</td>
<td>EB/WB Combined</td>
<td>24 hour</td>
<td>45,900</td>
</tr>
<tr>
<td>Old Abingdon Road (East of junction with Kennington Road)</td>
<td>NB/SB Combined</td>
<td>24 hour</td>
<td>7,769</td>
</tr>
<tr>
<td>A4144 Abingdon Road (South of junction with Old Abingdon Road)</td>
<td>NB/SB Combined</td>
<td>24 hour</td>
<td>14,799</td>
</tr>
</tbody>
</table>

This data reveals:

- The high traffic flows along the strategic A34 corridor;
- The A423 Southern/Eastern By-Pass has the second largest flows after the A34 corridor;
- Similarities in the volume of traffic accessing Oxford City Centre along the A420 Botley Road and A4144 Abingdon Road;
- Land uses along the A420 Botley Road (Seacourt Park and Ride, Retail parks) intercept a portion of flows along this western corridor to Oxford City Centre; and
- The lowest flows were recorded along Old Abingdon Road.

Further data is provided in Appendix C.

In addition to the above, further information about the characteristics of traffic flows is revealed from classified automatic turning counts that was collected in January 2017 at the following key junctions:

- A4144 Abingdon Road/Weir Lane;
- A4144 Abingdon Road/Old Abingdon Road;
- Old Abingdon Road/Kennington Road;
- Abingdon Road/Eastern By-Pass/Southern By-Pass; and
- Southern By-Pass/Kennington Road.

Figures 3.4 to 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
A4144 Abingdon Road/Weirs Lane

Key: Grey – Reference number; White – Vehicle number; Blue - PCUs

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/A423 Southern/Eastern By-Pass and the Iffley area of the City.
The turning movements at this junction also reflect the flows along the A4144 Abingdon Road. There is also a strong one way directional movement exiting Old Abingdon Road with 5550 vehicles compared to 1903 entry movements.

Some of this difference may reflect that the link acts as a ‘rat run’ between the southern by-pass and Abingdon Road in a northbound direction. The same movement in a southbound direction is difficult to replicate as the route effectively loops back along the Southern By-Pass towards the Abingdon Road/Eastern By-Pass/Southern By-Pass roundabout. Therefore, it offers little benefit in terms of perceived journey time saving. A second potential explanation is that as one of the egress routes from the Redbridge Park and Ride site, traffic which has entered the site elsewhere, exits along Old Abingdon Road.
As outlined previously, the turning counts at this junction reflect the routes into and out of Old Abingdon Road. North east bound traffic is higher than in the opposite direction. Approximately two thirds of the north east bound traffic comes directly from the Southern By-pass rather than Kennington. In the opposite direction, most of the traffic is using Old Abingdon Road to access Kennington. This is reflected by the flows in and out of Kennington Road.
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 the A34, the southern and eastern parts of Oxford and the M40. The turning movements out of the A4144 Abingdon Road indicate just over 60% travel towards the A34.
Figure 3.8 shows the flows on the gyratory at the Hinksey Hill Interchange. Flows along the A34 are captured separately by Highways England and these are outlined earlier in this section. The main trends being:

- The largest turning movement is between the A34 (South) to/from the A423 Southern By-Pass;
- A second large movement occurs between the A34 North) to/from the A423 Southern By-Pass;
- Directional one-way flows from the Interchange towards Old Abingdon Road; and
- The largest proportion of flows from Hinksey Hill are towards the A423 Southern By-Pass.
The final junction diagram shows the traffic flows in and out of Kennington Road. The count data indicates the in/out flows are similar and are very low. This suggests it provides only a local access route to and from the village of Kennington.

### 3.7 Summary of key issues

This section reviewed the baseline transport network and conditions. The main transport related issues considered as part of the TA:

- The higher traffic flows on the A34 reflecting the strategic corridor of the road linking the Midlands and the North with the South Coast suggesting it provides the function for which it is designed;
- The A423 Southern and Eastern By-Passes are an important link around Oxford and connecting the A34 with the A40 and M40, again performing the function for which they were designed;
- Both the A420 Botley Road/West Way and A4144 Abingdon Road are major corridors into and out of Oxford City Centre and are 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’ to avoid the 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; and
- The Scheme is criss-crossed by a network of footpaths and cycleways, which may be impacted during construction works.
4.1 Introduction

This section provides a general overview of the scheme proposal, its component parts and the scheduling of the works.

4.2 Background

The Environment Agency 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 Oxford Flood Alleviation Scheme essentially aims to:

- Reduce flood damages to at least 1000 homes and businesses currently at risk in Oxford;
- Reduce flood impacts on transport infrastructure and utilities in Oxford, particularly to Botley and Abingdon Roads, the railway line and the sewerage system;
- Safeguard Oxford’s reputation as a thriving centre of commerce that is open for business; and
- 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.

