Public Document Pack

OXFORDSHIRE COUNTY COUNCIL

Cabinet
Tuesday, 19 July 2022

SUPPLEMENTARY DOCUMENTS – ITEM 17
PART 1

17. Didcot Garden Town HIF1 - Compulsory Purchase and Side Road Orders (Pages 1 - 706)

Annex A
Appendix 1
Transport Assessment Part 1 – page 107
Transport Assessment Part 2 – page 277

This page is intentionally left blank

JOINT STATEMENT OF REASONS

Highways Act 1980

Acquisition of Land Act 1981

THE OXFORDSHIRE COUNTY COUNCIL (DIDCOT GARDEN TOWN HIGHWAYS INFRASTRUCTURE – A4130 IMPROVEMENT (MILTON GATE TO COLLETT ROUNDABOUT), A4197 DIDCOT TO CULHAM LINK ROAD, AND A415 CLIFTON HAMPDEN BYPASS) COMPULSORY PURCHASE ORDER 2022

THE OXFORDSHIRE COUNTY COUNCIL (DIDCOT TO CULHAM THAMES BRIDGE) SCHEME 2022

THE OXFORDSHIRE COUNTY COUNCIL (DIDCOT GARDEN TOWN HIGHWAYS INFRASTRUCTURE – A4130 IMPROVEMENT (MILTON GATE TO COLLETT ROUNDABOUT), A4197 DIDCOT TO CULHAM LINK ROAD, AND A415 CLIFTON HAMPDEN BYPASS) (SIDE ROADS) ORDER 2022

DRAFT

Version control

Author	Revision No.	Date Issued	Description of Revision: Comment
OCC	1.0	15.07.2021	OCC Team for TLT review
DR	1.1	20.07.2021	TLT Review
HF/MH	1.2	09.08.2021	FTB review
TS	1.3	20.01.2022	Further update and format change, issue for internal and Gateley Hamer review
TS	1.4	02.02.2022	Further update and format change, issue for internal updates
TS	1.5	09.02.2022	Issue to TLT for legal review
OCC	1.6	30.03.2022	Issue to TLT for Legal review and Gateley Hamer Lands review/input
OCC	1.8	13.04.2022	Incorporated updates post Legal Review
OCC	1.9	05.05.2022	Addressing updates post legal review

DRAFT

Contents

Contents 3
1. INTRODUCTION 6
The Orders the subject-matter of this Statement of Reasons 6
Statutory Powers under which the Orders are made 7
Confirmation of Orders 8
The Mining Code 8
2. LOCAL HOUSING, EMPLOYMENT AND TRANSPORT CONTEXT 10
Introduction 10
Geographic Context 10
Existing Highway Network 11
Allocated Housing Growth 13
Housing Infrastructure Fund (HIF) Business Case 14
Summary 14
3. NEED FOR THE SCHEME 15
Introduction 15
Existing Highway Network Performance 15
Active Travel 18
Public Transport 19
Network Resilience and Safety Improvements 20
Delivery of Housing and Employment Growth 21
Summary 23
4. SCHEME DESCRIPTION 24
Introduction 24
A4130 Widening 25
Didcot Science Bridge 27
Didcot to Culham River Crossing 29
Clifton Hampden Bypass 32
Public Transport 34
5. SCHEME OBJECTIVES AND THE BENEFITS OF THE SCHEME 35
Introduction 35
Meeting the Scheme Objectives 35
Benefits 38
6. ALTERNATIVES TO THE SCHEME 40
Introduction 40
Option Appraisal Report 41

DRAFT

Phase 1: Initial Sift 41
Phase 2: EAST Appraisal and Scoring 45
Phase 3 and 4: Sub Options 46
A4130 Widening – Sub Options 47
Didcot Science Bridge - Sub Options 47
Didcot to Culham River Crossing – Sub Options 48
Clifton Hampden Bypass Sub Options 49
OAR Alternative Summary 50
Appleford Parish Council – River Crossing Alternatives 50
7. CONSULTATION AND PUBLIC ENGAGEMENT – SECTION TO BE UPDATED 54
Introduction 54
Consultation on Local Plans 54
Landowner and Developer Engagement (February 2020 – present) 54
Stakeholder Briefings/Meetings (February 2020 – present) 55
Local Planning Authority Pre-Application Engagement (March 2020 – April 2021) 55
Environmental Impact Assessment Scoping Engagement 56
Public Consultation 56
A4130 Widening 57
Didcot Science Bridge 57
Didcot to Culham River Crossing 57
Clifton Hampden Bypass 57
General 57
Website 62
Conclusion 62
8. PLANNING POSITION 63
Introduction 63
Planning Policy Context 63
Key Planning Policies and Material Considerations of Relevance to the Scheme 64
Current Planning Status 66
Conclusions 67
9. THE ORDER LAND – SECTION TO BE UPDATED 68
Introduction 68
Description of Land Required for Title by Plot Reference 69
Description of Land Required for Rights by Plot Reference 74
10. COMPULSORY PURCHASE JUSTIFICATION – SECTION TO BE UPDATED 79
Appropriateness of Powers 79

DRAFT

The compelling case in the public interest 79
Need for compulsory acquisition 79
Detail of Negotiations 81
Conclusions 81
11. DELIVERABILITY AND VIABILITY 83
Introduction 83
Public Sector Funding 83
Timescales for Implementation 84
Conclusion 85
12. HUMAN RIGHTS AND PUBLIC SECTOR EQUALITY DUTY 86
Public Sector Equality Duty 87
13. BRIDGE SCHEME AND SIDE ROADS ORDER – TO BE UPDATED 88
Bridge Scheme 88
Side Roads Order (SRO) 88
14 RELATED ORDERS, CONSENTS AND SPECIAL CATEGORY LAND 98
Planning Application 98
Traffic Regulation Orders 98
Protected Species Licences 99
Network Rail – Asset Protection Agreement 100
Special Category Land – Statutory Undertakers' Land 100
Special Consideration 102
Views of Government Departments 102
INSPECTION OF DOCUMENTS AND CONTACT DETAILS 104
List of Documents in the Event of an Inquiry 104

DRAFT

1. INTRODUCTION

The Orders the subject-matter of this Statement of Reasons

1.1. Under the provisions of the Highways Act 1980, Oxfordshire County Council ("the Council") has made:

The Oxfordshire County Council (Access to Didcot Garden Town Infrastructure Improvements – A4130 Improvement (Milton To West of Didcot), A4130 Didcot Science Bridge Link Road, A4197 Didcot To Culham Link Road, and A415 Clifton Hampden Bypass) Compulsory Purchase Order 2022 ("the CPO");

The Oxfordshire County Council (Didcot To Culham Thames Bridge) Scheme 2022 ("the Bridge Scheme"); and

The Oxfordshire County Council (Access to Didcot Garden Town Infrastructure Improvements – A4130 Improvement (Milton to West Of Didcot), A4130 Didcot Science Bridge Link Road, A4197 Didcot To Culham Link Road, and A415 Clifton Hampden Bypass) (Side Roads) Order 2022 ("the SRO").

For the purposes of this Joint Statement of Reasons the CPO, SRO and Bridge Scheme are together referred to as the "Orders".

1.2. The Orders being made are to facilitate the delivery of the Access to Didcot Garden Town Highway Improvements ("the Scheme") which consists of a highway scheme approximately 11km in length, including converting 1.8km of single carriageway to dual carriageway, 6.8km of new single carriageway and approximately 20km of new and/or improved off-road cycling and pedestrian infrastructure. Connections into the existing public rights of way network will also be provided. The Scheme also includes three over bridges.

1.3. On 19 July 2022, the Council resolved to make the Compulsory Purchase Order, the Side Roads Order and the Bridge Scheme to facilitate the construction of the Scheme. The Council seeks confirmation of the Orders from the Secretary of State for Transport.

1.4. The Council has sought to acquire by agreement the required interests in the land needed to deliver the Scheme, including freehold, leasehold and occupational interests affected by the CPO, and has sought to enter into discussions with the owners of those interests with a view to agreeing appropriate terms for acquisition and compensation. In doing so, the Council has taken full account of the Department for Levelling Up, Housing and Communities' Guidance on Compulsory purchase process and The Crichel Down Rules (the "CPO Guidance"), which provides guidance to acquiring authorities on the use of compulsory purchase powers.

1.5. The CPO guidance is clear that compulsory purchase should be used as a last resort. However, it does acknowledge that acquiring authorities do need to programme for when land will be needed. For this reason, the CPO Guidance recommends that the compulsory purchase process should run in parallel with the negotiation process. To

enable the implementation of the Scheme within realistic timescales, compulsory purchase powers will be employed. Nevertheless, the Council remains committed to continuing discussions with landowners with a view to seeking to acquire all necessary land and rights by agreement.

1.6. The Council has conducted a thorough land referencing exercise to establish the required interests in the land to deliver the Scheme ("the Order Land").

1.7. On confirmation of the Orders, the Council intends to either serve Notices to Treat or execute a General Vesting Declaration(s), as the case may be, in order to secure title to or rights over the respective parts of the Order Land.

1.9. The Council is both the Local Planning Authority ("LPA") and also the Local Highway Authority ("LHA").

1.10. The following principles have been considered:

- The justification and need for the Orders;
- the consultation process and consideration of third-party interests;
- the status of the associated consents;
- the availability of funding;
- the availability of all the land required and the reasons why all the land identified is necessary;
- the statutory requirements that must be satisfied before construction can start; and
- confirmation that there are no impediments to the Scheme being implemented.

1.11. This Joint Statement of Reasons demonstrates a justified and compelling case in the public interest for confirmation of the Orders.

Statutory Powers under which the Orders are made

1.12. The Compulsory Purchase Order, made by the Council pursuant to sections 239, 240, 246, 250 and 260 of the Highways Act 1980 and the Acquisition of Land Act 1981, would, if confirmed by the Secretary of State, facilitate compulsory acquisition of the land and new rights required for delivery of the Scheme.

1.13. The CPO will enable the Council, as Acquiring Authority, to acquire land and new rights compulsorily for the improvement of the A4130 and A415, construction and maintenance of new highway, highway structures, cycling and pedestrian infrastructure to be classified roads as the proposed A1430, proposed A14197, and A415 Clifton Hampden Bypass.

1.14. The SRO, made by the Council pursuant to sections 14 and 125 of the Highways Act 1980, provides for the stopping up and improvement of particular side roads which connect to the Scheme, for the construction of new highways, for the stopping up of

private means of access to premises and the provision of new means of access to them. The SRO would, if confirmed by the Secretary of State, enable the construction of the Scheme and other necessary and associated highway works.

1.15. The Bridge Scheme, made by the Council pursuant to Section 106(3) of the Highways Act 1980, will authorise the construction of a new road bridge across the River Thames, being a navigable waterway. Without the Bridge Scheme, construction across a navigable waterway would not be permitted. The Bridge Scheme is in addition to needing to secure the acquisition of the airspace through which the bridge structure will be constructed, the land where any bridge supports sit and the acquisition of new rights as required to maintain and repair the bridge structure in the future (together with other such rights as may be necessary).

Confirmation of Orders

1.16. The making and confirmation of the CPO will enable the Council to acquire the land and rights necessary for the construction and maintenance of the Improvement Scheme, ensure the necessary improvements are made to the local highway network, and implement appropriate mitigation measures.

1.17. The making and confirmation of the SRO will enable the Council to improve, raise, lower, divert or otherwise alter highways, stop up highways, stop up private means of access and provide new private means of access to premises required as a consequence of the construction of the Improvement Scheme.

1.18. The making and confirmation of the Bridge Scheme will enable the Council to construct (subject to land acquisition) a single 65 metre span bridge from the south bank to the north bank of the River Thames over the navigable waters of the River Thames, at a location south east of Culham and north west of Appleford.

The Mining Code

1.19. The CPO also incorporates Parts II and III of Schedule 2 to the Acquisition of Land Act 1981, as applied by Section 3 of that Act, commonly referred to as the Mining Code. By virtue of these provisions, the CPO does not seek to compulsorily acquire mineral interests in the Order Land.

1.20. Paragraphs 201 and 202 of the Guidance states that the Mining Code should not be incorporated automatically or indiscriminately, as this may lead to the sterilisation of minerals, including coal reserves. Acquiring authorities are asked to consider the matter carefully before including the Mining Code, having regard to the existence of statutory rights of compensation or whether repair might provide an adequate remedy in the event of damage to land, buildings or works occasioned by mining subsidence.

1.21. Incorporation of the Mining Code within an order, thereby engaging Parts II and III of Schedule 2 to the Acquisition of Land Act 1981, provides for the exclusion of mineral right acquisition from the CPO, avoiding sterilisation of the minerals whilst providing a degree of protection for the Acquiring Authority and allowing the Scheme to be taken forward. By incorporating the Mining Code, the Acquiring Authority can take steps to

prevent the working of minerals within a specified distance of the surface, provided compensation is paid.

1.22. The Acquiring Authority has investigated mines and minerals with the County Council's Waste and Mineral Planning Team. It has been confirmed that the majority of workable minerals in the vicinity of the HIF1 Scheme have already been worked or that, where workable minerals exist, the HIF1 Scheme will not impact their ability to be worked in the future. The exception to this relates to the Clifton Hampden Bypass element of the Scheme. Permission to work minerals in this area has been denied by the Mineral Planning Authority ("MPA") twice within the last 15 years, largely as a result of significant objection by local residents. It is considered by the Acquiring Authority that the likelihood of minerals being extracted north of the A415 is very low, due to the area being relatively built up, particularly the Centre of the UK Atomic Energy facility, and due to the water treatment facility being within close proximity.

1.23. The Acquiring Authority has had regard to the discussions with the MPA and the advice contained in the Guidance in preparing the Order, and considers that in the circumstances of this case, where compensation and repair of damage would not be adequate in view of the public use and nature of the Scheme, together with the potential traffic implications and disruption that might occur if the mines and minerals within the Order Land were to be worked and such damage were to occur, it is appropriate to incorporate the Mining Code to sever from the Order Land the mineral rights that may exist below the land.

DRAFT

2. LOCAL HOUSING, EMPLOYMENT AND TRANSPORT CONTEXT

Introduction

2.1. This section gives an overview of the local context in terms of allocated housing and employment, inadequate existing transport infrastructure and physical constraints such as the railway and River Thames, which has led to the need for the Scheme, as detailed in Section 3.

Geographic Context

2.2. Science Vale UK ("Science Vale") is a significant area of economic growth and is a 'hot spot' for enterprise and innovation that spans both South Oxfordshire District Council and Vale of the White Horse District Council, within the county of Oxfordshire. It is home to a significant proportion of the region's scientific, research and development, and high technology businesses. The region is gaining an international reputation as a first-choice location for companies wanting to make their mark in business and research.

2.3. The area has two Enterprise Zones and new businesses relocating to these areas can benefit from business rates discounts, superfast broadband, and simplified planning zones. In future years, the Science Vale area will see extensive effort undertaken into innovative, high technology research and development. It is one of the anchors of the Oxfordshire Knowledge Spine, which underpins the strategy set out in the Oxfordshire Strategic Economic Plan.

2.4. The area extends south from Oxford across to Didcot, clustered broadly around the A34, Great Western Mainline and Oxford-Didcot railway route. Science Vale comprises the towns of Didcot (including Milton Park and Didcot Power Station), Wantage and Grove, together with the established research centres at Culham Science Centre and Harwell Campus and the area between these settlements. The area shown in **Figure 1** includes the boundaries of Science Vale.

DRAFT

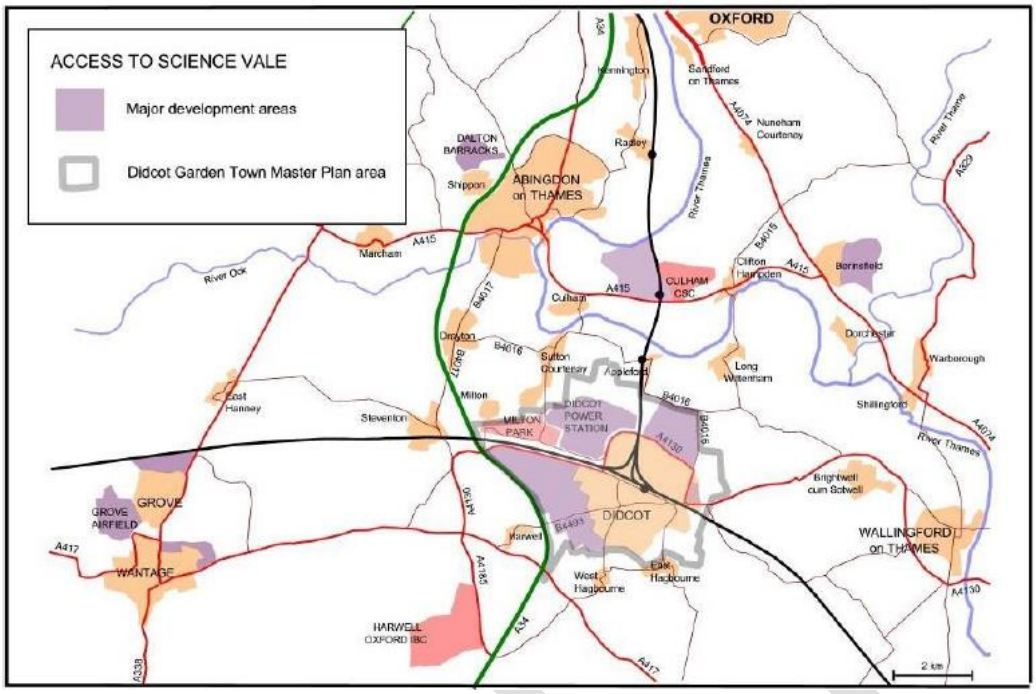


Figure 1: Didcot Garden Town within Science Vale

Existing Highway Network

2.5. Movement in Didcot and Science Vale is currently characterised by high levels of private car travel and dependence upon the car. This is outlined in the Transport Assessment **[Appendix 1]**, which compares mode share data for the journey to work from the 2011 Census for Oxfordshire as a whole. The existing high levels of car use across Didcot and Science Vale will continue unabated without suitable transport interventions. There are underlying issues which cause the high use of private cars including the rural nature of Science Vale and the lack of attractive sustainable alternatives. Whilst distances travelled may be short, the private car appears to be a popular mode of travel within Didcot. In part, this is self-reinforcing, as high levels of vehicular traffic makes active travel less attractive.

2.6. Large urban extensions of the 1990s (Ladygrove), planned housing and employment growth in the 21st Century and historic and constrained highway infrastructure in and around Didcot have resulted in a highway network that has failed to keep pace. Additionally, the location of employment centres on historic and relatively remote military bases (Harwell Science and Innovation Campus and Culham Science Centre), compounds congestion in and around the town.

2.7. Railway lines and the River Thames create severance to effective movement and barriers to connectivity between homes and jobs. Severe congestion is evident on the A4130, on the existing river crossings between Didcot and Culham/Clifton Hampden, and within Clifton Hampden. In addition, whilst the Great Western Mainline brings many benefits to the town, the crossings over/under the railway bring about problems related to limited visibility, restricted width lanes and unidirectional tunnels.

2.8. The major road in the area is the A34 Trunk Road, which passes in a north-south direction connecting the M40 and M4 via Oxford. The other main roads form a loose grid across the area: A338 (Oxford-Wantage-M4); A4074 (Oxford-Reading); A415

DRAFT

(Witney-Abingdon-A4074) and A417/A4130 (Wantage- Didcot-Wallingford). To the north of Didcot, the road network is relatively sparse and constrained by the River Thames. The B4016 connects to the village of Appleford (via a narrow bridge over the Cherwell Valley Railway (Didcot-Oxford), adjacent to Appleford station) and beyond to Culham and the A415 via Abingdon Road-Tollgate Road.

2.9. An alternative route is provided to the east via the village of Long Wittenham, which connects to the A415 at Clifton Hampden, close to the Culham Science Centre. The existing river crossing at Culham Village (Sutton Bridge and Culham Cut) is a historic narrow bridge, which operates under signalised shuttle-working. There is also an existing historic narrow bridge on the High Street connecting Clifton Hampden to Long Wittenham, which also operates under signalised shuttle-working. To the west of Didcot, Sutton Courtenay Road/Lane-Harwell Road-High Street-Church Street connects with Sutton Courtenay as well as Abingdon Road-Tollgate Road and onwards to the A415. The road network is shown in **Figure 2.**

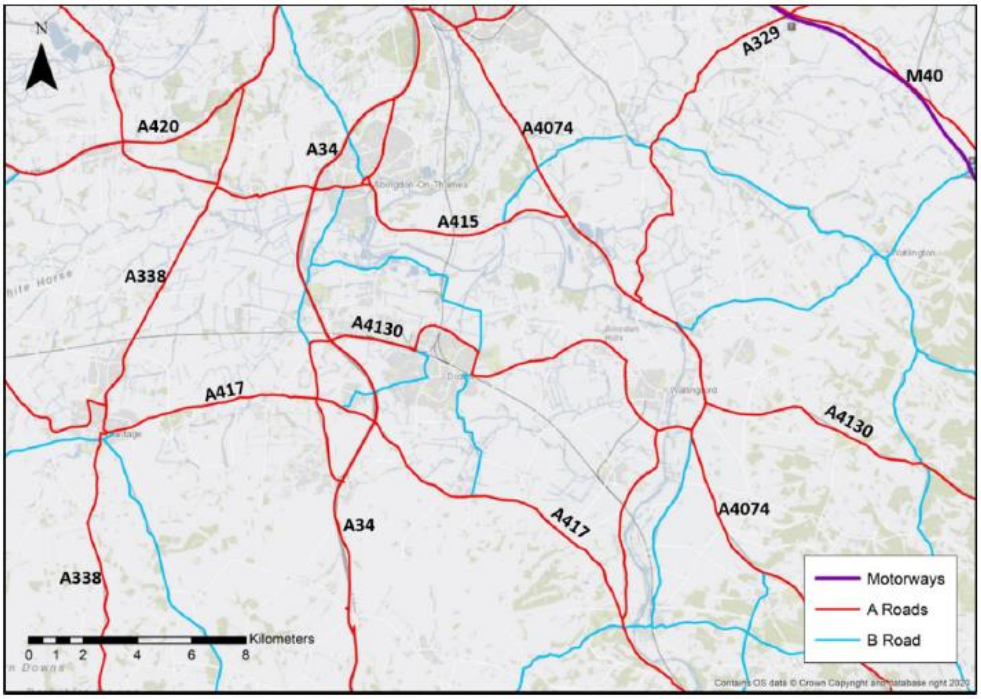


Figure 2: Road Network

2.10. Cycle infrastructure is present across Science Vale and Didcot. However, this provision is fragmented and discontinuous in places, with a lack of infrastructure in several key areas across the region. There is a concentration of cycling infrastructure in and around Didcot, notably with cycle infrastructure provided from Didcot to Milton Park, a key employment area. Further details can be found in the Transport Assessment [Appendix 1].

2.11. In comparison to the cycle infrastructure, there is a more extensive, interconnected network of public rights of ways, as shown in Figure 3. For example, there are footpaths connecting Didcot to Culham via Sutton Courtenay, and there are paths linking Harwell and Wantage. However, it should be noted that many of these footpaths do not have a solid surface and, as such, are more likely to be leisure routes rather than those used

for commuting. Due to the severance created by the River Thames and the historic road network, there are poor opportunities for walking and cycling north-south in this area. For example, residents of Didcot wishing to cycle to Culham Science Centre must use indirect routes, relying on the main carriageway for significant portions.

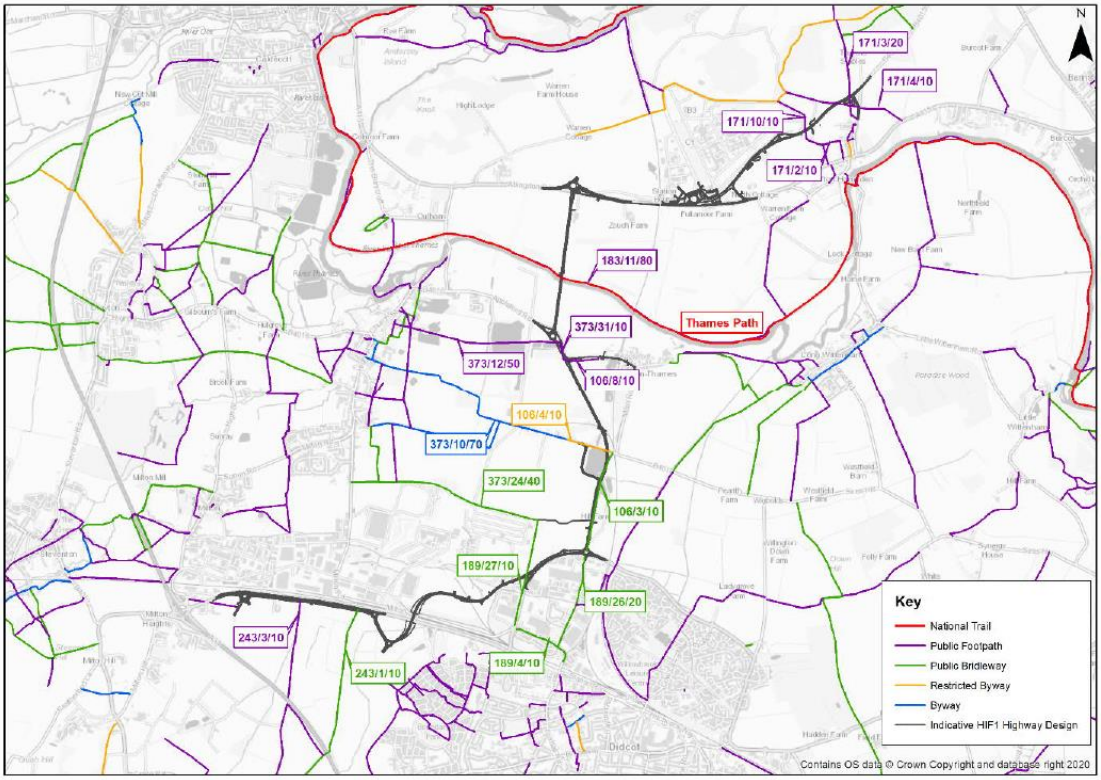


Figure 3: Public Rights of Way

Allocated Housing Growth

2.12. At present, Oxfordshire is a prosperous and vibrant county, combining a successful and thriving economy with a high-quality environment. Oxfordshire has committed to the delivery of 100,000 new homes between 2011 and 2031, as identified within the 2014 countywide Strategic Housing Market Assessment and the five districts' Local Plans.

2.13. Science Vale's development is directly influenced by the development plans in South Oxfordshire and Vale of White Horse, as well as the commitment to the Housing and Growth Deal by the Oxfordshire local authorities. The South Oxfordshire District Council Local Plan 2035 covers the area between south-east Oxford, Didcot and just north of Reading. The plan was adopted in December 2020 and outlines the district's housing need of 18,600 additional homes between 2020 and 2035. Furthermore, Oxford City's unmet housing need of 4,950 additional homes leads to South Oxfordshire having to deliver a total of 23,550 additional homes within the plan period, in order to cover for the area's shortfall in houses.

2.14. The Vale of White Horse District Council Local Plan 2031 covers the area from north and west of Didcot including the settlements of Chilton, Wantage, Harwell, Milton, Abingdon and the A4130 corridor. Part 1 of the Local Plan was adopted in December 2016 and Part 2 was adopted in October 2019, outlining the housing need across the district. Part 1 of the Local Plan identifies an additional 20,560 homes required within the plan period (2016 – 2031), and Part 2 of the Local Plan identifies that an extra 2,200 homes are required to assist Oxford City with meeting its housing needs, totalling 22,760 homes delivered within the plan period.

Housing Infrastructure Fund (HIF) Business Case

2.15. The HIF Business Case, submitted to Homes England by Oxfordshire County Council in 2019, identified that Didcot is a key centre of growth for enterprise locally and has been designated as a Garden Town growth area (Figure 1). The HIF Business Case also recognises the existing constraints on the highway network in Didcot. If left unresolved, the HIF Business Case considered that these issues could pose significant barriers to the growth and prosperity of the region. Therefore, in order to support growth in Science Vale, the HIF Business Case recommended that improvements are required to the transport network to enhance access to the area.

Summary

2.16. The existing issues with lack of river crossing options, constrained capacity on existing routes, railway crossing capacity and connections to the A34, all have the potential to become serious enough that they may make the allocated development sites less attractive, as well as exacerbating existing traffic-related issues and leading to increased traffic congestion. This would have the effect of disrupting local aspirations to use development growth as the catalyst to transform Didcot into a more coherent and cohesive Garden Town community. In addition, it is imperative to encourage the use of sustainable travel throughout Science Vale, in order to reduce adverse health impacts and improve air quality.

2.17. As such, the analysis of challenges to date has demonstrated the need for interventions to address the issues and ensure that the area has transport provisions suitable for the intended increase in housing growth.

DRAFT

3. NEED FOR THE SCHEME

Introduction

3.1. This section gives a summary of the background in respect of the need for the Scheme, and thus why land is required for construction of the Scheme, as well as the associated Side Road Order and Bridge Scheme. The information is set out in greater detail in the Transport Assessment **[Appendix 1**] submitted as part of the planning application for the Scheme.

3.2. There are five key problems that the Scheme will address:

- Existing Highway Network Performance
- Active Travel
- Public Transport
- Network Resilience and Safety Improvements
- Delivery of Housing and Employment Growth.

Existing Highway Network Performance

3.2. Railway lines and the River Thames create severance to effective movement and barriers to connectivity between homes, jobs and amenities in Didcot and the surrounding areas. High levels of congestion are evident on the A4130, on the existing river crossings between Didcot and Culham/Clifton Hampden and within Clifton Hampden.

3.3. Morning and evening peak hour traffic data for the existing junctions within the study area have been obtained from the Didcot Paramics Microsimulation model, which was jointly funded by Oxfordshire County Council, Vale of White Horse District Council and South Oxfordshire District Council. Utilising the 2020 base traffic flows from the Paramics model, junction capacity assessments have been undertaken at numerous existing off-site junctions (prefix 'OFF') as highlighted in **Figure 4**.

DRAFT

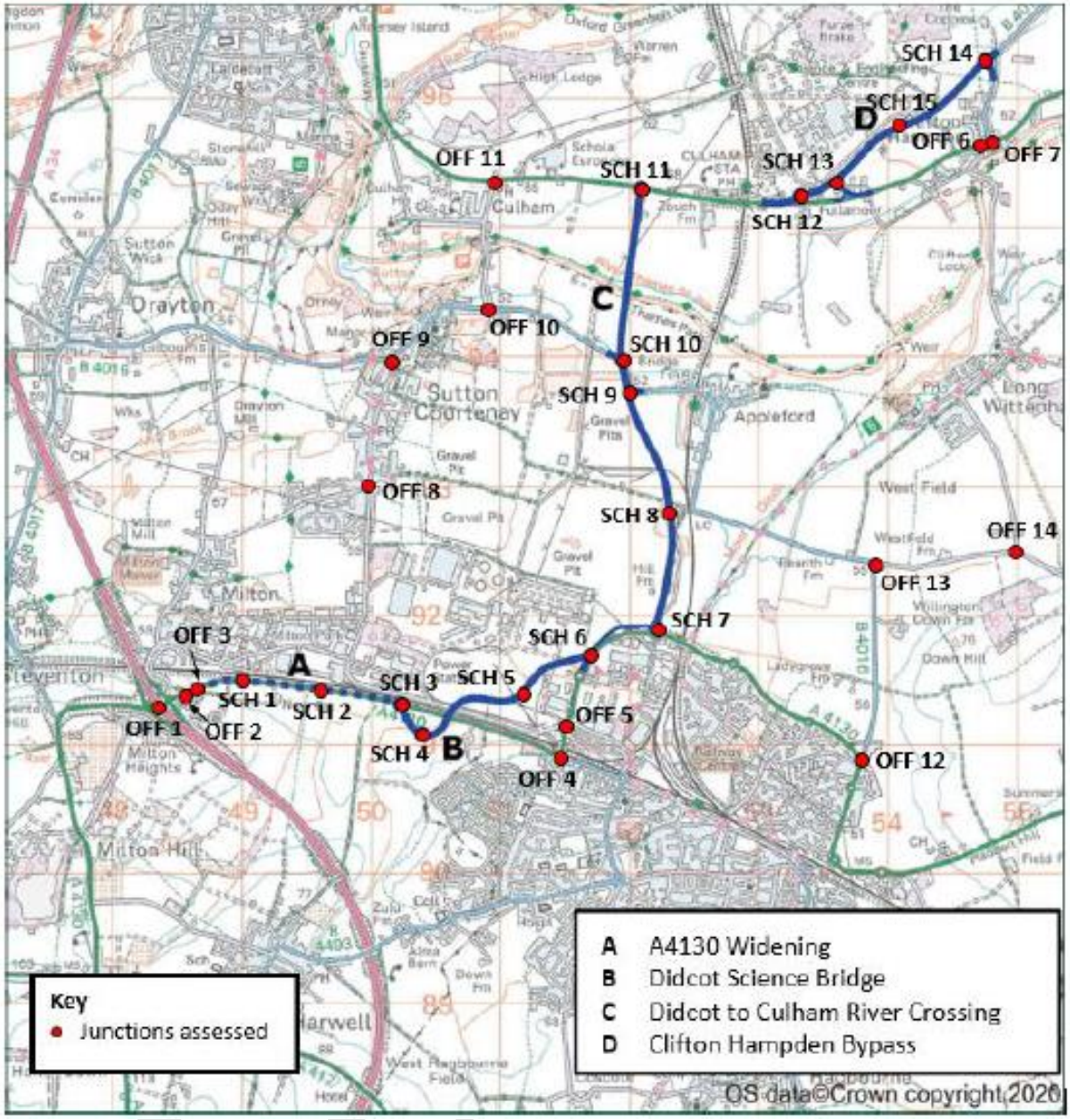


Figure 4: Junction assessment

3.4. The following off-site existing junctions are operating over capacity in either or both the 2020 morning and evening peak hours:

- (Ref: OFF 3) - A4130 signalised junction with Milton Gate;
- (Ref: OFF 5) - A4130 roundabout with Basil Hill Road and Milton Road (Power Station);
- (Ref: OFF 6) - A415 signalised junction with High Street;
- (Ref: OFF 7) - A415 signalised junction with B4015 Oxford Road;
- (Ref: OFF 9) - B4493 priority junction with Foxhill Road;
- (Ref: OFF 10) - B4016 Appleford Road priority junction with Abingdon Road;

- (Ref: OFF11) - A415 signalised junction with Tollgate Road;
- (Ref: OFF 12) - A4130 priority junction with Lady Grove; and
- (Ref OFF 13) - Lady Grove priority junction Sires Hill.

3.5. This has led to Oxfordshire County Council, as Local Highway Authority (LHA), objecting to the applications of single dwellings on grounds of highway safety, capacity, convenience and sustainability. These objections have led to planning applications being refused, with such refusals upheld on appeal [**Appendix 3**] as follows:

- APP/V3120/W/17/3187947 (Decision date 6 March 2018) – development proposal was for the erection of a dwelling and alterations to existing semi-detached dwelling.
- APP/V3120/W/18/3200241 (Decision date 2 November 2018) – development proposal for change of use from a storage barn to two bedroomed residential dwelling with parking.
- APP/V3120/W/3214090 (Decision date 26 March 2019) – development proposal for a change of use of agricultural building to a dwelling house and for associated operational development.
- APP/V3120/W/19/3234258 (Decision date 29 November 2019) – development proposal for the erection of 1 house.

3.6. Additionally, a Vale of White Horse District Council Local Plan strategic allocation for 200 new homes has also been refused planning permission on similar grounds. It is evident that the constrained highway network has already adversely affected growth in the area.

3.7. It is clear that the current highway network in this area suffers with severe traffic congestion and delay, which was identified as part of the Vale of White Horse District Council Local Plan Part 1 Inspector's Report (2016):

145. I have read and heard much debate about the robustness of the Impacts Study's findings and whether or not the residual congestion issues it identifies would be "severe" in terms of paragraph 32 of the NPPF. However, there is no convincing and detailed evidence to demonstrate that the study's conclusions are not robust, bearing in mind that they can only ever be a strategic-level forecast and that more detailed transport impact appraisals will be necessary as part of the consideration of specific development proposals. Moreover, whilst it is to a significant degree a matter of judgement, I have read and heard nothing which persuades me that the District and County Councils' conclusion that the likely residual transport impacts would be acceptable is not a soundly-based finding. In considering this point I have borne in mind that the "starting point" situation for the Vale is as a district which very much suffers from traffic congestion.

Active Travel

3.8. Key origins/destinations in the area include Culham Science Centre, Milton Park and Didcot Town Centre. There is currently a lack of direct and attractive walking and cycling routes to these locations to encourage residents / employees to use these modes. For example, the existing route between Didcot and the Culham Science Centre is along National Cycle Network route 5, via Long Wittenham to Clifton Hampden and along the A415 Abingdon Road. However, part of National Cycle Network route 5 is unlit and is, therefore, deemed unattractive to pedestrians and cyclists during night-time hours due to safety concerns. In addition, there is no continuous provision of footpaths for pedestrians to complete this route without walking on the carriageway.

3.9. The lack of walking and cycling connectivity between key residential and employment areas is reflected in the proportion of people who walk and cycle to work in Didcot. **Table 1** compares mode share data for the journey to work from the 2011 Census for Oxfordshire as a whole, Oxford and Didcot. The data represents mode share for residents in these areas. The combined walk and cycle mode share for Didcot is 15.6%, lower than Oxfordshire at 20.9% and significantly lower than Oxford at 38%.

Mode	Oxfordshire	Oxford	Didcot
Underground, metro, light rail, tram	0.2%	0.3%	0.1%
Train	3.2%	2.7%	7.3%
Bus, minibus or coach	7.5%	17.4%	4.0%
Taxi	0.3%	0.4%	0.2%
Motorcycle, scooter or moped	0.9%	0.7%	0.9%
Driving a car or van	61.8%	36.2%	66.3%
Passenger in a car or van	4.6%	3.4%	5.3%
Bicycle	7.7%	18.7%	4.7%
On foot	13.2%	19.3%	10.9%
Other method of travel to work	0.6%	0.8%	0.4%
TOTAL	**100.0%**	**100.0%**	**100.0%**

Source: 2011 Census, dataset QS701EW – Method of Travel to Work.

Table 1: Journey to Work Mode Share

3.10. Between the Milton Interchange roundabout and the rail underpass at Backhill Tunnel (south of Milton Park), up to 3m wide shared use cycle-pedestrian footways are present on both sides of the A4130 carriageway. However, there is no shared use provision on the northern side nearer Milton Interchange. There is no northern footway along the A4130 east of Backhilll tunnel. There is a Toucan crossing at this location providing a connection between the northern and southern footways of the A4130 and the Backhill Tunnel, connecting to Milton Park for pedestrians and cyclists only.

3.11. Between the Backhill Tunnel and the A4130/B4493/Mendip Heights roundabout, a 2.5m wide shared use footway is present along the southern frontage. This footway suffers from poor separation between the high-speed road subsequently the Non-Motorised User (NMU) experience is poor due to buffeting from vehicles passing by, especially Heavy Goods Vehicles. This footway is shared by cyclists and pedestrians and links to the public rights of way located to the south of the A4130.

3.12. There are poor NMU facilities linking to Manor Overbridge. There is a shared footway/cycleway along the western side of the A4130 between the A4130 / Milton Road / Basil Hill Road roundabout and the A4130 / Hawksworth / Purchas Road roundabout, with a footway also present on the eastern side of the carriageway.

3.13. Due to the severance created by the River Thames and the historic road network, there are poor opportunities for walking and cycling north / south in this area. For example, residents of Didcot wishing to cycle to Culham Science Centre must use indirect routes, relying on the main carriageway for significant portions.

3.14. Along A415 Abingdon Road there is a 1.3m wide shared footway / cycleway along the northern side of the carriageway, between Thame Lane and Culham Science Centre. There is a 1.5m wide shared footpath / cycleway on the south side of the A415 Abingdon Road, from Culham Science Centre to Clifton Hampden.

3.15. In summary, the highlighted current constrained/disjointed pedestrian and cycle infrastructure restricts the use of active travel modes for both commuting and leisure purposes in the area.

Public Transport

3.16. Due to the severance created by the River Thames and the historic road network, there are also currently poor opportunities for bus operators to offer good journey time reliability north / south in this area. This is evident from **Table 1** which shows Didcot to have very low bus use compared to other areas of Oxfordshire.

3.17. Prior to January 2021, the only service operating over Clifton Hampden Bridge was a less-than-daily service providing access to Didcot from local villages. Route 95 is a new service which commenced in January 2021 to provide a peak hours service from Didcot to Culham Science Centre - two morning journeys and three evening journeys. There is no off-peak or weekend services. The service is funded using contributions from section 106 planning obligations relating to Culham Science Centre. Between peak times, three journeys in each direction operate a similar route from Didcot until Clifton Hampden, where they then go to Berinsfield instead of Culham Science Centre. These journeys are numbered 95B and are operated with the bus that operates route 95, which will otherwise be unoccupied.

3.18. The 33 is the only bus service that uses the Culham Cut and Sutton Bridge crossing of the River Thames. It operates a broadly hourly service running between Didcot and Abingdon via Sutton Courtenay and Culham village.

DRAFT

Network Resilience and Safety Improvements

3.19. The area is located within the River Thames catchment and crosses a number of waterways, including the River Thames, Moor Ditch, Stert Brook, Cow Brook, Meadow Brook and the Clifton Hampden Brook. As a result, parts of the Site fall within both Flood Zone 2 and Flood Zone 3 as shown on **Figure 5**.

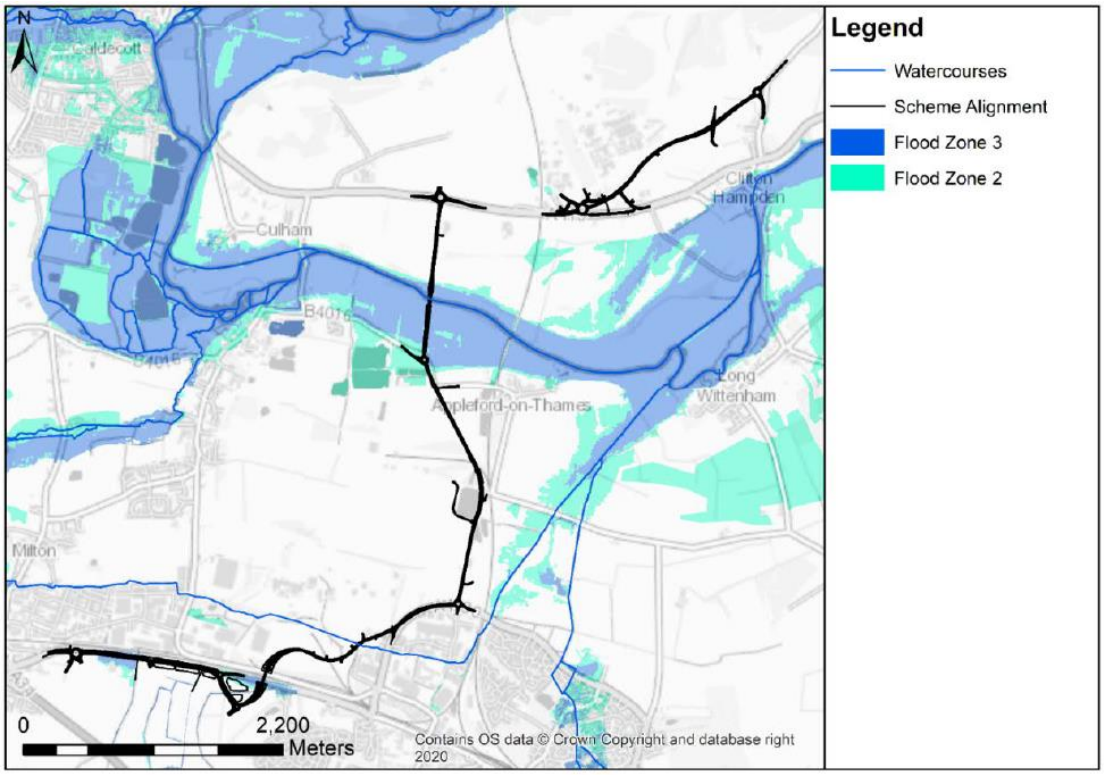


Figure 5: EA Long Term Flood Risk to Areas Surrounding Scheme

3.20. As shown on Figure 5, the existing bridges over the River Thames at Clifton Hampden and Culham are located within Flood Zone 3. In February 2021, both the existing bridges over the River Thames at Clifton Hampden and Culham were closed due to flooding, requiring long diversion routes and resulting in a negative impact on other areas of the highway network. Greater resilience is, therefore, required on the network through the provision of alternative routes through this important employment and residential area.

3.21. Collision data received for the 5-year period between June 2014-June 2019 within the Scheme extents shows that 150 collisions resulting in 189 casualties occurred during that time. Of the 189 casualties, 156 (82%) were categorised as slight injuries, 28 (15%) as serious and 1 (3%) resulted in a fatality. The collision records identify the following in terms of collision involving road users:

- 34% (48) of the 141 collisions involved a cyclist (30%) or pedestrian (4%)
- 21% (30) of the 141 collisions involved a motorbike

- 21% (30) of the 141 collisions involved other road user category (includes emergency vehicles and refuse vehicle etc), and
- 19% (27) of the 141 collisions involved a Heavy Good Vehicle.

3.22. Most of the locations of the recorded collision are spread across the Scheme area. However, a cluster site was identified in the study area at the A4130 / Milton Road / Basil Hill Road roundabout. A total of 12 collisions were reported within the study period, of which 5 were serious and 7 were slight in severity. All 5 serious collisions involved vehicles entering the roundabout from the A4130 and failure to give way to cyclists negotiating the roundabout from Milton Road on the west, towards Basil Hill Road on the east. 3 of these collisions occurred during the hours of darkness and 2 during daylight hours.

3.23. Of the 7 slight collisions, 5 collisions involved a vehicle entering the roundabout from the A4130 and failure to give way to cyclists negotiating the roundabout from Milton Road on the west towards Basil Hill Road on the east. All these collisions occurred during daylight hours, and 3 of these took place in wet conditions. The 2 remaining slight collisions involved a Heavy Goods Vehicle failing to give way to a motorcyclist during dry, dark conditions, and an incident involving a vehicle colliding with a cyclist travelling on the nearside on the A4130 approach to the A4130 / Milton Road / Basil Hill Road roundabout.

3.24. It is evident there are opportunities for road safety improvements given the historic nature of the current highway network, which is not designed to current horizontal or vertical design standards and provides poor Non-Motorised User infrastructure.

Delivery of Housing and Employment Growth

3.25. The Scheme will support significant growth in housing in South Oxfordshire District Council and Vale of White Horse District Council by directly unlocking 11,711 homes in the Didcot Garden Town area, including approximately 4,200 affordable homes and supporting another 5,000 new homes already permitted. This is coupled with substantial areas for employment generating activities, expected to be high value jobs contributing strongly to local and national economic growth. The allocated housing and employment sites alongside the Scheme alignment are shown on **Figure 6**.

DRAFT

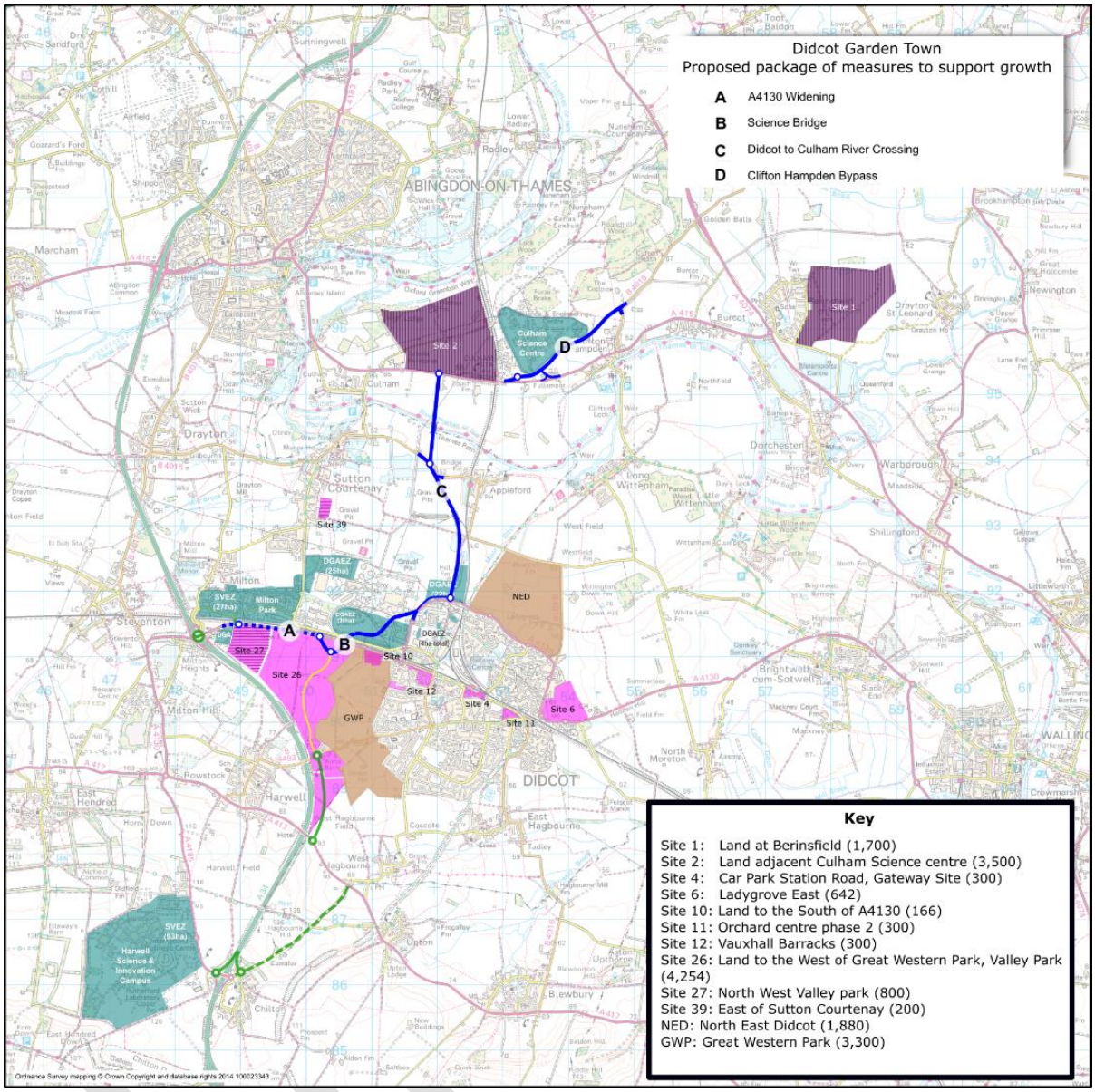


Figure 6: Allocated Housing and Employment Growth alongside Scheme alignment

3.26. The business case and benefit cost ratio (BCR) was predominantly predicated on the delivery of new homes by evaluation of land value uplift (LVU) rather than a traditional transport business case. Even though the transport benefits/disbenefits were assessed as part of the business case, the use of LVU is reflective of the Government's priority to deliver more new homes in areas where they are most needed. Oxfordshire is a high housing demand area with Oxford City, often cited as the most expensive area to live outside London, relative to wages. Oxfordshire, as demonstrated by the Housing and Growth Deal, is integral to the Government achieving its national target of building 300,000 new homes every year.

3.27. The housing schemes represent a significant contribution towards delivering Oxfordshire's Housing and Growth Deal, which supports the delivery of 100,000 new homes across the county up to 2031. However, a substantial number of new homes

and jobs have already been delivered throughout South Oxfordshire and Vale of White Horse, which has created a severe impact on the local highway network as per paragraph 111 of the National Planning Policy Framework 2021.

3.28. As part of the local planning process to determine where housing and employment growth is located in the Vale of White Horse and South Oxfordshire districts, an Evaluation of Transport Impacts has been conducted to determine the correct level and location highway mitigation. The Scheme, amongst other interventions, was identified as essential for the Vale of White Horse District Council Local Plan Part 1 adopted in 2016. In the Inspector's report for the Vale of White Horse District Council Local Plan Part 1, the Inspector was satisfied that a mitigation strategy was identified to deal with growth associated with the Local Plan Part 1 and South Oxfordshire's Core Strategy 2016. This was in the knowledge that much of the highway infrastructure was unfunded and a large shortfall was identified to deliver necessary infrastructure.

3.29. The complexity, scale, cost and risks associated with the Scheme has, to date, prevented private developers from fully funding and having the ability to deliver homes on third party land. The above highlights clear evidence of market failure in this area, which is preventing major housing and employment developments from being realised.

Summary

3.30. This section has given a summary of the need for the Scheme. The analysis of challenges to date has demonstrated the need for interventions to address the issues and ensure the area has transport provisions suitable for the intended increase in housing and employment growth.

DRAFT

4. SCHEME DESCRIPTION

Introduction

4.1. This section describes the Scheme objectives and the Scheme itself in detail.

Scheme Objectives

4.2. The objectives of the Scheme have been defined as part of work detailed in Access to Science Vale Option Appraisals Report Part 1, Option Appraisals Report Part 2 and the successful Housing Infrastructure Fund bid and agreed by a district working group. The objectives of the Scheme are:

- **Reduce congestion and provide capacity** on the arterial routes within Didcot;
- **Enable modal shift** across the Science Vale;
- **Improve accessibility** across the River Thames and the Great Western Main Line in Didcot;
- **Improve resilience** of the transport network, including safety enhancements, which will respond to future uncertainties and opportunities;
- Enable **sustainable growth** within the Science Vale; and
- Ensure the Science Vale remains a **world-leading research location**.

4.3. The Scheme has been designed to be the most appropriate solution to meet the objectives noted above and the need, as detailed in Section 3. A rigorous assessment of alternatives has been undertaken which identified, consulted, refined, and evaluated a range of options, as detailed further in Section 6.

The Scheme

4.4. A detailed description of each element of the Scheme is set out in turn with the General Arrangement drawings [**Appendix 2**]. The Scheme can be divided into four sections, as set out below and illustrated on **Figure 7**:

- the A4130 Widening;
- Didcot Science Bridge;
- Didcot to Culham River Crossing; and
- Clifton Hampden Bypass.

DRAFT

Image

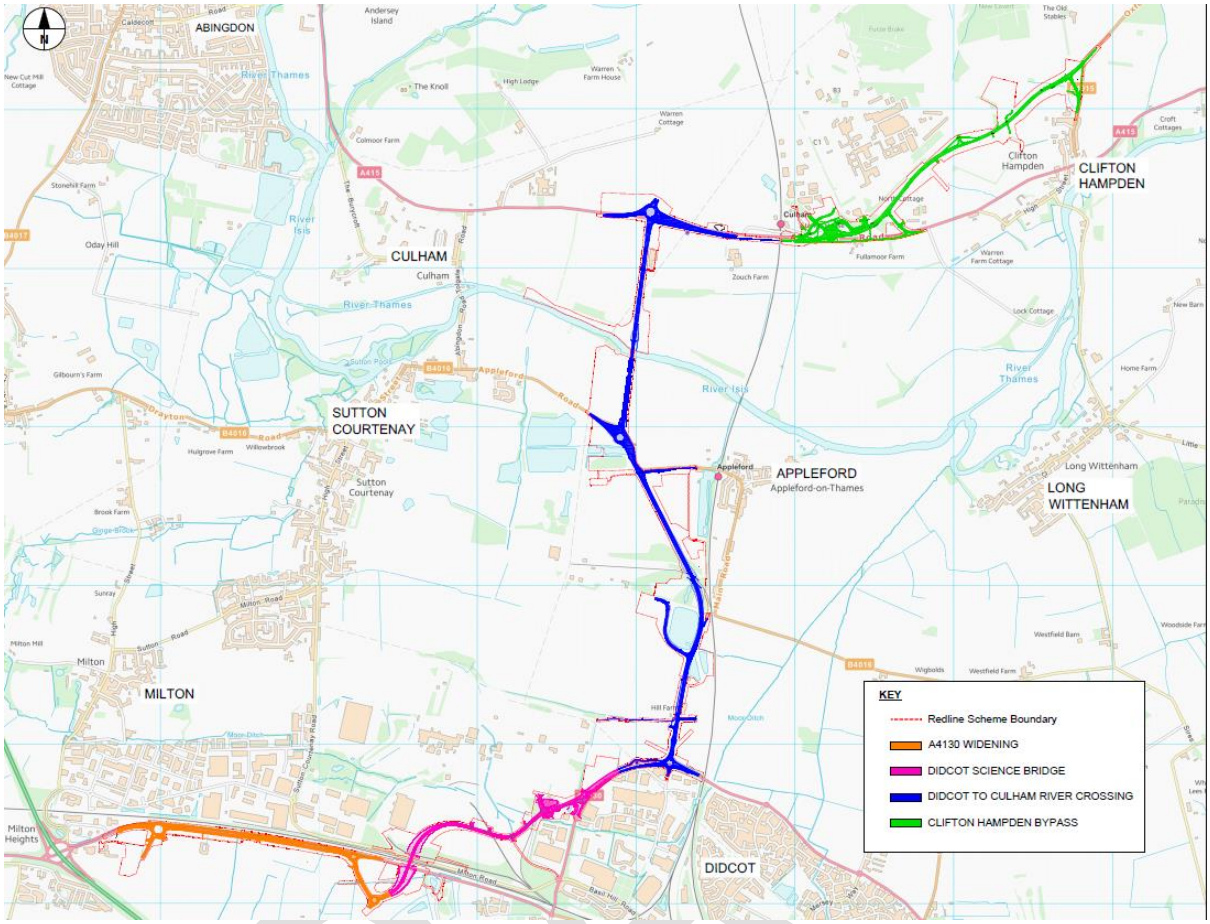


Figure 7: The Scheme Route

A4130 Widening

4.5. The A4130 Widening proposed layout is shown on General Arrangement drawings GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0001 to GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0003.

4.6. The existing A4130 is the main access to Didcot from the strategic road network at the A34. It is dual carriageway which extends eastbound from the Milton Interchange reducing to single carriageway at the Milton Gate junction.

4.7. A new, at grade, four-arm roundabout (Backhill roundabout) will be created approximately 200m to the east of the Milton Gate junction. This will include two lanes on its circulatory carriageway. The two mainline A4130 entry and exits will have two lanes. Two arms will be provided on the southern part of this roundabout, and these will provide access to planned developments on land to the south-west and south-east of the roundabout. Single lane entry and exits will be provided on these arms.

4.8. East of the new Backhill roundabout, the A4130 will be dualled to two lanes in each direction. Most of the existing single carriageway, adjacent grass verges, ditches, hedgerows, and trees will be retained. The existing single carriageway becomes the

eastbound carriageway of the new dualled road. A new two-lane carriageway will be constructed south of the existing carriageway and will form the westbound carriageway of the new road. The highway infrastructure in this location will be approximately 35m wide but may vary where the width of the existing ditch varies. This has been taken into account through the use of limits of deviation.

4.9. Further east, an access into the land subject to planning permission (Valley Park Ref: P14/V2873/O, Vale of White Horse District Council) will be included. This will be a signalised junction, with a dedicated right turn lane included on the eastbound carriageway and a dedicated left turn included on the westbound carriageway. The existing ditch and hedgerow south of the existing carriageway will be removed in the vicinity of this junction, to provide a safe layout, including for the required visibility. The access will have a single exit lane and two approach lanes providing separate left turn and right turn lanes onto the new dualled A4130. Two bus lay-bys will be provided in this location, one east of the junction on the eastbound carriageway, and one to the west of the junction, on the westbound carriageway.

4.10. A second roundabout (old A4130 roundabout) will be created. This will be an at grade, three-arm roundabout with two lanes on its circulatory carriageway. It will provide access to the current alignment of the A4130 towards Didcot, and to a single carriageway which will connect with a third roundabout, the Didcot Science Bridge roundabout, to the south-east. All three arms will be marked as two-lane entries, the eastern and south-eastern arms flaring from a single lane approach. The western arm will be marked as a two-lane exit, while the other two arms will provide only a single lane exit. To the east of this roundabout, two bus stops will be created in the main traffic lanes, on the alignment of the existing A4130. The eastern link road section between the proposed 'old A4130 roundabout' and the Didcot Science Bridge roundabout is a single carriageway. The Scheme will provide approximately 20.3m wide in this location, including Non-Motorised User provision.

4.11. The Didcot Science Bridge roundabout will be an at grade, three-arm roundabout, which will provide access between the A4130 and the Didcot Science Bridge, and to the planned development at Valley Park. All approaches will be single lanes flaring to two entry lanes, while all exits will provide only single lanes.

4.12. The A4130 will be subject to a reduced speed limit of 40mph from the junction with the roundabout at the A34 Milton interchange, continuing along the dual and retained single carriageway sections. This reflects the future urban nature of this modified road, with the allocated housing development along the road and planned walking and cycling facilities as discussed below.

4.13. Along the length of this section of the Scheme, segregated two-way, off-road, cycling and walking facilities will be provided. East of the Milton Gate junction, the Scheme includes a shared use cycle and footway adjacent to the eastbound and westbound carriageways. This will link to the existing NMU only Backhill Lane Tunnel and extend around the northern side of Backhill roundabout, where a two stage Toucan crossing (east of the roundabout) will be provided allowing users to cross both carriageways. Segregated cycling and walking facilities and raised parallel crossings will also be

included around the southern side of Backhill roundabout. The existing toucan crossing by Backhill Lane Tunnel will be replaced by a two stage Toucan crossing over the new dual carriageway. To the east of Backhill roundabout, a segregated two-way cycleway and new footway will be provided to the south of the widened and new sections of the road, up to and including the Didcot Science Bridge roundabout. This will continue over the Didcot Science Bridge, and links to the public rights of way and future developments located to the south of the A4130 will be provided.

4.14. A parallel crossing will be included at the western access to the Valley Park development. Additionally, an uncontrolled crossing will be provided east of the old A4130 roundabout, which will provide access to the eastbound bus stop (with bus shelter). A Toucan crossing will be included across the new A4130 immediately south of the old A4130 roundabout. This will provide access to the existing shared path for cyclists and pedestrians along the current alignment of the A4130 linking to Didcot.

An artist impression of the proposed A4130 Widening is shown in **Figure 8**.



Figure 8: A4130 Widening Artist Impression

Didcot Science Bridge

4.15. The Didcot Science Bridge proposed layout is shown on General Arrangement drawings GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0004 to GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0006.

4.16. The Didcot Science Bridge will consist of a single carriageway passing over the A4130, the Great Western mainline railway and Milton Road landing in the former Didcot A Power Station site. The bridge will be approximately 14.9m in width, including Non-Motorised User provisions.

4.17. This single carriageway road will continue as the Didcot Science Bridge Link Road, extending through the allocated development areas of the former Didcot A Power Station site. This part of the Scheme will provide approximately 18.3m in width, including Non-Motorised Use provision. The Non-Motorised Use provision shall be continued into the Didcot to Culham River Crossing scheme. The link road ties-in with A4130 Northern Perimeter Road, north of the Hawksworth Roundabout. The northern arm of Hawksworth Roundabout (A4130 Northern Perimeter Road) connects to the link road, forming a new ghost junction with a right turn pocket provided on the new link road into the old A4130 Northern Perimeter alignment, leading to Hawksworth Roundabout.

4.18. Throughout the Scheme extents, there are multiple side roads, which will provide direct access points into adjacent land located to the north and south of the Scheme. Side roads that lie within the Clowes Developments (UK) Limited development shall be provided by Clowes Developments (UK) Limited, all other side roads shall be provided by the Council.

4.19. A segregated two-way cycleway and footway will be provided over the Didcot Science Bridge on the eastern side of the bridge.

4.20. East of the northern approach embankment to the Didcot Science Bridge, segregated bi-directional cycleways and adjacent footways are to be provided on both sides of the road. Three parallel crossings will allow users to cross the Science Bridge Link Road and, additionally, one parallel crossing will allow users to cross the old A4130 leading to Purchas Road/Hawksworth Roundabout. Where the Scheme ties in with the existing A4130 Northern Perimeter Road, a Toucan crossing will be provided to allow those using the north-south public right of way (and National Cycle Network route 5) to safely cross the new road on a new alignment. In this locality, a segregated two-way cycleway and adjacent footway will be located away from the carriageway to provide a continuous NMU link to the Didcot to Culham River Crossing. The existing footway on the southern side of the A4130 will be realigned to the new carriageway.

4.21. An artist impression of the proposed Didcot Science Bridge is shown in **Figure 9**.

DRAFT



Figure 9: Didcot Science Bridge Artist Impression

Didcot to Culham River Crossing

4.22. The layout of the Didcot to Culham River Crossing is shown on General Arrangement drawings GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0007 to GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0015.

4.23. The existing, at grade, four-arm roundabout (Collett roundabout) will be enlarged. It will include two lanes on its circulatory carriageway where currently there is only one. All approaches to the roundabout will flare out to two lanes and all exits off the roundabout will merge from two lanes into one lane. Two bus stops will be included to the east of the roundabout, on both carriageways. The alignment continues north along the current alignment of an access road to several private residential properties, with two offline bus stops provided opposite one another on either side of the carriageway.

4.24. Further north, the Scheme will continue as a single carriageway with two accesses, one to land located to the east of the Scheme and one to land located west of the Scheme, both serving the proposed Didcot Technology Park (D-Tech) site. The D-Tech site will not be constructed in advance of the Scheme, therefore, access to J James Pallets and Wood Recycling will be maintained, ensuring that the business is able to operate during the construction of the Scheme. There will also be private accesses to Hartwright House and Hill Farm House. The Scheme will be approximately 20.3m in width, including Non-Motorised User provision and verges, but this will increase where bus stops and ghost island right turn lanes are provided (for example, to enable access to FCC Environment (UK) and Hanson Quarry Products Europe Limited operations).

4.25. The Scheme is aligned between three ponds, located to the east and west. Small sections of two of the ponds will be infilled. At this location, to the west of the main carriageway, a priority T junction and an access road will be constructed to replace the

existing Portway Road access road further north. The priority junction will include a ghost island right turn lane for traffic travelling from the north. The minor arm will incorporate a widened exit so that traffic turning left to the north can filter past vehicles waiting to turn right. The severed section of the Portway Road will be retained as an access for maintenance and operational purposes.

4.26. Further north, the Scheme will cross Appleford railway sidings, a private railway siding for the Hanson aggregate operations and FCC Environment (UK) Landfill Site. The Scheme will remain as a single carriageway and will continue through an area of historic restored landfill (known as the 90-Acre Field). There will be a priority junction on the B4016 to the north and west of Appleford, including a dedicated ghost island right turn lane for traffic travelling north. Further north, two bus stops located opposite each other will be provided offline from the mainline of the Scheme. The proposed Sutton Courtenay roundabout will be an at grade, three-arm roundabout with two lanes on its circulatory carriageway. Two lanes will be included on all exits, which will merge to one lane once off the roundabout. This roundabout will provide access to the crossing over the River Thames and maintain links between Appleford and Sutton Courtenay and the surrounding areas.

4.27. Extending north from Sutton Courtenay roundabout, a 336m viaduct is provided to cross the River Thames floodplain with a 155m bridge over the River Thames. The bridge over the River Thames will comprise two 45-metre side spans and a 65-metre main span. The River Thames is navigable at this location so the bridge height above water level has been designed to accommodate river traffic. The crossing over the River Thames will be a single carriageway, approximately 16.9m in width including the Non-Motorised User provision.

4.28. To the north of the River Thames crossing, private accesses will be created to a farm property located to the east of the alignment. Where the Scheme interfaces with the A415 Abingdon Road, a new four-arm at grade roundabout will be constructed to the north of the existing road alignment. This connects the A415 Abingdon Road, the new road and a new stub to the north for the South Oxfordshire District Council Local Plan allocated housing site.

4.29. The A415 Abingdon Roundabout has two lanes on its southern circulatory carriageway and three on its northern side. This will ensure three lanes are provided at the A415 eastbound access onto the roundabout. Two-lane approaches will be included on all other entries, except for the A415 westbound, which will also include a segregated left turn lane. To the east of the roundabout, the A415 will return to a single carriageway.

4.30. Shared-use footway/cycleways are proposed at the Collett roundabout, with an inline Toucan crossing on the eastern arm, a raised parallel crossing on the southern arm, plus uncontrolled crossing points on the western and northern arms. An off-road segregated footway/cycleway will be provided to the north side of the A4130 west of Collett Roundabout to connect to the same provision in the adjacent Didcot Science Bridge section of the Scheme.

DRAFT

4.31. North of the Collett roundabout, there will be dedicated, off-road, segregated two-way cycleways and footways either side of the highway. Two parallel crossings will be provided to facilitate the proposed D-Tech development site and bus stops. The facilities on the northbound side will cease at the parallel crossing located north of the accesses to the proposed D-Tech development site. These facilities will continue adjacent to the southbound carriageway leading up to the Abingdon roundabout.

4.32. A Toucan crossing will be provided for pedestrians and cyclists to cross the mainline immediately south of the FCC/Hanson access road junction. The crossing will connect to a shared-use bridleway along the west side of the Scheme.

4.33. An additional bridleway link to connect with an existing cycle route (NCN5) west of Hill Farm could be delivered by other parties. The restricted byway through the FCC landfill and Hanson quarries area will continue along the new access road alignment where a new shared use path will be provided.

4.34. After the point at which the Scheme ties-in with the B4016 Appleford Road, the mainline cycleway and footway will continue separately from the proposed carriageway by using a section of the existing B4016 carriageway alignment. A raised parallel crossing will be provided across the B4016 arm of the junction and a shared use footway/cycleway will be created adjacent to the eastbound lane of the B4016, to connect the Scheme with the village of Appleford.

4.35. There will be an uncontrolled crossing of the mainline immediately north of the junction with the B4016. This will connect with a shared-use pedestrian and cycleway facility, which will extend alongside the northbound lane of the Scheme and continue beside the westbound lane of the B4016 from the Sutton Courtenay roundabout. A shared-use facility will also be located alongside the eastbound lane of the B4016 Sutton Courtenay link, which will be accessed via a Toucan crossing located across the north arm of Sutton Courtenay Roundabout for the River Thames bridge. There will also be an uncontrolled crossing point on the west (B4016) arm of the roundabout.

4.36. There will be dedicated, off-road, two-way cycleway and footway facilities located adjacent to the southbound lane on the bridge across the River Thames. North of the River Thames a footpath will be provided to connect with the Thames path. The two-way cycleway and footway will continue to the Abingdon roundabout, where they will extend east adjacent to the westbound lane of the A415, linking back to the existing NMU facilities that lead into the Clifton Hampden Bypass. Access to a Toucan crossing across the eastern arm of Abingdon roundabout will be provided from the cycleway and footway. This will provide access to dedicated, off-road, segregated two-way cycleway and footway facilities located adjacent to the eastbound lane of the A415. A raised parallel crossing will be provided across the northern arm of the roundabout.

4.37. The proposed NMU facilities on the northern arm will lead into land allocated for future development. A two-way cycle way and footway will be provided on the western arm adjacent to the east bound carriageway.

4.38. An artist impression of the proposed Didcot to Culham River crossing is shown in **Figure 10**.



Figure 10: Didcot to Culham River Crossing Artist Impression

Clifton Hampden Bypass

4.39. The Clifton Hampden Bypass proposed layout is shown on General Arrangement drawings GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0016 to GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0019.

4.40. The Clifton Hampden Bypass will re-route traffic on the A415 around the village of Clifton Hampden, which currently experiences a large amount of through traffic as people travel between the A415 to A4074.

4.41. The existing A415 will be realigned south of the Culham Science Centre and a bypass will be created. The proposed works also include the construction of a large four-arm roundabout at the western end of the Scheme, providing access to the South Oxfordshire District Council Local Plan allocated housing site, a railway station and Leda Properties Limited owned farmland / businesses north of Culham Science Centre coming off the northern arm, and Culham Science Centre on the northeast arm. Station Road will be realigned and will join with a new entrance to the industrial properties (Culham No.1 site) located north west of the roundabout. An existing access road into the Culham Science Centre will be terminated and converted into a footway and cycleway. The other exit from the roundabout into the Culham Science Centre will provide two access points to Culham Science Centre (main gate and perimeter road). The bypass will be aligned in a south-west to north-east direction and will be a single carriageway, approximately 11.3m in width, including segregation strip and hard strip, but this will increase in some cases, for example, where dedicated ghost island right turn lanes are provided.

4.42. There will be a dedicated, ghost island, right turn lane that will connect with a new single carriageway, which will connect with the current alignment of the A415. This will provide access to the village of Clifton Hampden.

4.43. Two bus stops are proposed on the bypass, outside Culham Science Centre, to link public transport to this employment centre. The westbound bus stop will be in a lay-by, while the eastbound bus stop will be on-carriageway. A second pair of bus stops are proposed near the B4015 connection junction, as a provision for future use by local bus companies to connect with Clifton Hampden Village. The westbound bus stop will be in a lay-by, while the eastbound bus stop will be on-carriageway. Both sets of bus stops will be equipped with a bus shelter and Sheffield stands.

4.44. A dedicated, off-road, shared use cycleway / footway will be provided adjacent to both sides of the A415, west of the roundabout. There will be several shared and segregated cycleways and footways, with crossings, created around the roundabout with the CSC and Clifton Hampden Bypass. A new segregated cycleway / footway is proposed to link Culham Station and CSC.

4.45. This route is designed wide enough in anticipation of heavy NMU demand between these two points. Raised parallel crossings have been provided along this route to allow priority for NMUs over vehicular traffic. The existing A415 carriageway that will no longer be required for vehicular traffic will be used as a shared-use footway / cycleway, which links up to a new shared-use footway / cycleway on the south side of the A415.

4.46. This new route extends west across the existing rail bridge and into the River Crossing scheme. The existing main entrance to the CSC will be repurposed as a shared-use cycleway / footway to connect the existing A415 and the new bypass. A toucan crossing is proposed where this route meets the bypass.

4.47. Along the bypass, a shared-use cycleway / footway will be provided along the north side of the road. Several crossings at adjoining roads will be provided and links to existing footpaths will be provided. Additionally, two uncontrolled crossings across the bypass will be provided to maintain connectivity of local Public Rights of Way.

4.48. A shared-use cycleway / footway will be provided along the west side of the realigned B4015 at the northern end of the Clifton Hampden Village. The existing B4015 carriageway that will no longer be required for vehicular traffic will be used as a shared-use footway / cycleway, which links to the existing B4015 to the north.

4.49. An artist impression of the proposed Clifton Hampden Bypass is shown in **Figure 11**.

DRAFT



Figure 11: Didcot to Clifton Hampden Bypass Artist Impression

Public Transport

4.50. As part of the Scheme, a number of bus stops and associated public transport infrastructure are proposed, including:

- Four bus stops (two eastbound and two westbound) along the A4130
- Four bus stops (two eastbound and two westbound) as part of the Didcot Science Bridge section
- Six bus stops (a pair on the A4130 to the east of Collett Roundabout, a pair at the southern end inside the future employment site, and a pair near Appleford) as part of the River Crossing section, and
- Four bus stops (a pair at Culham Science Centre and a pair north of Clifton Hampden Village) as part of the Clifton Hampden Bypass section.

These additional bus stops will increase the accessibility and catchment of the existing bus services in this area, whilst also helping to cater for new or improved services in the future.

DRAFT

5. SCHEME OBJECTIVES AND THE BENEFITS OF THE SCHEME

Introduction

5.1. This section identifies how the Scheme as described in Section 4 meets the identified Scheme objectives. Furthermore, this section sets out the benefits that the Scheme provides in meeting the identified objectives. As set out above, these objectives are:

- **Reduce congestion and provide capacity** on the arterial routes within Didcot;
- **Enable modal shift** across the Science Vale;
- **Improve accessibility** across the River Thames and the Great Western Main Line in Didcot;
- **Improve resilience** of the transport network, including safety enhancements, which will respond to future uncertainties and opportunities;
- Enable **sustainable growth** within the Science Vale; and
- Ensure the Science Vale remains a **world-leading research location**.

Meeting the Scheme Objectives

5.2. The Scheme achieves all of the six Scheme Objectives set out above. The Scheme is designed to improve access to future housing and employment growth in the local area, including access by walking, cycling and public transport. The Scheme is policy backed and is the cornerstone of mitigation for the planned growth in the area. The Scheme does not aim to provide unlimited highway capacity for cars, or to remove all congestion; it forms part of a balanced transport strategy, which also provides high-quality walking and cycling infrastructure, helping to engender modal shift to more sustainable modes.

5.3. The Scheme will help relieve pressure on local transport networks and will facilitate economic growth across the Science Vale area whilst accommodating the expanding communities in the local area. The provision of walking and cycling facilities offer real mode choice for work and leisure, helping to encourage modal shift. Improving local roads and providing new roads will lead to more reliable journey times, less congestion, more job opportunities and better community links.

5.4. The Scheme both directly delivers and indirectly enables a significant number of new and/or improved walking and cycling routes in the area. The provision of additional and improved NMU routes and crossing points will help to reduce the existing severance caused by the Great Western Mainline and River Thames. Connections to public rights of way will be provided, and safe access to and from new bus stops. This will help to engender modal shift away from the private motor car, particularly for commuting purposes for employment and education, but also for important access to amenities such as retail and healthcare, and for leisure trips. The potential future NMU schemes that could link to the Scheme may be delivered by the Council, housing or employment developers, or other bodies. There may be other schemes identified through the planning application processes for other developments, or through the Didcot Local Cycling and Walking Infrastructure Plan (LCWIP) which has yet to be undertaken.

DRAFT

5.5. The scheme will result in significant reductions in journey time across the network as presented in **Figure 12**.

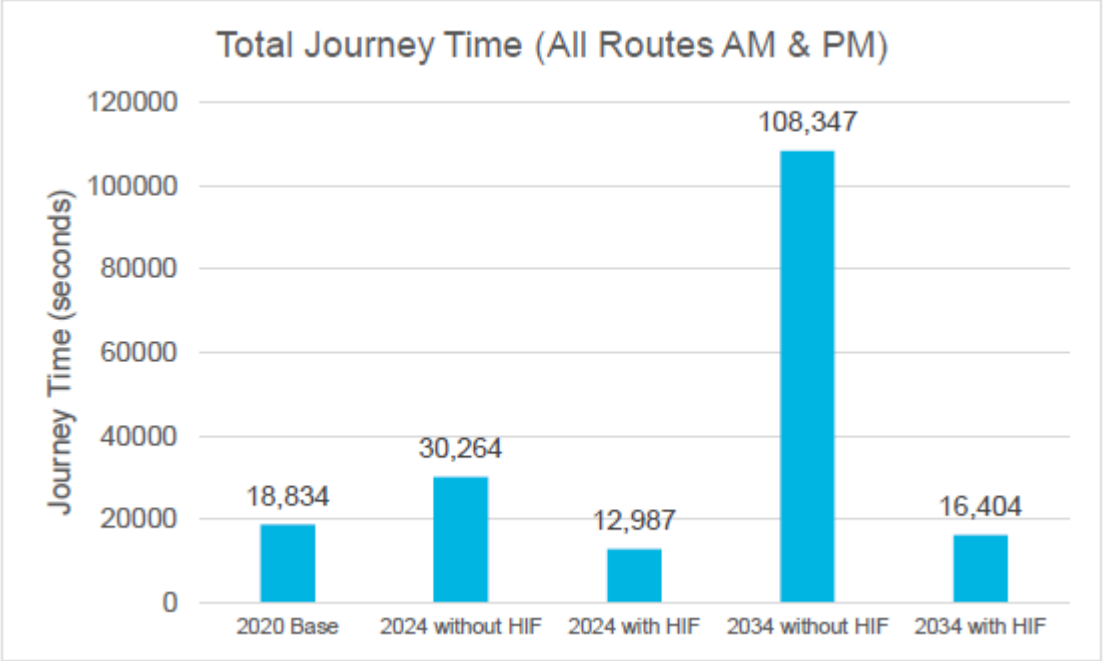


Figure 12: Journey Time Routes

5.6. The Scheme will significantly reduce journey time and/or improve journey time reliability for existing, altered, or new bus services and timetabling. In addition to improved journey time reliability, the Scheme provides 18 new bus stops, which will increase the accessibility and catchment of the existing, amended and new bus services in this area, enabling modal shift to public transport and active travel modes.

5.7. The A4130 Widening element of the Scheme includes upgrading the existing single carriageway road to dual carriageway standard, with adjacent but segregated walking and cycling infrastructure. This NMU provision will be key to encourage active modes, particularly to access the recently reopened Backhill Lane Tunnel to Milton Park Enterprise Zone and schools located in the new residential development sites. Equally, it will provide enhanced NMU provision and bus facilities, in part, from areas in the west to Didcot Town Centre and Didcot Parkway railway station. It will provide direct access and capacity for two strategic housing sites and the Enterprise Zone allocated in the Vale of White Horse District Council Local Plan 2031, as well as improved access to and from the Strategic Road Network.

5.8. The Didcot Science Bridge will reduce severance by providing another access point over the Great Western railway line, including for pedestrians and cycles. It will provide an alternative route for through traffic by improving the route (Northern Perimeter Road) around the town of Didcot. It will reduce congestion at Great Western Park junctions, Manor Bridge and Power Station roundabouts. This element of the Scheme will also enhance access to development sites at Valley Park (deemed as essential in

the Valley Park planning application and related Transport Assessment) and Didcot A, including further development opportunities on brownfield land.

5.9. The Didcot to Culham River Crossing element of the Scheme will alleviate the current severe transport impacts on the existing bridges at Sutton Courtenay / Culham and Clifton Hampden, whilst providing a new direct link across the River Thames including for pedestrian and cyclists. This element of the Scheme increases capacity for north/south movements across southern Oxfordshire and reduces pressure on the A34, whilst increasing network resilience across the Thames floodplain.

5.10. The Didcot to Culham River Crossing element of the Scheme will also improve network resilience at periods of flooding. This element of the Scheme will also enhance access between Didcot and Culham Science Centre and further afield to Oxford (in conjunction with the Clifton Hampden Bypass), including new and direct pedestrian and cycle links. This will also enable direct active travel links between new homes at Culham and employment at Milton Park/Harwell campus via existing rights of way and other committed infrastructure proposals. Furthermore, this section of the Scheme directly serves as an access junction for an allocated residential development of 3,500 allocated new homes to the north of the A415, and supports wider cumulative development. It also improves access to Culham Science Centre, delivering improved connectivity for employees and visitors. This is not only for cars, as this section includes high-quality, off-carriageway pedestrian and cycle facilities along its full length, making commuting by cycle attractive between existing and future housing in Didcot to a major employment area at Culham Science Centre. It also provides the Didcot sites with a high-quality direct link to Culham, Abingdon, and an alternative route to Oxford, avoiding the congested A34.

5.11. The Clifton Hampden Bypass element of the Scheme provides relief to historic congestion within Clifton Hampden Village and enables further development at the Culham Science Village and Berinsfield Local Plan allocations, as well as commercial development at Culham Science Centre. Additionally, given the success of the Science Vale area, housing developments to the east of Oxford (allocated in South Oxfordshire District Council Local Plan 2034) are also reliant on the Clifton Hampden Bypass and Didcot to Culham River Crossing. This also means that the Scheme is required for Oxford City Council unmet housing need (often quoted as the least affordable area of the UK relative to wages), largely allocated to the east of Oxford City Centre. In addition, the Clifton Hampden Bypass element of the Scheme will provide enhanced NMU provision and access to Culham Science Centre (including access to the countryside) including creating the environment for enhanced bus services to existing and additional locations including to housing and employment areas in East Oxford. Additionally, it will create an improved environment in Clifton Hampden itself by removing (standing) traffic and therefore improving the noise and air quality conditions.

5.12. It is evident the Scheme provides a strategic solution to enhance the connectivity between key existing and allocated housing and employment growth areas. This will enable and foster innovation, research and development in the Science Vale area. Science Vale serves a cluster of innovative, high technology, research and development industries across South Oxfordshire District Council and Vale of White

Horse District Council. It is one of the anchors of the Oxfordshire Knowledge Spine, as described in the Oxfordshire Strategic Economic Plan. It has strong ties with Oxford University, one of the world's leading academic institutions, and contains two of the UK's leading science research centres at Culham and Harwell.

Benefits

5.13. In addition to meeting the six identified objectives, the scheme will also provide additional benefits for Didcot, surrounding Villages and the Science Vale. Whilst there maybe elements of overlap with the Scheme objectives, the benefits are deemed significant. The benefits have been identified below:

- Reducing traffic flow and associated congestion from surrounding historic parishes will enhance the local environment by improving air quality and reducing noise creating more heathy liveable streets
- Upholding Didcot "Garden Town (DGT)" status by reducing traffic flow and associated congestion through the Town centre, aiding in the DGT Central Corridor vision to be implemented
- Enables surrounding Villages to implement traffic calming measures such as Low Traffic Neighbourhoods (LTN's), 20mph zones, School Streets, etc. In addition to the potential to reclaiming highway land for civic and amenity spaces in the heart of villages
- Supports the efficient and connected movements of goods and services by updating the areas road classifications, signage strategy and HGV routes/weight restrictions, further deferring traffic from the Town Centre and local villages
- Improves NMU accessibility and connection to Green Spaces such as the Thames Path, Millennium Common etc.
- Delivers a high-quality and well comprehensive active travel network enabling direct and safe connections to existing and proposed education, employment, housing, amenity and recreational areas reducing the impact of the private vehicle;
- Facilities new or amended bus routes offering direct links to potential public transport hubs further enhancing accessibility
- Unlocks the delivery of homes in the DGT area including affordable homes; Enables the delivery of employment growth providing both white and blue collar jobs
- Greater resilience on the network by providing alternative routes through this important employment and residential area e.g. in February 2021 both the existing bridges over the River Thames at Clifton Hampden and Culham were closed due to flooding, requiring long diversion routes
- Provide community benefits by providing construction work locally and potential training opportunities
- Complements planned and funded infrastructure such Milton Heights Bridge, Northern Permitter Road 3 (NPR3) to achieve the greatest modal shift for private car use
- Creating a dynamic and innovative place where technology and efficient solution will be embraced such as Superfast broadband, Connected and Autonomous Vehicles (CAV), E-scooters and other emerging mobility demand transport modes

DRAFT

- Allows developers to concentrate efforts and funding to enhance the wider walking, cycling and bus networks, previously deemed as unviable or desirable but now deemed an essential part of the highway strategy
- Opportunity to restrict the historic Culham Cut / Sutton bridge and Clifton Hampden bridge to buses and NMU users only
- Opportunity for pedestrian and cycle access improvements at Appleford and Culham Railway Stations
- Upholding Didcot “Garden Town (DGT)” status by reducing traffic flow and associated congestion through the Town centre, aiding in the DGT Central Corridor vision to be implemented;
- Enables surrounding Villages to implement traffic calming measures such as Local Transport Network (LTN’s), 20mph zones, School Streets, etc. In addition to the potential to reclaiming highway land for civic and amenity spaces in the heart of villages.

DRAFT

6. ALTERNATIVES TO THE SCHEME

Introduction

6.1. This Chapter outlines the rigorous scheme selection process that the Council has undertaken and its robust approach to ensuring an appropriate range of options have been identified, consulted, refined, and evaluated against available information in coming to the decision that the Scheme is the most appropriate solution to meet the need and objectives.

6.2. Identification of the preferred scheme option has been progressed in line with DfT's WebTag guidance as per the process shown in **Figure 13**.

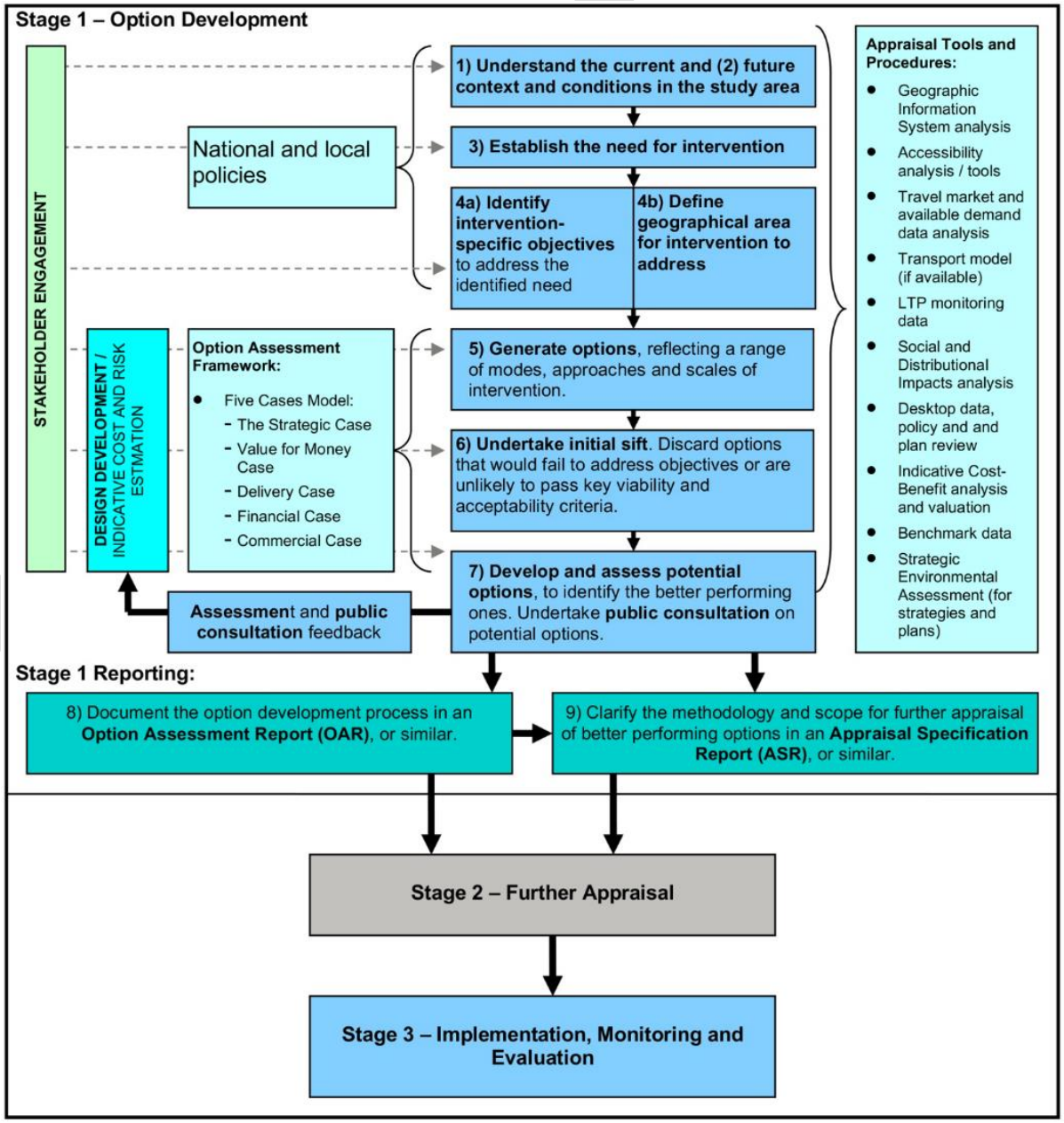


Figure 13: DfT's WebTag guidance

Option Appraisal Report

6.3. An Option Appraisal Report (OAR) Part Two [**Appendix 4**] was produced and submitted as part of the planning application and includes more detail on the alternatives and optioning process.

6.4. A robust optioneering and appraisal process was adopted to select better performing junctions/ access points improvement options, in accordance with the DfT TAG guidance. A four-phase appraisal process has been undertaken as shown in **Figure 14**.

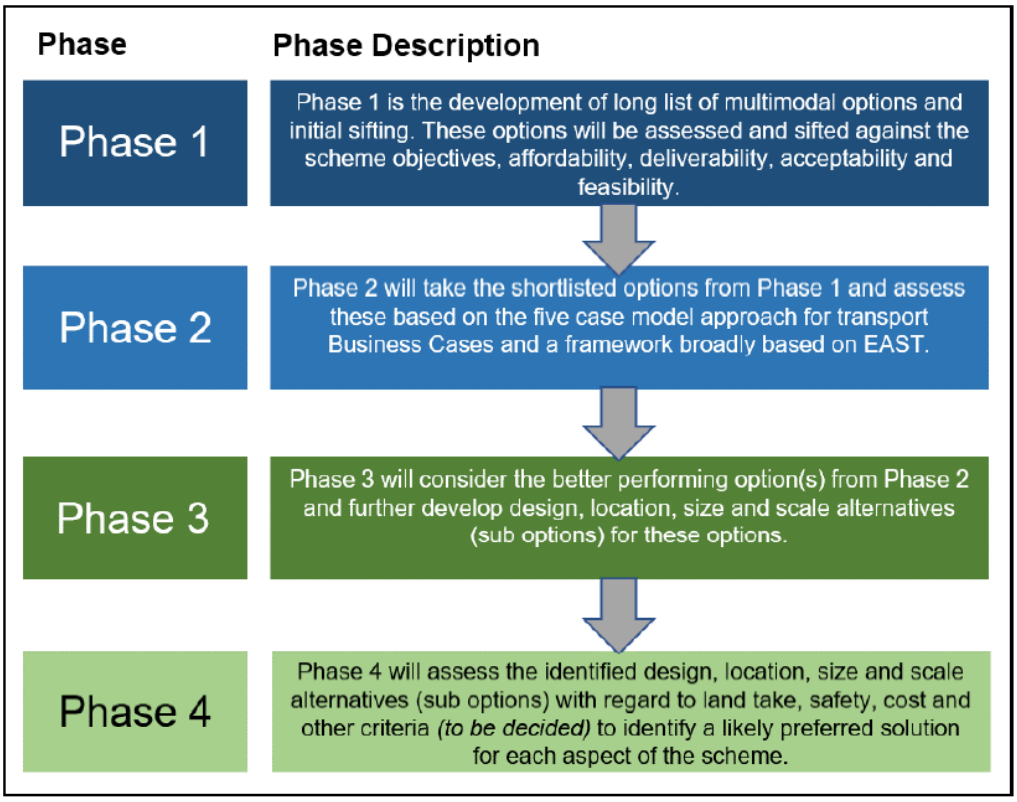


Figure 14: Options Identification and Appraisal Process

6.5. The following sections provide a summary of each of the option appraisal stages.

Phase 1: Initial Sift

6.6. **Table 2** provides an overview of all options considered as part of the Phase 1 appraisal process, including the mode and source document. The options are also shown in **Figure 15**.