4.3 Summary of construction works

Appendix D shows the extent of the planned construction works. Overall it is envisaged that 364,128m³ 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 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 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:

- North of Botley Road/West Way;
- Botley Road/West Way to Willow Walk;
- Willow Walk to Devil’s Backbone; and
Devil’s Backbone to confluence with the River Thames.

The scheme will also 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 Botley Road and Abingdon Road.

4.3.1 Area 1 – North of Botley Road/West Way

Drawing IMSE500177-CH2-B00-A1-DR-C-1010 in Appendix D shows the proposed works north of Botley Road/West Way. The main works involve the construction of the first stage channel with raised flood embankments and floodgates. One compound will be required and will be accessed from the Park and Ride site via the main Area entrance/exit.

4.3.2 Area 2 – Botley Road/West Way to Willow Walk

Drawing IMSE500177-CH2-B00-A1-DR-C-2010 in Appendix D shows the proposed works south of 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 a new Westway foot and cycle bridge and a new bridge at Willow Walk. Two compounds are proposed south of West Way near the existing Wickes Store and Buxton Court. The main access to this works Area 2 will be taken from the main works entrance/exit off Parker Road.

4.3.3 Area 3 – Willow Walk to Devil’s Backbone

Drawing IMSE500177-CH2-B00-A1-DR-C-3010 Appendix D 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.

4.3.4 Area 4 – Devil’s Backbone to confluence with the River Thames

Drawings IMSE500177-CH2-B00-A1-DR-C-4010 and Drawing IMSE500177-CH2-B00-A1-DR-C-4017 Appendix D show the proposed works in these areas. The works include raised defences along the River Thames east of Abingdon Road and a new culvert underneath Old Abingdon Road. Three compounds are proposed:

- East of the University College Boathouse;
- North of Old Abingdon Road, west of the Didcot to Oxford Railway Line; and
- Redbridge Park and Ride site. This will entail a temporary displacement of 30 parking spaces and closure of one of the entry gates into the site.

4.4 Programme of works (EA to confirm)

Figure 4.1 shows the provisional programme of the main works and phasing. This is based on an indicative programme dated October 2017 and summarises the main elements of the works.
FIGURE 4.1
Provisional Construction Programme (Main Elements only)

<table>
<thead>
<tr>
<th>Area</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
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<tbody>
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<td></td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Area 1 Botley Road</td>
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<tr>
<td>Area 2 Botley Road to Willow Walk</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area 3 Willow Walk to South Hinksey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area 4 Devils Backbone to Redbridge</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Area 4 Old Abingdon Road</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

- Construction of access roads – February 2019 to May 2019;
- Construction of compound areas – February 2019 to May 2019; and
- Construction of minor access points – February 2019 to scheme completion as required.

4.5 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 22 access points will be needed over the four works areas; these being:

Area 1

- Existing gated field access to the east of the A420 between its junction with the A34 and West Way
- Existing minor access to small parking area north of West Way near its junction with the A420
- New access north of West Way opposite Minns Business Park
- Shared use of the Seacourt Park and Ride site main access. Works entrance/exit to extend from eastern arm off the bus turning circle
- Emergency only access through grassed area north of Botley Road between Seacourt Park and Ride 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 Botley Road directly from southern end of Minns Business Park access road
- South of Botley Road via existing grassed pedestrian path between Minns Business Park and Wicks retail unit
- 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 from point of closure
- 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
• East of Kennington Road using existing field gate between Old Abingdon Road and Southern Bypass Underbridge
• East of Kennington Road using existing field gate at mini roundabout with Upper Road
• West of Abingdon Road, south of Redbridge Park and Ride access
• East of Abingdon Road using existing gated access opposite junction with Old Abingdon Road
• Upgraded path off eastern side of Abingdon Road opposite Hinksey Park
• Path off eastern side of Abingdon Road opposite retail unit between Lincoln Road and Monmouth 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 Park and Ride site main access
• Continued use of existing field access on eastern side of Parker Road 30m south of the A34 slip road roundabout
• Upgraded path off eastern side of Abingdon Road opposite Hinksey Park

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 Highways England 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.

4.6 Area 1 access, Seacourt Park and Ride

The main access to works Area 1 to the north of Botley Road will be taken from within the Seacourt Park and Ride site, as shown on drawing IMSE500177-CH2-B00-A1-DR-C-1010 in Appendix D. 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 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 east of the Park and Ride and thus will not conflict with movements of the general public. It should be noted that the construction works to the planned extension of the Seacourt Park and Ride site, if approved, will be timed around the Scheme. As no changes are proposed to the access arrangement a Road Safety Audit of this access is not necessary.

4.7 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 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 E. The vehicle tracking indicates that to facilitate the access, an existing gate along the farm access track directly south of the site compound will need relocation. Following this relocation, vehicles will be able to enter and exit the access unhindered.

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 E 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 F.

4.8 Area 4 access, Abingdon Road

The portion of works Area 4 in the vicinity of Old Abingdon Road and Kennington Road will be accessed via the haul road and the access described in section 4.7 above. Alongside this main access various smaller accesses will also be required as works progress. An additional access point to a remote area of the works alongside the River Thames, east of Abingdon Road, is also required to construct new flood defences. This is discussed below.

Access to the works and compound east of Abingdon Road will be taken from 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 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 E and a Stage One RSA of the design and accompanying RSA Response Report in Appendix F.
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.
SECTION 5

Methodology and Assessment

5.1 Introduction

This section 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.

Overall, there are two major impacts that need to be considered. The first is related to the transport impacts after completion of the Scheme. The second involves the short-term and temporary impacts arising from construction works. This should include construction related trip generation, access points, potential with existing transport users, a need for temporary closures and diversions and location of compounds and storage.

5.2 Scoping

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

- The TA needs to 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 detailed;
- Detail of the construction trip generation including timings;
- A need to consider the emerging Hinksey Hill Interchange project, which could impact the Scheme with potential works around Old Abingdon Road; and
- The temporary closure of Old Abingdon Road will have a significant impact on the operation of the network within this area and on local bus services. These effects will need to be considered within the TA.

5.3 Assessed impacts

Table 5.1 outlines the impacts that have been assessed during the TA:

<table>
<thead>
<tr>
<th>Scheme Phase</th>
<th>Mode</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post construction</td>
<td>Highway</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Bus</td>
<td>Access routes to construction sites and compounds. Identification of recommended access routes and tracking of HGVs in/out of construction sites and compounds.</td>
</tr>
<tr>
<td></td>
<td>Walking, Cycling and Equestrians</td>
<td>Additional HGV construction traffic on the highway network. Analysis of the percentage change in HGVs on links for both the start/endpoint of the construction period</td>
</tr>
<tr>
<td>Construction</td>
<td>Highway</td>
<td></td>
</tr>
</tbody>
</table>
### Scheme Phase Mode Impacts

<table>
<thead>
<tr>
<th>Scheme Phase</th>
<th>Mode</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>On existing routes.</td>
<td>Closure of Old Abingdon Road including the junction with Kennington Road and diversions. A short assessment of bus routes impacted and walking distances to alternative bus stops</td>
</tr>
<tr>
<td>Walking, Cycling and Equestrians</td>
<td>On existing routes.</td>
<td>Closure of Old Abingdon Road including the junction with Kennington Road and diversions. An assessment of distances and thresholds.</td>
</tr>
</tbody>
</table>

#### 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. TEMPRO traffic growth figures have been obtained from the National Trip End Model (NTEM) and have been applied to existing traffic flows.

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. Table 5.2 outlines the traffic growth figures that have been applied.

**TABLE 5.2**

**Traffic Growth Figures**

<table>
<thead>
<tr>
<th>Period</th>
<th>Growth Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 and 2018 (start of construction works)</td>
<td>+1.0317</td>
</tr>
<tr>
<td>2016 and 2021 (end of construction works)</td>
<td>+1.0792</td>
</tr>
<tr>
<td>2017 and 2018 (start of construction works)</td>
<td>+1.0156</td>
</tr>
<tr>
<td>2017 and 2021 (end of construction works)</td>
<td>+1.0624</td>
</tr>
</tbody>
</table>

#### 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; and
- Removal and delivery of materials.

**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 to bus workers from identified sites. This will include the Park and Ride sites at Seacourt and Redbridge and to collect workers from
public transport locations such as Oxford Railway Station. Based on this, the trip generation from construction workers is likely to be somewhat limited.

**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 are considered in the Construction Traffic Management Plan (CTMP) in Section 8. For example, timing of deliveries at off-peak periods on the highway network, delivery of abnormal loads subject to prior consultation and agreement with both the Local Highway Network and Highways England. It should also be noted that these types of movements will only form a small part of the overall trip generation and will likely be imperceptible, in terms of network delay, to users.

**Removal and delivery of material**

Table 5.3 outlines the material that will be handled in each of the areas. The Materials Management Plan, published in February 2018, calculates 364,128m³ 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; and
- Firm Oxford Clay.

The TA Scoping Report based on an earlier materials assessment in 2017, identified 391,000m³ of material will be moved on the public highway. Based on this, the higher 391,000m³ figure has been used as the proxy for construction material calculations. This generates a worst-case scenario in terms of the transport impacts.

Based on a 440-working day construction period between late 2018 and 2021 there would be a need to remove 890m³ per day. With movements restricted to off-peak periods (10:00 to 16:00) and given that a typical three axle HGV can carry 8m³ of material per load, a total number of 111 HGVs in each direction per day or 19 per hour can be expected.