Option Ref	Intervention	Mode
0	Do Minimum	No additional
1	A4130 Widening	Multi-modal
2	Didcot Science Bridge	Multi-modal
3	Didcot to Culham River Crossing	Multi-modal
4	Clifton Hampden Bypass	Multi-modal
5	Enhanced bus network including bus lanes and bus priority signals	Public Transport
6	Park and Ride in vicinity of A34	Public Transport
7	Improved rail services from Didcot to Oxford and Reading	Public Transport
8	Improved station at Didcot & Culham plus new station at Grove	Public Transport
9	Junction realignment and signalisation	Highways
10	Upgrades and co-ordinated traffic signal control	Highways
11	Comprehensive cycle and walking networks across Science Vale	Active Travel
12	Science Vale Bus Rapid Transit	Public Transport
13	Science Vale Light Rail Link	Public Transport
14	Demand Responsive Transport	Public Transport
15	Small scale bus improvements across Science Vale	Public Transport
16	A34 Widening	Highways

Table 2: Phase 1 Options Assessed

DRAFT

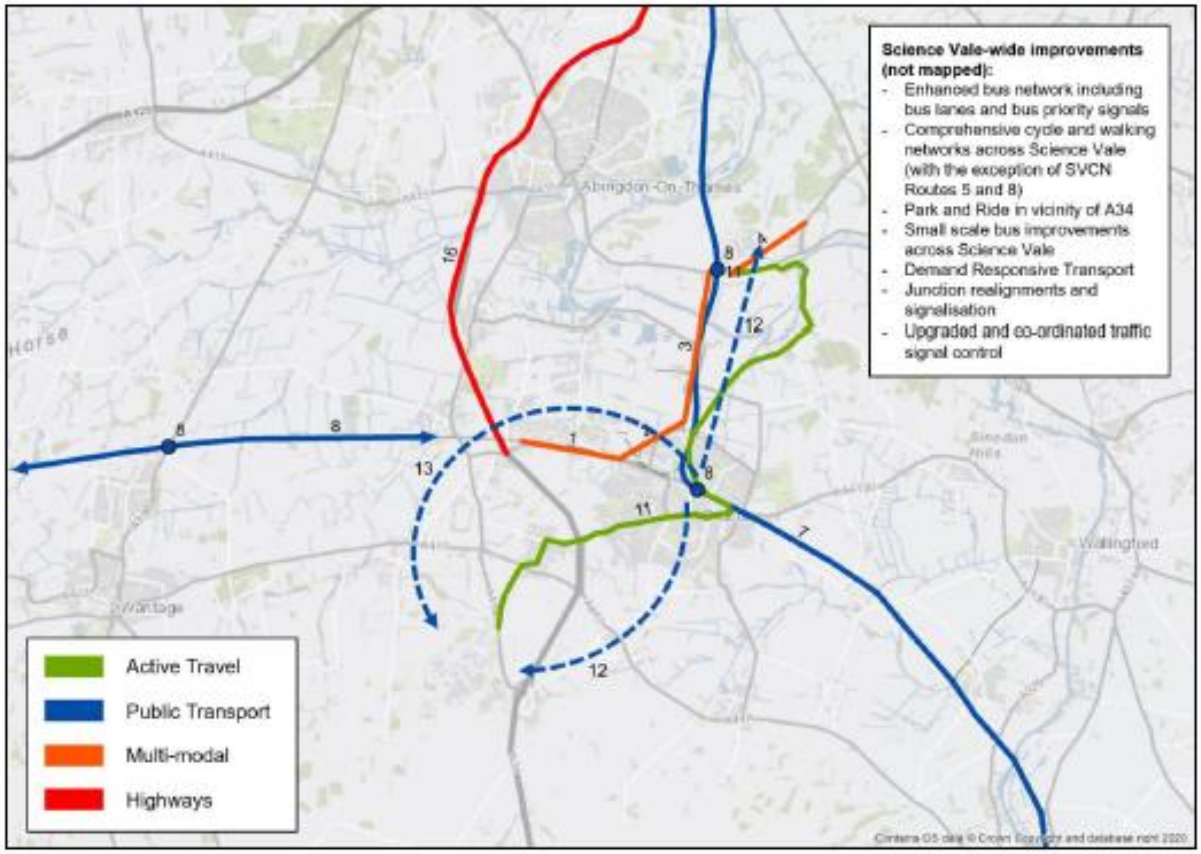


Figure 15 Options assessed as part of the OAR and set out in Table 2 'Phase 1 Options Assessed' above

6.7. For the initial sift (Phase 1), each option in **Table 2** was appraised by assessing its alignment with the Scheme Six objectives alongside additional criteria of affordability, deliverability, acceptability and feasibility. The summary results of the Phase 1 Sift can be found in **Table 3** and are set out in detail in the OAR **[Appendix 4]**.

Option Ref	Score	Status
0	-17	This option has not been taken forward for assessment due to the very poor score achieved.
1	20	This option has been taken forward for further assessment in Phase 2.
2	15	This option has been taken forward for further assessment in Phase 2.
3	16	This option has been taken forward for further assessment in Phase 2.
4	18	This option has been taken forward for further assessment in Phase 2.

5	-3	This option has not been taken forward for assessment due to the poor score achieved.
6	-10	This option has not been taken forward for assessment due to the poor score achieved.
7	-7	This option has not been taken forward for assessment due to the poor score achieved.
8	3	This option has been taken forward for further assessment as it scores positively and requires further assessment to understand in greater detail the benefits and challenges associated with this option.
9	-22	This option has not been taken forward for assessment due to the poor score achieved.
10	-14	This option has not been taken forward for assessment due to the poor score achieved.
11	-2	This option has not been taken forward for assessment due to the poor score achieved. Improved walking and cycling should, however, be a key feature of preferred scheme options.
12	-3	This option has not been taken forward for assessment due to the poor score achieved.
13	-7	This option has not been taken forward for assessment due to the poor score achieved.
14	-4	This option has not been taken forward for assessment due to the low score achieved.
15	-9	This option has not been taken forward for assessment due to the low score achieved.
16	-12	This option has not been taken forward for assessment due to the low score achieved.

Table 3: Stage 1 Option Sift Summary

6.8. The Phase 1: Initial Sift identified five options that would contribute to delivering the level of growth needed to achieve local housing and employment requirements. Due to the positive score achieved the following options were taken forward to Phase 2 for a more detailed appraisal:

- Option 1: A4130 Widening
- Option 2: Didcot Science Bridge
- Option 3: Didcot to Culham River Crossing
- Option 4: Clifton Hampden Bypass, and

DRAFT

- Option 8: Improved stations at Didcot and Culham, plus a new station at Grove.

Phase 2: EAST Appraisal and Scoring

6.9. Phase 2 assessed the five shortlisted options based on the following five-case business case approach and a framework based on the Early Assessment and Sifting Tool ("EAST") methodology:

- Strategic
- Economic
- Management
- Financial, and
- Commercial.

6.10. The criteria used to assess each option is set out in Appendix D of the OAR [**Appendix 4**]. **Table 4** summarises the results of the Phase 2 sift, and the full assessment is outlined in Appendix E of the OAR [**Appendix 4**].

6.11. The assessment aimed at drawing out weaknesses and strengths of each of the options, rather than quantitatively comparing them on the score achieved, to understand the nuance of each of the options. The scores nevertheless provide a broad guide as to how the options compare to one another.

Option	Business Case Element				
	Strategic (max score 60)	Economic (max score 25)	Management (max score 25)	Financial (max score 20)	Commercial (max score 15)
1	50	19	22	17	13
2	49	18	18	15	12
3	49	19	18	14	12
4	50	19	20	16	12
8	35	18	16	12	7

Table 4: Phase 2 Score Summary

6.12. The Phase 2 appraisal showed how the five options perform against the five-case business case criteria laid out in the EAST tool. The benefits of the five options have been clearly defined, whilst the areas in which each option does not perform have also been highlighted. This assessment was not aimed at identifying one single preferred option, but instead to draw out the strengths and weaknesses of each option.

6.13. The assessment has identified that across all five-case business case criteria, Option 8 (Improved stations at Didcot and Culham, plus a new station at Grove) performed the worst. There were key concerns for this option including the significant cost,

deliverability and potential to support planned development across Didcot and Science Vale. There were also concerns surrounding the programme of delivery of this option and how this would align with planned development. Overall, it was demonstrated that this option would not be a suitable fit to support development across Didcot and Science Vale and, therefore, the option was discounted and not taken forward to the next stage of assessment.

6.14. The remaining four assessed options went forward to be further assessed as part of Phase 3 and 4. These were as follows:

- Option 1: A4130 Widening
- Option 2: Didcot Science Bridge
- Option 3: Didcot to Culham River Crossing, and
- Option 4: Clifton Hampden Bypass.

Phase 3 and 4: Sub Options

6.15. Phase 3 and 4 considered design, location, size, and scale alternatives to the four preferred options as identified in Phase 2. The alternatives were based on optioneering studies undertaken by Oxfordshire County Council as presented in **Figure 16**.

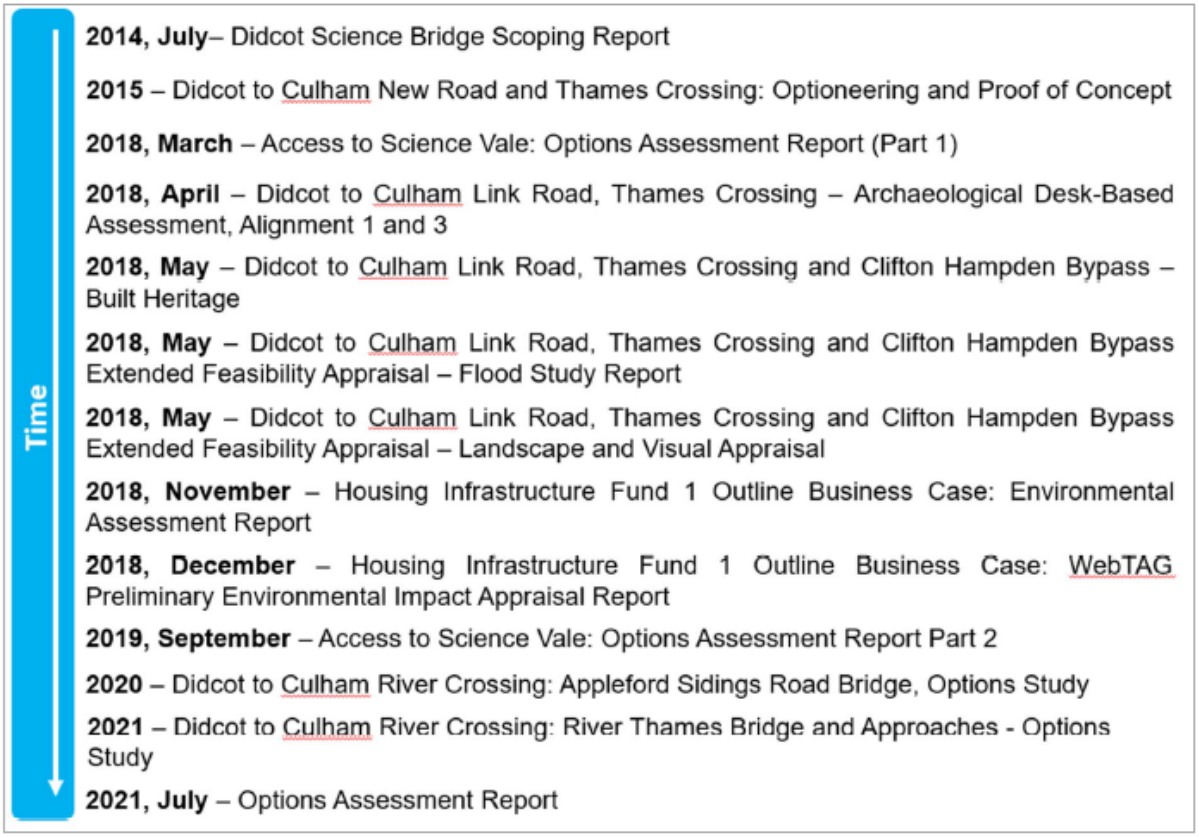


Figure 16: Chronology of optioneering reports

A4130 Widening – Sub Options

6.16. For the A4130 Widening, two sub-options were assessed as illustrated on **Figure 17**.

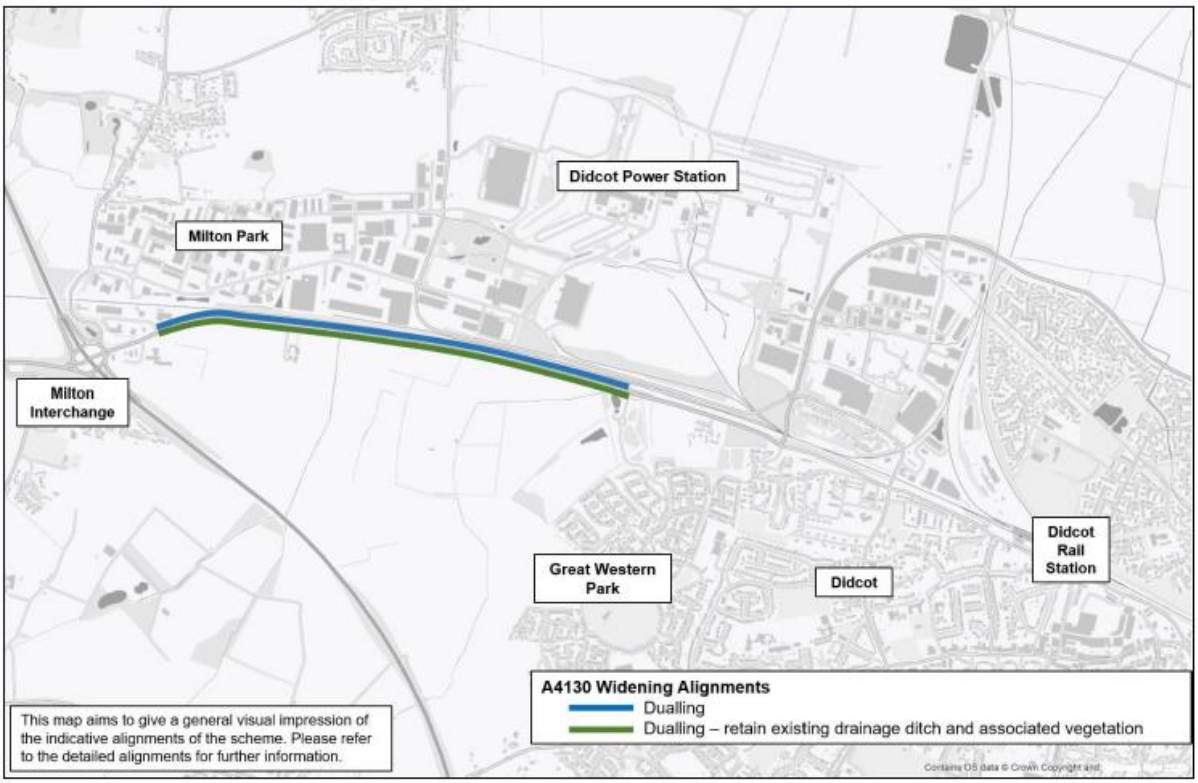


Figure 17: A4130 Widening Sub Options

6.17. In summary, the 2021 OAR concluded the following with regards to the A4130 Widening sub options:

> *8.2.6 After consideration of the benefits, issues and deliverability constraints for each of the A4130 Widening sub-options it has been determined that **sub-option 1.5** (Dualling – retain existing draining ditch and associated vegetation) is the preferred option.*

Didcot Science Bridge - Sub Options

6.18. For Didcot Science Bridge, three sub-options were assessed. These alignments were first identified in the Didcot Science Bridge Scoping Report produced by Atkins in 2014 and have since been refined further. **Figure 18** shows the indicative locations of the three sub-options assessed.

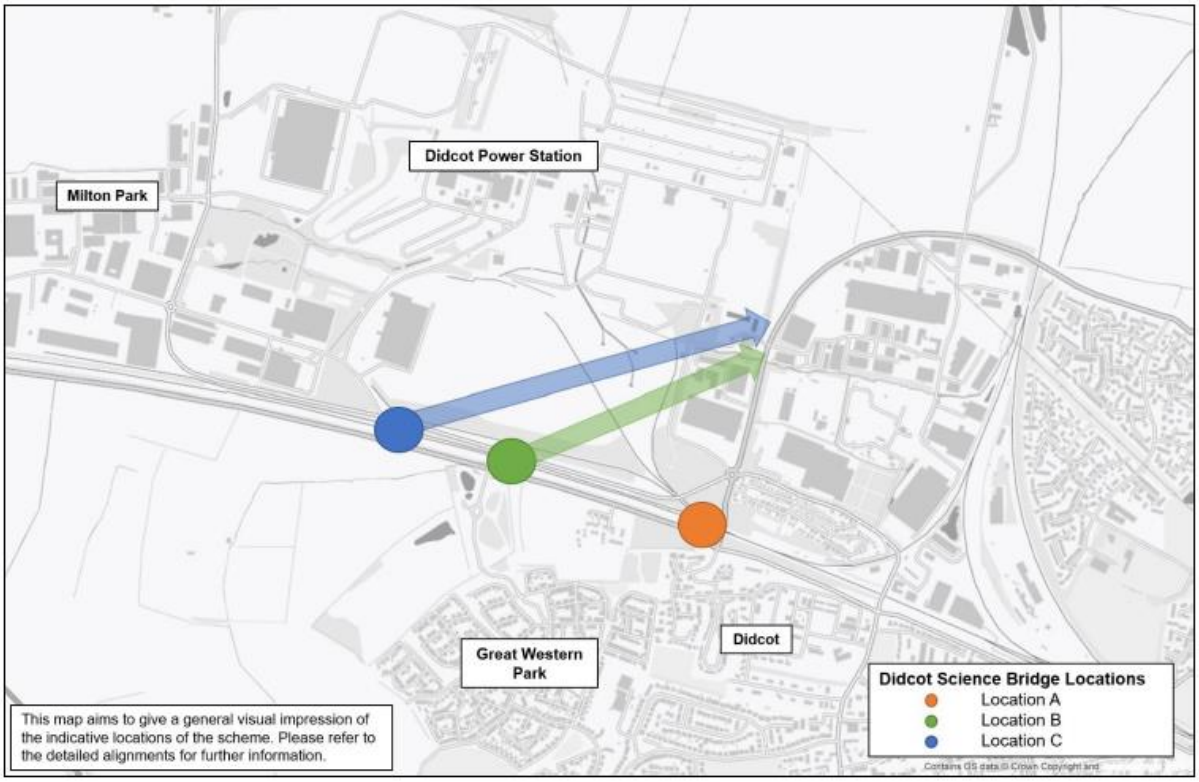


Figure 18: Didcot Science Bridge Sub Options

6.19. In summary, the 2021 OAR concluded the following with regards to the Didcot Science Bridge sub options:

> *8.3.8 After considerations of the benefits and issues for each of the Didcot Science Bridge sub-options it has been determined that **sub-option 2.4** (Alignment C) is the best performing as it can be built off-line and links housing directly to employment.*

Didcot to Culham River Crossing – Sub Options

6.20. It should be noted that the Didcot to Culham River Crossing scheme has been subject to substantially more optioneering than the other options brought forward, as the site is less spatially constrained and many different alignments were able to be investigated at the early design stage. However, there are also a number of environmental and engineering constraints unique to the Didcot to Culham River Crossing, and these needed to be taken into consideration as part of design. As illustrated in **Figure 19** six indicative alignments were assessed.

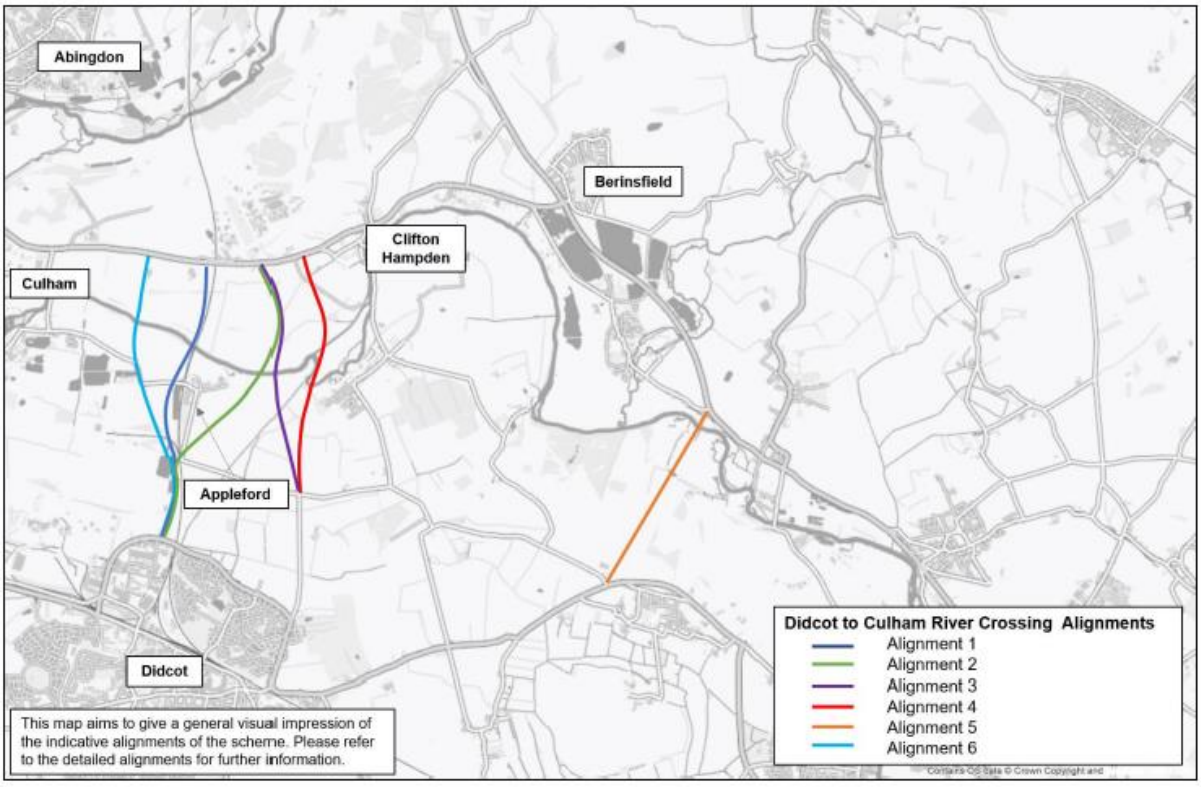


Figure 19: Didcot to Culham River Crossing Sub Options

6.21. In summary, the 2021 OAR concluded the following with regards to the Didcot to Culham River crossing sub options:

> *8.4.19 After consideration of the benefits and issues for each of the Didcot to Culham River Crossing sub-options it has been determined that* ***sub-option 3.6*** (Alignment 6 as shown on Figure 19) *(New Western Alignment) is the best performing as this minimises the environmental impacts of the scheme, avoids areas of archaeological importance and is more likely to be cost effective.*

Clifton Hampden Bypass Sub Options

6.22. For the Clifton Hampden Bypass, four sub-options were assessed as presented in **Figure 20.**

DRAFT

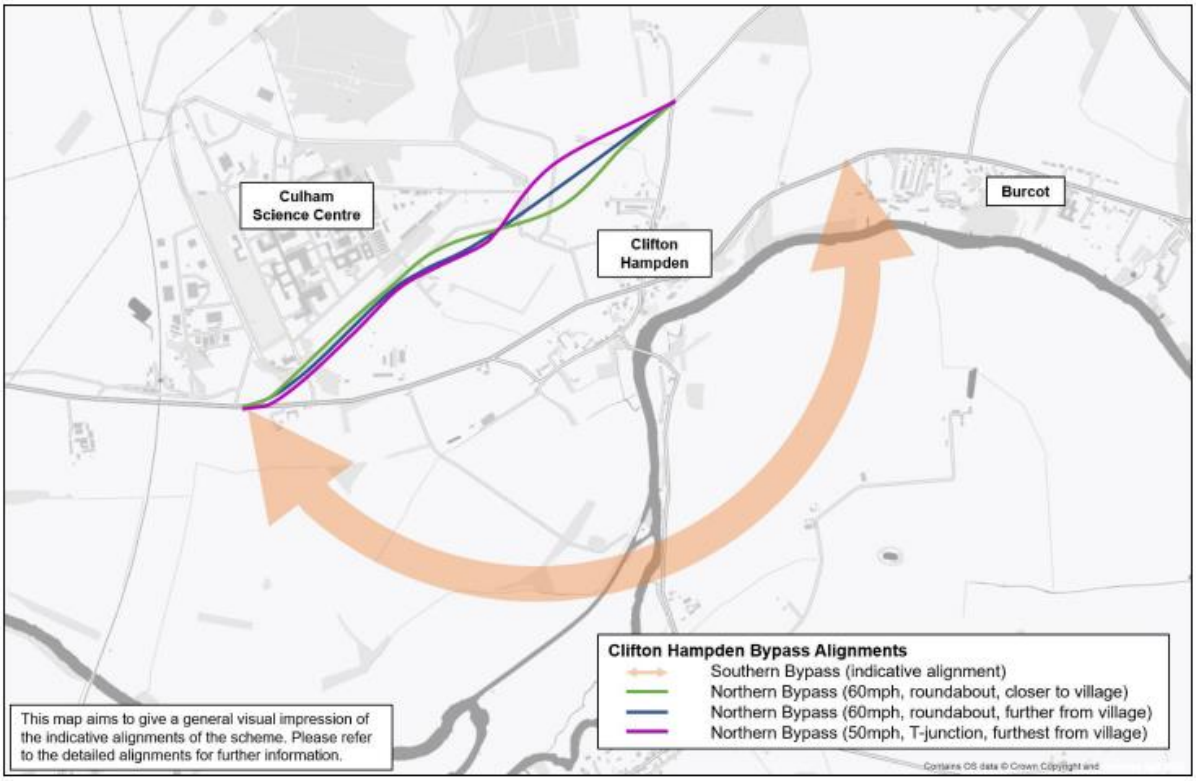


Figure 20: Clifton Hampden Bypass *Sub Options*

6.23. In summary, the 2021 OAR concluded the following with regards to the Clifton Hampden Bypass sub options:

8.5.10 After consideration of the benefits and issues for each of the Clifton Hampden Bypass sub-options it has been determined that ***sub-option 4.6*** *(Northern Bypass –T-junction at eastern end) is the best performing as it reduces land take and cost, protects a Category A Oak Tree and discourages the use of the village as a through route.*

OAR Alternative Summary

6.24. It is clear that the alternatives optioneering process has been rigorous and the Scheme embodies the result of that process. It is the most suitable and appropriate means of meeting the identified objectives, with Oxfordshire County Council Cabinet resolving to approve the preferred scheme alignment on 21 July 2020.

Appleford Parish Council – River Crossing Alternatives

6.25. Following Cabinet approval in July 2020 of the preferred alignment and subsequent engagement Appleford Parish Council (APC), requested that further options on the Didcot to Culham River crossing were explored. On 7 January 2021, APC provided the Council with a position paper (Environmental Statement – Volume I Chapter 3: Assessment of Alternatives **[Appendix 5]**), which requested that the alignment for the Didcot to Culham River Crossing be moved further to the west of Appleford. Figure 21 shows the Appleford Parish Council alternative route.

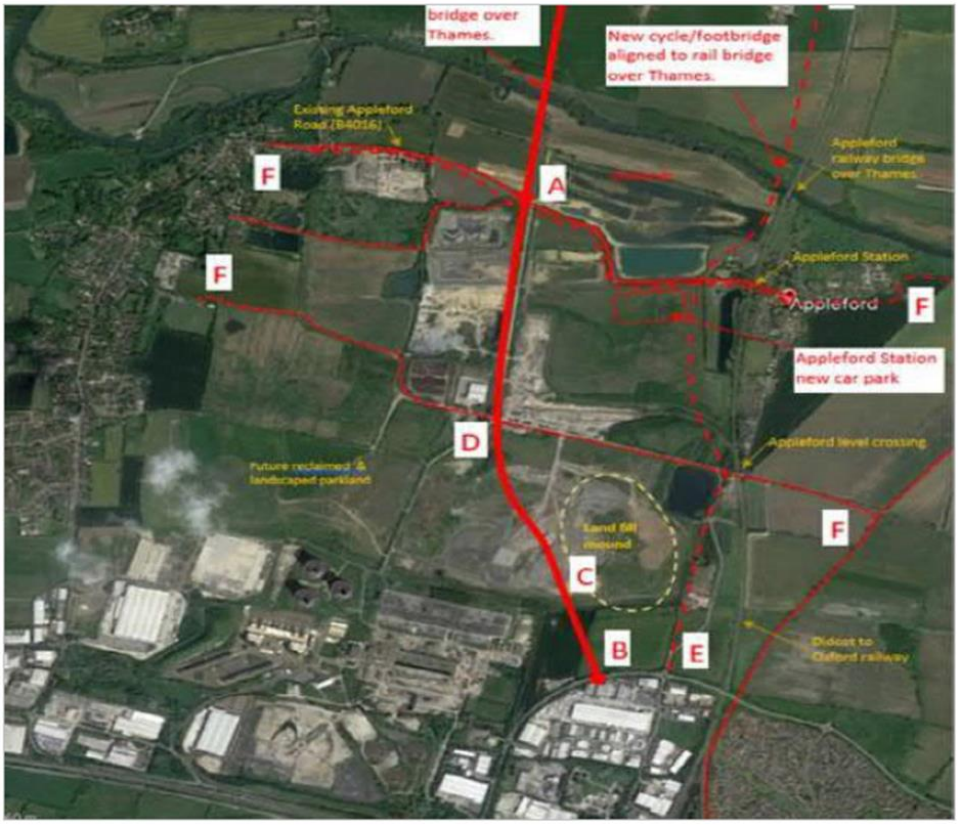


Figure 21: Alternative alignment proposed by Appleford Parish Council

6.26. This alignment was rejected for the numerous reasons set out in the Environmental Statement – Volume I Chapter 3: Assessment of Alternatives [**Appendix 5**]. This was explained to APC, who subsequently sought to amend their alignment to address these constraints. Figures 22 and 23 illustrate APC's revised suggested alignment.

DRAFT

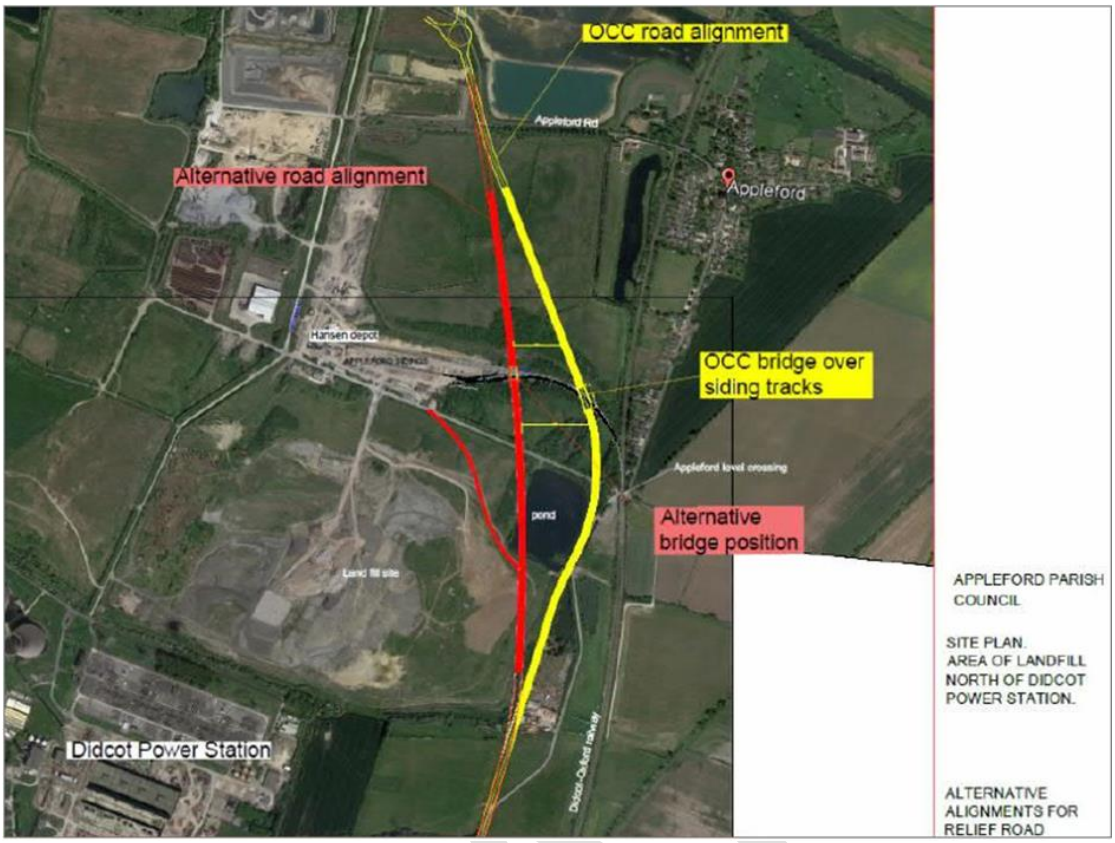


Figure 22: Amended APC alignment

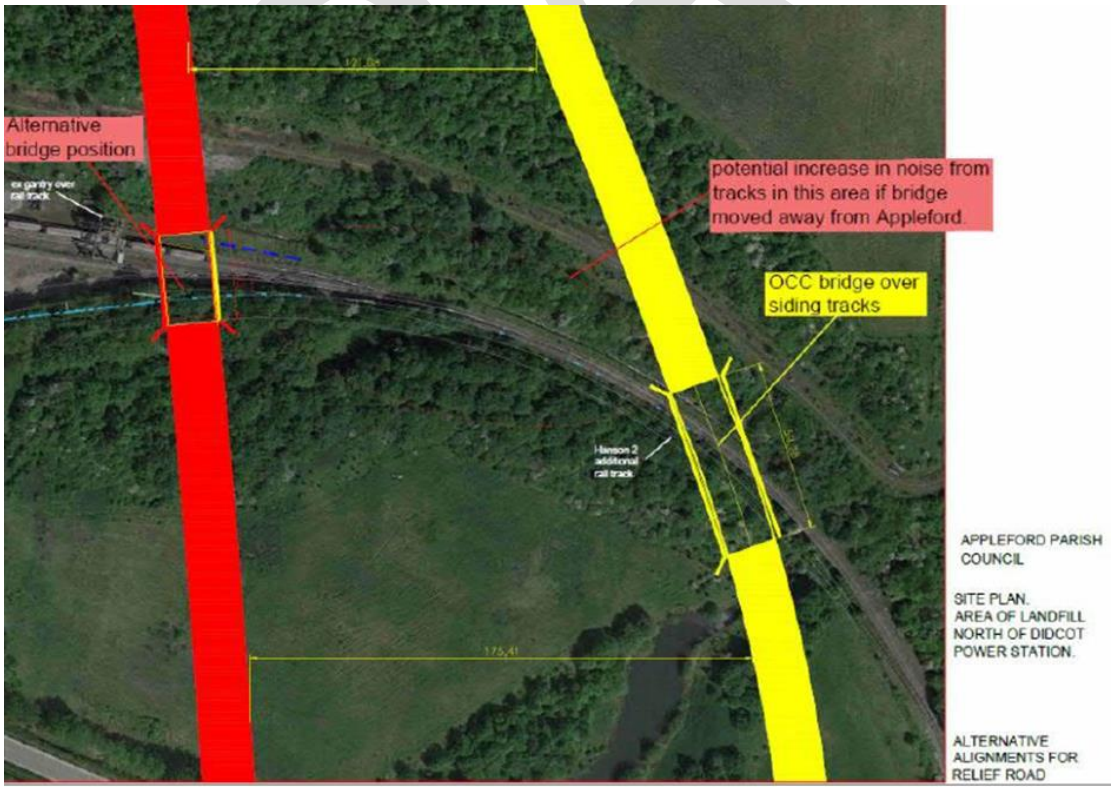


Figure 23: Amended APC alignment – bridge crossing over the Appleford sidings

6.27. This alignment was also considered not to be feasible for several reasons, including numerous environmental reasons. Owing to the aforementioned environmental issues, engineering issues and budgetary issues (with the alignments suggested by APC), this alignment has not been considered further.

6.28. APC accepted that there are issues with constructing a road through an area that includes operational and historic landfill sites and requested that other options to reduce the impact of the Scheme be considered. It was requested that a bridge structure over the lake located to the west of the Scheme be considered, which will move the alignment west by 100 to 200 m. Given the lake's size, depth and volume, a road across it will either need to be a viaduct type structure or some of the lake would need to be in-filled. This will have several environmental constraints, as set out in Environmental Statement – Volume I Chapter 3: Assessment of Alternatives [**Appendix 4**]. Owing to these reasons, along with other engineering and budgetary issues, this option was not considered further.

DRAFT

7. CONSULTATION AND PUBLIC ENGAGEMENT – SECTION TO BE UPDATED

Introduction

7.1. The Acquiring Authority has consulted with stakeholders extensively throughout the development of the Scheme. A stakeholder engagement strategy was developed for the Scheme and was based on the following principles:

- Early and ongoing engagement to inform and influence the Scheme design development process
- Seeking an appropriate level of feedback at each stage in the iterative design process and ensuring that comments received are taken into consideration, where appropriate
- Building of long-term relationships with key stakeholders throughout the different stages of the Scheme to help better understand their views, and
- Where possible and practicable ensuring concerns are addressed.

7.2. The main areas of engagement/consultation that have taken place prior to the submission of the planning application for the Scheme are set out below.

Consultation on Local Plans

7.3. The Scheme has been subject to numerous consultation periods during the production of Local Plans, including:

- The Oxfordshire County Council Local Transport Plan 4 (Connecting Oxfordshire 2015-2031), which included specific proposals for the Scheme and was adopted in 2015, following public consultation on the draft plan earlier in the same year;
- The Vale of White Horse District Council Local Plan 2031 (Part 1 and 2) safeguards land for future transport schemes, including the majority of the land now included within the Scheme. The Local Plan was subject to public consultation in 2014, with Part 2 refining the area required for the Didcot to Culham River Crossing, and was subject to further public consultation in 2017, and
- The South Oxfordshire District Council Local Plan (2011-2035) safeguards land for future transport schemes, including the majority of the land now included within the Scheme. This Local Plan was subject to public consultation in 2019.

Landowner and Developer Engagement (February 2020 – present)

7.4. Landowner engagement has been ongoing since early 2020. To ensure a comprehensive understanding of land ownership and occupation, the Council's appointed land referencing agents, Gateley Hamer, wrote to landowners in July 2021 with a questionnaire about their land holding. Discussions have been held with landowners regarding access to land, and engagement in relation to land access is ongoing with these landowners. Major landowners are represented and are aware of the land acquisition principles, and negotiations will continue in order to seek private acquisition of the rights and interests in land required for delivery of the Scheme.

DRAFT

Stakeholder Briefings/Meetings (February 2020 – present)

7.5. Frequent engagement has also been undertaken with elected representatives relevant to the Scheme, including but not limited to:

- Appleford Parish Council
- Berinsfield Parish Council
- Clifton Hampden Parish Council
- Culham Parish Council
- Didcot Town Council
- Harwell Parish Council
- Long Wittenham Parish Council
- Milton Parish Council
- Newington Parish Council
- Nuneham Parish Council
- Oxfordshire County Council
- Stadhampton Parish Council
- South Oxfordshire District Council
- Sutton Courtenay Parish Council, and
- Vale of White Horse District Council.

7.6. In addition, consultation with local Non-Motorised User groups has been undertaken to inform the production of the Walking, Cycling and Horse Rider Assessment (WCHAR) Report. The aim of the WCHAR was to gain an understanding of all relevant existing facilities for pedestrians, cyclists and horse-riders (the users) in the local area, to provide background user information that can be referred to throughout the design process and to identify opportunities for improvement for users. The WCHAR has been submitted as part of the planning application submission for the Scheme.

7.7. Prior to the submission of the planning application in [04 October 2021], online meetings took place with key Non-Motorised User groups on 13 May and 10 June 2021. The aim of these meetings was to provide an update on the Scheme and highlight changes to the proposed plans since the 2020 consultation. This also facilitated the Acquiring Authority's consideration of its Public Sector Equality Duty.

7.8. Online meetings took place in December 2020, February 2021 and January 2022 with local bus operators. The aim of these meetings was to provide an update on the Scheme and highlight bus infrastructure and key changes to the proposed plans since the 2020 consultation.

Local Planning Authority Pre-Application Engagement (March 2020 – April 2021)

DRAFT

7.9. In advance of the submission of the planning application, formal pre-application advice was obtained from the Local Planning authority from March 2020 to April 2021.

7.10. In advance of the planning application and as the design of the Scheme evolved up to that point, proactive engagement continued with statutory bodies such as the Environment Agency, Natural England, Lead Local Flood Authority and National Highways to ensure that any Scheme impacts are carefully and comprehensively mitigated.

Environmental Impact Assessment Scoping Engagement

7.11. An Environmental Impact Scoping Report was submitted by the Council to the Local Planning Authority in April 2020. The Local Planning Authority provided a Scoping Opinion in July 2020, which detailed the opinions of both statutory and non-statutory consultees. The Environmental Impact Assessment undertaken and reported in the Environmental Statement, was based on the Local Planning Authority Scoping Opinion. Each of the technical assessments, reported within the Environmental Statement, was subject to consultation with the relevant statutory consultees.

Public Consultation

7.12. The Acquiring Authority held public consultation events between 2-25 November 2018 on the proposed package of strategic transport improvements for Didcot and the surrounding area, which will support planned growth as detailed in the Local Plan.

7.13. The initial consultation in 2018 focused on a package of strategic improvements, including:

- **A4130 Capacity Improvement** – dualling of the A4130 between the A34 and new Science Bridge, including new and improved pedestrian and cycling measures.
- **Science Bridge** – A new road link from the new dualled section of the A4130, over the railway, back to the A4130 at Purchas Road, including pedestrian and cycling infrastructure.
- **Culham to Didcot River Crossing** – a new road between Culham near the Science Centre to Didcot's A4130 perimeter road, including pedestrian and cycling infrastructure.
- **Clifton Hampden Bypass** – a new road between the A415, Abingdon Road, at the Culham Science Centre and B4015, Oxford Road, north of Clifton Hampden village

Note: names and descriptions of the four elements of the Scheme have evolved during the design phase. The above descriptions are representative of the 2018 consultation.

7.14. When presenting the details of each element of the Scheme, information regarding the advantages and disadvantages of the different options considered was also provided, including the preferred option.

7.15. Respondents were asked to provide feedback on the design proposals through completing a feedback form. The feedback form was available at the online and in-

person public exhibitions, with a space to provide a free-text response to the following question:

'Do you have any comments on the proposed package of strategic transport improvements for Didcot and the surrounding area to support planned growth?

7.16. In total, 307 consultation responses were received during the 2018 consultation, of which 13 did not provide any comments. A summary of the key topics mentioned for each of the Scheme elements is outlined below:

A4130 Widening

- Dualling of the road should be extended further.
- Bus lanes along the A4130 should be considered.

Didcot Science Bridge

- Connections to Milton Park should be considered.

Didcot to Culham River Crossing

- Impact of alignment 1 on the village of Appleford.
- Alignment 1 would require two roundabouts on the A415.
- Alignment 3 and 4 would link closely to Culham Science Centre and the proposed Clifton Hampden Bypass.
- Consideration should be given of an alignment further west of Appleford using the existing Haul road.

Clifton Hampden Bypass

- The bypass should be further north or designed to be further away from properties.

General

- More focus to be made on public transport, cycling and walking.
- Consequential traffic problems in Nuneham Courtenay, Stadhampton and Chiselhampton and Golden Balls Roundabout.
- Concerns about how the Oxford to Cambridge Expressway will fit in with the scheme.
- Scheme should be delivered prior to new housing development.
- Consideration to improve the A34 needs to be made.
- Concerns that new roads may encourage more traffic.
- Traffic modelling/ traffic data was not shown to evidence how the schemes will help.
- Concerns about the impact on the environment

DRAFT

7.17. A further public consultation was held from 20 March – 30 April 2020 on the details of the Scheme. Public consultation events were planned for the Scheme, however, due to Government's guidance on social distancing in response to COVID-19, the in-person events were not able to go ahead.

7.18. A number of measures were introduced to ensure people could still participate, including holding an online consultation (which included a live chat function), hosted on the Acquiring Authority's website. Letters were sent to over 22,000 residences in the area. Radio and newspaper (print and online) adverts were published. Telephone numbers of Acquiring Authority Officers were advertised. Additionally, printed versions of the materials were sent to those who requested them due to lack of internet access.

7.19. The consultation was originally planned to last 4 weeks, which is usual for a non-statutory consultation, but this duration was extended to 6 weeks to allow people more time to respond.

7.20. This stage allowed the public to give feedback on the technical preferred options for each of the four elements of the Scheme via a dedicated email address, survey web-form, printed response form or a dedicated phone number. The Acquiring Authority advertised the consultation via the local media, social media, on site and a direct mailing campaign.

7.21. Information about the Scheme could be obtained online, at the consultation events, in the dedicated consultation booklet/response form or via a discussion with a Council officer via the dedicated project email/phone number. This included general information about each of the options, plus the relevant scheme plans.

7.22. As part of the 2020 virtual consultation (20 March – 30 April 2020), 686 pieces of feedback were submitted by stakeholders. These comprised 613 responses submitted via the online consultation feedback form, 48 via email, 13 via hard copy posted forms, eight via the phone and four via the live chat in the virtual consultation room. A breakdown of how responses were submitted is provided in **Figure 24**.

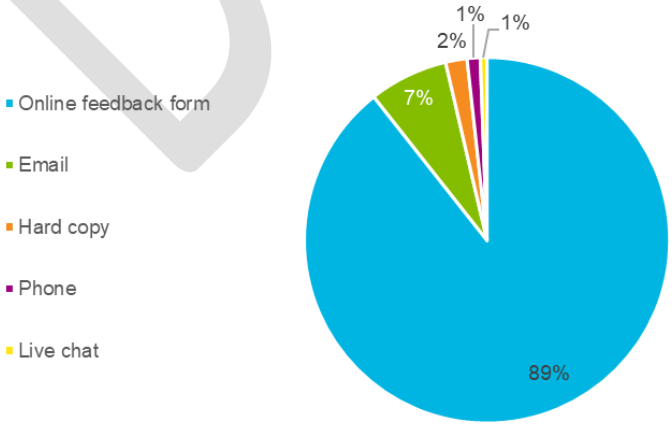


Figure 24: Feedback methods for the 2020 consultation (686 responses)

DRAFT

7.23. The feedback form asked respondents to specify whether they lived and/or worked in Didcot or the surrounding area. 37% of respondents stated that they lived in the surrounding area, followed by 33% of respondents who stated they lived in Didcot. 23% stated that they worked in the surrounding area, followed by 6% who stated they worked in Didcot.

7.24. **Figure 25** provides a high-level summary of the 2020 formal responses to each element of the Scheme:

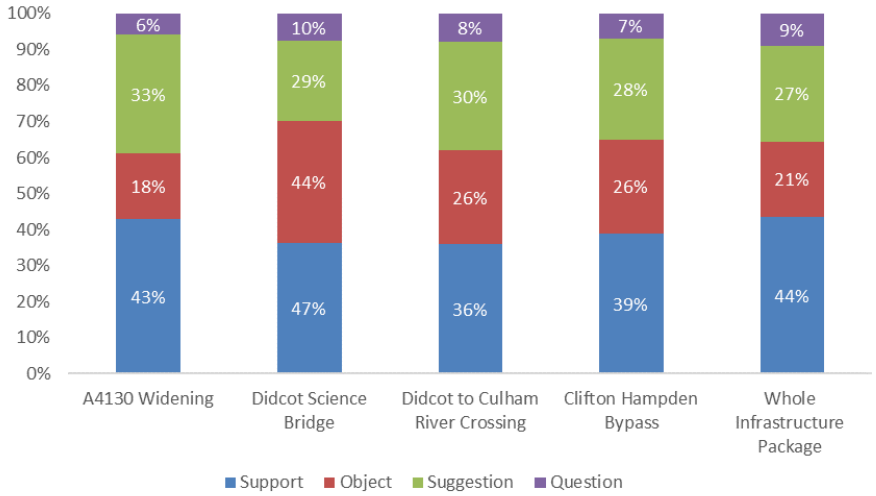


Figure 25: Categorisation of on whether comments supported or objected the scheme(s), made a suggestion or asked a question

7.25. The feedback form also asked respondents to state whether they were responding as an individual, business/group/organisation or on behalf of a parish/town/district/county council. Of those who responded, 92% of respondents were answering as an individual, followed by 6% on behalf of a business/group/organisation and only 2% were answering on behalf of a parish/town/district or county council.

7.26. The main feedback form was split into five questions including:

- Please provide us with comments you may have on the A4130 Widening Scheme.
- Please provide us with comments you may have on the Didcot Science Bridge Scheme.
- Please provide us with any comments you may have on the Didcot to Culham River Crossing Scheme.
- Please provide us with any comments you may have on Clifton Hampden Bypass Scheme.
- Please provide us with any general comments on the proposed package of strategic transport improvements.

Table 5 summarises the comments received on the Schemes active travel proposals.

Number of Comments	Key Theme	Sentiment			
		Support	Object	Suggestion	Question
Q1: A4130 Widening					
158	Cycle Infrastructure	41%	15%	40%	5%
95	Pedestrian Infrastructure	39%	19%	37%	5%
22	Safety	23%	14%	59%	5%
14	Bus Infrastructure	7%	7%	86%	0%
9	Onward Cycling Connections	22%	67%	11%	0%
4	Public Rights of Way	25%	50%	25%	0%
Q2: Didcot Science Bridge					
91	Cycle Infrastructure	38%	10%	45%	7%
51	Pedestrian Infrastructure	39%	14%	41%	6%
10	Onward Cycling Connections	10%	70%	20%	0%
8	Safety	25%	13%	50%	13%
8	Bus Infrastructure	13%	25%	63%	0%
1	Public Rights of Way	100%	0%	0%	0%
Q3: Didcot to Culham Science Bridge					
88	Cycle Infrastructure	40%	9%	41%	10%
44	Pedestrian Infrastructure	36%	7%	45%	11%
32	Onward Cycling Connections	8%	16%	63%	19%
17	Safety	29%	41%	24%	6%
9	Bus Infrastructure	0%	0%	89%	11%
8	Public Rights of Way	0%	13%	88%	0%
Q4: Clifton Hampden Bypass					

DRAFT

73	Cycle Infrastructure	26%	25%	45%	4%
51	Pedestrian Infrastructure	24%	9%	45%	2%
22	Safety	23%	59%	18%	0%
13	Onward Cycling Connections	0%	15%	77%	8%
9	Bus Infrastructure	0%	0%	89%	11%
8	Public Rights of Way	25%	13%	38%	25%
Q5: General					
99	Cycle Infrastructure	34%	10%	47%	8%
43	Pedestrian Infrastructure	49%	19%	28%	5%
26	Onward Cycling Connections	8%	12%	62%	19%
20	Bus Infrastructure	5%	20%	70%	5%
8	Safety	38%	13%	50%	0%
0	Public Rights of Way	0%	0%	0%	0%

Table 5: Categorisation of on whether comments supported or objected the scheme(s), made a suggestion or asked a question

7.27. Throughout the 2018 and 2020 consultation periods, a number of consistent key themes emerged through feedback received and discussions as part of one-to-one meetings. A summary of the key emerging themes are:

- Traffic impact – comments related to speed limits, traffic capacity, impact on neighbouring villages and junctions.
- Environmental – comments related to impact on air quality, noise and loss of roadside vegetation and biodiversity.
- Cycle infrastructure – comments related to the inclusion of segregated cycleways and safe crossings, as well as connectivity to existing cycleways.
- Pedestrian infrastructure – comments related to the inclusion of segregated pedestrian walkways and safe crossings including signalised crossings.
- Bus infrastructure – comments related to the provision of additional bus stops as a more sustainable transport method.
- Safety – comments related to concerns around a lack of segregation of walkways and cycleways from roads, speed limits and provision of safe pedestrian crossings.
- Construction – comments related to potential disruption caused by construction and mitigation measures to be put in place, as well as how residents will be kept informed.

DRAFT

- Public Rights of Way – comments related to how new the schemes will be integrated with existing public rights of way and the provision of bridleways and pedestrian/cycling routes.

7.28. A Statement of Community Involvement [**Appendix 6**] was produced following the formal engagement events and was submitted as part of the planning application. This includes more detail on the 2018 and the 2020 consultations.

Website

7.29. A dedicated webpage was developed on the Oxfordshire County Council website (www.oxfordshire.gov.uk/residents/roads-and-transport/roadworks/future-transport-projects/didcot-and-area-improvements), which provided scheme details, frequently asked questions, scheme video flythrough, public friendly General Arrangements plans and link to the Scheme's planning application on the Local Planning Authority website. The website also provides a dedicated HIF1 scheme email address.

Conclusion

7.30. It is evident that throughout the evolution of the Scheme, the Council has both consulted widely and extensively, and has been responsive to the information gathered during the consultation process which has shaped and informed the Scheme as described in this section. The output of consultation has fed into the alternatives and optioneering process as explained in Section 7 above.

DRAFT

8. PLANNING POSITION

Introduction

8.1. In making the CPO, the Acquiring Authority has had regard to the national and local planning policy context and other material planning considerations. This section describes the planning background and planning policy context. It includes a summary of Scheme compliance when considered against the relevant planning policy context and other material considerations. A full planning assessment of the Scheme is contained within the Planning Statement [**Appendix 3**]**.**

Planning Policy Context

8.2. Section 38(6) of the Planning and Compulsory Purchase Act 2004, together with s.70 of the Town and Country Planning Act 1990, provides that planning applications must be determined in accordance with the development plan unless material considerations indicate otherwise.

8.3. The Scheme is located within Oxfordshire County. The Scheme passes through the administrative boundaries of two local authorities: Vale of White Horse District Council and South Oxfordshire District Council. However, the planning application has been submitted to Oxfordshire County Council (OCC) as the determining Local Planning Authority (LPA) under the Town and Country Planning Act 1990 (as amended) and the Town and Country Planning (Development Management Procedure) (England) Order 2015. The application is a Regulation 3 application as defined by the Town and Country Planning General Regulations 1992.

8.4. The Development Plan for the Scheme comprises the following documents:

- South Oxfordshire Local Plan 2035 (adopted 2020) ('SOLP')
- Vale of White Horse Local Plan Part 1 Strategic Sites and Policies (adopted 2016) ('VoWHLP')
- VoWHLP Part 2 Detailed Policies and Additional Sites (adopted 2019) ('CLPPR')
- Oxfordshire Minerals and Waste Local Plan Part 1 – Core Strategy (adopted 2017) ('OMWLP')

8.5. Other material considerations include:

- National Planning Policy Framework (2021) ('NPPF')
- National Planning Practice Guidance ('NPPG')
- Connecting Oxfordshire: Local Transport Plan 2015-2031 (published 2015, updated 2016) ('LTP4') **[Appendix 9]**
- Equality Impact Assessment (EqIA) [**Appendix 10**]
- National Infrastructure Strategy (2020) ('NIS')
- Oxfordshire 2020 Climate Action Framework (2020) ('CAF')
- Oxfordshire Infrastructure Strategy (2017) ('OxIS')

DRAFT

- Oxfordshire's Strategic Vision for Long-Term Sustainable Development (2021)
- Vale of White Horse District Council Design Guide SPD (2015)
- South Oxfordshire District Council Town Centre SPD (2009)
- South Oxfordshire District Council Design Guide SPD (2016)
- South Oxfordshire District Council Landscape Assessment SPG (2003)
- Biodiversity and Planning in Oxfordshire (2014) ('BPO')

8.6. Emerging planning policy and guidance relevant to the Scheme include:

- Draft Oxfordshire Local Transport and Connectivity Plan ('Draft LTCP')
- Draft Oxfordshire Plan 2050 ('Draft OP')
- Draft Burcot and Clifton Hampden Neighbourhood Plan 2011-2034
- Emerging Oxfordshire Infrastructure Strategy 2021 ('emerging OxIS')

Key Planning Policies and Material Considerations of Relevance to the Scheme

8.7. The Scheme is predominantly located on land safeguarded for the delivery of highways infrastructure as set out in South Oxfordshire Local Plan (SOLP) Policy TRANS3 and Vale of White Horse Local Plan (VoWHLP) Core Policy 18, and within OCC's LTP4, supporting the principle of the Scheme. While there are elements of the Scheme that are outside of the safeguarded zones, these are a result of further detailed design to provide the most optimal solution, and the majority of the Scheme is within these safeguarded zones.

8.8. The Scheme comprises several of the highways infrastructure schemes listed within VoWHLP Core Policy 17 and SOLP Policies TRANS1b, TRANS3 and Policy STRAT9, further supporting the principle of development. These schemes include:

- Backhill Roundabout and junction on the A4130
- Didcot Science Bridge and A4130 re-routing through the former Didcot A site
- A4130 dualling between Milton Gate and Didcot Science Bridge
- a new strategic road connection between the A415 east of Abingdon-Thames and the A4130 north of Didcot
- provision for sustainable transport facilities including the creation of new cycle routes and footpaths
- a new Thames River crossing between Didcot Garden Town and Culham, and
- Clifton Hampden bypass.

8.9. The above schemes have been identified in the Science Vale Area Strategy as vital in order to *"mitigate the impact of planned growth across Science Vale and secure the future economic viability of the area"* (VoWHLP Core Policy 17). This is echoed in

paragraph 6.10 of the SOLP where *"Transport infrastructure improvements will be required to support the demand for travel arising from proposed new development".*

8.10. The Scheme provides a strategic solution to enhance the connectivity between key housing sites and areas of employment growth. The infrastructure investment will help relieve pressure on local transport networks and will facilitate economic growth across the Science Vale area whilst accommodating the expanding communities in the local area.

8.11. The Scheme will improve local roads which will lead to faster journeys, less congestion, more job opportunities, and better community links, with additional benefits of providing key active travel links to provide real mode choice for work and leisure. The Scheme will directly unlock the potential for 11,711 new homes and support the delivery of more than 18,000 new homes in total in the Didcot Town and the wider area through improved transport links. It will also promote Didcot as the gateway to the Science Vale, enhancing and improving access to Didcot and surrounding areas by all sustainable modes of transport.

8.12. The Scheme is deemed as essential to deliver future growth as identified within the adopted Local Plans for both South Oxfordshire District Council (SODC) and Vale of White Horse District Council (VoWHDC) and is also identified in the Science Vale Area Strategy forming part of OCC's Local Transport Plan 4.

8.13. The Scheme also supports the mitigation of the transport impacts of the planned developments on the road network. Its design has been informed by a detailed environmental assessment as set out within the Environmental Statement submitted in support of this application. This includes consideration of flood risk, heritage, biodiversity and landscape among many other key topic areas.

8.14. The Scheme will result in some significant positive effects. These include the delivery of biodiversity net gain, reduction in traffic noise during operation, provision of accesses to directly access adjacent development, and support for the provision of community facilities within the committed housing development sites located across the Scheme including nurseries, primary schools, care homes and areas of formal and informal open space.

8.15. The Scheme will inevitably have some significant adverse environmental effects, given the scale of development that is proposed, notably in relation to landscape and noise. However, comprehensive packages of mitigation are proposed to minimise adverse effects as far as reasonably possible and the residual effects are not considered to be unacceptable. Furthermore, the principle of significant development on the land required for the Scheme has been accepted through the safeguarding of the land for highways development within the SOLP and VoWHLP.

8.16. Part of the Didcot to Culham River crossing section (north of the River Thames) and the Clifton Hampden Bypass section are located within the Green Belt. In accordance with paragraph 150 of the NPPF, the Scheme is considered to be local transport infrastructure which can demonstrate a requirement for a Green Belt location, as the

majority of the development within this area is located within land safeguarded for highway development. It is also not possible to avoid Green Belt land in this instance given the area it covers between Didcot and Clifton Hampden.

8.17. The Scheme will have an impact on the openness of the Green Belt and would conflict with Green Belt purposes (c) to assist in safeguarding the countryside from encroachment and (d) to preserve the setting and special character of historic towns as set out in paragraph 138 of the National Planning Policy Framework (NPPF). Therefore, the Scheme is considered to be inappropriate development and will harm the Green Belt and Very Special Circumstances are required.

8.18. Paragraph 148 of the NPPF states that *"'Very special circumstances' will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the proposal, is clearly outweighed by other considerations"*. This includes the benefits of the Scheme.

8.19. The objectives and benefits of the Scheme have been described in Section 5. Furthermore, there is support for the Scheme in planning policy through land safeguarded for highways development within both the Vale of White Horse and South Oxfordshire Local Plans (Policies TRANS1b, TRANS2 and TRANS3 of the SOLP, and Core Policies 16, 17, 18, 33 and 35 of the VoWHLP). It is also set out and supported within the Science Vale Area Strategy in the LTP4. Therefore, there is significant planning policy support for the Scheme in this location.

8.20. Taking into account the policy support for the Scheme and the significant benefits listed above and detailed in Section 5, it is clear that Very Special Circumstances exist in accordance with paragraph 148 of the NPPF.

Current Planning Status

8.21. On 2 November 2021, a planning application submitted by Oxfordshire County Council (the Applicant) for the Scheme was validated by Local Planning Authority (Oxfordshire County Council as the determining authority) for the following development under application reference R3.0138/21 (the Application). This seeks permission for the following:

- The dualling of the A4130 carriageway (A4130 Widening) from the Milton Gate Junction eastwards, including the construction of three roundabouts.
- A road bridge over the Great Western Mainline (Didcot Science Bridge) and realignment of the A4130 north east of the proposed road bridge including the relocation of a lagoon. Construction of a new road between Didcot and Culham (Didcot to Culham River Crossing) including the construction of three roundabouts, a road bridge over the Appleford railway sidings and road bridge over the River Thames.
- Construction of a new road between the B4015 and A415 (Clifton Hampden bypass), including the provision of one roundabout and associated junctions.
- Controlled crossings, footways and cycleways, landscaping, lighting, noise barriers and sustainable drainage systems.

8.22. The planning application is supported by an Environmental Statement in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The scope of the EIA was agreed with OCC, as the local planning authority ("LPA"), through the submission of a Scoping Report in April 2020 and subsequent issue of a Scoping Opinion by the LPA in June 2020.

8.23. A suite of further documents was also submitted with the planning application including:

- Planning Statement
- Design and Access Statement
- Statement of Community Involvement
- Lighting and Electrical Design Report
- Transport Assessment
- Foul Water and Utilities Assessment
- Minerals and Waste Safeguarding Preliminary Assessment
- Arboriculture Impact Assessment
- Outline Landscape and Biodiversity Management Plan
- Drainage Strategy Report
- Biodiversity Net Gain Assessment
- Ground Investigations Report

8.24. At the time of writing, the LPA is waiting for key consultees to respond before confirming if further information is required. As such, the planning application has not yet been determined by OCC, as the LPA. It is anticipated that the planning application will be determined by the LPA's planning committee in Summer 2022.

8.25. Following discussions with the Vale of White Horse District Council, an outline planning application will be submitted by the Council to seek planning permission for the replacement RWE Gatehouse in the second quarter of 2022. It is expected that the planning application will be determined in early Summer 2022.

Conclusions

8.26. On the overall balance, the overwhelming social and economic benefits of the Scheme to the Science Vale area outweigh the limited adverse effects on Green Belt, landscape, noise and soils. It is, therefore, considered that taking the Development Plan as a whole, the Scheme complies with the Development Plan, and that the Development Plan and other material considerations point strongly in favour of the grant of planning permission. It is considered that there is no planning impediment to the delivery of the Scheme.

DRAFT

9. THE ORDER LAND – SECTION TO BE UPDATED

Introduction

9.1. In preparing the CPO, the Acquiring Authority (through its appointed land referencing/surveying consultants, Gateley Hamer) has undertaken diligent enquiry in order to identify all persons with an interest in the land that is required for the Scheme.

9.2. An initial desktop referencing exercise was undertaken to ensure that all registered interests in the land and property required were identified, resulting in the production of land referencing schedules and a land ownership map.

9.3. This included obtaining the relevant HM Land Registry information, which has been (and will continue to be) regularly refreshed to make sure that all the information is as up to date as possible. Gateley Hamer also undertook all other necessary and relevant searches and enquiries to establish principal ownerships and note any third-party mortgages, unilateral notices and/or rights and restrictions, including carrying out relevant Companies House checks, postcode searches and checking the electoral roll.

9.4. The Acquiring Authority and Gateley Hamer then used the information above to issue Statutory Requests for Information pursuant to section 16 of the Local Government (Miscellaneous Provisions) Act 1976.

9.5. Where there are any areas of unregistered land, unknown owner site notices were prepared and erected on site at the unregistered land. These were then regularly checked over a 4-week period to ensure that none were damaged or removed.

9.6. The information collected throughout the processes outlined above has been collated and analysed by Gateley Hamer to produce the required documentation to inform the compulsory purchase process and ensure that the Acquiring Authority has discharged its duty to exercise diligent enquiry to ascertain all interests in the Order Land.

9.7. The Order Land has a total area of approximately 145ha. This comprises:

- 92ha for which the title of land is required, 10ha of which is already in the ownership of The Oxfordshire County Council.
- 51ha of land is required for the construction of the Scheme and could be available to return to landowners under the Crichel Down rules.
- 2ha of land over which new rights are required.

9.8. The Order Land is comprised of agricultural land, residential development land, enterprise zone development land, former quarry land, land fill waste site land, Industrial/commercial land, private roads and tracks, commercial development land, gardens and public highway.

DRAFT

Description of Land Required for Title by Plot Reference

9.9. The plots over which title is required are set out below:

9.9.1. **2Morrow Group Limited, James Alexander Howe-Davies and Michael John Howe-Davies – Plot 10/3**
This plot comprises 421sqm of woodland and is required for working area for the construction of new highway.

9.9.2. **Alexander James Dale, Nicholas Siegfried Dale, Beatrice Maria O'Connell and Leo James Nathaniel Dugdale – Plots 3/4a, 3/4b and 3/4c**
These plots comprise 1,541sqm of agricultural fields and are required for new highway, temporary working area and mitigation land.

9.9.3. **Anthony Bryant Patrick Mockler - Plots: 1/10a, 1/10b, 1/10c, 1/10d, 1/10e, 1/10f, 1/10a, 1/10g, 1/10h, 1/10i, 2/1a, 2/1b, 2/1c, 2/1d, 2/1e, 2/1f, 2/1g, 2/1h, 2/1i, 2/1j, 2/1k, 2/1l, 2/1m, 2/1n, 3/2a, 3/2b, 3/2c, 3/2d and 3/2e**
These plots comprise 50,252sqm of agricultural fields and intersecting private access tracks, and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.4. **Caudwell & Sons Limited - Plots: 11/5, 13/3a, 13/3e, 13/3d, 13/4a, 13/4b, 13/4c, 17/13a, 17/13b, 17/13c, 17/13d, 18/1a, 18/1b, 18/1c, 18/1d, 18/1e, 18/1f, 18/1g, 18/1h, 18/1i, 19/1a, 19/1b, 19/1c, 19/1d, 19/1e, 19/1f, 19/1g, 19/1h, 19/1i, 19/1j, 19/1k, 19/1l, 19/1m and 19/1n**
These plots comprise 142,480sqm of agricultural fields and intersecting private access tracks, and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.5. **Adnams Farm Partnership - Plots: 3/13a, 3/13b, 3/13c, 3/13d, 3/13e, 3/13f, 3/13g, 3/13h, 4/4a, 4/4b, 4/4c, 4/4d and 4/4e**
These plots comprise 18,482sqm of agricultural fields and intersecting private access tracks, and are required for new highway, temporary working area and mitigation land.

9.9.6. **Clive Hartwright & Alison Joan Hartwright - Plots: 7/6a, 7/6b and 7/6c**
These plots comprise 222qm of private access track, and are required for new highway, temporary working area and mitigation land.

9.9.7. **Clowes Developments (UK) Limited - Plots: 4/5a, 4/5c, 4/5e, 4/5f, 4/5g, 4/5i, 4/5j, 5/1a, 5/1b, 5/1c, 5/1d, 5/1e, 5/1f, 5/1g, 5/1h, 5/1i, 5/1j, 5/1k, 5/1l, 5/3a, 5/3b and 5/3c**
These plots comprise 73,271sqm of hardstanding, grassland, scrubland and part classified road at Didcot A Power Station. The plots are required for new highway, temporary working area, private means of access and mitigation land.

DRAFT

9.9.8. **David Charles Leslie Gibbs - Plots: 17/12a and 17/12b**
These plots comprise 272sqm of private access tracks and are required for new highway and mitigation land.

9.9.9. **David Peter Green and Janet Betty Green - Plots: 2/5a, 2/5b and 2/5c**
These plots comprise 544sqm of agricultural fields and are required for new highway, temporary working area and mitigation land.

9.9.10. **Trustees of the W.E. Gale Trust - Plots: 6/3a, 6/3b, 6/3c, 6/3d, 6/3e, 7/1a, 7/1b**
These plots comprise 26,142sqm of agricultural fields and intersecting private access tracks, and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.11. **Emmett of Drayton Limited - Plots: 17/3a,17/3b, 17/3c, 17/3d, 7/3e, 7/3f, 17/3g, 17/3h, 17/3i, 7/3j and 17/3k**
These plots comprise 40,885sqm of agricultural fields and intersecting private access tracks and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.12. **FCC Environment (UK) Limited - Plots: 10/1a, 10/1b, 10/1c, 10/1d, 10/1e, 10/1f, 10/1g, 10/1h, 10/1i, 10/1j, 11/3a, 11/3b, 12/1a, 12/1b, 12/1c, 12/1d, 12/1e, 12/1f, 12/1g, 12/1h, 12/1i, 12/1j, 12/1k, 12/1l, 12/1m, 12/2a, 12/2b, 12/2c, 12/2d, 12/2e, 8/4a, 8/4b, 9/1a, 9/1b, 9/1c, 9/1d, 9/1e, 9/1f, 9/1g, 9/1h, 9/1i, 9/1j, 9/1k, 9/1l, 9/1m, 9/1n, 9/1o, 9/1p, 9/1q, 9/1r, 9/1s and 9/1t**
These plots comprise 242,010sqm of agricultural land and woodland and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.13. **Gemma Louise Hartwright & Simon Clive Hartwright - Plots: 8/10a, 8/10b, 8/10c, 8/10d, 8/10e, 8/10f, 9/7a and 9/7b**
These plots comprise 12.172sqm of pond, scrubland, grassland and outbuilding and are required for new highway, temporary working area and mitigation land.

9.9.14. **Gwendoline Mary Marsh - Plots: 3/5a, 3/5b and 3/5c**
These plots comprise 984sqm of agricultural fields and are required for new highway, temporary working area and mitigation land.

9.9.15. **Hanson Quarry Products Europe Limited - Plots: 11/1, 12/3a, 12/3b, 12/3c, 12/3d, 12/3e, 12/3f, 12/3g, 12/3h, 12/3i, 12/3j, 12/3k, 12/3l, 12/3m, 12/3n, 12/3p, 12/3q, 12/3r, 12/3s, 12/3t, 12/3u, 12/3v, 13/2a, 13/2b, 13/2c, 13/2d and 13/2e**
These plots comprise 78,341sqm gravel and sand workings and are required for new highway, temporary working area and mitigation land.

9.9.16. **Hartwright Estates Limited - Plots: 7/3a, 7/3b, 7/3c, 7/3d, 7/3e, 7/3f, 7/3g, 7/3h, 7/3i, 7/3j, 7/3k, 7/3l, 7/3m, 7/3n, 7/3o, 7/3p, 7/3q, 7/3r, 7/3s, 7/3t, 7/3u,**

8/12a, 8/12b, 8/12c, 8/1a, 8/1b, 8/1c, 8/1d, 8/1e, 8/1f, 8/1g, 8/1h, 8/1i, 8/1j, 8/1k, 8/1l, 8/1m, 8/1n, 9/11a, 9/11b, 8/11, 8/7, 8/8 and 8/9

These plots comprise 47,050sqm of agricultural fields and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.17. **Ian Michael Laing & Nicholas John Cross - Plots: 3/9a, 3/9b, 3/9c, 3/9d, 3/9e, 3/9f, 3/9g, 3/9h and 3/9i**

These plots comprise 12,293sqm of agricultural fields and are required for new highway, temporary working area and mitigation land.

9.9.18. **James Sherbrooke Waldegrave - Plots: 2/4a, 2/4b and 2/4c**

These plots comprise 1,726sqm of agricultural fields and are required for new highway, temporary working area and mitigation land.

9.9.19. **James Wallace Veitch - Plots: 16/4, 16/9, 17/1a, 17/1b and 17/1c**

These plots comprise 8,395sqm of public highway and private access tracks and are required for new highway, temporary working area and mitigation land.

9.9.20. **Joanna Mary Maxwell - Plots: 2/6a, 2/6b, 2/6c, 3/1a, 3/1b and 3/1c**

These plots comprise 1,487sqm of agricultural field and are required for new highway, temporary working area and mitigation land.

9.9.21. **Trustees for P.V.E Morrell Marriage Settlement - Plots: 13/1a, 13/1b, 13/1c, 13/1d, 13/1e, 13/1f, 13/1g, 13/1h, 13/1i, 13/1j, 13/1l, 13/1m, 13/1n, 13/1o, 13/1q, 13/1r, 13/1s, 13/1t, 14/2a, 14/2b , 14/2c, 14/2d, 14/2e, 14/2f, 14/2g, 14/2h, 14/2i, 14/2j, 14/2k, 14/2l, 14/2m and 14/2n**

These plots comprise 94,331sqm of agricultural fields and trees and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.22. **Jonathan William Johnson-Watts & Sara Jan Johnson-Watts - Plots: 19/4a and 19/4b**

These plots comprise 159sqm of public highway and are required for new highway and mitigation land.

9.9.23. **Judith Brown & Geoffrey Robert Morris - Plots: 3/11a, 3/11b, 3/11c, 3/11d, 3/11e, 3/11f, 3/11g, 3/11h, 3/11i, 3/11j, 4/1a, 4/1b, 4/1c, 4/1d, 4/1e, 4/1f, 4/1g, 4/1h and 4/1i**

These plots comprise 38,002sqm of agricultural fields and shrubland and are required for new highway, temporary working area and mitigation land.

9.9.24. **Katherine Emma Hartwright - Plots: 8/2a, 8/2b, 8/2c, 8/2d and 8/2e**

These plots comprise 1,217sqm of grassland forming part of a residential premises and private driveway. These plots are required for new highway, temporary working area, private means of access and mitigation land.

DRAFT

9.9.25. **LEDA Properties Limited - Plots: 16/12h, 16/12hh, 16/12i, 16/12ii, 16/12j, 16/12jj, 16/12k, 16/12kk, 16/12l, 16/12ll, 16/12m, 16/12mm, 16/12n, 16/12nn, 16/12o, 16/12oo, 16/12p, 16/12pp, 16/12q, 16/12qq, 16/12r, 16/12s, 16/12t, 16/12u, 16/12v, 16/12w, 16/12x, 16/12y, 16/12z, 16/13, 18/2f, 18/2a, 18/2b, 18/2c, 18/2d, 18/2e, 18/2g, 18/2h, 18/2i, 18/2j, 18/2k and 18/2l**

These plots comprise 76,998sqm of industrial business park and agricultural land, and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.26. **Mays Properties Limited - Plots: 1/6a and 1/6b**

These plots comprise 3,304sqm of agricultural fields and are required for new highway and temporary working area.

9.9.27. **MEPC Milton Park No.1 Limited & MEPC Milton Park No.2 Limited - Plot: 1/10**

This plot comprises 46sqm of scrubland and Network Rail apparatus and is required for temporary working area.

9.9.28. **Minscombe Properties Limited - Plots: 1/7a, 1/7b, 1/7c and 1/7d**

These plots comprise 23,998 sqm of agricultural fields and intersecting private access tracks, and are required for new highway, temporary working area and private means of access.

9.9.29. **Morrells Farming Limited - Plots; 14/1a, 14/1b, 14/1c, 14/1d, 14/1e, 14/1f, 14/1g, 14/1h, 14/1i, 14/1j, 14/1k, 14/1l, 14/1m, 15/2a, 15/2b, 15/2c, 15/2d and 15/2e**

These plots comprise 76,516sqm of agricultural fields and public highway, and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.30. **Oliver St George Wilson - Plots: 2/3a, 2/3b and 2/3c**

These plots comprise 50,252sqm of agricultural fields and are required for new highway, temporary working area and mitigation land.

9.9.31. **Trustees of the DCL Gibbs Children's Settlement - Plot: 18/3**

This plot comprises 56sqm of public footpath and is required for new highway.

9.9.32. **RWE Generation UK PLC - Plots: 13/6a, 13/6b, 4/3a, 5/2a, 5/2b, 5/2c, 5/2d, 5/2e, 5/2f, 5/2g, 5/2h, 5/2i, 5/2j, 5/2k, 6/1a, 6/1b, 6/1c, 6/1d, 6/1e, 6/1f, 6/1g, 6/1h, 6/1i and 6/1j**

These plots comprise 31,533sqm of grassland, shrubland and waterbodies, private accesses, and public highway. These plots are required for new highway, temporary working area, private means of access and mitigation land.

9.9.33. **S.J.Farrant & Son Limited - Plots: 19/7a and 19/7b**

These plots comprise 2,359sqm of public highway and shrubland and are required for new highway and temporary working area.

DRAFT

9.9.34. **Taylor Wimpey UK Limited - Plot: 4/15**
This plot comprises 3,584sqm of highway and is required for new highway.

9.9.35. **Thames Water Utilities Limited - Plots: 17/11a, 17/11b, 17/11c, 17/11d, 17/11e, 17/11f, 17/11g, 17/11h, 17/11i, 17/11j and 9/22**
These plots comprise 3,334sqm of shrubland and private access tracks, and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.36. **United Kingdom Atomic Energy Authority - Plots: 16/1c, 16/1d, 16/1e, 16/1f, 16/1g, 16/1h, 16/1i, 16/1j, 16/1k, 16/1l, 16/1m, 16/1n, 16/2, 16/3a, 16/3aa, 16/3b, 16/3bb, 16/3c, 16/3cc, 16/3d, 16/3dd, 16/3e, 16/3f, 16/3g, 16/3h, 16/3i, 16/3j, 16/3k, 16/3l, 16/3m, 16/3n, 16/3o, 16/3p, 16/3q, 16/3r, 16/3s, 16/3t, 16/3u, 16/3v, 16/3w, 16/3x, 16/3y, 16/20, 17/2a, 17/2b, 17/2c, 17/2d, 17/2e, 17/2f, 17/2g, 17/2h, 17/2i and 17/2j**
These plots comprise 59,288sqm of industrial business park, private accessways and public highway, and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.37. **Oxfordshire County Council - Plots: 1/3a, 1/3b, 1/3c, 1/3d, 1/3e, 14/5a, 14/5b, 15/1a, 15/1b, 16/1a, 16/10, 16/11, 16/12a, 16/12aa, 16/12b, 16/12bb, 16/12c, 16/12cc, 16/12d, 16/12dd, 16/12e, 16/12ee, 16/12f, 16/12ff, 18/18, 17/4a, 17/4b, 19/6, 2/2, 3/3a, 3/3b, 3/3c, 3/3d, 4/2a, 4/2b, 4/2c, 4/2e, 4/2f, 4/2g, 4/2i, 4/2j, 4/2k, 6/2a, 6/2b, 6/2c, 6/2d, 6/2e, 6/2f, 6/2g, 6/2h, 7/2a, 7/2b, 7/2c, 7/2d, 7/2e, 7/2f, 7/2g, 7/2h, 7/2i, 7/2j and 7/2k**
These plots comprise 127,895sqm of public highway and shrubland and are required for new highway, temporary working area and mitigation.

9.9.38. **Appleford Developments Limited (dissolved) - Plots: 7/4a, 7/4b, 7/4c and 7/4d**
These plots comprise 635sqm of public highway and grassland and are required for new highway and temporary working area.

9.9.39. **Max Andrew Lehmann and Victoria Anne Anderson Woolley - Plot: 16/6**
This plot comprises 123sqm of public highway and is required for new highway.

9.9.40. **Eric James Jackson – Plot: 16/17**
This plot comprises 121sqm of public highway and is required for new highway.

9.9.41. **Peter James Donkin and Gillian Ruth Donkin – Plot: 16/8**
This plot comprises 1011sqm of public highway and is required for new highway.

9.9.42. **Robert William Emmett and Heather Jane Emmett – Plot: 16/12gg**
This plot comprises 164sqm of public highway and is required for new highway.

9.9.43. **Trustees for P.V.E Morrell Marriage Settlement - Plots: 13/1k and 13/1p**

DRAFT

These plots comprise 1,152sqm agricultural land and are required for temporary working area.

9.9.44. **Richard Martin Estall and Mandy Jane Estall – Plot: 16/5**
This plot comprises 30sqm of public highway and is required for new highway.

9.9.45. **Unregistered (Hanson Land Development Limited) - Plots: 10/2a, 10/2b, 10/2c, 10/2d, 10/2e, 10/2f, 10/2g, 10/2h, 10/2i, 9/6a, 9/6b, 9/6c, 9/6d and 9/6e**
These plots comprise 17,625sqm of agricultural land and woodland and are required for new highway, temporary working area and mitigation.

9.9.46. **Unregistered (Caudwell & Sons Limited) - Plots: 17/14a and 17/14b**
These plots comprise 373sqm of hardstanding and shrubland and are required for new highway and mitigation.

9.9.47. **Unregistered (James Joseph Bray & Freda Eileen Bray) - Plots: 1/5a, 1/5b, 1/5c, 1/5d, 1/5e, 1/5f, 1/5g, 1/5h, 1/5i, 1/5j, 1/5k, 1/5l, 1/5m, 1/5n, 1/5o, 1/5p and 1/5q**
These plots comprise 2,103sqm agricultural fields and intersecting private access tracks and are required for new highway, temporary working area, private means of access and mitigation land.

9.9.48. **Unregistered, unknown - Plots: 1/11, 1/12, 1/4, 1/9, 11/2, 11/4, 11/6, 12/4, 12/5, 12/6, 12/8, 12/9, 14/3, 14/4, 16/14, 16/15, 16/16, 16/17, 16/19, 17/5, 17/7, 17/8, 17/9, 18/4, 19/2, 19/3, 19/5, 19/8, 3/10, 3/12, 3/6, 3/7, 3/8, 4/10, 4/17, 4/18, 6/4, 7/10, 7/11, 7/7, 7/8, 7/9, 8/3, 8/5, 9/10, 9/12, 9/13, 9/14, 9/15, 9/16, 9/17, 9/18, 9/19, 9/2, 9/20, 9/21, 9/23, 9/24, 9/25, 9/4, 9/5, 9/8, 16/1b, 16/3z, 16/12g, 16/14, 16/15, 16/16, 16/17, 16/18, 16/19, 17/10, 17/6, 13/5b, 13/5c, 13/5d, 13/5e and 9/9**
These plots comprise 23,276sqm of land used for various uses including public highway, private access, woodland, and grassland. Despite undertaking diligent enquiry to ascertain ownership, the landowners of these plots remain unknown. These plots are required for new highway, temporary working area, private means of access and mitigation land.

Description of Land Required for Rights by Plot Reference

9.10. The Order Land includes land over which new rights are required, shown shaded blue on the Order Map. A description of the rights sought over these plots is set out below along with a summary of the plots to which the rights relate:

9.11. RIGHT 1 - ACCESS AND GENERAL CONSTRUCTION

Right to enter the land at all times (with or without vehicles, machinery, equipment, plant and materials) for all purposes necessary in connection with the surveying, demolition, construction, maintenance, inspection, use, renewal, repair, reinstatement, cleaning, decoration, connection, removal and replacement of land, property, structures and buildings adjacent to or abutting the land and the right to manage access to such parts of

the land to accord with safe working practices (but without requiring exclusive possession of such land) including entering onto land, property, structures and buildings to make good and carry out protective works, boundary treatment works, to re-grade, re-surface and landscape land, carry out support works from properties adjoining the land and to carry out accommodation and reconfiguration works to land where access is reconfigured in order to modify the retained land so that it can be brought back into beneficial use.

9.12. RIGHT 2 – OVERSAIL

Right to oversail and/or sail a crane or cranes (including, but not limited to, mobile crane platforms, jibs and booms and all associated equipment), loaded or unloaded through the airspace over the land and/or water together with the right to temporarily set up exclusion zones for public safety and to accord with safe construction practices.

9.13. RIGHT 3 - SCAFFOLDING/HOARDING/SAFETY FENCING

Right to erect, secure, use, decorate, clean, maintain, repair, renew, replace and take support for scaffolding and/or hoardings and/or safety fencing (including signage) on land or land adjoining or abutting the boundaries of the land for the purpose of construction, demolition, maintenance, inspection and repair of land, highways and structures adjacent to or abutting the land, including but not limited to cradle scaffolding for the survey, construction, inspection and ongoing maintenance of any bridge structure.

9.14. RIGHT 4 - SERVICE MEDIA

Right to disconnect, install, lay, strengthen, connect to, divert, alter, use, maintain, repair, replace, renew, inspect and remove the surface media in, over or under the land as necessary and to make good any damage caused in connection with the exercise of these rights.

9.15. RIGHT 5 - PLANT

Right to disconnect, remove, install, lay, strengthen, maintain, inspect and replace plant equipment on, in, under or over the land (as necessary) and to make good any damage caused in the exercise of these rights.

9.16. RIGHT 6 - AMENDMENTS TO ACCESS/EGRESS ARRANGEMENTS

Right to alter, divert, replace and/or remove access/egress routes (either on a temporary or permanent basis) forming part of or used by the land whilst always providing an alternative means of access/egress from the land whilst carrying out such works and to grant rights for owners and occupiers of land to use said access/egress routes.

9.17. RIGHT 7 - CONSTRUCTION OF NEW ACCESS

Right to enter the land at all times (with or without vehicles, machinery, equipment, plant and materials) for all purposes necessary in connection with the construction of a new access/egress onto or from land or used by the land, including the installation of new gates.

9.18. RIGHT 8 - FUTURE INSPECTIONS AND MAINTENANCE

DRAFT

Right to enter the land at all times (with or without vehicles, machinery, equipment, plant and materials) for all purposes necessary in connection with the maintenance and inspection of the improved road including any road bridge structures to be improved, together with any ancillary support structures, drains, earthworks, scour protection measures, structural connections and components, bridge abutments and bridge deck or other structures or development on the land.

9.19. RIGHT 9 - CONDITION SURVEYS

Right to enter the land on foot only and temporarily remain on the land for the purposes of carrying out non-intrusive condition surveys in accordance with safe working practices and to document the condition of the land before, during and after development, if so necessary.

9.20. RIGHT 10 - DELIVERIES

Right to access the land at all times (with or without vehicles, machinery, equipment, plant and materials) for the purposes of delivery, removing and sorting materials, plant and machinery, and the right (from time to time) to create, divert and/or otherwise manage pedestrian and vehicular access to, on and across land to facilitate the delivery of the scheme (including the ongoing maintenance and inspection of the scheme) and to accord with safe working practices.

9.21. RIGHT 11 - DISCHARGE OF WATER

Right to discharge uncontaminated surface waters, land drainage waters and waters from highway drains into the new watercourse channel outfall to be constructed as part of the scheme in order to enable satisfactory operation of the channel outfall.

9.22. RIGHT 12 - BARGES

Right to access the canal for delivery, removal, assembly and operation of floating platform/barge to facilitate the construction of the bridge, including building and removal of installation platforms, tug attendance, access over the water, mooring or beaching in the navigable waterway and temporary obstruction of the navigable waterway during construction of the bridge.

9.23. RIGHT 13 - ECOLOGICAL MITIGATION

The right of access with or without vehicles, plant and machinery to carry out, maintain, and inspect ecological and environmental mitigation works, including (as necessary) the installation, inspection, repair and maintenance of landscape fencing, fencing to protect planting from livestock, kingfisher boxes and bat boxes.

9.24. RIGHT 14 - RAIL BRIDGE CONSTRUCTION

The right to carry out construction works above and around the railway line in connection with the construction of a new road bridge crossing the railway, including pilings, reinforcement structures, foundations and drainage and the permanent right to the airspace above the railway from a point [xxx] above ordnance datum for the siting of the road bridge.

9.25. RIGHT 15 - RAILWAY ACCESS

The right of access with or without vehicles, plant and machinery over the railway crossing in connection with the temporary storage and removal of construction materials plant and equipment on the Acquiring Authority's adjoining land, including the right to construct, repair and maintain a new [permanent/temporary] reinforced railway crossing platform with a right of support for the crossing.

9.26. RIGHT 16 - WATERWAY BRIDGE CONSTRUCTION

The right to carry out construction works above and around the [waterway] in connection with the construction of a new road bridge crossing the [river][canal], including pilings reinforcement structures, foundations and drainage and the permanent right to the airspace above the [river][canal] from a point [xxx] above ordnance datum for the siting of the road bridge.

9.27. RIGHT 17 - RIVER/CANAL/WATER CHANNEL BANK ACCESS

The right of access with or without vehicles, plant and machinery over the banks of any river/canal/water channel in the land in connection with improvement works to the river/canal/water channel and its embankments, including reinforcement works necessary as a result of the improved highway.

9.28. RIGHT 18 - BRIDGE MAINTENANCE

The permanent right to access the land around and under the bridge structure and the bridge itself for the purposes of inspection, repair, maintenance and, where necessary, reconstruction of the bridge structure as may be necessary.

9.29. The plots in which the above rights are sought are as follows:

9.29.1. **Exmoor Properties GP Limited and Exmoor Nominee Limited – Plot: 1/1**
This plot comprises 731qm of classified road. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

9.29.2. **Hanson Quarry Products Europe Limited - Plot: 12/3o**
This plot comprises 103sqm of gravel and sand workings. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

9.29.3. **Caudwell & Sons Limited - Plots: 13/3b, 13/3c and 13/4d**
These plots comprise 1,125sqm agricultural land. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

9.29.4. **Morrells Farming Limited – Plot: 13/7**
These plots comprise 3,724sqm arable land and woodland. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

DRAFT

9.29.5. **RWE Generation UK PLC - Plots: 13/6c, 4/3b, 4/3c**

These plots comprise 604sqm private access and riverbank. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

9.29.6. **Whitbread Group plc – Plot: 1/2**

This plot comprises 1,105qm of classified road. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

9.29.7. **Clowes Developments (UK) Limited - Plots: 4/5b, 4/5d and 4/5h**

These plots comprise 851sqm of classified road and hardstanding of Power Station known as Didcot A. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

9.29.8. **Oxfordshire County Council - Plots: 4/2d and 4/2h**

These plots comprise 1,158qm of highway verge of classified road. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

9.29.9. **Unregistered, unknown - Plots: 12/7, 4/11, 4/12, 4/13, 4/14, 4/16, 4/6, 4/7, 4/8, 4/9, 13/5a, 13/5f and 13/5g**

These plots comprise 14,613sqm of railway line and sidings. Despite undertaking diligent enquiry to ascertain ownership, the landowners of these plots remain unknown. Rights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 are required to facilitate the construction and ongoing operation of the new highway.

DRAFT

10. COMPULSORY PURCHASE JUSTIFICATION – SECTION TO BE UPDATED

Appropriateness of Powers

10.1. The acquisition of land to facilitate the delivery of the Scheme falls within the scope of the compulsory purchase powers as set out in Sections 239, 240, 246, 250 and 260 of the Highways Act 1980, being a highway infrastructure scheme as detailed in Section 1.

10.2. The Council is using its powers under the Highways Act 1980 because it is not certain that it will be able to acquire the land and new rights required by agreement, although efforts will be made in parallel with the compulsory purchase order process.

10.3. The Council as the Acquiring Authority cannot achieve the Scheme objectives without acquiring all the land required for the proposed classified roads and associated side roads and other works. The confirmation of compulsory purchase powers on the Order Land will enable the Council to deliver the proposed works, address the need for the Scheme and realise the planned Scheme benefits.

The compelling case in the public interest

10.4. Paragraph 2 of the CPO Guidance advises that a compulsory purchase order should only be made where there is a compelling case in the public interest. This Statement of Reasons sets out the Council's compelling case in the public interest' as follow:

- The need for the Scheme is set out and explained in Section 3 (above);
- The benefits of the scheme are set out and explained in Section 5 (above);
- The lack of more appropriate alternative for meeting the objectives of the Scheme are set out and explained in Section 6 (above);
- The planning policy support for the Scheme is set out and explained in Section 8 (above);
- The remaining parts of this section of the Statement of Reasons will set out and explain why it is necessary for the Council to be granted compulsory purchase powers in order to secure the timely implementation of the scheme.

10.5. The Scheme will provide numerous substantial benefits to the public, which are summarised below as taken from the Planning Statement [**Appendix 7**] and which provide a compelling case in the public interest for the acquisition of the Order Land as detailed within **Section 3** Need for the Scheme.

Need for compulsory acquisition

10.6. The Acquiring Authority has given careful consideration to the necessity of acquiring the land and new rights shown on the CPO Map and described further in Section 9 of this Statement.

DRAFT

10.7. The Acquiring Authority has a clear idea how it will use the land it intends to acquire and has the necessary resources to acquire the land and interests needed for the Scheme.

10.8. The Acquiring Authority's approach is only to acquire land and rights compulsorily where they are necessary to ensure successful delivery of the Scheme in accordance with best engineering and environmental practices.

10.9. The Acquiring Authority recognises that compulsory purchase is intended as a last resort to secure the assembly of land and has taken reasonable steps to acquire the land and rights required to deliver the Scheme by agreement. The Council has been working with landowners to identify means of mitigating the impacts of the Scheme proposals on property, where possible, with private treaty negotiations continuing in parallel with the preparation of the CPO.

10.10. The Acquiring Authority, as Highway Authority, is already the owner of the freehold interest in a number of plots or parts of plots required to deliver the Scheme, and its interests in the various plots or parts thereof are included in the CPO under the provisions of section 260 (clearance of title to land acquired for statutory purposes) of the 1980 Act.

10.11. During the preparation of the CPO, the Acquiring Authority has fully considered the Guidance, in particular those sections relating to the acquisition of land by agreement, namely, paragraphs 17 – 19.

10.12. In accordance with the Guidance, all owners and occupiers will be given the opportunity to enter into negotiations with the Acquiring Authority for the purchase of their respective interests. Some landowners have not responded to our requests to engage on the project, and as such it has not been possible to have detailed discussions despite the Acquiring Authority's efforts to do so. Notwithstanding this, efforts to engage with those landowners will continue, with the intention of agreeing the acquisition of all land by private agreement, where possible.

10.13. Although negotiations will run in parallel, the Acquiring Authority has concluded that acquisition by agreement is unlikely to occur in all cases or within sufficient time to ensure that the programme for funding and subsequent construction of the Scheme is met. There are also some plots of land where interests are within unknown ownership and, therefore, it will not be possible to acquire the interest except by way of compulsory acquisition.

10.14. Discussions will continue with owners of relevant interests and new rights required, with the intention of securing them by agreement, wherever possible, with a view to limiting the number of interests needing to be acquired compulsorily. The approach adopted by the Acquiring Authority is in accordance with the policy advice and recognised good practice.

DRAFT

10.15. Further information on the status of negotiations to date is set out in paragraph 10.17 onwards below.

10.16. Where the Acquiring Authority has been unable to reach agreement with landowners and occupiers it will offer alternative dispute resolution to enable agreement on compensation to be reached as suggested in the Guidance (paragraph 18). The Acquiring Authority will provide full information on the Scheme, with Gateley Hamer appointed as the dedicated case manager for the Scheme, assisting impacted parties and their agents with their queries and providing reassurance on fees, in accordance with paragraph 19 of the Guidance.

10.17. The CPO will be made to secure the outstanding interests and rights required to enable implementation of the Scheme.

Detail of Negotiations

10.18. The Acquiring Authority, together with its representatives at Gateley Hamer has been engaging with landowners since March 2020. This has included negotiations for access to land to undertake environmental and ecology surveys in accordance with paragraph 16 of the Guidance and discussions regarding the mitigation of the impacts that the Scheme will have upon landowners' property. This has then led to discussions regarding the terms for the acquisition of land. The nature of the discussions which have been undertaken to date are outlined further below.

10.19. The Scheme comprises 4 elements of works, A4130 Widening, Didcot Science Bridge, River Crossing and Clifton Hampden Bypass. Within the Scheme there are 45 freeholders/reputed freeholders.

10.20. Engagement with these impacted landowners and occupiers are ongoing via emails, phone calls, in person and virtual meetings and will continue to progress throughout the entirety of the compulsory purchase process, right up until the point of implementation of powers, should the Secretary of State see fit to confirm the Orders. Whilst a number of these impacted parties are willing to engage with the Acquiring Authority to enable the acquisition of the necessary land and rights, there are some individuals who have been reluctant to engage to date.