**TABLE 5.3**

*Construction HGV Movements related to Materials*

<table>
<thead>
<tr>
<th>Location</th>
<th>Estimated Quantity (m³)</th>
<th>Percentage of Overall HGV Trips</th>
<th>Estimated number of HGV journeys per day (entry and exit) (rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area 1 – North of Botley Road</td>
<td>5,040</td>
<td>6.9%</td>
<td>16</td>
</tr>
<tr>
<td>Area 2 – Botley Walk to Willow Walk</td>
<td>69,490</td>
<td>17.7%</td>
<td>40 (20 via Botley Road and 20 via the A34 at South Hinksey)*</td>
</tr>
<tr>
<td>Area 3 – Willow Walk to South Hinksey</td>
<td>175,640</td>
<td>44.8%</td>
<td>100</td>
</tr>
<tr>
<td>Area 4 (part) – Devil’s Backbone to Old Abingdon Road</td>
<td>40,795</td>
<td>10.4%</td>
<td>24</td>
</tr>
<tr>
<td>Area 4 (part)- Old Abingdon Road to Munday’s Bridge</td>
<td>47,910</td>
<td>13.8%</td>
<td>30</td>
</tr>
<tr>
<td>Area 4 (part) – Works to existing channels</td>
<td>25,850</td>
<td>6.4%</td>
<td>14</td>
</tr>
</tbody>
</table>
**TABLE 5.3**

*Construction HGV Movements related to Materials*

<table>
<thead>
<tr>
<th>Location</th>
<th>Estimated Quantity (m³)</th>
<th>Percentage of Overall HGV Trips</th>
<th>Estimated number of HGV journeys per day (entry and exit) (rounded)</th>
</tr>
</thead>
</table>
*This 50/50 split is an assumption based on a worst case scenario for Botley Road. It is highly likely that the vast majority of this traffic will interface with the highway at the Area 3 access via the internal haul road*

### 5.6 Construction trip distribution and assignment

Based on the above, Figures 5.1 and 5.2 show the distribution and assignment of HGV trips on the immediate highway network. This assumes 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 receiving the excavated material for filling operations.

The figures indicate:

- The bulk of HGV movements will be along the A34 corridor and to a lesser extent, along the A423 Southern and Eastern By-Pass;
- Movements along Old Abingdon Road will have a reduced impact on the operation of the highway as a result of the bridge closure; and
- Daily movements one way along Botley Road and Abingdon Road will be 18 and 7 respectively. Given the movements are being timed at off-peak periods between 10:00 to 16:00, this approximately equates to 3 and 1 per hour in each direction.
FIGURE 5.1
Distribution of HGV Traffic on the Highway Network

Oxford Flood Alleviation Scheme
Distribution of Construction Traffic

Area 1: North of Botley Road
67.4% 12.6%

Botley Road
6.9% 8.9%

Area 2: Botley Road to Willow Walk
12.6% 3.2%

Willow Walk to South Hinksey
42.9% 10.7%

Area 3: Willow Walk to South Hinksey
27.6% 42.9%

Area 4: Devil's Backbone to Old Abingdon Road
42.9% 6.4%

Area 4: Old Abingdon Road to Munday's Bridge
27.6% 10.7%

Old Abingdon Rd Bridge CLOSED

Hinksey Hill Interchange
13.9% 24.5%

Hinksey Hill
13.9% 6.1%

Kennington Road
24.5% 6.1%

A34
67.4% 3.2%

Botley Interchange
27.6% 10.7%

River Thames
8.9%

Oxford City Centre
8.9%

Abingdon Road
24.2% 6.4%

Hinksey Hill
24.5% 30.6%

A423 Eastern By-Pass
30.6%

39
FIGURE 5.2
Assignment of HGV Traffic on the Highway Network (Number of HGVs per Day) (Rounding may occur)

Oxford Flood Alleviation Scheme
Distribution of Construction Traffic

Area 1: North of Botley Road

Area 2: Botley Road to Willow Walk

Area 3: Willow Walk to South Hinksey

Area 4: Devil's Backbone to Old Abingdon Road

Area 4: Old Abingdon Road to Munday's Bridge

A34

Botley Interchange

67.4% 12.6%

6.9% 8.9%

12.6% 3.2%

27.6% 42.9%

42.9% 10.7%

13.9% 24.5%

24.2% 6.4%

24.5% 6.1%

6.9% 8.9%

8.9%

3.2%

6.4%

6.4%

6.4%

6.4%

6.4%

6.4%

6.4%

6.1%

Area 1:
North of Botley Road

Area 2:
Botley Road to Willow Walk

Area 3:
Willow Walk to South Hinksey

Area 4:
Devil's Backbone to Old Abingdon Road

Area 4:
Old Abingdon Road to Munday's Bridge

A423 Eastern By-Pass

Old Abingdon Rd Bridge CLOSED

A34

Hinksey Hill

Hinksey Hill Interchange

27.6% 10.7%

27.6% 10.7%

13.9% 6.1%

13.9% 6.1%

24.5% 6.1%

24.5% 6.1%

30.6%

30.6%

30.6%

30.6%

River Thames

Oxford City Centre

Abingdon Road

Hinksey Hill

Kennington Road
Assessment of Impacts

6.1 Introduction

This Section assesses the impacts arising from: -

• post Scheme competition 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 Impacts after scheme completion

6.2.1 Impacts on the Highway Network

Changes to the highway network are expected to be minimal. Other than 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 following the re-opening of Old Abingdon Road after completion of works in this area.

6.2.3 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.

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; and
• Temporary closure of Old Abingdon Road, with associated impacts.

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 Highway Authority, it is pertinent that the TA considers access routes to the three
main accesses discussed in sections 4.6, 4.7 and 4.8. 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, via the Seacourt Park and Ride, construction traffic will first exit the A34 at Botley Interchange following the A420 to its junction with the A420 West Way. From this point, traffic will turn left and travel along the A420 West Way/Botley Road before turning left into the Park and Ride site. Once within the site works, traffic will enter the works area via a new arm constructed on the eastern section of the bus turning circle. 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 Park and Ride traffic is minimised so far as possible.

The main access for Areas 2 and 3 will be taken at the existing gated field entrance along Parker Road between the roundabout of the A34 off slips and South Hinksey. The route to this access takes vehicles off the A34 at the South Hinksey grade separated junction either straight to the small roundabout at Parker Road or across the A34 overbridge to the small roundabout depending on A34 approach direction. After moving southwards through the roundabout, the site access is approximately 30m along Parker Road and controlled by a simple priority arrangement. However, 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 Abingdon Road opposite Hinksey Park. In order to reach this access, works traffic will exit the A34 at Hinksey Hill interchange then travel eastwards along the A423 Southern Bypass. At the junction of the A423 and the A4144 Abingdon Road, vehicles turn northwards along Abingdon Road travelling for approximately 1.5km before turning into the access road. Again, the reverse of this route will be followed by those vehicles leaving the site.

### 6.3.3 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 (assumed end of 2018). This is based on the distribution and assignment of Construction HGVs as outlined in Section 5.

The table reveals the proportion of HGVs to be very low against both the complete traffic flow and existing HGV flows. The highest percentage is recorded at Old Abingdon Road but the overall impact will be reduced by the proposed temporary closure of the highway.

<table>
<thead>
<tr>
<th>Link</th>
<th>24 hour AADT (two way flows)</th>
<th>Existing proportion of HGVs/numbers</th>
<th>Construction related daily HGVs (two way flows)</th>
<th>% Construction related daily HGVs against 24 hour AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A420 West Way (west of Seacourt Park and Ride)</td>
<td>25,173</td>
<td>--</td>
<td>36</td>
<td>0.14%</td>
</tr>
<tr>
<td>A34 South of Botley</td>
<td>67,830</td>
<td>9.75%</td>
<td>158</td>
<td>0.24%</td>
</tr>
<tr>
<td>A34 Road to North Hinksey Lane</td>
<td>72,483</td>
<td>8.56%</td>
<td>158</td>
<td>0.22%</td>
</tr>
<tr>
<td>A34 Hinksey Interchange NB off slip</td>
<td>9,205</td>
<td>NB 5.40% SB 5.25%</td>
<td>7</td>
<td>0.01%</td>
</tr>
<tr>
<td>Link</td>
<td>24 hour AADT (two way flows)</td>
<td>Existing proportion of HGVs/numbers</td>
<td>Construction related daily HGVs (two way flows)</td>
<td>% Construction related daily HGVs against 24 hour AADT</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>------------------------------</td>
<td>------------------------------------</td>
<td>-----------------------------------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>A34 Hinksey Interchange SB off slip</td>
<td>9,004</td>
<td>11.95%</td>
<td>27</td>
<td>0.29%</td>
</tr>
<tr>
<td>A423 Southern By-Pass</td>
<td>46,616</td>
<td>10.04%</td>
<td>68</td>
<td>0.14%</td>
</tr>
<tr>
<td>Old Abingdon Road</td>
<td>7890</td>
<td>EB 11.82% EB 11.36%</td>
<td>54</td>
<td>0.68%</td>
</tr>
<tr>
<td>A4144 Abingdon Road</td>
<td>15,030</td>
<td>NB 6.53% SB 7.41%</td>
<td>14</td>
<td>0.09%</td>
</tr>
</tbody>
</table>

Table 6.2 is similar to Table 6.1 but shows the likely percentages of HGVs at the end of the construction period will fall marginally as a result of continued traffic growth until 2021.