Conclusions

10.21. All elements of the Order Land are required and necessary in order to deliver the Scheme. Negotiations continue to take place with affected parties but there is no certainty that the necessary land interests and new rights can be assembled by private agreement within a reasonable period of time. Where such interests have already been acquired for the purpose of the Scheme, parcels of land are included within the Order Land in order to ensure that the delivery of the Scheme is not prejudiced by the existence of third-party rights, using the prescribed powers under section 260 of the Highways Act 1980. The Acquiring Authority has taken and is taking reasonable steps to acquire all of the land and new rights included in the CPO by private agreement. Further, these efforts to acquire the land and new rights by negotiation will continue in

DRAFT

parallel, both up to the making and confirmation of the CPO and also post confirmation, prior to its implementation.

10.22. The CPO is being sought under appropriate powers and there exists a compelling case in the public interest for the Scheme.

10.23. For all the above reasons the CPO is justified in accordance with policy and guidance.

DRAFT

11. DELIVERABILITY AND VIABILITY

Introduction

11.1. Paragraph 14 of the Guidance identifies the issues that will be considered by the Secretary of State when confirming an order and requires evidence as to the sources and timing of funding.

11.2. A Property Cost Estimate was commissioned from Gateley Hamer Limited, with the total estimated value for the acquisition of land based on market conditions, as at November 2021, this Property Cost Estimate will be revised at the appropriate time to ensure it remains accurate.

11.3. The Acquiring Authority has given proper consideration to potential statutory blight claims being received by affected owners and occupiers. Statutory Blight forms part of the report to Cabinet in July 2022.

11.4. The total estimated cost of delivering the Scheme is £296.152million, inclusive of costs associated with land acquisition and potential blight claims, which will be met in its entirety from public sector funds, as outlined below.

Public Sector Funding

11.5. The Acquiring Authority submitted a business case to Homes England for the Scheme in March 2019. In November 2019, it was announced by Government that the bid had been successful (subject to contract) in securing funding from the Housing Infrastructure Fund (Forward Fund) towards the delivery of the Scheme, estimated at that time to cost a total of £234 million.

11.6. Subsequent to the funding announcement and a further period of work to develop the Scheme and agreements, Cabinet resolved to approve the recommendation to enter into the Grant Determination Agreement (GDA), as set out in a report in October 2019. The GDA was subsequently entered in to with Homes England to secure full scheme funding of c.£218 million, subject to a series of milestone conditions.

11.7. Following the report to Cabinet, a further phase of development work was undertaken between November 2019 and April 2020 to identify preferred options for each of the four elements of the Scheme. These options were then the subject of the public consultation process, details of which can be found in Section 6 of this Statement, prior to the preferred route alignment being approved by Cabinet in July 2020.

11.8. Following further review of the preferred option at the end of the next stage of development (preliminary design), Homes England agreed to extend its funding allocation to cover forecast Scheme costs up to £239.816 million, subject to an amended GDA, as well as making these monies available until March 2026.

DRAFT

11.9. The breakdown of the funding package for the scheme is set out within Table 6 (as previously reported to Cabinet in March 2022 (ref 2021/221)). The project is substantially funded by Housing Infrastructure Fund grant to a capped value of £239.816m (the sum of the two Housing Infrastructure Grant figures in Table 6) and, following the approval of the recommendations as set out in the report to Cabinet in March 2022 and June 2022 (2022/045), a Deed of Variation to the Grant Determination Agreement (GDA) with Homes England has now been entered in to (TBC).

11.10. The remaining funding has been secured from the Council's capital programme and Section 106 developer contributions. Some of the Section 106 contributions are secured, and others are underwritten by the Council. There is no guarantee of recovery of non-secure Section 106 contributions.

11.11. Table 6 – Revised Funding Summary

Source	**Value (£'000)**
Housing Infrastructure Fund Grant	239,816
Oxfordshire Local Enterprise Partnership	10,000*
Council Capital Borrowing	29,897
S106 Developer Contributions	16,442
Total	**296,155**

**secured against future business rates retention and forward funded by Council as part of approved capital programme*

11.12. The risks associated with scheme delivery, including Statutory Blight, are underwritten by a £52.251m quantified risk and contingency fund, which is accounted for within the overall forecast budget of £296.155m.

11.13. Inflation is considered and calculated against the prevailing market indices and the revised delivery programme. This equates to £26.653m across the programme and is also accounted for within the overall forecast budget of £296.155m.

Timescales for Implementation

11.14. The Acquiring Authority will continue to negotiate with all parties with an interest in the Order Land, but would hope to be in a position that the majority of land and new rights will be privately secured (or the terms agreed and progressing through detailed legal agreements) by early 2023.

11.15. The Acquiring Authority anticipates that should the compulsory purchase process result in a local Public Inquiry, this would be heard in Spring 2023.

11.16. In the event that the Orders are confirmed by the Secretary of State, this would likely result in implementation by Autumn 2023, allowing the construction contract for the works to be awarded. Main construction works would then commence on Site in early 2024, completing in early 2026.

11.17. In the event that a local Public Inquiry is not required, the Acquiring Authority would seek to commence works on Site at the earliest possible time following confirmation of

the Orders, noting the statutory periods for implementation and acknowledging the need to let the construction contracts.

Conclusion

11.18. The Acquiring Authority is satisfied that, in accordance with Paragraph 14 of the Guidance, the Scheme has available all relevant resources to enable delivery, the necessary funding can be provided and, as set out above, it is financially viable.

11.19. If the Orders are confirmed, development of the Scheme will be brought forward on the Order Land and the Site at the earliest opportunity. The target completion for delivering the HIF1 Scheme is 24 months from commencement of main construction works.

DRAFT

12. HUMAN RIGHTS AND PUBLIC SECTOR EQUALITY DUTY

12.1. The Human Rights Act 1998 incorporated into domestic law the European Convention on Human Rights ("the Convention"). The Convention includes provisions in the form of Articles, the aim of which is to protect the rights of the individual.

12.2. The following articles of the Convention are relevant to the determination as to whether the CPO should be confirmed:

- Article 1 of the First Protocol protects the right of everyone to peaceful enjoyment of possessions. No one can be deprived of their possessions except in the public interest and subject to the relevant national and international laws. Any interference with possessions must be proportionate and, in determining whether a particular measure is proportionate, a fair balance must be struck between the public benefit sought and the interference with the rights in question
- Article 6 entitles those affected by the powers sought in the CPO to a fair and public hearing by an independent and impartial tribunal
- Article 8 protects the right of the individual to respect for his private and family life, his home and his correspondence. A public authority cannot interfere with these interests unless such interference is in accordance with the law and is necessary in the interests of, inter alia, national security, public safety or the economic wellbeing of the country.

12.3. The CPO has the potential to interfere with the human rights of persons who own property in the Order Land. Such interference is authorised by law provided:

- the statutory procedures for obtaining the CPO are followed and there is a compelling case in the public interest for the CPO, and
- any interference with the Convention right is proportionate to the legitimate aim served.

12.4. The Scheme has been designed to minimise interference with rights under Article 1 of the First Protocol. The Acquiring Authority believes that the Scheme is in the public interest and that this outweighs any interference with rights under Article 1 of the First Protocol caused by the use of compulsory purchase powers to acquire third party land for the Scheme.

12.5. In promoting the CPO, the Acquiring Authority has complied with all relevant legislation. The Scheme has been extensively publicised (as detailed within the Statement of Community Involvement (August 2021) [Appendix 6] and consultation has taken place with the communities and parties that will be affected by the CPO.

12.6. All those affected by the CPO will be notified, will have the right to make representations and/or objections to the Secretary of State, and to be heard at a Local Public Inquiry. It has been held that the statutory processes and associated right for those affected to pursue remedies in the High Court where relevant, are compliant with Article 6.

DRAFT

12.7. The Acquiring Authority considers that such interferences with Article 8, as may occur should the CPO be confirmed, are in accordance with the law and are necessary in a democratic society in that they would be in pursuit of a legitimate aim, namely the economic well-being of the country and/or the protection of the rights and freedoms of others, and are proportionate, having regard to the public interest that the Scheme will bring, which will benefit the well-being of the area.

12.8. Although there is no obligation on the Acquiring Authority to establish that there are no less intrusive means available, the Order Land has been kept to the minimum necessary to construct the road and provide the associated mitigation measures.

12.9. Those directly affected by the CPO will also be entitled to compensation, which will be payable in accordance with the Compulsory Purchase Compensation Code. This will be assessed on the basis of the market value of the property interest acquired, disturbance and statutory loss payment. The reasonable surveying and legal fees incurred by those affected will also be paid by the Acquiring Authority.

12.10. The Compulsory Purchase Code has been held to be compliant with Article 8 and Article 1 of the First Protocol.

12.11. Both public and private interests are to be taken into account in the exercise of the Acquiring Authority's powers and duties. Similarly, any interference with Article 8 rights must be "necessary in a democratic society", i.e. proportionate.

12.12. The public interest can only be safeguarded by the acquisition of this land and such acquisition would not place a disproportionate burden on the affected landowners.

12.13. In pursuing this CPO, the Acquiring Authority has carefully considered the balance to be struck between the effect of acquisition on individual rights and the wider public interest in the Scheme construction.

12.14. Interference with Convention rights is considered by the Acquiring Authority to be justified in order to secure the economic regeneration, environmental and public benefits which the Scheme will bring.

Public Sector Equality Duty

12.15. In formulating and promoting the Orders, the Council has had regard to its statutory duties and obligations under the Equality Act 2010 (2010 Act) and in particular, to its obligations in section 149 and 150 of the 2010 Act, in taking into account the differential impact the Orders will have on various groups of persons with different characteristics.

12.16. The Acquiring Authority will continue to have regard to its Public Sector Equality Duty throughout the process of the Orders and detailed design of the Scheme.

DRAFT

13. BRIDGE SCHEME AND SIDE ROADS ORDER – TO BE UPDATED

Bridge Scheme

13.1 Section 106(3) of the Highways Act 1980 states that "*Provision may be made by a scheme made by a local highway authority or a strategic highways company under this subsection, and confirmed by the Minister, for the construction of a bridge over or a tunnel under specified navigable waters as part of a highway or proposed highway which is or is to be a highway (other than a special road) maintainable at the public expense by the authority or company*."

13.2 As the Scheme involves the construction of Bridge over navigable waters of the River Thames, the Council has made the 'The Oxfordshire County Council (Didcot to Culham Thames) Bridge Scheme 2022' ('the Bridge Scheme'). If confirmed by the Secretary of State for Transport, the Bridge Scheme will authorise the Council to construct a single 65 metre span bridge from the south bank to the north bank of the River Thames over the navigable waters of the River Thames, at a location south east of Culham and north west of Appleford. The bridge headway will be 4.7 metres, based on the soffit level of 51.502 metres A.O.D over the standard headwater level at Clifton Lock of 46.802 metres.

13.3 The Council is satisfied that the design dimensions proposed for the Bridge will not impede the navigable interests on the River Thames.

Side Roads Order (SRO)

13.4 The Council has also made The Oxfordshire County Council (Didcot Garden Town Highways Infrastructure A4130 Improvement (Milton Gate to Collett Roundabout), A4197 Didcot to Culham Link Road, and A415 Clifton Hampden Bypass) (Side Roads) Order 2022 ('the SRO') [**Appendix 8b**] under Sections 14 and 125 of Highways Act 1980.

13.5 The SRO is made in relation to six lengths of Classified Road, commencing on the A4130 just south west of its junction with Milton Gate, in the south, and culminating on the B4015 just north of Clifton Hampden Village, where the last Classified Road length will provide a Bypass of that Village. The Classified Road works, from south to north, comprise –

(a) The A4130 Principal Road Sections – Two lengths of the A4130 to be improved and a new length of A4130 to be constructed, from just south west of its junction with Milton Gate, to a point on the A4130, approximately 110 metres north of the A4130/Hawksworth Roundabout junction;

(b) The new A4197 Principal Road Section – The highway which the Council propose to construct from its junction with an enlarged roundabout junction with Collett, northwards, crossing over the River Thames on a new bridge, to its

DRAFT

junction with the A415 Abingdon Road at a new Abingdon Road roundabout junction, north of Zouch Farm; and

(c) The A415 Principal Road Sections – A length of the A415 to be improved, from a point some 346 metres west of the access to Zouch Farm, eastwards to a point some 210 metres east of its crossing over the railway at Culham Station, and the highway which the Council propose to construct, as the Clifton Hampden Bypass, from that point at a new roundabout junction located to the south west of Culham Science Centre, north eastwards, to its junction with the B4015 Oxford Road, to the north of Clifton Hampden Village.

13.6. The SRO, if confirmed, will authorise the Council, in relation to the aforementioned Classified Roads, to improve highways, stop up existing highways and private means of access to premises affected by the Scheme, and to construct new highways and provide new private means of access required as a consequence of the Scheme works.

13.7. The SRO Plans [**Appendix 2b**] show the extent to which it is necessary to carry out works to existing highways, stopping up of existing highways, stopping up of private means of access, and the provision of new private means of access to premises that are likely to be affected by the Scheme.

13.8. The proposed alterations to existing highways and private means of access that would be affected by the Scheme are detailed in the Schedules to the SRO and shown diagrammatically on the Side Roads Order Plans [**Appendix 2b**].

13.9 The SRO and the necessary changes to the highways and private means of access to premises affected by the SRO are an integral part of the proposed construction of the Scheme, as set out below.

13.10 <u>The A4130 Principal Road Improved and New Sections (Site Plans 1 – 7 (part))</u>

- *<u>Highways to be Stopped Up, Highways to be Improved, and New Highways</u>*

(i) A 88 metres length of what is proposed as a new Cycle Track (with a right of way on foot) or Footpath, southwards from its junction with Footpath 229/10/20 (Milton (Abingdon), (1/S1), will be stopped up. The Cycle Track or Footpath route does not presently exist, but is expected will do at the time the HIF 1 Scheme is built. The SRO proposes its stopping up, within its current protected route corridor of land, so that when it becomes built, its stopping up is authorised under the SRO. The remainder of the Cycle Track or Footpath will connect with the eastern boundary of the new Link Road (1/A), which is to run south westwards off the A4130 Backhill Roundabout into the site and run southwards towards the A34 and a proposed bridge crossing there. The integral Cycle Track/pedestrian facilities within the proposed new Link Road will continue its route for cyclists and pedestrians proceeding to and from the A4130.

(ii) A 22 metres length of Footpath 243/3/10 (Harewell), Footpath 3, **(2/S1)**, southwards from its junction with the A4130 will to be stopped up. The remaining Footpath will continue to connect with the A4130 at its new widened southern boundary, at which point a short length of the Footpath will also be improved where it will tie in with the widened A4130.

(iii) A 21 metres length of Bridleway 243/1/10 (Harewell), Bridleway 1, **(3/S1)**, which runs co-existent with the Private Access Track to New Farm known as Cow Lane, south westwards from its junction with the A4130 will be stopped up. The remaining Bridleway will continue to connect with the A4130 at its new widened southern boundary, at which point a short length of the Bridleway will also be improved where it will tie in with the widened A4130.

(iv) A 169 metres length of Bridleway 373/24/40 (Sutton Courtney)/National Cycle Network (NCN) 5, **(6/S1)**, running northwards from its junction with the A4130 roundabout with Hawksworth and Private Access Track known as Purchas Road, will be stopped up. The A4130 Principal Road, Collett, and Bridleway 373/24/40 (Sutton Courtenay)/NCN 5, will be improved on the south side and providing their realignment and tie in with the new length of the Scheme at this location. The remaining length of the Bridleway/NCN 5 route on the northern side of the new A4130 and NCN 5 route on its southern side will remain connected through non-motorised vehicular integral facilities of the new A4130, and those within the improved A4130 on its southern side, and which also include a proposed Toucan Crossing as a feature of the new A4130 to facilitate ease of movement to and from its southern and northern sides and from which latter point Bridleway 373/24/40 (Sutton Courtenay) will continue northwards on its existing route.

- *Private Means of Access to be Stopped Up and New Means of Access to be Provided*

(i) Lengths of Private Access Track, known as Backhill Lane and former Backhill Lane, which runs southwards off the A4130, together with lengths of Private Access Track which extend to and from the aforementioned Access Track, on their western and eastern sides, will be stopped up (**1/1, 1/2, 1/3, 1/4 and 1/5**)

These Access Tracks currently serve the existing land holdings encircling the tracks and are to be replaced with New Means of Access to those land holdings, off the new Link Road which will run south westwards off the proposed A4130 Backhill Roundabout, and off a new highway spur which will run south eastwards off that roundabout. Both of these new highways are proposed to facilitate future development proposals off them, as may be granted planning permission in the future together with any continuity highway or access roads leading from them as may granted such future permission(s). In the meantime, new means of access to these surrounding premises, off the

DRAFT

new Link Roads, are to be provided under the Scheme,(**1/a, 1/b, 1/c, 1/d, 1/e, and 1/f**).

(ii) A length of Private Access Track to New Farm, **(1/6)**, which runs southwards off the A4130 and co-existent with the route of Footpath 243/3/10 (Harewell), will be stopped up, with a new Means of Access being provided at the southern boundary of the widened A4130, **(1/g)**, where this access will continue to make its connection.

(iii) A new Means of Access to premises, to one of the Council's proposed drainage Attenuation Ponds, **(2/b)**, will be provided off the southern side of the widened A4130, some 220 metres east of where the western access to the planned Valley Park off the A4130 is proposed.

(iv) A length of Private Access Track to New Farm, **(3/1)**, known as Cow Lane, which runs southwards off the A4130 and co-existent with the route of Bridleway 243/1/20 (Harewell), will be stopped up. This access will not be replaced, as other reasonably convenient means of access to the premises are available.

(v) New Means of Access to premises, to other of the Council's proposed drainage Attenuation Ponds and other drainage features, will be provided off the southern side of the improved A4130, to the north east of its proposed A4130 Roundabout junction; off the A4130 Science Bridge Roundabout junction; off the length of new A4130 which connects those two roundabouts; and off the existing A4130 south of Milton Road (**3/a, 3/b, 3/c, 3/d, 3/e, 4/a, 4/b, and 4/c**).

(xii) Four new Means of Access, **5/a, 5/b, 5/c and 5/d,** will be provided to existing land holdings on the north and north west side of the proposed new A4197 Classified Road, and which lands are currently being progressed in their development. Two of these new Accesses, 5/a and 5/c, together with a new access on the south east of the new A4197, 5/e, will also serve three of the Council's proposed drainage Attenuation Ponds.

(xiii) A number of Private Means of Access tracks within the RWE site, **5/1, 5/2, 5/3, 5/4, 5/5, 5/6, 5/7, 6/1, 6/2, and 6/3**, are to be stopped up, as lead off the A4130 and otherwise are continuous routes within the RWE site.

A new Means of Access to the severed RWE site on the north west side of, and connecting with, the new A4197 on its north western side, extending to the private access road known as Chimney Road, will be provided, **5/d**. At this location the Council proposes to provide a new Lagoon on the RWE site, as an improvement/development of the RWE frontage, and which will replace the RWE current drainage Ponds which will be lost under the Scheme. The severed RWE site on the southern side of the new A4197, will continue to be served, as now, by the private access road known as Purchas Road, which extends westwards off the A4130/Hawksworth roundabout junction.

DRAFT

(xiv) A new Means of Access to one of the Council's Attenuation Ponds, to be located on the opposite, south east, side of the new A4197 to the RWE Lagoon, will be provided, **5/e**.

13.11 The New A4197 Principal Road Section (Site Plans 7 (part) – 14 (part))

- *Highways to be Stopped Up, Highways to be Improved, and New Highways*

(i) The whole of Bridleway 106/3/10 (Appleford), Bridleway 3, **(comprising lengths 7/S1, 8/S1 and 9/S1)**, from its junction with the A4130/Collett Roundabout junction, northwards to its junction with Restricted Byway 106/4/10 (Appleford), will be stopped up. This route will be subsumed by the new length of A4197 Classified Road and its integral Cycle Tracks, Footways, and verges, will provide a complete replacement route for non-motorised vehicular uses from the A4130/Collett Roundabout junction northwards to the A415 and beyond.

(ii) A 364 metres length of Restricted Byway 106/4/10 (Appleford), **(9/S2)**, westwards from its junction with the northern terminal point of Bridleway 106/3/10 (Appledford), just west of Appleford Level Crossing, will be stopped up. A length of new all-purpose highway, **(9/A)**, extending north westwards off the western side of the new A4197 Classified Road, and skirting the large Pond located to the south of Appleford Level Crossing, will reconnect with the remaining length of the Restricted Byway, providing an alternative route for Byway users in use of the new A4197 and this replacement side road.

(iii) A 66 metres length of Footpath 106/8/19 (Appleford), south eastwards from its junction with Footpath 373/31/20 (Sutton Courtenay), **(12/S1)**; the whole of Footpath 373/31/10 (Sutton Courtenay), **(12/S2)**, a 154 metres length of the B4016, **(12/S3)**, and a 58 metres length of Footpath 3732/50 (Sutton Courtenay), **(12/S4)**, where they will all be subsumed within the extent of the new A4197 and its Sutton Courtenay Roundabout on the south side of the River Thames, will be stopped up.

The B4016 will remain connected with the new A4197 on its eastern side and Footpath 373/31/10 (Sutton Courtney) connected with the A4197 on its western side. Integral Cycle Tracks and Footways, separated from the A4197 carriageway by wide highway verges, around the proposed Sutton Courtenay roundabout, will provide replacement routes for non-motorised vehicular users, taking users north west to Sutton Courtenay, south east along the new A4197, and northwards onto the viaduct approach of the new River Thames bridge. The B4016 will be improved to form a T-junction on the eastern side of the new A4197 and by other tie in works and incorporation of an integral Cycle Track (with a right of way on foot) on its northern side eastwards to the point of the western side of access road to Bridge Farm House.

- *Private Means of Access to be Stopped Up and New Means of Access to be Provided*

(j) That length of the Access Road (the westerly Access Road), (7/1, 8/1, and 9/1), which extends northwards off the A4130/Collett Roundabout junction and then takes a westerly turn just to the west of Appleford Level Crossing and up to a point some 370 metres west of the Level Crossing, and which serves the premises of Hanson Appleford Sidings/Sutton Courtenay Quarry, Hill Farm and Hill Farm Cottage, the site of (former) J James Ltd Pallets & Wood Recycling Ltd, a garage repair operation within that site, an area of land to the north of that bounded site on the east side of the westerly Access Road, the north and south accesses to Hartright House and to Appleford Crossing, will be stopped up.

The northern and southern connections only of an easterly Access Road, **(7/3 and 9/2)**, which extends off the westerly Access Road, from a point some 60 metres north of the A4130 Collett Roundabout junction, to a point 162 metres north of the northerly access to Hartwright House, will be stopped up. This easterly Access Road, serves agricultural land lying to its east between it and the railway, the former J James Ltd Pallets & Wood Recycling Ltd site, and two extensive Ponds which lie to the north of Hartwright House and which are used as fishing Ponds.

The stopped up westerly Access Road will be subsumed within the new A4197 Classified Road length, with new Means of Access being provided off that to Hill Farm and Hill Farm Cottage, on the west of the A4197 via a new highway stub which is to be provided westwards off the A4197 as a link to a future development area, together with a length of new private means of access running northwards off that stub to Hill Farm and Hill Farm Cottage, **8/a**. The Council will share use of the first length of this new Access, as access to its new Attenuation Pond which is to be positioned to the north of the new highway stub and south of Hill Farm and Hill Farm Cottage, on the west side of the new A4197.

Additionally, a new single Means of Access, at the position of the current northerly Access, to Hartwright House will be provided directly off the eastern side of the new A4197, **8/b**.

Other premises currently served by the westerly Access Road, will not be provided with direct access to and from the A4197.

Agricultural land lying to the west of the westerly Access Road and immediately to the north of Collett Roundabout, presently afforded access off the Westerly Access Road, will instead use an existing alternative Means of Access, off the northern side of the A4130 some 320 metres west of the Collett Roundabout junction.

A new highway Link Road to a future development area which is to be provided eastwards off the new A4197 length, opposite the access road to Hill Farm and Hill Farm Cottage, and at a point just south of the former J J Pallets and Wood Recycling Ltd site, is to be provided to connect the new A4197 with the easterly Access Road. A new private means of access will be provided off the eastern end of the new Link Road, reconnecting with the easterly Access Road and continuing private access rights for those who presently have such private access rights, J J

DRAFT

Pallets and Wood Recycling Ltd, the Hartwright House Ponds, and agricultural land, over what will become the remaining cul-de-sac easterly Access Road.

The existing Appleford Crossing property, together with areas of woodland and landscaped area, severed by the new A4197 and lying to the north and west of the Appleford Crossing, will be provided with new means of access off the A4197 and B4106 at the Appleford Level Crossing, **9/a and 9/b**.

(ii) A new private means of access track will be provided southwards off the B4016, **10a, 12a and 12/b**, and lying to the west of Bridge Farm House and Bridge House, on the eastern side of the new A4197, into a land corridor which the Council is to acquire and which will accommodate three new Attenuation Ponds as part of the Scheme. A length of this new access track, **12/b**, will also provide access into the remaining land holding, known as ninety acre field, which is severed by the new A4197 and the Attenuation Ponds site to its south.

(iii) Two new means of Access, **12/c and 12/d**, are to be provided to a further two new Attenuation Pond sites proposed by the Council under the Scheme, located on the western side of the proposed Sutton Courtenay Roundabout and lying to the north and south of Footpath 373/12/50 (Sutton Courtenay).

(iv) A new means of Access, **13/a**, to an Attenuation Pond, on the east side of the new A4197, where it has crossed over the River Thames on bridge and joins its northern bank, will be provided.

(v) New means of Access to agricultural land on the west side of the new A4197, **14/b**, and to an agricultural barn and outbuildings housing farm animals on the east side of the A4197, **14/a**, of Zouch Farm, at a point some 320 metres south of the proposed A415 Abingdon Road roundabout junction, will be provided to those holdings severed by the new A4197.

13.12 <u>The A415 Improved and New Sections (Site Plans 14 (part) – 19)</u>

- *<u>Highways to be Stopped Up, Highways to be Improved, and New Highways</u>*

(i) A 236 metres length of Station Road, **(16/S1)**, and a 216 metres length of the A415 Abingdon Road, **(16/S2)**, are to be stopped up, at the new A415 roundabout junction, which is the commencement of the Clifton Hampden Bypass, just east of Culham Station and south of Culham Science Centre.

New Link Roads, into Culham Science Centre and off that to rejoin with Station Road leading to Culham Station, will be provided, together with a number of new Cycle Track connections, for pedestrian and cyclist use, leading into the Culham Science Centre and into Culham Station, to the north of the new A415 junction, and to its south, providing connections back to the bypassed A415.

(ii) A 169 metres length of Footpath 171/10/10 (Clifton Hampden) and 171/10/20 (Clifton Hampden), **(18/S1)**, where they will be crossed by the new A415 Clifton

Hampden Bypass, will be stopped up. New lengths of Footpath will be provided, north **(18/B)** and south **(18/A)** of the new A415, slightly west of their current alignment, and from which pedestrians will be led to a uncontrolled crossing of the A415 and use of a short stretch of the integral Cycle Track within the A415 on its northern side. Pedestrians will pick up their journey on those remaining lengths of Footpath north and south of the new A415.

(iii) The whole of Footpath 171/5/10 (Clifton Hampden), **(19/S2)**, and a 184 metres length of Footpath 171/6/10 (Clifton Hampden), **(19/S3)**, north westwards off the B4105 Oxford Road, together with a 53 metres length of Footpath 171/3/30 (Clifton Hampen), **(19/S3)**, where it will be crossed by the new A415, will be stopped up at the north easterly termination point of the Clifton Hampden Bypass section of the Scheme and where that will tie in to the existing B4105 Oxford Road. A 260 metres length of the B4105 Oxford Road, **(19/S4)**, will also be stopped up here, to be replaced by a new Link Road realignment of the B4105, slightly west of the existing route, **(19/C)**, which will connect with the new A415 on its south east side and form the terminal T-Junction connection of the Scheme and its Bypass section.

A new Cycle Track, **(19/C)**, co-existent with a new private access track leading to one of the Scheme's Attenuation Ponds, will be provided along the stopped up B4105, offering a segregated route for pedestrian and cyclists, to link up with the integral cyclist and pedestrian facilities within the Bypass section of the Scheme on its north west and south east sides.

A new Footpath, **(19/A)**, will be provided off the new B4015 Link Road realignment, to connect with Footpaths 171/3/30 (Clifton Hampden) and 171/3/20 (Clifton Hampden), offering an off-road route for pedestrians to pick up their connections with the Bypass and ongoing lengths of the Scheme.

- *Private Means of Access to be Stopped Up and New Means of Access to be Provided*

(i) New means of Access to two Scheme Attenuation Ponds, **14/c and 14/d**, located on the west and east sides of a short new highway spur road to future development, leading northwards off Abingdon Roundabout, will be provided.

(ii) A new means of Access to a Scheme Attenuation Pond, **15/a**, located on the northern side the A415, north of Zouch Farm, will be provided.

(iii) A number of new means of Access to Attenuation Ponds, **16/d, 16/f and 16/j**, to the north and south of the new A415 roundabout which is the commencement of the Clifton Hampden Bypass, just east of Culham Station, will be provided, with those on the northern side of the A415 leading off two new Accesses, **16/c and 16/e**, leading to the Culham Science Centre. A further two new accesses, **16/g and 16/h** will lead off the western and eastern sides of the one of the main new accesses, 16/e, to the Science Centre. These replace existing private means of access which are to be stopped up (**16/1 – 16/8**) to the Culham Science Centre.

(iv) A new private means of Access to Fullamoor Farm, **17/a**, will be provided off a new highway Link Road which will connect the new and old A415, immediately to the west of those premises. This will replace the existing private means of access which is to be stopped up to the Farm, **17/2**, and which leads southwards of the private access road, Thame Lane, which is also to be stopped up, **17/1**.

(v) A new private means of Access to Culham Sewage Treatment Works, **17/c**, will be provided off a short new highway spur off the southern side of the A415 Clifton Hampden Bypass, replacing the private means of access which is to be stopped up to the Works, **17/3**, off Thame Lane.

(vi) A new private means of Access Track westwards off that same new highway spur**, 17/b**, will provide access to the site proposed as Scheme Attenuation Ponds and additional offsite drainage features, located on the south side of the new A415.

(vii) A new private means of Access off the north western side of the A415 Clifton Hampden Bypass, **18/a**, will be provided as the Culham Science Centre secondary access.

(viii) Two lengths of new private means of access track, off the south side and north side of the new A415 Bypass, **18/b and 18/c**, to …. Farm, will be provided to replace the existing access track which is stopped up under the Scheme, **18/3**, as severed by the new A415.

(ix) A new private means of access, **19/a**, co-existent with a new Cycle Track (with a right of way on foot), will be provided along a length of the stopped up B4015 Oxford Road, at the eastern termination point of the Scheme, to provide access to a Scheme Attenuation Pond there.

<u>Side Roads Order Summary</u>

13.13 The SRO is made in relation to the Classified Roads which are to be improved and constructed under the Scheme.

13.14 The Council is satisfied that where highways are to be stopped up, their stopping up is necessary as a consequence of the Scheme, that other reasonably convenient routes for those highways already exist or will be provided under the Scheme before the relevant highway is stopped up, allowing the Secretary of State for Transport to satisfy himself on that matter under Section 14(6) of the Highways Act 1980.

13.15 The Council is also satisfied that where private means of access to premises are to be stopped up under the SRO, their stopping up is a necessary consequence of the Scheme, and that where those premises are to remain another reasonably convenient means of access to the relevant premises will be provided under the SRO, or otherwise, before that private means of access is stopped up; and that in other instances no access to the premises to which an access is stopped up is reasonably required, because such premises are vacated and have been or are to be demolished, allowing the Secretary of State for Transport to satisfy himself on that matter under

Section 125 (3) of the Highways Act 1980, in his consideration of confirmation of the SRO.

DRAFT

14 RELATED ORDERS, CONSENTS AND SPECIAL CATEGORY LAND

Planning Application

14.1. Planning permission is required for the Scheme. On 2 November 2021, a planning application was validated for the Scheme by Oxfordshire County Council as the determining local planning authority under application reference R3.0138/21. As noted above, there is no reason why planning permission would not be forthcoming and it is anticipated that it will be granted in Q2 2022.

Traffic Regulation Orders

14.2. The Traffic Regulation Orders are in the process of being drafted and are not considered to represent an impediment to the delivery of the Scheme. Traffic Regulation Orders will be required to introduce new, and amend existing speed limits, to prohibit or restrict parking and waiting of vehicles, and to prohibit or restrict the loading and unloading of vehicles.

14.3. The A4130 between Milton Gate and circa 260m west of the Great Western Park currently operates at the national speed limit for a single carriageway 60mph. The HIF1 scheme will reduced this section to 40mph including the proposed dual section and proposed single lane carriageway between the two proposed roundabouts linking the A4130 to the new Didcot Science Bridge.

14.4. The proposed two south eastern arms into proposed development sites will be subject to 20mph speed limits.

14.5. The new single carriageway from the proposed Didcot Science Bridge roundabout over the A4130, Great Western Mainline and Milton Road through the former Didcot A Power Station site connecting to the existing Northern Perimeter Road will be subject to 30mph speed limit.

14.6. The existing Purchas roundabout and associated single carriageway arms will be reduced from a 50mph to 30mph speed limit.

14.7. The enhanced Collett roundabout and associated arms will be reduced from 50mph to 30mph. The new Didcot to Culham River Crossing single carriageway will be subject to a 30mph speed limit circa 690m north of the Collett roundabout. The northern arm of the Collett Roundabout directly links into the proposed Didcot to Culham River crossing, this single carriageway will also be subject to a 30mph for 690m from the roundabout. This single carriageway will continue north to the A415 Abingdon Road over the River Thames and will be subject to a 50mph speed limit.

14.8. The existing 60mph speed limit on the B4016 Appleford Road west of the proposed Didcot to Culham River crossing will be reduced to 30mph.

14.9. The proposed A415 roundabout with the new Didcot to Culham River Crossing and associated arms will be subject to a 50mph speed limit.

DRAFT

14.10. The new A415 roundabout with Culham Science Centre and associated arms will have a designated speed limit of 40mph.

14.11. The proposed single carriageway Clifton Hampden Bypass will be subject to a 50mph speed limit.

14.12. The existing A415 between Culham Science Centre to Clifton Hampden Village will be reduced from 60mph to 30mph speed limit.

14.13. The existing B4015 Oxford road between Courtiers Garden and the new Clifton Hampden Bypass will be reduced to 30mph speed limit.

14.14. Sections of the existing public highway to prohibited to motor-vehicles were rededicated to footway and cycleway only.

14.15. The Traffic Regulation Orders are in the process of being drafted and are not considered to represent an impediment to the delivery of the Scheme.

Protected Species Licences

14.16. All necessary protected species licences required for the Scheme will be obtained prior to undertaking any works that might result in offences under relevant legislation.

14.17. With reference to the defined existing baseline conditions, the requirement for licences relates to the following species:

- **Fish:** consent will be required to capture and relocate fish away from the works areas in water bodies to be directly impacted, namely at: the unnamed lake and ponds at the Appleford Siding and the Culham finger lakes. Fish capture and translocation will be facilitated by applications submitted to the Environment Agency, working with their local Biodiversity Team.
- **Bats:** the Scheme would directly impact on roosts in trees on the northern extent of the Clifton Hampden section of the Scheme and require works under license from Natural England.
- **Badgers:** The survey of badger activity identified 13 active badger setts; two of which are main setts which would be directly impacted by the Scheme and require closure under license from Natural England.

14.18. As per the ecological assessment in the EIA, following the application of best practice construction measures in a Construction Environmental Management Plan (CEMP) prepared by the contractor and applying for protected species licences from the relevant regulators, no significant adverse effects on biodiversity are anticipated.

DRAFT

Network Rail – Asset Protection Agreement

14.19 The Council is continuing to progress an Asset Protection Agreement (APA) with Network Rail which will enable it to secure the necessary temporary access rights, design approvals and rail possessions to undertake the works to the Didcot Science Bridge.

14.20 The agreement will detail the following but not limited to the below:

- Purpose
- Defining Roles & Responsibilities
- Programme of Works (Design, Surveys, Assurance, Construction, Handover)
- Access / Egress
- Undertaking construction works
- Safeguarding the railway
- Inspection, Construction Completion, Taking Over and Final Completion
- Network Rail costs
- Indemnity
- Limitation of Liability
- Insurances

14.21 It is recognised that the various rights required to deliver this work and future planned works are excluded from the Orders, as they will be obtained in this agreement once detailed design has been developed and accepted by Network Rail. However there is no reason to consider as to why this agreement would not obtain all the necessary rights to carry out this element of the Scheme.

14.22 An Approval in Principle (AIP) has been approved by the Council and accepted by Network Rail. The AIP highlights the proposed arrangements for construction, consultation of any special conditions required and proposed arrangements for future maintenance and inspection. Network Rail have provided a letter of no objection confirming to the Planning Inspectorate that Network Rail have been duly consulted and their input has been taken into account in the preliminary design (including having had the opportunity to review and comment on the AIP).

14.23 It is estimated the APA for the main works could be agreed as early as Q3 2022 and an APA for future works as early as Q2 2023.

Special Category Land – Statutory Undertakers' Land

14.24 The Acquiring Authority has concluded that the only Special Category Land is that which is owned by Statutory Undertakers. There is no land which is classified as public open space, allotments, consecrated ground or land within the ownership of the Crown Estate or the National Trust.

14.25 The Order Land includes land which has been previously acquired by a statutory undertaker for the purposes of their undertaking.

DRAFT

14.26 Should a statutory undertaker object to the Order and make a representation under Section 16 of the Acquisition of Land Act 1981 in respect of such land, it cannot be confirmed unless the Secretary of State for Business, Energy and Industrial Strategy is satisfied that the land in question can either be purchased without serious detriment to the carrying on of the undertaking, or that if purchased, it can be replaced by other land belonging to, or available for acquisition by the undertakers.

14.27 The Acquiring Authority has been working with Network Rail to allow a series of night time possessions, where the Acquiring Authority will occupy the area and where Network Rail will shut off the power to the railway line and stop train movements in the localised area to allow work to be undertaken for approximately 8 hours each time. The Acquiring Authority has entered into an Outside Party Asset Protection Agreement with Network Rail and has all the agreements in place to allow access to the land in order to carry out the works.

14.28 The Order Land includes parcels of land which Thames Water and The Environment Agency have rights over. The Council does not believe that the Scheme will interfere with their ability to undertake their statutory duties. Further discussions are ongoing in this regard.

14.29 In accordance with the New Roads and Street Works Act 1991, extensive discussions have taken place with all statutory undertakers to determine if they are affected by the Scheme. Potential necessary measures and diversions that will be required where their operational apparatus is likely to be impacted have been discussed with the statutory undertakers. With the exception of Thames Water, all of the statutory undertakers have received and responded to 'C4' detailed estimate applications (see **Table 6** below). Bearing this in mind, and in consideration of the ongoing negotiations with the relevant statutory undertakers, it is considered that there will be no serious detriment to the carrying on of the undertaking and, as such, section 16(2) is satisfied.

Utilities Provider	**C4 application submitted**	**C4 detailed estimate received**
Openreach BT	07/05/2021	05/11/2021
SGN	07/05/2021	05/11/2021
SSE Telecommunications Ltd	05/05/2021	04/08/2021
SSEN	05/05/2021	03/08/2021
Vodafone	06/04/2021	30/07/2021
Thames Water (enhanced C3)	12/03/2021	17/08/2021
Gigaclear	24/04/2021	20/08/2021
CloudHQ / InstalCom	24/04/2021	20/08/2021
Virgin Media	12/04/2021	03/06/2021

Table 6: C4 Programme

Special Consideration

14.30 There are no Sites of Special Scientific Interest (SSSI) within the Order Land. The closest SSSI to the Scheme is Culham Brake, which approximately 2.1km in distance from the northernmost extent of the Culham to Didcot River Crossing.

14.31 There are no scheduled ancient monuments or listed buildings within the Order Land; however, the land required for the Culham to Didcot River Crossing is adjacent to a Scheduled Ancient Monument called 'Settlement site N of Thames', reference 1006345. Ground Penetrating Radar Surveys (GPRS) have been undertaken within the corridors of land for the Scheme to reveal any possible archaeological features within the Order Land. A written scheme of investigation has been developed and agreed with Richard Oram (County Archaeologist). Archaeological trenching was undertaken in March 2021 to July 2021 and was considered within the Environmental Statement, submitted as part of the planning application.

14.32 The Order Land is not within a conservation area, skirting the Clifton Hampden Conservation Area which is the closest. None of its land is owned by the National Trust, or held by or on behalf of the Crown. None of the Order Land is ecclesiastical or burial ground. The Order Land contains no Common land or Public Open Space.

Views of Government Departments

14.33 The Department for Levelling Up, Housing and Communities (DLHC) and Homes England support the Scheme. Homes England, on behalf of the DLHC, has entered a Grant Determination Agreement with the Council providing £239.8 million, via the Housing Infrastructure Fund, for the Council to undertake the Scheme as the Highway Authority (subject to an amended GDA, as well as making these monies available until March 2026). As part of the updated business case yet to be submitted (with the update GDA funding breakdown) to DLHC, the Department for Transport will also need to assess and approve the proposals.

14.34 The business case and benefit cost ratio (BCR) was predominantly predicated on the delivery of new homes by evaluation of land value uplift (LVU) rather than a traditional transport business case. Even though the transport benefits/disbenefits were assessed as part of the business case, the use of LVU is reflective of the Government's priority to deliver more new homes in areas where they are most needed. Oxfordshire is a high housing demand area with Oxford City often cited as the most expensive area to live, outside London, relative to wages. Oxfordshire, as demonstrated by the Housing and Growth Deal, is integral to Government achieving its national target of building 300,000 new homes every year.

Statement justifying extent of scheme to be disregarded for the purposes of assessing compensation in the 'no-scheme world'

14.35 Paragraph 196(v) of the CPO Guidance requires a statement to be included in every statement of reasons which justifies the extent of the scheme to be disregarded for the purposes of assessing compensation in the 'no-scheme world'.

14.36 Section 6(A) of the Land Compensation Act 1961 provides that "*the no- scheme principle is to be applied when assessing the value of land in order to work out how much compensation should be paid by the acquiring authority for the compulsory acquisition of the land"*. For the purposes of section 6(A), the "scheme" means the scheme of development underlying the acquisition.

14.37 Section 6D explains that the underlying scheme is to be the scheme provided for by the Order unless it is shown that the underlying scheme is a scheme larger than, but incorporating, the scheme provided for by that instrument.

14.38 In the present case, the underlying scheme is HIF 1 Scheme. That is the extent of the scheme to be disregarded for the purposes of assessing compensation in the 'no-scheme world'.

Conclusion

14.39 Having regard to the above, the acquiring authority can show in accordance with paragraph 15 of the CPO Guidance that the Scheme is unlikely to be blocked by any physical or legal impediments to implementation or delivery. A statement in accordance with paragraph 196(v) of the CPO Guidance has also been provided.

DRAFT

INSPECTION OF DOCUMENTS AND CONTACT DETAILS

15.1. The following documents are available for public inspection during normal opening hours at the following locations:

- Oxfordshire County Council, County Hall, Oxford OX1 1DJ.
- Didcot Library, 197 Broadway, Didcot OX11 8RU
- Abingdon Library, The Charter, Abingdon OX14 3LY
- Berinsfield Library, Green Furlong Berinsfield, Wallingford OX10 7NR

15.2. The documents are:

- the CPO and Order Schedule
- the CPO Map
- the SRO and SRO schedule
- the SRO plans
- the Bridge Scheme,
- this Joint Statement of Reasons, and
- the suite of General Arrangement Drawings

15.3. The documents can also be viewed on the Acquiring Authority's website at wwww.oxfordshire.gov.uk/residents/roads-and-transport/roadworks/future-transport-projects/didcot-and-area-improvements

15.4. Interested parties affected by the Order who wish to discuss matters with the Acquiring Authority should contact Shamoon Ahmed, Programme Lead, by one of the following means:

- by telephone on 07776 244856
- by e-mail to hif1project@oxfordshire.gov.uk
- by post to Oxfordshire County Council, County Hall, Oxford OX1 1DJ

15.5. Owners and occupiers of properties affected by the CPO who wish to progress discussions for the acquisition of their interest should contact Ian Miles, Technical Director, Gateley Hamer Limited on 07923 212 505 or via email ian.miles@gateleyhamer.com

15.6. The Acquiring Authority will assist, wherever practicable, occupiers of properties affected by the CPO to relocate to alternative premises.

List of Documents in the Event of an Inquiry

- Planning application and supporting documentation and Environmental Statement, as referred to in this statement of reasons
- Local and national policy and guidance documents (including existing and emerging documents), as referred to in this statement of reasons
- Scheme development documents, including option reports, technical studies, and consultation documents, as referred to in this statement of reasons

DRAFT

- Funding and financial documentation and agreements, as referred to in this statement of reasons
  Other background documents

DRAFT

This page is intentionally left blank



Didcot Garden Town Housing Infrastructure Fund (HIF1)

Transport Assessment

Oxfordshire County Council

Project number: 60606782

September 2021

Project number: 60606782

Quality information

Prepared by	Checked by	Verified by	Approved by
Laura van Heezik Transport Planner Danny Crew Transport Planner	Sean O'Connell Principal	Ralph Stapleton Associate	Andy Blanchard Associate

Revision History

Revision	Revision date	Details	Authorized	Name	Position

Prepared for:

Oxfordshire County Council

Prepared by:

AECOM Limited
AECOM House
63-77 Victoria Street
St Albans
Hertfordshire AL1 3ER
United Kingdom

T: +44(0)1727 535000
aecom.com

© 2020 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited (“AECOM”) for sole use of our client (the “Client”) in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1. Introduction 8
1.2 Scheme Background 8
1.3 Consultation 10
1.4 Report Structure 11
2. Policy Context 12
2.1 Introduction 12
2.2 National Policy 12
2.3 Regional Policy 14
2.4 Local Policy 18
2.5 Other Policy and Guidance 22
3. Baseline Conditions 25
3.1 Introduction 25
3.2 Walking, Cycling and Horse-riding 26
3.3 Public Transport Accessibility 39
3.4 Highway Network 42
3.5 Junction Capacity Assessments 43
3.6 Summary of Existing Road Network Performance 51
3.7 Road Safety 51
4. Development Proposals 53
4.1 Introduction 53
4.2 A4130 Widening 53
4.3 Didcot Science Bridge 55
4.4 Didcot to Culham River Crossing 57
4.5 Clifton Hampden Bypass 62
4.6 Road Safety Audit 64
5. Modelling Assessment 65
5.1 Introduction 65
5.2 Assessment Scenarios 65
5.3 Paramics Model 65
5.4 Methodology 70
6. Assessment of Impacts 73
6.1 Introduction 73
6.2 NMU impacts 73
6.3 Pedestrian and cycle routes delivered and enabled by the Scheme 81
6.4 Public Transport Impact 83
6.5 Impact on the Highway Network 85
6.6 Scheme Junctions 85
6.7 Off-Site Junctions 94
6.8 Future Year Junction Capacity Assessments – Off Site Junctions 96
6.9 Impacts at Milton Interchange Junction (OFF 1) 108
6.10 Journey Time 113
6.11 Overall Network Statistics 116
7. Construction 120
7.1 Introduction 120
7.2 Construction Traffic Management Plan 120
7.3 Programme 121
7.4 Construction Compounds, Site Accesses and Vehicle Movements 121
8. Summary & Conclusions 126
8.1 Summary 126
8.2 Conclusions 128

Appendix A – Walking, Cycling and Horse-Riding Assessment Reports 129
Appendix B – Off-Site Junction Capacity Assessment Outputs 130
Appendix C – Personal Injury Collision Data 131
Appendix D – Stage 1 Road Safety Audit Reports 132
Appendix E – Didcot Microsimulation Base Model Development Report (September 2018) 133
Appendix F – HIF1 Paramics Modelling Forecasting Note (September 2021) 134
Appendix G – HIF1 Paramics Modelling Future Year Infrastructure Note (September 2021) 135
Appendix H – On-Site Junction Capacity Assessment Outputs 136

Figures

Figure 1.1: Oxfordshire's critical economic sectors, assets and growth opportunities within the innovation ecosystem 9
Figure 2.1: Proposed Science Vale Cycle Network Map 16
Figure 3.1: Scheme Location 25
Figure 3.2: National Cycling Network 27
Figure 3.3: Local Public Rights of Way 28
Figure 3.4: WCHAR Survey Locations 30
Figure 3.5: Backhill Tunnel / A4130 Tunnel - Total NMUs observed (7-day survey period) 31
Figure 3.6: Sir Frank Williams Avenue / A4130 Junction - Total NMUs observed (7-day survey period) 31
Figure 3.7: Cow Lane/ A4130 Junction - Total NMUs observed (7-day survey period) 32
Figure 3.8: A4130/ B4493/ Mendip Heights Roundabout - Total NMUs observed (7-day survey period) 32
Figure 3.9: Milton Road / Purchas Road / A4130 / Basil Hill Road (PRoW 189/27/10) - Total NMUs observed (7-day survey period) 33
Figure 3.10: A4130 / Purchas Road / Hawksworth (PRoW 189/27/10) - Total NMUs observed (7-day survey period) 33
Figure 3.11: Culham Railway Station Entrance - Total NMUs observed (7-day survey period) 34
Figure 3.12: Station Road / Abingdon Road Junction - Total NMUs observed (7-day survey period) 34
Figure 3.13: Thames Path at Tollgate Road, Culham (PRoW 183/11/80) - Total NMUs observed (7-day survey period) 35
Figure 3.14: Appleford Railway Station - Total NMUs observed (7-day survey period) 35
Figure 3.15: Appleford Level Crossing (PRoW 106/4/10) - Total NMUs observed (7-day survey period) 36
Figure 3.16: A4130 and Collett Road Junction - Total NMUs observed (7-day survey period) 36
Figure 3.17: Junction of B4015 - Total NMUs observed (7-day survey period) 37
Figure 3.18: Footpath North of Clifton Hampden (PRoW 171/4/10) - Total NMUs observed (7-day survey period) 37
Figure 3.19: Footpath, junction on A415 (PRoW 171/2/10) - Total NMUs observed (7-day survey period) 38
Figure 3.20: Culham Science Centre / A415 Junction - Total NMUs observed (7-day survey period) 38
Figure 3.21: Station Road / A415 Junction - Total NMUs observed (7-day survey period) 39
Figure 3.22: Public Transport Facilities 40
Figure 3.23: Bus Routes in Didcot 41
Figure 3.24: Junction Locations 44
Figure 3.25: Culham Crossing Queue Length 50
Figure 4.1: A4130 Widening Layout Plan 54
Figure 4.2: A4130 Widening - Proposed Layout 55
Figure 4.3: Didcot Science Bridge Layout Plan 55
Figure 4.4: Didcot Science Bridge - Proposed Layout 57
Figure 4.5: Didcot to Culham River Crossing Layout Plan 58
Figure 4.6: Didcot to Culham River Crossing - Proposed Layout 61
Figure 4.7: Clifton Hampden Bypass Layout Plan 62
Figure 4.8: Clifton Hampden Bypass - Proposed Layout 64
Figure 5.1: Paramics Model Extent 66
Figure 5.2: Modelling Approach Methodology 69
Figure 5.3: Junction Locations 72
Figure 6.1: Photograph East of the proposed Backhill Roundabout 74
Figure 6.2: Proposed Layout of A4130 74
Figure 6.3: Photograph of Manor Bridge (Didcot Northern Perimeter Road) 75

Figure 6.4: Proposed Layout of Didcot Science Bridge 75
Figure 6.5: Photograph of NMU Facilities on A4130 Northern Perimeter Road 76
Figure 6.6: Proposed layout of new NMU facilities north of A4130 Northern Perimeter Road 76
Figure 6.7: Photograph of Existing NMU Facilities at Sutton Bridge 77
Figure 6.8: Photograph showing lack of NMU facilities at Clifton Hampden Bridge 78
Figure 6.9: Proposed Layout of Didcot to Culham River Crossing 78
Figure 6.10: Photograph of Existing NMU Facilities on the A415 east of Proposed Roundabout 79
Figure 6.11: Proposed Layout of Eastern Approach to Abingdon Roundabout 79
Figure 6.12: Photograph of Existing NMU Facilities on A415 west of Station Road 80
Figure 6.13: Proposed Layout of A415 west of Station Road 80
Figure 6.14: Proposed Bus Stop Locations 84
Figure 6.15: Proposed Layout for A4130/B4493/Mendip Heights Junction 98
Figure 6.16: Proposed Layout for Power Station Roundabout 99
Figure 6.17: Culham Crossing Queue Comparison (Northbound) 105
Figure 6.18: Culham Crossing Queue Comparison (Southbound) 105
Figure 6.19: A34 Northbound Average Journey Time (AM) 108
Figure 6.20: A34 Northbound Average Journey Time (PM) 109
Figure 6.21: A34 Southbound Average Journey Time (AM) 110
Figure 6.22: A34 Southbound Average Journey Time (PM) 111
Figure 6.23: Average Eastbound AM Peak Hour Journey Times 112
Figure 6.24: Average Eastbound AM Peak Hour Speeds 112
Figure 6.25: Average Eastbound PM Peak Hour Journey Times 113
Figure 6.26: Average Eastbound PM Peak Hour Speeds 113
Figure 6.27: Journey Time Routes 114
Figure 6.28: Journey Time Routes 116
Figure 6.29: AM Average Speed 117
Figure 6.30: PM Average Speed 117
Figure 6.31: Average Journey Time (AM Peak) 118
Figure 6.32: Average Journey Time (PM Peak) 118
Figure 7.1: Construction HGV Access 122

Tables

Table 2.1: Science Vale Transport Package 19
Table 3.1: Journey to Work Mode Share 26
Table 3.2: Local Bus Stops and Bus Routes 40
Table 3.3: Frequency of Local Bus Routes (Single Direction) 40
Table 3.4: 2020 Base Junction Capacity Assessment Summary (Maximum RFC/PRC) 45
Table 3.5: Operation of A4130 / Service Area Junction (OFF 2) 46
Table 3.6: Operation of A4130 / Milton Gate Junction (OFF 3) 46
Table 3.7: Operation of A4130 / B4493 / Mendip Heights Roundabout (OFF 4) 46
Table 3.8: Operation of A4130 / Basil Hill Road / Milton Road (Power Station) Roundabout (OFF 5) 47
Table 3.9: Operation of Clifton Hampden Signalised Junction (OFF 6 & OFF 7) 47
Table 3.10: Operation of Harwell Road / Milton Road / High Street Mini Roundabout (OFF 8) 48
Table 3.11: Operation of High Street / Church Street / Brook Street Junction (OFF 9) 48
Table 3.12: Operation of Tollgate Road / Abingdon Road Junctions (OFF 10 & OFF 11) 49
Table 3.13: Operation of A4130 / Lady Grove Junction (OFF 12) 50
Table 3.14: Operation of Lady Grove / Sires Hill Junction (OFF 13) 51
Table 3.15: Operation of Sires Hill / Didcot Road Junction (OFF 14) 51
Table 3.16: Total Collisions by Severity 52
Table 3.17: Total Casualties by Severity 52
Table 5.1: Housing Completion Trajectories 66
Table 5.2: Employment Completion Trajectories 67
Table 5.3: Infrastructure included in Paramics Model 68
Table 5.4: Paramics Model Trip Rates 70
Table 6.1: Summary of Scheme Junction Capacity Results 85
Table 6.2: Operation of A4130 / Service Area / North West Valley Park (SCH1) 86
Table 6.3: Operation of A4130 / Valley Park access signalised junction (SCH2) 86

Table 6.4: Operation of A4130 / Science Bridge junction (SCH3) 86
Table 6.5: Operation of Valley Park Spine Road / Science Bridge Link junction (SCH4) 87
Table 6.6: Operation of Science Bridge Link Road / New Purchas Road junction (SCH5) 87
Table 6.7: Operation of A4130 / Science Bridge junction (SCH6) 88
Table 6.8: Operation of A4130 / New Thames River Crossing / Collett (SCH7) 89
Table 6.9: Operation of New Thames River Crossing / Hanson & FCC Access Road (SCH8) 89
Table 6.10: Operation of New Thames River Crossing / B4016 (SCH9) 90
Table 6.11: Operation of New Thames River Crossing / B4016 Appleford Road (SCH10) 90
Table 6.12: Operation of New Thames River Crossing / A415 Abingdon Road (SCH11) 91
Table 6.13: Operation of A415 / Clifton Hampden Bypass / Culham Science Centre (SCH12) 91
Table 6.14: Operation of Clifton Hampden Bypass / Realigned A415 (SCH13) 92
Table 6.15: Operation of Clifton Hampden Bypass / B4015 (SCH14) 93
Table 6.16: Clifton Hampden Bypass / Culham Science Centre (SCH15) 93
Table 6.17: Summary of Off-site Junction Capacity Results 95
Table 6.18: Operation of A4130 / Service Area Junction (OFF 2) – 2024 96
Table 6.19: Operation of A4130 / Service Area Junction (OFF 2) – 2034 96
Table 6.20: Operation of A4130 / Milton Gate Signalised Junction (OFF 3) - 2024 97
Table 6.21: Operation of A4130 / Milton Gate Signalised Junction (OFF 3) - 2034 97
Table 6.22: Operation of A4130 / B4493 / Mendip Heights Roundabout (OFF 4) - 2024 98
Table 6.23: Operation of A4130 / B4493 / Mendip Heights Roundabout (OFF 4) - 2034 98
Table 6.24: Operation of Power Station Roundabout (OFF 5) - 2024 99
Table 6.25: Operation of Power Station Roundabout (OFF 5) - 2034 100
Table 6.26: Operation of Clifton Hampden Signalised Junction (OFF6 & OFF7) - 2024 100
Table 6.27: Operation of Clifton Hampden Signalised Junction (OFF6 & OFF7) - 2034 101
Table 6.28: Operation of Harwell Rd / Milton Rd / High Street Mini Roundabout (OFF 8) - 2024 101
Table 6.29: Operation of Harwell Rd / Milton Rd / High Street Mini Roundabout (OFF 8) - 2034 101
Table 6.30: Operation of High Street / Church Street / Brook Street Junction (OFF 9) - 2024 102
Table 6.31: Operation of High Street / Church Street / Brook Street Junction (OFF 9) - 2034 102
Table 6.32: Operation of Tollgate Road / Abingdon Road Junctions (OFF 10 & OFF 11) - 2024 103
Table 6.33: Operation of Tollgate Road / Abingdon Road Junctions (OFF 10 & OFF 11) - 2034 104
Table 6.34: Operation of A4130 / Lady Grove Roundabout (OFF 12) - 2024 106
Table 6.35: Operation of A4130 / Lady Grove Roundabout (OFF 12) - 2034 106
Table 6.36: Operation of Lady Grove / Sires Hill Junction (OFF 13) - 2024 106
Table 6.37: Operation of Lady Grove / Sires Hill Junction (OFF 13) - 2034 107
Table 6.38: Sires Hill / Didcot Road Junction (OFF 14) - 2024 107
Table 6.39: Sires Hill / Didcot Road Junction (OFF 14) – 2034 108
Table 6.40: Journey Time Data – AM Peak 115
Table 6.41: Journey Time Data – PM Peak 115
Table 7.1: Construction Access Points 122
Table 7.2: Forecast Construction Car / LGV Traffic per Access 124
Table 7.3: Forecast HGV Traffic per Access 125

1. Introduction

1.1.1 This Transport Assessment (TA) has been prepared in support of a planning application for the HIF1 Didcot Garden Town Infrastructure project ('the HIF1 Scheme') on behalf of Oxfordshire County Council (OCC). The Scheme is designed to improve access to future housing and employment growth in the local area, including access by walking, cycling and public transport. The Scheme is policy-backed and is the cornerstone of mitigation for the planned growth in the area. The Scheme does not aim to provide unlimited highway capacity for cars, or to remove all congestion; it forms part of a balanced transport strategy which also provides high-quality walking and cycling infrastructure, helping to engender modal shift to more sustainable modes.

1.1.2 Planning permission is sought for the following:

Planning application seeking full planning permission for the dualling of the A4130 carriageway (A4130 Widening) from the Milton Gate Junction eastwards, including the construction of three roundabouts; a road bridge over the Great Western Mainline (Didcot Science Bridge); realignment of the A4130 north east of the proposed road bridge including the relocation of a lagoon; construction of a new road between Didcot and Culham (Didcot to Culham River Crossing) including the construction of three roundabouts, a road bridge over the Appleford railway sidings and road bridge over the River Thames; construction of a new road between the B4015 and A415 (Clifton Hampden bypass), including the provision of one roundabout and associated junctions; and controlled crossings, footways and cycleways, landscaping, lighting, noise barriers and sustainable drainage systems.

At Land in the parishes of Milton, Didcot, Harwell, Sutton Courtenay, Appleford-on-Thames, Culham and Clifton Hampden.

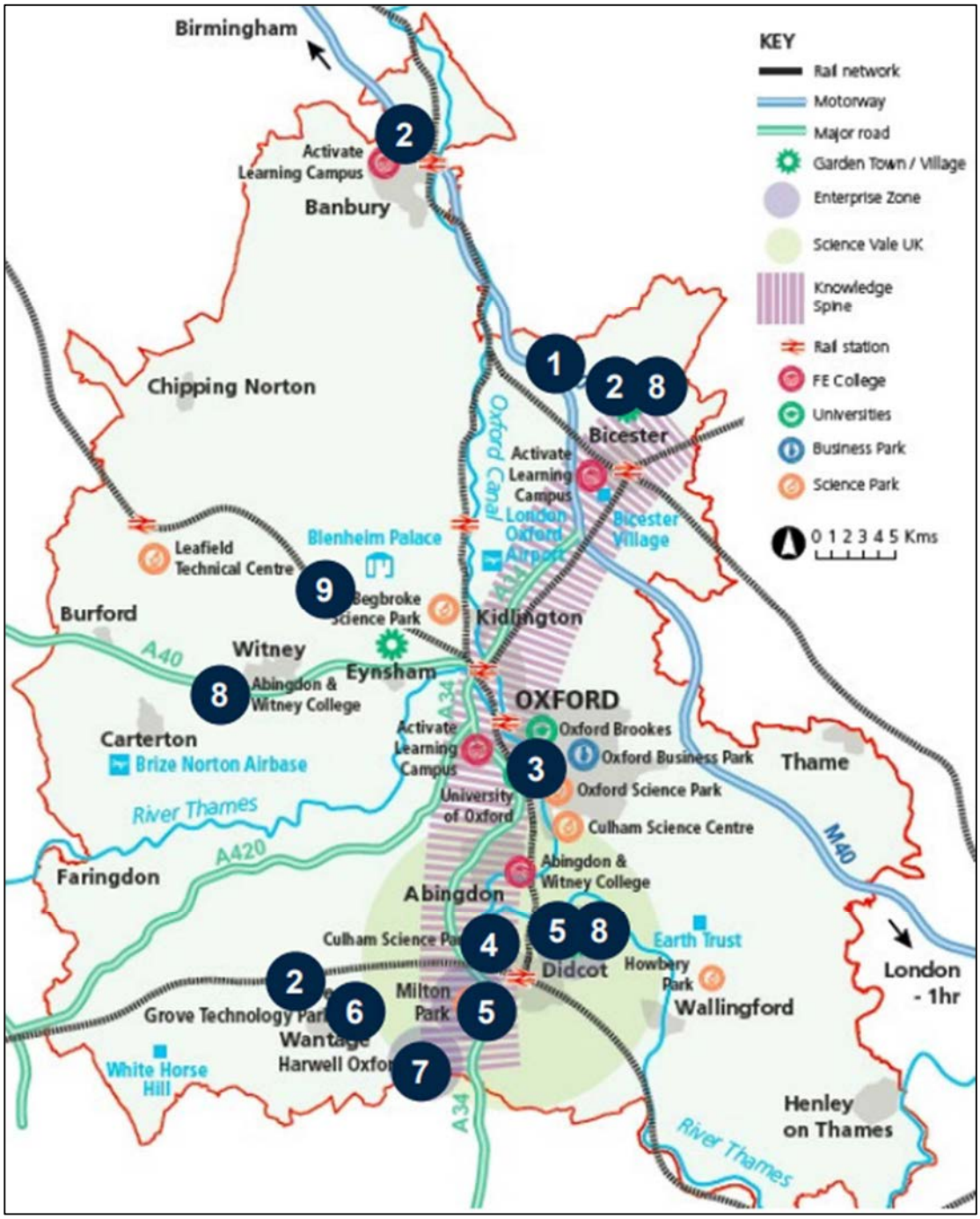
1.2 Scheme Background

1.2.1 The HIF1 Scheme is essential for the economic and social prosperity of Science Vale UK, one of the first Enterprise Zones, in addition to other newer Enterprise Zones in the area. Whilst the HIF1 programme is based on future growth, the HIF1 infrastructure will also help to ameliorate the issues resulting from historic housing and employment growth.

1.2.2 Didcot is a historic growth area in Oxfordshire, led by the growth and development of Didcot Parkway Railway Station, and continues to rapidly expand whilst quickly becoming a destination in its own right. With large urban extensions of the 1990s (Ladygrove) and planned housing and employment growth in the 21st Century, highway infrastructure has failed to keep pace. Additionally, the location of employment centres on historic and relatively remote military bases (Harwell Innovation Campus and Culham Science Centre and Milton Park), compounds congestion in and around the town. The local vicinity is an important employment area recognised nationally by Enterprise Zone status. It forms part of the area known as the 'Science Vale' and is expected to deliver 20,000 additional jobs by 2031. The area is vitally important to the local and national economy. Didcot was awarded Garden Town status by the government in December 2015. Didcot and the surrounding area will deliver around 15,000 new homes up to 2040 in addition to circa 3,300 already built out at Great Western Park.

1.2.3 Figure 1.1 below shows Didcot's central position in Science Vale UK and how it contributes towards the Knowledge Spine, with key employment areas at Milton Park and Culham Science Centre, and other Enterprise Zones.

Figure 1.1: Oxfordshire's critical economic sectors, assets and growth opportunities within the innovation ecosystem



Source: Oxfordshire Local Industrial Strategy (2019), Figure 5

1.2.4 Railway lines and the River Thames creates severance to effective movement and barriers to connectivity between homes, jobs and amenities in Didcot and surrounding areas. High levels of congestion are evident on the A4130, on the existing river crossings between Didcot and Culham/Clifton Hampden and within Clifton Hampden. This has led to Oxfordshire County Council (OCC), as local highway authority (LHA), objecting to the applications of single dwellings on grounds of highway safety, convenience and sustainability. These objections have led to Local Planning Authority (LPA) refusals which have been upheld at appeal by the Planning Inspectorate. Additionally, a Vale of White Horse District Council (VoWHDC) Local Plan strategic allocation for 200 new homes has also been refused planning permission on similar grounds. It is evident that the constrained highway network has already adversely affected growth in the area.

1.2.5 The Scheme is deemed as essential to deliver future growth as identified within Local Plans for both South Oxfordshire District Council (SODC) and the VoWHDC. The Scheme is also identified in OCC's Local Transport Plan 4.

1.2.6 The infrastructure investment will help relieve pressure on local transport networks and will facilitate economic growth across the Science Vale area whilst accommodating the expanding communities in the local area. The provision of walking and cycling facilities offer real mode choice for work and leisure, helping to encourage modal shift. Improving local roads and providing new roads will lead to more reliable journey times, less congestion, more job opportunities, and better community links.

1.2.7 Improving local roads which will lead to faster journeys, less congestion, more job opportunities, and better community links with additional benefits of providing key active travel links to provide real mode choice for work and leisure.

1.2.8 The HIF1 Scheme aims to address the following issues and opportunities:

- **Local and regional economy**: The historic road network in Didcot and the surrounding areas is not currently fit for purpose and will be exacerbated with planned growth. There is congestion at key points, including where new and planned developments access the road network. The Scheme will unlock and support the delivery of circa 18,000 new homes in the area including affordable homes;
- **Local traffic issues**: Didcot is a centre for distribution meaning there are more Heavy Goods Vehicles (HGVs) on the transport network than in other areas, adding to congestion and delay. There is also a need to plan now for all forms of travel, including modes that are only just starting to be tested (e.g. autonomous vehicles). Transport connectivity is poor in the area with limited links making it difficult to travel between existing/ planned housing and employment sites;
- **Environment**: To uphold its "Garden Town" status, developments within Didcot should positively protect and enhance the natural, built and historic environment; including making effective use of land including using brownfield sites, helping to improve biodiversity, using natural resources prudently, providing green infrastructure, addressing issues such as flood risk, climate change and minimising waste and pollution; and
- **People and local communities**: There have been increasing traffic impacts in Didcot and the surrounding villages and their historic cores due to congestion, noise and air quality. The location of railway lines creates physical barriers between some housing and employment sites, including areas proposed for new development because of limited crossings, which are already reaching capacity. The River Thames is also a barrier with limited bridge crossings. The Scheme will facilitate new movements across the Science Vale area. The Scheme will provide direct, safe and convenient walking cycling infrastructure across its full length and opens up opportunities for new and improved bus routes.

1.3 Consultation

1.3.1 The methodology and scope of this Transport Assessment was developed in conjunction with OCC. Highways England (HE) was also consulted due to the proximity of the HIF1 Scheme to the A34 at Milton Interchange, with the A34 being part of the Strategic Road Network (SRN) managed by HE. An assessment of the impact of the HIF1 Scheme on the A34 at Milton Interchange was requested by HE and this has been included in the TA.

1.3.2 Detailed information on the Scheme consultation processes can be found in the Statement of Community Involvement, included in the planning application. Key dates are summarised below:

- The schemes were included in VoWHDC Local Plan 2031 Part 1, subject to consultation in 2014;
- The schemes were included in OCC Local Transport Plan 4, subject to consultation in 2015;
- The schemes were included in VoWHDC Local Plan 2031 Part 2, subject to consultation in 2017;
- OCC held consultation events on the schemes in November 2018;
- The schemes were included in SODC Local Plan 2035, subject to consultation in 2019;
- OCC held an online consultation on the schemes in March/April 2020;
- Ongoing liaison with Parish Councils;

- Ongoing liaison with Non-motorised user (NMU) groups and bus operators;
- Ongoing liaison with statutory bodies (Environment Agency etc);
- Ongoing liaison with businesses; and
- Ongoing liaison with landowners.

1.4 Report Structure

1.4.1 Following this introduction, the report is set out as follows:

- **Section 2: Policy Context** - sets out the relevant national, regional and local policies related to transport and the proposed HIF1 Scheme;
- **Section 3: Baseline Conditions** - outlines the local existing walking, cycling, horse-riding, public transport and highway routes. This section also identifies the available data sources relating to transport network performance and junction capacity modelling for the 2020 base year;
- **Section 4: Development Proposals** – includes a description of the 4 highway schemes that comprise the HIF1 Scheme;
- **Section 5: Modelling Assessment** - summarises the methodology used to identify the impact of the HIF1 Scheme on the local highway network;
- **Section 6: Assessment of Impact** - assesses the impact of the Scheme on the local highway network in the 2024 and 2034 assessment years and provides commentary on impacts on pedestrian, cycle and public transport amenity;
- **Section 7: Construction Period** - Provides consideration of impacts of the Scheme during the construction period, forecast construction delivery activity and measures to minimise the impact of construction;
- **Section 8: Summary and Conclusion** - provides a summary of this TA and a conclusion on the impact of the proposals.

2. Policy Context

2.1 Introduction

2.1.1 The proposed HIF1 Scheme has been considered with reference to the following relevant national, regional and local policies and guidance:

- National Planning Policy Framework (2021)
- Planning Policy Guidance (2014)
- Oxfordshire County Council: Local Transport Plan 4 2015-2031 (2016)
- Oxfordshire County Council 2020 Climate Action Framework
- Oxfordshire Cycling Design Standards (2017)
- Oxfordshire Walking Design Standards (2017)
- Oxfordshire Local Industrial Strategy (2019)
- Oxfordshire LIS – The Investment Plan (2020)
- The Oxfordshire Infrastructure Strategy (2017)
- South Oxfordshire Local Plan 2035 (2020)
- The Planning Inspectorate: Report on the Examination of the South Oxfordshire Local Plan 2011-2034 (2020)
- South Oxfordshire Infrastructure Delivery Plan (2019)
- Vale of White Horse Local Plan 2031 Part 1 (2016)
- Vale of White Horse Local Plan 2031 Part 2 (2019)
- Vale of White Horse Local Plan 2031 Part 1, Inspector's Report (2016)
- Vale of White Horse Local Plan 2031 Part 2, Inspector's Report (2019)
- Vale of White Horse Local Plan 2031 Part 1, Infrastructure Delivery Plan (2015)
- Vale of White Horse Local Plan 2031 Part 2, Infrastructure Delivery Plan (2018)
- Didcot Garden Town Delivery Plan (2017)
- The Strategic Road Network – Planning for the Future (2015)
- Transport for New Developments: Transport Assessments and Travel Plans (2014)
- Design Manual for Roads and Bridges (2020)
- LTN 1/20 Cycle Infrastructure Design (2020)
- Department of Transport Gear Change: A Bold Vision for Cycling and Walking (2020)

2.2 National Policy

National Planning Policy Framework (2021)

2.2.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England, providing a framework within which local people and councils can encourage development which reflects the needs and priorities of their communities.

2.2.2 A key principle of the NPPF is the presumption in favour of sustainable development that contributes to the economic, social, and environmental aspects of a community. The use of sustainable transport modes for the movement of goods and people is widely encouraged.

2.2.3 Chapter 9 sets out Promoting Sustainable Transport (paragraph 104 to 109). This chapter explains the variety of ways in which transport should be considered as part of the planning process. This includes setting out that transport issues should be considered from the earliest stages of the plan-making and development proposals.

2.2.4 Paragraph 106 states that planning policies should '*be prepared with the active involvement of local highways authorities, other transport infrastructure providers and operators and neighbouring councils, so that strategies and investments for supporting sustainable transport and development patterns are aligned'.*

2.2.5 Policies on assessing the transport impact of development proposals are identified in paragraphs 110 to 112. These refer to highway safety as well as capacity and congestion to make clearer that pedestrian and cycle movements should be prioritised, followed by access to high quality public transport, to reflect the importance of creating a well-designed place.

2.2.6 Paragraph 113 states that a development that generates a significant amount of movement should be supported by a Transport Statement or Transport Assessment and should be required to provide a travel plan.

Planning Practice Guidance

2.2.7 In 2014, the Department for Communities and Local Government (DCLG) launched a website containing national planning practice guidance. The website contains guidance on a range of planning topics such as design, Local Plans, Neighbourhood Plans and Travel Plans / Transport Assessments. The section on 'Travel plans, transport assessments and statements in decision-taking' (ID 42 – https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements) provides advice on when Transport Assessments and Transport Statements are required and what they should contain.

2.2.8 Paragraph 014 states:

'The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management process as possible as this may therefore positively influence the overall nature or the detailed design of the development.

Key issues to consider at the start of preparing a Transport Assessment or Statement may include:

- *The planning context of the development proposal;*
- *Appropriate study parameters (i.e. 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.'*

2.2.9 Paragraph 015, which sets out what information should be included in Transport Assessments, states:

- *'Information about the proposed development, site layout, (particularly proposed transport access and layout across all modes of transport);*
- *Information about neighbouring uses, amenity and character, existing functional classification of the nearby road network;*
- *Data about existing public transport provision, including provision / frequency of services and proposed public transport changes;*
- *A qualitative and quantitative description of the travel characteristics of the proposed development, including movements across all modes of transport that would result from the development and in the vicinity of the site;*
- *An assessment of trips from all directly relevant committed development in the area (i.e. development that there is a reasonable degree of certainty will proceed within the next 3 years);*
- *Data about current traffic flows on links and at junctions (including by different modes of transport and the volume and type of vehicles) within the study area and identification of critical links and junctions on the highways network;*

- *An analysis of the injury accident records on the public highway in the vicinity of the site access for the most recent 3-year period, or 5-year period if the proposed site has been identified as within a high accident area;*
- *An assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to proximity to environmentally sensitive areas (such as air quality management areas or noise sensitive areas);*
- *Measures to improve the accessibility of the location (such as provision/enhancement of nearby footpath and cycle path linkages) where these are necessary to make the development acceptable in planning terms;*
- *A description of parking facilities in the area and the parking strategy of the development;*
- *Ways of encouraging environmental sustainability by reducing the need to travel; and*
- *Measures to mitigate the residual impacts of development (such as improvements to the public transport network, introducing walking and cycling facilities, physical improvements to existing roads.'*

2.3 Regional Policy

Oxfordshire County Council: Local Transport Plan 4 2015-2031 (2016)

2.3.1 The Oxfordshire County Council: Local Transport Plan 4 (LTP4) outlines the policy and strategy for developing the transport network in Oxfordshire between 2015 and 2031. The LTP4 was adopted in September 2015 following public consultation and was updated in 2016, with emphasis on improving air quality and making better provision for walking and cycling.

2.3.2 The LTP4 has identified three overarching goals relating to transport with ten supporting objectives, which are outlined below:

- **Goal 1:** Support jobs and housing growth and economic vitality:
  - **Objective 1**: Maintain and improve transport connections to support economic growth;
  - **Objective 2**: Make the most effective use of all available transport capacity through innovative management of the network;
  - **Objective 3**: Increase journey time reliability and minimise end-to-end public transport journey times on main routes; and
  - **Objective 4**: Develop a high-quality integrated transport system.
- **Goal 2:** Reduce emissions, enhance air quality and support transition to a low carbon economy:
  - **Objective 5**: Minimise the need to travel;
  - **Objective 6**: Reduce the private car proportion of journeys and make public transport, walking and cycling more attractive;
  - **Objective 7**: Maximise the use of existing and planned sustainable transport investments through influencing the location and layout of developments; and
  - **Objective 8**: Reduce carbon emissions from transport in line with the UK government targets.
- **Goal 3:** Protect, and where possible enhance Oxfordshire's environment and improve the quality of life, including public health, air quality, safety and individual wellbeing:
  - **Objective 9**: Mitigate and where possible enhance the impacts of transport; and
  - **Objective 10**: Increase the levels of walking and cycling to improve public health, reduce transport emissions, reduce casualties and enable inclusive access to jobs, education, training and services.

2.3.3 The LTP4 identifies a number of key policies relating to the development proposals, which include:

- **Policy 01:** Ensure the transport network supports sustainable economic and housing growth, while protecting and where possible enhancing the environment and supporting health and wellbeing of residents;
- **Policy 02:** Manage and where appropriate develop the road network to reduce congestion and minimise disruption and delays;
- **Policy 03**: Support measures and innovation that makes more efficient use of the transport network capacity by reducing the proportion of single occupancy car journeys and encouraging walking, cycling and public transport;
- **Policy 07**: Work with operators and partners to enhance the network of high quality, integrated public transport services, interchanges and supporting infrastructure;
- **Policy 17**: Seek that the location of developments make the best use of existing and planned infrastructure and provides new or improved infrastructure and supports walking, cycling and public transport;
- **Policy 24**: Seek to avoid negative environmental impacts of transport and where possible provide environmental improvements;
- **Policy 28**: Consult from an early stage in the development of schemes;
- **Policy 30**: Identify the parts of the highway network where significant number of accidents occur and propose solutions to prevent further accidents;
- **Policy 31**: Aim to work with partners to support road safety campaigns and education programmes aimed at reducing road accidents and keep speed limits under review;
- **Policy 33**: Seek external funding to support the delivery of transport infrastructure priorities as outlined in the Strategic Economic Plan and Oxfordshire Infrastructure Strategy; and
- **Policy 34**: Require the layout and design of new developments to encourage walking, cycling and to be served by frequent, reliable and efficient public transport.

Science Vale Transport Strategy

2.3.4 The Science Vale Transport Strategy is part of LTP4 and identifies that with the amount of housing and employment growth that is proposed in the Science Vale area, a number of transport schemes are required to mitigate the impact of the growth and support the area.

2.3.5 To improve journeys in the Science Vale area the following schemes are proposed (policy numbers shown in brackets):

- Upgrade the cycle network and undertake maintenance on the existing network (SV 2.6);
- Secure new bus services with associated infrastructure and improve existing bus services (SV 2.2);
- Deliver the Science Bridge and widening of A4130 (SV 2.6);
- Improve access to Culham Science Centre (Clifton Hampden Bypass – SV 2.13);
- Deliver the Didcot to Culham river crossing (SV 2.16); and
- Provide strategic cycle network to encourage the use of sustainable transport. (SV 2.21 & SV 2.22)

Bus and Rapid Transit Strategy

2.3.6 The Bus and Rapid Transit Strategy has been developed to complement the LTP4 and identifies key outcomes in relation to the five key goals identified in the LTP4. The Bus and Rapid Transit Strategy key outcomes include:

- **Support jobs and Housing Growth and Economic Vitality**: *'More people will be able to travel to more destinations by bus, improving access to work, shops and local centres';*
- **Support transition to a Low-Carbon Future**: '*Sustainable, energy-efficient bus transport will reduce sole-occupancy car usage and help manage car emission levels';*
- **Support Social Inclusion and Equality of Opportunity**: *'Accessible bus connections will enable disabled people, elderly people and those unable to drive will travel more';* and

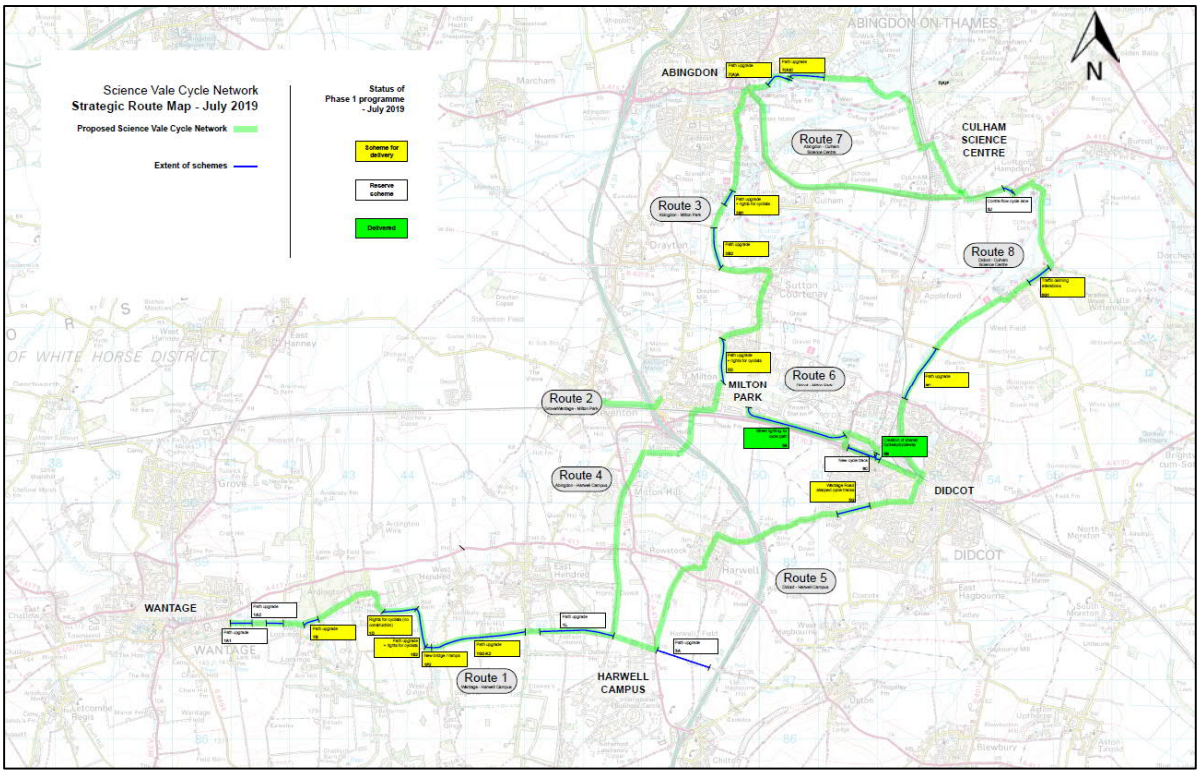
- **Improve Public Health, Safety and Individual Wellbeing**: '*Regular walking and cycling to and from bus stops and interchange can be an important contributor to keeping fit*'.

Active & Healthy Travel Strategy

2.3.7 The Active and Healthy Travel Strategy builds on the LTP4 with the aim to 'contribute to reducing pressure on the road network, contribute to economic growth and the reduction of emissions, quality of life and health, and link active travel with bus and rail options by enabling sustainable door to door journeys combining cycling or walking with public transport'.

2.3.8 As part of the Strategy, a Cycle Premium Route between Didcot and Culham Science Centre, via the existing National Cycle (NCN) Route 5 between Didcot and Long Wittenham and then on-road towards Culham Science Centre via Clifton Hampden Bridge, has been identified as part of the proposed Science Vale Cycle Network, as shown in Figure 2.1. This cycle network has been identified to be a focus for future investment in cycling in the area. Given the importance of the route between the two key attractors in the region, and the existing site constraints at the Clifton Hampden Bridge, the proposed Didcot to Culham River Crossing will provide an opportunity for a high-quality cycle route as an alternative to the existing.

Figure 2.1: Proposed Science Vale Cycle Network Map



Source: https://www.oxfordshire.gov.uk/sites/default/files/file/roads-and-transport-major-projects/science_vale_cycle_network.pdf

Oxfordshire County Council 2020 Climate Action Framework

2.3.9 The 2020 Climate Action Framework sets out OCC's guiding principles and how it will mobilise to tackle climate change. The Council has set itself a target of becoming carbon neutral by 2030, and enabling a zero carbon Oxfordshire by 2050.

2.3.10 The Council intends to use its strategic policy roles and partnerships to take climate action. Through the Council's local transport planning role it will focus on the following:

- Increase walking and cycling; it will be accessible and normal;
- Enable safe, convenient electric public transport across and between towns;
- Accelerate the rise of electric, shared and autonomous travel;
- Increasingly deprioritise journeys by single occupancy private car;

- Implement post Covid schemes to support active travel; and
- Develop and implement local cycling and walking infrastructure plans.

Oxfordshire Cycling Design Standards (2017)

2.3.11 The Oxfordshire Cycling Design Standards (OCDS) is a live document which provides guidance on how to design cycle infrastructure for new developments that will support all cycle users.

2.3.12 The aim of the OCDS is to make cycling the first choice for travel by creating a better environment for cycling, making cycling a more attractive choice and ensuring that it is accessible to everyone.

2.3.13 This guidance outlines the application of contemporary cycle infrastructure design in the Oxfordshire context.

2.3.14 The OCDS outlines how cycle infrastructure in Oxfordshire should be designed based on the type of junction or road, amount of vehicular traffic and existing facilities in the area.

Oxfordshire Walking Design Standards (2017)

2.3.15 The Oxfordshire Walking Design Standards (OWDS) is a live document that provides guidance on how pedestrian infrastructure should be designed in Oxfordshire to encourage more people to walk journeys.

2.3.16 The aim of the OWDS is to make walking people's first choice in Oxfordshire and accessible for all. Streets should be designed with pedestrians at the top of the hierarchy giving them precedence over cyclist, buses and cars.

2.3.17 The OWDS outlines the standards for footways depending on the location, road / junction and amount of traffic. In addition, the standards also set out the different types of crossings and when each type of crossing should be used depending on pedestrian demand, road width, proximity to junctions and road speed.

Oxfordshire Local Industrial Strategy (2019)

2.3.18 The Oxfordshire Local Industrial Strategy (OxLIS) was published in June 2019 and sets out the plan to build on Oxfordshire's strong foundations and world-leading assets by 2040. OxLIS supports the objectives of the National Industrial Strategy.

2.3.19 The new river crossing proposed between Didcot and Culham is designed to link to major employment sites such as Milton Park, Culham and Harwell and enable housing growth in the area. In addition *"Oxfordshire proposes establishing a CAV service between Culham and Harwell via Culham Railway Station, Didcot Parkway and Milton Park. In parallel with using existing rural roads, this CAV service would also use the new road and bridge."*

2.3.20 The growth of the Didcot and Bicester Garden Towns, Oxfordshire Garden Village and the expansion of science parks would address critical connectivity issues in these area and release pressure on existing infrastructure.

OxLIS: The Investment Plan (2020)

2.3.21 The Investment Plan is part of a suite of documents which underpin OxLIS. In the Investment Plan Didcot Garden Town, Milton Park and Culham Science Park are outlined as critical economic sectors, assets and growth opportunities.

2.3.22 The HIF1 projects are identified as being requirements to support the delivery of science-based research and knowledge clusters at Harwell, Culham and Milton Park as well as unlocking homes in the Didcot Garden Town area.

The Oxfordshire Infrastructure Strategy (2017)

2.3.23 The Oxfordshire Infrastructure Strategy (OXIS) examines the emerging development and infrastructure requirements to support growth in the area from 2016 to 2031 and beyond.

2.3.24 Several road improvements are proposed to alleviate congestion in Oxfordshire and support planned growth in the area. These include the Didcot Science bridge, capacity improvements to the A4130 including Didcot North Perimeter Road, Culham to Didcot River Crossing and Clifton Hampden Bypass.

2.4 Local Policy

Vale of White Horse Local Plan 2031 Part One (2016)

2.4.1 The Vale of White Horse Local Plan was adopted in December 2016 and sets out the vision for the district up to 2031.

2.4.2 The key challenges and opportunities that outlined in the Local Plan that the district faces are:

- "*Building healthy and sustainable communities;*
- *Supporting economic prosperity;*
- *Supporting sustainable transport and accessibility, and*
- *Protecting the environment and responding to climate change".*

2.4.3 The relevant core policies stated in the Local Plan are the following:

- **Core Policy 1: Presumption in Favour of Sustainable Development**
  - States that planning applications that accord with the Local Plan and are not anticipated to have adverse impacts that outweigh the benefits will be granted planning permission.
- **Core Policy 7: Providing Supporting Infrastructure and Services**
  - States that the Council will ensure that new infrastructure and services are delivered alongside new housing and employment.
- **Core Policy 17: Delivery of Strategic Highway Improvements with the South-East Vale Sub-Area**
  - States that contributions will be made towards transport infrastructure improvements with the South-East Vale Sub-Area including:
    - Science Bridge and A4130 re-routing through the Didcot A site;
    - A4130 dualling between Milton Interchange and Science Bridge; and
    - A new strategic road connection between the A415 east of Abingdon on-Thames and the A4130 north of Didcot, including a new crossing of the River Thames.
- **Core Policy 18: Safeguarding Land for Strategic Highway Improvements**
  - The Council seeks to ensure that land required for important transport infrastructure in the South East Vale Sub-Area.
- **Core Policy 33: Promoting Sustainable Transport and Accessibility**
  - The Council will support improvements for accessing Oxford and support measures identified in the Local Transport Plan.
- **Core Policy 34: Promoting Public Transport, Cycling and Walking**
  - The Council will seek to support the provision of new cycling routes and ensure that proposals for major development are supported by a Transport Assessment and Travel plan.

Vale of White Horse Local Plan 2031: Part 1, Infrastructure Delivery Plan (2015)

2.4.4 The Infrastructure Delivery Plan was prepared to support the Local Plan 2031: Part 1 which identifies the vision for the area up to 2031 and the infrastructure required to accommodate the growth of the area.

2.4.5 *"The council has been working closely with Oxfordshire County Council and South Oxfordshire District Council so that cross-border infrastructure requirements are fully taken into account and that the Science Vale area is planned holistically."*

2.4.6 The relevant transport infrastructure that has been identified as part of the Science Vale Transport Package is outlined in Table 2.1 below.

Table 2.1: Science Vale Transport Package

Project	Cost	Funding	Rational
Widening A4130	£13,500,000	LGF, CIL	Improving Connectivity between Didcot and the Enterprise Zone.
Science Bridge	£26,000,000	LGF CIL	Capacity improvements for vehicles over the railway line along the A4130 in the vicinity of the Power station.
Cycle Network Improvements Across the Science Vale area	£10,000,000	LGF, GPF LSTF, CIL	Providing easier and greater connectivity by bike providing a key layer to the science Vale transport system and enabling and encouraging sustainable travel across the area.
Thames Crossing at Appleford /Culham and further link between Culham Science Centre and the B4017.	£40,000,000	LGF, CIL	To enable better access between Culham and Oxford. The Scheme will provide an alternative north south link to the A34, linking centres of economic growth.

Source: Vale of White Horse Local Plan 2031: Part 1, Infrastructure Delivery Plan (2015), Table 5.

Vale of White Horse Local Plan 2031: Part 1, Inspector's Report (2016)

2.4.7 In the Inspector's report for the VoWH Local Plan Part 1, the Inspector was satisfied that a mitigation strategy was identified to deal with growth associated with the Local Plan Part 1 and South Oxfordshire's Core Strategy 2016. This was in the knowledge that much of the highway infrastructure was unfunded and a large shortfall was identified to deliver necessary infrastructure. In acknowledgement of the existing traffic congestion, the Inspector noted that infrastructure (to which this Scheme seeking planning permission is part of a wider strategy) would largely mitigate the impact of development. The relevant paragraphs of the report related to highway infrastructure are copied below:

"*144. In relation to transport Oxfordshire County Council, as Highway Authority, commissioned the November 2014 Evaluation of Transport Impacts Study to Inform the Vale of White Horse District Council Local Plan 2031: Part 1. Following several earlier stages this report assessed the likely transport impacts of the plan's proposed 20,560 new homes and 23,000 additional jobs in the district, based on a range of different transport interventions and improvements (one of medium scale and two of large scale). The report concludes that the Stage 5ETI mitigation package (which in essence comprises those transport improvements identified in the plan) would largely mitigate the impacts of the proposed new development in the district, albeit that some congestion issues would remain.*

145. I have read and heard much debate about the robustness of the Impacts Study's findings and whether or not the residual congestion issues it identifies would be "severe" in terms of paragraph 32 of the NPPF. However, there is no convincing and detailed evidence to demonstrate that the study's conclusions are not robust, bearing in mind that they can only ever be a strategic-level forecast and that more detailed transport impact appraisals will be necessary as part of the consideration of specific development proposals. Moreover, whilst it is to a significant degree a matter of judgement, I have read and heard nothing which persuades me that the District and County Councils' conclusion that the likely residual transport impacts would be acceptable is not a soundly-based finding. In considering this point I have borne in mind that the "starting point" situation for the Vale is as a district which very much suffers from traffic congestion."

150. Policy CP7 states that all new development will be required to provide for the necessary on-site and off-site infrastructure requirements arising from the development. However, it goes on to indicate that, where viability constraints are demonstrated, the Council will (i) prioritise contributions sought, giving first priority to essential infrastructure and second priority to other infrastructure (ii) defer part of the contribution to a later date (iii) as a last resort, refuse planning permission if the development would be unsustainable without the unfunded infrastructure requirements. With reference to recent specific examples significant concern has been raised that this would lead to development being permitted without the timely implementation of necessary infrastructure, or even its provision at all.

151. The policy is written such that there is a presumption that the necessary infrastructure will be provided when required and that any relaxation of the requirements will only be considered where viability constraints are demonstrated. However, ultimately it is appropriate that the Council reaches a decision on this issue on a case by case basis at the planning application stage, balancing the benefits of the development against the harm likely to result from delayed or unfunded infrastructure. Consequently, and bearing in mind that it makes clear that ultimately proposals which are unsustainable because of an absence of supporting infrastructure will be refused, the policy is soundly-based. Nonetheless, to ensure the effectiveness of the policy, MM10 and MM11 are necessary to define "essential" and "other" infrastructure in the supporting text of the policy and to require collaboration between developers where infrastructure is necessary to serve more than one site. I have noted the suggested changes to the wording of MM10 but conclude that the modification is appropriate as consulted on, bearing in mind that the supporting text should not alter the meaning of the policy to which it relates."