**TABLE 6.2**

*Additional Construction HGV Movements on Links – End of Construction*

<table>
<thead>
<tr>
<th>Link</th>
<th>24 hour AADT (two way flows)</th>
<th>Existing proportion of HGVs/numbers</th>
<th>Construction related daily HGVs (two way flows)</th>
<th>% Construction related daily HGVs against 24 hour AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A420 West Way (west of Seacourt Park and Ride)</td>
<td>26,332</td>
<td>--</td>
<td>36</td>
<td>0.14%</td>
</tr>
<tr>
<td>A34 South of Botley</td>
<td>70,953</td>
<td>9.75%</td>
<td>158</td>
<td>0.23%</td>
</tr>
<tr>
<td>A34 Road to North Hinksey Lane</td>
<td>75,820</td>
<td>8.56%</td>
<td>158</td>
<td>0.21%</td>
</tr>
<tr>
<td>A34 Hinksey Interchange NB off slip</td>
<td>10,361</td>
<td>NB 5.40% EB 5.25%</td>
<td>7</td>
<td>0.01%</td>
</tr>
<tr>
<td>A34 Hinksey Interchange SB off slip</td>
<td>11,222</td>
<td>11.95%</td>
<td>27</td>
<td>0.24%</td>
</tr>
<tr>
<td>A423 Southern By-Pass</td>
<td>48,764</td>
<td>10.04%</td>
<td>68</td>
<td>0.14%</td>
</tr>
<tr>
<td>Old Abingdon Road</td>
<td>8254</td>
<td>EB 11.82% WB 11.36%</td>
<td>54</td>
<td>0.65%</td>
</tr>
<tr>
<td>A4144 Abingdon Road</td>
<td>15722</td>
<td>NB 6.53% SB 7.41%</td>
<td>14</td>
<td>0.09%</td>
</tr>
</tbody>
</table>

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 the delays can be
caused by 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. However, the potential for issues is acknowledged and it is considered that monitoring of the slip road is required during the works to determine if any impacts occur. Should any impacts by the works be identified, the Transport Management Working Group set out in section 7.2.4 of this TA will present an appropriate forum to discuss solutions. Closure of Old Abingdon Road (including junction with Kennington Road) and Diversions

Under the proposals, Old Abingdon Road will be closed for a period of up to 15 months for bridge works, provisionally scheduled for the final quarter of 2020 and through to the end of 2021. The works will also involve the closure of the Old Abingdon Road and Kennington Road junction. During this time, the recommended diversion route for traffic will be via the A423 Southern By-Pass and the A4144 Abingdon Road.

Access along Old Abingdon Road for local residents, including the Redbridge Traveller site, and local business will be maintained during the works. This will be achieved from either end of Old Abingdon Road. During the works, it is likely that the new HWRC at Redbridge Park and Ride site will be open and access is likely to be via Old Abingdon Road.

Based on existing turning count data, Figures 6.1 to 6.2 show the likely turning movements in 2018 and 2021 respectively while Figures 6.3 to 6.4 show the same periods with diverted traffic. For ease of comparison, the start year is assumed end of 2018 although Old Abingdon Road is likely to be closed from 2020 to 2021.

For the purposes of this exercise, traffic has been redistributed directly onto the A423 Southern By-Pass Road and the A4144 Abingdon Road and away from Old Abingdon Road. It also assumed, for this exercise, there will be no turning movements into and from Old Abingdon Road from the A4144 Abingdon Road although there will be very local movements to Bertie Place, local businesses and services and numerous exits from the Redbridge Park and Ride.

This spreadsheet analysis suggests the main changes are likely to be:

- The largest variation in volume will be in the eastbound direction along the A423 Southern By-Pass Road and northbound along the A4144 Abingdon Road near Redbridge Park and Ride. This reflects that Old Abingdon Road is used as a ‘rat run’ between the Hinksey Hill Interchange and Abingdon Road. It also forms the main route from Kennington towards Oxford City Centre. Traffic is likely to use Old Abingdon Road west of the bridge and then loop along the A423 Southern By-Pass Road;

- There will be less change in westbound traffic flows along the A423 Southern By-Pass and southbound along the A4144 Abingdon Road. This is the currently the most direct route from traffic heading south of Oxford City Centre along Abingdon Road towards the A34 southbound; and

- There will be an increase in movements along A423 Southern By-Pass Road in the direction of Kennington as a result of the bridge closure.

As stated, this is a spreadsheet assessment of the redistribution of traffic. Traffic may use alternative routes as a result of temporary closure and perceptions of queue times at junctions. The assessment also does not show the very localised movements along Old Abingdon Road to access side streets, local businesses and services. There may be increased journey times for these trips as vehicles will be required to ‘loop’ around via the A34 Botley Interchange, the Kennington Roundabout and the A423 Southern By-Pass. However, such movements form only a small portion of those along Old Abingdon Road.
6.3.4 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 Park and Ride sites for construction access and compounds; and
- Temporary closure of 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 Abingdon Old 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 Park and Ride 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, one bus service will be directly impacted by the temporary closure. Route 35 operates between Oxford City Centre, Kennington and Abingdon with a typical 20-minute frequency in both directions during the daytime. The temporary closure of Old Abingdon Road will also impact two sets of bus stops at Old Abingdon Road (Bertie Place) and Kennington Road (Egrove Park).

Section 7 of this TA will outline the recommended mitigation for this impact on local bus services.

6.3.5 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, other than Old Abingdon Road for a set period, diversion routes for pedestrians and cyclists will mainly be via the highway network as described in Section 7.

The main impacts will be:

<table>
<thead>
<tr>
<th>TABLE 6.3</th>
<th>Construction Impacts on Pedestrians, Cyclists and Equestrians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link</td>
<td>Construction Impact</td>
</tr>
<tr>
<td>320/14 Willow Walk</td>
<td>Temporary closure and diversion</td>
</tr>
<tr>
<td>320/16 Hinksey Causeway</td>
<td>Temporary closure and diversion</td>
</tr>
<tr>
<td>Electric Footpath</td>
<td>Loss of use of path.</td>
</tr>
<tr>
<td>320/17 and 352/1 Devils Backbone</td>
<td>Temporary closure and diversion</td>
</tr>
<tr>
<td>352/3 South Hinksey to Old Abingdon Road</td>
<td>Temporary closure and diversion</td>
</tr>
<tr>
<td>320/5 West of River Thames</td>
<td>No identified impact at this stage</td>
</tr>
<tr>
<td>Old Abingdon Road and junction with Kennington Road</td>
<td>Closure of highway. Diversion via A4144 Abingdon Road and A423 Southern By-Pass</td>
</tr>
</tbody>
</table>
6.4 Summary of the key issues

This section 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 closure of Old Abingdon Road and the junction with Kennington Road for up to 15 months will result in diverted traffic using the A423 Southern By-Pass and A4144 Abingdon Road instead. Given the variation between eastbound traffic and westbound traffic along Old Abingdon Road (reflecting the eastbound shortcut), the increase in traffic should be accommodated by the junctions;

- There will be certain negative impacts on local bus services including the park and ride sites at Seacourt and Redbridge. These will largely be mitigated by the measures contained within the CTMP. One bus service will need to be diverted as a result of the temporary closure of Old Abingdon Road with two sets of bus stops affected. Nearby bus stops should mitigate the impact; and

- 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.
SECTION 6

FIGURE 6.1
Closure of Old Abingdon Road – 2018 Construction Start

Old Abingdon Road
Impact of Diverted Traffic - 2018 Construction Start
Growth Factor 1.016

A34 North towards Botley Interchange

Hinksey Hill Interchange

Hinksey Hill

A34 South
FIGURE 6.2
Closure of Old Abingdon Road – 2021 Construction End

Old Abingdon Road
Impact of Diverted Traffic - 2021 Construction End

Growth Factor: 1.062

A34 North towards Botley Interchange
Old Abingdon Road
A4144 Abingdon Road
A42 Southern By Pass
Hinksey Hill Interchange
A34 South

Hinksey Hill

222 59 8568 6

709 407 191 1

4461 21054

672 10152 3459 12026

2104

1130 1651

3603 773

473

2856 20159

44

24989

1406

20953

4937 868

1640 7884

1 5396 3362

1 5298 3362

37 8440

20953

477 1780

341 20953

1789

3868 1640 7984
FIGURE 6.3
Closure of Old Abingdon Road – 2018 Diversion of Traffic

Old Abingdon Road
Impact of Diverted Traffic - 2018 Construction Start

Growth Factor: 1.02

A34 North towards Botley Interchange

Hinksey Hill Interchange

Hinksey Hill

A34 South

A423 Southern By Pass

3815
9705
3307
11497

A423 Eastern By Pass

23803
3793

A34 North towards Botley Interchange

0 428 18 10416

Old Abingdon Road

0 0 13050

A4144 Abingdon Road

0 9200

Kennington Road

0 0

Hinksey Hill

212 57 8568 6
FIGURE 6.4
Closure of Old Abingdon Road – 2021 Diversion of Traffic
Mitigation

7.1 Introduction

Section 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 associate with 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)

7.2.1 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 comments; and
- Residents to be kept informed throughout the works.

Whilst the Outline CTMP discussed 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 7.2.8 below discusses 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 and walking and cycling routes.

7.2.2 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;
- Staff travel.
7.2.3 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
- Twitter account

7.2.4 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 LHA and Highways England. It is suggested the TMWG is made up of representatives from

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

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; and
- 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 6.3.2 of the TA. It is expected that routes to the minor accesses will be similar to those identified in section 6.3.2 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 will be monitored due to the short length of the on slips. Should concerns arise close working with Highways England 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 2016 and the requirements of 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 Traffic Signs Regulations and General Directions 2016 and the requirements of the Local Highways Authority.