Vale of White Horse Local Plan 2031 Part Two (2019)

2.4.8 The Vale of White Horse Local Plan Part Two was adopted in December 2019 and complements the Part 1 plan setting out policies and locations for housing up to 2031.

2.4.9 The Part 2 Local Plan includes Core Policy 16b which supports the implementation of Didcot Garden Town. This policy ensures that proposals for development support the successful implementation of the Garden Town.

2.4.10 The key relevant policies stated in part two of the Local Plan are the following:

- **Development Policy 17: Transport Assessments and Travel Plans**
  - States that proposals for large developments will need to be supports by a Transport Assessment or Statement in accordance with Oxfordshire County Council guidance.
- **Development Policy 31: Protection of Public Rights or Way, National Trails and Open Access Areas**
  - The Council will permit developments that can accommodate existing routes or provide alternative routes that are equally or more attractive and convenient for users.

Vale of White Horse Local Plan 2031: Part 2 Infrastructure Delivery Plan (2018)

2.4.11 The Infrastructure Delivery Plan was prepared to support the sites identified in the Local Plan 2031: Part 2. It is intended to be a 'live' document that will be updated and reviewed at regular intervals.

2.4.12 The Local Plan Part 2 identified seven sites for a total of 3,420 dwellings up to 2031.

2.4.13 In order to achieve a sustainable transport network in the VoWH area, the Council is working alongside OCC, South Oxfordshire, Oxfordshire Local Enterprise Partnership (OxLEP) and Oxfordshire Growth Board. The relevant required transport infrastructure that has been identified includes:

- Delivering the Science Bridge and widening of A4130; and
- Providing new and substantially upgraded strategic cycle routes to Milton Park, Harwell and Culham Science Centre through the Science Vale cycle strategy.

Vale of White Horse Local Plan 2031: Part 2, Inspector's Report (2019)

2.4.14 An Inspector's Report for the Local Plan 2031: Part 2 was published in June 2019, assessing the Local Plan. The report concluded that it *"provides an appropriate basis for the planning of the district alongside the existing Vale of White Horse Local Plan: Part 1 provided that a number of main modifications are made to it".*

South Oxfordshire Local Plan 2035 (2020)

2.4.15 The South Oxfordshire Local Plan was adopted in December 2020 and sets out the vision and strategy for the area up to 2035.

2.4.16 Objective 4 of the Local Plan is relevant as it states that it should ensure that essential infrastructure is delivered to support our existing residents and services as well as growth and to make sustainable transport a more attractive and viable choice whilst recognising that car travel will continue to be important.

2.4.17 The relevant policies stated in the Local Plan are the following:

- **Policy STRAT1**: The Overall Strategy
  - Development proposals should be in line with the overall strategy for South Oxfordshire. This includes *"focusing major new development in Science Vale including Didcot Garden Town and Culham so that this area can play an enhanced role in providing homes, jobs and services with improved transport connectivity."*
- **Policy TRANS1b**: Supporting Strategic Transport Investment
  - "*The Council will work with Oxfordshire County Council and others to:*
    - *deliver the transport infrastructure which improves movement in and around Didcot, including measures that help support delivery of the Didcot Garden Town; ii) support measures identified in the Local Transport Plan for the district including within the relevant area strategies;*
    - *support delivery of the safeguarded transport improvements as required to help deliver the development required in this Plan period and beyond;*
    - *understand any cross-border transport impacts from development and plan for associated mitigation."*
- **Policy TRANS2**: Promoting Sustainable Transport and Accessibility
  - "*The Council will support, where relevant, sustainable transport improvements in the wider Didcot Garden Town area and in and around Oxford, particularly where they improve access to strategic development locations".*
- **Policy TRANS3**: Safeguarding of Land for Strategic Transport Schemes
  - States that land is safeguarded to support the delivery of identified transport schemes, including those forming this planning application (not exhaustive list)::
    - Clifton Hampden Bypass
    - A new Thames road crossing between Culham and Didcot Garden Town
    - Science Bridge, Didcot

South Oxfordshire Infrastructure Delivery Plan (2019)

2.4.18 The Infrastructure Delivery Plan (IDP) was produced to support the South Oxfordshire Local Plan 2034 Final Publication Version 2 which has now been adopted and identifies the infrastructure that is needed to support future growth in South Oxfordshire until 2035. The current IDP was last updated in January 2019 and supersedes the previous IDP published in 2017.

2.4.19 The IDP is considered to be a 'live document' meaning it will be regularly updated and monitored as new schemes are completed or new infrastructure requirements are identified.

2.4.20 In order to support the Didcot Garden Town the County Council has secured funding for the delivery of major transport infrastructure including, a new road crossing over the Thames between Culham and Didcot, capacity enhancements to the A4130 and a new 'Science Bridge' improving access to growing areas of Didcot and for a bypass through of Clifton Hampden. This planning application is for that infrastructure.

The Planning Inspectorate: Report on the Examination of the South Oxfordshire Local Plan 2011-2034 (2020)

2.4.21 This report predominantly focusses on the housing sites proposed, and whether the Plan's preparation had complied with the duty to co-operate. It proposed main modifications to the Plan to make it sound and capable of adoption. In relation to infrastructure, which includes this Scheme, the policies are found to be sound. A main modification (MM51) is proposed which further highlights the importance and policy standing of this Scheme, by adding it to the "list of supported projects". The relevant paragraphs of the report related to the Scheme are copied below:

'*209. The plan's spatial strategy and its housing and employment provision will require adequate infrastructure to make it effective. The Council's Infrastructure Delivery Plan Update (April 2020) (Document PSD27) focuses on the Plan's strategic allocations and is supported by an updated Financial Viability Assessment Report and associated documents (PSD52, PSD52.1 and PSD53). The Infrastructure Delivery Plan Update is a thorough document that contains a list of infrastructure requirements for the allocations. Not all the costs can be known, because the allocations are strategic and will need to be worked up in detail through masterplans, and some of the infrastructure is not fully designed and costed. This is inevitable with long term masterplans and strategic allocations, and does not indicate any defect in either the viability assessment or the plan.'*

'213. The set of documents comprising the Evaluation of Transport Impacts (documents TRA06 to TRA06.6.1) examined various development scenarios and their transport impacts, and the evaluation underpins the range of transport improvements required by the Plan in connection with the allocations.

214. The success of the Housing Infrastructure Fund bid will bring about early delivery of a new crossing of the River Thames between Culham and Didcot, a bypass of Clifton Hampden, capacity enhancements to the A4130, and a new 'Science Bridge', which will enable STRAT8, STRAT9 and STRAT10 to proceed. They are part of a wider highway strategy to support the delivery of housing growth in the wider Didcot Garden Town area and to mitigate the impact of existing, approved and allocated developments.'

'216. Policy TRANS1b: Supporting Strategic Transport Investment sets out the ways in which the Council intends to support such investment, and to ensure the policy is fully up to date, ***MM51*** *adds the schemes that are linked to the Housing Infrastructure Funding to the list of supported projects. It also adds support for the re-opening of the Cowley Branch Line for passenger traffic which has the potential to provide an additional sustainable transport choice for sites STRAT11 and STRAT12.*

217. Policy INF1: Infrastructure Provision provides a strategy for infrastructure delivery within South Oxfordshire, developed in partnership with Oxfordshire County Council who are responsible for education and highways. It requires new development to be supported by appropriate infrastructure, both on-site and off-site. Infrastructure required as a consequence of development, and provision for its maintenance, will be secured through planning conditions, obligations and other agreements and funding through the Community Infrastructure Levy. A clarification is inserted into Policy INF1 by ***MM49*** *to the effect that where external forward funding for infrastructure necessary for development has been secured (for example from the Housing Infrastructure Fund), it will be recovered from the development. This is to assist the County Council to recycle funding to help support other future transport improvements, and is necessary to ensure an effective policy towards the provision of infrastructure.'*

'226. Subject to the main modifications described above, the plan's policies, proposals and strategic allocations are viable and its infrastructure policies are sound.'

Didcot Garden Town Delivery Plan (2017)

2.4.22 This plan recognises that Didcot will grow from approximately 26,000 people to over 60,000 by 2031. With this growth, Didcot is expected to become the largest town in Southern Oxfordshire, so even if the resident's movements around the town remain unchanged, town-wide journeys by car will double. This means that infrastructure investment is required, in terms of highways, pedestrian and cycle routes.

2.4.23 The east-west movement corridors like the A4130 and the Science Bridge have been identified as one of the key proposals to achieving sustainable movement across the area. The Clifton Hampden Bypass and the Didcot to Culham River Crossing are also identified in the Delivery Plan to encourage sustainable movement in the area.

2.4.24 A new cycle route between Harwell, Didcot and Culham, referred to as the Garden Line, has also been identified in the Delivery Plan. This is proposed to include upgrading of the route to Culham and a new river crossing to the east of the railway line.

2.5 Other Policy and Guidance

The Strategic Road Network – Planning for the Future (September 2015)

2.5.1 Highways England document '*The Strategic Road Network – Planning for the Future'* (September 2015) provides guidance on the requirements for Transport Assessments and consideration of impacts on the SRN. Regarding assessment years, it states that assessments should be carried out for the following:

- *The development and construction phase; and*
- *The opening year, assuming full build out and occupation; and*
- *Either a date ten years after the date of registration of the associated planning application or the end of the Local Plan period (whichever is the greater).*

The assessment at opening will be used for the determination of impact mitigation needs whilst the latter is necessary to determine the risk which will transfer to us.

Transport for New Developments: Transport Assessments and Travel Plans (March 2014)

2.5.2 OCC requirements for Transport Assessments are set out in the document *'Transport for New Developments: Transport Assessments and Travel Plans'* (March 2014). The document includes a Scoping for Transport Assessment Form, to be completed by the applicant and submitted to the highway authority. The form includes the following under 'Assessment years':

- Existing;
- Year of opening;
- Design Year;
- Other sensitivity tests required, e.g. phasing

2.5.3 The OCC guidance refers to the methodology set out in DfT publication 'Guidance on Transport Assessments' (March 2007). This document states: '*For the SRN (Strategic Road Network), the future year should normally be ten years after registration of a planning application for the development, in line with the forward horizon of the RTS (Regional Transport Strategy). Should the development take place over a longer period than the horizon of the wider planning framework, a longer period of assessment will need to be agreed with the HA'.*

2.5.4 The *'Guidance on Transport Assessments'* document has now been superseded by MHCLG guidance *'Travel Plans, Transport Assessments and Statements'*. With regard to assessment years, the MHCLG guidance states that '*The timeframe that the assessment covers should be agreed with the local planning authority in consultation with the relevant transport network operators and service providers.'*

Design Manual for Roads and Bridges (2020)

2.5.5 The Design Manual for Roads and Bridges (DMRB) identifies the design standards for road layouts in the United Kingdom.

LTN 1/20 Cycle Infrastructure Design (2020)

2.5.6 This Local Transport Note provides guidance and good practice for the design of cycle infrastructure. LTN 1/20 also replaces LTN 1/12: Shared Use Routes for Pedestrians and Cyclists.

2.5.7 The key principles of this guidance are the following:

- Ensuring cycle infrastructure is accessible for all;
- Cycles should be treated as vehicles and separately from pedestrians;
- Cyclists must be physically separated from high volume vehicular traffic;
- Using side street routes that have been closed to through traffic as an alternative to segregated cycle facilities;
- Cycle infrastructure should be designed for all forms of cycles and high volumes of cycles; and
- Cycle schemes must be legible and understandable.

Department of Transport Gear Change: A Bold Vision for Cycling and Walking (2020)

2.5.8 This plan describes the vision for England to increase walking and cycling across the country. It sets out the actions required at all levels of government to make this a reality, grouped under four themes:

- Better streets for cycling and people;
- Putting cycling and walking at the heart of transport, place-making, and health policy;

- Empowering and encouraging local authorities;
- Enabling people to cycle and protecting them when they do.

3. Baseline Conditions

3.1 Introduction

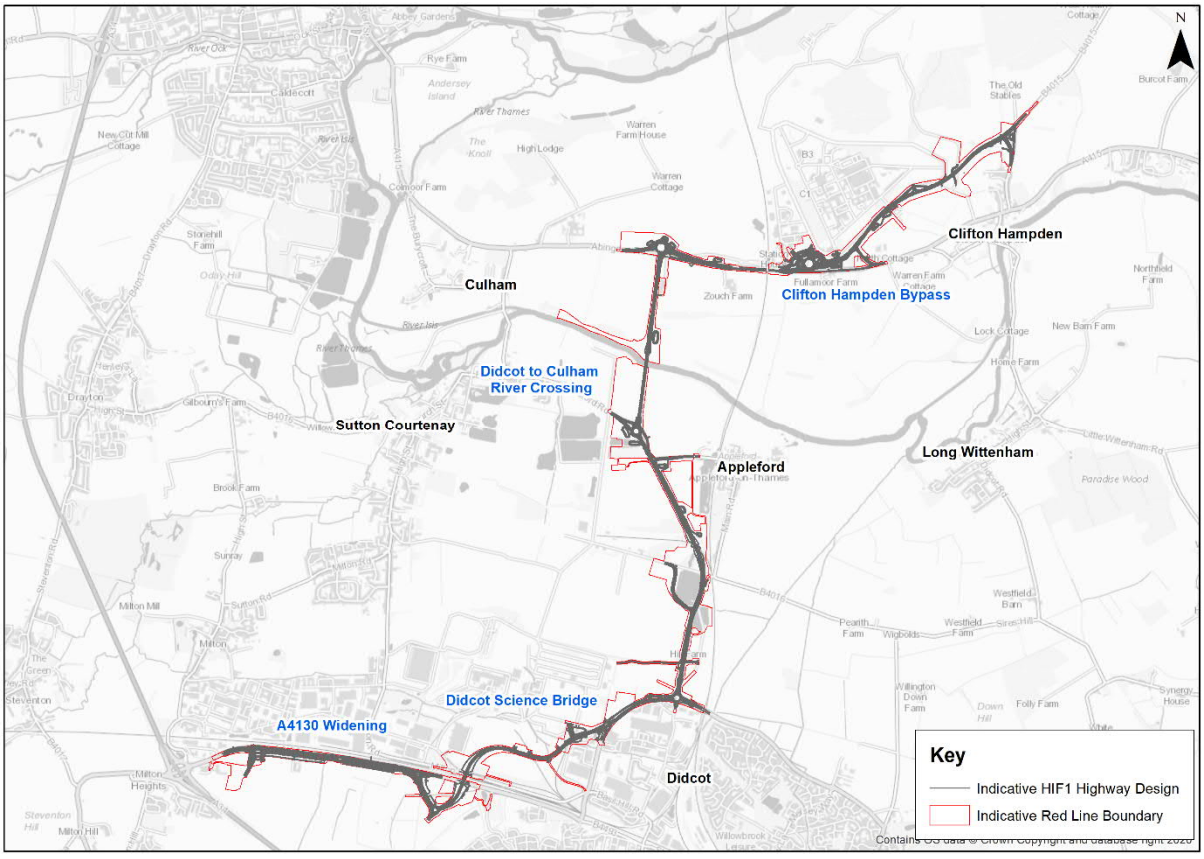
3.1.1 This section provides details of the existing baseline transport conditions relevant to the development proposals.

3.1.2 The proposed HIF1 Scheme is located to the north of Didcot and runs between Milton Gate and Clifton Hampden as shown in Figure 3.1. The HIF1 Scheme is made up of four components:

- A4130 Widening;
- Didcot Science Bridge;
- Didcot to Culham River Crossing; and
- Clifton Hampden Bypass.

3.1.3 Further details of the development proposals are provided in Section 4 of this report.

Figure 3.1: Scheme Location



3.1.4 The following section considers the baseline conditions with respect to the following:

- Walking, Cycling and Horse Riding;
- Public Transport;
- Highway Network;
- Traffic Data;
- Junction Capacity; and
- Road Safety.

3.2 Walking, Cycling and Horse-riding

Walking and Cycling Facilities and Routes

3.2.1 Key origins/destinations for individuals in the area include Culham Science Centre, Milton Park and Didcot. There is currently a lack of direct and attractive walking and cycling routes to these locations to encourage residents / employees to use these modes. For example, the existing route between Didcot and the Culham Science Centre is along NCN route 5 via Long Wittenham to Clifton Hampden and along the A415 Abingdon Road. However, part of NCN route 5 is not lit and are therefore unattractive to pedestrians and cyclists when it is dark due to feeling unsafe. In addition, there is no continuous provision of footpaths for pedestrians to complete this route without walking on the carriageway.

3.2.2 The lack of walking and cycling connectivity between key residential and employment areas is reflected in the proportion of people who walk and cycle to work in Didcot. Table 3.1 compares mode share data for the journey to work from the 2011 Census for Oxfordshire as a whole, Oxford and Didcot. The data represents mode share for residents in these areas. The combined walk and cycle mode share for Didcot is 15.6%, significantly lower than Oxford at 38% and even lower than Oxfordshire as a whole, at 20.9%. Bus use is also low, and as a consequence car driver mode share is above the average for Oxfordshire and significantly higher than Oxford.

Table 3.1: Journey to Work Mode Share

Mode	Oxfordshire	Oxford	Didcot
Underground, metro, light rail, tram	0.2%	0.3%	0.1%
Train	3.2%	2.7%	7.3%
Bus, minibus or coach	7.5%	17.4%	4.0%
Taxi	0.3%	0.4%	0.2%
Motorcycle, scooter or moped	0.9%	0.7%	0.9%
Driving a car or van	61.8%	36.2%	66.3%
Passenger in a car or van	4.6%	3.4%	5.3%
Bicycle	7.7%	18.7%	4.7%
On foot	13.2%	19.3%	10.9%
Other method of travel to work	0.6%	0.8%	0.4%
TOTAL	**100.0%**	**100.0%**	**100.0%**

Source: 2011 Census, dataset QS701EW – Method of Travel to Work.

3.2.3 Between the Milton Interchange roundabout and the rail underpass at Backhill Tunnel (south of Milton Park), up to 3m wide shared use cycle-pedestrian footways are present on both sides of the A4130 carriageway. However, there is no shared use on the northern side nearer Milton Interchange. There is no northern footway along the A4130 east of the tunnel. There is a Toucan crossing at this location and it provides a connection between the northern and southern footways of the A4130 and the Backhill Tunnel which connects to Milton Park for pedestrians and cyclists only.

3.2.4 Between the Backhill Tunnel and the A4130/B4493/Mendip Heights roundabout a 2.5m wide shared use footway is present along the southern frontage. This has poor separation from the high-speed road, and NMUs experience buffeting from vehicles passing by, especially HGVs. This footway is shared by cyclists and pedestrians and links to the Public Rights of Way located to the south of the A4130.

3.2.5 There are poor NMU facilities linking to Manor Overbridge. There is a shared footway/cycleway along the western side of the A4130 between the A4130 / Milton Road / Basil Hill Road roundabout and the A4130 / Hawksworth / Purchas Road roundabout with a footway also present on the eastern side of the carriageway.

3.2.6 Due to the severance created by the River Thames and the historic road network, there are poor opportunities for walking and cycling north / south in this area. For example, residents of Didcot wishing to cycle to Culham Science Centre must use indirect routes, relying on the main carriageway for significant portions.

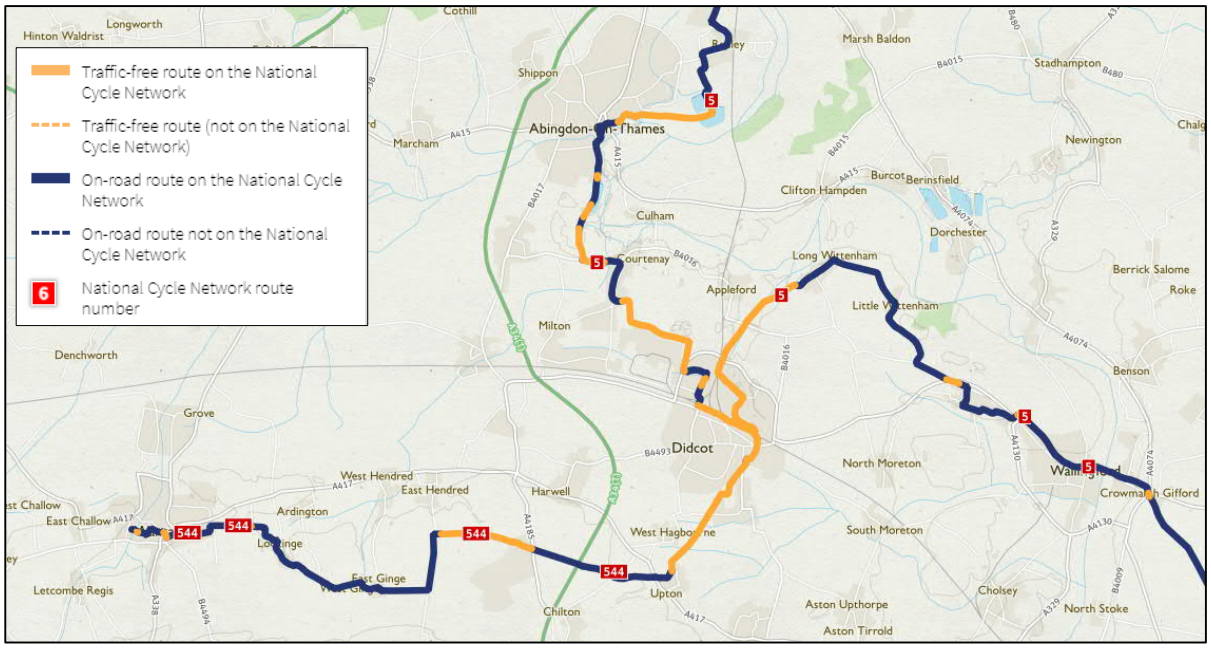
3.2.7 Along A415 Abingdon Road there is a 1.3m wide shared footway / cycleway along the northern side of the carriageway between Thame Lane and Culham Science Centre. There is a 1.5m wide shared

footpath / cycleway on the south side of the A415 Abingdon Road from Culham Science Centre to Clifton Hampden.

3.2.8 Further discussion and photographs of the existing NMU facilities are included in Section 6.2 NMU Impacts.

3.2.9 There are two National Cycling Network (NCN) routes across the Didcot area, as shown in Figure 3.2.

Figure 3.2: National Cycling Network

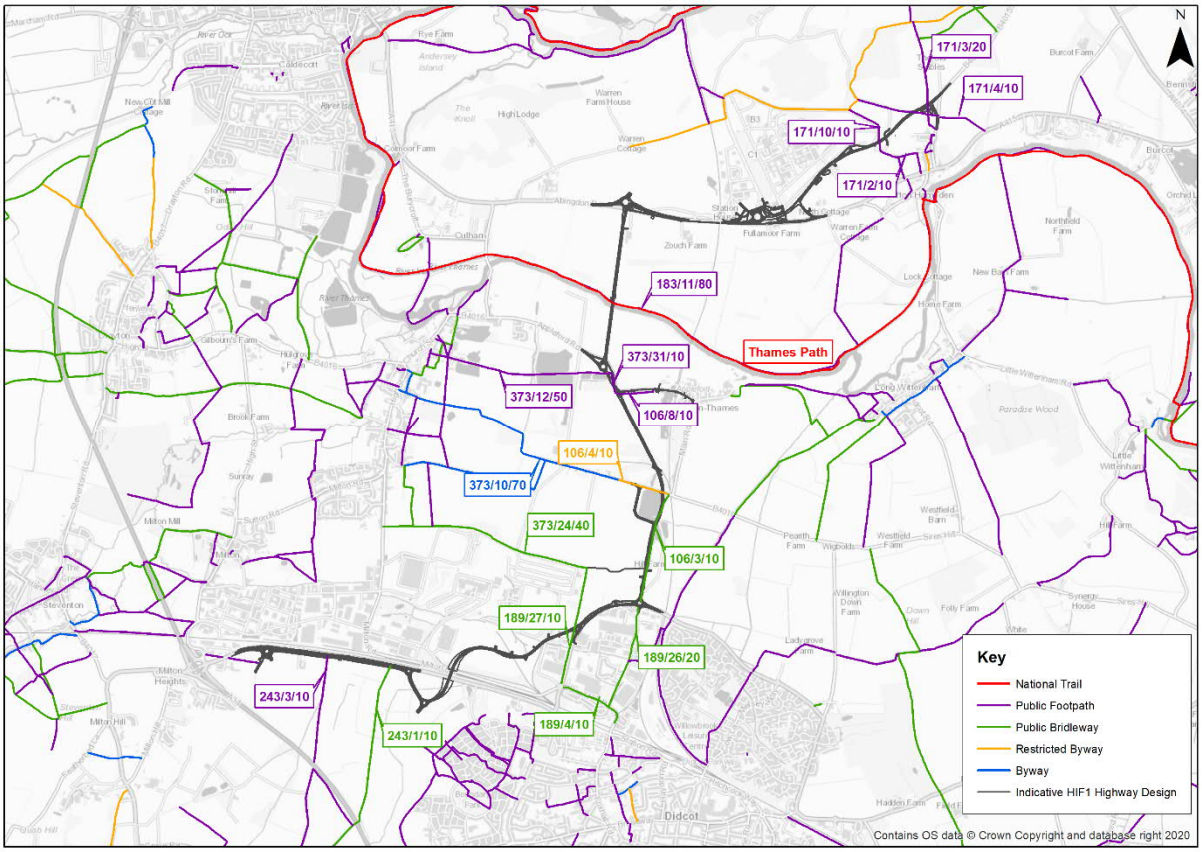


Source: https://www.sustrans.org.uk/national-cycle-network

3.2.10 The National Cycle Network Route 5 connects the area with the Didcot Parkway Station. NCN Route 5 is a long-distance route connecting Reading and Holyhead via Oxford, Stratford-upon-Avon, Bromsgrove, Birmingham, Stoke-on-Trent, Chester, Colwyn Bay and Bangor.

3.2.11 National Cycle Network Route 544 connects Didcot and Wantage. It is a 12-mile route on quiet roads, byways and purpose-built paths.

Figure 3.3: Local Public Rights of Way



3.2.12 Footpath 243/3/10 is located approximately 1.1km to the east of Milton Interchange and runs in a north-south direction connecting to Harwell to the south.

3.2.13 Bridleway 243/1/10 is located on the south side of the A4130, 1.6km east of Milton Interchange and runs in a north-south direction providing a bridge over the A34 to the south connecting to Harwell.

3.2.14 Bridleway 189/4/10 runs between Didcot Parkway station and the A4130 / Basil Hill Road / Milton Road roundabout. This connects to bridleway 189/27/10 which runs in a north-south direction along the A4130 to the A4130 / Hawksworth / Purchas Road Roundabout. The 189/27/10 bridleway joins to the 373/24/40 bridleway providing a connection to Sutton Courtenay.

3.2.15 Bridleway 189/26/20 runs along Collett between Basil Hill Road and the A4130 / Collett / New Link roundabout. Bridleway 106/3/10 runs in a north-south direction between Appleford Crossing and the A4130 / Collett / New Link roundabout.

3.2.16 Restricted byway 106/4/10 runs in an east-west direction connecting Appleford Crossing to byway 373/10/70 which provides a route to Sutton Courtney.

3.2.17 Footpaths 106/8/10, 373/31/10 and 373/12/50 provide a route between Appleford and Sutton Courtney.

3.2.18 Footpath 183/11/80 runs along the north side of the River Thames forming part of the Thames Path which runs between Woolwich and Kemble in the Cotswolds.

3.2.19 Footpath 171/10/10 is located approximately 200m to the west of the A415 Abingdon Road / High Street junction on the north side of the A415. This footpath is approximately 144m long and runs in a north-south direction connecting to Thame Lane and the Culham Science Centre campus. Footway 171/2/10 is located to the east of Clifton Hampden Village Hall and connects to the 171/10/10 footpath.

3.2.20 Footpath 171/4/10 is located approximately 550m to the east of the A415 / B4015 junction.

Walking, Cycling and Horse Riding Assessment and Review (WCHAR)

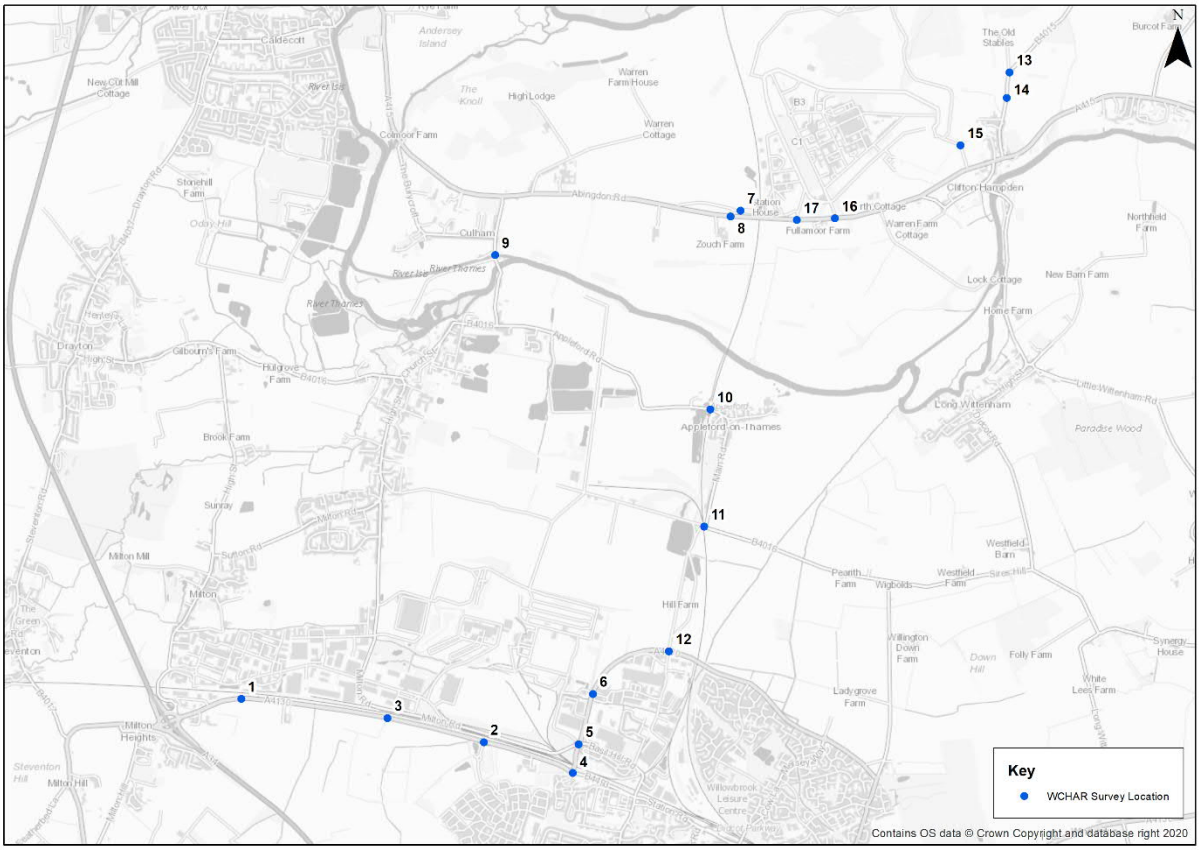
3.2.21 AECOM has undertaken four WCHAR reports for each element of the proposed Scheme, in accordance with the Design Manual for Roads and Bridges GG142. The purpose of the WCHAR is to facilitate the inclusion of all walking, cycling and horse-riding modes in the highway scheme design process from the earliest stage, enabling the design team to identify opportunities for improved facilities and integration with the local and national networks throughout the design process.

3.2.22 As the proposed Scheme does not form part of the trunk road network, a 1km radius of the Scheme has been deemed an appropriate study area for the WCHAR.

3.2.23 Walking, cycling and horse-riding surveys were undertaken between Monday 11th November and Sunday 17th November 2017. The locations of the surveys are identified below and illustrated in Figure 3.4. The WCHAR Reports are provided in Appendix A.

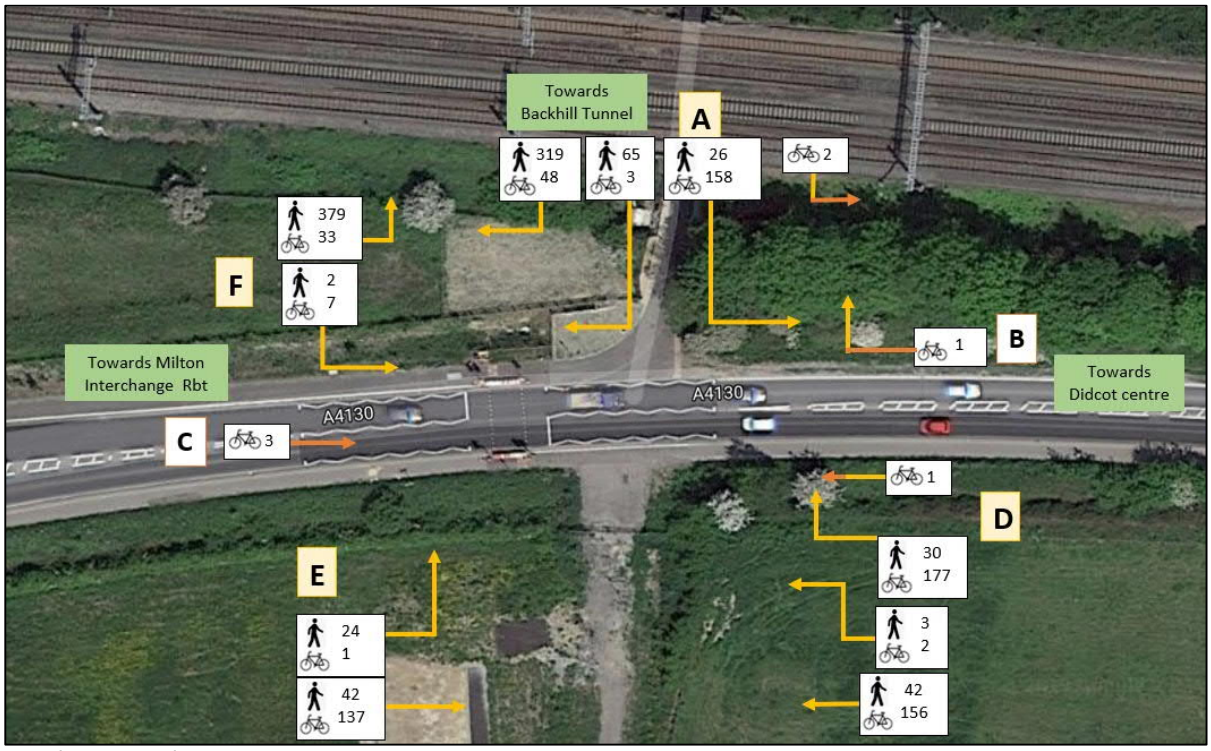
1. Backhill Tunnel / A4130 Junction
2. Sir Frank Williams Avenue / A4130 Junction
3. Cow Lane/ A4130 Junction
4. A4130/ B4493/ Mendip Heights Roundabout
5. Milton Road / Purchas Road / A4130 / Basil Hill Road (PRoW 189/27/10)
6. A4130 / Purchas Road / Hawksworth (PRoW 189/27/10)
7. Culham Railway Station Entrance
8. Station Road / Abingdon Road Junction
9. Thames Path at Tollgate Road, Culham (PRoW 183/11/80)
10. Appleford Railway Station
11. Appleford Level Crossing (PRoW 106/4/10)
12. A4130 and Collett Road Junction
13. Junction of B4015
14. Footpath North of Clifton Hampden (PRoW 171/4/10)
15. Footpath, junction on A415 (PRoW 171/2/10)
16. Culham Science Centre / A415 Junction
17. Station Road / A415 Junction

Figure 3.4: WCHAR Survey Locations



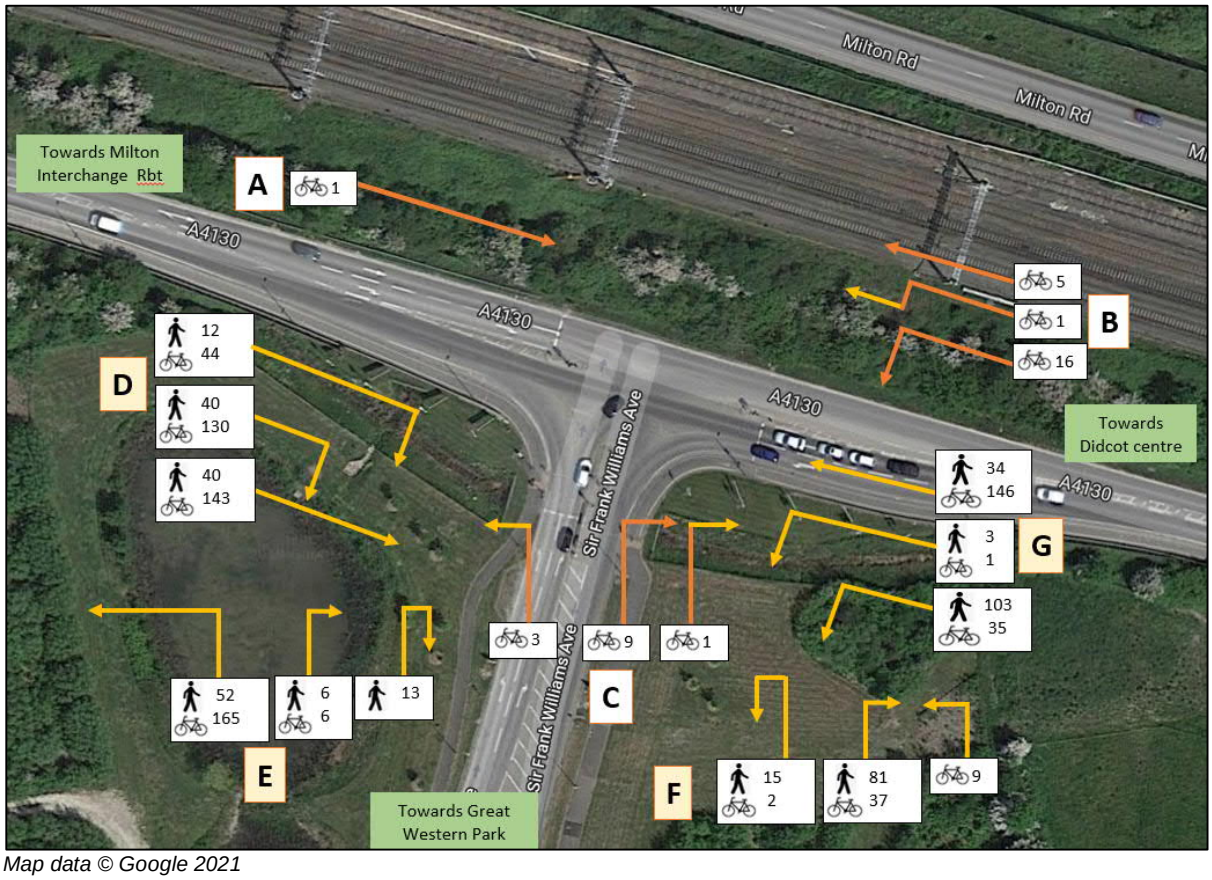
3.2.24 The total NMUs observed over the seven day survey period at each of the survey locations are shown in Figure 3.5 to Figure 3.21 below.

Figure 3.5: Backhill Tunnel / A4130 Tunnel - Total NMUs observed (7-day survey period)



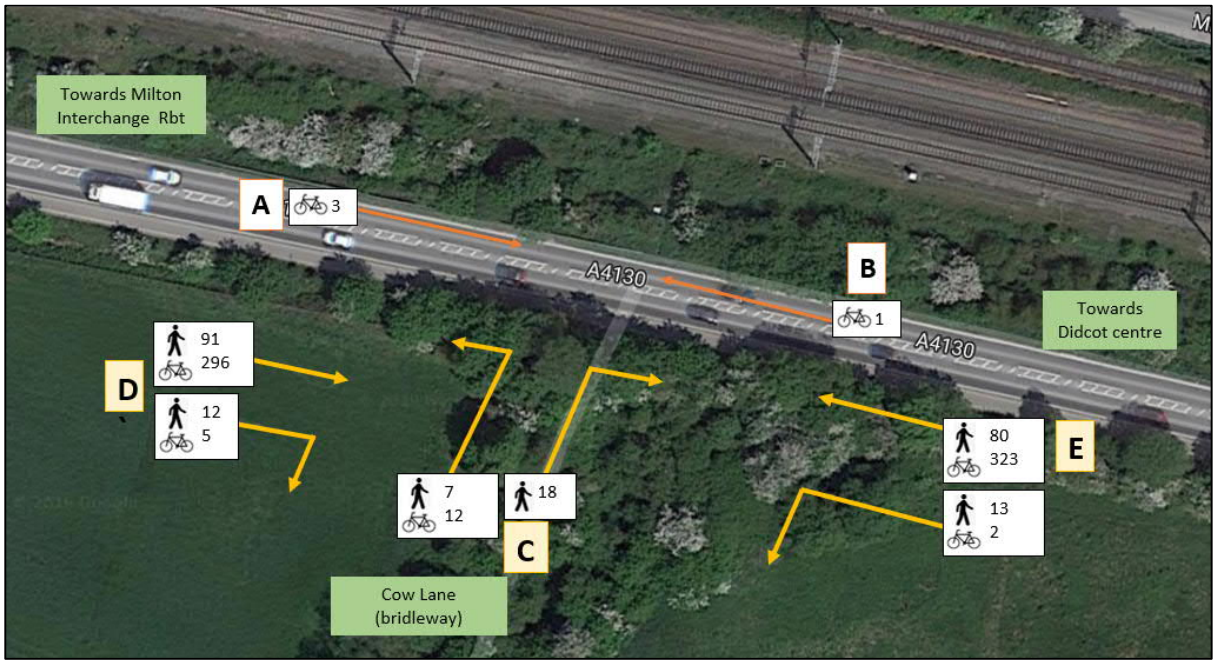
Map data © Google 2021

Figure 3.6: Sir Frank Williams Avenue / A4130 Junction - Total NMUs observed (7-day survey period)



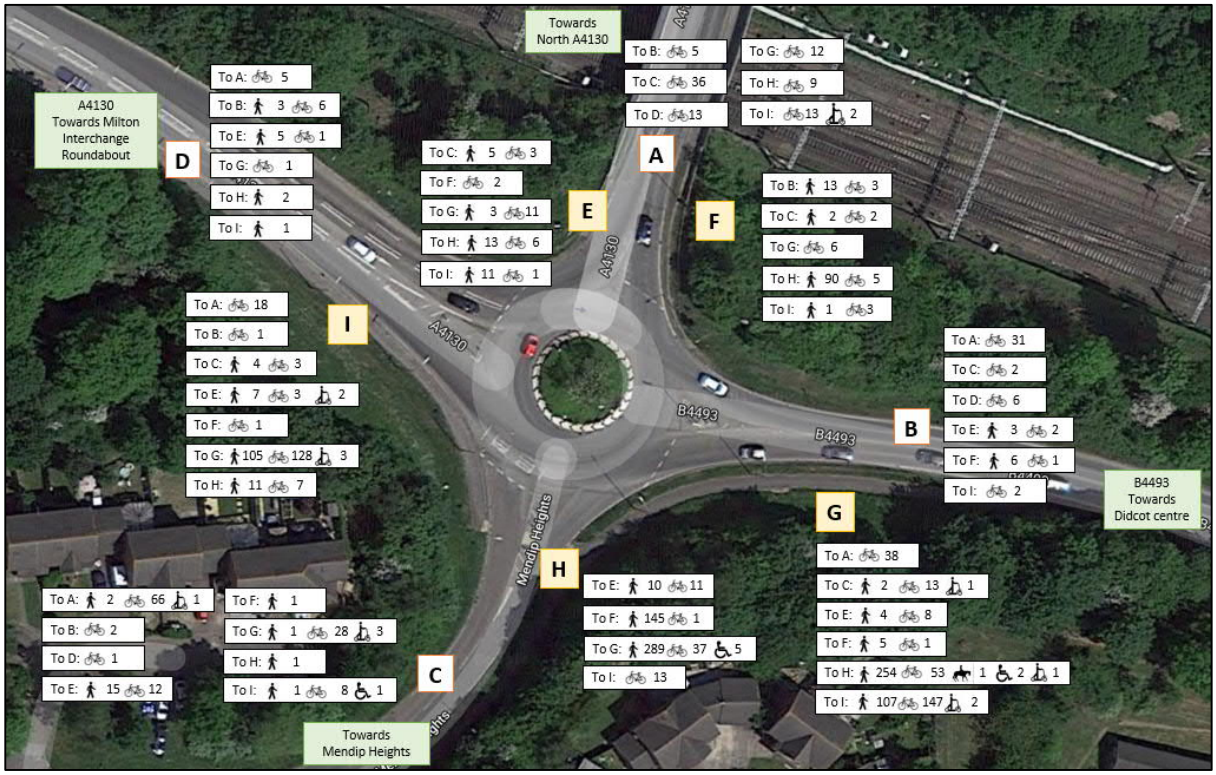
Map data © Google 2021

Figure 3.7: Cow Lane/ A4130 Junction - Total NMUs observed (7-day survey period)



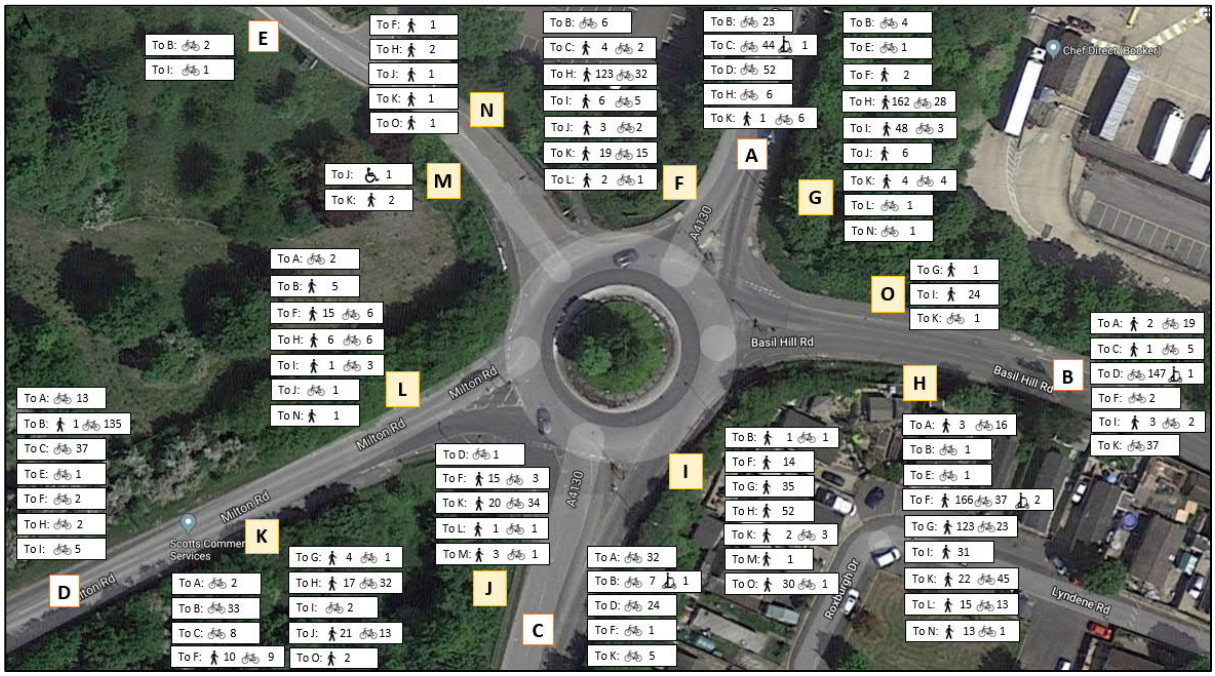
Map data © Google 2021

Figure 3.8: A4130/ B4493/ Mendip Heights Roundabout - Total NMUs observed (7-day survey period)



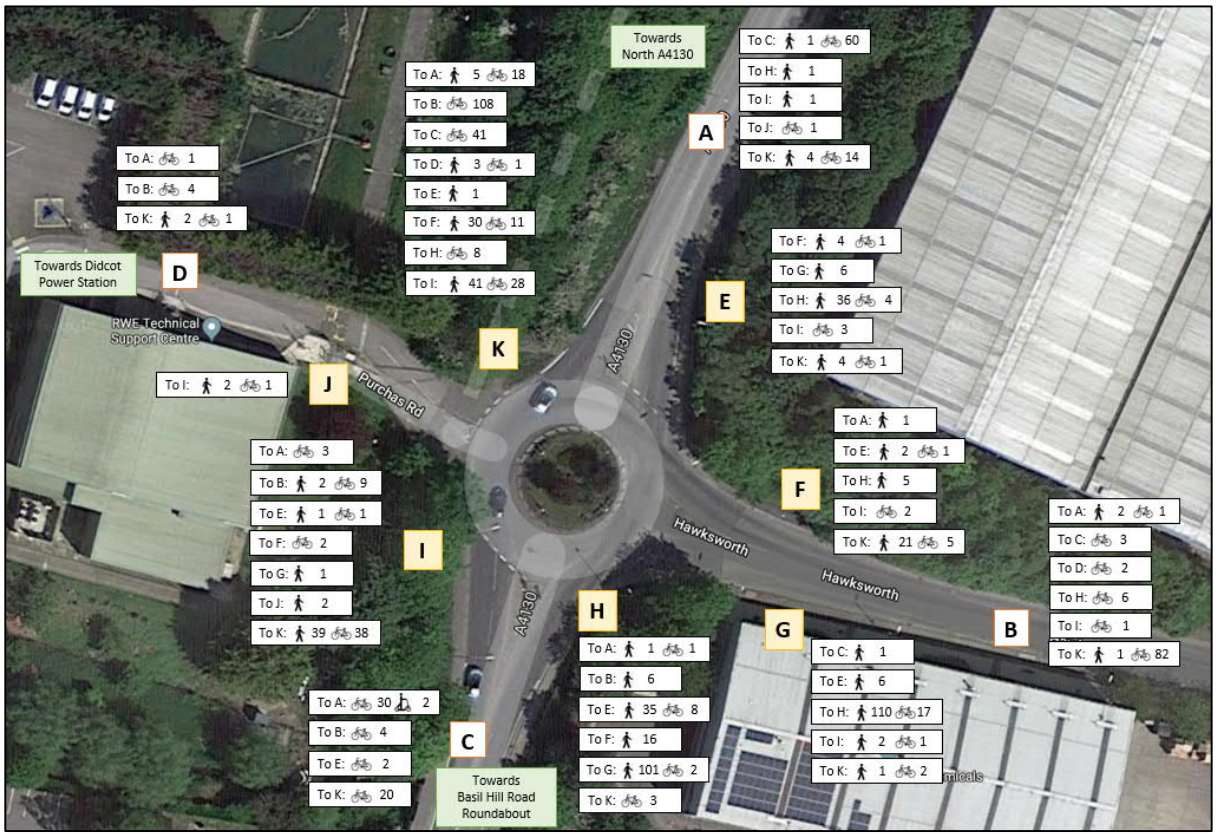
Map data © Google 2021

Figure 3.9: Milton Road / Purchas Road / A4130 / Basil Hill Road (PRoW 189/27/10) - Total NMUs observed (7-day survey period)



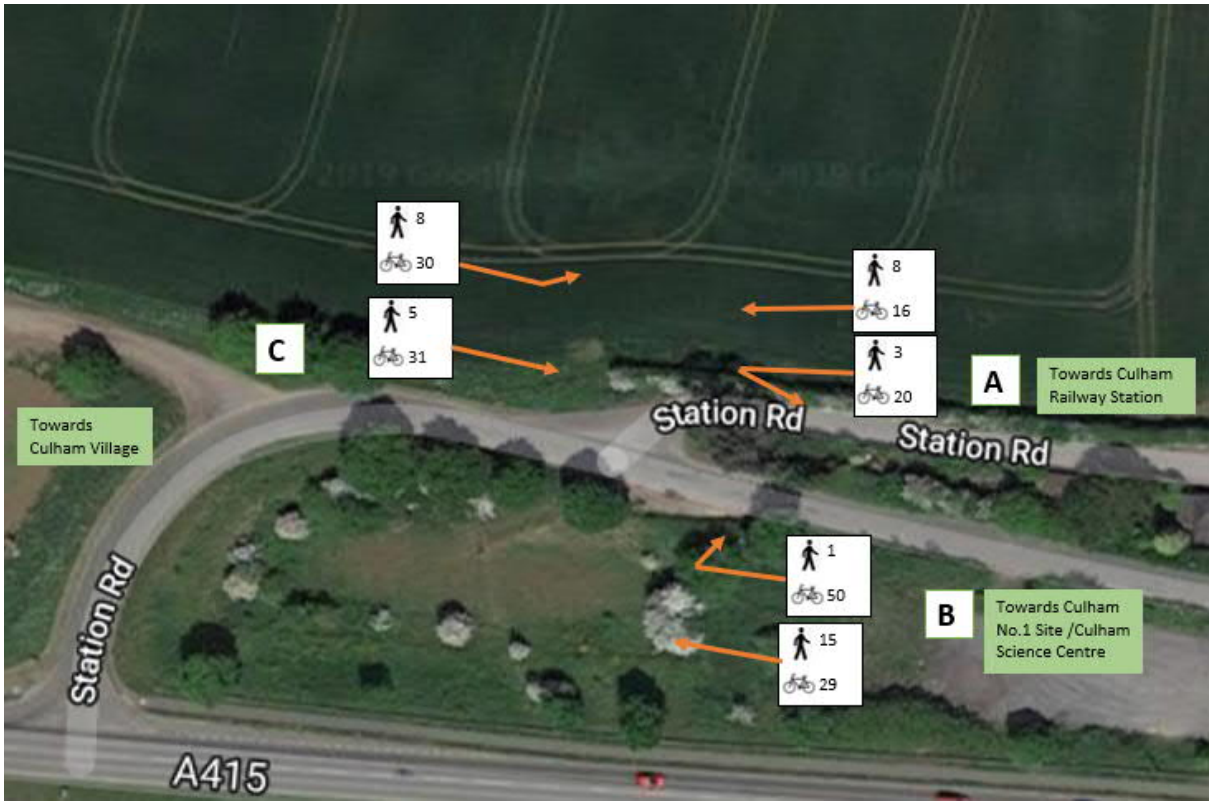
Map data © Google 2021

Figure 3.10: A4130 / Purchas Road / Hawksworth (PRoW 189/27/10) - Total NMUs observed (7-day survey period)



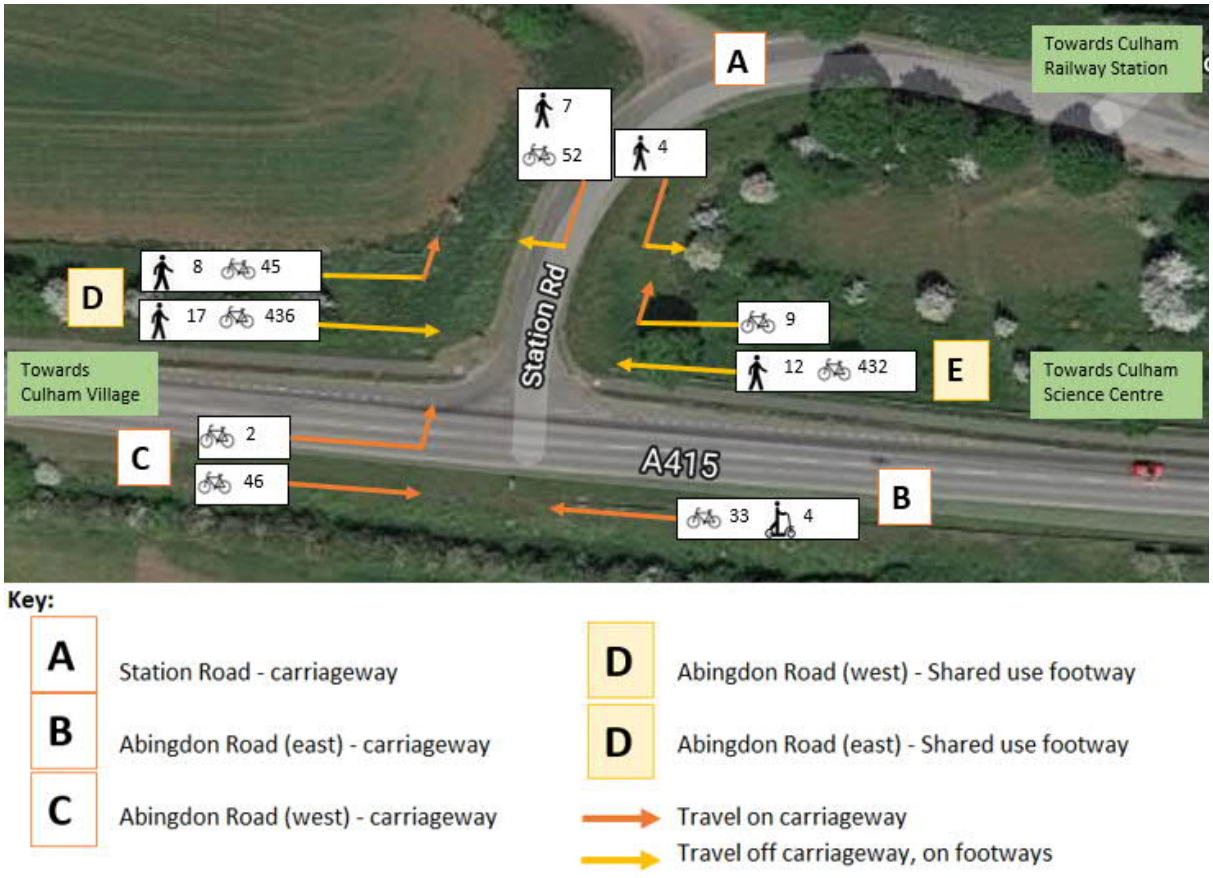
Map data © Google 2021

Figure 3.11: Culham Railway Station Entrance - Total NMUs observed (7-day survey period)



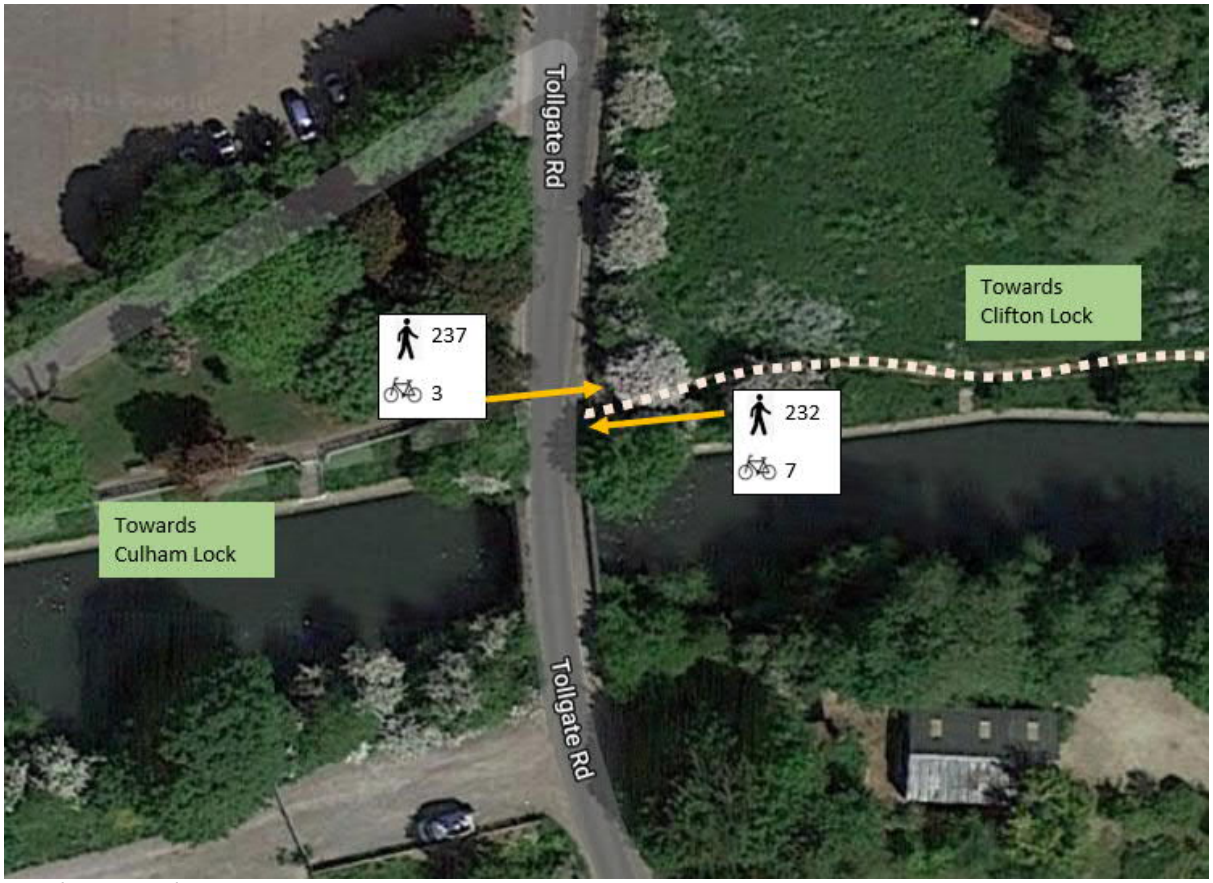
Map data © Google 2021

Figure 3.12: Station Road / Abingdon Road Junction - Total NMUs observed (7-day survey period)



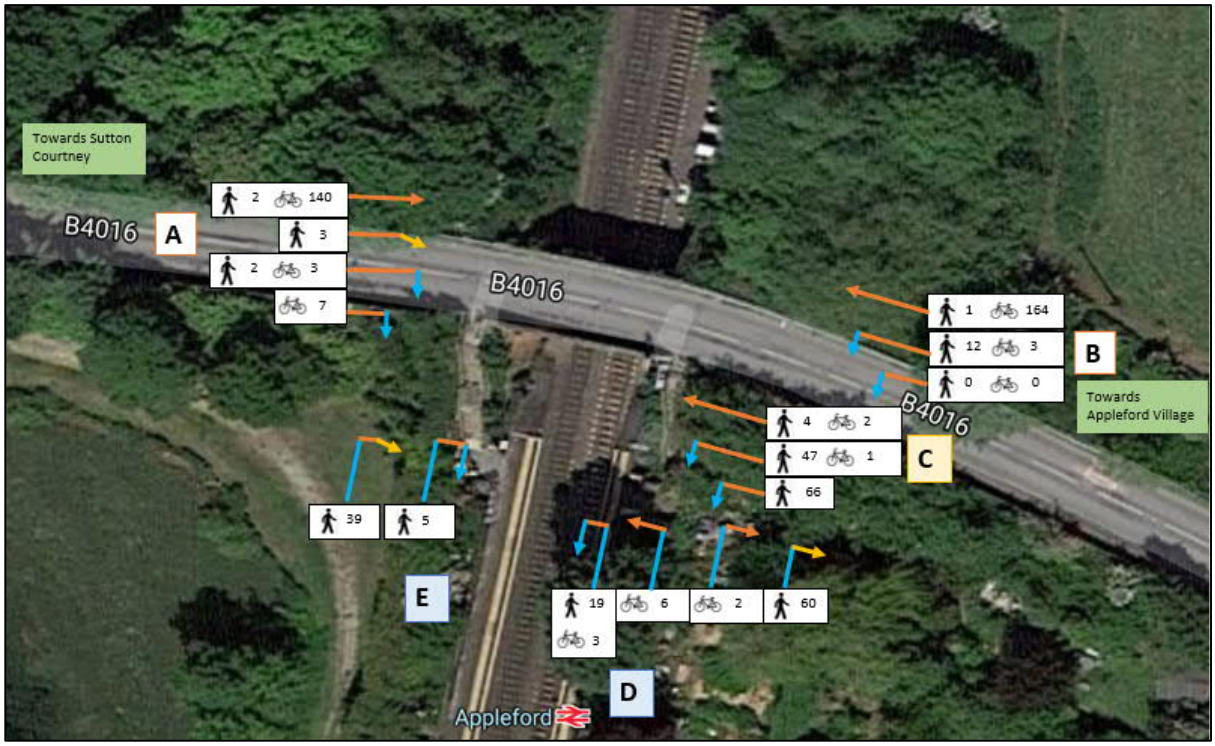
Map data © Google 2021

Figure 3.13: Thames Path at Tollgate Road, Culham (PRoW 183/11/80) - Total NMUs observed (7-day survey period)



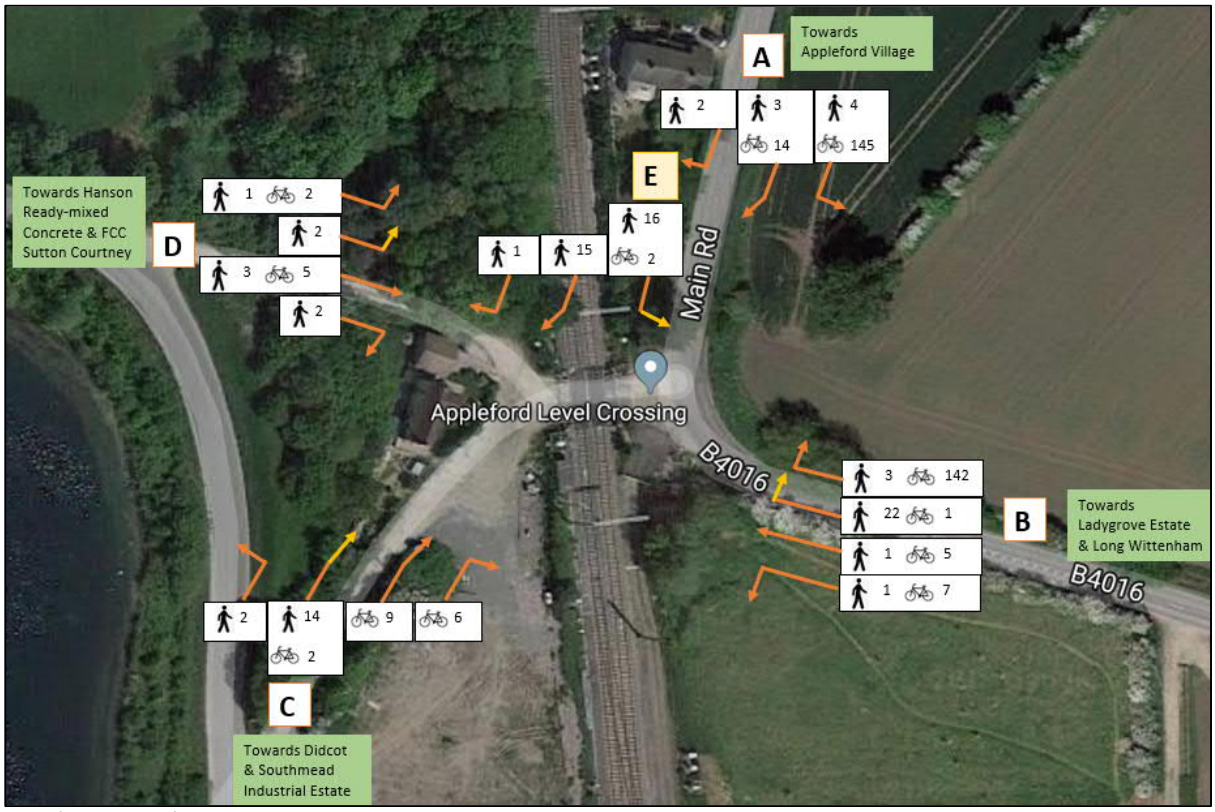
Map data © Google 2021

Figure 3.14: Appleford Railway Station - Total NMUs observed (7-day survey period)



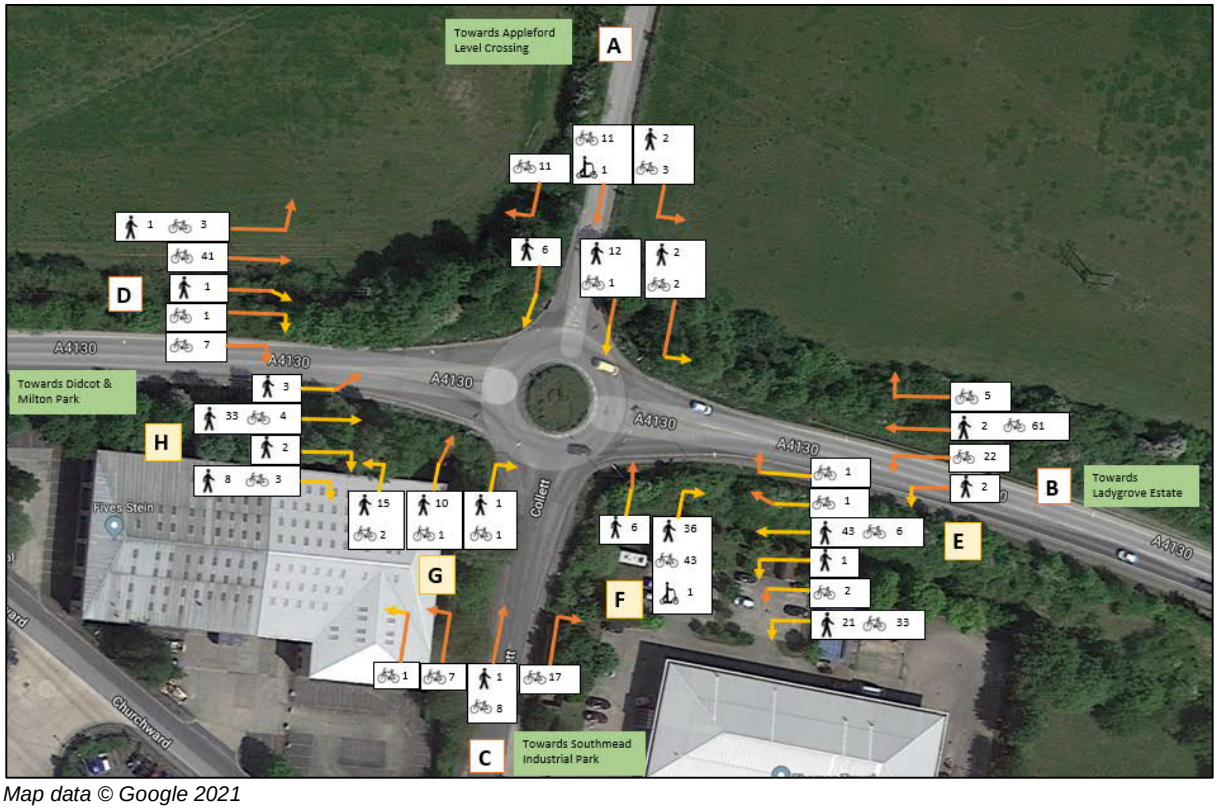
Map data © Google 2021

Figure 3.15: Appleford Level Crossing (PRoW 106/4/10) - Total NMUs observed (7-day survey period)



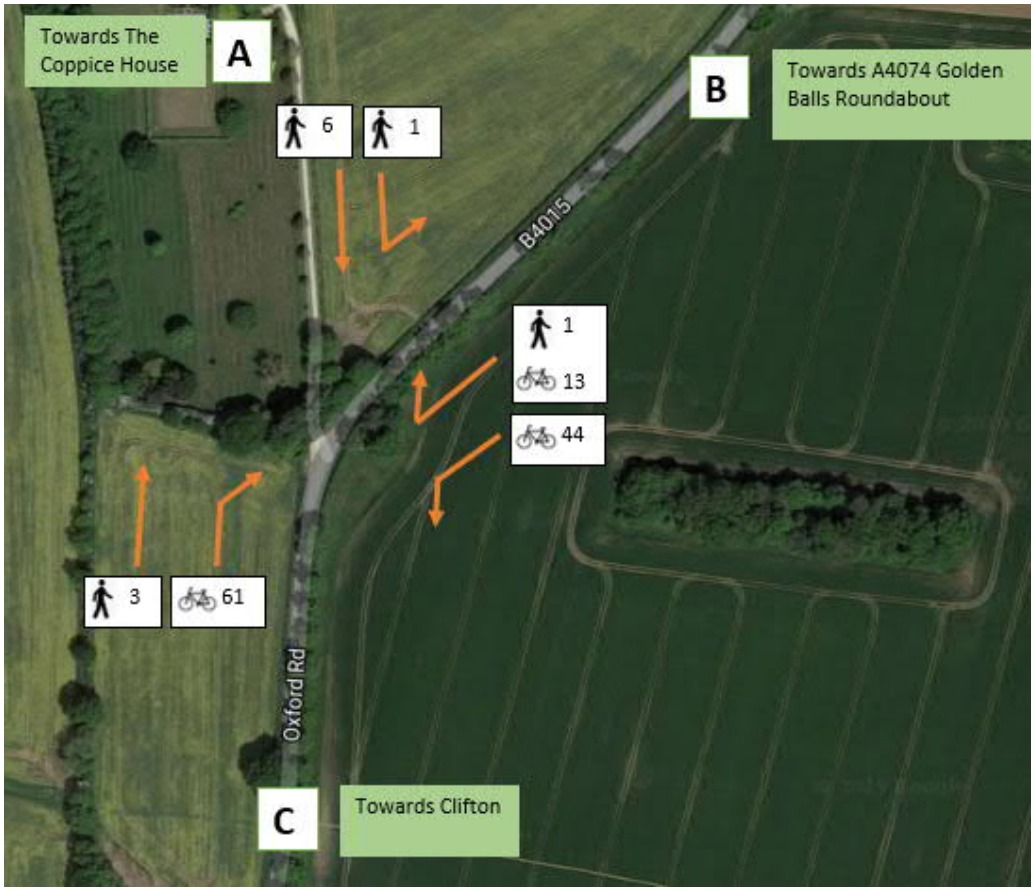
Map data © Google 2021

Figure 3.16: A4130 and Collett Road Junction - Total NMUs observed (7-day survey period)



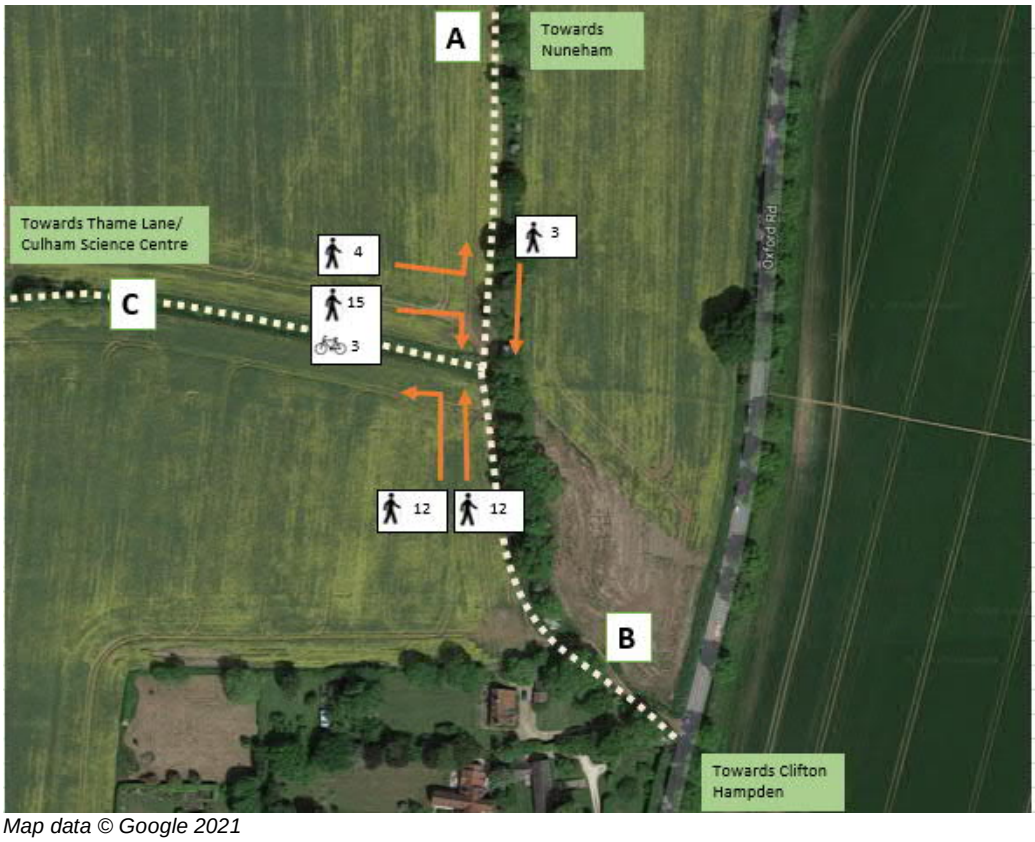
Map data © Google 2021

Figure 3.17: Junction of B4015 - Total NMUs observed (7-day survey period)



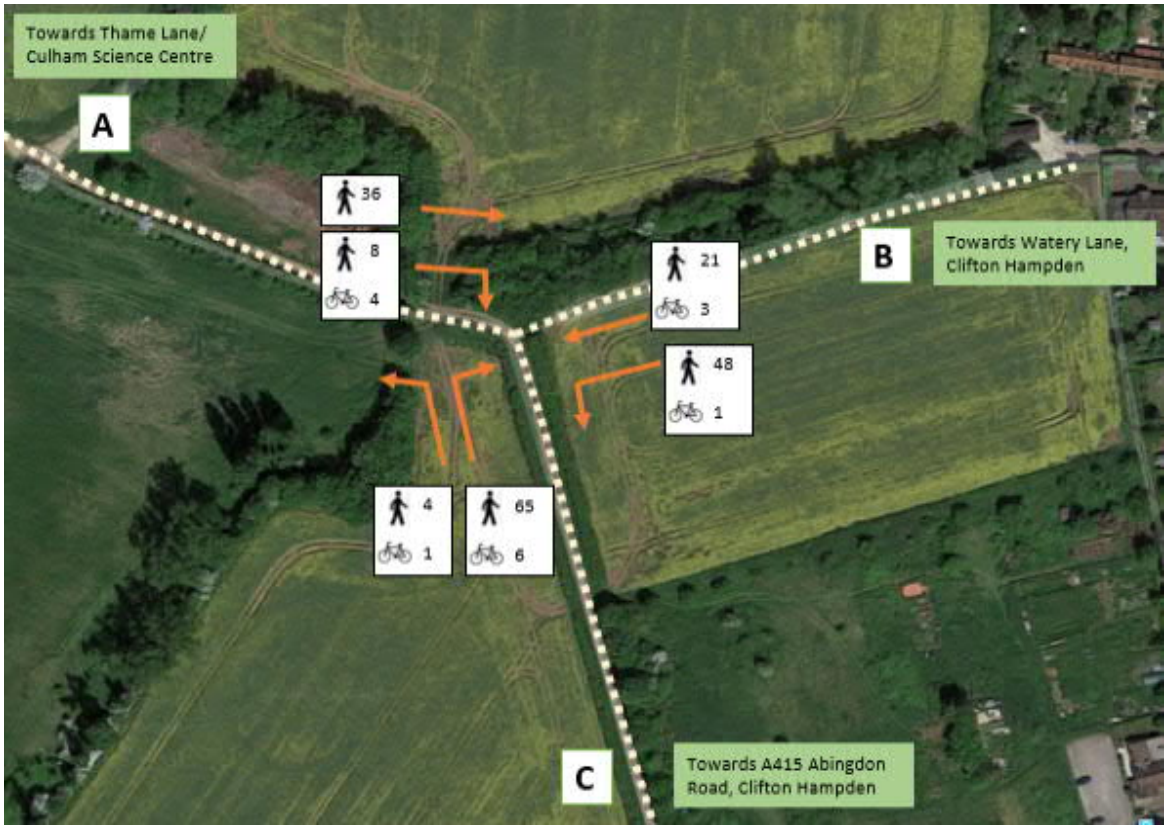
Map data © Google 2021

Figure 3.18: Footpath North of Clifton Hampden (PRoW 171/4/10) - Total NMUs observed (7-day survey period)



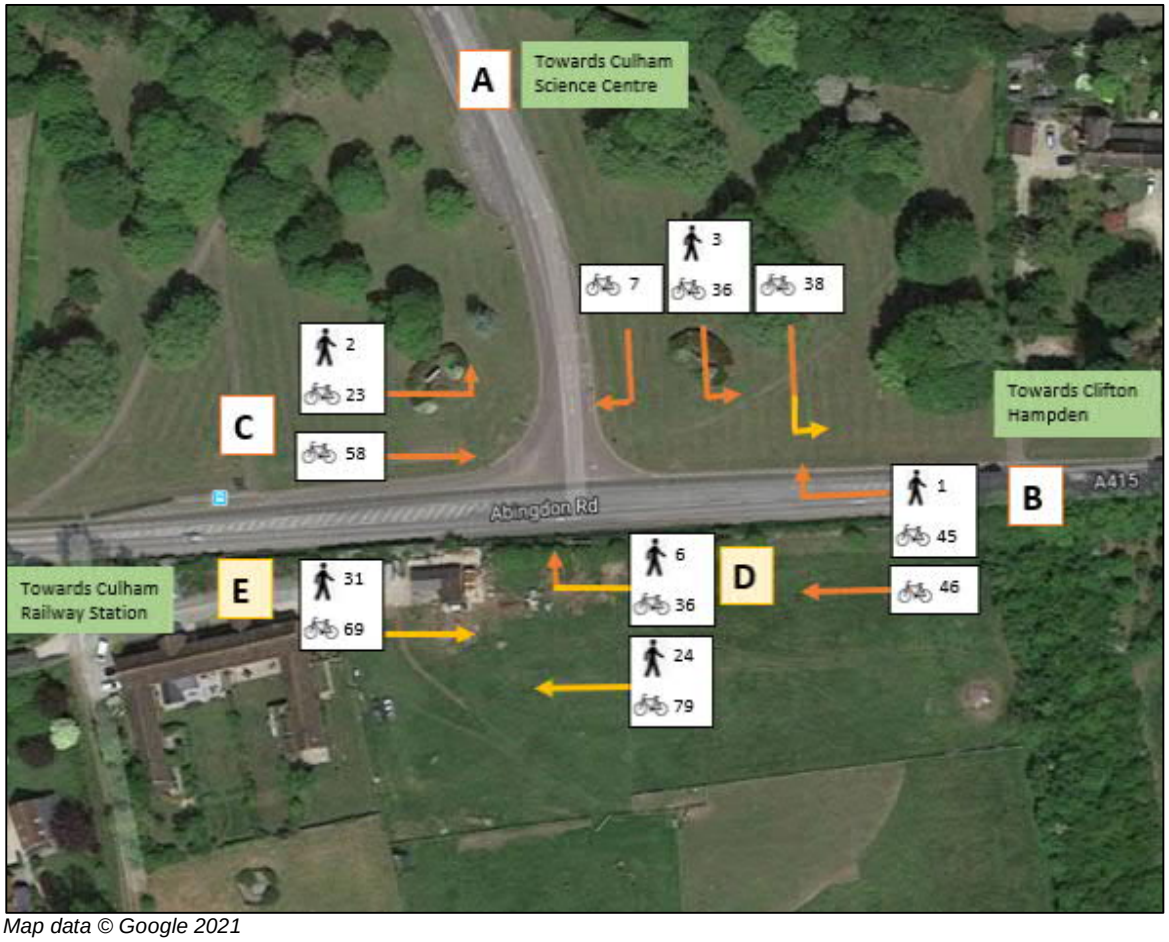
Map data © Google 2021

Figure 3.19: Footpath, junction on A415 (PRoW 171/2/10) - Total NMUs observed (7-day survey period)



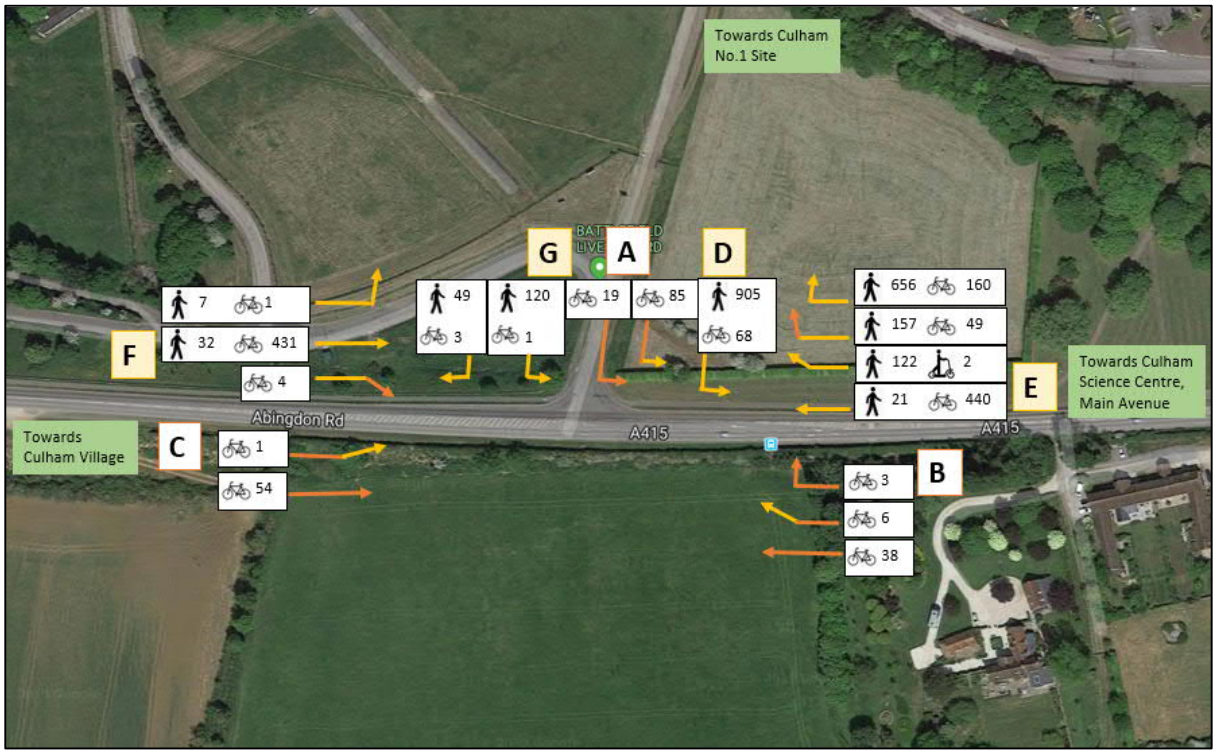
Map data © Google 2021

Figure 3.20: Culham Science Centre / A415 Junction - Total NMUs observed (7-day survey period)



Map data © Google 2021

Figure 3.21: Station Road / A415 Junction - Total NMUs observed (7-day survey period)



Map data © Google 2021

3.2.25 General observations regarding walking and cycling movements in the WCHAR Report found:

- NMU flows were generally higher during 0800-0900 and 1630-1730 along the A415 Abingdon Road suggesting that this is used as a commuter route.
- Pedestrians using public rights of way were mainly recorded during the weekend.

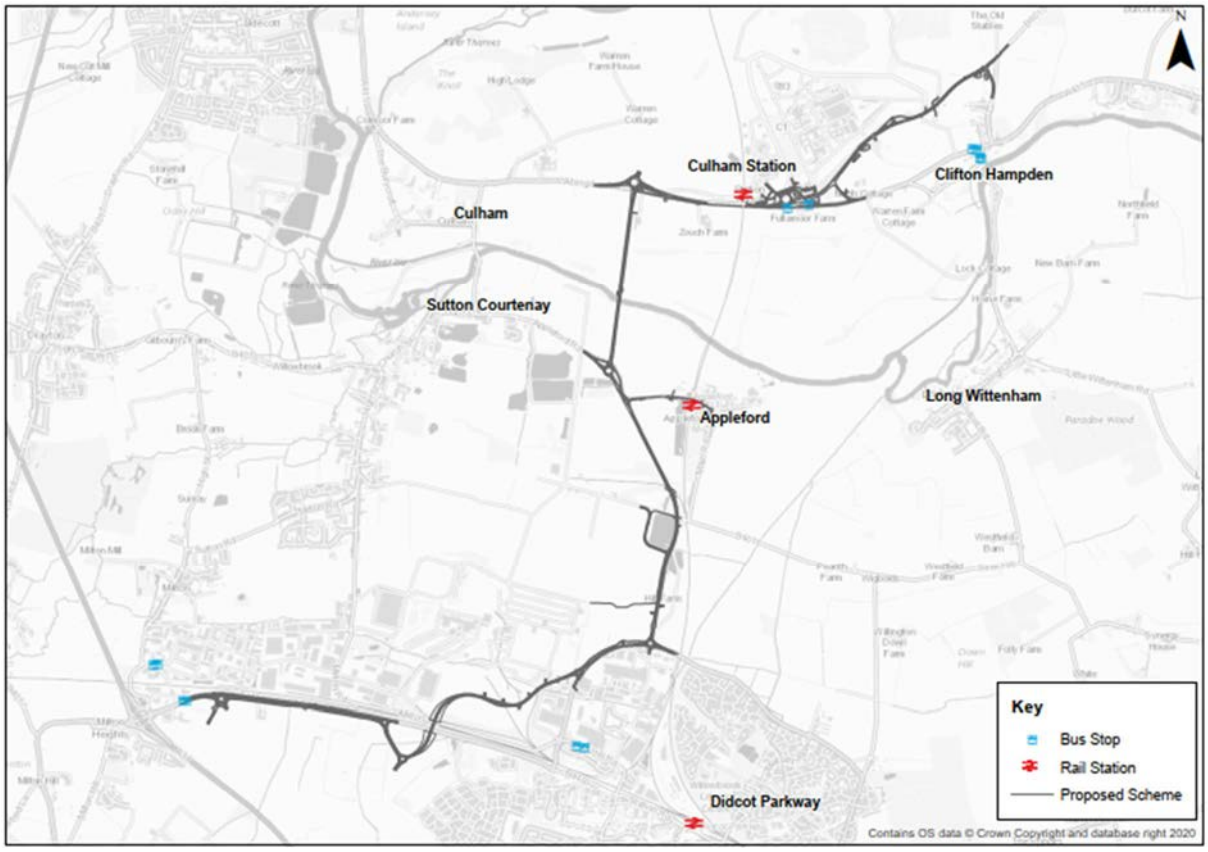
3.3 Public Transport Accessibility

Bus

3.3.1 There are 10 existing bus stops (five pairs) located along the length of the Proposed Scheme or within close proximity. There are two bus stops on the A4130 between Milton Gate and Backhill Tunnel with shelters. In Milton Park along Park Drive there is a pair of bus stops, both with bus shelters. There is a pair of bus stops on Basil Hill Road, both with bus shelters and live bus information is available at the westbound bus stop. There are two bus stops on the A415 Abingdon Road opposite the Culham Science Centre, both with bus shelters. There are two bus stops on the A415 Abingdon Road opposite Clifton Hampden Village Hall, a bus shelter is provided at the westbound bus stop only.

3.3.2 The bus stops are shown in Figure 3.22 below.

Figure 3.22: Public Transport Facilities



3.3.3 Table 3.2 identifies the bus routes that serve the bus stops along or near the Proposed Scheme.

Table 3.2: Local Bus Stops and Bus Routes

Bus Stop Name	Direction	Bus Routes
Milton Park, Sutton Courtenay Road Milton Park, Stop 14	Eastbound	33, 99C, X2, X32, X36
	Westbound	33, 99A, X2, X32, X36
Milton Gate	Eastbound	99A
	Westbound	99C
Foxhall Manor Park	Eastbound	33, 99C, X2, X32, X36
	Westbound	33, 99A, X2, X32, X36
Science Centre Entrance	Eastbound	45, 95
	Westbound	45, 95
Clifton Hampden Village Hall	Eastbound	45, 95
	Westbound	45, 95

3.3.4 Table 3.3 identifies the route and frequency of these services.

Table 3.3: Frequency of Local Bus Routes (Single Direction)

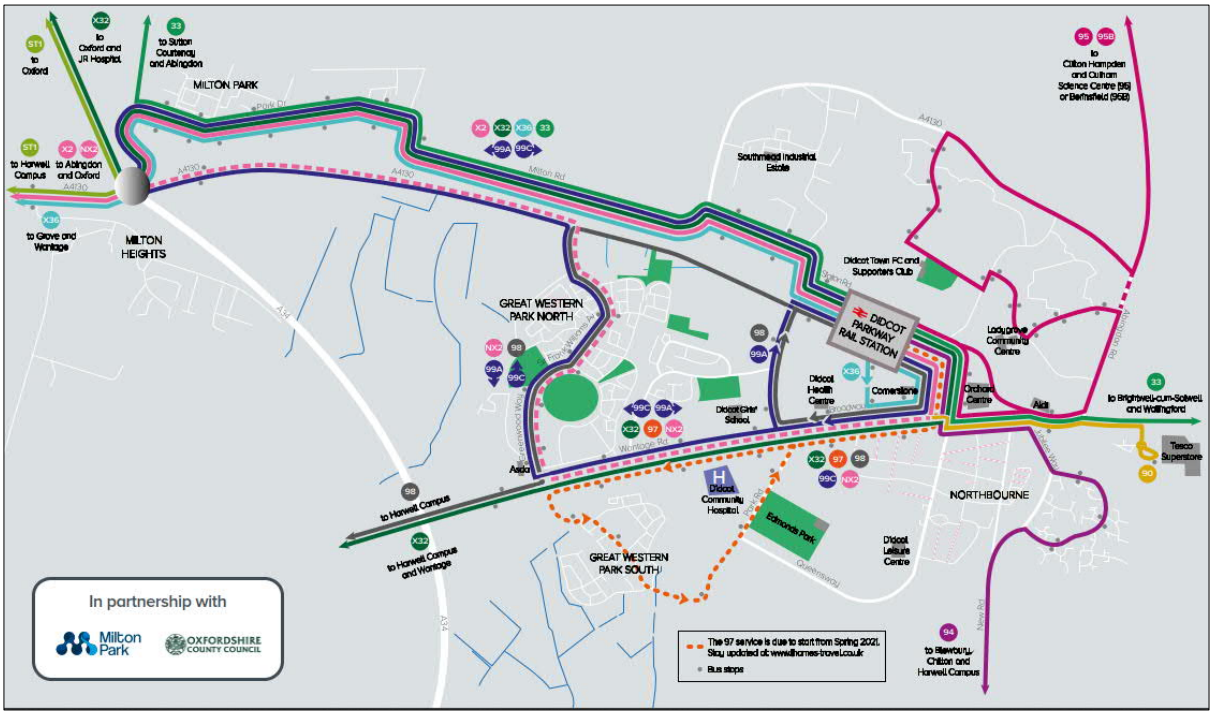
Service	Route	AM Peak 0800-0900	Off-Peak[1]	PM Peak 1700-1800
33	Abingdon – Sutton Courtenay – Milton Park – Didcot – Wallingford	1	1	2
99A	Didcot – Milton Park – Great Western Park – Didcot	0	1	2

[1] Average number of buses per hour taken between 0900-1700

Service	Route	AM Peak 0800-0900	Off-Peak[1]	PM Peak 1700-1800
99C	Didcot – Great Western Park – Milton Park – Didcot	2	1	0
X2	Oxford – Abingdon – Steventon – Milton Park – Didcot	3	3	3
X32	Oxford – Milton Park – Didcot – Harwell – Wantage	2	2	2
X36	Wantage – Grove – Steventon – Milton Park – Didcot	1	2	2
45	Abingdon – Culham Science Centre – Berinsfield – Cowley	2	0.5	2
95/ 95B	Didcot – Culham Science Centre	1	0	1

3.3.5 Bus routes in Didcot are shown in Figure 3.23 (extract from Thames Travel website; https://www.thames-travel.co.uk/maps-guides/).

Figure 3.23: Bus Routes in Didcot



3.3.6 From January 2021 the 33, X2 and X32 bus services have been running on enhanced timetables. The X32 service operates every 30 minutes between Oxford and Wantage via Didcot. The 33 service operates every 30 minutes between Wallingford and Didcot Parkway with one bus per hour continuing to Abingdon via Sutton Courtenay and Culham. The X2 service operates every 20 minutes between Oxford, Abingdon and Didcot.