7.2.7 Minor accesses

The works will require numerous minor access for short period 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
- 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 set out a methodology for agreeing the temporary 30 mph limit proposed along Parker Road. This speed reduction will enhance road safety at the main site access at Area 3. Critically
such a reduction would act to reduce the speed differential between through traffic and HGVs slowing
to enter the site.

7.2.9 Site Management

Maintaining 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 the impact, such as:

- **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 gate points 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. All hoardings will be formed of 2.4m minimum high plywood to a good standard and painted or plastic sheet decorated to suit the client’s requirements. The contractor will be responsible for maintaining the hoardings 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. 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**: This will be limited to workers who need carry heavy equipment or materials to site. Others will be encouraged to travel by sustainable modes (see section 7.2.7 below); and

- **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 vehicles where feasible, and regular fleet maintenance will take place to reduce emissions. All vehicles will be required to comply with the current 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. For example, this will include 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 Park and Ride 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.

7.3 Diversion of bus services

Section 6 identified one bus service (and two sets of bus stops) that would be impacted directly by the works. The temporary closure of Old Abingdon Road will mean the current route 35 will need to be diverted. Table 7.1 identifies the recommended mitigation actions.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation</th>
<th>Effect on Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact on Route 35 and commercial bus operation</td>
<td>Recommended early dialogue with the bus operator over a diversion route and agree a communication plan with passengers</td>
<td>Early engagement with the operator likely to improve and reinforce communication with passengers</td>
</tr>
</tbody>
</table>

1 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, CH4, NOX, NH3) and adopts harmonised drive cycles. New durability requirements to cover greater distances and measures to access vehicle repair and maintenance information.
Diversion of Route 35

Recommended diversion route is via the A4144 Abingdon Road and A423 Southern By-Pass

Route will involve looping around both the Hinksey Hill interchange and the Kennington roundabout. There is likely to be a marginal extension to journey times.

Temporary suspension of bus stops at Old Abingdon Road (Bertie Place) and Kennington Road (Egrove Park)

Recommended alternative bus stops at A4144 Abingdon Road (Canning Crescent) and Kennington Road (Upper Road)

Walking distance from the existing stops to Abingdon Road (Canning Crescent) from Old Abingdon Road is approximately 170m. Distance to Kennington Road (Upper Road) is approximately 270m.

7.4 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 7.2 identified the routes with the proposed mitigation.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation</th>
<th>Effect on Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>320/14 Willow Walk</td>
<td>Temporary closure of bridleway and diversion</td>
<td>The diverted route runs parallel to the existing 320/14 Willow Walk. Closure times and distances involved to be confirmed.</td>
</tr>
<tr>
<td>320/16 Hinksey Causeway</td>
<td>Temporary closure of footpath and diversion</td>
<td>The diverted route is via the Hinksey Meadow footpath to the north west. Closure times and distances involved to be confirmed.</td>
</tr>
<tr>
<td>320/17 and 352/1 Devils Backbone</td>
<td>Temporary closure of footpath and diversion</td>
<td>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 (works being timed before the closure of Old Abingdon Road). Closure times and distances involved to be confirmed.</td>
</tr>
<tr>
<td>Electric Footway</td>
<td>Temporary closure of footpath</td>
<td>Footway use is subject to approval of landowners. Existing routes via Devils Backbone to the New Hinksey area.</td>
</tr>
<tr>
<td>352/3 South Hinksey to Old Abingdon Road</td>
<td>Temporary closure of footpath</td>
<td>There will be two minor diversions along the existing alignment. Closure times and distances involved to be confirmed.</td>
</tr>
<tr>
<td>Temporary closure of Old Abingdon Road and junction with Kennington Road</td>
<td>Temporary closure of footpath</td>
<td>Recommended route, appropriately signposted, via shared use paths along the A4144 Abingdon Road, through the Kennington Roundabout to Kennington Road. Closure times and distances involved to be confirmed.</td>
</tr>
</tbody>
</table>
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 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 temporary closure of Old Abingdon Road and the junction with Kennington Road. The assessment undertaken here suggests a diversionary route through the A4144 Abingdon Road and the A423 Southern By-Pass should accommodate the additional traffic. The closure of the bridge at Old Abingdon Road should not impact on access for residents, businesses and services although some looping around the A34 Hinksey Hill Interchange and the A423 Kennington ‘Hamburger’ roundabout may be required. It is also worthwhile to note that Old Abingdon Road is used as an eastbound shortcut at present but cannot be replicated in the opposite direction.

The temporary closure of Old Abingdon Road will have an impact on one local bus route with two sets of bus stops affected over a duration of approximately 15 months. It is recommended that earlier liaison is taken with the local bus operator but alternative bus stops are available within acceptable distances.

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 Oxford Flood Alleviation Scheme is aligned with local policy and is recommended be approved on highways grounds.