3.3.7 Due to the severance created by the River Thames and the historic road network with limited crossings, there are poor opportunities for bus routes to offer good journey time reliability north / south in this area due to existing congestion, particularly during the AM and PM peaks. Prior to January 2021, the only service operating over Clifton Hampden Bridge was a less-than-daily service providing access to Didcot from local villages. Route 95 is a new service which commenced in January 2021 to provide a peak hour service from Didcot to Culham Science Centre - two morning journeys and three evening journeys. There is no off-peak service. The service is funded using S106 contributions from Culham Science Centre. Between peak times, three journeys in each direction operate a similar route from Didcot to Clifton Hampden, where they then go to Berinsfield (instead of Culham Science Centre). These journeys are numbered 95B and are operated with the bus that operates route 95, which would otherwise be unused.

3.3.8 The 33 is the only bus service that uses the Culham Cut and Sutton Bridge crossing of the River Thames. It operates a broadly hourly service running between Didcot and Abingdon via Sutton Courtenay and Culham village.

Rail

3.3.9 The nearest rail stations are Didcot Parkway, Appleford and Culham Stations. The Proposed Scheme passes within 1.8km of Didcot Parkway. The station serves the Great Western Mainline and Cherwell Valley Line, providing services to London Paddington, Oxford, Ealing Broadway, Bristol Temple Meads, Banbury and Cheltenham Spa. This station has an average of ten services per hour.

3.3.10 Appleford Station is located along the B4016 to the east of the Proposed Scheme and serves the Cherwell Valley Line, providing services to Banbury, Didcot and Oxford and has an average of one-two services per hour in the peaks, and fewer off-peak.

3.3.11 Culham Station is located in between Culham and Clifton Hampden and is served by Great Western Railway. Culham Station serves the Cherwell Valley Line, providing services to Banbury, Morton-in-Marsh, Oxford and Reading and has an average of one or two services per hour in the peaks, and fewer off-peak.

3.4 Highway Network

3.4.1 Within the extent of the Scheme, the A4130 is a dual carriageway between the Milton Interchange Roundabout and the Milton Gate junction, this is subject to 40mph speed limit.

3.4.2 The A4130 between the A4130/ B4493/ Mendip Heights roundabout and to the east of the Backhill Tunnel is subject to the national speed limit.

3.4.3 The B4493 is a 40mph single carriageway road which runs between the A4130 and Station Road. There is a 2m wide shared footway and cycleway on the south side of the carriageway with street lighting present.

3.4.4 Mendip Heights is a 30mph single carriageway road which serves a residential area. A 2m wide shared footway and cycleway are present on the eastern side of the carriageway with street lighting.

3.4.5 The A4130 between the A4130/ B4493/ Mendip Heights roundabout and A4130/ Milton Road/ Basil Hill Road roundabout is a 50mph single carriageway road with a narrow circa. 1m footway present on the eastern side of the carriageway. Street lighting is present along the A4130.

3.4.6 Milton Road is a 40mph single carriageway road with a 2.5m wide shared footway and cycleway along the southern side of the carriageway. Street lighting is present.

3.4.7 Basil Hill Road is a 30mph single carriageway road with 2.2m shared footway and cycleway on the northern side of the carriageway near the A4130/ Milton Road/ Basil Hill Road roundabout which leads into a 0.8m wide on-street cycle lane. A 0.8m cycle lane is also present on the southern side of the carriageway with street lighting provided.

3.4.8 The A4130 between the A4130/ Milton Road/ Basil Hill Road roundabout and the A4130/ Purchas Road/ Hawksworth junction is a 50mph single carriageway road. There is a 2.2m footway present on both sides of the carriageway with street lighting provided.

3.4.9 Hawksworth is a 30mph road which serves an industrial estate. Footways 1.5m wide are present on both sides of the carriageway with street lighting.

3.4.10 The A4130 between the A4130/ Purchas Road/ Hawksworth junction and the A4130/ Collett Roundabout is a 50mph single carriageway road. A narrow 1m footway is present on the eastern side of the carriageway with street lighting provided.

3.4.11 The B4016 within the extent of the Scheme is a single carriageway road with a national speed limit restriction that runs in an east-west direction between Appleford and Sutton Courtenay.

3.4.12 The A415 Abingdon Road is a single carriageway road which runs between Abingdon and Burcot. This road is subject to a 30mph speed limit through Clifton Hampden and a 40mph speed limit through Burcot. There is a 2m shared footway/ cycleway along the northern side of the carriageway between Thame Lane and Culham Science Centre. A 2m wide shared footway/cycleway is present on the south side of the A415 Abingdon Road from Culham Science Centre to Clifton Hampden. Street lighting is present at the Culham Science Centre.

3.4.13 The key existing junctions within the Scheme extents are:

- A34/ A4130 grade separated Milton interchange includes a five-arm signalised hamburger roundabout with a three-lane circulatory flaring to four lanes between the A34 north approach and A34 south exit arms. The A34 north approach widens to four lanes with a dedicated lane for Milton Park. There is a cut-through from the A4130 east arm providing access to the A34 northbound. The A34 approach arm flares to three lanes at the approach including a slip road leading to the A34 southbound arm. Park Drive provides access to Milton Park flaring to four lanes at the approach to Milton Interchange;
- A4130/ Milton Gate is a signalised priority T-junction. Milton Gate is the minor arm at this junction, providing access to several car dealerships and food retail units;
- A4130/ B4493/ Mendip Heights roundabout has a one lane circulatory with all arms having one lane apart from the A4130 west arm that flares to two lanes at the approach;
- A4130/ Milton Road/ Basil Hill Road roundabout has a one lane circulatory with the A4130 south arm widening to two lanes at the approach;
- A4130/ Hawksworth/ Purchas Road roundabout has a one lane circulatory with the A4130 north and south arms widening to two lanes at the approach;
- A4130/ Collett roundabout is a single circulatory roundabout with the A4130 and Collett approach arms widening to two lanes at the approach;
- Culham Station access junction is a priority T-junction with single lanes at each arm;
- The eastern access to the Culham Station is a priority junction with a right turn ghost island;
- Culham Science Centre priority T-junction with right turn ghost island. The Culham Science Centre access widens to two lanes at the approach with a dedicated right turn lane;
- A415/ High Street (Clifton Hampden) and A415/ B4015 Oxford Road is a staggered signalised junction. The A415 west arm widens to two lanes at the junction to provide a narrow dedicated right turn lane. The southern arm from long Wittenham travels over the historic narrow bridge which operates under signalised shuttle-working. The northern and eastern arms have single lane approaches, providing access to north Clifton Hampden/A4074 and the Burcot/Berinsfield/A4074 respectively; and
- The existing river crossing at Culham Village (Sutton Bridge and Culham Cut) is a historic narrow bridge crossing which operates under signalised shuttle-working. At the northern end is the A415/ Tollgate Road signalised junction and at the southern end B4016 Appleford Road/ Abingdon Road priority T-junction.

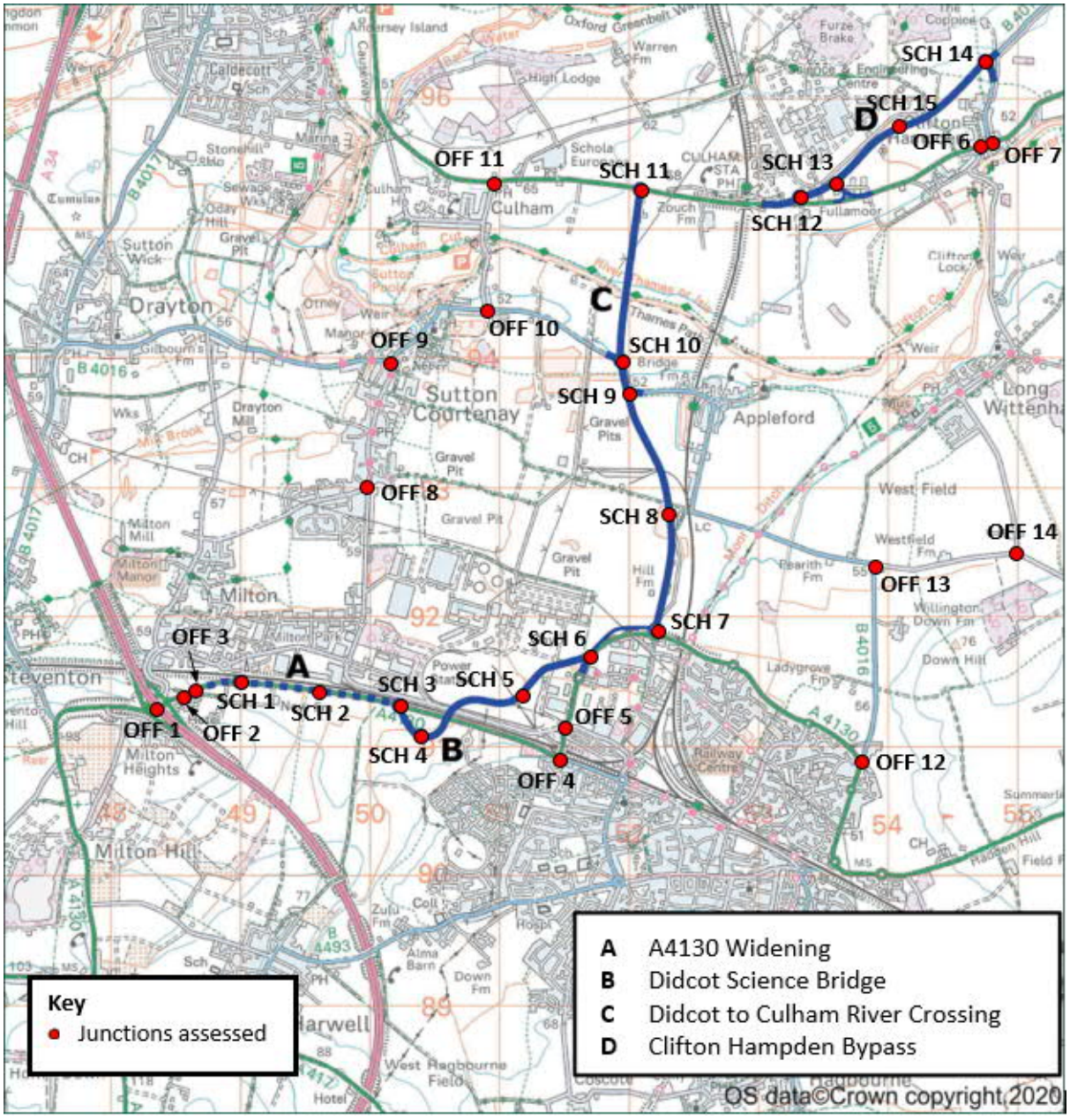
3.5 Junction Capacity Assessments

3.5.1 Capacity assessments of the junctions within the study area have been undertaken for the 2020 base year, using the following industry standard assessment tools:

- Junctions 9 for priority junctions and roundabouts; and
- LinSig for signalised junctions.

3.5.2 Figure 3.24 illustrates which junctions have been assessed below. The 2020 base year assessments are for the off-site junctions only (prefix ‘OFF’). New or amended junctions that form part of the Scheme have the prefix ‘SCH’.

Figure 3.24: Junction Locations



3.5.3 The following section provides a summary of the junction capacity modelling results, based on the modelled 2020 traffic flows, and provides a commentary on the junction operation.

3.5.4 Traffic data for the junction assessments has been obtained from the Didcot Paramics microsimulation model. This model was jointly funded by OCC, VoWHDC and SODC. The model is maintained and run on behalf of OCC by Systra. OCC/Systra provided the AM and PM peak hour junction turning movements for each of the scenarios considered. The 2020 modelled flows were calculated by adding housing and employment completions from 2017 to 2020, as advised by the Local Planning Authorities, to the Paramics 2017 base model. See 'Figure 5.2 Modelling Approach Methodology Diagram' for more information on the modelling methodology.

3.5.5 The performance of the priority junctions and roundabouts has been assessed by considering the ratio to flow capacity (RFC) for each of the approach arms. An RFC value of 0.85 or below indicates that the arm is operating within design capacity. An RFC value of 0.85 to 1.00 indicates that the approach is operating above design capacity but within theoretical capacity, while an RFC value of 1.00 or more indicates that the arm is operating above theoretical capacity and significant queuing and delays may occur.

3.5.6 Traffic flows have been entered into the models as 'one hour/ODTAB' profile which is a synthesised profile created from the peak hour Paramics turning movements. This profile includes 15 minutes

'warm up' and 'cool down' periods either side of the one hour traffic flows. This is to ensure that the model is sufficiently saturated at the beginning of the modelled hour and actual conditions on the network are simulated effectively. This also provides a level of robustness against a flat demand profile that can be used for congested junctions.

3.5.7 The performance of the signalised junctions has been assessed by considering the Degree of Saturation (DoS) for each of the approach arms. A DoS value of 90% or below indicates that the arm is operating within design capacity. A DoS value of 90% to 100% indicates that the approach is operating above design capacity but within theoretical capacity, while a DoS value of 100% or more indicates that the arm is operating above theoretical capacity where significant queuing and delays may occur. The results for the LinSig models also present the Mean Max Queue (MMQ) in PCUs. The Practical Reserve Capacity (PRC) of the signalised junctions is also presented in the modelling results tables along with the cycle time for the AM and PM peak hours.

3.5.8 For the signalised junctions, information was obtained from the local highway authority, OCC, regarding the existing signal timings including phasing, staging and intergreens. Junction operation has been optimised in LinSig, and cycle times have been set such that maximum green times for each phase as identified in the controller specification for the relevant time period are not exceeded. The input parameters for the junctions (cycle time, phase maximum, intergreens, etc) have been replicated for the 2024 and 2034 modelling without and with the Scheme, in order to provide a like-for-like comparison.

3.5.9 The DoS reported for signalised junctions is the equivalent to RFC reported for priority junctions and roundabouts for presenting the junction modelling results.

3.5.10 Geometric parameters for off-site junctions have been obtained from OS mapping.

3.5.11 A summary of the 2020 base junction capacity assessment results is set out in Table 3.4, with more detailed results provided in the following paragraphs. Milton interchange is currently subject to some congestion during the peaks, and due to the complexity of this junction the impact of the Scheme is considered separately (Section 6.9).

Table 3.4: 2020 Base Junction Capacity Assessment Summary (Maximum RFC/PRC)

No.	Junction	Type	AM	PM
OFF 1	A34 / A4130 Milton interchange	Grade separated interchange	Refer to Section 6.9 for Milton interchange	
OFF 2	A4130 / Service Area	Priority junction	0.60	0.55
OFF 3	A4130 / Milton Gate	Signalised junction	+7.4%	-2.0%
OFF 4	A4130 / B4493 / Mendip Heights	Roundabout	0.62	0.73
OFF 5	A4130 / Basil Hill Road / Milton Road (Power Station)	Roundabout	0.79	1.16
OFF 6	A415 / High Street (Clifton Hampden)	Signalised junction	-241%	-273%
OFF 7	A415 / B4015 Oxford Road (Clifton Hampden)	Signalised junction		
OFF 8	Harwell Road / Milton Road / High Street	Mini roundabout	0.39	0.54
OFF 9	High Street / Church Street / Brook Street Junction	Priority junction	0.58	1.19
OFF 10	B4016 Appleford Road / Abingdon Road	Priority junction	-22.3%	-14.1%
OFF 11	A415 / Tollgate Road	Signalised junction		
OFF 12	A4130 / Lady Grove	Priority junction	0.68	0.97
OFF 13	Lady Grove / Sires Hill	Priority junction	0.95	0.48
OFF 14	Sires Hill / Didcot Road	Priority junction	0.26	0.29

A4130 / Service Area Junction (OFF 2)

3.5.12 Table 3.5 identifies the existing operation of A4130 / Service Area priority junction for the AM peak hour (0800-0900) and PM peak hour (1700-1800). The Junctions 9 (PICADY) model outputs are provided in Appendix B.

Table 3.5: Operation of A4130 / Service Area Junction (OFF 2)

Movement	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
Service Area to A4130	0.60	2	0.55	1
A4130	0.31	0	0.38	1

3.5.13 The results above indicate that the junction operates with RFCs within the satisfactory level of performance in both the AM and PM peaks.

A4130 / Milton Gate Signalised Junction (OFF 3)

3.5.14 Table 3.6 identifies the operation of A4130 / Milton Gate signalised junction in 2020. The LinSig model outputs are also provided in Appendix B.

Table 3.6: Operation of A4130 / Milton Gate Junction (OFF 3)

Approach and Movement	AM		PM	
	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)
A4130 West - Left Ahead	59.2%	8.0	40.6%	5.4
A4130 West - Ahead	59.2%	8.7	42.8%	6.1
Milton Gate - Right Left	25.0%	1.3	30.3%	1.5
A4130 East - Ahead	44.3%	5.4	22.9%	4.4
A4130 East - Ahead Right	88.3%	15.2	91.8%	18.3
Cycle Time	66 seconds		66 seconds	
PRC	7.4%		-2.0%	

3.5.15 The results above indicate that the junction operates within capacity in the AM peak hour with a PRC of 7.4% and a maximum DoS of 88% on the A4130 East ahead and right movement. The junction operates within theoretical capacity in the PM peak hour with a PRC of -2.0% and a maximum DoS of 92% on the A4130 ahead and east movement.

A4130 / B4493 / Mendip Heights Roundabout (OFF 4)

3.5.16 Table 3.7 identifies the existing operation of the A4130 / B4493 / Mendip Heights Roundabout in 2020. The Junctions 9 (ARCADY) model outputs are provided in Appendix B.

Table 3.7: Operation of A4130 / B4493 / Mendip Heights Roundabout (OFF 4)

Arm	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
A4130 (North)	0.49	1	0.66	2
B4493	0.54	1	0.73	3
Mendip Heights	0.08	0	0.10	0
A4130 (West)	0.62	2	0.43	3

3.5.17 The results indicate that the junction operates within capacity with an RFC of less than 0.85 in both peaks.

A4130 / Basil Hill Road / Milton Road (Power Station) Roundabout (OFF 5)

3.5.18 Table 3.8 identifies the existing operation of the A4130 / Basil Hill Road / Milton Road Roundabout. The Junctions 9 (ARCADY) model outputs are provided in Appendix B.

Table 3.8: Operation of A4130 / Basil Hill Road / Milton Road (Power Station) Roundabout (OFF 5)

Arm	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
A4130 (North)	0.79	4	0.61	2
Basil Hill Road	0.72	3	0.54	1
A4130 (South)	0.59	1	0.29	0
Milton Road	0.56	1	1.16	77
Access Road	0.08	0	0.12	0

3.5.19 The results of the junction assessment indicate that the A4130 (South) operates within capacity in the AM peak, with an RFC of less than 0.85. In the PM peak junction capacity is exceeded, with the RFC on the Milton Road approach at 1.16 and a queue of 77 vehicles. This results from the difficulty in turning out from Milton Road due to the high flows in the PM peak, which makes the model very sensitive to the levels of flow for this arm and the reported queue lengths become less reliable.

Clifton Hampden Signalised Junction (OFF 6 & OFF 7)

3.5.20 Table 3.9 identifies the operation of A415 / High Street / B4015 Oxford Road staggered signalised junction in 2020. The LinSig model outputs are provided in Appendix B.

Table 3.9: Operation of Clifton Hampden Signalised Junction (OFF 6 & OFF 7)

Approach & Movement	AM		PM	
	DoS (%)	Queue (PCUs)	DoS (%)	Queue (PCUs)
A415 Abingdon - Ahead Right Left	194.0%	149	175.7%	185
Internal Junction link Eastbound - East Ahead Left	62.6%	2	54.3%	2
A415 Burcot - Ahead Right	307.1%	173	335.8%	194
Internal Junction link Westbound - West Ahead Left Right	57.1%	6	51.8%	7
High Street - Right Left Ahead	151.4%	106	159.7%	62
Watery Lane Plough Inn - Left Right Ahead	0.0%	0	0.0%	0
B4015 Oxford Road - Left Right	107.6%	19	138.2%	62
Cycle Time	90 seconds		90 seconds	
PRC	-241.2%		-273.1%	

3.5.21 The results above indicate the junction operates above capacity in both the AM and PM peak hours, with PRCs of -241% and 273% respectively and significant queues reported on the A415 and High Street. The maximum DoS reported is 335.8% on the A415 Dorchester East approach in the PM peak hour.

Harwell Road / Milton Road / High Street Mini Roundabout (OFF 8)

3.5.22 Table 3.10 identifies the existing operation of the Harwell Road / Milton Road / High Street Roundabout in 2020. The Junctions 9 (ARCADY) model outputs are provided in Appendix B.

Table 3.10: Operation of Harwell Road / Milton Road / High Street Mini Roundabout (OFF 8)

Arm	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
High Street	0.39	1	0.26	0
Harwell Road	0.21	0	0.54	1
Milton Road	0.27	0	0.17	0

3.5.23 The results of the assessment indicate that the junction operates within capacity with a maximum RFC below 0.85 in both peaks.

High Street / Church Street / Brook Street Junction (OFF 9)

3.5.24 Table 3.11 identifies the operation of High Street / Church Street / Brook Street priority junction in 2020. The junction is formed out of three small priority junctions forming a triangle, and each junction has been assessed separately. The Junctions 9 (PICADY) model outputs are provided in Appendix B.

Table 3.11: Operation of High Street / Church Street / Brook Street Junction (OFF 9)

Movement	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
High Street to High Street				
High Street (North) to High Street	0.41	1	0.36	1
High Street (South) to High Street (North)	0.44	1	0.89	7
High Street to Church Street				
High Street to Brook Street/Church Street	0.58	1	1.19	47
Brook Street to High Street	0	0	0	0
High Street to Brook Street				
High Street to Brook Street/Church Street	0.11	0	0.16	0
Church Street to High Street	0.23	1	0.07	0

3.5.25 The results above indicate that the junction operates within capacity with a maximum RFC of less than 0.85 in the AM peak hour. In the PM peak, the junction operates above absolute capacity with a maximum RFC of 1.19 and right turn queue of 47 vehicles. This is a result of the difficulty in turning out of the junction due to the high flows on Brook Street / Church Street and makes the model very sensitive to the levels of flow for this movement. The reported queue lengths therefore become less reliable.

Tollgate Road / Abingdon Road Junctions (OFF 10 and OFF 11)

3.5.26 The operation of the B4016 Appleford Road/Abingdon Road junction (OFF 10) and A415 / Tollgate Road junction (OFF 11) have been assessed based on a LinSig network provided by OCC that includes both junctions as well as the traffic signals that control single lane running across the Culham Bridges located between the two junctions.

3.5.27 LinSig does not allow for the effect of queuing back from one junction to an adjacent junction and the impact this can have on junction capacity. This is known to occur at the B4016 Appleford Road/Abingdon Road and A415/Tollgate Road junctions. To account for this the model utilises the Underutilised Green Time function within LinSig.

3.5.28 Table 3.12 identifies the operation of the Tollgate Road/Abingdon Road junctions in 2020. The LinSig model outputs are provided in Appendix B.

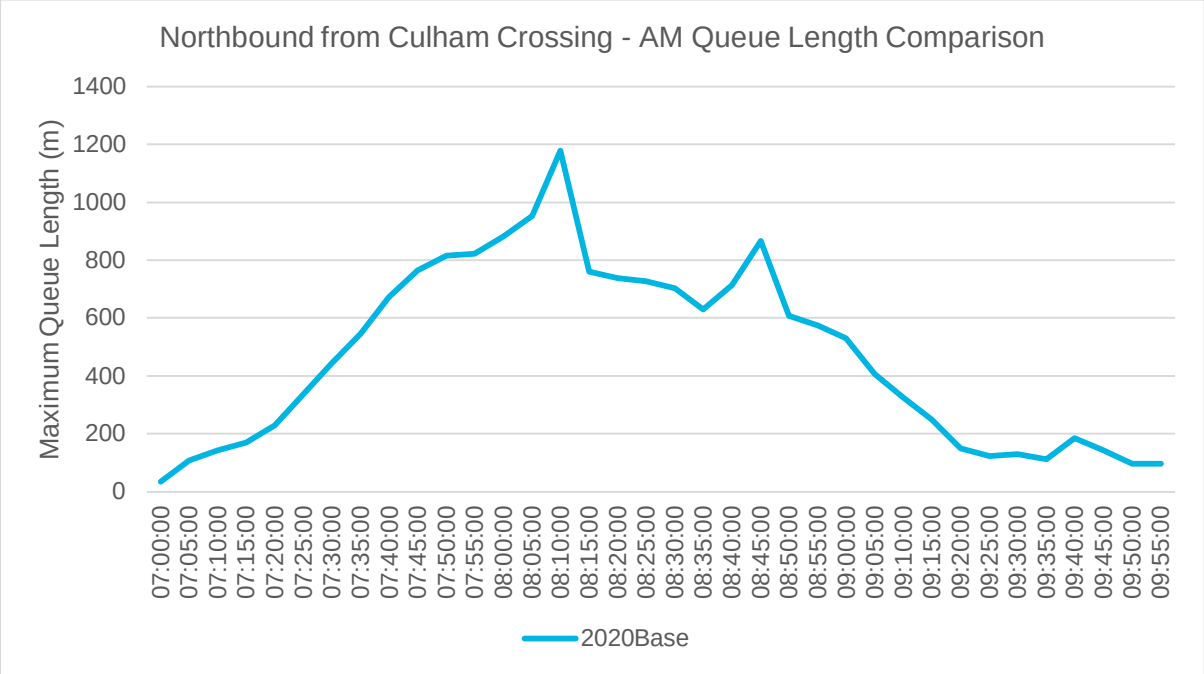
Table 3.12: Operation of Tollgate Road / Abingdon Road Junctions (OFF 10 & OFF 11)

Approach & Movement	AM		PM	
	DoS (%)	Queue (PCUs)	DoS (%)	Queue (PCUs)
A415 / Tollgate Road Junction Signals				
Abingdon Rd (E) - Ahead Left	67%	8	103%	37
Tollgate Road – Right Left	110%	38	99%	16
Abingdon Rd (W) - Ahead Right	100%	28	92%	10
Culham Bridges Signals				
Culham Bridges Northbound - Ahead	110%	51	94%	20
Culham Bridges Southbound – Ahead	49%	11	93%	24
Appleford Road / Abingdon Road Priority Junction				
Appleford Rd (E) – Right Ahead	14%	0	13%	0
Appleford Rd (W) – Left Ahead	30%	0	33%	0
Abingdon Road – Left Right	29%	7	46%	18
Cycle Time	154 / 111 seconds		154 / 111 seconds	
PRC (over all lanes)	-22.3%		-14.1%	

3.5.29 The results above indicate that the network is operating over capacity in both the AM and PM peaks, with PRCs of -22% and -14% respectively. In the AM peak long northbound queues are shown to occur at the Abingdon Road/Tollgate Road junction and at the Culham Bridges. In the PM peak queues are indicated on Abingdon Road (E) arm of the Tollgate Road junction and at the Culham Bridges in both directions.

3.5.30 These junctions are complex to model due to the interaction of queuing back between them, particularly the uncontrolled priority junction at the south. For example, the Culham Bridges Northbound AM predicted queue is 51 PCUs which would queue back to/through Appleford Road / Abingdon Road priority junction, however LinSig does not take account of this as shown by the predicted queue of 0 PCU on the Appleford Road (W) arm. There is a known queue on this arm in the AM peak. To further interrogate this, queue lengths have been extracted from the Paramics model to compare how the junction operates across different model platforms. Paramics takes account of the whole modelled network including interaction between adjacent junctions. In Paramics, a vehicle is determined to be in a queue when the speed drops below 4.47 mph and the distance to the vehicle in front is less than 10 metres.

Figure 3.25: Culham Crossing Queue Length



3.5.31 Figure 3.25 above shows that the Paramics model indicates a queue in the AM peak extending from the northbound signals before the bridge, back for 500m to 1180m across the 0800-0900 AM peak. This is known locally, with queues often extending past the George & Dragon Public House. The queueing in this area is the subject of OCC's objections to applications of single dwellings on grounds of highway safety, convenience and sustainability. These objections have led to Local Planning Authority (LPA) refusals which have been upheld at appeal by the Planning Inspectorate.

A4130 / Lady Grove Junction (OFF 12)

3.5.32 Table 3.13 identifies the existing operation of A4130 / Lady Grove priority junction in 2020. The Junctions 9 (PICADY) model outputs are provided in Appendix B.

Table 3.13: Operation of A4130 / Lady Grove Junction (OFF 12)

Movement	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
A4130 to Lady Grove (North)	0.52	1	0.15	0
A4130 to Lady Grove (South)	0.68	2	0.61	2
Lady Grove (North) to A4130	0.43	1	0.97	19

3.5.33 The results above indicate that the junction operates within capacity in the AM peak. In the PM peak the junction operates within capacity, although the maximum RFC exceeds the desirable maximum of 0.85 on the Lady Grove (North) arm, indicating that the junction is operating at close to its capacity.

Lady Grove / Sires Hill Junction (OFF 13)

3.5.34 Table 3.14 identifies the existing operation of Lady Grove / Sires Hill priority junction for the AM peak hour (0800-0900) and PM peak hour (1700-1800). The Junctions 9 (PICADY) model outputs are provided in Appendix B.

Table 3.14: Operation of Lady Grove / Sires Hill Junction (OFF 13)

Movement	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
Lady Grove to Sires Hill (East)	0.94	4	0.10	0
Lady Grove to Sires Hill (West)	0.95	10	0.47	1
Sires Hill East to Sires Hill (West)	0.17	0	0.48	1

3.5.35 The results above indicate that the junction operates within capacity in both the AM and PM peak hours. However, the maximum RFC exceeds the desirable maximum of 0.85 in the AM peak hour on the Lady Grove arm, indicating that the junction is operating at close to its capacity. The maximum RFC reported is on the Lady Grove to Sires Hill (west) movement with a maximum RFC of 0.95.

Sires Hill / Didcot Road Junction (OFF 14)

3.5.36 Table 3.15 identifies the existing operation of Sires Hill / Didcot Road priority junction in 2020. The Junctions 9 (PICADY) model outputs are provided in Appendix B.

Table 3.15: Operation of Sires Hill / Didcot Road Junction (OFF 14)

Movement	AM		PM	
	Max RFC	Queue (Vehicles)	Max RFC	Queue (Vehicles)
Sires Hill (South) - Sires Hill (West)	0.16	0	0.29	0
Sires Hill (South) - Didcot Road	0.18	0	0.13	0
Sires Hill (West) - Sires Hill (South)	0.26	1	0.20	0

3.5.37 The results above indicate that the junction operates within capacity in both the AM and PM peaks.

3.6 Summary of Existing Road Network Performance

3.6.1 As per the VoWHDC Local Plan Part 1 Inspector's Report (2016), "*the 'starting point' situation for the Vale is as a district which very much suffers from traffic congestion*." A high level of congestion is evident on the A4130, on the existing river crossings between Didcot and Culham/Clifton Hampden and within Clifton Hampden. The local highway infrastructure has failed to keep pace with growth in the area, and the railway lines and the River Thames clearly create barriers to connectivity between homes and jobs. This has led to Oxfordshire County Council (OCC), as local highway authority (LHA), objecting to the applications of single dwellings on grounds of highway safety, convenience and sustainability. These objections have led to Local Planning Authority (LPA) refusals which have been upheld at appeal by the Planning Inspectorate.

3.6.2 Table 3.4 above summarises the network performance, with many of the junctions at or over capacity in one or both peaks. This is particularly evident at the staggered signalised junction in Clifton Hampden (OFF 6 and OFF 7) and the existing river crossing at Culham / Sutton Courtenay (OFF 10 and OFF 11). The additional queue length data from the Paramics model used to support the analysis of the existing river crossing at Culham and Sutton Courtenay shows queues almost 1.2km long in the AM peak through Sutton Courtenay. Later sections of this report present the impact of additional growth on the road network, if unmitigated without the proposed Scheme. Consideration should also be given to non-motorised users (NMU), who in many locations are currently forced to share the congested road network with vehicles due to lack of suitable dedicated NMU provision.

3.7 Road Safety

3.7.1 Collision data has been obtained from Oxfordshire County Council for a five-year period between 9th June 2014 and 8th June 2019. There was a total of 150 collisions recorded within the Scheme extents resulting in 189 casualties. The injury severity is summarised by year for collisions in Table 3.16 and casualties in Table 3.17. The data does not show any clear evidence of deterioration or improvement in road safety in the study area.

3.7.2 The collision data includes part of the A34 road and the Milton Interchange roundabout. As a consequence, the results show more collisions than the immediate Scheme area.

Table 3.16: Total Collisions by Severity

Severity/ Year	2014 (part)	2015	2016	2017	2018	2019 (part)	Total
Fatal	0	0	0	0	1	0	**1**
Serious	4	6	7	7	3	0	**27**
Slight	24	26	19	28	15	10	**122**
Total	**28**	**32**	**26**	**35**	**19**	**10**	**150**

Table 3.17: Total Casualties by Severity

Severity/ Year	2014 (part)	2015	2016	2017	2018	2019 (part)	Total
Fatal	0	0	0	0	1	0	**1**
Serious	4	6	7	8	3	0	**28**
Slight	33	31	29	34	22	11	**156**
Total	**37**	**37**	**36**	**42**	**26**	**11**	**189**

3.7.3 Between 9th June 2014 and 8th June 2019, 31 incidents were recorded at the A4130 Milton Interchange There was one fatal collision recorded which involved a car and a motorcycle rider at the A4130 Milton Interchange Roundabout junction with the A4130. The speed limit of the road was 40 mph. A contributory factor to this incident was disobeying traffic signals. Approximately half of the incidents recorded at the Milton Interchange occurred in 2014 and 2015 before the Milton Interchange improvement scheme was implemented changing the layout of the roundabout to a hamburger roundabout.

3.7.4 For the purposes of this assessment, a cluster site has been defined as an area with seven or more collisions within a 100m radius over a 5-year period. A cluster site was identified in the study area at the A4130 / Milton Road / Basil Hill Road roundabout. A total of 12 collisions were reported within the study period, of which five were serious and seven were slight in severity. All five serious collisions involved vehicles entering the roundabout from the A4130 and failure to give way to cyclists negotiating the roundabout from Milton Road on the west towards Basil Hill Road on the east. Three of these collisions occurred during the hours of darkness and two during daylight hours.

3.7.5 Of the seven slight collisions, five collisions involved a vehicle entering the roundabout from the A4130 and failure to give way to cyclists negotiating the roundabout from Milton Road on the west towards Basil Hill Road on the east. All these collisions occurred during daylight hours, and three of these took place in wet conditions. The two remaining slight collisions involved a HGV failing to give way to a motorcyclist during dry, dark conditions, and an incident involving a vehicle colliding with a cyclist travelling on the nearside on the A4130 approach to the A4130 / Milton Road / Basil Hill Road roundabout.

3.7.6 There is a developer promoted scheme being submitted to alter the 5-arm roundabout which will provide additional crossing points, new footway/cycleway provision and traffic calming features on the roundabout approaches to improve safety for cyclists (refer to Figure 6.16). Therefore, no significant sites have been identified that need to be changed as part of the Scheme.

3.7.7 The collision data and maps can be found in Appendix C.

4. Development Proposals

4.1 Introduction

4.1.1 This section of the TA identifies the key aspects of the development proposals. The objectives of the proposed Scheme are:

- Directly unlock delivery of new homes in the area as allocated in Vale of White Horse District Council and South Oxfordshire District Council Local Plans;
- Unlock thousands of new jobs across existing and new employments sites in the area;
- Ensure the impact of additional housing on the transport network is acceptable;
- Provide real mode choice by future proofing new infrastructure; and
- Reduce congestion in the parishes surrounding Didcot to the north.

4.1.2 The Scheme comprises of the following four separate but interdependent highway schemes:

- A4130 Widening;
- Didcot Science Bridge;
- Didcot to Culham River Crossing; and
- Clifton Hampden Bypass.

4.1.3 Details of the Scheme are shown on the following drawings, which form part of the planning application submission, and are described in Sections 4.2 to 4.5 of this report.

Highways General Arrangement Plans

- Drawing numbers GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0001 to 0019

Typical Cross Sections

- Drawing numbers GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0021 to 0026

Highway Swept Paths

- Drawing numbers GEN_PD-ACM-HSP-DGT_ZZ_ZZ_ZZ-DR-T-0001 to 0039

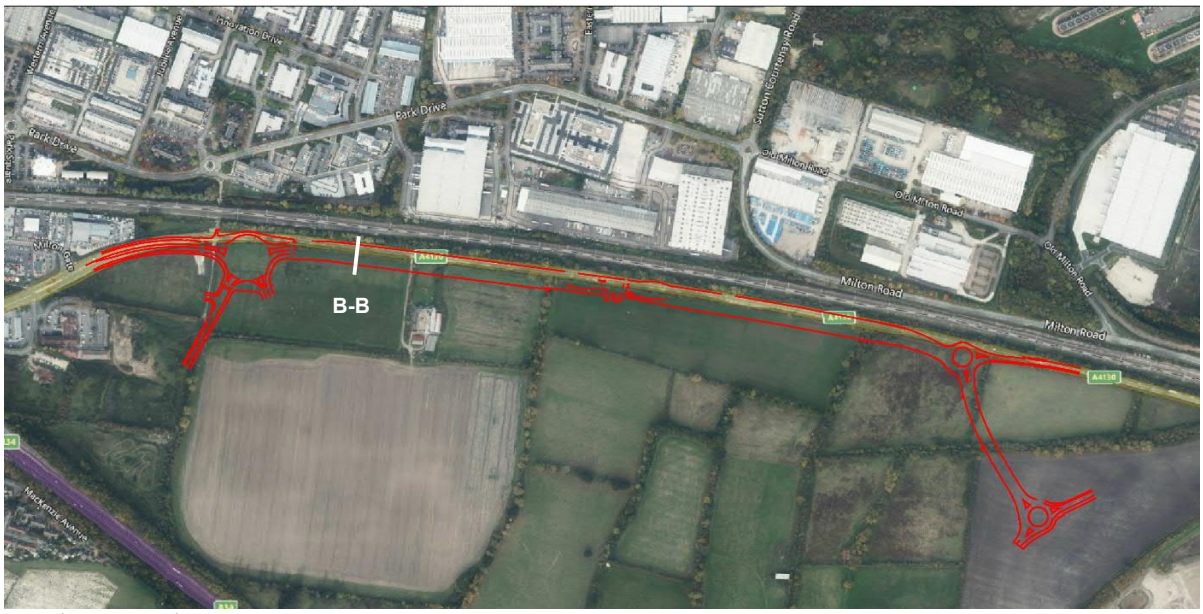
Highway Visibility Splays

- Drawing numbers GEN_PD-ACM-HML-DGT_ZZ_ZZ_ZZ-DR-T-0001 to 0019

4.2 A4130 Widening

4.2.1 The A4130 Widening proposed layout is shown in the following Figure.

Figure 4.1: A4130 Widening Layout Plan



Map data © Google 2021

4.2.2 This part of the Scheme comprises a dual-carriageway from a point approximately 250 m east of Milton Interchange at the junction with Milton Gate, eastwards for approximately 1.6 km to the proposed eastern roundabouts connecting into the future development at Valley Park and the Didcot Science Bridge scheme. Dualling of the A4130 will consist of modifications to the existing single carriageway, establishment of a central reserve and provision of two additional lanes to the south. The existing single carriageway will form the eastbound carriageway towards Didcot and the newly constructed lanes will form the westbound carriageway to the A34 Milton Interchange.

4.2.3 A four-arm roundabout at the western end of the scheme is proposed to serve an area located immediately south-west of this roundabout, which has been subject to approved outline development proposals for Roadside Services and Facilities (planning application reference P15/V2880/O). This 'Backhill roundabout' will also provide access to the 'North West of Valley Park' strategic housing allocation site, to the south and east.

4.2.4 A new signalised T-junction is proposed approximately 600 m east of the Backhill roundabout, which will provide access to the 'Valley Park' strategic housing allocation site, which is the subject of an outline planning application P14/V2873/O, with a resolution to grant permission subject to Section 106 agreement.

4.2.5 A new three-arm 'Old A4130' roundabout is proposed 600 m east of the signalised junction. The eastern arm will be the current A4130, that is to be retained as a single carriageway, providing access into Didcot. The south eastern arm is proposed to be an approximately 260 m single carriageway road connecting to the new Didcot Science Bridge three-arm roundabout. The Didcot Science Bridge roundabout will provide access to the new Didcot Science Bridge to the north, and Valley Park housing development to the south. Access at this location is already being secured through the outline planning application for Valley Park.

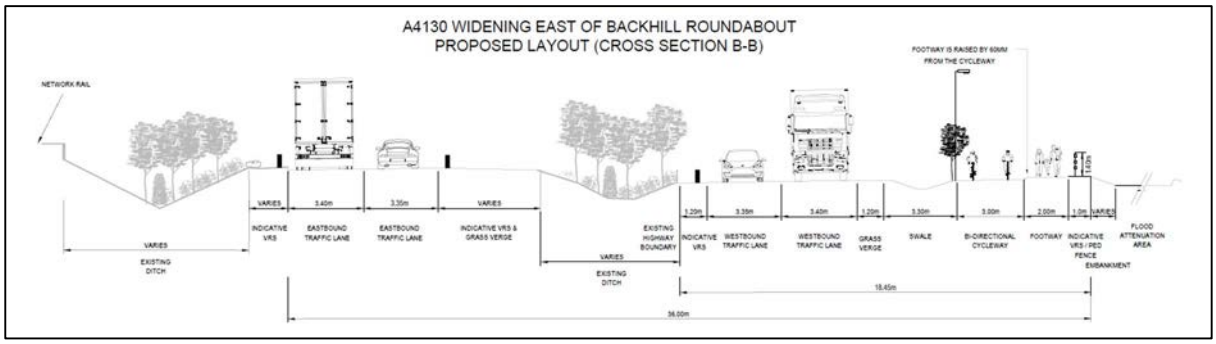
4.2.6 The road corridor will also include a bi-directional segregated cycleway and a footway on the southern side of the dual carriageway, as well as several formal crossing points and buffer.

4.2.7 Along the length of this section of the Scheme, dedicated two-way, off-carriageway, cycling and walking facilities will be provided. East of the Milton Gate junction, the Scheme will include a shared, cycle and footway adjacent to the eastbound and westbound carriageways. This will link to the existing NMU only Backhill Tunnel, and extend around the northern side of Backhill roundabout, where an in-line Toucan crossing (east of the roundabout) will be provided allowing users to cross both carriageways. Dedicated cycling and walking facilities and raised Parallel crossings will also be included around the southern side of Backhill roundabout. The existing toucan crossing by Backhill Tunnel will be replaced by an in-line Toucan crossing over the new dual carriageway to the west of the new roundabout. To the east of Backhill roundabout, a dedicated two-way cycleway and new footway will be provided to the south of the widened and new sections of the road, up to and including the Science Bridge roundabout, and will continue over the Science Bridge.

4.2.8 A shared walking and cycling crossing will be included at the access to the Valley Park development (western access). Additionally, a shared crossing will be provided across both carriageways, which will provide access to the eastbound bus stop (with bus shelter and cycle stands on the southern side). A Toucan crossing will be included across the new A4130 immediately south of the Northern roundabout. This will provide access to the existing shared path for cyclists and pedestrians along the current alignment of the A4130 linking to Didcot.

4.2.9 An indicative cross section for the A4130 widening scheme is presented in Figure 4.2 below.

Figure 4.2: A4130 Widening - Proposed Layout



4.2.10 Figure 4.2 shows that the proposed A4130 widening scheme includes a 3m wide bi-directional cycleway and a 2m wide footway which is raised 60mm above the cycleway. There is a grass verge and swale area separating the bi-directional cycleway from the highway creating a more pleasant environment for NMUs. The GA plans listed in paragraph 4.1.2 show how it is proposed to maintain pedestrian and cycle priority across side roads.

4.3 Didcot Science Bridge

4.3.1 The Didcot Science Bridge proposed layout is shown in the following Figure.

Figure 4.3: Didcot Science Bridge Layout Plan



Map data © Google 2021

4.3.2 This section of the proposed scheme is a new north-south bridge from the proposed Didcot Science Bridge roundabout, over the existing A4130, the Great Western Railway Mainline, and Milton Road, into the former Didcot A Power Station site. The proposed Science Bridge Link Road (SBLR) will connect the bridge with the A4130 Northern Perimeter Road north of the Purchas Road/Hawksworth roundabout, close to the existing Southmead Industrial Estate.

4.3.3 Planning permission (P15/S1880/O and P15/V1304/O) has been granted for a mixed-use development in the power station site and this includes the reservation of land for the SBLR and Didcot Science

Bridge. There will be various embankments associated with the road bridge approaches, and they will vary in width. The road bridge will be approximately 16m in width, including a single carriageway, a bi-directional segregated cycleway and a footway on one side of the road.

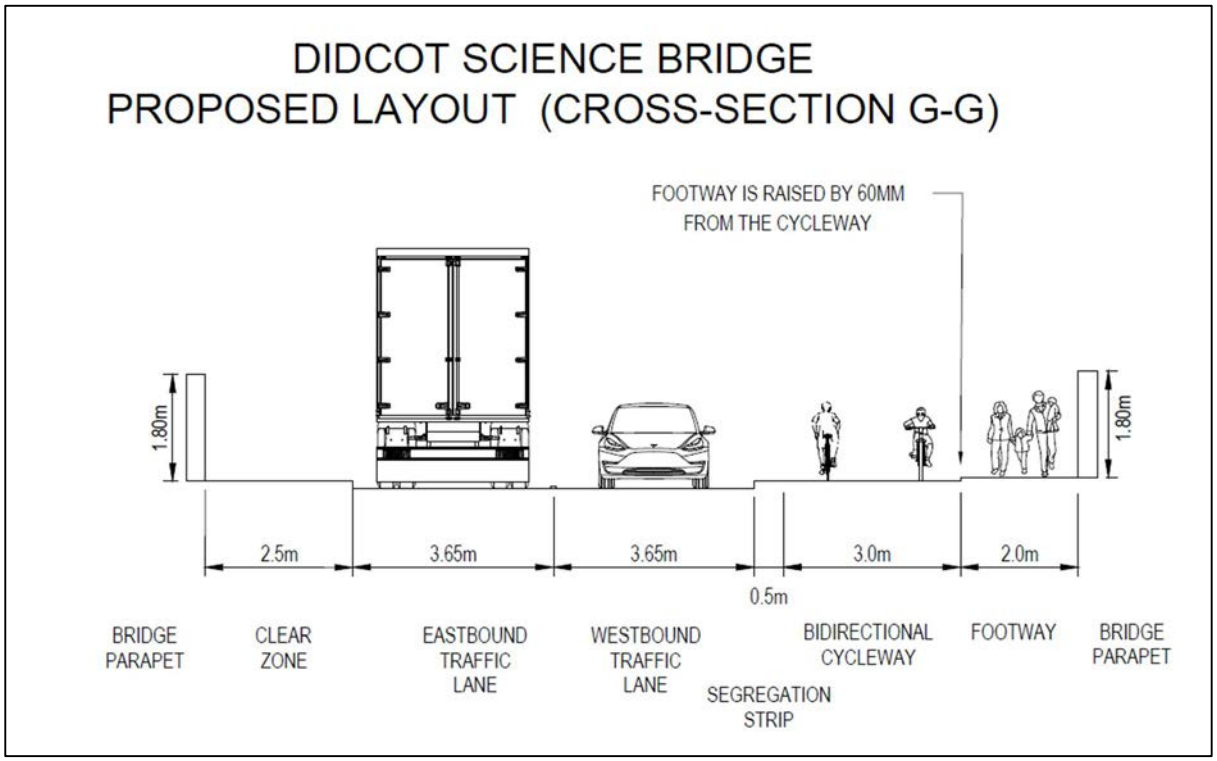
4.3.4 The SBLR will be a single carriageway, with segregated footways and bi-directional cycleways on both sides of the road for most of its length. Various accesses are planned off the road alignment for the proposed development in the power station site (P15/S1880/O and P15/V1304/O). Other works required include the diversion of a watercourse, which will cross underneath the new road in a culvert, and provision of formal Non-Motorised User (NMU) crossings, including a toucan crossing where a National Cycle Route crosses the road alignment.

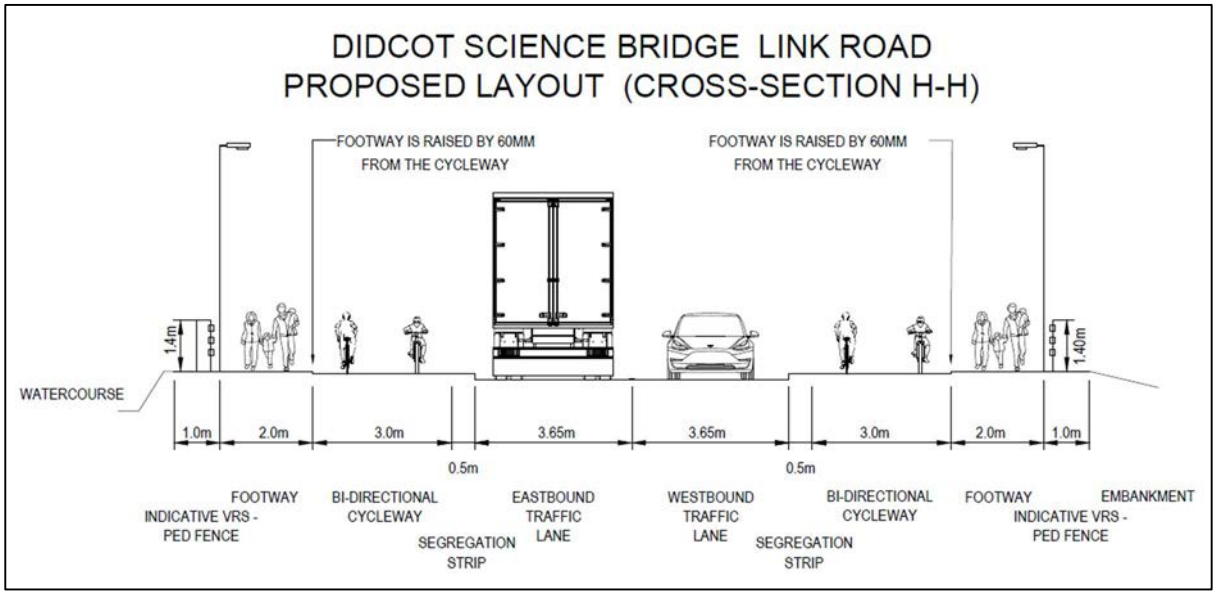
4.3.5 A dedicated two-way cycleway and adjacent footway will be provided over the Didcot Science Bridge on the eastern side of the bridge. East of the Science Bridge and northern approach embankment dedicated bi-directional cycleways and adjacent footways are to be provided on both sides of the road. Three parallel crossings will allow users to cross the Science Bridge Link Road and there will be one Toucan crossing. Where the Scheme ties-in with the existing A4130 Northern Perimeter Road, a Toucan crossing will be provided to allow those using the north-south bridleway (and National Cycle Network route 5) to safely cross the new road. East of this crossing, a dedicated two-way cycleway and adjacent footway will be located away from the carriageway. The existing footway on the southern side of the A4130 will be realigned to the new carriageway.

4.3.6 Four bus stops (two eastbound and two westbound) will be provided as part of the Didcot Science Bridge scheme.

4.3.7 An indicative cross section for the Didcot Science Bridge proposed layout is presented in Figure 4.4 below.

Figure 4.4: Didcot Science Bridge - Proposed Layout



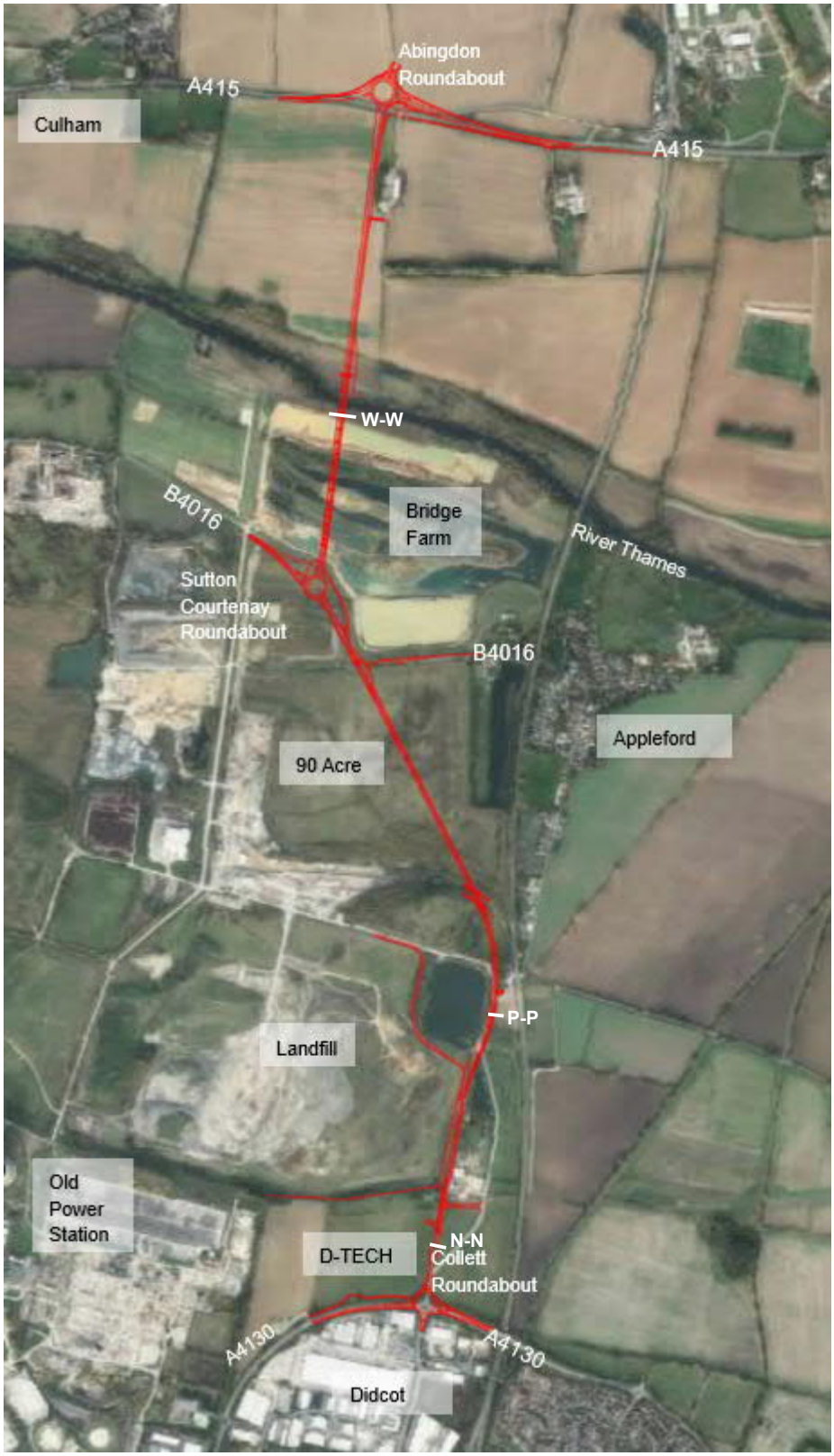


4.3.8 Figure 4.4 indicates that the proposed layout for the Didcot Bridge scheme includes a 3m wide bi-directional cycleway and a 2m wide footway along the eastern side of the carriageway when on the bridge structure (cross-section G-G). When off the structure and in the proposed development site (cross-section H-H) there is a 3m bi-dictional cycleway and 2m footway on both sides of the road. The GA plans listed in paragraph 4.1.2 show how it is proposed to maintain pedestrian and cycle priority across side roads.

4.4 Didcot to Culham River Crossing

4.4.1 The Didcot to Culham River Crossing proposed layout is shown in the following Figure.

Figure 4.5: Didcot to Culham River Crossing Layout Plan



Map data © Google 2021

4.4.2 This section of the Scheme will provide a new 3.6 km single carriageway link road west of the Cherwell Valley railway line and NMU facilities between Didcot and Culham. It will extend north from the A4130 Collett roundabout in Didcot to the A415 Abingdon Road west of CSC.

4.4.3 An improved and enlarged four-arm A4130 Collett roundabout will be provided. This will connect with the Didcot Science Bridge scheme to the west, the Didcot to Culham Link Road to the north, Southmead Industrial Estate to the south and to the existing A4130 to the east.

4.4.4 Agricultural land, private residential properties, a pallet and wood recycling centre, Sutton Courtenay landfill, and Hanson aggregate operations all lay north of Collett roundabout. A Local Development Order is being prepared to enable this agricultural area to become an employment site called D-Tech, in this 'Didcot Growth Accelerator' Enterprise Zone.

4.4.5 North of Collett roundabout to the southern edge of Sutton Courtenay Landfill the new single carriageway road will be approximately 20 m wide, with verges, hard strips, and segregated footways and bi-directional cycleways on both sides. Two accesses, one on either side of the proposed road, will be provided to maintain access to the adjacent agricultural land, private residential properties, and businesses.

4.4.6 The road will extend north along the east edge of Sutton Courtenay Landfill. In this area on the west side of the road a 3.0 m shared use bridleway is provided with the segregated footways and bi-directional cycleways and continues to the east side. On the west side of the road a new priority junction and access road will be provided to Sutton Courtenay Landfill (operated by FCC Environment), and Hanson Aggregates and Appleford Railway Sidings (operated by Hanson). This will replace the existing Portway Road access further north.

4.4.7 The road extends north to Appleford railway sidings passing along the eastern boundary of a large surface water management pond. The Cherwell Valley Line and Appleford Level Crossing is located to the east of the proposed road. Appleford Sidings bridge will be provided to bridge the road over the railway sidings and connect the north and south approach embankments.

4.4.8 The road will traverse 90 Acre Field, an area of restored historic landfill, and link to the B4016 to the west of Appleford. A priority T-junction with a ghost island right turn lane will be provided at this location. Sutton Courtenay roundabout will be provided to the north west with a severed section of the B4016 retained to be a footway cycleway. Sutton Courtenay roundabout will be an at grade, three-arm roundabout providing access to the crossing over the River Thames whilst maintaining links between Appleford, Sutton Courtenay and the surrounding areas.

4.4.9 Extending north from Sutton Courtenay roundabout, a 336 m approach viaduct will be provided to cross the River Thames flood plain with a 155 m bridge provided to span over the River Thames. The River Thames is navigable at this location the bridge height has been designed to accommodate river traffic.

4.4.10 North of the River Thames, the new link road will continue north through existing agricultural land towards A415 where a new at grade four-arm roundabout will be constructed to connect with the A415 and a new development to the north, which is an allocated site in the Local Plan.

4.4.11 Shared-use footway/cycleways are proposed at the Collett roundabout. An in-line Toucan crossing on eastern arm, raised parallel crossing on southern arm, and uncontrolled crossing points on the other two arms.

4.4.12 North of the Collett roundabout, there will be dedicated, off-road, two-way cycleways and footways located either side of the highway. The facilities adjacent to the northbound lane will cease at a parallel crossing. The facilities provided alongside the southbound lane will continue to the northern extent of the Scheme at the A415.There are proposed two parallel crossings and one toucan crossing on the southern section of the new road.

4.4.13 After the point at which the Scheme forms a junction with the B4016 Appleford Road, the cycleway and pedestrian footway will continue along the current alignment of the B4016. There will be an uncontrolled crossing immediately north of the B4016 junction. This will connect with a shared-use pedestrian and cycleway facility, which will extend alongside the northbound lane of the Scheme and continue beside the westbound lane of the B4016 from the Sutton Courtenay roundabout. This crossing serves the new bus stops and connections with existing PRoWs. The bus stops have shelters and cycle stands.

4.4.14 A shared facility will also be located alongside the eastbound lane of the B4016, which will be accessed via a Toucan crossing located across the arm for the River Thames bridge. This route offers connection towards Sutton Courtenay.

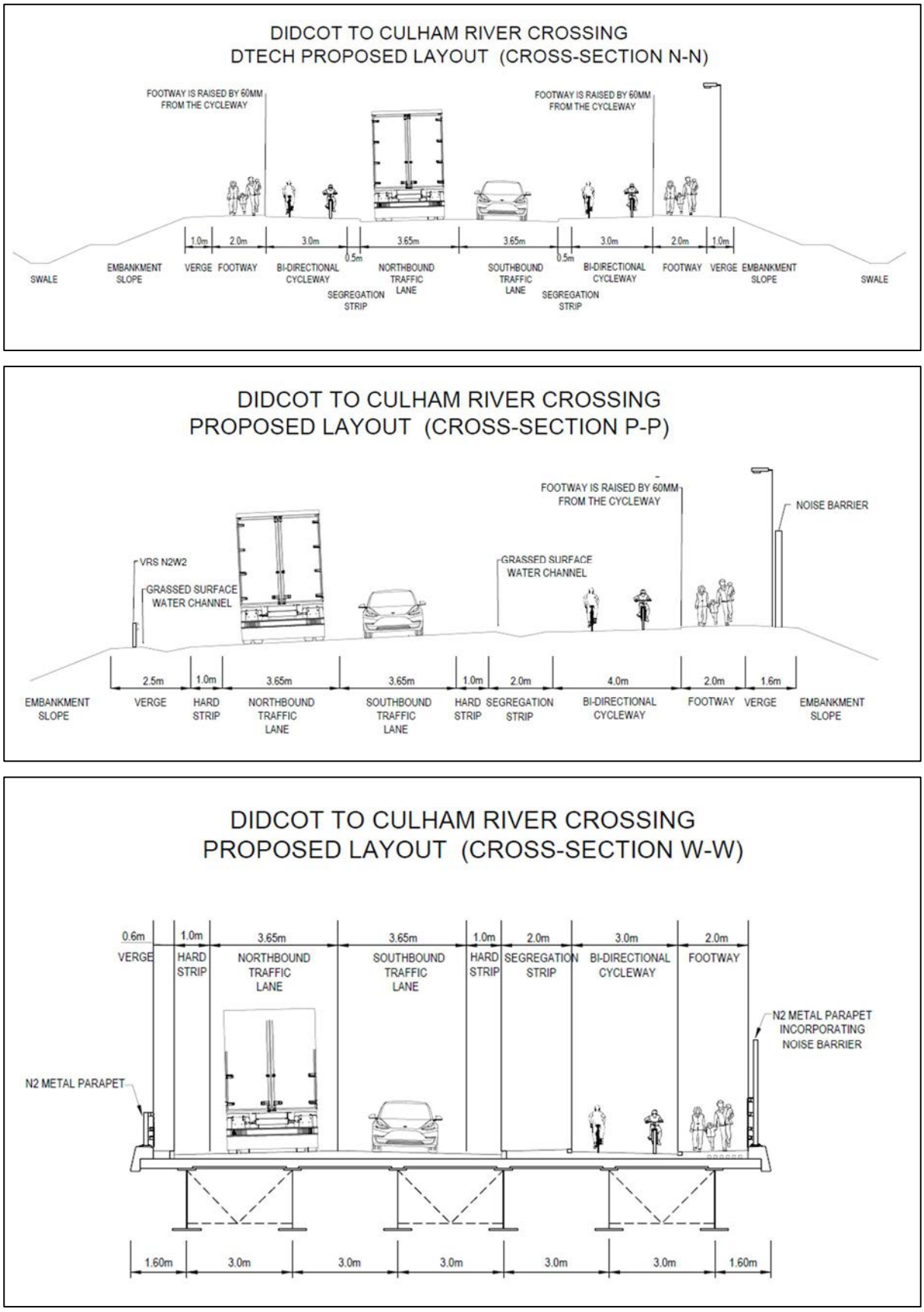
4.4.15 A shared-use cycleway and pedestrian footway will be created adjacent to the eastbound lane of the B4106, in order to connect the Scheme with the village of Appleford.

4.4.16 There will be dedicated, off-road, two-way cycleway and footway facilities located adjacent to the southbound lane on the bridge across the River Thames. These will continue to the northern A415 roundabout, where they will extend east adjacent to the westbound lane of the A415. This will continue

as a shared use facility along the southern side of the A415 to connect with the existing provision at Culham Science Centre. An in-line Toucan crossing is proposed on the eastern arm of the new roundabout, which connects to an improved segregated two-way cycleway and footway on the northern side of the A415, separated from the carriageway. The northern arm of the roundabout is s stub to serve a future housing development allocated in the adopted SODC Local Plan. A raised parallel crossing will be provided across the northern arm of the roundabout.

4.4.17 The indicative cross sections of the proposed layout for the Didcot to Culham River Crossing Scheme is presented in Figure 4.6.

Figure 4.6: Didcot to Culham River Crossing - Proposed Layout



4.4.18 Figure 4.6 illustrates the high quality NMU facilities that are included in the Didcot to Culham River Crossing proposed layout. Cross section N-N shows that a 2m wide footway and a 3m wide bi-directional cycleway is proposed on both sides of the carriageway with the footway being raised above

the cycleway to provide separation between the cyclists and the pedestrians. This is the proposal at the southern end of the Scheme, through the proposed employment site.

4.4.19 Cross section P-P shows that a 2m wide footway and 4m wide bidirectional cycleway is proposed on the eastern side of the carriageway with a 2m wide segregation strip of grass/ water channel between the highway and the cycleway providing separation between vehicles and cyclists. This is the proposal when the Scheme is not on a raised structure.

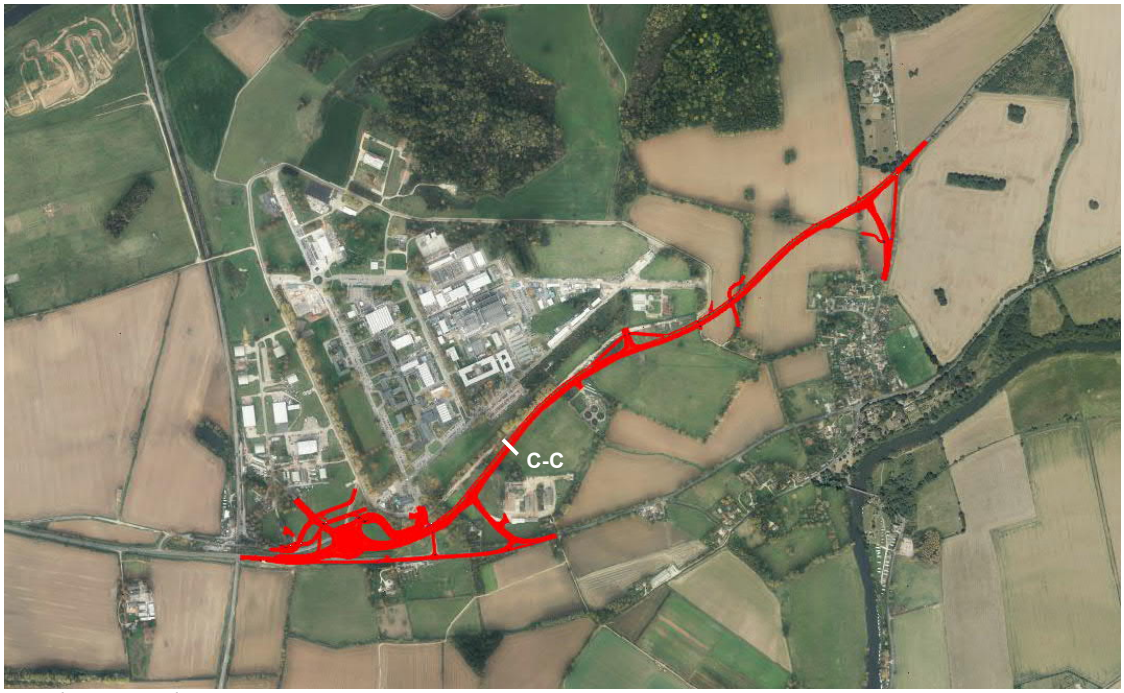
4.4.20 Cross section W-W illustrates that a 3m wide bi-directional cycleway and 2m wide footway is proposed on the eastern side of the carriageway providing high quality facilities for pedestrians and cyclists. A 2m wide segregation strip is proposed to provide separation between the cyclists and moving vehicles to create a more safe and pleasant environment for cyclists. The footway is raised above the cycleway to provide physical separation between the pedestrians and cyclists.

4.4.21 The GA plans listed in paragraph 4.1.2 show how it is proposed to maintain pedestrian and cycle priority across side roads.

4.5 Clifton Hampden Bypass

4.5.1 The Clifton Hampden Bypass proposed layout is shown in the following Figure.

Figure 4.7: Clifton Hampden Bypass Layout Plan



Map data © Google 2021

4.5.2 The Clifton Hampden Bypass will re-route traffic on the A415 around the village of Clifton Hampden, which currently experiences a large amount of through traffic as people travel between the A415 to A4074 northwest of the village.

4.5.3 The link road will provide a bypass northwest of Clifton Hampden village and will be approximately 2.2 km long. The new road will be a single carriageway with adjacent hard strips, grass verges, and a shared-use cycleway / footway. The bypass will be aligned in a south-west to north-east direction and will be a single carriageway, approximately 9.3 m in width including hard strips.

4.5.4 The proposed works also include the construction of a large four-arm roundabout at the western end of the Scheme, providing access to the SODC Local Plan allocated housing site, a railway station and LEDA owned farmland / businesses north of CSC coming off the northern arm, and CSC on the northeast arm. A new T-junction with a ghost island right turn lane connecting the existing B4015 Oxford Road is proposed at the eastern extent of the Scheme.

4.5.5 The current alignment of the A415 will be realigned north into the proposed bypass, with the existing A415 west of this point as a 'no through road' to serve existing residences. All roundabout exits will

include one lane, except the eastern bypass arm which will have two lanes. The roundabout will have a segregated left turn lane from the eastern bypass arm to the western A415 arm.

4.5.6 Station Road will be realigned and will join with a new entrance to the industrial properties located northwest of the roundabout. The existing main access into the CSC will be converted into a shared use footway / cycleway. The northeast roundabout arm will provide access to CSC via the main gate, and a stub towards Perimeter Road for a potential future connection to be delivered by CSC.

4.5.7 The A415 connection road east of the roundabout will provide access from the bypass to the existing A415 and Clifton Hampden.

4.5.8 Along the bypass, four access points will be included on the south side of the road; one will link to the existing alignment of the A415 (as described); one to a Thames Water sewage treatment works; and one to an existing farm track. The bypass will tie-in with the current alignment of the B4015 Oxford Road (east) and a T-junction with a ghost island right turn will be included, to provide access to the current alignment of the B4015 Oxford Road (south-west).

4.5.9 On the north side of the road, two accesses will be created; one will be a new second access into the CSC, the other will link with an existing farm track.

4.5.10 A dedicated, off-road, two-way cycleway and footway will be provided adjacent to both carriageways of the A415, west of the roundabout.

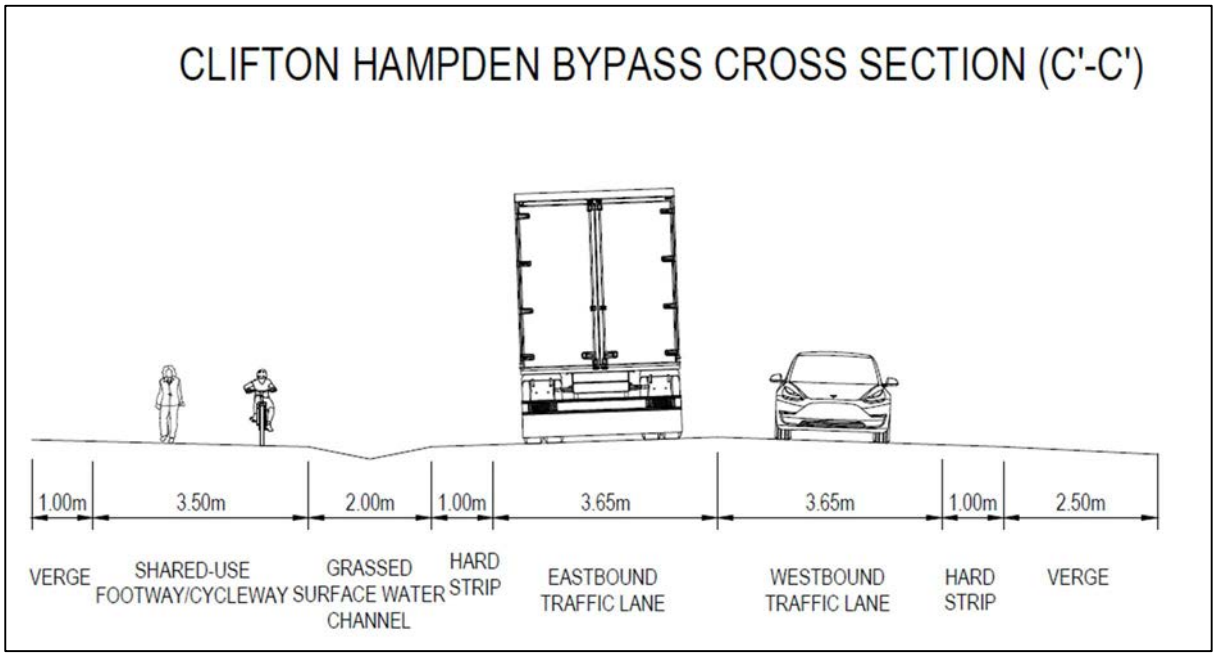
4.5.11 There will be several shared and segregated cycleways and footways, with crossings, created around the roundabout with the CSC and Clifton Hampden Bypass. A new segregated cycleway / footway is proposed to link Culham Station and CSC, in anticipation of heavy NMU demand between these two points. Three raised parallel crossings are proposed to maintain direct NMU links. The stopped-up existing A415 carriageway will be used as a shared-use footway / cycleway, which links up to a new shared-use footway / cycleway on the south side of the A415. This new route extends west across the existing rail bridge and into the Didcot to Culham River Crossing scheme. The existing main entrance to the CSC will be repurposed as a shared-use cycleway / footway. A toucan crossing is proposed where this route meets the bypass, which also serves a pair of new bus stops with shelters and cycle parking.

4.5.12 Along the bypass, a shared-use cycleway / footway will be provided along the north side of the road. Several crossings across adjoining roads will be provided and links to existing footpaths will be provided. Additionally, two uncontrolled crossings over the bypass will be provided.

4.5.13 A shared-use cycleway / footway will be provided along the west side of the realigned B4015 to connect in with the northern end of Clifton Hampden Village.

4.5.14 The indicative cross section of the proposed layout for the Clifton Hampden Bypass is illustrated in Figure 4.8 below.

Figure 4.8: Clifton Hampden Bypass - Proposed Layout



4.5.15 Figure 4.8 shows that a 3.5m wide shared footway/cycleway is proposed on the northern side of the carriageway. A 2m grassed surface channel is also proposed between the main carriageway and the shared footway/cycleway to provide separation between the moving vehicles and the NMUs providing a more pleasant and safe environment for the NMUs. The GA plans listed in paragraph 4.1.2 show how it is proposed to maintain pedestrian and cycle priority across side roads,

4.6 Road Safety Audit

4.6.1 AECOM was commissioned by Oxfordshire County Council to complete a Stage 1 Road Safety Audit (RSA) for the four sections of the Scheme. These were undertaken between December 2019 and May 2020. The RSA reports also include the Design Organisation Response logs. The RSA reports can be found in Appendix D.

5. Modelling Assessment

5.1 Introduction

5.1.1 This section of the report sets out the traffic modelling that has been undertaken to assess the impact of the Scheme.

5.2 Assessment Scenarios

5.2.1 Completion of the Scheme is currently planned for 2024. The adopted Vale of White Horse District Council (VoWHDC) Local Plan Part 1 and 2 period ends in 2031. The adopted South Oxfordshire District Council (SODC) Local Plan period ends in 2035, although little growth is expected between 2034 and 2035. Therefore, based on the guidance set out in Section 2.5 of this report and the available model years, and as agreed with the highway authority, the following assessments have been undertaken for the purposes of this TA:

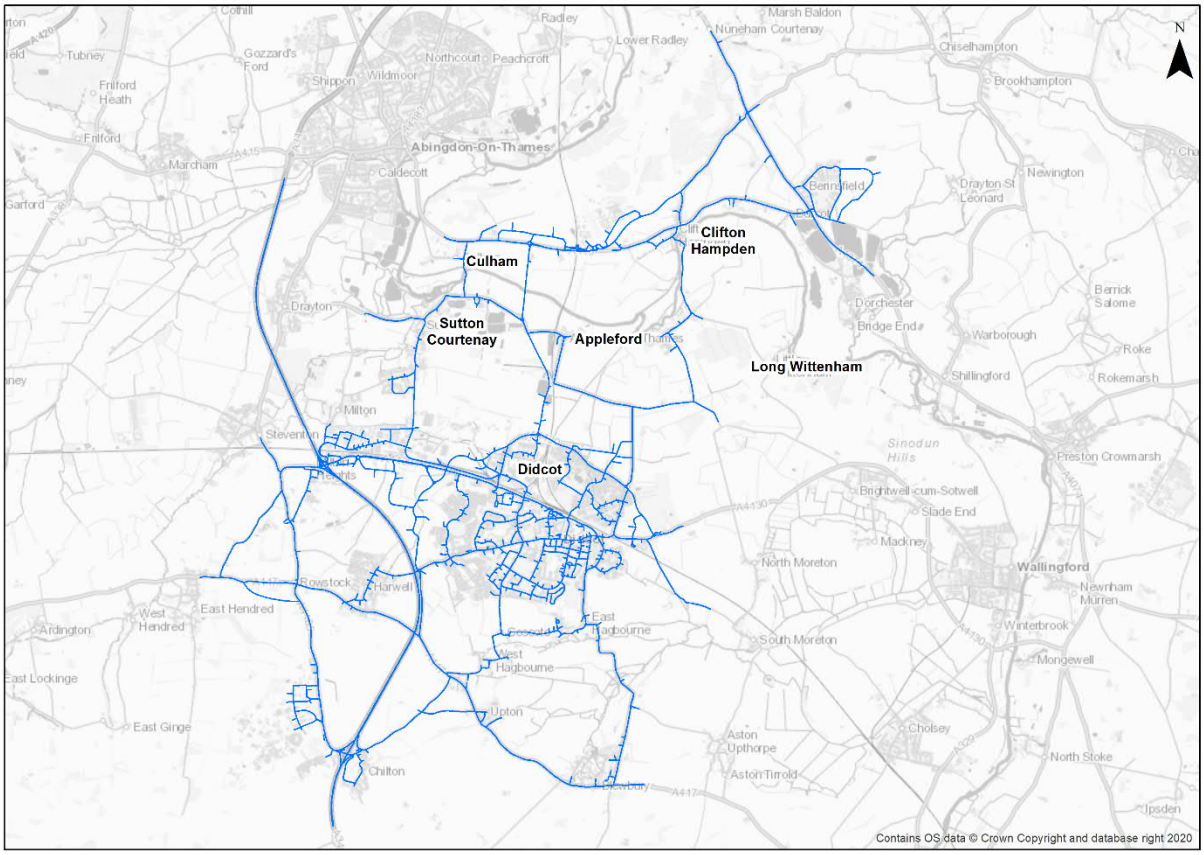
- 2020 Baseline;
- 2024 (year of Scheme opening) – without Scheme;
- 2024 (year of Scheme opening) – with Scheme;
- 2034 (design year) – without Scheme; and
- 2034 (design year) – with Scheme

5.3 Paramics Model

5.3.1 As discussed in Section 3.5.4, traffic data for the junction assessments has been obtained from the Didcot Paramics microsimulation model, which is maintained and run on behalf of OCC by Systra. Data extracted from the Didcot Paramics microsimulation model was provided to AECOM by OCC/Systra for the assessment of impacts on the road network.

5.3.2 The model area extends from the A417 East of East Hendred in the west, through to A4130 Hadden Hill in the East. The network includes the A34 (Chilton Through to Milton Interchange), and up to A4074 Golden Balls Roundabout in the North. The Paramics model extent is shown in Figure 5.1 below.

Figure 5.1: Paramics Model Extent



5.3.3 Traffic demands for each period of the model have been developed using traffic count data collected late in 2016 and in 2017. This included detailed turning count surveys at the key junctions within the study area. Traffic demands were informed by data from OSM to ensure that the traffic patterns within the study area were as consistent as possible with those in the strategic model. Journey time data was utilised to validate the model against WebTAG criteria. Details of the development of the base model are provided in the Systra report 'Didcot Microsimulation Base Model Development Report' (2018) in Appendix E.

5.3.4 The model includes housing and employment completion trajectories as supplied by the relevant LPAs (VoWHDC and SODC). These were updated in June-August 2020, in preparation for the work to support this planning application. Refer to the Systra reports in Appendix F and G for more information on the trajectories and site accesses in the model. Table 5.1 and Table 5.2 below show the additional residential units and employment floor area assumed to be complete over the 2017 base year for the 2020, 2024 and 2034 scenarios.

Table 5.1: Housing Completion Trajectories

Site Name	Units Additional to Base Year		
	2020	2024	2034
Ladygrove East - Land off A4130, Hadden Hill, Didcot	0	107	642
Land at Didcot Road, Great Western Park	514	514	514
Land to the south of Blenheim Hill Harwell	60	60	60
Land at Barnett Road Steventon OX13 6AJ	65	65	65
Land south of Appleford Road, Phase 1	85	101	101
Land south of Appleford Road, Phase 2	0	91	91
Land at Abingdon Road Steventon	15	15	15
Land to south of Hadden Hill Didcot	74	74	74
Land to the West of Great Western Park (Valley Park)	0	384	4,254
Land at Reading Road Harwell	3	16	16

Site Name	Units Additional to Base Year		
	2020	2024	2034
Land at former Didcot A	0	0	120
Land at former Didcot A	0	0	280
Land North of Grove Road Harwell	191	207	207
Land off Hanney Road Steventon OX13 6AS	44	44	44
Land to the north east of Didcot	27	548	1,880
Land north of Appleford Road	0	43	93
Land off Drayton Road, Milton	18	18	18
Land to north of Manor Close	18	18	18
Land to the South of A4130 Didcot	31	166	166
Milton Heights (Allocation - Site 9)	56	186	458
Land at Milton Hill, Milton Heights	32	53	53
East of Sutton Courtenay (Allocation - Site 5)	0	0	200
Chailey House Bessels Way	22	22	22
Land adjacent Culham Science centre	0	0	1,850
Great Western Park	818	1,155	1,155
Orchard Centre Phase 2	0	0	300
North West Valley Park (Allocation - Site 8)	0	0	800
Vauxhall Baracks	0	0	300
Land at Berinsfeld	0	0	1,600
Long Reach, Didcot Road	0	19	19
Didcot Gateway South	0	100	300
Land Adjacent to the Village Hall	0	70	74
Land off fieldside track	0	36	36
TOTAL	**2,073**	**4,112**	**15,825**

Table 5.2: Employment Completion Trajectories

Site Name	Use Class	Floor Area Additional to Base Year (sqm)		
		2020	2024	2034
Southmead Industrial Estate	B1	656	656	9,076
Culham Science Centre	B1	0	13,632	56,079
Land West of CSC Inc No.1 Site	B1	0	4,851	4,851
	B2	0	255	255
Berinsfield Regeneration	B1	0	0	9,671
	B2	0	0	10,768
	B8 (Storage)	0	0	11,350
Milton Park	B1	11,472	31,411	76,889
	C1	10,563	10,563	10,563
Harwell Campus	B1	11,723	75,427	103,434
	B2	0	6,993	35,000
Other Premises Adjacent to Didcot Power Station - Diageo	B8 (Storage)	0	28,907	28,907
	B8 (Data)	0	68,750	68,750

Site Name	Use Class	Floor Area Additional to Base Year (sqm)		
		2020	2024	2034
Didcot A	B1	0	2,502	25,000
	B2	0	5,505	55,000
	B8 (Storage)	22,483	27,988	77,483
	A1	0	1,351	13,500
Milton Hill Business and Technology Park	B8 (Storage)	0	0	11,338
D-Tech- EZ 2	B2	0	1,000	5,000
	B8 (Data)	0	22,000	110,000
Milton Interchange Site- EZ2	B1	0	0	9,380
	A1	0	0	2,704
	C1	0	0	1,294
Orchard Centre Expansion	A1	11,155	11,155	11,155
TOTAL		**68,052**	**312,946**	**747,446**

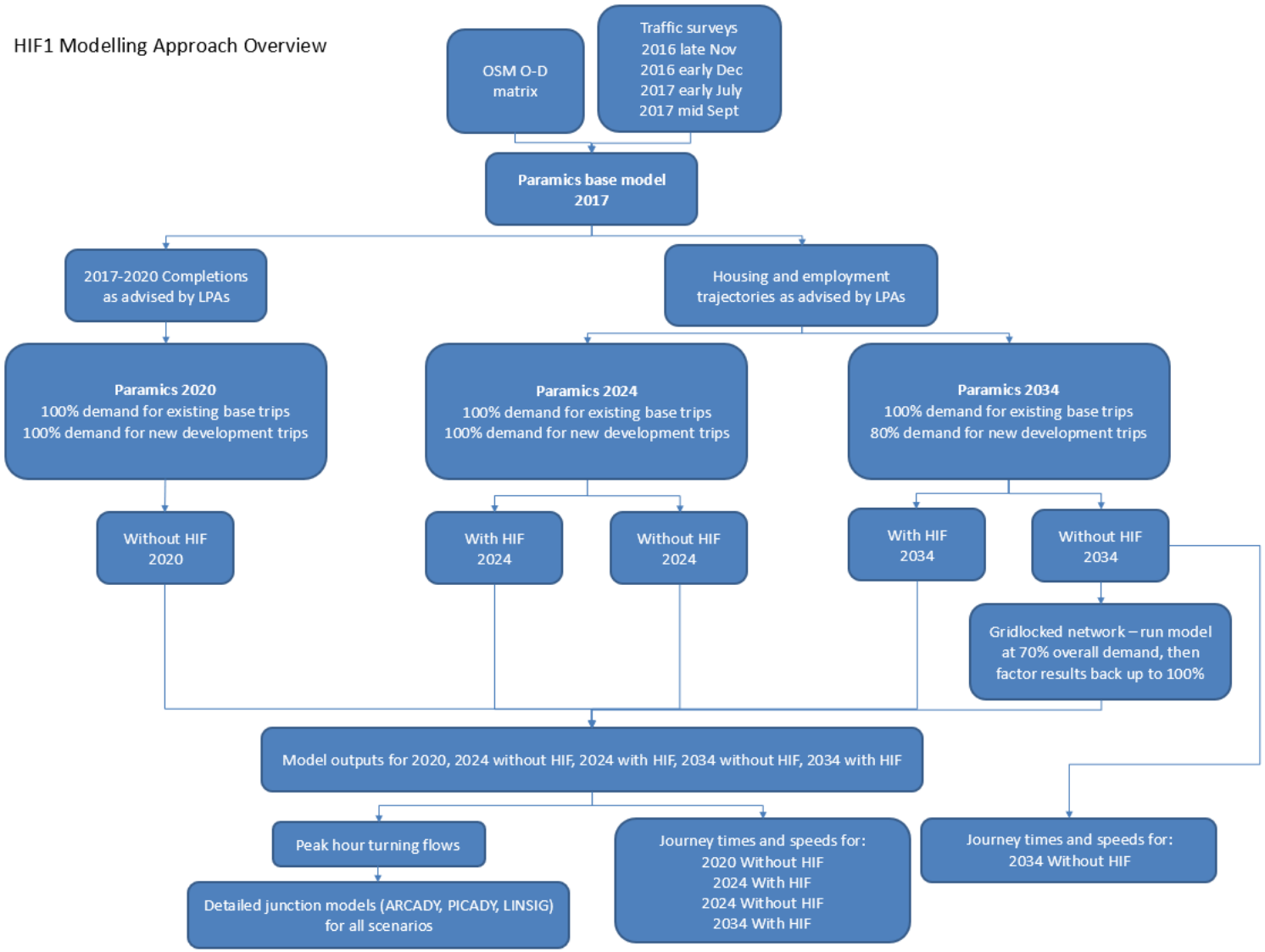
5.3.5 In addition to the Proposed Scheme infrastructure in the with HIF scheme modelling, the infrastructure outlined in Table 5.3 has been included in the Paramics modelling. The infrastructure outlined in the table is cumulative and therefore once present in the modelling is also present for any future year scenarios. Further details are provided in the Systra Technical Note 'HIF1 Paramics Modelling – Future Year Infrastructure Note' (September 2021) in Appendix G.

Table 5.3: Infrastructure included in Paramics Model

Model	Infrastructure
2019 / 2020 Base	Harwell Link Road
	A4185 Newbury Road/Thompson Avenue signals
2024 without HIF / 2024 with HIF	Power Station/Manor Bridge Roundabout improvements
	Featherbed Lane Improvements
	NPR3
	Park Drive/High Street Junction (Milton Park access)
	Eastbound widening between Steventon Lights and Milton Interchange
	Signalised one way shuttle working on the B4016, of approximately 150m, over the bridge adjacent to Appleford Rail Station
	Various development related accesses
2034 without HIF / 2034 with HIF	Valley Park Spine Road
	Milton Interchange improvements
	Rowstock Bypass
	Chilton Interchange Signals
	Golden Balls Improvements
	Milton Road/Park Drive/Sutton Courtenay Road junction alteration
	Various development related accesses

5.3.6 Figure 5.2 below summarises the modelling methodology approach:

Figure 5.2: Modelling Approach Methodology



5.3.7 SYSTRA provided flow turning counts for the peak hours for the junctions. The peak hours are AM (08:00-09:00) and PM (17:00-18:00). These flows were then used in detailed junction modelling as presented in this TA.

5.3.8 For the 2034 scenarios the model assumes 100% demand of existing trips present in the 2017 base, and 80% of demand for new growth. The justification for this approach is set out in Systra Technical Note 'HIF1 Paramics Modelling – Forecasting Note' (September 2021) in Appendix F, and is summarised below (Section 6 of the Systra Technical Note refers):

- *The model uses a generic trip rate across all development in the area. A demand reduction is required to align the trip generation with trip rates recently accepted by OCC TDC for planning applications sites in Didcot. This accounts for approximately half of the demand reduction. See below paragraph for more information.*
- *It is assumed that the Garden Town principles will continue to be enacted in this area over the next 14 years, increasing the usage of sustainable modes. Modal shift from these developments later in the plan period (over a decade away) is more likely as they are coming alongside significantly improved pedestrian / cycle / public transport provisions. The Paramics model is not multi-modal so cannot automatically account for improved NMU infrastructure, therefore a demand reduction is used as a proxy. This and the following point account for approximately half of the demand reduction.*
- *The largest new sites follow good spatial strategies and are in more sustainable locations near public transport hubs and / or are located nearer the growing employment areas which will have significantly improved NMU routes.*

5.3.9 Table 5.4 compares the Paramics model trips rates with planning applications in the area:

Table 5.4: Paramics Model Trip Rates

Site / Model	AM	PM
Paramics at 100% demand	0.571	0.529
Valley Park P14/V2873/O	0.517	0.572
North East Didcot P15/S2902/O	0.5	0.56
South of A4130 P16/S3609/O	0.497	0.489
Paramics equivalent at 80% demand	0.457	0.423

5.3.10 The table above shows how the Paramics model trip rates are overall higher than trip rates accepted for the three development sites. Using 80% demand brings the trip rate lower than the development site trip rates, to account for the Didcot Garden Town principles, modal shift, and spatial strategies. As explained above and in Figure 5.2, this is only for the new growth in the 2034 scenarios, the 2017 base demand is still 100% e.g. it assumes existing residents in the model area do not change travel patterns. This is a robust assumption as it is likely that some would change travel patterns by 2034, due to the improved NMU infrastructure, additional bus stops, future bus routes, and other schemes in LCWIPs etc.

5.3.11 Initial model runs exhibited significant congestion in 2034 with the full development demand in place. To enable results to be extracted for comparisons, in the 2034 without HIF scenarios the model has been run at 70% total demand (70% of everything, after the demand reduction explained in paragraph 5.3.8) as this value enabled the model to run without gridlock. Modelled journeys were able to be completed, and therefore data could be extracted. These data have then been factored back up to 100% to calculate the 'factored' flow e.g. how many vehicles would have wanted to go through that junction, if the network had not been gridlocked. As shown in Figure 5.2, the 70% factoring exercise was not undertaken for the 2034 without HIF journey time and speed data presented in this TA.

5.3.12 This methodology was agreed between Systra and OCC, and further details are provided in the Systra Technical Note in Appendix F.

5.4 Methodology

5.4.1 All major new and existing junctions along the route of the Scheme have been included in the assessment. The extent of off-site junction assessments required has been agreed with the highway authority. The following junctions as shown in Figure 5.3 have been assessed in this report:

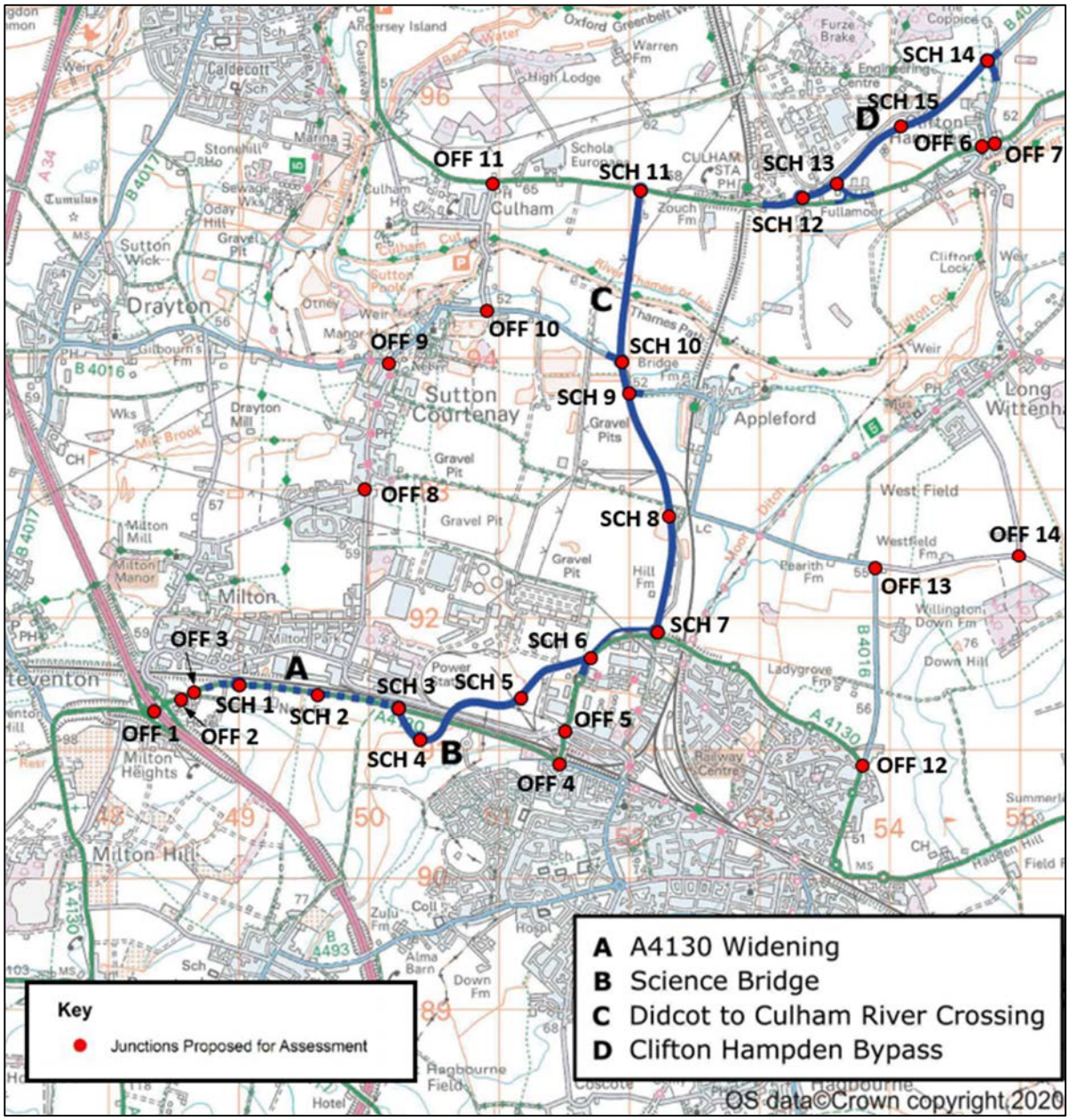
Scheme Junctions:

- SCH 1 A4130 / Service Area / North West Valley Park roundabout
- SCH 2 A4130 / Valley Park access signalised junction
- SCH 3 A4130 / Science Bridge Link roundabout
- SCH 4 Valley Park Spine Road / Science Bridge Link roundabout
- SCH 5 Science Bridge Link Road and New Purchas Road priority junction
- SCH 6 A4130 / Science Bridge priority junction
- SCH 7 A4130 / New Thames River Crossing / Collett roundabout
- SCH 8 New Thames River Crossing / Hanson and FCC Access Road priority junction
- SCH 9 New Thames River Crossing / B4016 priority junction
- SCH 10 New Thames River Crossing / B4016 roundabout
- SCH 11 New Thames River Crossing / A415 roundabout
- SCH 12 A415 / Clifton Hampden Bypass / Culham Science Centre roundabout
- SCH 13 Clifton Hampden Bypass / realigned A415 priority junction
- SCH 14 Clifton Hampden Bypass / B4015 priority junction
- SCH 15 Clifton Hampden Bypass / Culham Science Centre Access

Off-site Junctions:

- OFF 1 A34 / A4130 Milton interchange
- OFF 2 A4130 / Service Area priority junction
- OFF 3 A4130 / Milton Gate signalised junction
- OFF 4 A4130 / B4493 / Mendip Heights roundabout
- OFF 5 A4130 / Basil Hill Road / Milton Road (Power Station) roundabout
- OFF 6 A415 / High Street signalised junction (Clifton Hampden)
- OFF 7 A415 / B4015 Oxford Road signalised junction (Clifton Hampden)
- OFF 8 Harwell Road / Milton Road / High Street mini roundabout junction
- OFF 9 High Street / Church Street / Brook Street priority junction
- OFF 10 B4016 Appleford Road / Abingdon Road priority junction
- OFF 11 A415 / Tollgate Road signalised junction
- OFF 12 A4130 / Lady Grove priority junction / roundabout
- OFF 13 Lady Grove / Sires Hill priority junction
- OFF 14 Sires Hill / Didcot Road priority junction

Figure 5.3: Junction Locations



5.4.2 The selected junctions have been assessed using the appropriate stand-alone junction capacity modelling software (Junctions 9 for roundabouts and priority junctions, LinSig v3.2 for signal-controlled junctions) for all scenarios. In discussions with Highways England, the impact of the HIF1 Scheme on the A34 and at the A34/A4130 Milton Interchange (OFF 1) has been demonstrated by comparing journey times along the A34, as explained in paragraph 6.9.1.

6. Assessment of Impacts

6.1 Introduction

6.1.1 This section of the report sets out the forecast impact of the Scheme on the highway network in terms of junction capacity assessments, impact on non-motorised users (NMUs) and the impact on public transport users.

6.2 NMU impacts

6.2.1 There are limited existing opportunities for walking and cycling north/south in this area to the north Didcot due to the severance created by the River Thames, with just two crossing points at Culham and Clifton Hampden. For example, residents of Didcot wishing to cycle to Culham Science Centre must use indirect routes, cycling on road for significant parts of the journey.

6.2.2 The development proposals will have a very positive impact on NMU travel in the area by directly providing high-quality infrastructure. The provision of additional and improved crossing points for all NMU modes will help to maintain direct routes, connecting footways/bridleways and providing safe access to and from bus stops.

6.2.3 The Scheme has been designed in line with the LTN1/20 guidance, providing priority to cyclists over side roads as appropriate. Details of the Scheme are shown on the following drawings, which form part of the planning application submission.

Highways General Arrangement Plans

- Drawing numbers GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0001 to 0019

Typical Cross Sections

- Drawing numbers GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0021 to 0026

6.2.4 As part of the A4130 Widening scheme the following NMU facilities are proposed to increase connectivity for NMUs:

- At or near the proposed bus stops, cycle parking facilities will be provided as appropriate to enable the bus stops to act as an interchange and improve connectivity for cyclists.
- Dedicated two-way, off-carriageway cycling and walking facilities will be provided. East of the Milton Gate junction, the Scheme will include a shared cycle and footway adjacent to the eastbound and westbound carriageways. This will link to the existing NMU only Backhill Tunnel, and extend around the northern side of Backhill roundabout, where an in-line Toucan crossing (east of the roundabout) will be provided allowing users to cross both carriageways. Dedicated cycling and walking facilities and raised parallel crossings will also be included around the southern side of Backhill roundabout. The existing Toucan crossing by Backhill Tunnel will be replaced by an in-line Toucan crossing over the new dual carriageway to the west of the new roundabout. To the east of Backhill roundabout, a dedicated two-way cycleway and new footway will be provided to the south of the widened and new sections of the road, up to and including the Didcot Science Bridge roundabout, and will continue over the Didcot Science Bridge.
- A shared walking and cycling crossing will be included at the access to the Valley Park development (western access). Additionally, a shared crossing will be provided across both carriageways, which will provide access to the eastbound bus stop. A Toucan crossing will be included across the new A4130 immediately south of the Northern roundabout. This will provide access to the existing shared path for cyclists and pedestrians along the current alignment of the A4130 linking to Didcot.
- The segregated footway and two-way cycleway will connect to bridleway 243/1/10 (Cow Lane) and the planned Valley Park development (east access) improving NMU connectivity. The footway will connect to footpath 243/3/10 adjacent to Stert Brook.

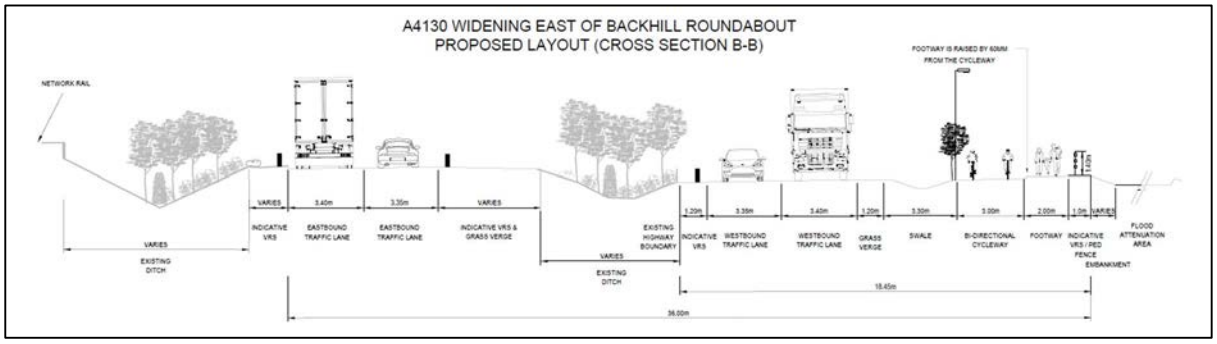
6.2.5 On the A4130 to the east of the proposed Backhill roundabout, the existing shared use NMU facility is on the southern side only and is approximately 2.0m usable width including the white line buffer zone. Photograph taken 15th September 2021, looking east.

Figure 6.1: Photograph East of the proposed Backhill Roundabout



6.2.6 In approximately the same location as the photograph the Scheme proposes significantly improved NMU facilities, provided on the southern side of the carriageway:

Figure 6.2: Proposed Layout of A4130



6.2.7 As part of the Didcot Science Bridge scheme the following NMU facilities are proposed to increase connectivity for NMUs:

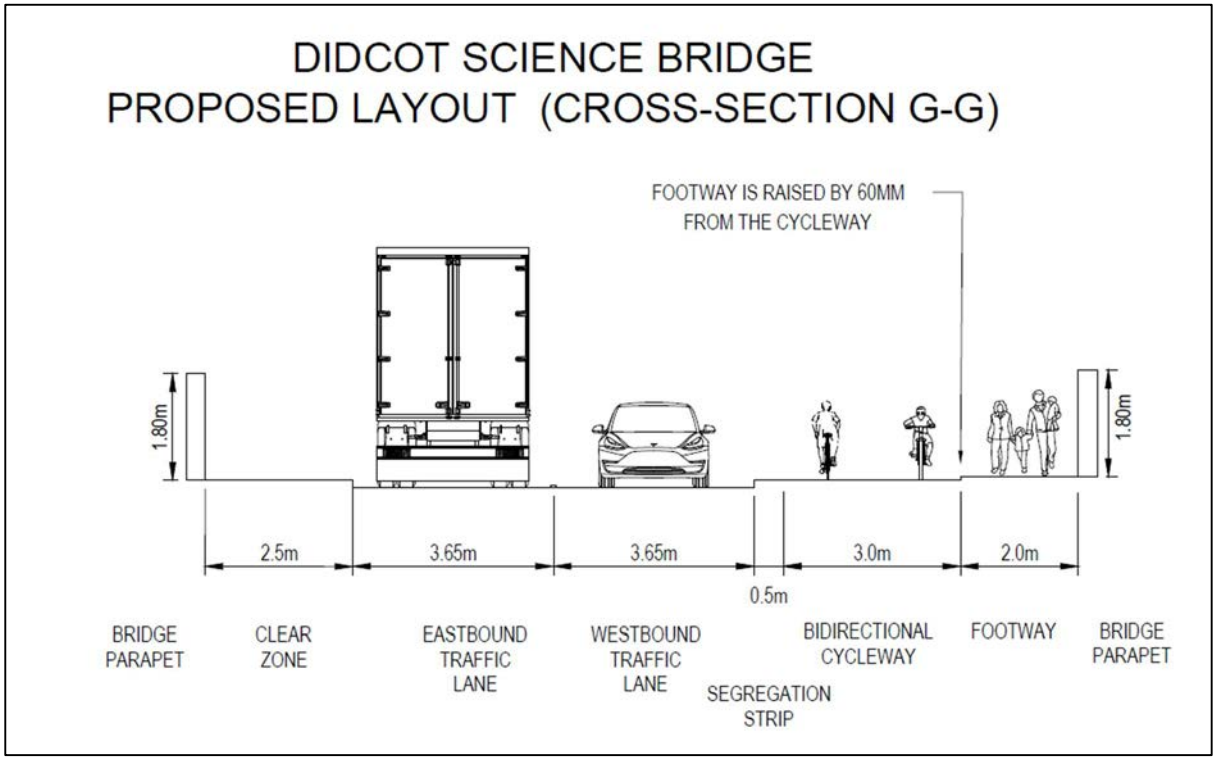
- The Didcot Science Bridge scheme includes a footway and cycleway along the extents of the scheme with crossing points to increase accessibility for pedestrians and cyclists.
- Three parallel crossing points along the Scheme to facilitate movement across the route, and another parallel crossing on a side road.
- A toucan crossing is proposed over the A4130 at the eastern extent of the Scheme, to provide NMU access to Southmead Industrial Estate / NCN Route 5 (which connects to Sutton Courtenay).
- The existing bridge structure over the Great Western Main Line is Manor Bridge, which forms part of the Didcot Northern Perimeter Road (A4130). There are no formal NMU provisions over the bridge, however NMUs are known to use the grass verges, as shown in the photo below. A developer scheme which seeks to implement a shared use facility at this bridge is undergoing technical review with the OCC Road Agreements Team. This structure does not address the severance to north-south NMU movements. Photograph taken 15th September 2021, looking north.

Figure 6.3: Photograph of Manor Bridge (Didcot Northern Perimeter Road)



6.2.8 In contrast, the new Didcot Science Bridge structure (which is an alternative to the above Manor Bridge) does address the severance to north-south NMU movements, by providing NMU facilities segregated from the carriageway:

Figure 6.4: Proposed Layout of Didcot Science Bridge



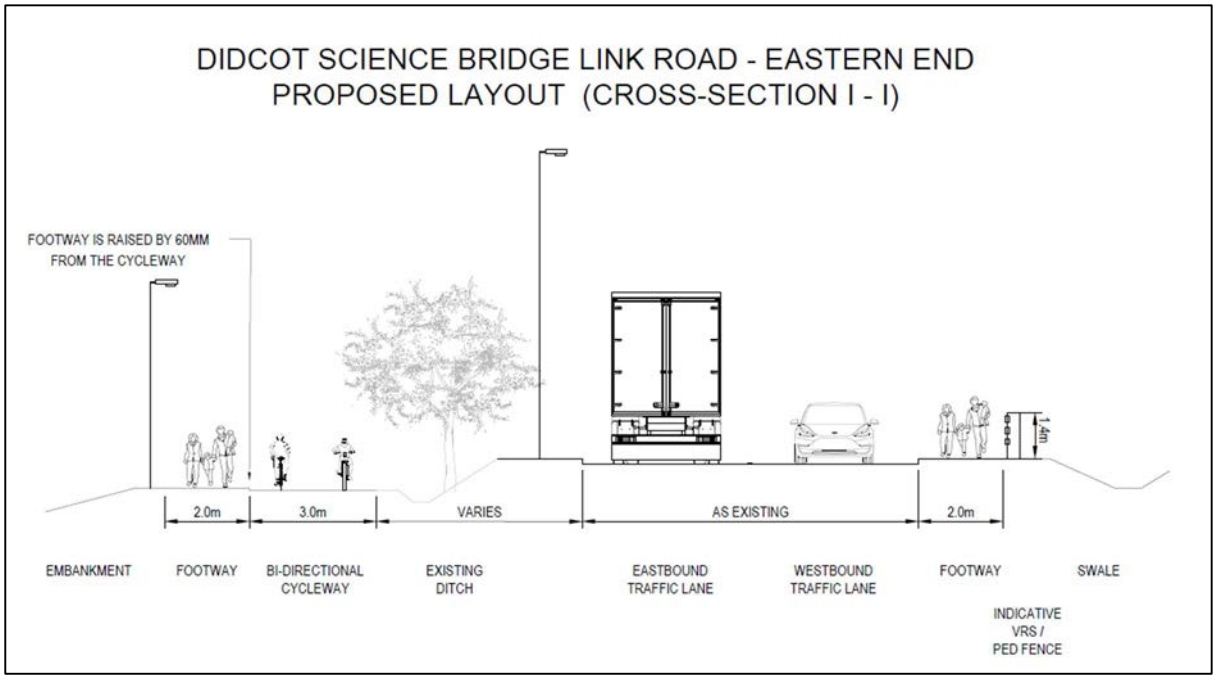
- The Didcot Science Bridge NMU facilities will connect to the River Crossing Scheme NMU facilities behind the hedge on the northern side of the existing A4130 Northern Perimeter Road.
- On the A4130 Northern Perimeter Road, the existing NMU facility is on the southern side only and is a footway of approximately 1.5m width, with no buffer from the carriageway. Photograph taken 15th September 2021, looking northeast.

Figure 6.5: Photograph of NMU Facilities on A4130 Northern Perimeter Road



6.2.9 In approximately the same location as the photograph the Scheme proposes significantly improved NMU facilities, provided on the northern side behind the existing trees and ditch:

Figure 6.6: Proposed layout of new NMU facilities north of A4130 Northern Perimeter Road



6.2.10 As part of the River Crossing Scheme the following NMU crossing facilities are proposed to increase connectivity for NMUs:

- The NMU connection to the Didcot Science Bridge Scheme, as described above.
- At the southern end at Collett Roundabout, an in-line signalised Toucan crossing is proposed on the eastern arm to cater for onwards journeys to Didcot. On the southern arm a raised parallel crossing is proposed. A new section of bridleway between 373/24/40 (Sustrans NCN5) and the Scheme near Hill Farm is shown on application drawings, however this could be delivered by other parties. This would enable a direct link for residents from the southern end of Sutton Courtenay to access the new route northwards over the River Thames, for work at Culham Science Centre for example. The reverse is also true, future residents of the SODC Local Plan proposed housing site would be provided with a direct cycling route towards Milton Park, Didcot centre etc.
- At the southern end of the Scheme, segregated NMU provision is proposed on both sides of the road through the potential future employment site. Two parallel crossings are proposed to cater for east-west movement, and the pair of bus stops. The NMU route has bus stop bypasses and floating bus stop shelters. The cycle routes maintain priority across the two side road accesses for the future employment site.

- Restricted byway 106/4/10 is proposed to be replaced by a new bridleway around the south and west sides of the lake, connecting with a new north-south route down to Hill Farm, in addition to a new toucan crossing north of Hartwright House to enable NMU's from the west (e.g. from Sutton Courtenay) to access the proposed segregated NMU route on the eastern side of the Scheme, catering for onwards north or south travel.
- A shared-use facility is proposed on the northern side of B4016 towards Appleford Village. An uncontrolled refuge island crossing is proposed on the Scheme to cater for the proposed bus laybys near Appleford, and for east-west NMU movements across the Scheme connecting to PROWs between Appleford and Sutton Courtenay.
- North of the proposed Sutton Courtenay roundabout, it is proposed that the existing B4016 highway is re-used to create a shared footway / cycleway from Sutton Courtenay direction, in addition to a shared footway / cycleway running along the western side of the carriageway with crossing points provided. A toucan crossing is proposed on the northern arm of the roundabout, and an uncontrolled refuge island crossing on the western arm.
- An NMU facility down from the proposed new bridge over the River Thames is proposed to connect to the Thames Path on the northern side of the river, providing access for NMUs. This improves the connectivity to the countryside to existing residents in the area, particularly Appleford Village.
- Along the length of the Scheme, high quality NMU infrastructure is proposed on the eastern side, segregated from the carriageway. This caters for local and longer distance north/south journeys, combatting the existing severance created by the river and existing highway layout at current bridges at Culham and Clifton Hampden. The poor NMU provisions on these existing routes over the River Thames are shown below, compared to the Scheme proposals:
- The existing bridge structure over the River Thames at Sutton Bridge and Culham Cut has a narrow footway immediately adjacent to the carriageway, on the eastern side only. It is approximately 1.5m wide, with pinch points of approximately 1m. This structure does not address the severance to north-south NMU movements. Photograph taken 15th September 2021, looking north.

Figure 6.7: Photograph of Existing NMU Facilities at Sutton Bridge



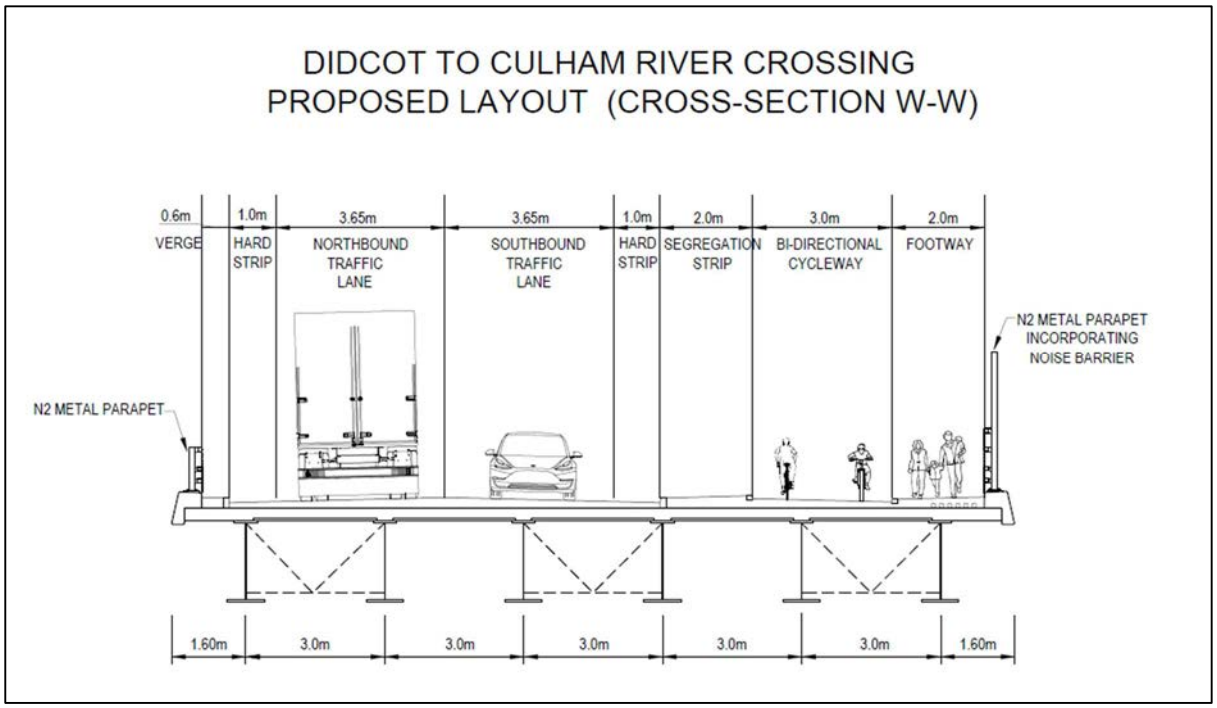
- The existing bridge structure over the River Thames at Clifton Hampden Bridge has no NMU facilities, although some pedestrians try to use the narrow kerb upstand (approximately 0.6m on western side and 0.4m on eastern side), which does not tie into and NMU provision either side of the structure: This structure does not address the severance to north-south NMU movements. Photograph taken 15th September 2021, looking north.

Figure 6.8: Photograph showing lack of NMU facilities at Clifton Hampden Bridge



- In contrast, the new Didcot to Culham River Crossing structure (which is an alternative to the above Sutton Bridge / Culham Cut and Clifton Hampden Bridge) does address the severance to north-south NMU movements, by providing NMU facilities segregated from the carriageway:

Figure 6.9: Proposed Layout of Didcot to Culham River Crossing



6.2.11 At the proposed northern roundabout which connects to the existing A415 Abingdon Road, the development proposals include an in-line toucan crossing on the eastern arm and a raised parallel crossing on the northern arm. This helps cater for connection with future a housing site allocated in the adopted SODC Local Plan here. The Scheme proposes to tie into the existing shared use facility on the northern side of A415, and proposes to include a new shared use facility on the southern side of A415, connecting with the existing provision near Culham Science Centre. As part of the Clifton Hampden Bypass Scheme, a network of shared and segregated footway / cycleways are proposed, increasing accessibility to Culham Science Centre, Culham Rail Station, future housing and employment here, Clifton Hampden, Burcot and Berinsfield. The following NMU facilities are proposed as part of the Scheme:

- To the west of the A415 / Clifton Hampden Bypass / Culham Science Centre roundabout a shared footway and cycleway is proposed on both sides of the carriageway; there is an existing provision on the northern side of the A415 that the Scheme will tie into. On the southern side, a new facility will extend from the Didcot to Culham River Crossing, as described above.
- On the A415 to the east of the proposed A415 roundabout, in the vicinity of the high-voltage overhead powerline the existing NMU facility is on the northern side only and is approximately 1.2m

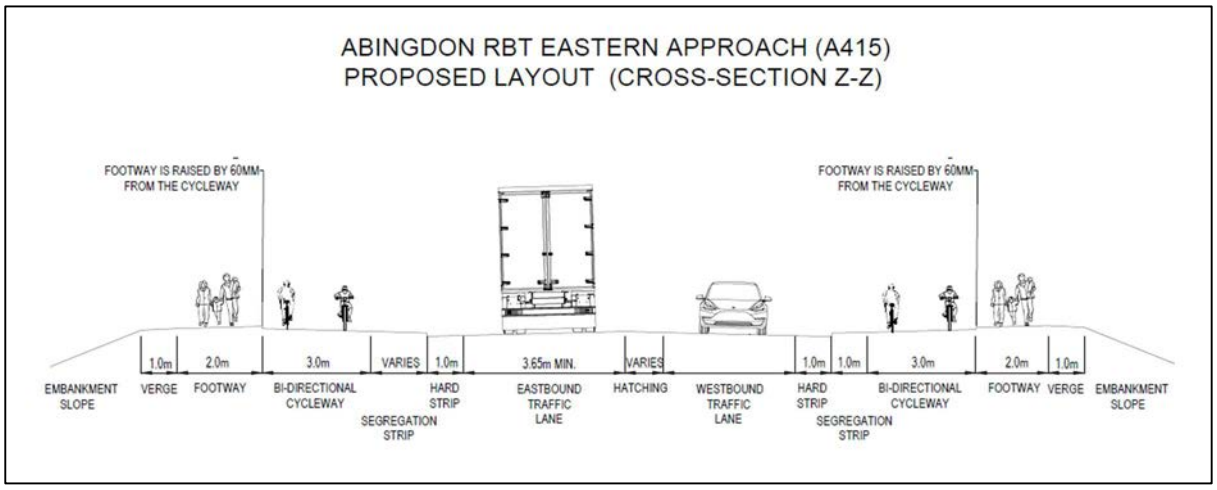
wide shared use with 1.6m grass buffer from the carriageway. There is no provision for NMUs on the southern side. Photograph taken 14th July 2021, looking east.

Figure 6.10: Photograph of Existing NMU Facilities on the A415 east of Proposed Roundabout



- In approximately the same location as the photograph the Scheme proposes significantly improved NMU facilities, provided on both sides of the carriageway:

Figure 6.11: Proposed Layout of Eastern Approach to Abingdon Roundabout



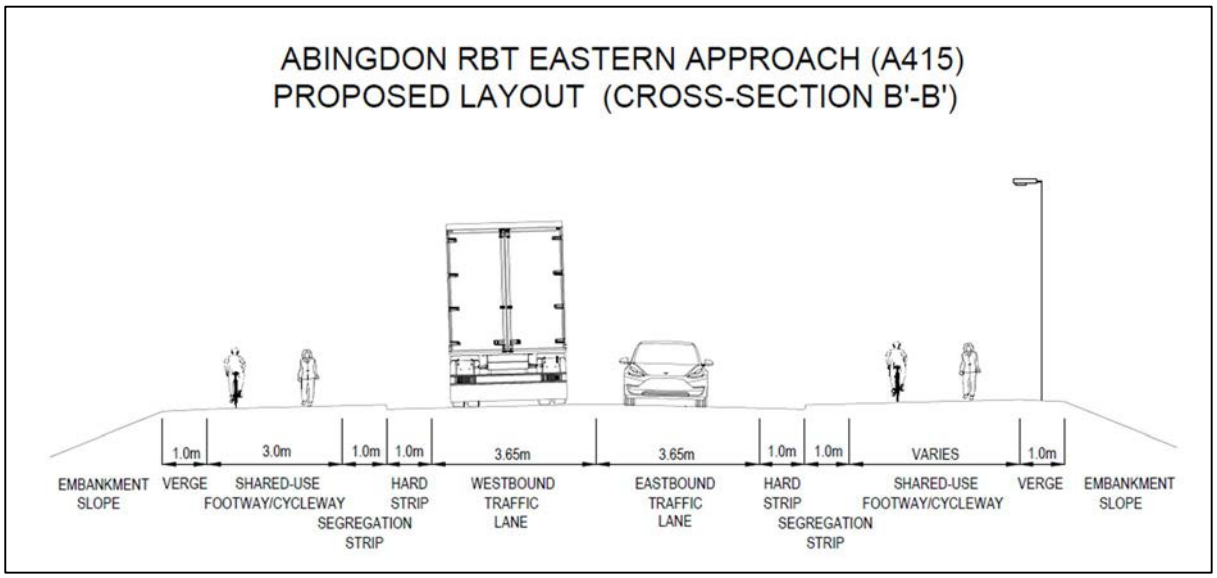
- On the A415 to the west of Station Road (west) the existing NMU facility is on the northern side only and is approximately 1.2m wide shared use with 1.6m grass buffer from the carriageway. There is no provision for NMUs on the southern side. Photograph taken 14th July 2021, looking east.

Figure 6.12: Photograph of Existing NMU Facilities on A415 west of Station Road



- In approximately the same location as the photograph the Scheme proposes significantly improved NMU facilities, provided on both sides of the carriageway:

Figure 6.13: Proposed Layout of A415 west of Station Road



- A segregated footway and cycleway is proposed from the entrance road of Culham Rail Station directly to Culham Science Centre. The pedestrian facility is proposed to be wider than standard to better cater for groups of pedestrians to/from the train. Two raised parallel crossings are proposed to provide convenient routes for NMUs. The segregated footway and cycleway will be separated from the carriageway. Future works at the Culham Science Centre entrance will connect to this route.
- The route from the rail station continues over the Culham Science Centre access arm of the new roundabout on a raised parallel crossing as a shared footway / cycleway, which then continues along the northern side of the Clifton Hampden Bypass for its full length, providing a high quality link from the northern end of Clifton Hampden village. It is separated from the carriageway.
- The Scheme includes a new Toucan signalised crossing on the bypass directly outside the Culham Science Centre, providing direct and convenient access for NMUs. This crossing ties in to sections of existing carriageway which are to be repurposed as NMU routes, and the new bus stops on the bypass.

- The shared footways and cycleways along the Clifton Hampden Bypass connect into existing PRoWs providing increased pedestrian accessibility to the footpaths.
- A raised parallel crossing is proposed over the new Culham Science Centre secondary access.
- At the Clifton Hampden Bypass / B4015 Oxford Road Junction, an uncontrolled refuge island crossing is proposed to provide access to the NMU route on the northern side of the new bypass, and for the new bus stops. The shared footway and cycleway is proposed to run along the south side of the Clifton Hampden Bypass from the southbound bus stop and continuing alongside the B4015, connecting to the existing village and PRoWs.
- A section of existing highway that is made redundant by the Scheme is proposed to become a shared footway/cycleway to help NMUs make more direct journeys in a northbound direction.

6.3 Pedestrian and cycle routes delivered and enabled by the Scheme

6.3.1 The Scheme both directly delivers and indirectly enables a significant number of new and/or improved walking and cycling routes in the area. This helps to engender modal shift away from the private motor car, particularly for commuting purposes for employment and education, but also for important access to amenities such as retail and healthcare, and for leisure trips. As reported above, the journey to work mode share for bicycle in Didcot is only 4.7%. This section of the report does not exhaustively list all routes but aims to highlight some of the significantly improved routes the scheme delivers / facilitates. The potential future NMU schemes that could link to the Scheme may be delivered by OCC, housing or employment developers, or other bodies. There may be other schemes identified through the planning application processes for other developments, or through the Didcot Local Cycling and Walking Infrastructure Plan (LCWIP) which has yet to be undertaken.

Origin: Great Western Park / Valley Park / North West Valley Park / Existing Didcot

Destination: Milton Park (Enterprise Zone)

6.3.2 The existing NMU route is on the narrow, shared use facility on the southern side of the A4130, with no significant buffer from the carriageway. This is not an attractive route, due to the narrow width and wind buffeting experienced by passing vehicles, particularly HGVs. The WCHAR surveys illustrate this, with a low number of just over 600 cyclists (two-way) counted over a 7-day period at the A4130 near Cow Lane. As illustrated in the cross-sections above (Figure 6.2), the scheme directly delivers a significantly improved route along the southern side of A4130, addressing the above issues. This route is also likely to be used by residents from central / southern Didcot, especially when the Valley Park site is constructed which includes NMU infrastructure on the north-south spine road. Additionally, this is likely to be used by residents from Harwell Village, who would access it from Valley Park either from Didcot Road and along the spine road, or along Cow Lane and then up the spine road.

Destination: Culham Science Centre

6.3.3 The existing NMU route is neither convenient nor direct, and for large sections has no NMU facilities which requires NMUs to use the carriageway. For many people this is not attractive, as shown by the low census mode share percentage. The route would include the A415, which the WCHAR surveys show a low number of cyclists, just over 800 (two-way), counted over a 7-day period. The Scheme delivers a convenient, high quality NMU route along the A4130, over the Great Western Main Line railway, north over the River Thames, and directly to Culham Science Centre (CSC). For comparison purposes, approximate routes for cycling to CSC from the junction of Cow Lane/A4130 in the centre of the Valley Park site were measured, using existing facilities. These ranged from 8.97km to 10.29km without HIF and required the use of carriageway in some sections, and narrow shared-use facilities. With the Scheme, the equivalent route is approximately 7.54km, with high-quality off-carriageway facility facilities for the full length.

6.3.4 The same improved route to CSC is accessible to residents of existing Didcot from Collett Roundabout, for example by using the NCN5 from Station Road to access Southmead Industrial Estate.

Origin: Land adjacent to Culham Science Centre (residential)

Destination: Milton Park Enterprise Zone

6.3.5 The future housing site allocation in the adopted SODC Local Plan 2035 would be provided with high quality and direct NMU routes to a significant number of destinations. Without the Scheme, the existing

routes are not conducive to promoting mode shift as they require a large portion of on-carriageway on congested roads.

6.3.6 The Scheme provides a route to Milton Park that is approximately one kilometre longer than the existing route through Sutton Courtenay, but is off-carriageway for the full length as opposed to the existing route which is predominantly on carriageway. Additionally, the traffic reductions the scheme enables through Sutton Courtenay would make the existing on-carriageway route more pleasant for cyclists who wish to use it.

Destination: Didcot Centre / Didcot Railway Station

6.3.7 The Scheme ties in with Collett Roundabout on the A4130 Northern Perimeter Road, which is a short distance from NCN5 inside Southmead Industrial Estate. For comparison purposes, approximate routes for cycling from the proposed housing site to the NCN5 route inside Southmead Industrial Estate (for onwards existing connections to Didcot, Railway Station, etc.) were measured using existing facilities. Without the Scheme, the likely route is approximately 7.44km long, with a large proportion of on-carriageway cycling. With the scheme, this is reduced to approximately 3.97km, all off-carriageway except a small section inside Southmead Industrial Estate.

Origin: Appleford

Destination: CSC

6.3.8 The existing routes via Clifton Hampden or Culham are neither convenient nor direct (approx. 5.68km and 5.62km respectively), and require on-carriageway cycling, using narrow shared-use facilities, some use of bridleway (to Long Wittenham). With the Scheme, the route is approximately 3.67km, formed of high-quality off-carriageway provision (on-carriageway from the western built-up edge of Appleford into the village).

Destination: Milton Park Enterprise Zone

6.3.9 As above for Land adjacent to Culham Science Centre, Appleford also benefits from significantly improved NMU routes to Milton Park.

Destination: Didcot Centre / Didcot Railway Station

6.3.10 As above for Land adjacent to Culham Science Centre, Appleford also benefits from significantly improved NMU routes to Didcot Centre / Railway Station (Appleford has a railway station, however not all trains stop there).

Origin: Berinsfield, Burcot, Clifton Hampden

Destination: Various – Didcot, Milton Park etc

6.3.11 The significant reduction in traffic flow along the A415 through Burcot as a result of the Scheme creates improved conditions for future NMU schemes to be implemented from Berinsfield towards Abingdon/Didcot etc. In the SODC Local Plan, the policy wording for the Berinsfield housing site allocation says:

"*2. The proposals to develop land at Berinsfield will be expected to deliver:*

vi) all necessary transport infrastructure, referring to the Infrastructure Delivery Plan, which is likely to include:

> *e. high quality infrastructure to encourage cycling and walking, and provide links through the site and to adjacent employment and into the village of Berinsfield and to other surrounding locations including Culham; specifically (but not limited to) improving the existing pedestrian/cyclist infrastructure along the A415 from Berinsfield to Culham, and providing for a cycle route from Berinsfield to Oxford."*

6.3.12 The existing shared-use facility will join the Scheme near Culham Science Centre, which then enables village residents to access the Scheme NMU facilities for onwards journeys to Didcot and Milton Park etc, as described in the above sections. With other potential future schemes as described below, this also includes onwards connections to Abingdon and Oxford.

Origin: Various – Didcot, Valley Park, Appleford, Berinsfield, etc.

Destination: Abingdon, Oxford

6.3.13 The scheme NMU facilities are designed to tie into the future housing proposal at Land adjacent to Culham Science Centre. In the SODC Local Plan, the policy wording for this site says:

"2. Proposals to develop Culham will be expected to deliver:

vi) all necessary infrastructure, referring to the Infrastructure Delivery Plan, which is likely to include:

b. provision of a new cycle bridge and associated connectivity and paths across the River Thames to connect appropriately with Abingdon on Thames to the north of the site"

6.3.14 With a new future NMU bridge over the River Thames into southeast Abingdon provided by that site, and other NMU schemes currently being worked on between Abingdon and Oxford via Radley and Kennington, the Scheme NMU facilities will form the missing link between a predominantly off-carriageway cycle route from Oxford City Centre to Didcot. Using sections of NCN5 and 544 in Didcot, this then extends the route from Oxford to Harwell Campus and beyond.

Origin: Milton Heights (residential)

Destination: Various - Milton Park Enterprise Zone (employment) / Didcot Centre / Didcot Railway Station / Culham Science Centre

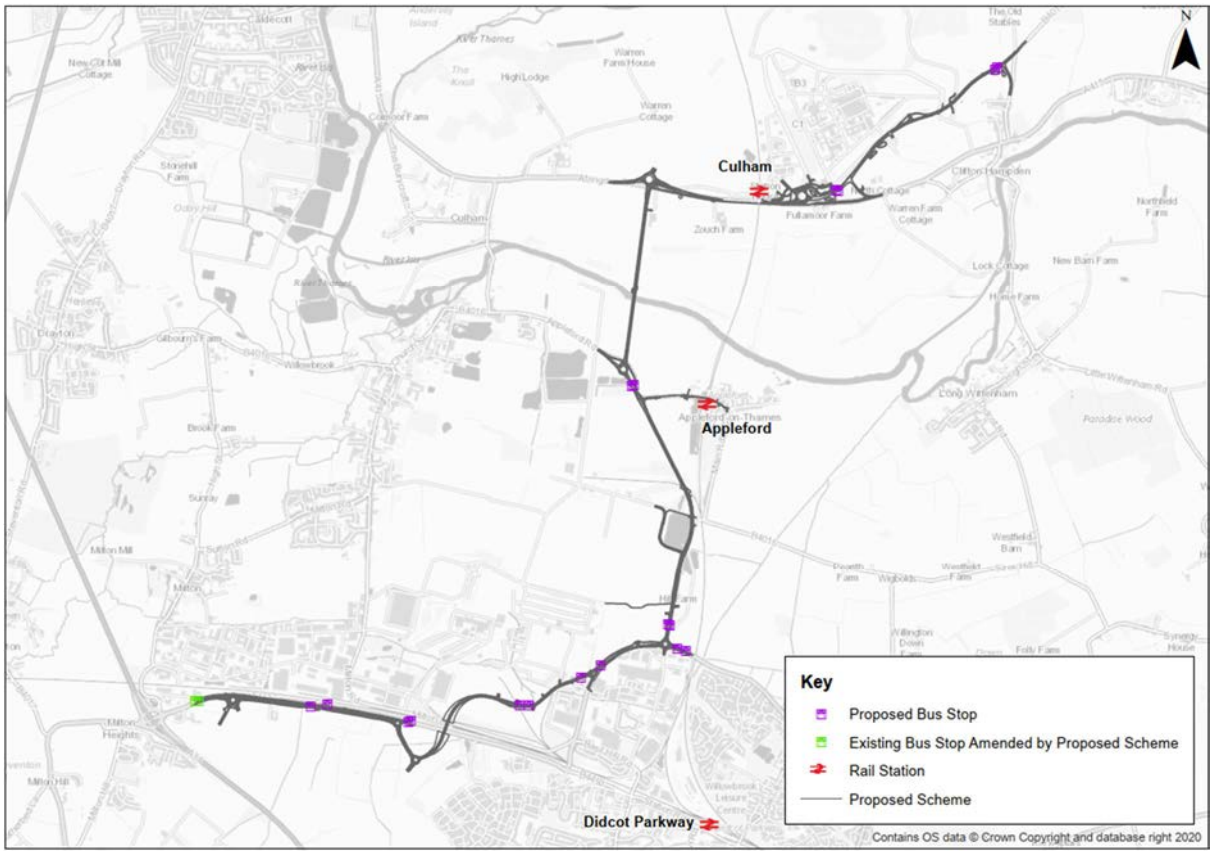
6.3.15 Another scheme is being progressed by OCC to deliver an NMU bridge over the A34, south of Milton Interchange. This would connect with the Scheme at the new Backhill Roundabout on A4130, enabling onwards journeys.

6.4 Public Transport Impact

6.4.1 As part of the HIF1 Scheme, the following new, fully accessible bus stops are proposed as shown in Figure 6.14:

- Four bus stops (two eastbound and two westbound) along the A4130;
- Four bus stops (two eastbound and two westbound) as part of the Didcot Science Bridge section;
- Six bus stops (a pair on the A4130 to the east of Collett Roundabout, a pair at the southern end inside the future employment site, and a pair near Appleford) as part of the River Crossing section; and
- Four bus stops (a pair at Culham Science Centre and a pair north of Clifton Hampden Village) as part of the Clifton Hampden Bypass Scheme.

Figure 6.14: Proposed Bus Stop Locations



6.4.2 These additional bus stops will increase the accessibility and catchment of the existing bus services in this area, whilst also helping to cater for new or improved services in the future. The locations have been determined in liaison with the bus operators serving this area.

6.4.3 The stops are proposed to include shelters and bicycle parking as appropriate.

6.4.1 The journey time data in Section 6.10 below demonstrates that the HIF1 Scheme will significantly improve journey times over the existing river crossings at Culham Cut / Sutton Bridge and Clifton Hampden Bridge. Any routes that use these bridges in the future, currently the 95 and 33 services, would benefit from the improved journey times and reliability.

6.4.2 As explained in Section 3.3, there are currently poor opportunities for bus routes to offer good journey time reliability north / south in this area due to the severance created by the River Thames and the historic road network. The South Oxfordshire Infrastructure Delivery Plan (IDP) includes requirements for several new bus routes to support planned growth. It is the intention for two of these routes to use the new Didcot to Culham River Crossing road, and as such the future bus network has been planned assuming the new road is in place. Without the new road it is unlikely the new bus routes could be delivered; the routes would take longer and be less reliable, increasing operating costs, while at the same time being less attractive to use, suppressing revenue. It is unlikely the proposed new routes would be viable without the new road, which would cause several strategic new developments to be more car dependent and less acceptable in planning terms.

6.4.3 The exact routes of the new services is not yet finalised, however the intention is for them to provide links from the development areas at Chalgrove to Culham Science Centre then via the new Didcot to Culham River Crossing road towards Didcot, and from Oxford's Eastern Arc, covering the Bayswater Brook, Northfield and Grenoble Road development sites, again to Culham Science Centre and onwards towards Didcot via the new road. These services will also serve the proposed strategic housing development at Culham. It is intended that both routes will eventually operate half-hourly, combining to provide four buses per hour along the new road in each direction.

6.4.4 The new services will be initially funded through S106 contributions from the development sites that they will serve. This will cover the start-up period where passenger use is built-up over time and as development build-out progresses. The requirement for subsidy will decline over this time as

passenger numbers and associated revenue increases, with the routes eventually becoming self-funding through passenger revenue alone.

6.5 Impact on the Highway Network

6.5.1 The following sections set out the performance of the junctions along the Scheme, and the impact of the Scheme on off-site junctions, in the 2024 and 2034 scenarios without and with the HIF1 Scheme.

6.6 Scheme Junctions

6.6.1 Table 6.1 summarises the results of the capacity assessments of the junctions along the Scheme. Junction model outputs (Junctions 9 and LinSig) are provided in Appendix H.

Table 6.1: Summary of Scheme Junction Capacity Results

Junction		Junction Type	2024 With				2034 With			
			AM		PM		AM		PM	
			RFC/ PRC	Queue	RFC/ PRC	Queue	RFC/ PRC	Queue	RFC/ PRC	Queue
SCH1	A4130 / Service Area / North West Valley Park	Roundabout	0.79	4	0.64	2	0.73	3	0.94	14
SCH2	A4130 / Valley Park access signalised junction	Signalised Junction	32%	16	64%	11	48%	13	33%	14
SCH3	A4130 / Science Bridge	Roundabout	0.95	14	0.79	4	0.93	11	0.97	19
SCH4	Valley Park Spine Road / Science Bridge Link	Roundabout	0.38	1	0.39	1	0.77	3	0.83	5
SCH5	Science Bridge Link Road / New Purchas Road	Priority Junction	0.41	1	0.39	1	0.73	4	0.79	6
SCH6	A4130 / Science Bridge	Priority Junction	1.01	12	1.37	71	1.99	65	1.95	48
SCH7	A4130 / New Thames River Crossing / Collett	Roundabout	0.65	2	0.59	2	0.77	3	0.81	4
SCH8	New Thames River Crossing / Hanson and FCC Access Road	Priority Junction	0.24	1	0.08	0	0.75	3	0.21	0
SCH9	New Thames River Crossing / B4016	Priority Junction	0.20	0	0.41	1	1.00	7	0.99	5
SCH10	New Thames River Crossing / B4016	Roundabout	0.42	1	0.56	1	0.69	2	0.91	9
SCH11	New Thames River Crossing / A415	Roundabout	0.48	1	0.35	0	0.61	2	0.59	1
SCH12	A415 / Clifton Hampden Bypass / Culham Science Centre	Roundabout	0.67	2	0.35	1	0.94	13	0.58	1
SCH13	Clifton Hampden Bypass / realigned A415	Priority Junction	0.29	0	0.32	1	***	59	1.28	19
SCH14	Clifton Hampden Bypass / B4015	Priority Junction	0.56	1	0.26	0	***	49	***	29
SCH15	Clifton Hampden Bypass / Culham Science Centre Access	Left In / Left Out Junction	0.05	0	0.13	0	0.10	0	0.44	1

**** Indicates that Junctions 9 predicts that the flow is significantly in excess of capacity and is unable to calculate a maximum RFC.*

A4130 / Service Area / North West Valley Park (SCH1)

6.6.2 The results of the 2024 and 2034 capacity assessments for the A4130 / Service Area / North West Valley Park access junction are presented in the following table.

Table 6.2: Operation of A4130 / Service Area / North West Valley Park (SCH1)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
A4130 (E)	0.79	4	0.64	2	0.73	3	0.67	2
NW Valley Park	0.00	0	0.00	0	0.13	0	0.13	0
Mays/Minscombe Services	0.09	0	0.11	0	0.05	0	0.24	0
A4130 (W)	0.52	1	0.61	2	0.71	3	0.94	14

6.6.3 The results indicate that the junction will operate within capacity in 2024. In 2034 the junction is shown to be approaching capacity in the PM peak, with the RFC on the A4130(W) arm exceeding the desirable maximum value of 0.85, but still within capacity.

A4130 / Valley Park access signalised junction (SCH2)

6.6.4 The results of the 2024 and 2034 capacity assessments for the A4130 / Valley Park access signalised junction are presented in the following table.

Table 6.3: Operation of A4130 / Valley Park access signalised junction (SCH2)

Arm	2024				2034			
	AM		PM		AM		PM	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A4130 (E)	68%	17	55%	12	61%	14	64%	14
Valley Park	11%	1	4%	0	51%	4	32%	2
A4130 (W)	38%	6	45%	8	49%	9	68%	14
Cycle time	108s		108s		108s		108s	
PRC	32%		64%		48%		33%	

6.6.5 The results indicate that the junction will operate within capacity in 2024 and 2034, with PRCs in excess of 30% in all scenarios and time periods.

A4130 / Science Bridge junction (SCH3)

6.6.6 The results of the 2024 and 2034 capacity assessments for the A4130 / Science Bridge junction are presented in the following table.

Table 6.4: Operation of A4130 / Science Bridge junction (SCH3)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
A4130 (E)	0.95	14	0.79	4	0.64	2	0.77	3
Science Bridge Link	0.81	4	0.62	2	0.93	11	0.84	5
A4130 (W)	0.58	2	0.68	2	0.78	4	0.97	19

6.6.7 The results indicate that the junction will operate within capacity in 2024, although the desirable maximum RFC is exceeded on the A4130(E) arm in the AM peak. In 2034 the junction is shown to be approaching but within capacity in both peaks, with the desirable maximum RFC exceeded on the Science Bridge link arm in the AM peak and the A4130(W) arm in the PM peak.

6.6.8 The overall flow change from 2024 to 2034 shows an increase. However, the A4130(E) arm has a significant decrease in flow, causing it to show a reduction in RFC (although the other two arms show an increase in RFC). Whilst traffic overall has increased from 2024 to 2034, it is being distributed more efficiently across the arms of the roundabout in 2034, producing a slightly lower maximum RFC in the AM peak.

Valley Park Spine Road / Science Bridge Link (SCH4)

6.6.9 The results of the 2024 and 2034 capacity assessments for the Valley Park Spine Road / Science Bridge Link junction are presented in the following table.

Table 6.5: Operation of Valley Park Spine Road / Science Bridge Link junction (SCH4)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Science Bridge	0.37	1	0.35	1	0.57	2	0.75	3
Valley Park Spine Road	0.07	0	0.03	0	0.77	3	0.61	2
Science Bridge Link	0.38	1	0.39	1	0.65	2	0.83	5

6.6.10 The results indicate that the junction will operate within capacity in 2024 and 2034.

Science Bridge Link Road / New Purchas Road (SCH5)

6.6.11 The results of the 2024 and 2034 capacity assessments for the Valley Park Spine Road / Science Bridge Link junction are presented in the following table.

Table 6.6: Operation of Science Bridge Link Road / New Purchas Road junction (SCH5)

Movement	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
New Purchas Rd - A4130(W)	0.04	0	0.05	0	0.29	0	0.30	0
New Purchas Rd - A4130(E)	0.27	0	0.19	0	0.73	3	0.79	3
A4130(W) - A4130(E)	0.39	1	0.37	1	0.69	4	0.76	6
A4130(W) - New Purchas Rd	0.41	0	0.39	0	0.68	1	0.72	1

6.6.12 The results indicate that the junction will operate within capacity in 2024 and 2034.

A4130 / Science Bridge (SCH6)

6.6.13 The results of the 2024 and 2034 capacity assessments for the A4130 / Science Bridge junction are presented in the following table.

Table 6.7: Operation of A4130 / Science Bridge junction (SCH6)

Movement	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Old A4130 - A4130(W)	1.01	3	1.37	5	1.99	21	1.95	28
Old A4130 - A4130(E)	1.01	12	1.37	71	1.96	65	1.92	48
A4130(W) - Old A4130(E)	0.16	0	0.07	0	0.25	0	0.15	0
A4130(E) - Old A4130(W)	0.62	2	0.53	1	0.75	3	0.69	2

6.6.14 The results indicate that the junction would be operating over capacity in both 2024 and 2034. Queuing and delays are predicted to occur on the minor arm (old A4130) in both peaks, although the new Science Bridge link road operates within capacity with no queuing or delays.

6.6.15 Although the stand-alone junction model indicated this junction would be operating over capacity, the applicant views this as acceptable for the following reasons:

- The strategy for the Scheme is to prioritise the mainline flow over side arm flows, particularly in this location. The intention is for vehicles coming from the west on the A4130 wishing to travel north on Didcot to Culham River crossing or east on the A4130 Didcot Northern Perimeter Road to use the new Didcot Science Bridge, rather than continue along the old A4130 past Sir Frank Williams Avenue and use the A4130 / B4493 / Mendip Heights roundabout (OFF4) and A4130 / Basil Hill Road / Milton Road (Power Station) roundabout (OFF5), A level of queuing on the side arm of SCH6 will help to achieve this by influencing driver behaviour.

- One of the main ways this can be achieved is to discourage traffic from using the existing A4130 between the Mendip Heights and Purchas Road roundabouts by creating a priority T-junction instead of a roundabout where the existing A4130 meets the new A4130, thus giving priority to the peripheral route. The roundabout at the Collett access to the Southmead Industrial Estate will still remain and so provides easier access for HGV movements eastwards.

- The traffic modelling data indicates that 78% of the minor arm traffic at the junction is turning right in the AM peak, and 65% in the PM peak in 2034. There is an alternative route to travel north / east by turning right at the A4130/Purchas Road/Hawksworth Road junction and travelling via the industrial estate to the improved A4130/New Thames River Crossing/Collett roundabout (SCH7), from where traffic can either continue north on the New Thames River Crossing or east along the A4130 eastbound. The southern arm of the proposed A4130/New Thames River Crossing/Collett roundabout has spare capacity to accommodate re-routing traffic (refer to results for SCH7).

- The traffic modelling data indicates that 22% of the minor arm traffic at the junction is turning left in the AM peak, and 35% in the PM peak in 2034. There is an alternative route to travel south / west by turning left at the A4130 / Basil Hill Road / Milton Road (Power Station) roundabout (OFF5) to access the new Didcot Science Bridge Road at SCH5.

- When updating the Paramics model assumptions to support the HIF application the LPA had advised 400 dwellings should be included on the Didcot A site. However, it is understood that this is no longer likely, therefore, if the 400 units do not come forward, the model is assuming too many trips in this area.

- Any drivers from existing housing in Didcot are likely to be heading north over the new Didcot to Culham River Crossing. Without the HIF Scheme, their route north would have been through Long Wittenham / Clifton Hampden or Sutton Courtenay / Culham. Therefore, if they are queuing at SCH6 junction they are taking a different route to baseline conditions, where they would have been queuing through the villages.

- Stand-alone junction models do not account for breaks in the mainline traffic flow as a result of junctions or crossings further upstream and downstream. The results are therefore likely to show longer queues on side arms of priority junctions. For example, in this location of SCH6, the mainline flow is likely to have more gaps in vehicles than predicted by the stand-alone

junction model due to the signalised crossing, bus stop, and roundabout to the north, and to the south the bus stop, three parallel crossings, the other side road accesses from future development, and the roundabout.

A4130 / New Thames River Crossing / Collett (SCH7)

6.6.16 The results of the 2024 and 2034 capacity assessments for the A4130 / New Thames River Crossing / Collett junction are presented in the following table.

Table 6.8: Operation of A4130 / New Thames River Crossing / Collett (SCH7)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
New Culham Crossing	0.33	1	0.59	2	0.69	2	0.74	3
A4130 (E)	0.65	2	0.44	1	0.77	3	0.68	2
Collett	0.16	0	0.13	0	0.32	1	0.40	1
A4130(W)	0.47	1	0.58	1	0.71	3	0.81	4

6.6.17 The results indicate that the junction will operate within capacity in 2024 and 2034.

New Thames River Crossing / Hanson & FCC Access Road (SCH8)

6.6.18 The results of the 2024 and 2034 capacity assessments for the New Thames River Crossing / Hanson & FCC Access Road junction are presented in the following table.

Table 6.9: Operation of New Thames River Crossing / Hanson & FCC Access Road (SCH8)

Movement	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
FCC/Hanson - New Culham Crossing(N)	0.03	0	0.03	0	0.08	0	0.05	0
FCC/Hanson - New Culham Crossing(S)	0.24	1	0.08	0	0.75	3	0.21	0
New Culham Crossing (N) - New Culham Crossing (S) / FCC/Hanson	0.04	0	0.02	0	0.06	0	0.02	0

6.6.19 The results indicate that the junction will operate within capacity in 2024 and 2034.

New Thames River Crossing / B4016 (SCH9)

6.6.20 The results of the 2024 and 2034 capacity assessments for the New Thames River Crossing / B4016 junction are presented in the following table.

Table 6.10: Operation of New Thames River Crossing / B4016 (SCH9)

Movement	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
B4016 - New Thames Crossing (S)	0.01	0	0.02	0	1.00	1	0.99	1
B4016 – New Thames Crossing (N)	0.20	0	0.41	1	0.98	7	0.92	5
New Thames Crossing (S) – New Thames Crossing (N) / B4016	0.04	0	0.02	0	0.06	0	0.06	0

6.6.21 The results indicate that the junction will operate within capacity in 2024. In 2034 the junction is predicted to operate at very close to capacity. Whilst RFC values are predicted to be between 0.92 and 1.00 in 2034, the maximum queue length on the B4016 is only seven vehicles.

6.6.22 Although the stand-alone junction model indicated this junction would be operating at very close to capacity in 2034, the applicant views this as acceptable for the following reasons:

- The strategy for the Scheme is to prioritise the mainline flow over side arm flows, particularly in this location. The intention is for vehicles coming from existing areas of Didcot and future new housing on the north and eastern sides of Didcot (North East Didcot 1,880 dwellings in the model, Ladygrove East 642 dwellings in model) to access the new Didcot to Culham River Crossing from the Collett roundabout (SCH7). A different junction type in this location could be more attractive to drivers from the locations stated above, potentially resulting in more trips through Appleford Village. Therefore, a level of queuing on the side arm is deemed reasonable as it will operate as a village access whilst not being too attractive for through-trips.

- Any drivers from existing housing in Didcot, North East Didcot or Ladygrove East are likely to be heading north over the new Didcot to Culham River Crossing. Without the HIF Scheme, their route north would have likely been through Appleford Village and then Sutton Courtenay / Culham. Therefore, the Scheme is reducing flows through the villages by offering a more suitable route from Collett roundabout (SCH7). Any delay to Appleford residents experienced at this junction SCH9 is significantly outweighed by the reduction in through traffic in the village.

- Stand-alone junction models do not account for breaks in the mainline traffic flow as a result of junctions or crossings further upstream and downstream. The results are therefore likely to show longer queues on side arms of priority junctions. For example, in this location of SCH9, the mainline flow is likely to have more gaps in vehicles than predicted by the stand-alone junction model due to the signalised crossing, bus stops, and roundabout to the north, and to the south the signalised crossing, two parallel crossings, bus stops, the other side road accesses from future development, and the roundabout.

New Thames River Crossing / B4016 Appleford Road (SCH10)

6.6.23 The results of the 2024 and 2034 capacity assessments for the New Thames River Crossing / B4016 Appleford Road junction are presented in the following table.

Table 6.11: Operation of New Thames River Crossing / B4016 Appleford Road (SCH10)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
New Thames Crossing	0.32	1	0.56	1	0.69	2	0.91	9
B4016 Appleford Road (S)	0.42	1	0.39	1	0.69	2	0.67	2
B4016 Appleford Road (N)	0.41	1	0.25	0	0.42	1	0.37	1

6.6.24 The results indicate that the junction will operate within capacity in 2024 and 2034, although the desirable maximum RFC of 0.85 will be exceeded in the 2034 PM peak with a small queue of nine vehicles.

New Thames River Crossing / A415 Abingdon Road (SCH11)

6.6.25 The results of the 2024 and 2034 capacity assessments for the New Thames River Crossing / A415 Abingdon Road junction are presented in the following table.

Table 6.12: Operation of New Thames River Crossing / A415 Abingdon Road (SCH11)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
New Access Road	0.00	0	0.01	0	0.03	0	0.06	0
A415 Abingdon Road (E)	0.22	0	0.35	1	0.33	1	0.52	1
New Thames Crossing	0.48	1	0.33	1	0.61	2	0.59	1
A415 Abingdon Road (W)	0.33	1	0.20	0	0.61	2	0.39	1

6.6.26 The results indicate that the junction will operate within capacity in 2024 and 2034.

A415 / Clifton Hampden Bypass / Culham Science Centre (SCH12)

6.6.27 The results of the 2024 and 2034 capacity assessments for the A415 / Clifton Hampden Bypass / Culham Science Centre junction are presented in the following table.

Table 6.13: Operation of A415 / Clifton Hampden Bypass / Culham Science Centre (SCH12)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
CSC Access	0.05	0	0.28	0	0.11	0	0.38	1
Clifton Hampden Bypass (E)	0.21	0	0.12	0	0.34	1	0.25	0
Clifton Hampden Bypass (W)	0.67	2	0.35	1	0.94	13	0.58	1
CSV Access	0.04	0	0.07	0	0.50	1	0.15	0

6.6.28 The results indicate that the junction will operate within capacity in 2024. In 2034 the junction is shown to be operating within capacity in both peaks, although the desirable maximum RFC of 0.85 is exceeded on the Clifton Hampden Bypass (W) arm in the AM peak.

Clifton Hampden Bypass / Realigned A415 (SCH13)

6.6.29 The results of the 2024 and 2034 capacity assessments for the Clifton Hampden Bypass / Realigned A415 priority junction are presented in the following table.

Table 6.14: Operation of Clifton Hampden Bypass / Realigned A415 (SCH13)

Movement	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
A415 - Clifton Hampden Bypass(W)	0.29	0	0.19	0	***	59	1.28	19
A415 - Clifton Hampden Bypass(E)	0.04	0	0.01	0	***	30	1.16	5
Clifton Hampden Bypass(W) - A415	0.22	0	0.32	1	0.20	0	0.26	0

**** Indicates that Junctions 9 predicts that the flow is significantly in excess of capacity and is unable to calculate a maximum RFC.*

6.6.30 The results indicate that the junction will operate within capacity in 2024. In 2034 capacity is exceeded in both peaks with queues and delays occurring on the minor arm (realigned section of the A415). No delays are experienced on the Clifton Hampden Bypass.

6.6.31 Although the stand-alone junction model indicated this junction would be operating over capacity in 2034, the applicant views this as acceptable for the following reasons:

- The strategy for the Scheme is to prioritise the mainline flow over side arm flows. The intention is for vehicles coming from the south of the River Thames and wishing to head north / east of SCH13 to make the journey from Collett Roundabout (SCH7). A different junction type in this location could be more attractive to drivers, reducing the rerouting benefits of the Scheme that remove trips through Long Wittenham and Clifton Hampden. Therefore, a level of queuing on the side arm in the peaks deemed acceptable as it will operate as a village access whilst not being too attractive for through-trips.

- The traffic modelling data indicates that 34% of the minor arm traffic at the junction is turning right in the AM peak, and 29% in the PM peak in 2034. As this traffic is heading east, there is an alternative route through Clifton Hampden via Abingdon Road and Oxford Road (SCH14), and this would appear to be the more logical route selection to travel east. If the right turn movements are removed from the 2034 scenarios the junction would then operate within capacity. There is also another existing alternative route via A415 through Burcot.

- Any drivers in a queue on this side arm are trying to travel east or west on the Clifton Hampden Bypass. Without the HIF Scheme, significantly more drivers would be travelling through the staggered signalised junction in Clifton Hampden Village (OFF6 and OFF7, see results in Table 6.26 and Table 6.27). Delays at the signalised junction in the 'No HIF' scenario are significantly higher than those predicted at this junction in the 'With HIF' scenario.

- Stand-alone junction models do not account for breaks in the mainline traffic flow as a result of junctions or crossings further upstream and downstream. The results are therefore likely to show longer queues on side arms of priority junctions. For example, in this location, the mainline flow is likely to have more gaps in vehicles than predicted by the stand-alone junction model due to the bus stops to the north-east, and bus stops, Toucan crossing and roundabout to the south-west.

Clifton Hampden Bypass / B4015 (SCH14)

6.6.32 The results of the 2024 and 2034 capacity assessments for the Clifton Hampden Bypass / B4015 priority junction are presented in the following table.

Table 6.15: Operation of Clifton Hampden Bypass / B4015 (SCH14)

Movement	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
B4015 - Clifton Hampden Bypass (W)	0.05	0	0.06	0	***	18	***	16
B4015 - Clifton Hampden Bypass (E)	0.56	1	0.26	0	***	49	***	29
Clifton Hampden Bypass (W) - Clifton Hampden Bypass (E) / B4015	0.05	0	0.05	0	0.07	0	0.33	1

**** Indicates that Junctions 9 predicts that the flow is significantly in excess of capacity and is unable to calculate a maximum RFC.*

6.6.33 The results indicate that the junction will operate within capacity in 2024. In 2034 capacity is exceeded in both peaks with queues and delays occurring on the minor arm (B4015). No delays are experienced on the Clifton Hampden Bypass.

6.6.34 Although the stand-alone junction model indicated this junction would be operating over capacity in 2034, the applicant views this as acceptable for the following reasons:

- The strategy for the Scheme is to prioritise the mainline flow over side arm flows. The intention is for vehicles coming from the south of the River Thames and wishing to head north / east of SCH14 to make the journey from Collett Roundabout (SCH7). A different junction type in this location could be more attractive to drivers, reducing the rerouting benefits of the Scheme that remove trips through Long Wittenham and Clifton Hampden. Therefore, a level of queuing on the side arm in the peaks is deemed acceptable as it will operate as a village access whilst not being too attractive for through-trips.
- There is another existing alternative route via A415 through Burcot.
- Any drivers in a queue on this side arm are trying to travel east or west on the Clifton Hampden Bypass. Without the HIF Scheme, significantly more drivers would be travelling through the staggered signalised junction in Clifton Hampden Village (OFF6 and OFF7, see results in Table 6.26 and Table 6.27 Delays at the signalised junction in the 'No HIF' scenario are significantly higher than those predicted at this junction in the 'With HIF' scenario.

Clifton Hampden Bypass / Culham Science Centre Access (SCH15)

6.6.35 The results of the 2024 and 2034 capacity assessments for the Clifton Hampden Bypass / Culham Science Centre Access junction (left turn egress only) are presented in the following table.

Table 6.16: Clifton Hampden Bypass / Culham Science Centre (SCH15)

Arm	2024				2034			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
CSC Access – Clifton Hampden Bypass (E)	0.05	0	0.13	0	0.10	0	0.44	1
Clifton Hampden Bypass (E) – CSC Access	0.00	0	0.00	0	0.00	0	0.00	0

6.6.36 The results indicate that the junction will operate within capacity in 2024 and 2034. There is no right turn movement allowed from the bypass into this junction, resulting in 0 RFC values for that movement.

6.7 Off-Site Junctions

6.7.1 Junction capacity assessment results for 2024 and 2034, with and without the HIF1 Scheme, are summarised in the following table. The 2020 baseline scenario results are also shown for comparison purposes (ref. Table 3.4). Impacts at Milton Interchange (OFF 1) are considered in Section 6.9

Table 6.17: Summary of Off-site Junction Capacity Results

Junction		Junction Type	2020 Baseline				2024 Without HIF1				2024 With HIF 1				2034 Without HIF 1				2034 With HIF1			
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
			RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)	RFC/ PRC	Q (PCU)
OFF2	A4130 / Service Area	Priority Junction	0.60	2	0.55	1	0.61	2	0.59	1	0.49	1	0.66	2	1.07	18	0.77	3	0.71	2	0.40	1
OFF3	A4130 / Milton Gate	Signalised Junction	+7%	15	-2%	18	-5%	22	-2%	20	-6%	24	-3%	21	-52%	220	-25%	93	-5%	22	-6%	25
OFF4	A4130 / B4493 / Mendip Heights	Roundabout	0.62	2	0.73	3	1.02	31	1.02	33	0.74	3	0.74	3	1.47	459	1.42	229	0.73	3	0.54	1
OFF5	A4130 / Basil Hill Rd / Milton Rd (Power Station)	Roundabout	0.79	4	1.16	77	0.73	2	0.83	5	0.42	1	0.59	1	1.10	122	1.11	57	0.54	1	0.65	2
OFF6 & OFF7	A415 / High Street/ B4015 Oxford Rd	Signalised Junction	-241%	173	-273%	194	-270%	192	-122%	160	34%	7	19%	6	-606%	539	-348%	455	12%	9	3%	11
OFF8	Harwell Road / Milton Road / High Street	Mini Roundabout	0.39	1	0.54	1	0.47	1	0.63	2	0.37	1	0.29	0	0.97	15	1.00	25	0.49	1	0.44	1
OFF9	High St / High St	Priority Junction	0.44	1	0.89	7	1.00	18	1.10	44	0.43	1	0.45	1	1.88	494	1.76	447	0.55	1	0.69	2
	High St /Church St	Priority Junction	0.58	1	1.19	47	1.35	87	1.47	135	0.62	2	0.58	1	2.69	654	2.43	557	0.84	4	1.06	20
	High St / Brook St	Priority Junction	0.23	1	0.16	0	0.26	1	0.18	0	0.20	0	0.15	0	0.31	1	0.24	0	0.26	1	0.49	0
OFF10	B4016 / Abingdon Road	Priority Junction	-22%	51	-14%	37	-26%	58	20%	15	25%	6	47%	9	-47%	109	-11%	30	7%	18	13%	16
OFF11	A415 / Tollgate Road	Signalised Junction																				
OFF12	A4130 / Lady Grove	Priority junction / Roundabout *	0.68	2	0.97	19	0.53	1	0.50	1	0.53	1	0.45	1	0.58	1	0.62	2	0.72	3	0.61	2
OFF13	Lady Grove / Sires Hill	Priority Junction	0.95	10	0.48	1	0.79	3	0.43	1	0.50	1	0.39	1	1.37	49	1.07	13	0.80	4	0.61	2
OFF14	Sires Hill / Didcot Road	Priority Junction	0.26	1	0.29	0	0.35	1	0.38	1	0.30	1	0.33	1	0.96	25	1.54	45	0.65	2	0.70	1

* *Priority junction in 2020 baseline scenario; roundabout in 2024 and 2034 scenarios*

6.8 Future Year Junction Capacity Assessments – Off Site Junctions

6.8.1 The following section provides a summary of the 2024 and 2034 capacity assessments for the off-site junctions, without and with the HIF1 Scheme. Junction model outputs (Junctions 9 and LinSig) are provided in Appendix B.

A4130 / Service Area Junction (OFF 2)

6.8.2 The results of the capacity assessments for the A4130 / Service Area priority junction are presented in Table 6.18 and Table 6.19for 2024 and 2034 respectively.

Table 6.18: Operation of A4130 / Service Area Junction (OFF 2) – 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Service Area to A4130	0.61	2	0.59	1	0.49	1	0.66	1
A4130	0.33	1	0.40	1	0.34	0	0.43	1

Table 6.19: Operation of A4130 / Service Area Junction (OFF 2) – 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Service Area to A4130	1.07	18	0.77	3	0.71	2	0.40	1
A4130	0.60	1	0.47	1	0.35	1	0.38	1

6.8.3 The results indicate that without the HIF1 Scheme, the junction would operate within capacity in 2024 but capacity would be exceeded in the AM peak in 2034, with excessive queuing occurring on the service area access.

6.8.4 The HIF1 Scheme is expected to result in a significant improvement in junction performance, and the junction is predicted to operate within capacity in 2024 and 2034, with minimal queuing on any arm.

A4130 / Milton Gate Signalised Junction (OFF 3)

6.8.5 The results of the capacity assessments for the A4130 / Milton Gate signalised junction are presented in Table 6.20 and Table 6.21 for 2024 and 2034 respectively.

Table 6.20: Operation of A4130 / Milton Gate Signalised Junction (OFF 3) - 2024

Approach & Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A4130 (W) Left Ahead	51.3%	6.5	57.3%	7.8	56.7%	7.4	62.3%	8.7
A4130 (W) Ahead	53.7%	7.5	59.0%	8.6	58.7%	8.6	63.9%	9.8
Milton Gate Right Left	27.5%	1.4	28.4%	1.4	25.5%	1.3	26.6%	1.3
A4130 (E) Ahead	61.8%	8.5	31.2%	3.4	73.3%	11.3	47.7%	5.8
A4130 (E) Ahead Right	94.1%	22.2	92.1%	20.3	95.0%	23.5	93.1%	21.3
Cycle time	66 seconds		66 seconds		66 seconds		66 seconds	
PRC	-4.5%		-2.4%		-5.6%		-3.3%	

Table 6.21: Operation of A4130 / Milton Gate Signalised Junction (OFF 3) - 2034

Approach & Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A4130 (W) Left Ahead	90.3%	18.4	112.7%	86.4	76.2%	12.1	95.4%	23.5
A4130 (W) Ahead	91.2%	20.3	112.7%	93.1	77.8%	13.7	95.8%	25.4
Milton Gate Right Left	32.7%	1.7	25.4%	1.2	25.3%	1.2	26.2%	1.3
A4130 (E) Ahead	134.2%	183.7	84.6%	14.9	61.2%	8.3	50.8%	6.4
A4130 (E) Ahead Right	136.5%	219.6	96.5%	25.7	94.1%	22.2	93.3%	21.5
Cycle time	66 seconds		66 seconds		66 seconds		66 seconds	
PRC	-51.7%		-25.2%		-4.6%		-6.4%	

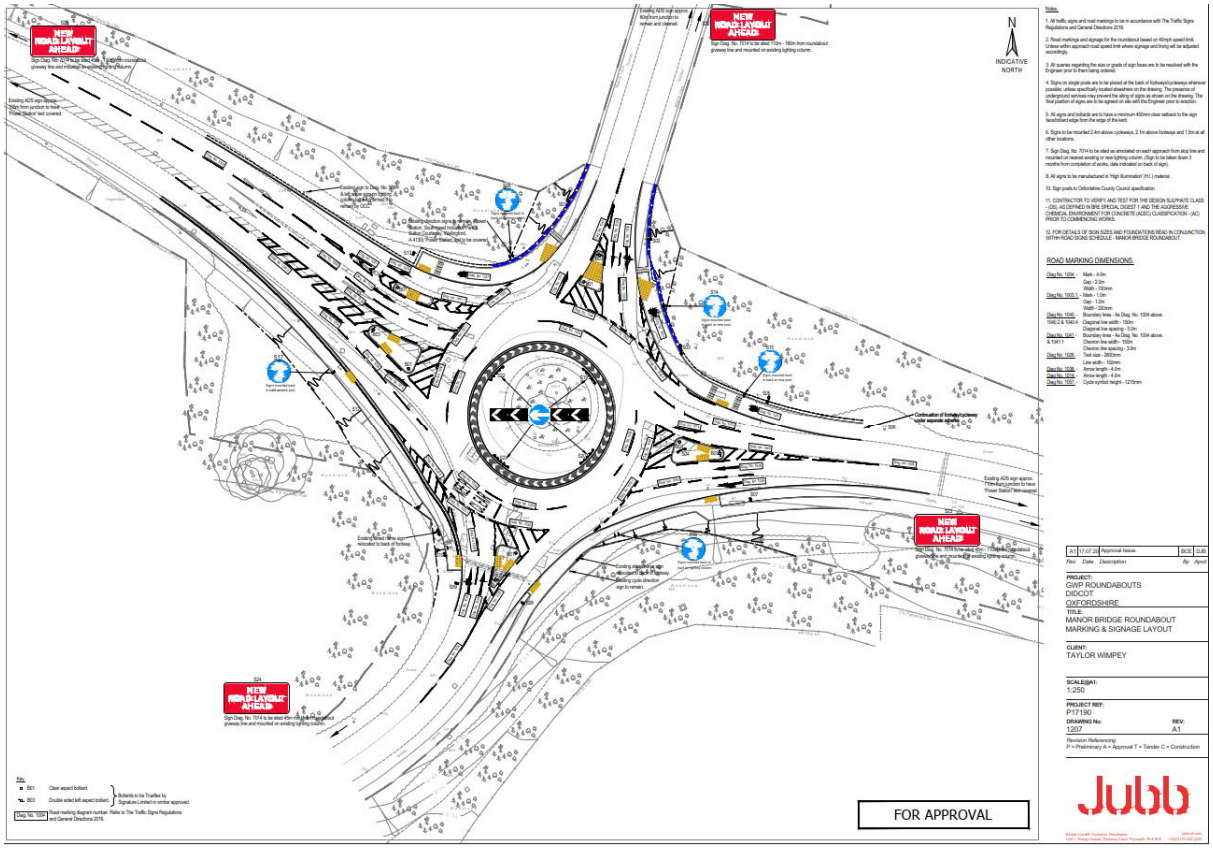
6.8.6 The results indicate that without the HIF1 Scheme, the design capacity of the junction would be exceeded in 2024 in both peaks with a PRC between -2.4% and -4.5%, although the junction would still be operating within theoretical capacity. By 2034 junction performance would deteriorate further, with theoretical capacity exceeded in both peaks and significant queuing on both the A4130(E) and A4130(W) approaches. The PRC for the junction would decrease significantly to between -51.7% and -25.2%.

6.8.7 With the HIF1 Scheme, the junction is predicted to operate within theoretical capacity in 2024 and 2034, although the DoS on the A4130(W) and A4130(E) approaches is predicted to exceed 90%, indicating that the junction is approaching its theoretical capacity and resulting in PRCs of -5% and -6% in the AM and PM peaks respectively. The HIF1 Scheme creates a significant improvement in junction operation in 2034, with performance and queues similar to those in the 2020 baseline assessment.

A4130 / B4493 / Mendip Heights Roundabout (OFF 4)

6.8.8 As explained in Table 5.3, an improvement scheme has been proposed for this junction as S278 works related to a nearby housing site, which is currently undergoing review by OCC Road Agreements Team. The future year assessments have been based on the proposed scheme. The scheme layout is shown below (Drawing 1207 Rev A1, '*Manor Bridge Roundabout Marking and Signage Layout*', Jubb, 17/07/2020).

Figure 6.15: Proposed Layout for A4130/B4493/Mendip Heights Junction



6.8.9 The results of the capacity assessments for the A4130 / B4493 / Mendip Heights junction are presented in Table 6.22 and Table 6.23 for 2024 and 2034 respectively.

Table 6.22: Operation of A4130 / B4493 / Mendip Heights Roundabout (OFF 4) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
A4130 (North)	0.78	3	0.87	6	0.24	0	0.52	1
B4493	1.02	31	1.02	33	0.74	3	0.74	3
Mendip Heights	0.14	0	0.09	0	0.14	0	0.07	0
A4130 (West)	0.56	1	0.52	1	0.41	1	0.29	0

Table 6.23: Operation of A4130 / B4493 / Mendip Heights Roundabout (OFF 4) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
A4130 (North)	1.27	144	1.42	229	0.32	1	0.53	1
B4493	1.47	459	1.29	261	0.73	3	0.54	1
Mendip Heights	0.22	0	0.14	0	0.20	0	0.08	0
A4130 (West)	0.93	12	0.90	8	0.58	1	0.34	1

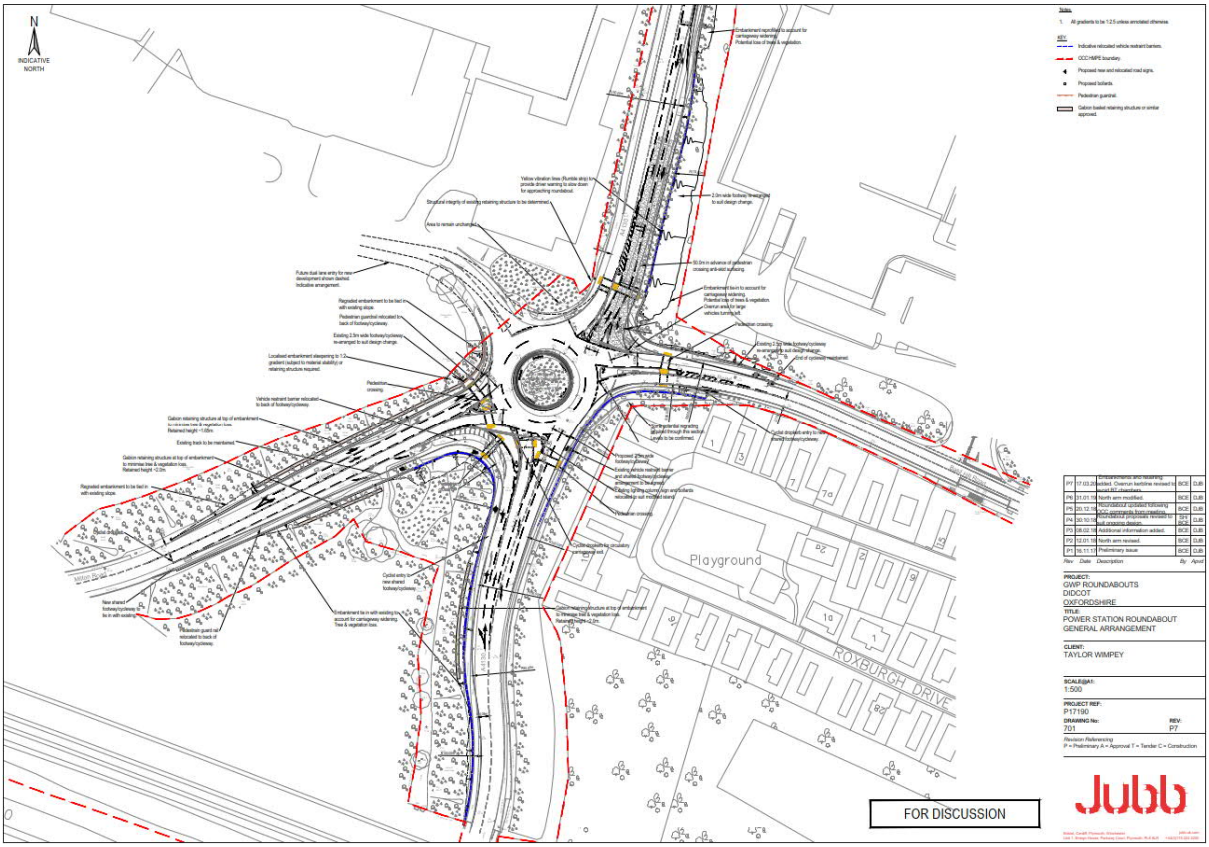
6.8.10 The results indicate that without the HIF1 Scheme, junction capacity would be exceeded in both peaks in 2024 and 2034, with long queues on the A4130(N) and the B4493.

6.8.11 With the HIF1 Scheme, operation of the junction is significantly improved and it is predicted to operate within capacity in 2024 and 2034.

Power Station Roundabout (OFF 5)

6.8.12 As explained in Table 5.3, an improvement scheme has been proposed for this junction as S278 works related to a nearby housing site, which is currently undergoing review by OCC Road Agreements Team. The future year assessments have been based on the proposed scheme. The scheme layout is shown below (Drawing No. 701 Rev P7, '*Power Station Roundabout General Arrangement''*, Jubb, 17/03/2020).

Figure 6.16: Proposed Layout for Power Station Roundabout



6.8.13 The results of the capacity assessments for the Power Station roundabout are presented in Table 6.24 and Table 6.25 for 2024 and 2034 respectively.

Table 6.24: Operation of Power Station Roundabout (OFF 5) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
A4130 (North)	0.67	2	0.46	1	0.22	0	0.23	0
Basil Hill Road	0.73	2	0.25	0	0.42	1	0.26	0
A4130 (South)	0.72	3	0.53	1	0.33	1	0.18	0
Milton Road	0.49	1	0.83	5	0.25	0	0.59	1
Access Road	0.05	0	0.08	0	0.10	0	0.08	0

Table 6.25: Operation of Power Station Roundabout (OFF 5) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
A4130 (North)	0.94	12	0.70	2	0.26	0	0.15	0
Basil Hill Road	38.0	122	0.58	1	0.54	1	0.37	1
A4130 (South)	1.10	54	0.98	18	0.37	1	0.15	0
Milton Road	0.67	2	1.11	57	0.34	1	0.65	2
Access Road	0.25	0	0.31	0	0.19	0	0.18	0

6.8.14 The results indicate that without the HIF1 Scheme, the junction would operate within capacity in 2024, but capacity would be exceeded in both peaks in 2034, with capacity exceeded on the A4130(S) and Basil Hill Road arms in the AM peak, and on the Milton Road arm in the PM peak.

6.8.15 With the HIF1 Scheme, performance of the junction significantly improves. It is forecast to operate within capacity in both 2024 and 2034.

Clifton Hampden Signalised Junction (OFF6 & OFF7)

The results of the capacity assessments for the Clifton Hampden staggered signalised junction are presented in Table 6.26 and Table 6.27 for 2024 and 2034 respectively.

Table 6.26: Operation of Clifton Hampden Signalised Junction (OFF6 & OFF7) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A415 Abingdon Ahead Right Left	166.8%	109.5	90.0%	12.4	41.7%	2.0	45.2%	3.0
Internal Junction link Eastbound East Ahead Left	61.9%	2.2	48.0%	1.8	32.7%	0.5	24.3%	0.6
A415 Burcot Ahead Right	333.0%	192.7	199.3%	160.2	66.2%	4.0	75.5%	5.8
Internal Junction link Westbound West Ahead Left Right	57.1%	6.4	66.3%	6.3	27.2%	1.3	45.8%	4.4
High Street Right Left Ahead	165.5%	132.1	190.8%	101.5	67.4%	6.6	59.6%	3.2
Watery Lane Plough Inn	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
B4015 Left Right	105.8%	17.0	175.4%	96.3	30.4%	1.6	71.9%	5.9
Cycle time	90 seconds		90 seconds		90 seconds		90 seconds	
PRC	-270%		-122%		34%		19%	

Table 6.27: Operation of Clifton Hampden Signalised Junction (OFF6 & OFF7) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A415 Abingdon Ahead Right Left	345.5%	405.4	273.4%	410.1	29.0%	1.3	34.4%	1.6
Internal Junction link Eastbound East Ahead Left	58.7%	2.1	51.5%	1.9	31.0%	0.7	18.0%	0.6
A415 Burcot Ahead Right	635.7%	446.4	385.9%	455.2	39.8%	1.9	87.6%	7.2
Internal Junction link Westbound West Ahead Left Right	58.4%	6.5	69.9%	7.1	18.5%	0.4	63.4%	9.4
High Street Right Left Ahead	376.2%	539.3	403.3%	406.3	80.6%	9.2	76.0%	4.5
Watery Lane Plough Inn	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
B4015 Left Right	260.2%	198.1	281.5%	223.8	30.9%	1.7	85.7%	10.5
Cycle time	90 seconds		90 seconds		90 seconds		90 seconds	
PRC	-606%		-348%		+12%		+3%	

6.8.16 Based on the same signal timings as the 2020 model, the junction is forecast to operate above capacity in 2024 without the HIF1 Scheme, with significant queuing in both AM and PM peaks and a PRC of -270% in the AM peak. By 2034, without the HIF1 Scheme the operation of the junction would deteriorate further, with a PRC of -606% in the AM peak and -348% in the PM peak.

6.8.17 With the HIF1 Scheme there is a significant improvement in the operation of the junction. It is forecast to operate within capacity in both 2024 and 2034 with significantly reduced queues in the village.

Harwell Road / Milton Road / High Street Mini Roundabout (OFF 8)

6.8.18 The results of the capacity assessments for the Harwell Road / Milton Road / High Street mini roundabout are presented in Table 6.28 and Table 6.29 for 2024 and 2034 respectively.

Table 6.28: Operation of Harwell Rd / Milton Rd / High Street Mini Roundabout (OFF 8) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
High Street	0.44	1	0.29	0	0.37	1	0.22	0
Harwell Road	0.47	1	0.63	2	0.17	0	0.29	0
Milton Road	0.36	1	0.21	0	0.27	0	0.15	0

Table 6.29: Operation of Harwell Rd / Milton Rd / High Street Mini Roundabout (OFF 8) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
High Street	0.54	1	0.33	1	0.49	1	0.43	1
Harwell Road	0.97	15	1.00	25	0.24	0	0.44	1
Milton Road	0.74	3	0.44	1	0.29	0	0.22	0

6.8.19 The results indicate that without HIF1 the junction would operate within capacity in 2024, but would be reaching theoretical capacity in 2034 with RFCs exceeding the desirable maximum of 0.85 in both the AM and PM peaks and operating with an RFC of 1.00 in the PM peak without HIF1.

6.8.20 With the HIF1 Scheme there is a significant improvement in the operation of the junction, and it is forecast to operate well within capacity in both 2024 and 2034 with minimal queuing.

High Street / Church Street / Brook Street Junction (OFF 9)

6.8.21 The results of the capacity assessments for the High Street / Church Street / Brook Street junction are presented in Table 6.30 and Table 6.31 for 2024 and 2034 respectively.

Table 6.30: Operation of High Street / Church Street / Brook Street Junction (OFF 9) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
High Street to High Street								
High St (N) to High St	0.49	1	0.39	1	0.43	1	0.30	0
High St (S) to High St (N)	1.00	18	1.10	44	0.43	1	0.45	1
High Street to Church Street								
High St to Brook St/ Church St	1.35	87	1.47	135	0.62	2	0.58	1
Brook St to High St	0	0	0	0	0	0	0	0
High Street to Brook Street								
High St to Brook St/ Church St	0.11	0	0.18	0	0.09	0	0.15	0
Church St to High St	0.26	1	0.11	0	0.20	0	0.08	0

Table 6.31: Operation of High Street / Church Street / Brook Street Junction (OFF 9) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
High Street to High Street								
High St (N) to High St	0.54	1	0.40	1	0.53	1	0.62	2
High St (S) to High St (N)	1.88	494	1.76	447	0.55	1	0.69	2
High Street to Church Street								
High St to Brook St/ Church St	2.69	654	2.43	577	0.84	4	1.06	20
Brook St to High St	0	0	0	0	0	0	0	0
High Street to Brook Street								
High St to Brook St/ Church St	0.16	0	0.24	0	0.11	0	0.49	0
Church St to High St	0.31	1	0.13	0	0.26	1	0.21	0

6.8.22 Without the HIF1 Scheme, the junction is forecast to operate above capacity in the AM peak and PM peak hours in 2024, and the performance of the junction deteriorates further by 2034.

6.8.23 With the HIF1 Scheme there is a significant improvement in junction performance. It is forecast to operate within capacity in 2024. In 2034, capacity is exceeded in the PM peak, with a maximum RFC

of 1.06 on the High Street to Brook Street/Church Street movement and a maximum queue of 20 vehicles. This is low compared to the same without HIF1 scenario with a forecast RFC of 2.43 and a maximum queue of 577.

6.8.24 Junction performance in the 2034 With HIF1 scenario is predicted to be similar to 2020 in the AM, and better in the PM, with a maximum RFC of 1.06 and associated queue of 20 vehicles in 2034 compared to RFC of 1.19 and queue of 47 vehicles in 2020 as shown in Table 3.11.

Tollgate Road / Abingdon Road Junctions (OFF 10 and OFF 11)

6.8.25 The results of the capacity assessments for the B4016 Appleford Road/Abingdon Road junction (OFF 10) and A415 / Tollgate Road junction (OFF 11) are presented in Table 6.32 and Table 6.33 for 2024 and 2034 respectively.

Table 6.32: Operation of Tollgate Road / Abingdon Road Junctions (OFF 10 & OFF 11) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A415 / Tollgate Road Junction Signals								
Abingdon Rd (E) - Ahead Left	64%	7	74%	9	52%	6	61%	9
Tollgate Road – Right Left	112%	42	73%	6	72%	3	54%	2
Abingdon Rd (W) - Ahead Right	99%	28	62%	5	44%	6	38%	3
Culham Bridges Signals								
Culham Br N/bound - Ahead	113%	58	73%	13	24%	4	20%	3
Culham Br S/bound – Ahead	49%	12	75%	15	13%	3	14%	3
Appleford Road / Abingdon Road Priority Junction								
Appleford Rd (E) – Right Ahead	15%	0	20%	0	21%	0	21%	0
Appleford Rd (W) – Left Ahead	47%	0	39%	0	33%	0	24%	0
Abingdon Road – Left Right	40%	12	50%	14	16%	0	14%	0
Cycle time	154 / 111 seconds		154 / 111 seconds		154 / 111 seconds		154 / 111 seconds	
PRC	-26.0%		+19.9%		+24.7%		+46.5%	

Table 6.33: Operation of Tollgate Road / Abingdon Road Junctions (OFF 10 & OFF 11) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A415 / Tollgate Road Junction Signals								
Abingdon Rd (E) - Ahead Left	81%	11	75%	7	78%	14	80%	16
Tollgate Road – Right Left	93%	16	78%	10	84%	11	73%	5
Abingdon Rd (W) - Ahead Right	91%	13	64%	5	70%	18	54%	7
Culham Bridges Signals								
Culham Br N/bound - Ahead	133%	109	100%	30	82%	17	45%	8
Culham Br S/bound – Ahead	65%	16	84%	16	16%	3	20%	4
Appleford Road / Abingdon Road Priority Junction								
Appleford Rd (E) – Right Ahead	26%	0	31%	0	34%	0	36%	0
Appleford Rd (W) – Left Ahead	73%	1	57%	0	39%	0	34%	0
Abingdon Road – Left Right	121%	87	85%	17	24%	3	44%	6
Cycle time	154 / 111 seconds		154 / 111 seconds		154 / 111 seconds		154 / 111 seconds	
PRC	-47.2%		-10.7%		+6.9%		+12.9%	

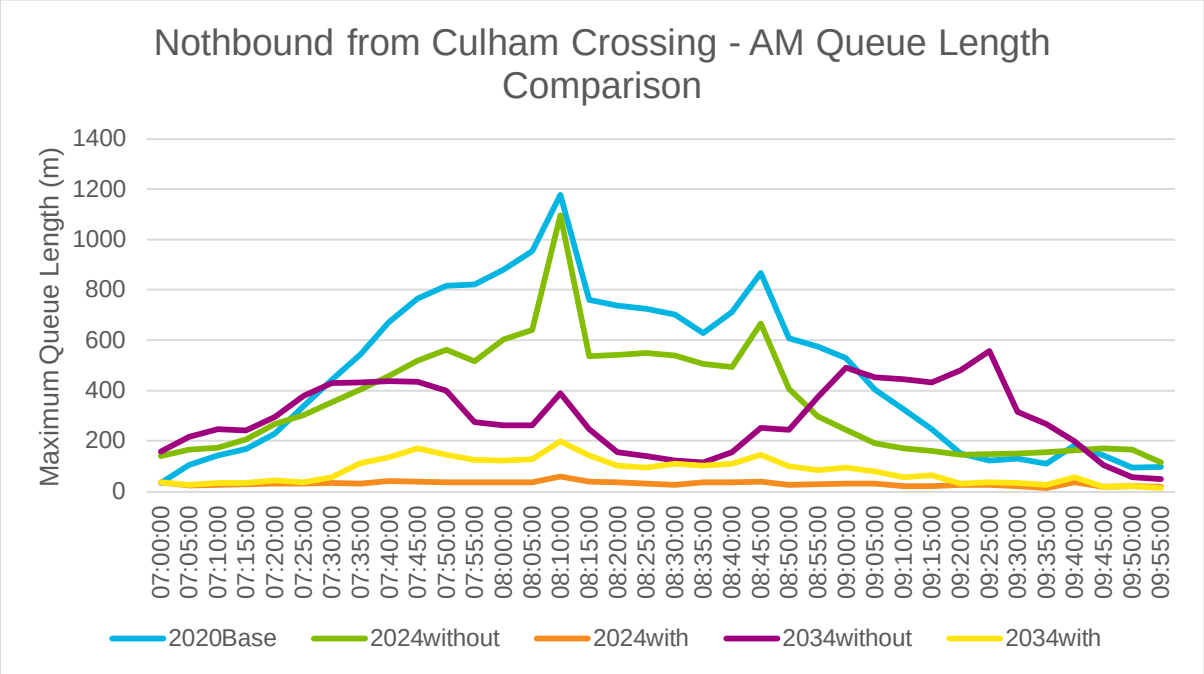
6.8.26 The results indicate that in 2024 without the HIF1 Scheme the junctions will operate above capacity in the AM peak and within capacity in the PM peak. Interrogation of the traffic flows for the 2024 PM peak scenario indicate that total traffic flows are lower than in the 2020 scenario. However, journey time data for the routes through this part of the network indicate higher journey times in 2024 compared to 2020 (ref Section 6.10). Congestion elsewhere on the network is therefore reducing the traffic flows through this part of the network, giving a false indication that network operation has improved when solely modelling this junction in a stand-alone manner.

6.8.27 In 2034 there is further deterioration in network performance in the AM peak. Network performance in the PM peak is indicated to be similar to the 2020 scenario, however this is related to congestion on the network elsewhere preventing traffic reaching these junctions, as for the 2024 scenario.

6.8.28 In the 'with HIF1' scenarios there is a significant improvement in network operation, with all junctions operating within capacity in both 2024 and 2034 and predicted queue lengths at a level that would not block back to adjacent junctions. The forecast PRC for all junctions in 2024 is between 24.7% and 46.5% and in 2034 it is forecast to be between 6.9% and 12.9% indicating that there will be spare capacity at these junctions with the HIF1 Scheme.

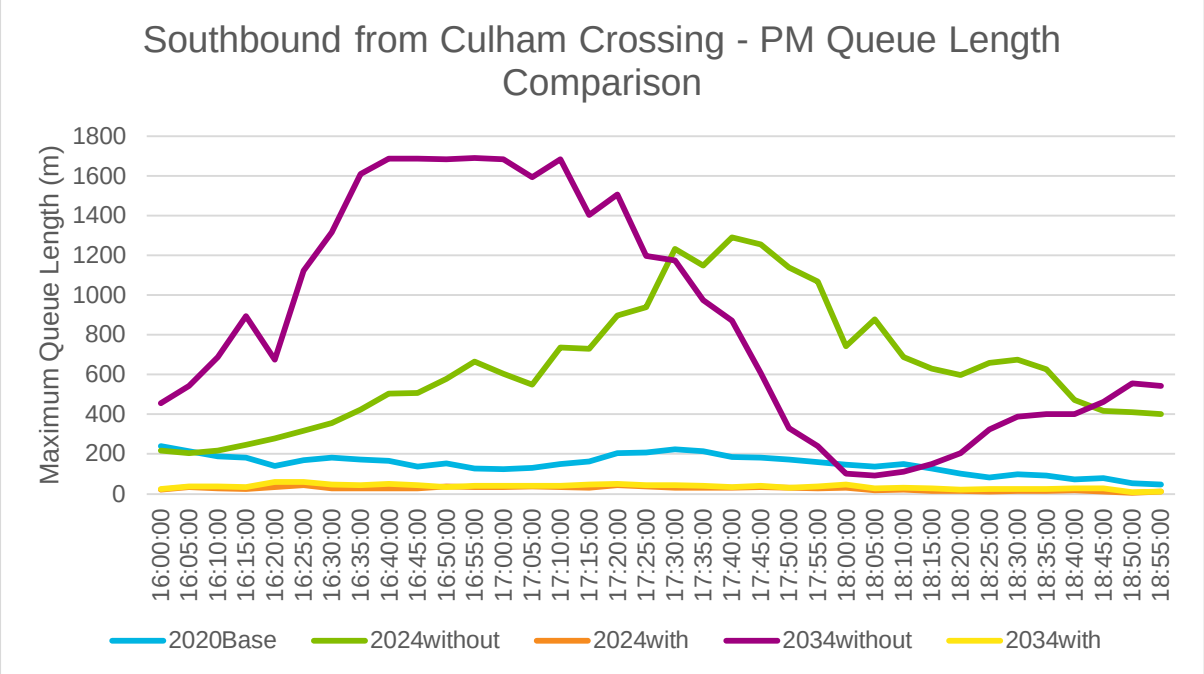
6.8.29 As explained in the baseline section, these junctions are complex to model due to the interaction of queuing back between them, particularly the uncontrolled priority junction at the south. As done for the baseline scenario, queue length data has been extracted from the Paramics model to further understand the predicted operation of these junctions across future scenarios. The model queue data uses the demand scenarios as shown in Figure 5.2, excluding the 70% factoring exercise for 2034 without HIF scenario.

Figure 6.17: Culham Crossing Queue Comparison (Northbound)



6.8.30 Figure 6.17 above shows that the Paramics model indicates significant reductions in queue length from the northbound signals before the bridge as a result of the HIF1 Scheme in both 2024 and 2034 AM scenarios. There is no predicted queueing from the crossing signals that would block back to the southern Appleford Road / Abingdon Road priority junction (approximately 290m distance). This contrasts to the base, 2024 without HIF and 2034 without HIF where queuing is predicted to extend back to the junction (and further through Sutton Courtenay) for large portions of the AM peak. It should be noted that the shorter queue lengths in 2024 and 2034 without HIF when compared to base are not due to an improved performance at this junction, but are a result of vehicles being stuck in queues elsewhere in the model network preventing them from reaching the junction. Regardless of this, the model shows a significant improvement at this junction as a result of the HIF1 Scheme.

Figure 6.18: Culham Crossing Queue Comparison (Southbound)



6.8.31 Figure 6.18 above shows that the Paramics model indicates significant reductions in queue length from the southbound signals before the bridge as a result of the HIF1 Scheme in both 2024 and 2034 PM scenarios. There is no predicted queueing from the crossing signals that would block back to the northern A415 / Tollgate Road signalised junction (approximately 430m distance). This contrasts to the

base year which shows a queue approximately 200m long throughout the PM peak hour, and 2024 without HIF and 2034 without HIF where queuing is predicted to extend back to and through the northern junction (and further along the A415) for almost all of the PM peak hour. Therefore, the model shows a significant improvement at this junction as a result of the HIF1 Scheme.

A4130 / Lady Grove Roundabout (OFF 12)

6.8.32 The capacity of the A4130 / Lady Grove roundabout has been assessed based on the proposed roundabout scheme for the junction, which is included in the Paramics model in 2024 and 2034 as explained in Table 5.3. The results of the capacity assessments are presented in Table 6.34 and Table 6.35 for 2024 and 2034 respectively.

Table 6.34: Operation of A4130 / Lady Grove Roundabout (OFF 12) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Lady Grove	0.27	0	0.50	1	0.12	0	0.25	0
Abington Road	0.53	1	0.41	1	0.53	1	0.43	1
A4130	0.34	1	0.32	1	0.50	1	0.45	1

Table 6.35: Operation of A4130 / Lady Grove Roundabout (OFF 12) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Lady Grove	0.46	1	0.62	2	0.17	0	0.46	1
Abington Road	0.58	1	0.41	1	0.72	3	0.60	2
A4130	0.19	0	0.17	0	0.66	2	0.61	2

6.8.33 The results indicate that without the HIF1 Scheme the junction will operate within capacity in 2024 and 2034.

6.8.34 With the HIF1 Scheme there are slight changes to results on each arm with some increasing and others decreasing, and it is forecast to operate within capacity in both 2024 and 2034.

Lady Grove / Sires Hill Junction (OFF 13)

6.8.35 The results of the capacity assessments for the Lady Grove / Sires Hill junction are presented in Table 6.36 and Table 6.37 for 2024 and 2034 respectively.

Table 6.36: Operation of Lady Grove / Sires Hill Junction (OFF 13) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Lady Grove to Sires Hill (East)	0.16	0	0.05	0	0	0	0	0
Lady Grove to Sires Hill (West)	0.79	3	0.43	1	0.50	1	0.39	1
Sires Hill East to Sires Hill (West)	0.23	1	0.40	1	0	0	0.1	0

Table 6.37: Operation of Lady Grove / Sires Hill Junction (OFF 13) - 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Lady Grove to Sires Hill (East)	1.37	6	1.06	3	0.11	0	0.01	0
Lady Grove to Sires Hill (West)	1.35	49	1.07	13	0.80	4	0.61	2
Sires Hill East to Sires Hill (West)	0.64	4	0.88	13	0.01	0	0.58	2

6.8.36 Without the HIF1 Scheme, the junction is forecast to operate within capacity in both the AM and PM peak hour in 2024. The maximum RFC forecast of 0.79 on the Lady Grove to Sires Hill (west) movement. In 2034, junction capacity is forecast to be exceeded in both the AM and PM peaks, with long queues forming on all arms.

6.8.37 With the HIF1 Scheme there is a significant improvement in the operation of the junction, and it is forecast to operate within capacity in both 2024 and 2034. Junction performance in the 2034 With HIF1 scenario is better than that for 2020, where junction capacity is exceeded in the AM peak with an RFC of 0.95 as shown in Table 6.17.

Sires Hill / Didcot Road Junction (OFF 14)

6.8.38 The results of the capacity assessments for the Sires Hill / Didcot Road junction are presented in Table 6.38 and Table 6.39 for 2024 and 2034 respectively.

Table 6.38: Sires Hill / Didcot Road Junction (OFF 14) - 2024

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Sires Hill (South) to-Sires Hill (West)	0.16	0	0.38	1	0.17	0	0.33	1
Sires Hill (South) - Didcot Road	0.27	0	0.32	1	0.15	0	0.10	0
Sires Hill (West)-Sires Hill (South)	0.35	1	0.32	1	0.30	1	0.28	1

Table 6.39: Sires Hill / Didcot Road Junction (OFF 14) – 2034

Movement	Without HIF1				With HIF1			
	AM		PM		AM		PM	
	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue	Max RFC	Queue
Sires Hill (South) to-Sires Hill (West)	0.39	1	1.54	45	0.06	0	0.01	0
Sires Hill (South) - Didcot Road	0.73	2	1.51	25	0.65	2	0.52	1
Sires Hill (West)-Sires Hill (South)	0.96	25	0.68	5	0.01	0	0.70	0

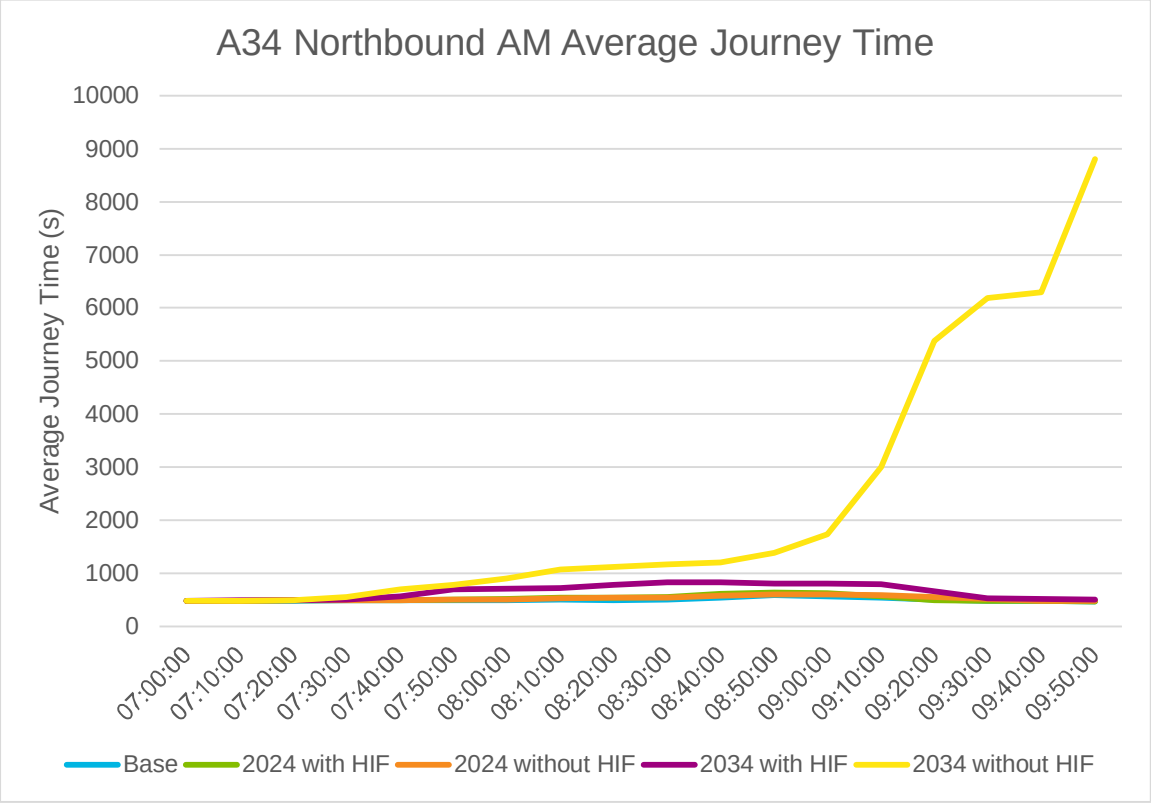
6.8.39 Without the HIF1 Scheme, the junction is forecast to operate within capacity in 2024. In 2034 the junction is forecast to operate at close to capacity in the AM peak, and capacity is exceeded in the PM peak with long queues forming on all arms.

6.8.40 With the HIF1 Scheme there is a significant improvement in the operation of the junction, and it is forecast to operate within capacity in both 2024 and 2034.

6.9 Impacts at Milton Interchange Junction (OFF 1)

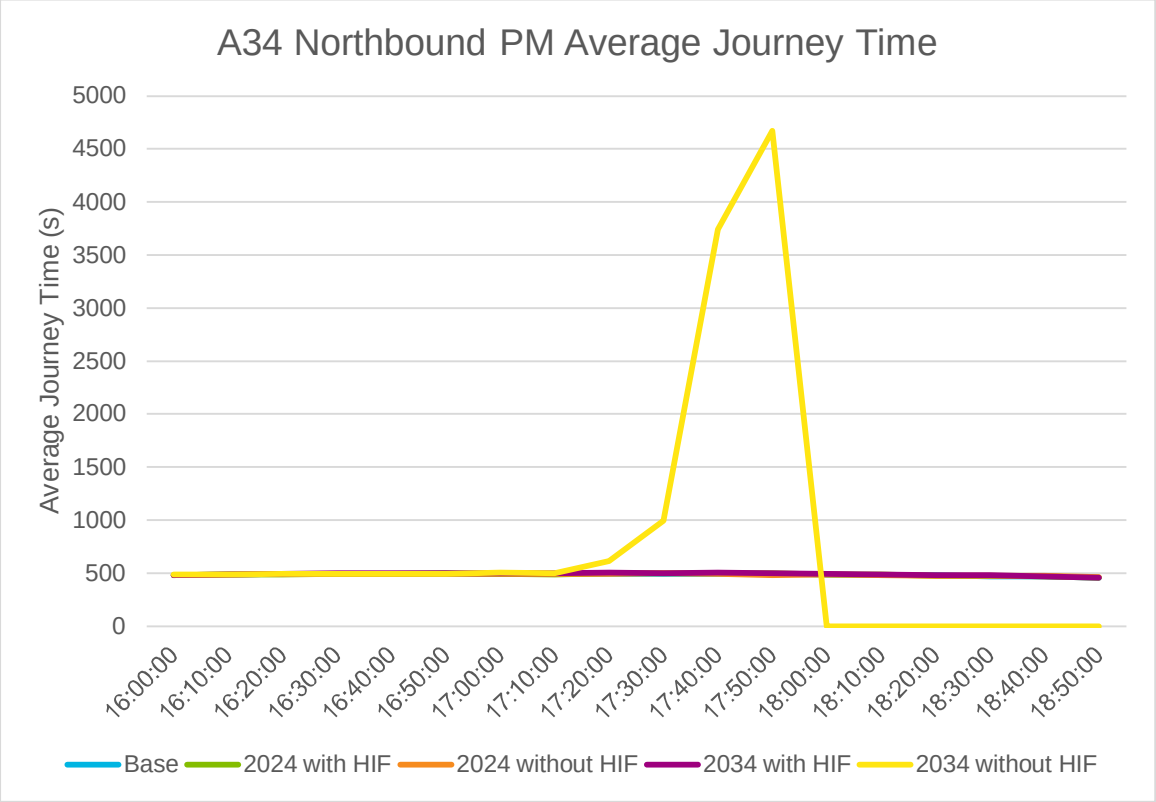
6.9.1 In discussions with Highways England, the impact of the HIF1 Scheme on the A34 and at the A34/A4130 Milton Interchange has been demonstrated by comparing journey times along the A34. This was extracted from the Paramics model along the full length of the A34 covered by the model (approximately 13km), for ten minute intervals 07:00 to 10:00 and 16:00 to 19:00, northbound and southbound, without and with HIF across the scenario years. The demand scenarios are explained in Figure 5.2. Figure 6.19 to Figure 6.22 below show the journey time results.

Figure 6.19: A34 Northbound Average Journey Time (AM)



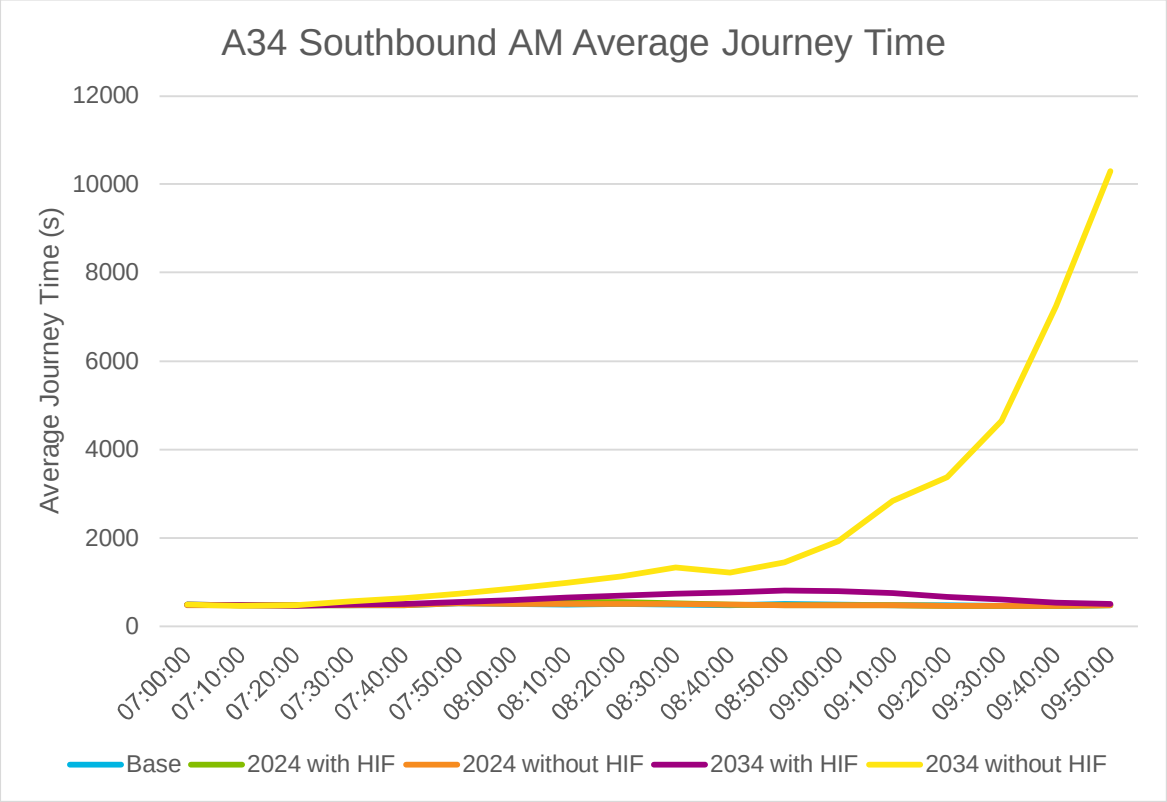
6.9.2 Figure 6.19 shows the northbound AM average journey time along the A34 is similar in the base, 2024 with and without HIF scenarios. The 2034 with HIF scenarios shows a slight increase which is to be expected due to the 14 years of growth above base. The 2034 without HIF scenario shows a significant increase in journey time particularly after 09:00, with vehicles taking over two hours to complete a journey of approximately 13km.

Figure 6.20: A34 Northbound Average Journey Time (PM)



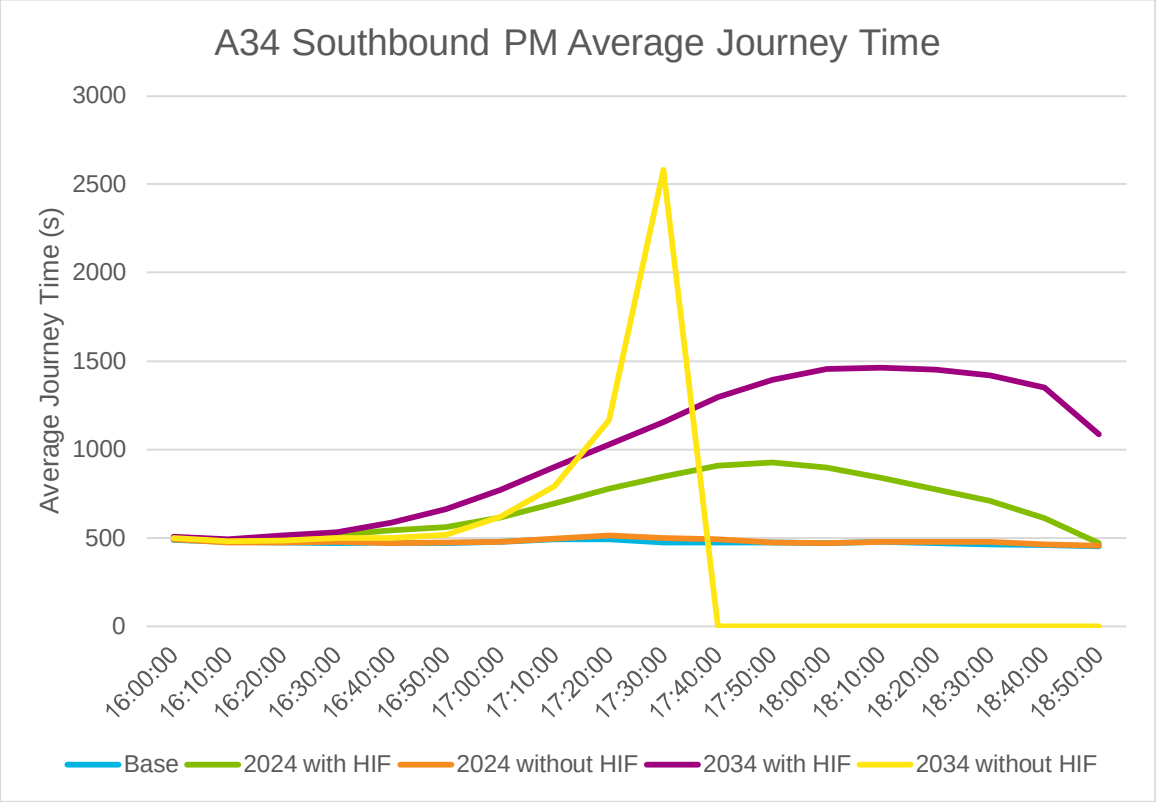
6.9.3 Figure 6.20 shows the northbound PM average journey time along the A34 is similar in the base, 2024 with and without HIF scenarios. The 2034 without HIF scenario shows a significant increase in journey time particularly after 17:30, with vehicles taking over one hour to complete a journey of approximately 13km. After 17:50 the journey time drops to zero as the network is congested and vehicles are not able to complete the journey.

Figure 6.21: A34 Southbound Average Journey Time (AM)



6.9.4 Figure 6.21 shows the southbound AM average journey time along the A34 is similar in the base, 2024 with and without HIF scenarios. The 2034 with HIF scenarios shows a slight increase which is to be expected due to the 14 years of growth above base. The 2034 without HIF scenario shows a significant increase in journey time particularly after 09:00, with vehicles taking over two hours to complete a journey of approximately 13km.

Figure 6.22: A34 Southbound Average Journey Time (PM)



6.9.5 Figure 6.22 shows the southbound PM average journey time along the A34 is similar in the base, 2024 with and without HIF scenarios. The 2034 with HIF scenarios shows an increase which is to be expected due to the 14 years of growth above base. The 2034 without HIF scenario shows a significant increase in journey time particularly after 17:20, with vehicles taking over 41 minutes to complete a journey of approximately 13km. After 17:30 the journey time drops to zero as the network is congested and vehicles are not able to complete the journey.

6.9.6 Interrogation of the model network towards Didcot, across Milton Interchange and travelling east away from it explains the above journey time results on the A34. Figure 6.23 and Figure 6.25 below show the average eastbound journey times in the AM and PM peak hours, for the approximately comparable sections of the model (to the next junction) across the different scenarios. The journey times are across the following distances: 2020 base is 786 metres, 2024 without HIF is 1,032 metres, 2024 with HIF is 724 metres, 2034 without HIF is 1,032 metres, and 2034 with HIF is 717 metres. To allow further comparisons across the scenarios, Figure 6.24 and Figure 6.26 show the average speeds across the section in each scenario, which takes into account the different section lengths.

Figure 6.23: Average Eastbound AM Peak Hour Journey Times

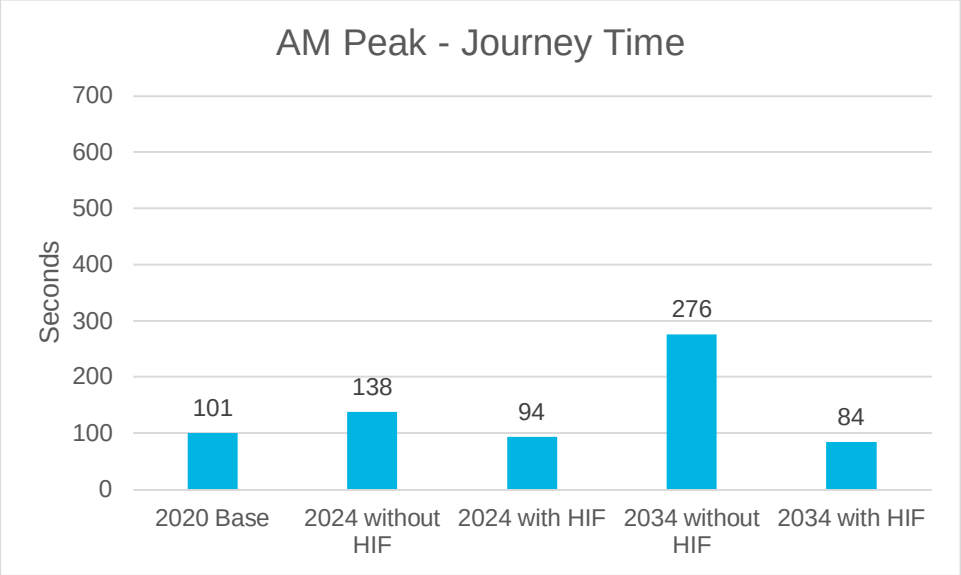
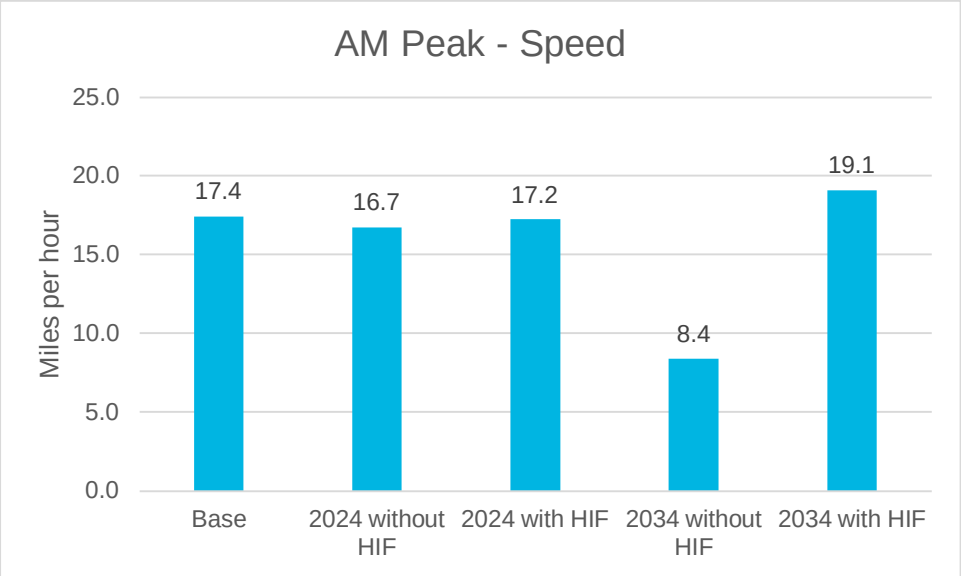


Figure 6.24: Average Eastbound AM Peak Hour Speeds



6.9.7 Figure 6.23 above shows that in 2034 AM peak hour, without HIF the journey takes 276 seconds compared to 84 seconds with HIF. This equates to approximately 8.4 mph and 19.1 mph respectively, as shown in Figure 6.24. The Scheme is allowing vehicles to travel away from Milton Interchange approximately twice as fast, at a speed similar to 2020 base. The effect of this is seen on the A34 as shown in Figure 6.19 and Figure 6.21 above, where significantly increased journey times are seen without HIF, due to the blocking back to Milton Interchange.

Figure 6.25: Average Eastbound PM Peak Hour Journey Times

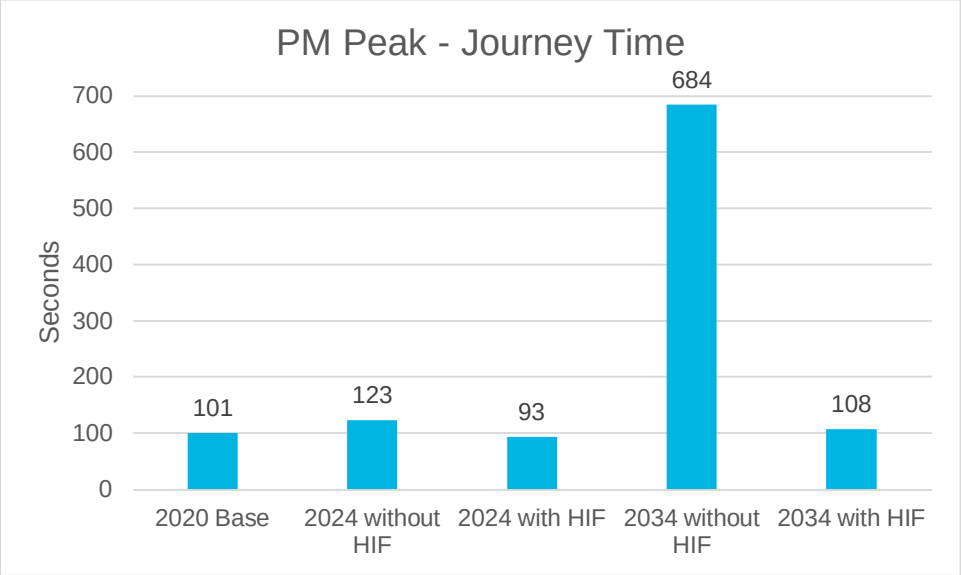
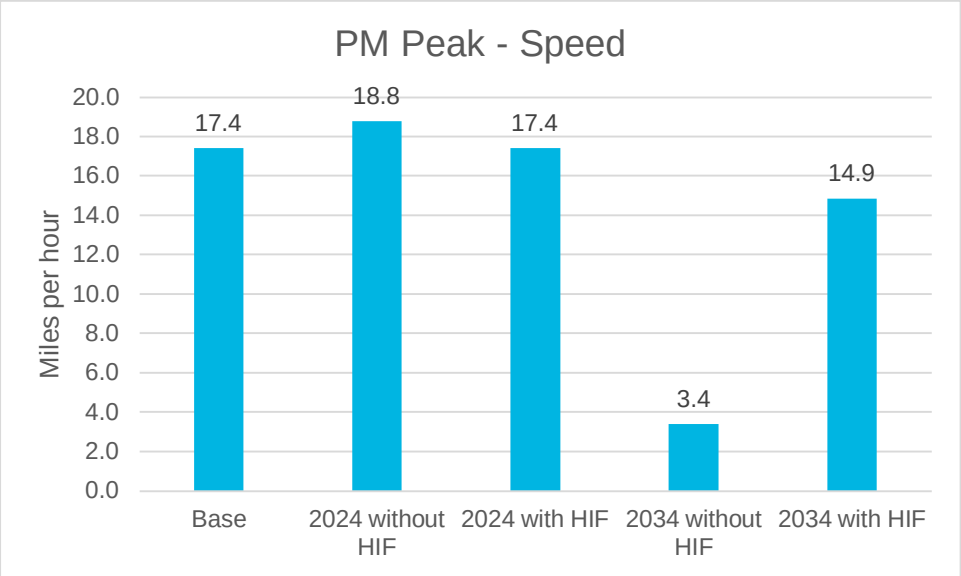


Figure 6.26: Average Eastbound PM Peak Hour Speeds



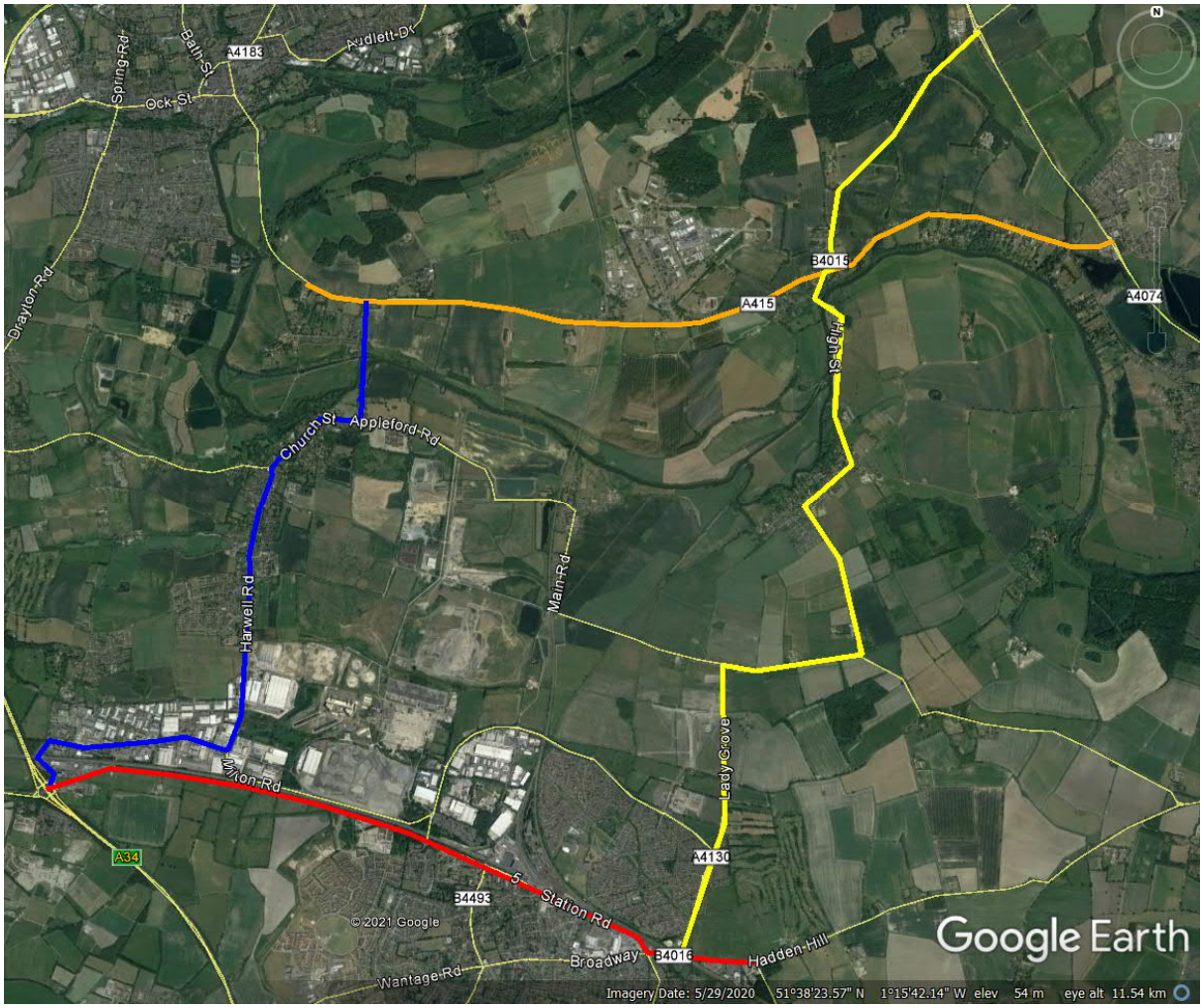
6.9.8 Figure 6.25 above shows that in 2034 PM peak hour, without HIF the journey takes 684 seconds compared to 108 seconds with HIF. This equates to approximately 3.4 mph and 14.9 mph respectively, as shown in Figure 6.26. The Scheme is allowing vehicles to travel away from Milton Interchange approximately four times faster, at a speed similar to 2020 base. The effect of this is seen on the A34 as shown in Figure 6.20 and Figure 6.22 above, where significantly increased journey times are seen without HIF, due to the blocking back to Milton Interchange.

6.9.9 In summary, HIF enables the A4130 eastbound from Milton Interchange to operate more efficiently, allowing vehicles to travel away from the junction. This reduces blocking back through the junction, enabling it to operate more efficiently, which in turn reduces queueing on the A34 off slip roads. The effect of this on the A34 is reduced journey times, as shown in above figures. The greatest impact of the Scheme is shown to be in PM peak.

6.10 Journey Time

6.10.1 Journey time data has been extracted from the Paramics model to enable comparisons of network operation across multiple routes on the highway network. The demand scenarios are explained in Figure 5.2. These four routes, as shown in Figure 6.27, were selected as they represent a good geographic spread across the Scheme area, and they cover the significant areas of existing congestion that the Scheme intends to relieve. They also cover the north/south sections of the existing bus routes over the River Thames, routes 33 and 95.

Figure 6.27: Journey Time Routes



Map data © Google 2021

6.10.2 Journey times for the 2020, 2024 and 2034 scenarios without and with the HIF1 Scheme are presented in Table 6.40 (AM peak) and Table 6.41 (PM peak). The journey times for the '2034 No HIF1' scenario are based on the model run using 100% demand rather than 70% demand (refer to section 5.3.10), as factoring up from the 70% demand model run would not provide reliable results for journey times. The journey times reported for the '2034 No HIF1' scenario therefore reflect the widespread congestion seen on the network in this scenario rather than predicted journey times.

Table 6.40: Journey Time Data – AM Peak

Route	Direction	From	To	Journey Time (seconds)				
				2020 Base	2024 No HIF1	2024 With HIF1	2034 No HIF1	2034 With HIF1
Yellow	Northbound	Hadden Hill	Golden Balls	1,465	3,471	800	7,319	1,224
Yellow	Southbound	Golden Balls	Hadden Hill	1,103	1,553	766	4,953	796
Blue	Northbound	Milton Interchange	A415	1,594	1,287	786	1,648	840
Blue	Southbound	A415	Milton Interchange	997	1,140	804	2,663	1,039
Orange	Eastbound	West of Tollgate Rd	Berinsfield	1,213	1,598	632	5,156	824
Orange	Westbound	Berinsfield	West of Tollgate Rd	666	927	614	2,845	931
Red	Eastbound	Milton Interchange	Hadden Grove	859	940	905	1,486	932
Red	Westbound	Hadden Grove	Milton Interchange	1,139	976	922	1,540	1,624

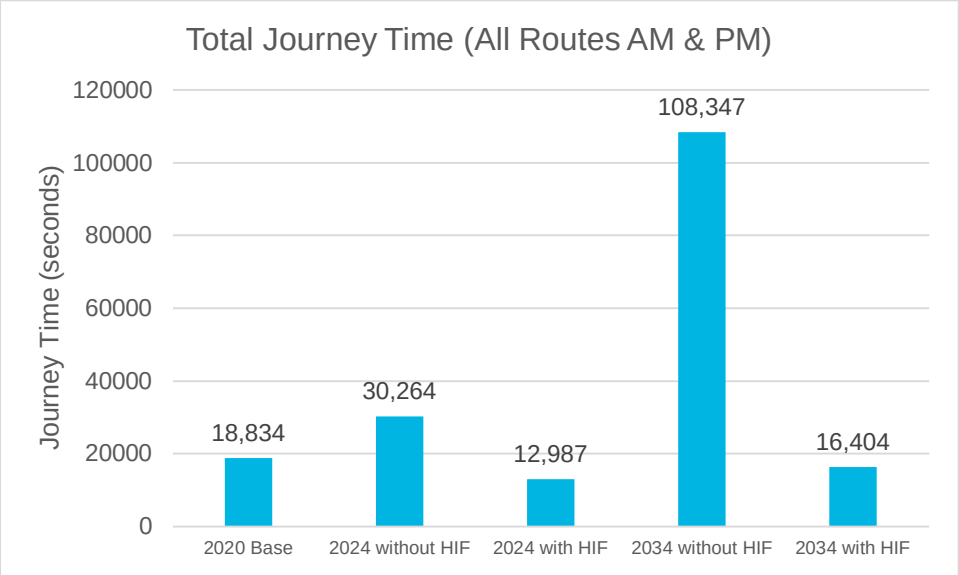
Table 6.41: Journey Time Data – PM Peak

Route	Direction	From	To	Journey Time (seconds)				
				2020 Base	2024 No HIF1	2024 With HIF1	2034 No HIF1	2034 With HIF1
Yellow	Northbound	Hadden Hill	Golden Balls	2,441	4,657	790	12,174	1,144
Yellow	Southbound	Golden Balls	Hadden Hill	1,159	1,206	790	3,009	882
Blue	Northbound	Milton Interchange	A415	967	940	769	1,444	870
Blue	Southbound	A415	Milton Interchange	1,235	2,255	1,280	2,227	1,282
Orange	Eastbound	West of Tollgate Rd	Berinsfield	892	6,250	593	53,785	608
Orange	Westbound	Berinsfield	West of Tollgate Rd	527	842	609	3,627	668
Red	Eastbound	Milton Interchange	Hadden Grove	1,482	1,083	1,038	2,293	1,316
Red	Westbound	Hadden Grove	Milton Interchange	1,096	1,139	888	2,180	1,425

6.10.3 The results indicate significant journey time reductions as a result of the HIF1 Scheme.

6.10.4 A comparison of the sum of journey times for all routes in Table 6.40 and Table 6.41 is shown below.

Figure 6.28: Journey Time Routes



6.10.5 The Figure above demonstrates that the total journey time for all routes is significantly reduced with the HIF1 Scheme in both 2024 and 2034. The yellow and blue routes are used by bus services to cross the River Thames, therefore the Scheme enables lower journey times / improved journey time reliability for bus services using these routes. The significant increase in journey times seen in 2034 without HIF is caused by increases across all routes, but predominantly the orange PM eastbound route. This is created by significant delays at the Clifton Hampden staggered signalised junction and Culham Science Centre entrance. Total journey times in 2034 with the HIF1 Scheme are also slightly lower than those in 2020, showing that the HIF1 Scheme helps to enable the planned growth whilst allowing the road network to operate similarly to the base scenario. Speeds across the entire modelled network help to illustrate this further, as presented in the following section.

6.11 Overall Network Statistics

6.11.1 The average speeds of vehicles were extracted from the Paramics model to represent the overall performance of the network with and without the HIF1 Scheme. The demand scenarios are explained in Figure 5.2. Results from 2020, 2024 and 2034 scenarios without and with the HIF1 Scheme for AM and PM peaks are presented in Figure 6.29 and Figure 6.30 below.

Figure 6.29: AM Average Speed

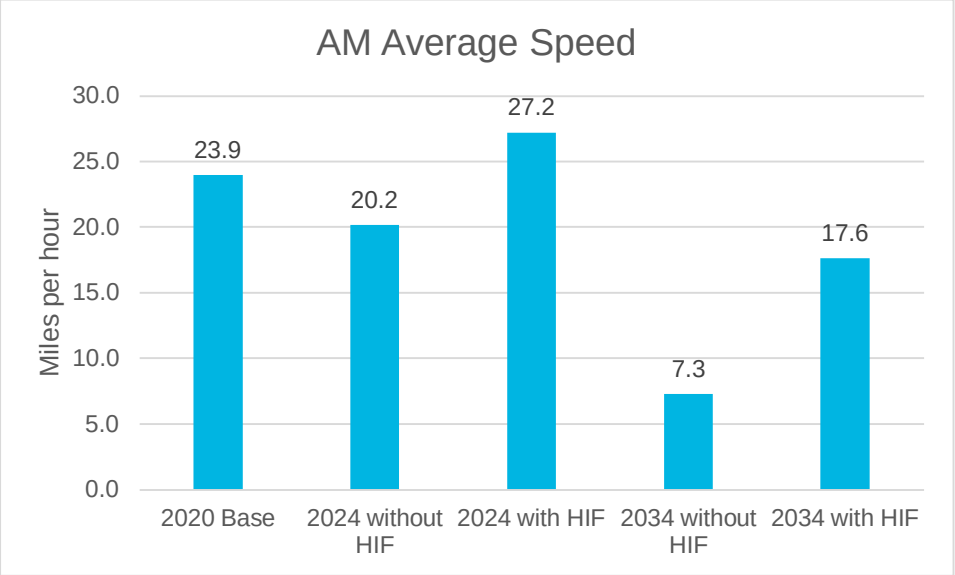
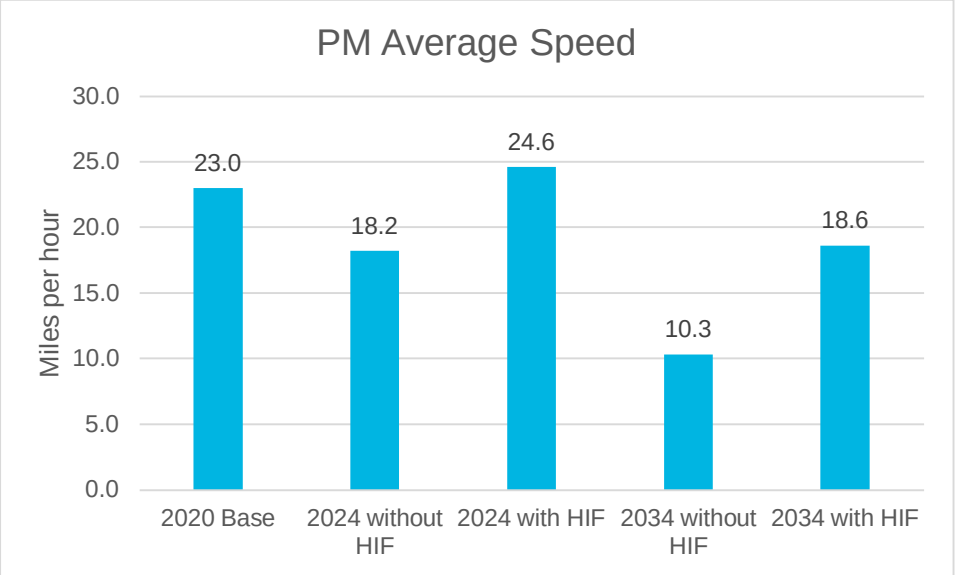


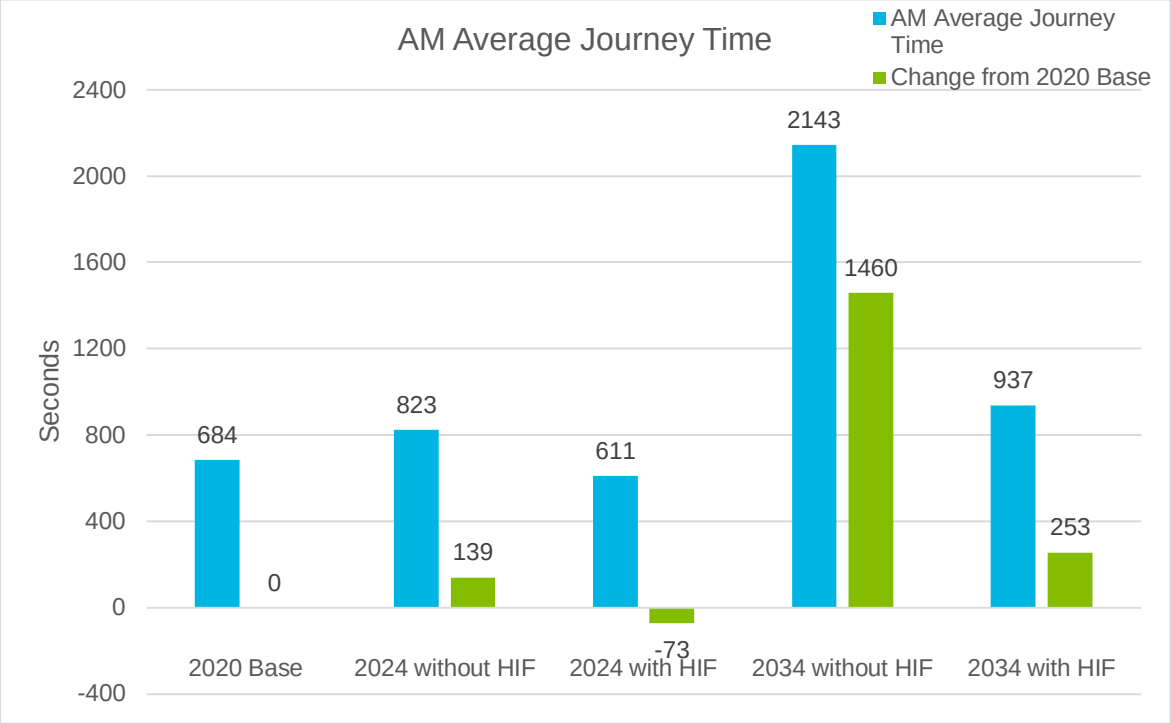
Figure 6.30: PM Average Speed



6.11.2 The Figures above show that additional growth in the model area without the HIF1 Scheme results in a slower moving network, which can be considered as a proxy for congestion. For example, four years of growth from 2020 to 2024 results in a 3.7mph reduction in the AM and 4.8mph reduction in the PM. The HIF1 Scheme in 2024 enables the network to operate more efficiently than 2020, as shown by the higher average speeds. The 2034 without HIF scenario shows a significant reduction in average speed across the network, due to the gridlock situation that develops in the model. The HIF1 Scheme enables the 2034 network to operate similarly to 2024 without HIF. It should be noted that the highway elements of the HIF1 Scheme are intended to be one part of a balanced transport strategy. The high-quality walking and cycling infrastructure elements of the Scheme help to offer alternative options for many journey types and routes.

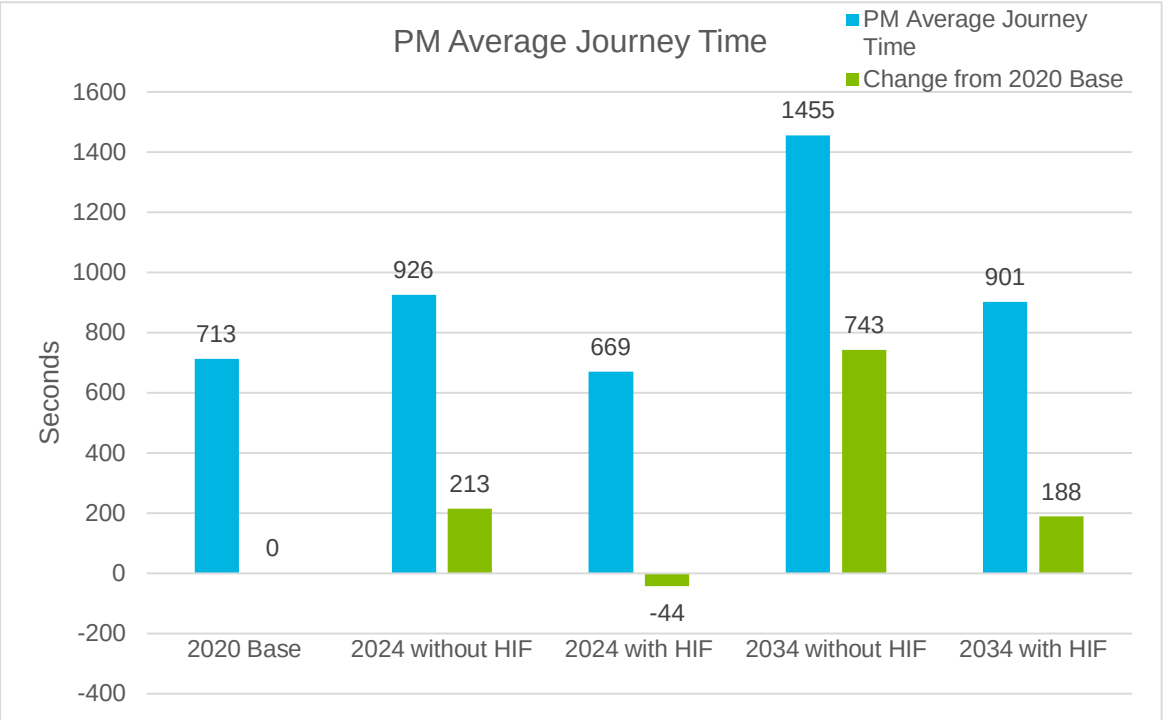
6.11.3 The average journey times of vehicles were extracted from the Paramics model to represent the overall performance of the network with and without the HIF1 Scheme. The demand scenarios are explained in Figure 5.2. Results from 2020, 2024 and 2034 scenarios without and with the HIF1 Scheme for AM and PM peaks are presented in Figure 6.31 and Figure 6.32 respectively. For ease of comparison, the change from 2020 Base is also presented in the same figure for each scenario.

Figure 6.31: Average Journey Time (AM Peak)



6.11.4 Figure 6.31 shows that in the AM peak, four years of growth from 2020 Base, without the HIF Scheme, is modelled to increase average journey times by over two minutes (139 secs). This is significantly worsened with an additional ten years of growth to 2034, with the average journey time increasing by over 24 minutes (1,460 secs) compared to the 2020 base. In 2024, the HIF1 Scheme reduces average journey times compared to the 2020 base by over one minute (-73 secs). In 2034, the HIF1 Scheme has enabled 14 years of growth with an average journey time increase of just over four minutes (253 secs). The average journey time with the HIF1 Scheme in 2034 is less than half of that without HIF1 (937 to 2,143). The HIF1 Scheme enables the 2034 network to operate similarly to 2024 without HIF1.

Figure 6.32: Average Journey Time (PM Peak)



6.11.5 Figure 6.32 shows that in the PM peak, four years of growth from the 2020 Base, without the HIF1 Scheme, is modelled to increase average journey times by three and a half minutes (213 secs). This is significantly worsened with an additional ten years of growth to 2034, with the average journey time

increasing by almost twelve and a half minutes (743 secs) compared to the 2020 Base. In 2024, the HIF1 Scheme reduces average journey times compared to the 2020 base by almost one minute (-44 secs). In 2034, the HIF1 Scheme has enabled 14 years of growth with an average journey time increase of just over three minutes (188 secs). The average journey time with the HIF1 Scheme in 2034 is less than two thirds of that without HIF1 (901 to 1,455). The HIF1 Scheme enables the 2034 network to operate similarly to 2024 without HIF.

7. Construction

7.1 Introduction

7.1.1 This section considers the potential impact of the construction of the proposed HIF1 Scheme. GRAHAM has been appointed by OCC to provide Early Contractor Involvement (ECI) on this project. The detailed construction strategy is being prepared at the time of the production of this TA. Therefore, a high level analysis has been undertaken of the potential implications of the construction activity, based on the information available at the time. Throughout the design process, the Scheme has been amended to move junctions offline where possible. This should enable a shorter construction period with less disruption to residents due to road closures / traffic management.

7.1.2 As part of a planning permission for the proposed development, it is anticipated that there will be a pre-commencement condition to produce a Construction Environmental Management Plan (CEMP), with Construction Traffic Management Plans (CTMP) produced as relevant ahead of each phase of construction. The CTMP will consider the construction activity for that phase and identify appropriate measures to minimise or mitigate significant impacts. A list of the potential measures which may be included within the CTMP is provided at the end of this section.

7.2 Construction Traffic Management Plan

7.2.1 As noted above, a CTMP will be required for each phase of the construction. This will identify the strategy for controlling / minimising traffic related impacts of the construction, in particular the effects of highways works on the A4130 and A415 and associated with deliveries to the site. The following key principles will be identified in the CTMP, and the CEMP where relevant.

- The CTMP will be consulted on with the local highway authority. All proposals for off-site transport management will be required to conform to the CTMP.
- The contractor will work with OCC to identify appropriate times for vehicles to travel to/from the site and to minimise impact of construction vehicles and deliveries, especially during peak times. This will need to take into account key sensitive receptors and the impacts on local residents and communities of different working times and practices, e.g. minimising the need for night-time working where properties are adjacent. Some activities may need to be completed beyond the normal working day for reasons such as engineering practicality and/or public safety, which will be agreed in advance with the LPA / LHA. Examples of this could include:
  - temporary highway/traffic management works;
  - formwork – erection and removal;
  - concrete pours;
  - earthwork movements;
  - completion of crane lifting operations;
  - heavy lifts such as bridge decks;
  - heavy/large components of the Proposed Development; and
  - movement of abnormal loads.
- The identification of routes for construction vehicles to and from the site. The routes identified will primarily be major roads (A roads). Approvals from the local highway authority will be obtained in respect of the means and routes by which anything required for construction is to be transported by large goods vehicles (as defined in Part IV Road Traffic Act 1988) on a highway to a construction or storage site, or to a waste disposal site.
- An appropriate control system will be implemented for the dispatch of all vehicles containing excavated material or other waste material.
- All Temporary Traffic Management shall be in accordance with the Traffic Signs Manual: Chapter 8, Safety at Street Works and Road Works: A Code of Practice (2013), Traffic Signs Regulations and General Directions 2016.
- Approval will be obtained from the relevant highway authorities to the formation, layout or alteration of any permanent or temporary means of access to a highway to be used by vehicular traffic.

Procedures for applications for temporary interference to the highway and for any required Traffic Regulation Orders will be discussed with the local highway authority, with inputs from the LPA.

- The works will be carried out in such a way that inconvenience to the public arising from any increases in traffic flows and disruptive effects of construction traffic is limited, as far as reasonably practicable.
- The Contractor shall ensure appropriate pedestrian and cycling routes are maintained while ensuring any temporary closures are supported by appropriate and clearly signed alternative routes.
- The Contractor will ensure that all working areas are sufficiently and adequately fenced off from members of the public and to prevent animals from straying on to the working area. The standard of enclosure and screening at a particular site will be selected in order to maintain effective site security and achieve appropriate noise attenuation and visual effect, and limit dust accumulation. In some areas screening may be painted and may include viewing points and relevant project information.
- All reasonably practicable measures will be put in place to avoid/limit and mitigate the deposition of mud and other debris on the highway. These measures will have regard to the nature and the use of the Site and will include:
  - hardstanding at the access and egress points which will be cleaned at appropriate intervals;
  - vehicle clean down points to clean vehicle wheels at each exit point on to the highway;
  - the correct loading of vehicles and sheeting of loads where necessary to avoid spillage during their journeys;
  - the use of mechanical road sweepers combined with water sprays for the suppression of dust to clean site hardstanding, roads and footpaths in the vicinity of the Site; and
  - the flushing of gullies in the vicinity of the Site.
- Wherever practicable, concrete wash out facilities will be installed at the point of work. Where this is not practicable, concrete deliveries will be directed to the nearest available wash out facility and supervised to ensure they wash out before driving onto the live carriageway. All compound areas will have a concrete wash out facility.
- Parking for construction staff will be provided within the site compounds. Site access points for site personnel, construction related vehicles and emergency access will be identified and signed for both vehicular traffic and pedestrian/cycle access.
- The Contractor will comply with Construction Logistics and Community Safety (CLOCS) Standard requirements to manage risk associated with vehicle movements. Deliveries and construction activity will be consolidated where feasible.
- Suppliers will be expected to be part of a best practice scheme, e.g. TfL's Freight Operator Recognition Scheme (FORS), which is aligned to CLOCS requirements.

7.3 Programme

7.3.1 In advance of a detailed construction programme and strategy, estimates have been made of the vehicular activity which would be anticipated to occur during the construction period which is outlined in Table 7.2 and Table 7.3 below.

7.3.2 Construction is anticipated to start in March 2023 and continue to 25 months finishing in March 2025.

7.4 Construction Compounds, Site Accesses and Vehicle Movements

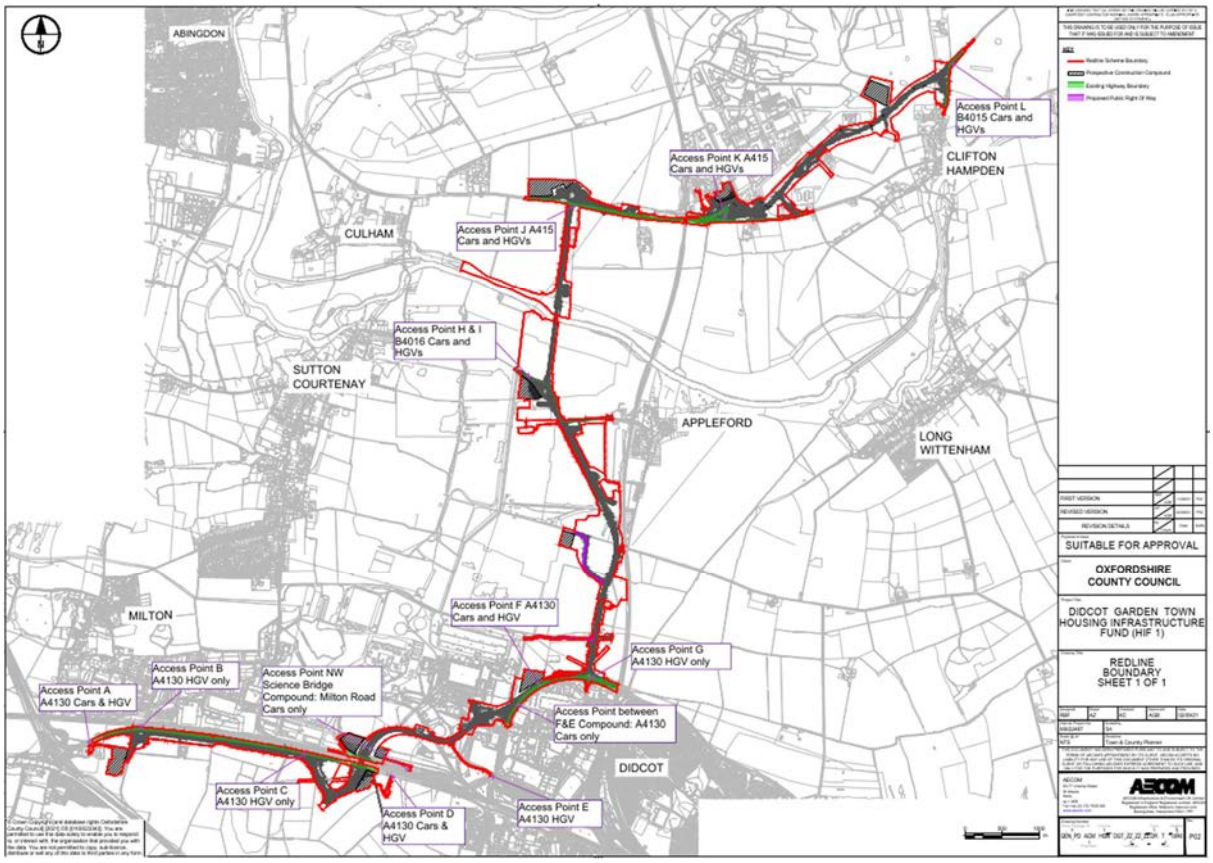
7.4.1 A total of 14 site access points has been identified along the Scheme and are outlined in Table 7.1 below. The ECI Contractor (Grahams) has provided an estimate of the monthly vehicle movements at each access point, for both cars/LGVs and HGVs. Car/LGV movements are predominantly related to staff travelling to and from the Site, and it has been assumed that the import and export of materials is by HGV.

Table 7.1: Construction Access Points

Access	Location	Type
Access A	A4130	HGV
Access B	A4130	HGV
Access C	A4130	HGV
Access D	A4130	HGV & Car/LGV
NW Science Bridge Compound	Milton Road	Car/LGV
Access E	A4130	HGV
Access Between F & E	A4130	Car/LGV
Access F	A4130	HGV & Car/LGV
Access G	A4130	HGV
Access H	B4016	HGV
Access I	B4016	HGV & Car/LGV
Access J	A415	HGV & Car/LGV
Access K	A415	HGV & Car/LGV
Access L	B4015	HGV & Car/LGV

7.4.2 The HGV access points and permitted routes are shown in Figure 7.1 below.

Figure 7.1: Construction HGV Access



7.4.3 It has been assumed that HGVs will use Milton Interchange and the A4130 for access points A to G. To avoid existing weight restrictions on High Street through Milton, access to access points I and H, located between Sutton Courtenay and Appleford, will be via Marcham Interchange on the A34, then the B4017 to Drayton and Drayton Road/Appleford Road. There is an existing 7.5t weight restriction on Appleford Road to the east of the Hanson site access. In order to access the Site it has been assumed that this weight restriction would be moved temporarily to access point H, and HGVs would not be permitted east of this point, thereby maintaining the restriction through Appleford.

7.4.4 HGVs would access Site accesses J and K via Marcham Interchange and the A415 Abingdon Road. Access to Site access L would be via the A4074. There is an existing 7.5t weight restriction on the A4074 to the west of the Notcutts Garden Centre access. It has been assumed that this would temporarily be re-located to Site access L, with HGVs restricted to the west of this point thereby maintaining the restriction through Clifton Hampden.

7.4.5 An assessment of the impact of construction traffic has been included in the Environmental Statement (Chapter 16 'Traffic and Transport'). The conclusions to the assessment are summarised below:

- The assessment indicates that no roads in the local area are expected to experience an increase in daily traffic flows of more than 10% with the traffic associated with the construction of the Scheme, and these increases would be short-term only;
- Some roads are predicted to have large percentage increases in daily HGV traffic. The greatest increase is forecast on the B4016 Appleford Road, to the west of construction Access H and I. However, there is an existing 7.5t weight restriction (except for access) on this link to the east of the Hanson quarry access, and therefore the baseline HGV traffic on this link is low. The construction traffic would not travel east beyond the proposed site access points and through Appleford, and therefore the impact would be limited to a short section of the B4016 between the Hanson access and the proposed site access;
- The southbound A34 On-Slip and the northbound A34 Off-Slip at Milton Interchange are forecast to experience an increase of 154 daily HGVs, equating to a 53% and a 40% increase respectively in 2024 with the construction of the Scheme. If the HGVs are spread evenly across the 10-hour working day this equates to approximately 15 HGVs per hour. This level of HGV traffic is forecast to occur on these slip roads for only month 3 of the construction period. The average number of daily construction HGVs forecast to use the southbound A34 On-Slip and the northbound A34 Off-Slip at Milton Interchange during the entire construction period is 37 HGVs, which equates to 13% and 10% increase in daily HGV traffic flows in 2024. The impact at this junction is not considered to be significant.
- The A415 Abingdon Road is forecast to experience an increase of 154 daily HGVs, equating to a 40% increase. This increase equates to approximately 15 HGVs per hour across a 10-hour working day. However, this level of construction HGVs is only forecast for month 6 of the construction period. The average number of daily construction HGVs forecast to use the A415 Abingdon Road 56 HGVs, which equates to a 14% increase in daily HGV traffic flows. The impact on the A415 is not considered to be significant.
- During the construction of the Scheme there may be lane closures where works need to be undertaken on or adjacent to existing carriageway. This is most likely to occur at the following locations:
  - On the A4130 between Milton Interchange the proposed Science Bridge as part of the A4130 Widening Scheme;
  - The A4130/ Hawksworth/ Purchas Road roundabout;
  - The A4130 between the A4130/ Hawksworth/ Purchas Road roundabout and the A4130/ Collett roundabout;
  - B4016 Appleford Road at the location of the proposed roundabout; and
  - A415 Abingdon Road between the proposed roundabouts.
- These closures will be temporary whilst construction works on the existing highway are undertaken. It is not known at this time how long the closures at each location will last, however, these will be managed by the principal contractor and appropriate signage or alternative routes will be provided to reduce delays.
- HGV movements will be managed through the CTMP to minimise impacts during the highway peak hour. The HGVs will be managed to ensure that they stay on the strategic highway network for as long as possible to reduce the impact on rural roads in the local area.

Table 7.2: Forecast Construction Car / LGV Traffic per Access

Car / LGV Access Points	Month																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25
Access A	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	0	0	0	0	0	0	0
Access D	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
NW Science Bridge Compound	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Access Between F & E	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Access F	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	0	0
Access I	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	0	0	0	0	0
Access J	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	0	0	0	0	0
Access K	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
Access L	20	20	20	20	20	20	20	20	20	20															
Total	**1280**	**1280**	**1280**	**1280**	**1280**	**1280**	**1280**	**1280**	**1280**	**1280**	**1260**	**1260**	**1260**	**1260**	**1260**	**1260**	**1260**	**1260**	**1080**	**1080**	**820**	**820**	**820**	**580**	**580**

Table 7.3: Forecast HGV Traffic per Access

HGV Access Points	Month																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25
Access A	0	0	0	0	0	0	0	19	33	25	41	60	13	3	2	67	13	3	0	0	0	0	0	0	0
Access B	71	188	183	77	53	46	72	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Access C	38	82	185	23	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Access D	5	2	57	57	57	57	57	57	57	57	57	57	57	57	79	3	3	3	11	5	3	9	8	8	0
Access E	16	14	40	54	5	22	5	7	23	4	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Access F	31	32	83	39	27	83	80	81	76	43	23	20	11	59	6	189	68	17	36	100	27	10	11	0	0
Access G	4	10	67	25	19	10	7	8	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Access H	71	114	19	4	7	75	163	134	143	70	43	8	9	38	27	35	12	17	108	2	0	0	0	0	0
Access I	10	4	17	2	2	2	61	74	74	74	74	41	4	4	8	7	4	17	13	48	0	0	0	0	0
Access J	31	4	14	4	135	113	98	86	55	57	84	50	5	212	5	5	3	12	8	32	0	0	0	0	0
Access K	42	10	10	46	66	195	195	199	54	52	8	9	131	45	15	21	77	252	218	124	17	0	0	0	0
Access L	7	45	17	23	28	13	14	28	35	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**323**	**503**	**691**	**354**	**405**	**614**	**752**	**711**	**552**	**392**	**391**	**245**	**230**	**418**	**141**	**327**	**179**	**321**	**394**	**310**	**47**	**19**	**19**	**8**	**0**

8. Summary & Conclusions

8.1 Summary

8.1.1 This TA has been produced to consider the impacts of the proposed HIF1 Scheme on the transport networks that may be affected by the proposals. Traffic and transport implications are also considered with the separate Environmental Statement that has been produced for the planning application, in line with relevant DMRB guidelines.

8.1.2 Planning permission is sought for the following:

Planning application seeking full planning permission for the dualling of the A4130 carriageway (A4130 Widening) from the Milton Gate Junction eastwards, including the construction of three roundabouts; a road bridge over the Great Western Mainline (Didcot Science Bridge); realignment of the A4130 north east of the proposed road bridge including the relocation of a lagoon; construction of a new road between Didcot and Culham (Didcot to Culham River Crossing) including the construction of three roundabouts, a road bridge over the Appleford railway sidings and road bridge over the River Thames; construction of a new road between the B4015 and A415 (Clifton Hampden bypass), including the provision of one roundabout and associated junctions; and controlled crossings, footways and cycleways, landscaping, lighting, noise barriers and sustainable drainage systems.

At Land in the parishes of Milton, Didcot, Harwell, Sutton Courtenay, Appleford-on-Thames, Culham and Clifton Hampden.

8.1.3 Railway lines and the River Thames creates severance to effective movement and barriers to connectivity between homes, jobs and amenities. High levels of congestion are evident on the A4130, on the existing river crossings between Didcot and Culham/Clifton Hampden and within Clifton Hampden. This has led to OCC objecting to the applications of single dwellings on grounds of highway safety, convenience and sustainability. These objections have led to Local Planning Authority (LPA) refusals which have been upheld at appeal by the Planning Inspectorate. Additionally, a Vale of White Horse District Council (VoWHDC) Local Plan strategic allocation for 200 new homes has also been refused planning permission on similar grounds. It is evident that the constrained highway network has already adversely affected growth in the area.

8.1.4 The Scheme is deemed as essential to deliver future growth as identified within Local Plans for both South Oxfordshire District Council (SODC) and the Vale of White Horse District Council (VoWHDC). The Scheme is also identified in OCC's Local Transport Plan 4.

8.1.5 The infrastructure investment will help relieve pressure on local transport networks and will facilitate economic growth across the Science Vale area whilst accommodating the expanding communities in the local area. The provision of walking and cycling facilities offer real mode choice for work and leisure, helping to encourage modal shift. Improving local roads and providing new roads will lead to more reliable journey times, less congestion, more job opportunities, and better community links.

8.1.6 The Scheme includes dedicated off-road pedestrian and cycle facilities along its length, that tie-in to existing facilities where possible. In addition, 18 new bus stops are being provided, which will increase the accessibility and catchment of the existing bus services in this area.

8.1.7 The Scheme is included in Core Policy 17 and 18 of the Vale of White Horse Local Plan 2031. The Inspector's Report for the Vale of White Horse Local Plan states that the proposed infrastructure and services to support new development in the area, of which the HIF1 Scheme forms a major part, '*would largely mitigate*' the likely transport impacts of the new housing and employment, however some congestion issues would remain. The Inspector's report also notes that *"the 'starting point' situation for the Vale is as a district which very much suffers from traffic congestion."*

8.1.8 The Scheme is also identified in Policies TRANS1b and TRANS3 of the South Oxfordshire Local Plan 2035, and the South Oxfordshire Infrastructure Delivery Plan. The Planning Inspectorate report on the Examination of the South Oxfordshire Local Plan 2011-2034 (in 2020) notes that the schemes '*are part of a wider highway strategy to support the delivery of housing growth in the wider Didcot Garden Town area and to mitigate the impact of existing, approved and allocated developments*.'

8.1.9 The TA includes a review of the existing network conditions, based on modelled traffic flows for 2020. The traffic flows were provided by Systra/OCC, and were obtained from the Didcot Paramics microsimulation model. A high level of congestion is evident on the A4130, and a number of junctions are shown to already be operating at or over capacity in one or both peaks. This is particularly evident at

the staggered signalised junction in Clifton Hampden and the existing river crossing at Culham / Sutton Courtenay.

8.1.10 The results confirm that the local highway infrastructure has failed to keep pace with growth in the area, and the railway lines and the River Thames clearly create barriers to connectivity between homes and jobs.

8.1.11 Future baseline assessments with the proposed Scheme have been undertaken for the first year of opening in 2024 and for opening plus 10 years (2034). The traffic model data reflects the future year residential and employment completion trajectories as supplied by the relevant Local Planning Authorities (VoWHDC and SODC).

8.1.12 Capacity assessments of the junctions along the proposed Scheme and also a number of off-site junctions were undertaken for 'without Scheme' and 'with Scheme' scenario in 2024 and 2034. The results for the Scheme junctions indicated that the majority would operate within capacity in 2034. Junctions shown to be operating at or close to capacity on the side arms include the following:

- The A4130 / Science Bridge junction is shown to operate over capacity in 2034 on the side arm. However, an alternative route via the industrial estate is available for traffic heading north or east, with capacity to accommodate re-routing traffic. The strategy is to prioritise the mainline flow, to promote the use of Didcot Science Bridge, as explained in paragraph 6.6.15;
- The New Thames River Crossing / B4016 junction is predicted to operate at close to capacity in 2034 on the side arm. However, the maximum queue length on the B4016 is only seven vehicles. The strategy is prioritise the mainline flow, helping to dissuade through traffic in the village, as explained in paragraph 6.6.22;
- The Clifton Hampden Bypass junctions with the realigned A415 and B4015 are forecast to operate over capacity in 2034 on the side arms. The strategy is to prioritise the mainline flow, helping to dissuade through traffic in the village, as explained in paragraphs 6.6.31 and 6.6.34.

8.1.13 Capacity assessments for the off-site junctions show that the Scheme results in significant improvements at a number of junctions. This includes junctions along the route between Didcot and the A4074 via Long Wittenham and Clifton Hampden and the route from Milton Interchange to Culham via Sutton Courtenay. This also reflected in reduced journey times along these routes.

8.1.14 At Milton Interchange, the HIF1 Scheme enables the A4130 eastbound from Milton Interchange to operate more efficiently, allowing vehicles to travel away from the junction. This reduces blocking back through the junction, enabling it to operate more efficiently, which in turn reduces queueing on the A34 slip roads. The effect of this on the A34 is reduced journey times on the A34 and on the A4130.

8.1.15 Journey time data for key routes in and around Didcot demonstrate significant reductions as a result of the HIF1 Scheme. Total journey times in 2034 with the HIF1 Scheme are slightly lower than those in 2020, showing that the HIF1 Scheme helps to enable the planned growth whilst allowing the road network to operate similarly to the base scenario. This is also reflected in average speed data. This demonstrates that by 2034, without the HIF1 Scheme there would be significant reductions in average speeds across the network, indicating widespread congestion. The HIF1 Scheme increases average speeds to levels similar to those in 2024, although slightly lower than 2020 base speeds. It should be noted, however, that the highway elements of the HIF1 Scheme are intended to be one part of a balanced transport strategy. The high-quality walking and cycling infrastructure elements of the Scheme help to offer alternative options for many journey types and routes.

8.1.16 AECOM has undertaken a WCHAR report for each element of the proposed Scheme. Walking and cycling movements were recorded over a period of one week, and movements were generally low across the network. This reflects the limited opportunities for walking/cycling between residential and employment areas, particularly north/south in the area north of Didcot, and the overall low walk and cycle mode share for the journey to work for Didcot (based on 2011 census data).

8.1.17 A Collision Investigation Study has been undertaken to help inform the design of the highway works. The study found identified one cluster site, at the A4130/Milton Road/Basil Hill roundabout, where 12 collisions were reported in the 5 year study period. A developer promoted scheme is currently under S278 review with OCC Road Agreements Team.

8.1.18 The potential impact of the construction of the proposed HIF1 Scheme has been considered. GRAHAM has been appointed by OCC to provide Early Contractor Involvement (ECI) on this project. Throughout the design process, the Scheme has been amended to move junctions offline where possible. This should enable a shorter construction period with less disruption to residents due to road closures / traffic management.

8.1.19 As part of a planning permission for the proposed development, it is anticipated that there will be a pre-commencement condition to produce a Construction Environmental Management Plan, with Construction Traffic Management Plans produced as relevant ahead of each phase of construction. These plans will consider the construction activity for that phase and identify appropriate measures to minimise or mitigate significant impacts, and other good practice that the main Contractor will be required to adhere to, such as the Construction Logistics and Community Safety Standard and the Freight Operator Recognition Scheme.

8.2 Conclusions

8.2.1 The Scheme is deemed as essential to deliver future growth as identified within Local Plans for both South Oxfordshire District Council and the Vale of White Horse District Council. The Scheme is also identified in Oxfordshire County Council's Local Transport Plan 4.

8.2.2 The infrastructure investment will help relieve pressure on local transport networks and will facilitate economic growth across the Science Vale area whilst accommodating the expanding communities in the local area. Improving local roads will lead to faster journeys, less congestion, more job opportunities, and better community links whilst also providing key active travel links to provide real mode choice for work and leisure.

8.2.3 The Scheme both directly delivers and indirectly enables a significant number of new and/or improved walking and cycling routes in the area. The provision of additional and improved NMU routes and crossing points will help to reduce the existing severance caused by the Great Western Mainline and River Thames. Connections to public rights of way will be provided, and safe access to and from new bus stops. This will help to engender modal shift away from the private motor car, particularly for commuting purposes for employment and education, but also for important access to amenities such as retail and healthcare, and for leisure trips. The potential future NMU schemes that could link to the Scheme may be delivered by OCC, housing or employment developers, or other bodies. There may be other schemes identified through the planning application processes for other developments, or through the Didcot Local Cycling and Walking Infrastructure Plan (LCWIP) which has yet to be undertaken.

8.2.4 There are currently poor opportunities for bus routes to offer good journey time reliability north / south in this area due to the severance created by the River Thames and the historic road network. Journey time data demonstrates that the HIF1 Scheme will significantly improve journey times over the existing river crossings at Culham Cut / Sutton Bridge and Clifton Hampden Bridge. Bus routes that use these bridges in the future, currently the 95 and 33 services, would benefit from the improved journey times and reliability.

8.2.5 The South Oxfordshire IDP includes requirements for several new bus routes to support planned growth. It is the intention for two of these routes to use the new Didcot to Culham River Crossing road, and as such the future bus network has been planned assuming the new road is in place. Without the new road it is unlikely the new bus routes could be delivered; the routes would take longer and be less reliable, increasing operating costs, while at the same time being less attractive to use, suppressing revenue. It is unlikely the proposed new routes would be viable without the new road, which would cause several strategic new developments to be more car dependent and less acceptable in planning terms.

8.2.6 The traffic modelling indicates that without the HIF1 Scheme in place the traffic associated with the Local Plan housing and employment growth would result in congestion throughout the network in and around Didcot by 2034. The Scheme improves overall conditions for existing users of the transport network and helps to accommodate committed local plan growth in a sustainable way as part of an overall balanced transport strategy.

8.2.7 In conclusion, the proposed Scheme will significantly improve the accessibility to the walking, cycling and the bus network, as well improve the journey quality, times and reliability for these users along the Scheme extent. The analysis undertaken as part of this TA does not indicate any significant adverse effects on the highway, walking, cycling, horse-riding or public transport networks as a result of the proposed development.

8.2.8 The Scheme is part of balanced transport strategy, reducing congestion in some areas, providing high-quality walking and cycling routes to engender mode shift away from private motor car, and enables new routes and improved journey times for buses. Therefore, it is considered that the HIF1 Scheme is positive in transport terms, and that the proposed development should be granted planning permission.

Appendix A – Walking, Cycling and Horse-Riding Assessment Reports



Didcot Garden Town HIF 1 - A4130 Widening

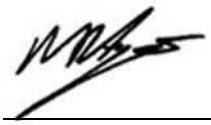
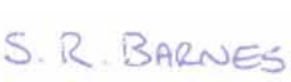
Walking, Cycling and Horse-Riding Assessment Report

Oxfordshire County Council

Project number: 60606782

May 2020

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Andy Blanchard Associate Director	Mike Ager Principal Engineer	Samuel Barnes Associate Director	Andy Blanchard Associate Director

Revision History

Revision	Revision	Details	Authorized	Name	Position
0	20/12/2019	DRAFT	✓	Andy Blanchard	Project Manager
P01	15/05/2020	FINAL – updated & stakeholder feedback added	✓	Andy Blanchard	Project Manager

Distribution List

# Hard Copies	PDF Required	Association / Company Name
-	Y	Aron Wisdom, Oxfordshire County Council
-	Y	Will Pedley, Oxfordshire County Council
-	Y	Harry Davis, Oxfordshire County Council
-	Y	Gavin Belcher, Oxfordshire County Council

Prepared for:

Oxfordshire County Council
County Hall
New Road
Oxford
OX1 1ND

Prepared by:

Andy Blanchard
Associate Director
E: andy.blanchard@aecom.com

AECOM Infrastructure & Environment UK Limited
AECOM House
63-77 Victoria Street
St Albans
Hertfordshire AL1 3ER
United Kingdom

T: +44(0)1727 535000
aecom.com

© 2020 AECOM Infrastructure & Environment UK Limited. All Rights Reserved.

This document has been prepared by AECOM Infrastructure & Environment UK Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

Executive Summary 6

1. Background and highways scheme description 7
1.1 Background 7
1.2 Proposed highway scheme 8
1.3 WCHAR study area 8
2. WCHAR assessment 9
2.1 Assessment of walking, cycling and horse-riding policies and strategies 9
2.2 Collision Data 11
2.3 Multi-modal transport services and interchange information 12
2.4 Key trip generators and local amenities 14
2.5 Site visit 17
2.6 Existing pedestrian, cyclist and equestrian network facilities 18
2.7 Walking, cycling & horse-riding survey data 22
2.8 Liaison with key stakeholders 27
3. User Opportunities 31
3.1 General 31
3.2 Strategic opportunities 31
3.3 Pedestrian specific opportunities 32
3.4 Cyclist specific opportunities 32
3.5 Equestrian specific opportunities 32
4. Walking, Cycling and Horse-Riding Assessment Team Statement 33

Appendix A - Feasibility Design 34
Appendix B - Collision Data and Balloon Diagrams 35
Appendix C - WCHAR Survey Locations 36
Appendix D - WCHAR Survey Data 37
Appendix E – Stakeholder Consultation Records 38

Figures

Figure 1: Science Vale area 7
Figure 2: A4130 WCHAR study area location plan 8
Figure 3: Proposed Science Vale Cycle Network route map 9
Figure 4: Location of bus stops within the study area 12
Figure 5: Bus routes around Didcot 13
Figure 6: Extract of South Oxfordshire Zone network map 13
Figure 7: Great Western Railway Network 14
Figure 8: Modal split of journeys to work in and from Didcot 15
Figure 9: Backhill Tunnel 18
Figure 10: Southern footway of A4130 18
Figure 11: Public Rights of Way within the study area 19
Figure 12: North entrance to the footpath 19
Figure 13: South entrance to the footpath 20
Figure 14: North entrance to the footpath at the A4130 20
Figure 15: Northern and southern entrances to the bridleway 20
Figure 16: Bridleway crossing the A34 21
Figure 17: Public Rights of Way outside the study area 21
Figure 18: National Cycling Network 22
Figure 19: East-west section of A4130 23
Figure 20: Pedestrian and cycle total weekly movements at Backhill Tunnel 24
Figure 21: Backhill Tunnel 24
Figure 22: Pedestrian and cycle total weekly movements at WID-02 (from A, B, C and D) 25
Figure 23: Sir Frank Williams Avenue and A4130 Junction 25
Figure 24: Pedestrian and cycle total weekly movements at WID-04 26
Figure 25: Cow Lane (bridleway) and A4130 Junction 26

Tables

Table 1: Total collisions by severity 11
Table 2: Total casualties by severity 11
Table 4: Bus routes within the A4130 scheme extents 12
Table 5: Locations for WCHAR surveys 23
Table 6: Total traffic flow and vehicle classification 23
Table 7: Surveyed average and 85%ile speeds 23
Table 8: Summary of Stakeholder Response to Consultation 30

Executive Summary

This report outlines the Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) prepared for Oxfordshire County Council for the proposed A4130 Widening scheme. This scheme is one of four that comprise the HIF1 Didcot Garden Town infrastructure project. Whilst the process set out in the Design Manual for Roads and Bridges (DMRB) GG 142 document has generally been followed in preparing this WCHAR Report, as this scheme is not a trunk road some alterations have been made to reflect this, such as a reduced study area.

The WCHAR process is divided into two phases:

- Assessment (this report): undertaken during the options or concept stage of a highway scheme to capture the existing conditions for pedestrians, cyclists and equestrians, and identify the opportunities for improvement for these modes.
- Review: shall be completed as an ongoing review during the various design stages of the highway scheme and shall record the design decisions relating to the provision of walking, cycling and horse-riding facilities.

The aims of this assessment are to gain an understanding of all relevant existing facilities for pedestrians, cyclists and equestrians (the users) in the local area, to provide background user information that can be referred to throughout the design process and to identify opportunities for improvement for users.

The proposed A4130 Widening scheme will deliver a dual carriageway between Milton Interchange at the A34 and the proposed Science Bridge over the Great Western rail line.

This Assessment Report documents the relevant local and national relevant policies and strategies. Within the study area, there has been only one recorded collision involving a pedestrian, and one involving a cyclist in the last five years. While there are a number of local and regional bus services operating in the area, there are no bus stops within the scheme extents. A train station, Didcot Parkway, is located approximately 2km east of the scheme.

The key trip generators in the area include the Milton Park Science Park, as well as Milton Interchange Service Area, and further afield the industrial areas to the north of the Great Western rail line. Movement within the study area is dominated by the private car, with low numbers of pedestrians and cyclists. This is self-reinforcing since the high level of vehicular traffic makes walking and cycling less attractive.

Few pedestrians and cyclists were observed during the site visit or throughout the surveys conducted in November 2019. The majority of cyclists observed used the southern shared use footway, and generally out number pedestrians in the study area.

A public information event covering the four HIF1 schemes was held throughout April 2020, and relevant WCHAR stakeholders were sent a targeted questionnaire to capture their views on the feasibility designs and needs of the users they represent. Their responses are summarised in this report.

Identified user opportunities as part of the assessment included:

- Integrating the walking and cycling networks along the public highways with those proposed as part of planned developments, with convenient, frequent and direct links.
- Improvement and incorporation of the Public Rights of Way and Science Vale Cycle Network with the existing connections and facilities, so that they can be fully utilised.
- Provision of segregated cycle track and footways, to avoid potential discomfort and conflict between pedestrian and cyclists; greening; and convenient crossing points.

1. Background and highways scheme description

1.1 Background

The proposed A4130 Widening scheme, to the west of Didcot, is one of four schemes that are included in the Access to Science Vale Options Assessment Report (OAR) to facilitate new developments to be constructed in the Didcot area.

The scheme will have a significant impact on the highways network in the area and therefore OCC have requested that the GG 142 Walking, Cycling & Horse-Riding Assessment and Review (WCHAR) is completed to inform the scheme design. Mike Ager in the role of Design Team Leader, has appointed Andy Blanchard as the Lead Assessor to undertake the WCHAR process in accordance with GG 142.

Although the scale of the scheme would usually qualify as a 'large' scheme in accordance with GG 142, the assessment will be based on the extent for a small scheme by virtue of this not being a trunk road (to which GG 142 applies) as determined by the Lead Assessor. The scheme will therefore be subject to a Walking, Cycling & Horse-Riding Assessment (this document) during the feasibility design stage of the proposed highway scheme. This will then be followed by a Walking, Cycling & Horse-Riding Review during each design stage.

The A4130 Widening scheme is located in the Science Vale area (see **Figure 1**), which comprises the towns of Didcot (including Milton Park and Didcot Power Station) and Wantage (& Grove) together with the established research centres at Culham Science Centre (CSC) and Harwell International Business Centre (IBC) together with the area between these settlements. The extents of the scheme are outlined in green in the figure below.

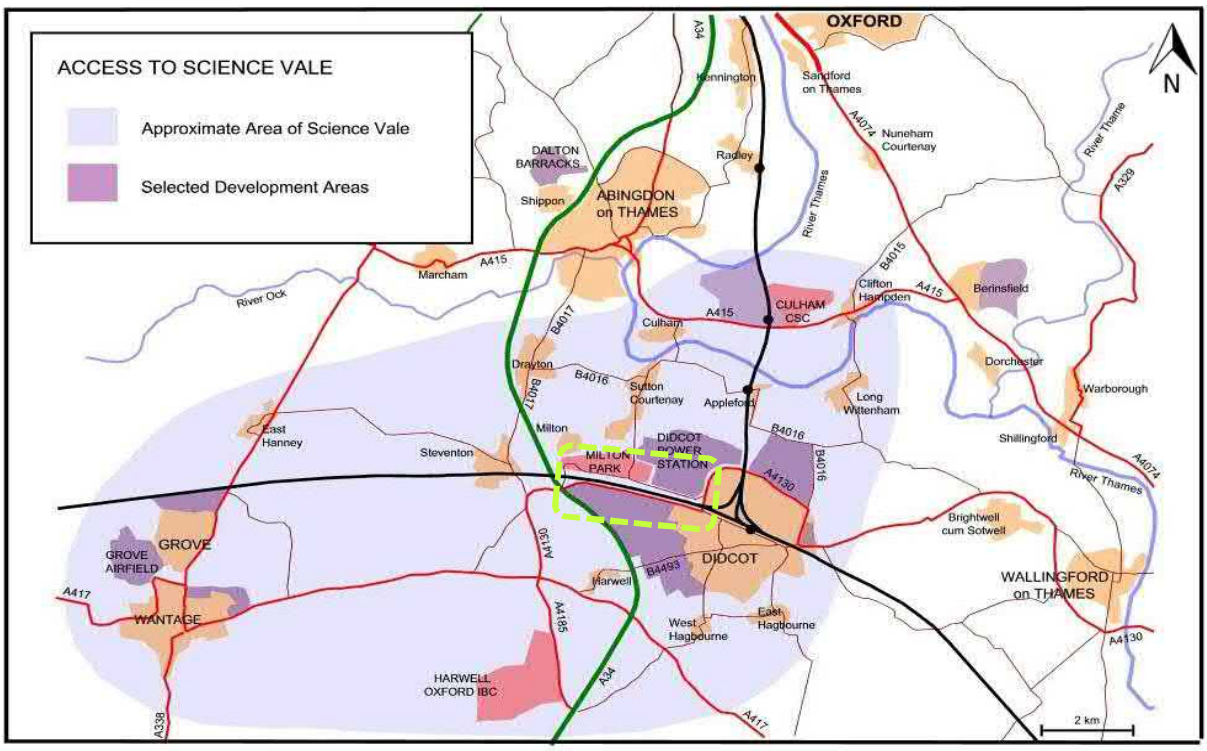


Figure 1: Science Vale area[1]

[1] *"Option Assessment report: Access to Science Vale_OAR_ PART 1_FINAL-converted"*

The A4130 currently provides the principal connection between Didcot and the A34. The A34 is a major regional transport route, linking to the north and south, and giving access to the wider road network. The scheme objectives include improving conditions for walking, cycling and horse-riding as the current route has limited facilities and connections for these users. This is likely to include segregated facilities alongside the proposed dual carriageway and associated pedestrian and cycling infrastructure such as improve crossings and adjacent routes wherever possible.

1.2 Proposed highway scheme

The proposed A4130 Widening scheme will deliver a dual carriageway between Milton Interchange at the A34 and the proposed Science Bridge, which continues north and east to link with the existing A4130 Northern Perimeter Road and the proposed Didcot to Culham River Crossing & the Clifton Hampden Bypass. Dualling of the A4130 will help mitigate the cumulative impact of employment and housing growth in Didcot and the surrounding Science Vale area by providing improved network capacity and resilience.

The proposal (the current design layout is provided in **Appendix A**) includes providing a dual carriageway from a point 320m east of Milton Interchange, eastwards for approximately 1.6km. A four-arm roundabout about 300m to the east of the existing Milton Gate junction is proposed to provide access to a new business park and Local Plan housing allocation to the south of the existing A4130. Approximately 600m east of this roundabout a signalised junction is to be constructed for access to a part of the planned Valley Park housing development. Further east, a new three-arm roundabout will provide a connection to the current A4130 (that is to be retained as single carriageway) and a new dual carriageway link to the proposed Science Bridge roundabout. The Science Bridge roundabout will additionally provide the main access to the planned Valley Park housing development.

Dualling of the existing A4130 will consist of converting the existing single carriageway, and construction of a central reserve and additional two lanes to the south of the existing carriageway. The existing carriageway will form the eastbound carriageway towards Didcot and the newly constructed lanes will form the westbound carriageway to Milton Interchange. The road corridor will also include a two-way segregated 3m cycleway and 2m footway on the southern side of the dual carriageway, as well as a number of formal crossing points.

1.3 WCHAR study area

GG 142 establishes that the Lead Assessor shall define a WCHAR study area on a scheme-by-scheme basis, that should typically extend 5km surrounding a large highway scheme. This scheme does not form part of the trunk road network, and after careful review of the requirements and proposed works, a reduced local study area extent (approximately 1km radius) has been proposed that is deemed appropriate for this study. **Figure 2** shows the proposed study area extents (green dashed line) and the scheme (blue dashed line).

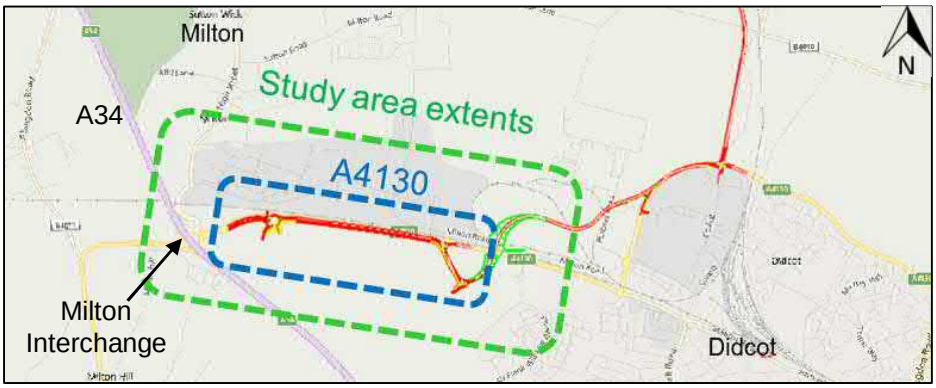


Figure 2: A4130 WCHAR study area location plan[2]

[2] *"Google Map™ and Google Streetview™ have been used, unmodified, within this document. This imagery has been used within the extents of the AECOM license agreement with Google Inc."*

2. WCHAR assessment

2.1 Assessment of walking, cycling and horse-riding policies and strategies

The following regional and local policy documents have been reviewed as part of the assessment:

Oxfordshire County Council's Local Transport Plan 4, 2015 – 2031

LTP4 recognises that new road links and capacity improvements are necessary to accommodate the large scale of employment and residential development in Didcot.

Connecting Oxfordshire: Volume 4 Local Transport Plan 2015-2031 (Adopted 2016) - Active & Healthy Travel Strategy

The strategy states that the number of people who usually drive short journeys to work in Oxfordshire is increasing and therefore roads are becoming more congested. Oxfordshire County Council have a vision to make cycling a safe, simple and accessible option for people of all ages, and in turn make cycling a major mode of travel and reduce air pollution in Oxfordshire. This will include an increase in multimodal door-to-door trips by integrating the cycling and public transport networks to allow bike-rail and bike-bus journeys.

As part of the Strategy, a Cycle Premium Route between Didcot to Culham Science Centre, via the existing National Cycle Route 5 between Didcot and Long Wittenham and then on-road towards Culham Science Centre via Clifton Hampden Bridge, has been identified as part of the proposed Science Vale Cycle Network as shown in Figure 3. This cycle network has been identified to be a focus for future investment to cycling in the area. Given the importance of the route between the two key attractors in the region, and the existing site constraints at the Clifton Hampden Bridge, the proposed Didcot to Culham River Crossing will provide an opportunity for a high quality cycle route as an alternative to the existing.

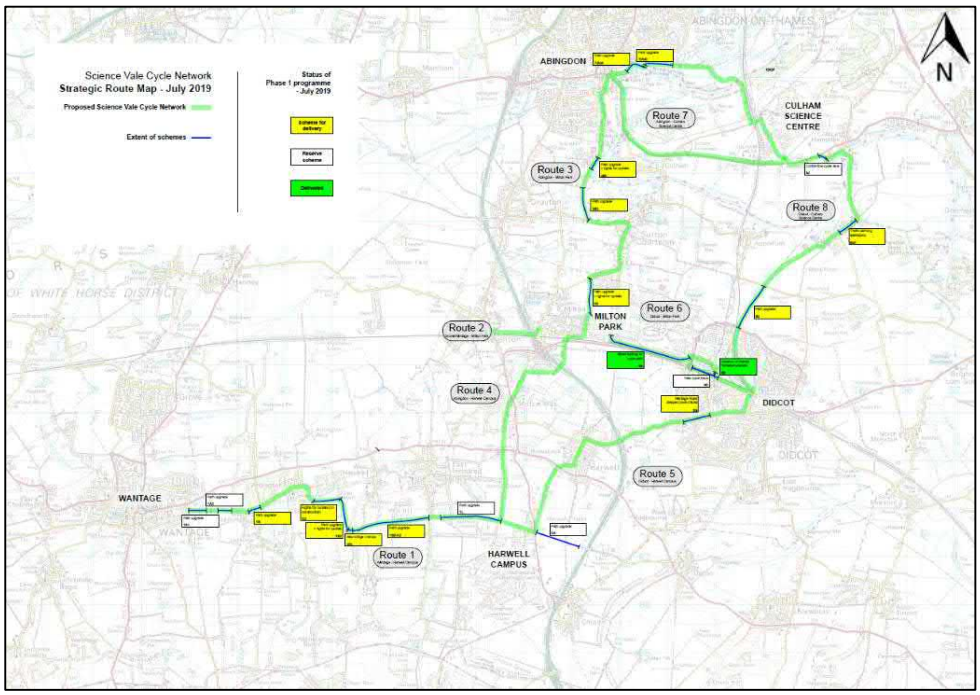


Figure 3: Proposed Science Vale Cycle Network route map[3]

[3] https://www.oxfordshire.gov.uk/sites/default/files/file/roads-and-transport-major-projects/science_vale_cycle_network.pdf

Oxfordshire Rights of Way Management Plan 2015-2025

This document is an extension of the Oxfordshire Local Transport Plan and supports the achievement of the proposed goals. The main relevant objectives are the improvement of public health and wellbeing by increasing levels of walking and cycling, reducing the proportion of journeys made by private car. This is be achieved by making the use of public transport, walking and cycling more attractive, and maximising the use of existing and planned sustainable transport investment, through linking and integrating this with planned development to allow continued and increased use of the right of way network.

Vale of White Horse District Council - Local Plan 2031 (February 2018)

The main goal is to ensure that employment growth centred on the Enterprise Zone and Science Vale sits alongside strategic housing and infrastructure to support sustainable growth. Didcot has been identified as a location for strategic growth with proposals for improvements to the town centre and railway station.

Didcot Garden Town Delivery Plan (October 2017)

This plan recognises that Didcot will grow from approximately 26,000 people to over 60,000 by 2031. With this growth, Didcot is expected to become the largest town in Southern Oxfordshire, so even if the resident's movements around the town remain unchanged, town-wide journeys by car will double. This means that infrastructure investment is required, in terms of highways, pedestrian and cycle routes.

The east-west movement corridors like A4130 Widening and the Science Bridge have been identified as one of the key proposals to achieving sustainable movement across the area.

South Oxfordshire Local Plan 2034 - Infrastructure Delivery Plan (January 2019 update)

In 2015 the Government announced that Didcot would become a Garden Town delivering 15,050 homes and 20,000 high-tech jobs in the greater Didcot area. The Local Plan includes a policy to support the Garden Town, ensuring that proposals for development within the Didcot Garden Town Delivery Plan (October 2017) and its masterplan area will demonstrate a positive contribution to the achievement of the Didcot Garden Town Principles.

The plan has a summary of the infrastructure requirements for sites in Didcot, such as the capacity enhancements to the A4130, the new Science Bridge, the Didcot Station Car Park Expansion, and the Science Vale Cycle Network Improvements, which includes improvements to connectivity between Science Vale and Didcot station by bike.

Design Standards

The following design standards have been reviewed as part of the assessment:

- Oxfordshire Walking Design Standards (A guide for Developers, Planners and Engineers, summer 2017).
- Oxfordshire Cycling Design Standards (A guide for Developers, Planners and Engineers, summer 2017).
- CD 195 Designing for cycle traffic.
- CD 143 Designing for walking, cycling and horse-riding.
- Advice on road crossings for horses (The British Horse Society).

2.2 Collision Data

Collision data from Stats 19 has been obtained and analysed to identify collision cluster sites and trends. Analysis of collision data allows the identification of existing problems which may discourage the use of a particular site.

Collision data has been obtained from Oxfordshire County Council for a five-year period between 9th June 2014 and 8th June 2019. There was a total of 64 collisions recorded within the scheme extents resulting in 82 casualties. The injury severity is summarised by year for collisions in **Table 1** and casualties in **Table 2**. The data does not show any clear evidence of deterioration or improvement in road safety in the study area.

The collision data includes part of the A34 road and the Milton Interchange roundabout. As a consequence, the results show more collision than the immediate scheme area.

Severity/ Year	2014 (part)	2015	2016	2017	2018	2019 (part)	Total
Fatal	0	0	0	0	1	0	**1**
Serious	2	0	2	2	0	0	**6**
Slight	7	18	9	12	6	5	**57**
Total	9	18	11	14	7	5	**64**

Table 1: Total collisions by severity

Severity/ Year	2014(part)	2015	2016	2017	2018	2019(part)	Total
Fatal	0	0	0	0	1	0	**1**
Serious	2	0	2	2	0	0	**6**
Slight	10	21	14	15	9	6	**75**
Total	12	21	16	17	10	6	**82**

Table 2: Total casualties by severity

Of the total 64 collisions and 82 casualties, one involved a pedestrian and one involved a cyclist. No equestrian casualties were recorded in the scheme extents.

There was one fatal collision which involved a car and a motorcycle rider at the A4130 Milton Interchange Roundabout junction with the A4130. The speed limit of the road was 40 mph.

The collision involving a pedestrian was outside the scheme extents (70m west of junction with Trenchard Avenue, to the west of the Milton Interchange Roundabout). The vehicle failed to stop for the red signal at the pedestrian crossing and hit the pedestrian causing slight injury. The speed limit of the road was 40 mph.

The collision involving a cyclist was on the A4130 approximately 750m west of the junction with Sir Frank Williams Avenue. In a 60mph limit section, an HGV mounted the kerb (“possibly due to glare from oncoming headlights or driver illness”) and hit the cyclist travelling on the off-road shared use footway.

All the mentioned collisions occurred in fine and dry weather conditions.

Appendix B contains details and balloon diagrams for all the collisions.

2.3 Multi-modal transport services and interchange information

Pedestrians, cyclists and equestrians may combine their modes of travel with public transport as part of a longer trip. As part of this Assessment, public transport services and associated infrastructure such as rail and bus stations (including bus stops) and interchanges have been identified to enable an appropriate assessment of the integration of such modes.

2.3.1 Bus Services

There are no existing bus stops within the scheme extents, but there are bus stops located within the study area, as shown in **Figure 4**. The main reason no bus stops are located along the existing A4130 road is that it passes through an undeveloped green field area with no existing demand for them, and the Great Western main rail line forms a barrier to the Milton Park Science Park to the north. With the proposed developments to the south of the A4130, this is likely to require new bus stops, routes and increased frequencies in the future.

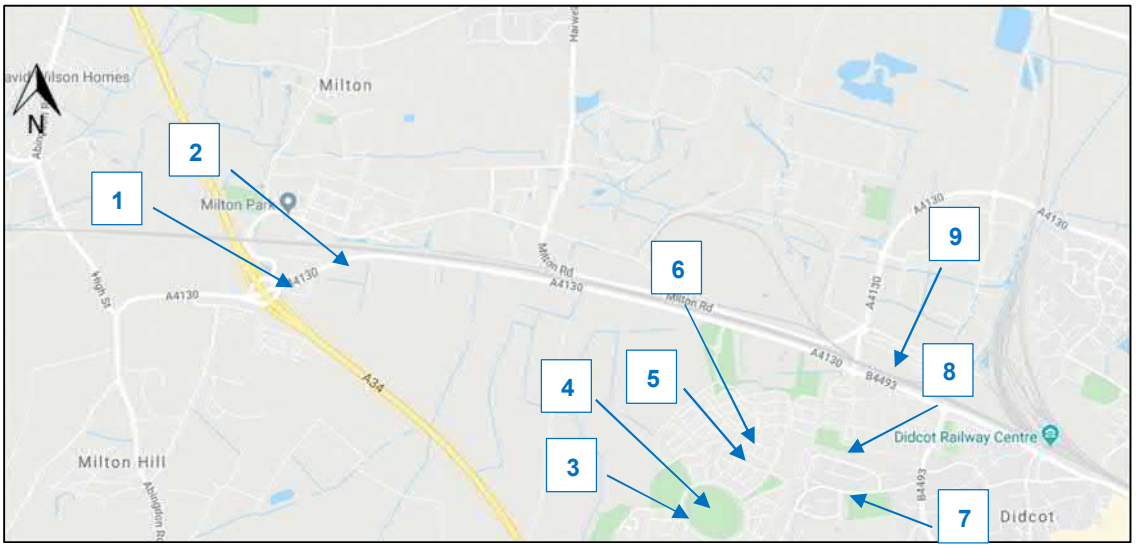


Figure 4: Location of bus stops within the study area

Bus route	Frequency (service hours)	Days of service	Bus stop Nos.	Route connections
Milton Park Shuttle	Every 10-20 min (7:00-19:00)	Monday - Friday	1, 2, 9	Milton Park – Didcot Parkway Station – Milton Park
33 Connector	Every 1.5h (6:20 to 17:20) Hourly (10:00 to 14:00)	Monday - Friday	2, 9	Abingdon to Wantage
99 Connector	Every 30min (7:15 to 19:00) Hourly (9:47 to 15:47)	Monday - Friday	2, 3, 4, 5	Great Western Park to Milton Park
X2 Connector	Every 30 min (4:51 to 20:28) Hourly (5:20 to 6:10; 16:18 to 17:08 and 21:28 to 23:25)	Monday - Sunday	2, 9	Oxford - Abingdon - Milton Park - Didcot - Wallingford
X32 Connector	Every 30min-1hour (5:01 to 20:30)	Monday - Sunday	2, 9	Oxford - Milton Park - Didcot - Chilton - Harwell Campus - Wantage
98 Connector	Every 10-30min 6:00 to 23:40	Monday - Sunday	3, 4, 5, 6	Didcot Parkway - Great Western Park - Harwell Campus
93	Hourly (10:00 to 14:00)	Monday - Friday	7	Broadway - Meadow Way - Freeman Way - Broadway (Circular)
91	Hourly (9:15 to 13:15)	Monday - Friday	8	Didcot - Ladygrove (Circular route)

Table 3: Bus routes within the A4130 scheme extents[4]

[4] https://bustimes.org/localities/didcot

The above bus services have been split between the services around Didcot (**Figure 5**) and those services with connections outside of the Didcot area (**Figure 6**).

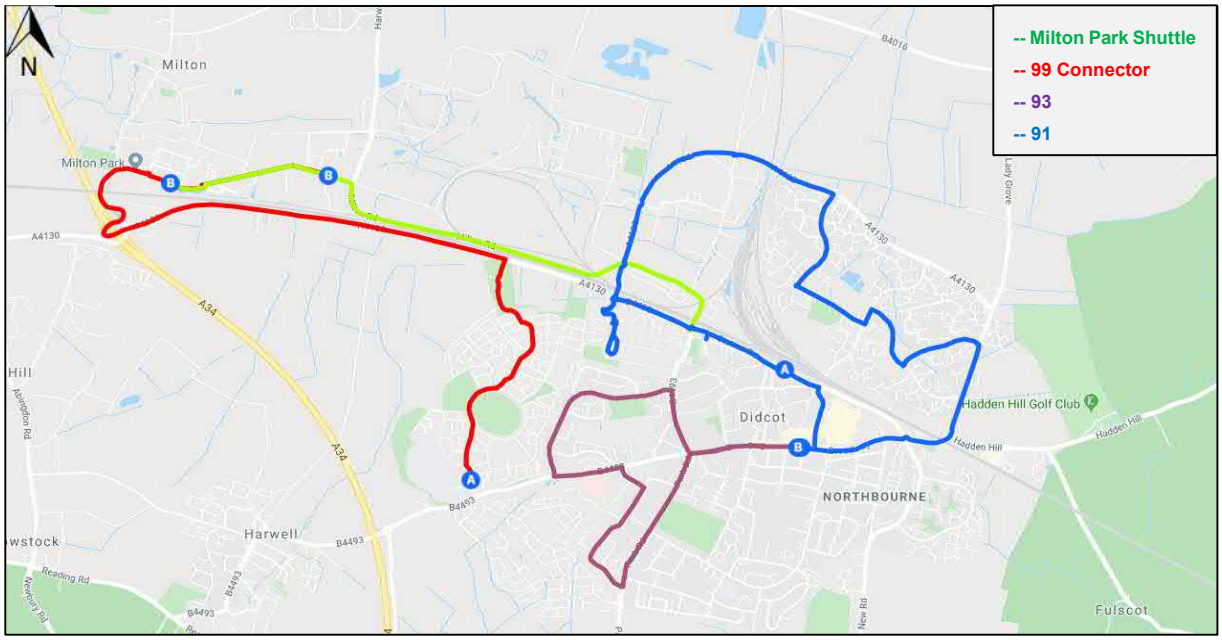


Figure 5: Bus routes around Didcot

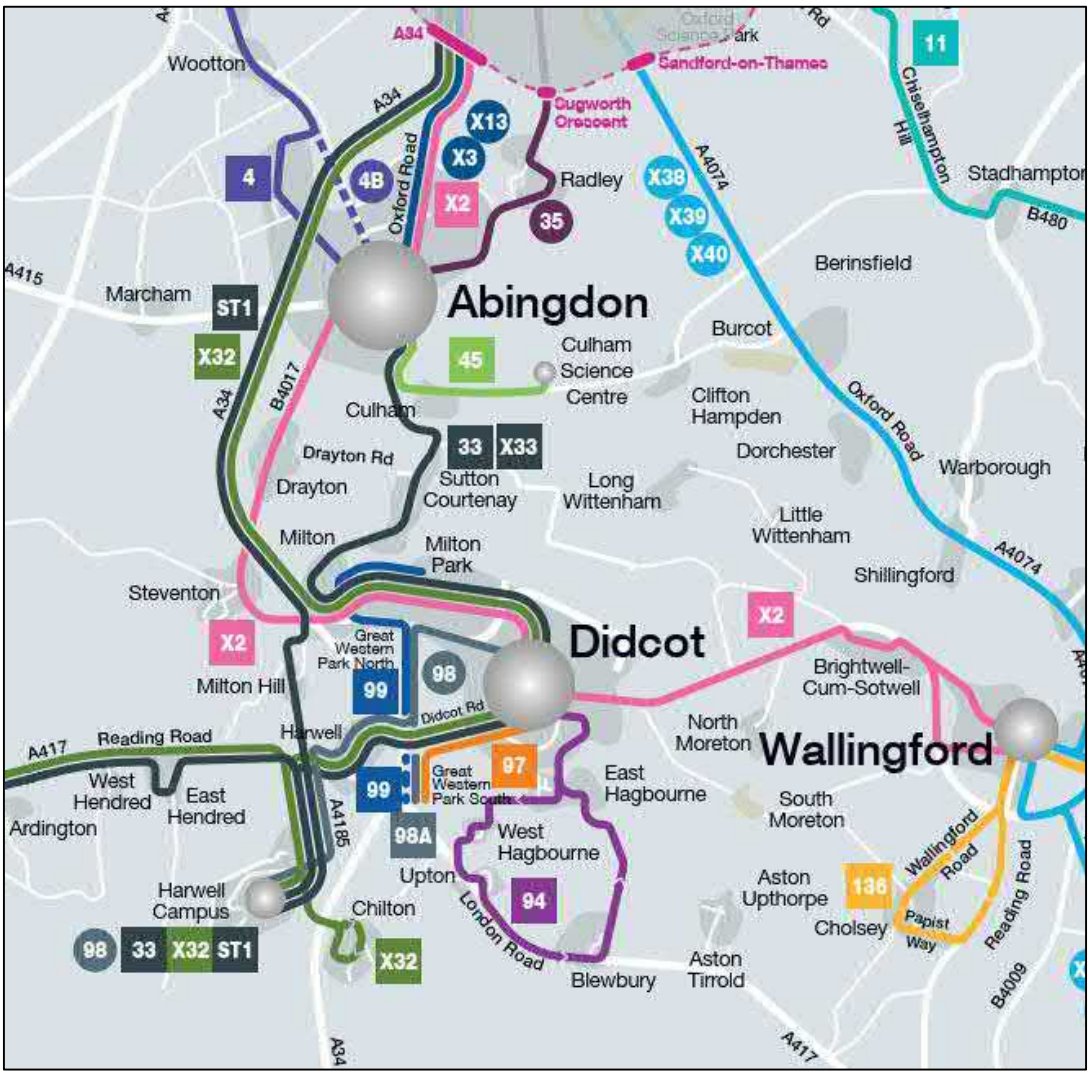


Figure 6: Extract of South Oxfordshire Zone network map

2.3.2 Train Services

While there are no train stations along the A4130 Widening scheme, there is one train station located within the study area. Didcot Parkway station is located less than 2km east of the scheme along the B4493 – Station Road. Train services at this station are operated by Great Western Rail[5], running trains into Oxford, London Paddington, Reading, Cardiff Central, Banbury, Weston Super Mare, Cheltenham Spa, Swansea, Taunton, Bristol Temple Meads and Carmarthen. This station has an average of ten services per hour.

The train station has a ticket office and ticket machine. It also has facilities such as toilets, car parks (1,127 spaces), sheltered cycle storage, bus services, taxi rank and a bike hire station. All station areas have step free access suitable for wheelchairs and ramps for train access.

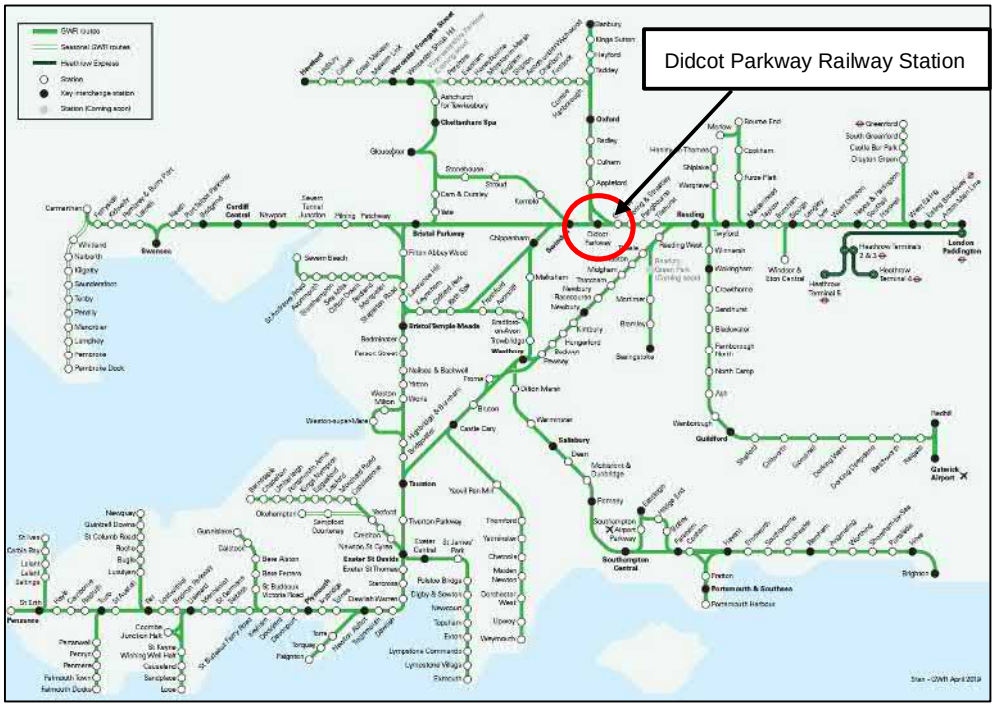


Figure 7: Great Western Railway Network

2.4 Key trip generators and local amenities

2.4.1 Current trip generators

Didcot has a population of 25,140[6], as of the 2011 census, has grown by 1,687 residents (7%) since 2001. Didcot is the largest settlement in South Oxfordshire (19%).

Didcot has a higher proportion of flats, terraced housing and semi-detached houses than average for the district and households are less likely to be owner occupied.

Almost half of the journeys to work which end in Didcot also start in the town. There is almost double the number of journeys out of Didcot to work as journeys into the town. Trips to the rest of the Science Vale area make up the largest number (about 20%), and this includes trips to Milton Park, Harwell and Culham Science Parks. The next largest destination is Oxford with other significant destinations being Abingdon, Wallingford and Reading.

[5] https://www.gwr.com/
[6] http://www.oxford.gov.uk/districtdata/downloads/file/61/south_oxon_census_2011_summary_leaflet

The number of vehicle movements into and out of Didcot town increased from 12,544 in 2001 to 13,826 in 2011[7] however cars per household remains below the district average. The overwhelming mode of travel to work in Didcot is as a car driver. Around 80% of journeys to work in Didcot are made by car, either as driver or passenger. There has been an increase in the number of employees driving to work, going by bus and travelling to work on foot.

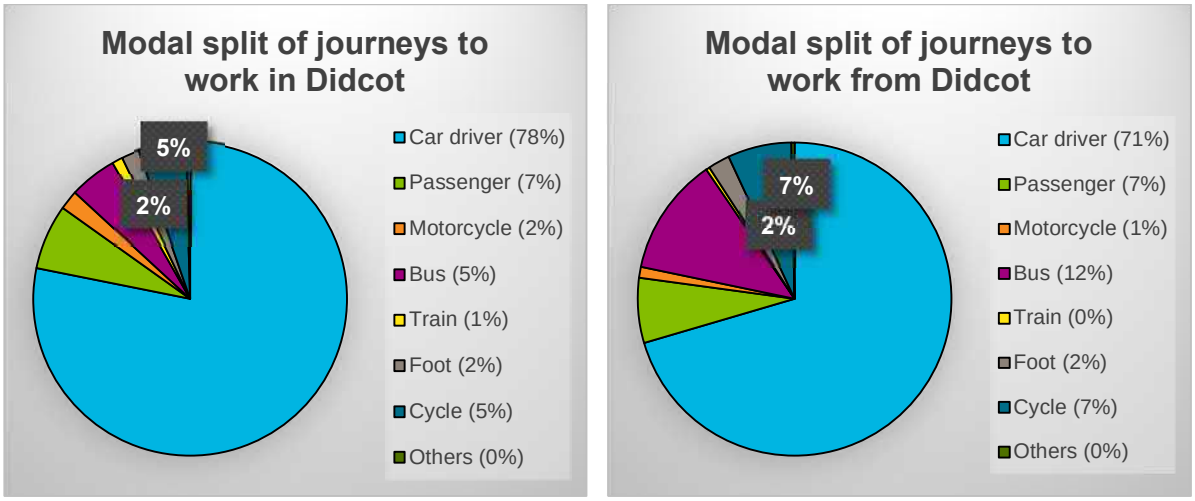


Figure 8: Modal split of journeys to work in and from Didcot

Bus journeys and cycle trips each account for approximately 5% of all journeys to work in Didcot, while the train is used in only 1% of commuter trips and only 2% by foot. Bus trips to work are only significant for trips to elsewhere in Science Vale (which includes Milton Park).

The key trip generators near the proposed scheme that could attract pedestrian and cyclist trips are the following:

Local businesses and key places of interest

Milton Park is a major employer of local staff and from a wider area, increasingly so as it has become a centre for more specialised, higher end activities, and also impacts the balance of in- commuters to out-commuters.

A service area near the Milton Interchange, has businesses such as car dealerships, restaurants, a coffee shop, a fuel station, and hotels.

Didcot Power Station, Southmead Industrial Estate, including Tesco Distribution Centre and the Trident Business Park are also local trip generators. While many Didcot residents use the Didcot Parkway train station to reach destinations further afield.

Residential areas

There are no residential areas that are within the immediate scheme extents, however there are many within a short distance from the scheme:

Didcot

The town offers a broad range of housing and employment opportunities, as well as key services and facilities including retail, health care, leisure and culture. The Great Western Park development, immediately east of the scheme extents has recently delivered many new homes.

[7] http://www.oxford.gov.uk/districtdata/downloads/file/68/didcot_settlement_profile_census_2011

Milton

There is a residential area located west of the scheme. However, there are no stores or restaurants, so residents probably go to Milton Gate or Didcot for these services.

There are some villages outside of the scheme extents such as Sutton Courtenay, Steventon, Milton Hill, Harwell, North Moreton, South Moreton or Appleford that are close to Didcot. Residents in these areas probably travel frequently to Didcot due to the facilities available, including shopping, restaurants, hospital, banks and fuel stations.

Oxford

The A34 links Didcot with Oxford, which is 14 miles to the north. Oxford has several important functions: a centre of higher education (with two universities), a major shopping centre; a centre for public services and a centre of manufacturing. Oxford is one of the largest employment centres in the South East, in addition to a large student population. Oxford also has a high level of in-commuting for employment, public services, education, health services and over 5 million visitors a year.

2.4.2 Future trip generators

Housing areas are planned for the Valley Park area in south-west Didcot (immediately south of the A4130 Widening scheme), Ladygrove North in north-east Didcot, North-east Wantage, and at other locations including Culham, Berinsfield and Dalton Barracks. Together these will add more than 22,000 houses to the local area.

Major employment development is planned within two Enterprise Zones, Science Vale and Didcot Growth Accelerator, and elsewhere at Milton Park and Didcot Power Station, Grove Airfield, Culham Science Centre and Harwell IBC. If these developments were allowed to progress without any improvements in the capacity of the transport networks, then the result would likely be unacceptable local congestion.

The Oxford Strategic Model (OSM) has been developed to predict traffic growth based on travel conditions in 2013. The model consists of an Highway Assignment Model (HAM) representing vehicle-based movements within and across the Oxfordshire County, the Public Transport Assignment Model (PTAM) representing bus and rail-based movements across the same area and for the same periods and a five-stage multi-modal Demand Model (MMDM) that estimates the choice of frequency, mode, period, destination and sub-mode in response to changes in generalised costs of travel.

These model assignments suggest that in the period 2013-2031 there would be around 25% traffic growth in the Didcot area in the morning and evening peaks, while in the inter-peak periods traffic growth could be 45%. The flow on the A4130 to the A34 is predicted to increase by 30-40% in the peaks and over 50% in the inter-peak periods.

The proposed planning applications that are pertinent to the proposed developments in the study area and extents according to the OCC[8] are the following:

South of Great Western Park, Didcot (P17/S3029/SCO)

Scoping opinion for proposed outline application for the development of land to the south of Great Western Park, for approximately 1,023 dwellings.

Land to the north east of Didcot (P15/S2902/O)

Proposed new and integrated neighbourhood to the northeast of Didcot of up to 1,880 homes, two new primary schools, a new secondary school and a new leisure/ sports facility and sports pitches, including a pavilion. A new neighbourhood centre, a mixed-use Public

[8] https://www.oxfordshire.gov.uk/residents/environment-and-planning/planning/find-planning-application/major-planning-applications/south-oxfordshire

House/restaurant, a hotel, a new community hall, a residential Extra Care Housing facility, new areas of green infrastructure including amenity green space, allotments and children's play areas, a supporting town-wide and site-specific associated infrastructure.

Car Park, Station Road, Didcot OX11 7NN (P15/S2159/O)

Planning application for demolition of existing buildings and a mixed-use development comprised of up to 300 residential units, a 70-bed hotel, gym, retail uses, commercial office floorspace, a replacement nursery school and a decked car park of up to three levels and supporting infrastructure. Closure of Lydalls Road to allow for redevelopment and altered pedestrian access.

Land at former Didcot A Power Station, Purchas Road, Didcot (P15/S1880/O)

Mixed-use redevelopment comprising up to 400 dwellings, hotel and pub/restaurant, including link road, related open space, landscaping and drainage infrastructure, together with reservation of land for link road and Science Bridge.

Orchard Shopping Centre, Didcot OX11 7LL (P15/S0433/FUL)

Demolition of existing buildings and construction of 1 and 2 storey buildings comprising retail units, flexible retail units, restaurants and a gym. Replacement public toilets, new public realm, improvements to existing public realm, new landscaping, realignment of drainage channel and alterations to access comprising amendments to the existing parking layout, additional car, motorcycle and cycle parking, new servicing area, new and amended access from the highway (including relocated bus route and closure of the High Street to allow redevelopment for retail use) and altered/ new pedestrian access.

2.5 Site visit

The site visit was undertaken by Andy Blanchard (Project Manager & Lead Assessor), Mike Ager (Design Team Leader), Andrea Blanco (Senior Engineer) and Rebeca Bolado (Graduate Engineer), on 9th December 2019 during daylight hours. The site visit took the form of walking along the A4130 within the scheme extents. The weather during the site visit was windy and sunny, with temperatures of 7 degrees Celsius.

The primary findings of the site visit were:

- The shared use footway along the southern side of the A4130 is relatively narrow (2.5 meters), has no physical segregation from the main carriageway and at the time of the site visit was not well used.
- Pedestrians were observed using the new Toucan crossing at Backhill Tunnel to cross the A4130.
- No pedestrians were observed using any of the Public Rights of Way during the site visit. It appears that two them are not used because one access has a closed gate and the other has overgrown vegetation making it impossible to access.
- No cyclists were seen during the site visit.
- No evidence of equestrian use was found.
- Traffic flows along the A4130 were relatively heavy with a large number of heavy goods vehicles.

2.6 Existing pedestrian, cyclist and equestrian network facilities

2.6.1 Local facilities

The existing facilities for non-motorised users along the scheme extents include the following:

- Between the Milton Interchange roundabout and the rail underpass at Backhill Tunnel (south of Milton Park), up to 3m wide shared use cycle-pedestrian footways is present on both sides of the A4130 carriageway. There is no northern footway along the A4130 east of the tunnel. The Backhill Tunnel is shown in the **Figure 9.**



Figure 9: Backhill Tunnel

- Between the Backhill Tunnel and the A4130/B4493 roundabout (east of the scheme extents) a 2.5m wide shared use footway is present along the southern frontage. This footway is shared by cyclists and pedestrians and links to the Public Rights of Way located to the south of the A4130.



Figure 10: Southern footway of A4130

- There is limited street lighting. Part of the route is lit from Milton Interchange to just east of the Toucan crossing. There is lighting at Backhill Tunnel for pedestrians and cyclists, and there is lighting at the Sir Frank Williams Avenue junction at the entrance to Great Western Park, to the east of the scheme extents. However, there is no other lighting along the A4130 between these junctions.

The figure below shows the location of the Public Rights of Way (PRoW) within the study area.

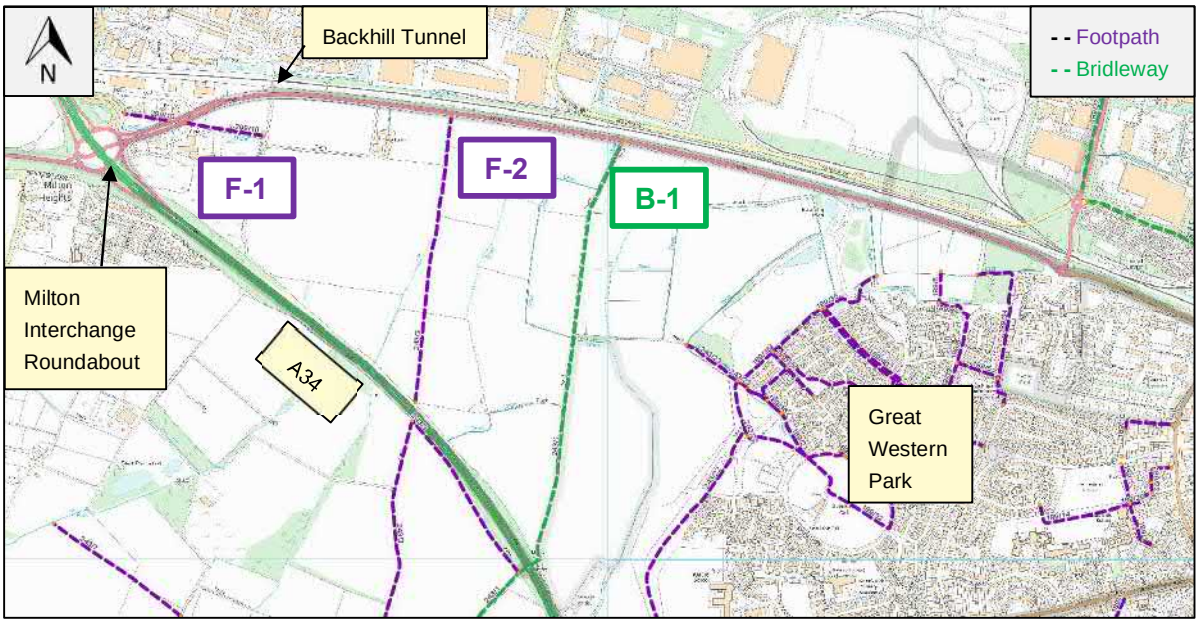


Figure 11: Public Rights of Way within the study area[9]

The following pedestrian, cyclist and equestrian facilities within the scheme extents have been identified:

Walking network facilities

There are two footpaths within the study area extension:

Footpath F-1 (ref 299/10/10):

This footpath is divided by the A4130 into two sections.

- The first section starts close to the Milton Interchange roundabout and stretches for 145 metres up to the northern side of the A4130. Its entrance appears to be shared with cars.
- The second section continues on the southern side of the road but is blocked by a padlocked gate (there is no direct crossings between the two sections over the A4130, but there are controlled crossing facilities at the nearby Milton Gate signals). The footpath beyond the gate stretches for 275m alongside a field and ends at a private lane.
- It would appear that this lane links to the former Backhill Lane (and Backhill tunnel) which may have been a public road prior to the construction of the current A4130.



Figure 12: North entrance to footpath F-1

[9] *https://publicrightsofway.oxfordshire.gov.uk/Web/standardmap.aspx*



Figure 13: South entrance to footpath F-1

Footpath F-2 (ref 243/3/10):

- This footpath is severed by the A34.
- The northern section starts on the southern side of the A4130 but there is dense vegetation and it does not have a clear entrance. This footpath appears to be severed at it is southern end by the A34, there is no way to cross the busy dual carriageway at this point. This footpath seems completely abandoned and is inaccessible.
- South of the A34 it divides into two sections, one leads to Harwell and the other runs parallel to the A34 in the south-east direction.



Figure 14: North entrance to footpath F-2 at the A4130

Bridleways (ref 243/1/10):

There is one bridleway within the study area. This bridleway (known as Cow Lane) is approximately 1,450 metres in length and goes from the north, connecting with the A4130 south, connecting with Harwell. There is a bridge as seen in **Figure 16** crossing the A34.



Figure 15: Northern and southern entrances to bridleway B-1



Figure 16: Bridleway B-1 crossing the A34

Cycling network facilities

There are no cyclist facilities registered in the National Cycling Network within the scheme or study area. However, cycling is permitted along the southern footway for the whole length of the A4130 within the study area, and on the northern footway west of Backhill tunnel. Cycling is also permitted along the Cow Lane bridleway, which has a well compacted natural surface.

Horse-riding network facilities

The bridleway mentioned above is an equestrian facility.

2.6.2 Facilities at a strategic level

Public Right of Way (PRoW)

Figure 17 below shows the location of the Public Rights of Way (PRoW) at a strategic level.

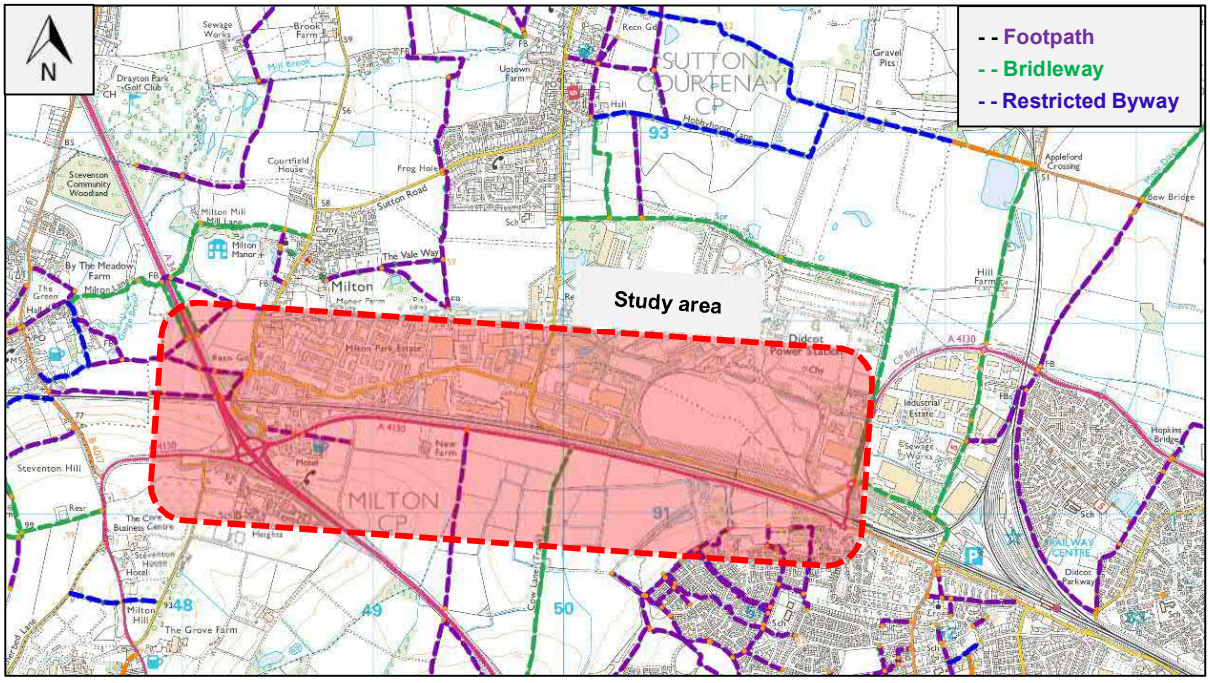


Figure 17: Public Rights of Way outside the study area

Cycling network facilities

There are two National Cycling Network (NCN)[10] routes across the Didcot area, as shown in **Figure 18**.

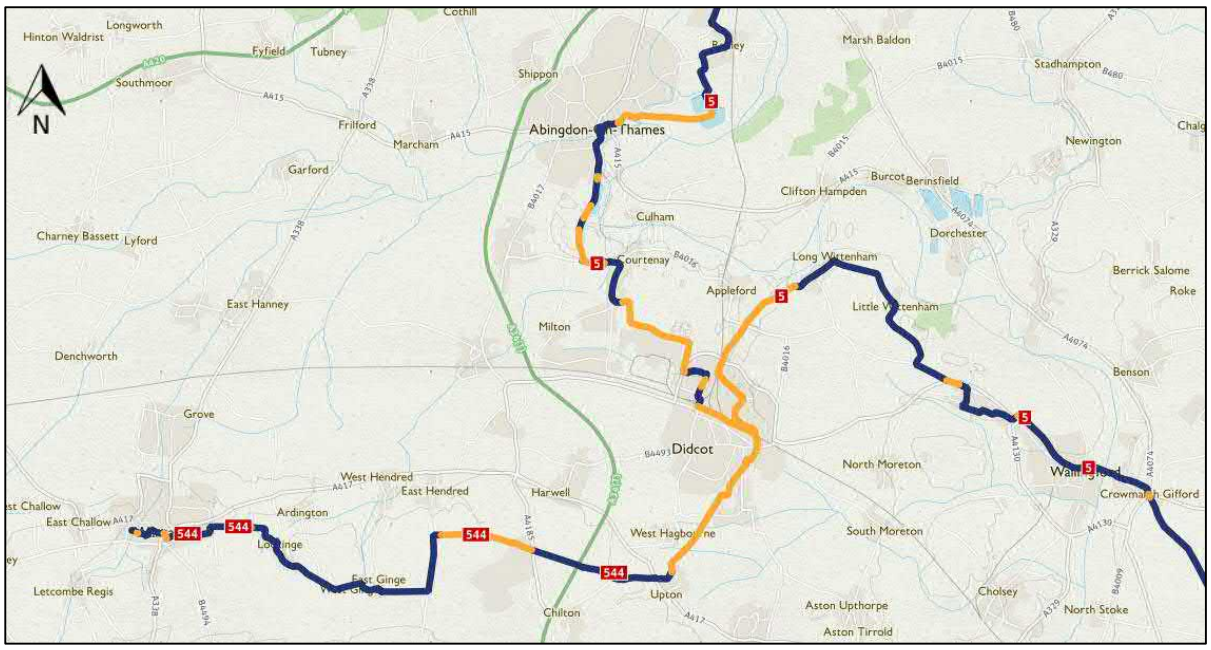


Figure 18: National Cycling Network

National Cycle Network Route 5 is a long-distance route connecting Reading and Holyhead via Oxford, Stratford-upon-Avon, Bromsgrove, Birmingham, Stoke-on-Trent, Chester, Colwyn Bay and Bangor.

The National Cycle Network Route 544 connects Didcot and Wantage. It is a 12-mile route on quiet roads, byways and purpose-built paths, offering a tranquil way to explore Southern Oxfordshire.

Some cycle facilities have been completed as part of the planned Science Vale Cycle Network, see **Figure 3**.

Horse-riding network facilities

There are no known equestrian facilities that exist beyond the scheme extents.

2.7 Walking, cycling & horse-riding survey data

A 7-day, 24-hour survey was conducted in November 2019 to collect data on walking, cycling and horse-riding movements at three locations within the scheme extents. This data was collected in order to provide a quantitative understanding of the existing walking, cycling and horse-riding demand, and understand the use of junctions in the scheme. Additionally, an Automatic Traffic Count (ATC) was conducted on the A4130 to collect data on traffic speeds.

The movement surveys were undertaken between Monday 11th November and Sunday 17th November 2019. The surveys were undertaken using video survey techniques to cover walking, cycling and horse-riding movements through each of the junctions.

The count locations are shown in **Table 4** below. A map of these locations is shown in **Appendix C**.

[10] *https://osmaps.ordnancesurvey.co.uk/ncn*

Survey ID	Location	Survey Type	Grid Reference
WID-01	Backhill Tunnel (NMU only) and A4130 Junction	All NMU movements	E: 448914 N: 191499
WID-02	Sir Frank Williams Avenue (Great Western Park) and A4130 Junction	All NMU movements	E: 450783 N: 191168
WID-03	A4130 (east of Backhill Tunnel)	An ATC speed survey	
WID-04	Cow Lane (bridleway) and A4130 Junction	All NMU movements	E: 450036 N: 191341

Table 4: Locations for WCHAR surveys

2.7.1 ATC and speed surveys

The following table provides the total number of vehicles recorded in each direction along A4130 East of Backhill Tunnel during the survey period and their classification.

Survey ID	Location	Direction	Vehicle Classification (%)					
			Cycles (on road)	Motor/ cycle	Car	LGV	HGV	Buses
WID-03	A4130 East of Backhill Tunnel	Eastbound	0.01	0.35	80.58	10.86	7.76	0.44
		Westbound	0.02	0.42	75.29	14.93	8.74	0.60

Table 5: Total traffic flow and vehicle classification

The average weekly total traffic flow was 85,289 vehicles Eastbound and 85,553 Westbound.

The following table shows the average and 85%ile speeds recorded on the A4130. The recorded information shows that vehicles frequently travel above the speed limit on both roads, although it should be noted that the survey location was at the speed limit change from 40mph to 60mph.

Survey ID	Location	Direction	Speed Limit (mph)	Average speed (mph)	85%ile speed (mph)
WID-03	A4130 East of Backhill Tunnel	Eastbound	40mph	42.4	50.6
		Westbound	40mph	43.3	49.4

Table 6: Surveyed average and 85%ile speeds



Figure 19: A4130 east of Backhill Tunnel

2.7.2 NMU surveys

The total pedestrian and cycle movements have been marked on a location plan for each site. The full survey counts are provided in **Appendix D**.

WID-01: Backhill Tunnel (NMU only) and A4130 Junction

There is a Toucan crossing at this location and it provides a connection between the northern and southern footways of the A4130 and the Backhill Tunnel which connects to Milton Park for pedestrians and cyclists only. There is a footway on the northern side of the carriageway, but it ends east of the tunnel. This means that pedestrians have to cross to the south carriageway, that has a continuous footway, connecting to Didcot. During the survey the Toucan crossing was not operational, so pedestrians / cyclists using the tunnel who were unable to cross to the southern footway, may have decided to continue on the northern footway.

The pedestrian and cycle movements recorded during the survey period are shown in the following figure. During the survey period, no equestrians were counted, but four scooter riders were recorded during the whole week. The number of NMUs recorded at this location averaged 169 pedestrian and 127 cyclist on a weekday, and 44 and 47 respectively during the weekend.

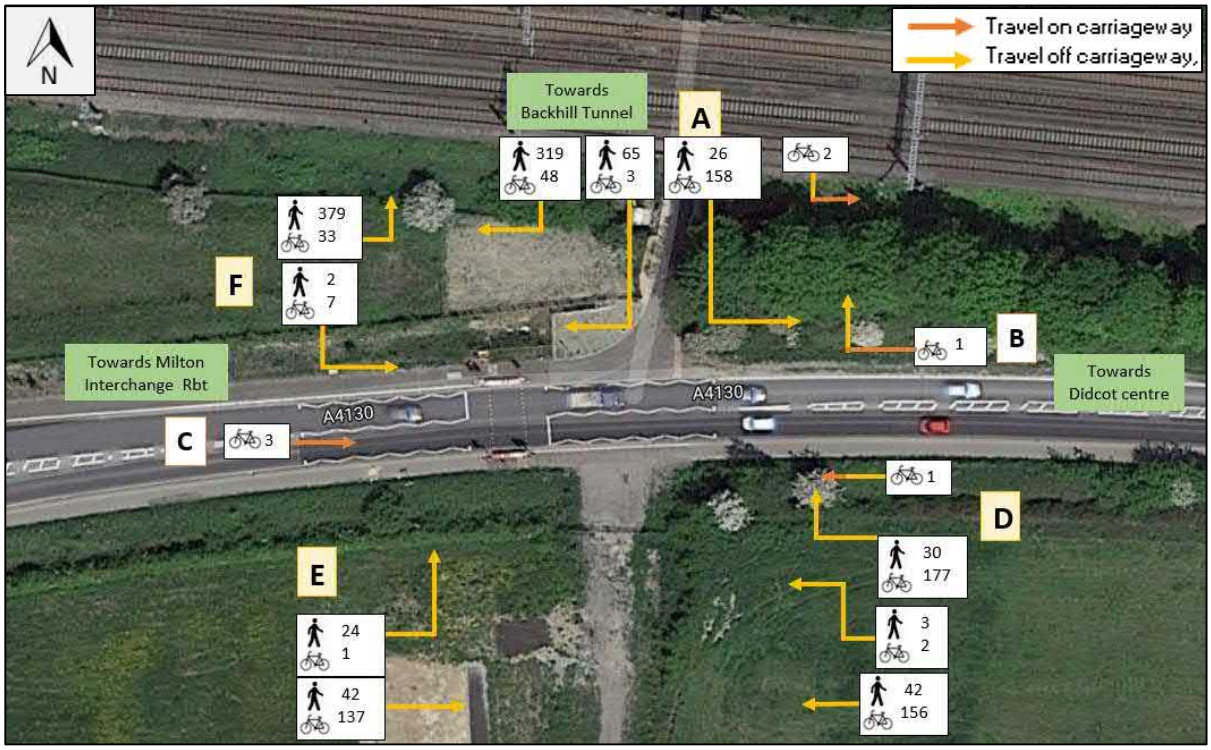


Figure 20: Pedestrian and cycle total weekly movements at Backhill Tunnel



Figure 21: Backhill Tunnel

WID-02: Sir Frank Williams Avenue and A4130 Junction

This junction is signalised and provides a link to the Great Western Park residential development. There is a footway on the southern side of the A4130 carriageway and both sides of Sir Frank Williams Avenue.

The pedestrian and cycle movements recorded during the survey period are shown in the following figure. During the survey period, no equestrians were counted. Four scooter riders using the footway were recorded during the whole week. The number of NMUs recorded at this location averaged 50 pedestrians and 128 cyclist on a weekday, and 73 and 58 respectively during the weekend.

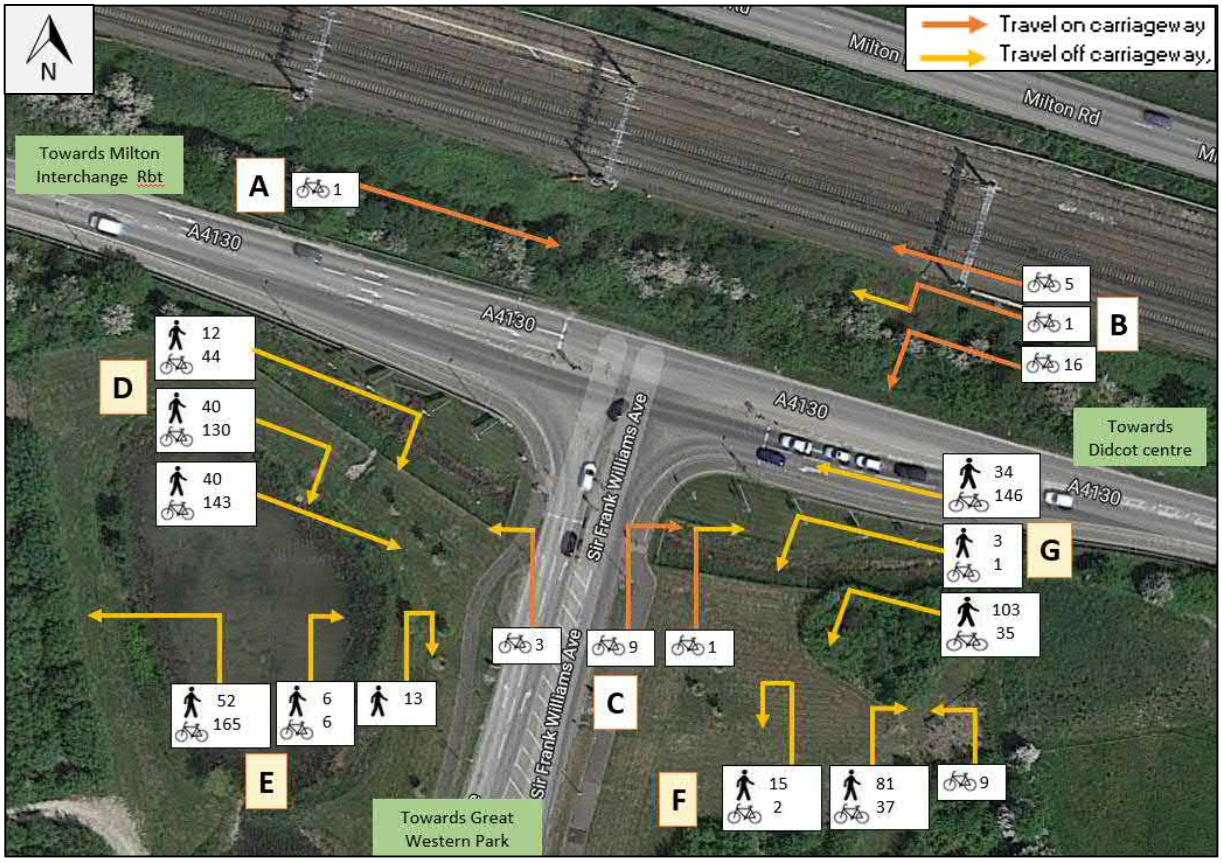


Figure 22: Pedestrian and cycle total weekly movements at WID-02 (from A, B, C and D)



Figure 23: Sir Frank Williams Avenue and A4130 Junction

WID-04: Cow Lane (bridleway) and A4130 Junction

This junction is unsignalised and connects the A4130 with the Cow Lane (bridleway). There is a (shared use) footway on the southern side of the A4130 carriageway at this location.

The pedestrian and cycle movements recorded during the survey period are shown in the following figure. During the survey period, no equestrians were counted. Two scooter riders using the footway were recorded during the whole week. The number of NMUs recorded at location averaged 29 pedestrian and 112 cyclist trips on a weekday, and 37 and 42 respectively during a weekend day.

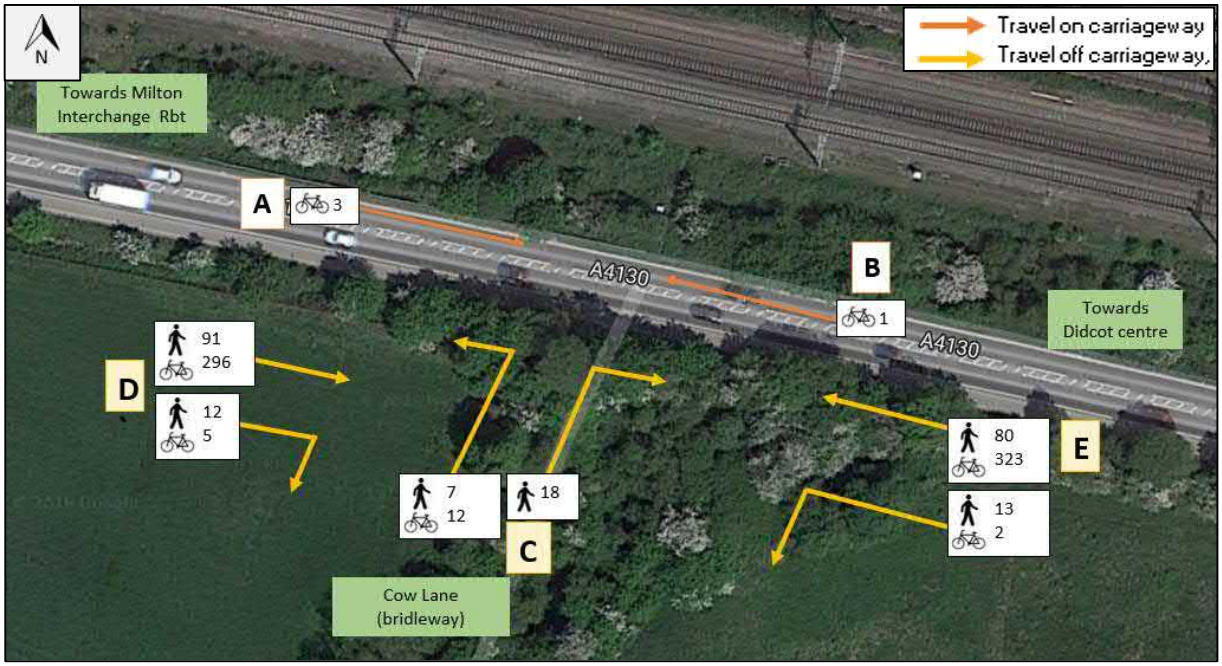


Figure 24: Pedestrian and cycle total weekly movements at WID-04



Figure 25: Cow Lane (bridleway) and A4130 Junction

2.8 Liaison with key stakeholders

In order to be able to incorporate, where appropriate, the comments and views of local people on the preferred alignments into the next stage of the scheme design process of the HIF1 package of schemes an online public consultation was undertaken. This commenced on 20th March 2020 and finished on 30th April 2020. Full details of the consultation are available here: www.oxfordshire.gov.uk/didcotupdate.

As a result of Government restrictions on social distancing in response to the COVID-19 pandemic, it was not possible to hold the five public exhibitions that were scheduled for the last two weeks of March 2020. Due to the very tight timescales imposed by Government with respect to the terms of the funding, it was necessary to continue with an online consultation in order to avoid delay to the project programme.

However, to address this, OCC undertook additional measures to ensure that as many people as possible were aware of the consultation and were able to access the information. This included sending letters to approximately 22,000 residences in the area, using an innovative virtual exhibition room with live chat function, promoting telephone numbers of officers available to answer questions, and sending printed versions of the materials to those without internet access. This was all in addition to the standard means of engagement (newspaper adverts, press releases, electronic mailouts, OCC website etc).

It should be noted that the A4130 Widening scheme was consulted alongside the three other Didcot HIF highways schemes. Later in the year, it is intended that stakeholder workshops will be held to invite further input to the design of the walking, cycling, and horse-riding provision in these schemes.

Overall, 24 questionnaires were sent out to a list of identified key stakeholders and user groups which included representatives from the following:

- OCC Public Health
- OCC Public Rights of Way
- Didcot Garden Town Project Manager
- Harwell Campus Bicycle Users Group (HarBUG)
- Sustrans Thames Valley
- CYCLOX / Cycling UK
- Culham Science Centre Bicycle Users Group (CulBUG)
- Milton Park Bike Users' Group (MilBUG)
- Oxfordshire Cycling Network (OCN)
- Ramblers Association
- Rambers Association Oxon (& Oxford Fieldpaths Society)
- British Horse Society
- Oxfordshire Association for the Blind
- Oxfordshire Unlimited
- Guide Dogs
- Oxfordshire Transport & Access Group (OXTRAG)

In total, seven replies were received. In general, all respondents supported walking and cycling improvements, even if this means less space for other road traffic.

Table 7 provides a summary of the stakeholder responses relating to the proposed A4130 Widening scheme received during the consultation. A copy of the questionnaire and the full responses received are included in **Appendix E**.

Consultee	Summary of Responses
Oxfordshire County Council Public Health	• Providing high quality pedestrian infrastructure will enable people making short trips to walk, but that new routes should be safe and convenient -i.e. providing short cuts and avoiding long wait times at crossings. • Providing high quality cycle infrastructure will improve people's cycling experience, but should be part of a safe network, and be more direct and convenient than driving to encourage more people to cycle, and more often. • Strongly support the full segregation and setting back of walking and cycling facilities from the carriageway. However, the plans will create a relatively fast and noisy traffic corridor that if not carefully designed will reduce people's confidence and desire to walk and cycle. • Particularly concerned about tangential roundabout design that might result in vehicles entering and leaving the roundabouts at speeds that will be intimidating and unpleasant to NMU's using the Toucan crossings and waiting in the central refuges. Radial roundabout design suggestion instead. • Green infrastructure should be implemented to create a more pleasant and less traffic dominated environment, e.g. a boulevard of trees. • Concerns about the proposal impacts on carbon reduction priorities due to the risk that it could induce more traffic.
Public Rights of Way Access Strategy & Develop-ment (OCC PRoW)	• Noted that the improvements for pedestrians are relatively close to traffic and won't encourage new walkers due to the distances involved, but they would enable people who already walk or run on roads in the area to do so more safely. • Recommended creating alternative traffic free routes well away from carriageways and within settlements instead. • Considered that the segregated proposals will provide safer and more convenient facilities for confident cyclists and encourage less confident cyclists to use their bikes for utility and social journeys, provided there were complementary facilities within the neighbouring developments. • Stated preference for having 5m grass verge separation between all motor vehicles and NMUs, i.e. group pod (autonomous vehicle) lane with other motor traffic. • OCC PRoW highlighted several potential improvements: – Speaking to local and national British Horse Society (BHS) to identify the needs of equestrians, because they noted that there is no provision for them. – Provide connections for bridleway users. – Focus on facilities within settlements - these must have traffic-free or physically separate routes to encourage non-cyclists to get on bicycles. • Consult the statutory Oxfordshire Countryside Access Forum.
Harwell Campus Bicycle Users Group (HarBUG)	• People will walk along the route for short distances to get to places but not for pleasure alongside a main road, as it is unpleasant and pedestrians will want to get away from the road as soon as possible. • Cycle paths and facilities must provide direct and convenient connections to existing and new Didcot housing developments, so that cyclists can easily join and leave the new paths. • Cycle paths need to be integrated into the Science Vale Cycling Network. • Key general points relating to improve provision for people who wish to walk, cycle or ride a horse outlined below: – Ensure that Valley Park and other developments along the A4130 have cycle path networks that connect to the new A4130 paths and beyond.

Consultee	Summary of Responses
HarBUG (cont.)	– Optimise the Toucan crossings at the Backhill Lane Tunnel Roundabout to reduce waiting times when traffic flow is low. Maybe the crossing either side of the roundabout should have different timing priorities. – Suggest Toucan crossing at the Valley Park signalised junction to be a raised parallel crossing to provide better continuity for cyclists. • Suggested that the POD lane would be better next to the main carriageway so that, in future, carriageway space can be easily be re-allocated to accommodate more autonomous vehicles without changing the cycle lanes. • Suggestion of Science Vale Cycle Network route naming is used, as proposed in their *Proposal for Network Naming Convention and Routes*, April 2019.
Cyclox	• Cyclox welcome the improvements proposed to encourage people to walk and cycle more often, as they are safer and reduce motorised threat. • Compact roundabouts should be proposed instead of "normal" DMRB style roundabouts, to avoid encouraging increased vehicle speeds and risk to those people using the crossings, particularly at flared entry and exits. If volumes are too great, consider grade separation or full signalisation. • Provisions are not all in the most obvious locations. Crossings should be as close as possible to all roundabouts and junctions – be direct and convenient. • Staggered crossings should be avoided. • Re-engineer the Toucan crossing at Great Western Park to be single stage. • Provide convenient and frequent access into adjacent developments, Valley and Great Western Parks for pedestrians and cyclists. • Make the designs reduce distances for cyclists and increase roadside and road-facing development as much as possible, in line with current guidance (Manuals for Streets 1&2). • Concerned that area's current and future residents will travel by car, creating more congestion, pollution and health problems.
Milton Park Bike Users' Group (MilBUG)	• Improvements would encourage people to walk and cycle more often but only if the new infrastructure has proper connections to destinations within the area, including access points to housing and employment areas. • Walking along traffic-busy roads like A4130 is unpleasant and will be affected unless good segregation (e.g. through planting) can be achieved. • MilBUG highlighted several improvements for consideration: – Improve segregation of modes with good landscaping and speed reduction schemes. – Safe, direct crossing points with sensor-controlled traffic signals to minimise wait times for cyclist. – Ensure all crossings are parallel crossings with cyclist priority. – Further improve Backhill Tunnel access to make the connection with Valley Park and Great Western Park more direct and prominent (taking into account the future cycle hub facility at the entry to the tunnel). • Use Milton Park Travel Survey data to identify where people travel from and review connections to these places, including provision of signage.
Oxfordshire Cycling Network (OCN)	• Use Milton Park Travel Survey data to identify where people travel from and review connections to these places, including provision of signage. • OCN welcomed the improvements proposed to encourage people to walk and cycle more often, but cautioned that if easy driving still remains that good walking and cycling facilities may not encourage a switch to these modes. • Cyclists will be most benefited by the proposals due to the longer distances involved. The routes that can form part of a leisure cycling ride while people would use them for 'function' and not for 'pleasure'. • Supported walking and cycling improvements as they are separated from motor vehicles and pedestrians and cyclists are segregated. Crossings are well-designed, particularly the inclusion of parallel crossings.

Consultee	Summary of Responses
OCN (cont)	• Suggested further improvements: • Ensure several points of connection into Valley Park and GW Park. • Improve the crossing at the BP fossil fuel station. • Ensure single stage Toucan crossing at Valley Park road entrance.
OXTRAG	• OXTRAG welcomes the improvements for encourage people to walk and cycle more often. • Agree with the walking and cycling facilities proposed and are pleased that there will be an off-carriageway cycleway. • Do not expect anyone to want to ride a horse along the proposed road.

Table 7: Summary of Stakeholder Response to Consultation

3. User Opportunities

The opportunities highlighted below are deemed to be relevant to the highway scheme and should be considered by the design team leader throughout the progression of the highway scheme design in addition to any further opportunities that may arise through the ongoing development of the design phases.

It is noted that opportunities labelled “KS-X” have been identified through key stakeholder consultation carried out in April 2020 and have only been raised following the completion of the feasibility design stage. Additional opportunities identified are to be reviewed by designers at the preliminary design stage and to be included in the next stage WCHAR review.

3.1 General

Opportunity 1

Ensure future pedestrian and cyclist facilities within the public highway are integrated with proposed facilities within new developments, to provide a joined up optimal walking and cycling networks. Seek funding from developers to deliver the overall networks.

3.2 Strategic opportunities

Opportunity 2

Provision of convenient, frequent and direct links between the A4130, Milton and the future development areas to the south of the proposed widening scheme.

Opportunity 3

Provision of a direct link along the A4130 into the centre of Didcot, including to Didcot Parkway station.

Opportunity 4

Provision of bus services along the A4130 and bus stops near accesses into the future development areas. The new developments will be predominantly housing, so new transport needs will appear.

Opportunity 5

Improvement and incorporation of the Public Rights of Way to the existing connections and facilities, so that can be fully utilised.

Opportunity KS-1

Group motor vehicle elements together, i.e. move the Pod lane next to carriageway

Opportunity KS-2

Provide as great as possible separation between motor vehicles and the NMU facilities, use green infrastructure to create a more pleasant and less traffic-dominated environment, to ultimately encourage active travel.

Opportunity KS-3

Ensure all crossings are convenient, direct, raised where practical, and do not incur unnecessary delay to NMUs.

3.3 Pedestrian specific opportunities

Opportunity 6

Improve and resurface the existing footways to fix potholes and other defects that may cause potentially unsafe conditions and user discomfort. Any new facilities to have high quality surfacing.

Opportunity 7

Provision of a segregated cycle track and footway on the southern side of the carriageway along the whole scheme, to avoid potential discomfort and conflict between pedestrians and cyclists, as walking and cycling demand increases. People whose mobility is reduced due to a disability, age, pregnancy or travelling with young children in pushchairs, will feel more comfortable if segregated instead of shared facilities being provided. (see also Opportunity #9)

Opportunity 8

It should be noted that since the NMU survey was undertaken, the Toucan crossing at Backhill Tunnel has been switched on. During the site visit, pedestrians were observed using the crossing. An opportunity exists to continue the provision of a crossing facility in the area to accommodate NMU's using Backhill Tunnel, to enable them to move safely between Milton Park and Didcot.

Opportunity KS-4

Provision of a convenient and frequent access into adjacent developments, Valley and Great Western Parks for pedestrians and cyclists.

3.4 Cyclist specific opportunities

Opportunity 9

Convert the shared existing footways to a segregated cycle track throughout the scheme to make off road facilities more attractive and usable, particularly for the less confident cyclists. Provision of a segregated cycle track will minimise the potential for conflict between pedestrians and cyclists, as walking and cycling demand increases.

Opportunity 10

Provision of a segregated cycle facility throughout the scheme, that connects to the Science Vale Cycle Network and the National Cycle Network Route 5.

3.5 Equestrian specific opportunities

No equestrian specific opportunities have been developed for this scheme, as the route along the A4130 has been determined as not being appropriate for these road users.

4. Walking, Cycling and Horse-Riding Assessment Team Statement

As Lead Assessor, I confirm that this walking, cycling and horse-riding assessment report has been generally compiled in accordance with DMRB GG 142 (refer to section 1 for exceptions). The walking, cycling and horse-riding assessment was undertaken by the following assessment and review team:

Name	Andy Blanchard
Position	Associate Director - WCHAR Lead Assessor
Organisation	AECOM
Signed	
Date	15/05/2020

Name	Rebeca Bolado Fernandez
Position	Graduate Engineer - WCHAR Assessor
Organisation	AECOM

As the design team leader, I confirm that the assessment has been undertaken at the appropriate stage of the highway scheme development.

I confirm that in my professional opinion the appointed Lead Assessor has the appropriate experience for the role making reference to the expected competencies contained in GG 142.

Name	Mike Ager
Position	Principal Engineer - Design team leader
Organisation	AECOM
Signed	
Date	15/05/2020

aecom.com



Didcot Garden Town HIF 1 - Science Bridge

Walking, Cycling and Horse-Riding Assessment Report

Oxfordshire County Council

Project number: 60606782

May 2020

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Andy Blanchard Associate Director	Mike Ager Principal Engineer	Samuel Barnes Associate Director	Andy Blanchard Associate Director

Revision History

Revision	Revision	Details	Authorized	Name	Position
0	20/12/2019	DRAFT	✓	Andy Blanchard	Project Manager
P01	19/05/2020	FINAL – stakeholder feedback added	✓	Andy Blanchard	Project Manager

Distribution List

# Hard Copies	PDF Required	Association / Company Name
-	Y	Aron Wisdom, Oxfordshire County Council
-	Y	Will Pedley, Oxfordshire County Council
-	Y	Harry Davis, Oxfordshire County Council
-	Y	Gavin Belcher, Oxfordshire County Council

Prepared for:

Oxfordshire County Council
County Hall
New Road
Oxford
OX1 1ND

Prepared by:

Andy Blanchard
Associate Director
E: andy.blanchard@aecom.com

AECOM Infrastructure & Environment UK Limited
AECOM House
63-77 Victoria Street
St Albans
Hertfordshire AL1 3ER
United Kingdom

T: +44(0)1727 535000
aecom.com

© 2020 AECOM Infrastructure & Environment UK Limited. All Rights Reserved.

This document has been prepared by AECOM Infrastructure & Environment UK Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

Executive summary 6

1. Background and highways scheme description 7
1.1 Background 7
1.2 Proposed highway scheme 8
1.3 WCHAR study area 9
2. WCHAR assessment 10
2.1 Assessment of walking, cycling and horse-riding policies and strategies 10
2.2 Collision Data 12
2.3 Multi-modal transport services and interchange information 14
2.4 Key trip generators and local amenities 16
2.5 Site visit 19
2.6 Existing pedestrian, cyclist and equestrian facilities 20
2.7 Walking, cycling & horse-riding survey data 24
2.8 Liaison with key stakeholders 29
3. User Opportunities 32
3.1 General 32
3.2 Strategic opportunities 32
3.3 Pedestrian specific opportunities 33
3.4 Cyclist specific opportunities 33
3.5 Equestrian specific opportunities 33
4. Walking, Cycling and Horse-Riding Assessment Team Statement 34

Appendix A - Feasibility Design
Appendix B - Collision Data and Balloon Diagrams
Appendix C - WCHAR Survey Locations
Appendix D - WCHAR Survey Data
Appendix E - Stakeholder Consultation Records

Figures

Figure 1: Science Vale area 7
Figure 2: DSB WCHAR study area location plan 9
Figure 3: Proposed Science Vale Cycle Network route map 10
Figure 4: Bus routes around Didcot 14
Figure 5: Extract of South Oxfordshire Zone network map 15
Figure 6: Great Western Railway Network 16
Figure 7: Modal split of journeys to work in and from Didcot 17
Figure 8: A4130 Northern Perimeter Road 19
Figure 9: A4130 Mendip Heights Roundabout 20
Figure 10: Public Rights of Way within the study area 20
Figure 11: Bridleway entrance indicators and map 21
Figure 12: Bridleway 21
Figure 13: Hanson Way cycle route network within the local area (source: Sustrans) 22
Figure 14: Public Rights of Way outside the study area 22
Figure 15: National Cycling Network 23
Figure 16: East-west section of A4130 25
Figure 17: NMU total weekly movements at A4130/ B4493 Roundabout 26
Figure 18: A4130/B4493 Roundabout 26
Figure 19: NMU total weekly movements at Purchas Rd, A4130 and Basil Hill Rd Roundabout 27
Figure 20: Purchas Rd, A4130 and Basil Hill Rd Roundabout 27
Figure 21: NMU total weekly movements at A4130, Purchas Rd and Hawksworth Roundabout 28
Figure 22: A4130, Purchas Rd and Hawksworth Roundabout 28

Tables

Table 1: Total collisions by severity 12
Table 2: Total casualties by severity 12
Table 3: Collision register 13
Table 5: Locations for WCHAR surveys 24
Table 6: Total traffic flow and vehicle classification 24
Table 7: Surveyed average and 85%ile speeds 25
Table 8: Summary of Stakeholder Response to Consultation 31

Executive summary

This report outlines the Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) prepared for Oxfordshire County Council for the proposed Science Bridge scheme. This scheme is one of four that comprise the HIF1 Didcot Garden Town infrastructure project. Whilst the process set out in the Design Manual for Roads and Bridges (DMRB) GG 142 document has generally been followed in preparing this WCHAR Report, as this scheme is not a trunk road some alterations have been made to reflect this, such as a reduced study area.

The WCHAR process is divided into two phases:

- Assessment (this report): undertaken during the options or concept stage of a highway scheme to capture the existing conditions for pedestrians, cyclists and equestrians, and identify the opportunities for improvement for these modes.
- Review: shall be completed as an ongoing review during the various design stages of the highway scheme and shall record the design decisions relating to the provision of walking, cycling and horse-riding facilities.

The aims of this assessment are to gain an understanding of all relevant existing facilities for pedestrians, cyclists and equestrians (the users) in the local area, to provide background user information that can be referred to throughout the design process and to identify opportunities for improvement for users.

The proposed Science Bridge scheme will deliver a new link road and bridge over the Great Western rail line, linking the proposed widened A4130 east of the A34 Milton Interchange with the Didcot Northern Perimeter Road.

This Assessment Report documents the relevant local and national policies and strategies. Within the study area, there has been one recorded collision involving a pedestrian and twenty-one involving cyclists in the last five years. Currently this area comprises of the decommissioned Didcot A Power Station and green fields, there are no bus stops on the route for this scheme. Two train stations, Didcot Parkway and Appleford, are located approximately 1.5km east and 3km north respectively from the scheme extents.

The key trip generators in the area include the nearby Milton Park Science Park and light industrial parks adjacent to the Didcot Northern Perimeter Road, as well as the Great Western Park residential development. Movement within the study area is dominated by the private car. This is self-reinforcing since the high level of vehicular traffic makes walking and cycling less attractive.

Few pedestrians and cyclists were observed during the site visit or throughout the surveys conducted in November 2019. Of those cyclists observed, almost all used the footway.

A public information event covering the four HIF1 schemes was held throughout April 2020, and relevant WCHAR stakeholders were sent a targeted questionnaire to capture their views on the feasibility designs and needs of the users they represent. Their responses are summarised in this report.

Identified user opportunities as part of the assessment included:

- Integrating the walking and cycling networks along the public highways with those proposed as part of planned developments, with convenient, frequent and direct links.
- Improvement and incorporation of the Public Rights of Way and Science Vale Cycle Network with the existing connections and facilities, so that can be fully utilised.
- Provision of segregated cycle track and footways, to avoid potential discomfort and conflict between pedestrian and cyclists; greening; and convenient crossing points.

1. Background and highways scheme description

1.1 Background

The proposed Science Bridge scheme is one of four schemes that are included in the Access to Science Vale Options Assessment Report (OAR) to facilitate new developments to be constructed in the Didcot area.

The scheme will have a significant impact on the highways network in the area and therefore OCC have requested that the GG 142 Walking, Cycling & Horse-Riding Assessment and Review (WCHAR) is completed to inform the scheme design. Mike Ager in the role of Design Team Leader, has appointed Andy Blanchard as the Lead Assessor to undertake the WCHAR process in accordance with GG 142.

Although the scale of the scheme would usually qualify as a 'large' scheme in accordance with GG 142, the assessment will be based on the extent for a small scheme by virtue of this not being a trunk road (to which GG 142 applies) as determined by the Lead Assessor. The scheme will therefore be subject to a Walking, Cycling & Horse-Riding Assessment (this document) during the feasibility design stage of the proposed highway scheme. This will then be followed by a Walking, Cycling & Horse-Riding Review during each design stage.

The Science Bridge is located in the Science Vale area (see **Figure 1**), which comprises the towns of Didcot (including Milton Park and Didcot Power Station) and Wantage (& Grove) together with the established research centres at Culham Science Centre (CSC) and Harwell International Business Centre (IBC) together with the area between these settlements. The extents of the scheme are outlined in green in the figure below.

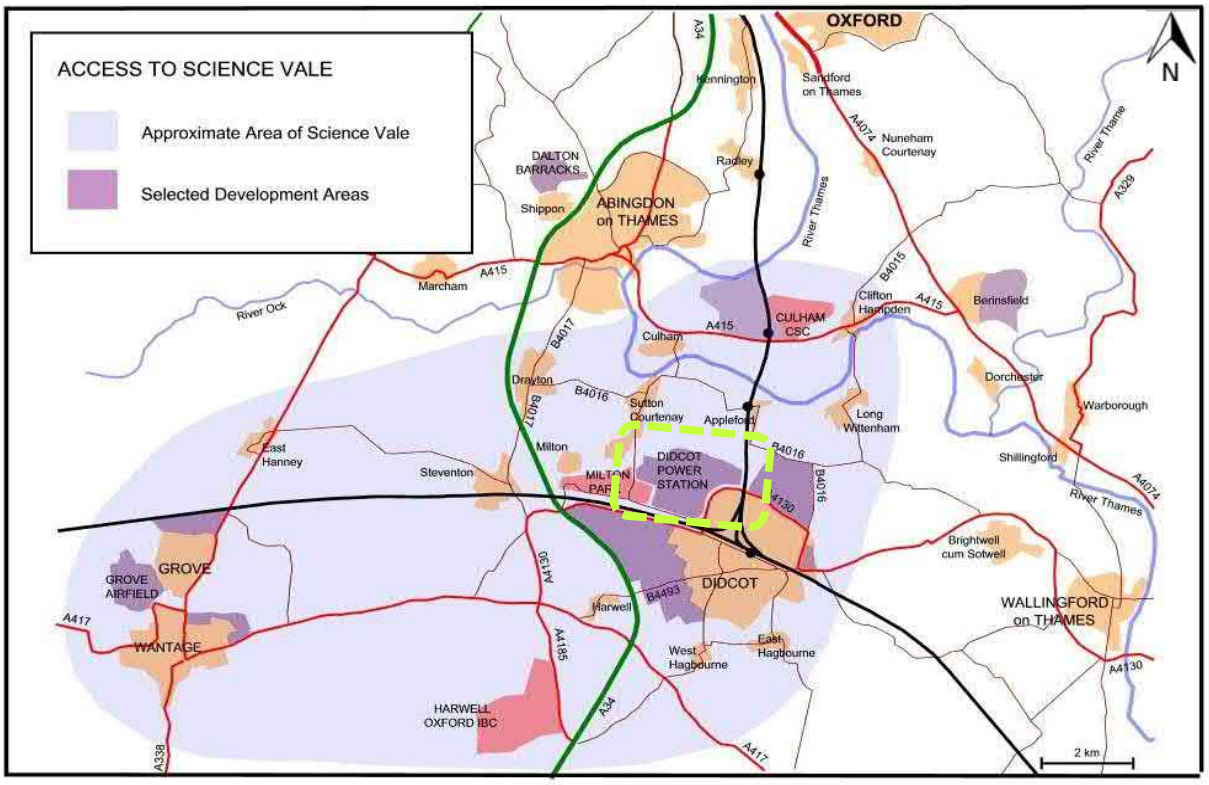


Figure 1: Science Vale area[1]

[1] *"Option Assessment report: Access to Science Vale_OAR_ PART 1_FINAL-converted"*

There is no Science Bridge or link road through the power station site at the moment, but the proposed scheme is located in what is currently privately owned fields to the south and to the east, and the existing decommissioned Didcot A Power Station, which is earmarked for redevelopment and requires access to enable this development.

The scheme objectives include improving conditions for walking and cycling as the current A4130 alignment has limited facilities and connections for these users. This is likely to include segregated facilities alongside the proposed carriageway and associated pedestrian and cycling infrastructure such as improving crossings and adjacent routes wherever possible.

1.2 Proposed highway scheme

The proposed Science Bridge will facilitate the redevelopment of the decommissioned Didcot A Power Station site as a key part of the proposed development to the Science Vale area. The brown field site is intended for redevelopment into mainly B1 (Business) and/or B8 (Storage and Distribution) use. Traffic flow within the area is therefore expected to grow significantly by 2030.

A new road over rail bridge is proposed to provide access to the former power station site and provide part of a strategic link between the Didcot Northern Perimeter Road, the A4130 and the A34 at Milton Interchange. The bridge is also intended to alleviate pressure on existing transport infrastructure in the Didcot area, predominantly the existing A4130 / B4493 roundabout, A4130 / Basil Hill Rd roundabout and A4130 / Hawksworth roundabout.

The proposal (the current design layout is provided in **Appendix A**) includes a single carriageway link road between the proposed widened A4130 west of the Great Western Park development and the Didcot Northern Relief Road, providing access to the Didcot A Power Station site, and supporting employment and housing development within the power station site and the wider Science Vale area. The scheme objectives include improving conditions for walking, cycling and horse-riding.

The proposed Science Bridge link road will not have a consistent cross section along the whole scheme. Although there are three different sections, all of them will have in common a 7.3m wide carriageway (although the design plans show a narrower width):

Section 1: eastern end of A4130 Widening scheme to the northern end of the proposed bridge embankment:

- 1.5m wide unidirectional cycleway (western side)
- 2.0m wide footway (eastern side)
- 3.0m wide bidirectional cycleway (eastern side)

Section 2: northern end of the proposed bridge embankment for approximately 500m:

- 2.0m wide footway (both sides)
- 3.0m wide bidirectional cycleway (both sides)

Section 3: end of section 2 to the eastern end of the scheme:

- 2.0m wide footway (both sides)
- 3.0m wide bidirectional cycleway (northern side)

1.3 WCHAR study area

GG 142 establishes that the Lead Assessor shall define a WCHAR study area on a scheme-by-scheme basis, that should typically extend 1km surrounding a small highway scheme and 5km surrounding a large highway scheme. This scheme does not form part of the trunk road network, and after careful review of the requirements and proposed works, a reduced local study area extent (approximately 1km radius) has been proposed that is deemed appropriate for this study. **Figure 2** shows the proposed study area, where the blue dashed line shows the scheme and the green one shows the study area extents.

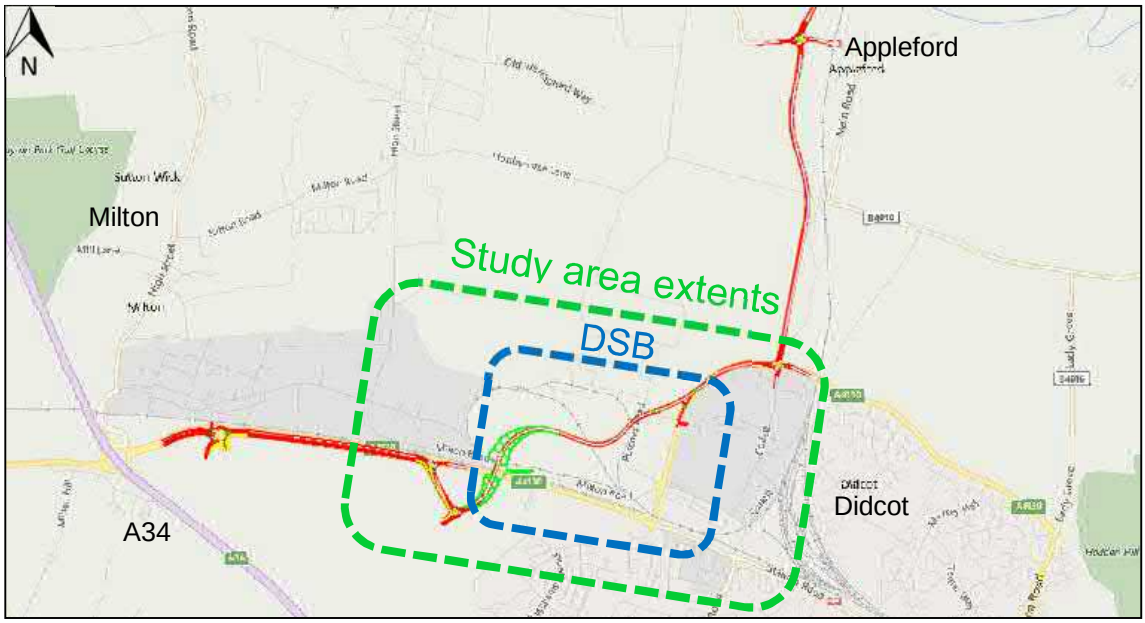


Figure 2: DSB WCHAR study area location plan[2]

[2] *"Google Map™ and Google Streetview™ have been used, unmodified, within this document. This imagery has been used within the extents of the AECOM license agreement with Google Inc."*

2. WCHAR assessment

2.1 Assessment of walking, cycling and horse-riding policies and strategies

The following regional and local policy documents have been reviewed as part of the assessment:

Oxfordshire County Council's Local Transport Plan 4, 2015 – 2031

LTP4 recognises that new road links and capacity improvements are necessary to accommodate the large scale of employment and residential development in Didcot.

Connecting Oxfordshire: Volume 4 Local Transport Plan 2015-2031 (Adopted 2016) - Active & Healthy Travel Strategy

The strategy states that the number of people who usually drive short journeys to work in Oxfordshire is increasing and therefore roads are becoming more congested. Oxfordshire County Council have a vision to make cycling a safe, simple and accessible option for people of all ages, and in turn make cycling a major mode of travel and reduce air pollution in Oxfordshire. This will include an increase in multimodal door-to-door trips by integrating the cycling and public transport networks to allow bike-rail and bike-bus journeys.

As part of the Strategy, a Cycle Premium Route between Didcot to Culham Science Centre, via the existing National Cycle Route 5 between Didcot and Long Wittenham and then on-road towards Culham Science Centre via Clifton Hampden Bridge, has been identified as part of the proposed Science Vale Cycle Network as shown in Figure 3. This cycle network has been identified to be a focus for future investment to cycling in the area. Given the importance of the route between the two key attractors in the region, and the existing site constraints at the Clifton Hampden Bridge, the proposed Didcot to Culham River Crossing will provide an opportunity for a high-quality cycle route as an alternative to the existing.

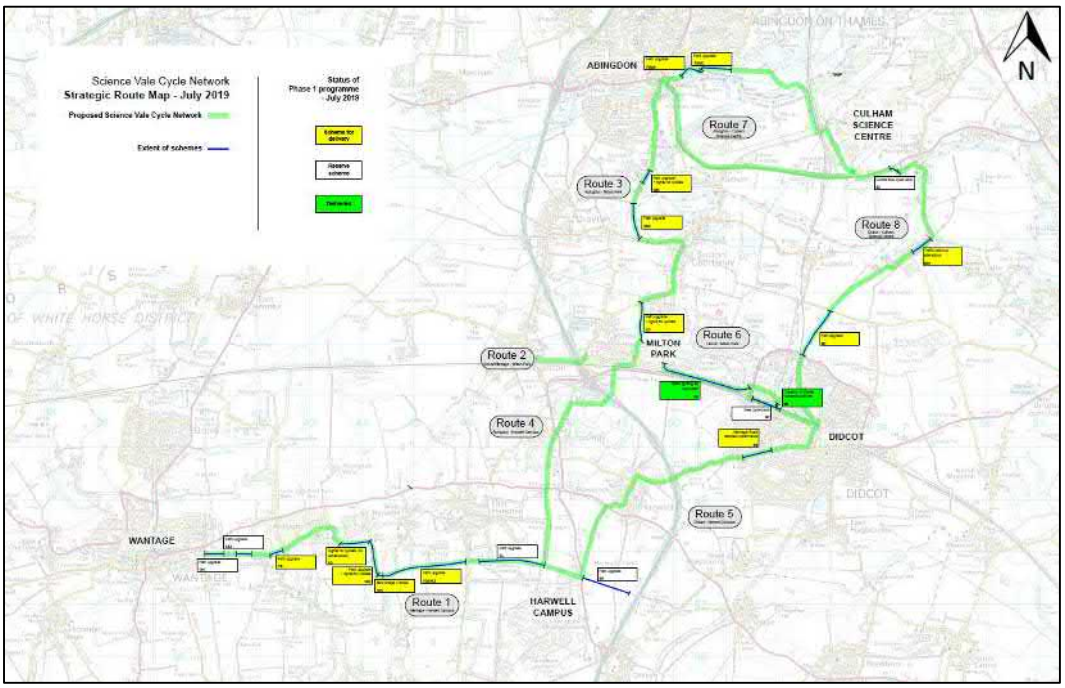


Figure 3: Proposed Science Vale Cycle Network route map[3]

[3] https://www.oxfordshire.gov.uk/sites/default/files/file/roads-and-transport-major-projects/science_vale_cycle_network.pdf

Oxfordshire Rights of Way Management Plan 2015-2025

This document is an extension of the Oxfordshire Local Transport Plan and supports the achievement of the proposed goals. The main relevant objectives are the improvement of public health and wellbeing by increasing levels of walking and cycling, reducing the proportion of journeys made by private car. This is be achieved by making the use of public transport, walking and cycling more attractive, and maximising the use of existing and planned sustainable transport investment, through linking and integrating this with planned development to allow continued and increased use of the right of way network.

Vale of White Horse District Council - Local Plan 2031 (February 2018)

The main goal is to ensure that employment growth centred on the Enterprise Zone and Science Vale sits alongside strategic housing and infrastructure to support sustainable growth. Didcot has been identified as a location for strategic growth with proposals for improvements to the town centre and railway station.

Didcot Garden Town Delivery Plan (October 2017)

This plan recognises that Didcot will grow from approximately 26,000 people to over 60,000 by 2031. With this growth, Didcot is expected to become the largest town in Southern Oxfordshire, so even if the resident's movements around the town remain unchanged, town-wide journeys by car will double. This means that infrastructure investment is required, in terms of highways, pedestrian and cycle routes.

The east-west movement corridors like A4130 and the Science Bridge have been identified as one of the key proposals to achieving sustainable movement across the area.

Connecting Oxfordshire: Volume 4 Local Transport Plan 2015-2031 (Adopted 2016) - Active & Healthy Travel Strategy

Due to the increase of people who usually drive short journeys to work, OCC is attempting to make cycling a major mode of travel and reduce air pollution in the County. As part of the strategy, proposed cycle network like the connection between Didcot and Long Wittenham (Route 8), that provides a connection to Clifton Hampden, has been improved and created.

South Oxfordshire Local Plan 2034 - Infrastructure Delivery Plan (January 2019 update)

In 2015 the Government announced that Didcot would become a Garden Town delivering 15,050 homes and 20,000 high-tech jobs in the greater Didcot area. The Local Plan includes a policy to support the Garden Town, ensuring that proposals for development within the Didcot Garden Town Delivery Plan (October 2017) and its masterplan area will demonstrate a positive contribution to the achievement of the Didcot Garden Town Principles.

The plan has a summary of the infrastructure requirements for sites in Didcot, such as the capacity enhancements to the A4130, the new Science Bridge, the Didcot Station Car Park Expansion, and the Science Vale Cycle Network Improvements (see **Figure 3**), which includes improvements to connectivity between Science Vale and Didcot station by bike.

Design Standards

The following design standards have been reviewed as part of the assessment:

- Oxfordshire Walking Design Standards (A guide for Developers, Planners and engineers, summer 2017).
- Oxfordshire Cycling Design Standards (A guide for Developers, Planners and engineers, summer 2017).
- CD 195 Designing for cycle traffic.
- CD 143 Designing for walking, cycling and horse-riding.
- Advice on road crossings for horses (The British Horse Society).

2.2 Collision Data

Collision data from Stats 19 has been obtained and analysed to identify collision cluster sites and trends. Analysis of collision data allows the identification of existing problems which may discourage the use of a particular site.

Collision data has been obtained from Oxfordshire County Council for a five-year period between 9th June 2014 and 8th June 2019. There was a total of 36 collisions recorded within the scheme extents, resulting in 42 casualties. The severity is summarised by year for collisions in **Table 1** and casualties in **Table 2**. The data does not show any clear evidence of deterioration or improvement in road safety in the study area.

To avoid overlapping with the collision data recorded in the Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) for the Didcot to Culham River Crossing scheme, only the data to the west of the A4130/Collett junction has been analysed.

Severity/ Year	2014 (part)	2015	2016	2017	2018	2019 (part)	Total
Fatal	0	0	0	0	0	0	**0**
Serious	1	2	2	4	1	0	**10**
Slight	7	2	5	7	3	2	**26**
Total	8	4	7	11	4	2	**36**

Table 1: Total collisions by severity

Severity/ Year	2014(part)	2015	2016	2017	2018	2019(part)	Total
Fatal	0	0	0	0	0	0	**0**
Serious	1	2	2	5	1	0	**11**
Slight	9	2	6	8	4	2	**31**
Total	10	4	8	13	5	2	**42**

Table 2: Total casualties by severity

Of the total 36 collisions and 42 casualties, one involved a pedestrian and 21 involved a cyclist. No collisions involving an equestrian were recorded in the scheme extents. There were no fatal injury severity collisions within the scheme extents.

A summary of the collisions involving pedestrians and cyclists is shown in the table below:

Location	Collision severity	Collision type	Non-motorised users involved?	Contributory factors
A4130 Didcot Northern Perimeter Road junction with Trident house entrance	1 serious	1 shunt	No	External distraction, failure to look, junction restart, poor manoeuvre and distraction outside
A4130 at roundabout Mendip heights / B4493	2 serious, 1 slight	1 failure to give way	Yes (Cyclist)	Failed to look
		1 shunt	No	Distraction in vehicle, following too close, sudden braking, mobile phone used, defective eyesight and failed to look

Location	Collision severity	Collision type	Non-motorised users involved?	Contributory factors
		1 shunt	No	Failed to look/judge speed, swerved
Roundabout A4130 / Basil Hill Road / Milton Road / Power Station access	3 serious, 5 slights	3 failure to give way	Yes (Cyclist)	Failed to look and vehicle blind spot - Failed to look/judge speed, poor manoeuvre, dazzling sun and blind spot
		3 failure to give way	Yes (Cyclist)	Failed to look, careless - Failed to look, junction restart, wet conditions - Failed to look and careless
		1 Unclear circumstance. Cyclist was using cycle crossing point	Yes (Cyclist)	Failed to look/judge speed
		1 failure to give way	No	Vehicle blind spot, failed to look/judge speed
Basil Hill Road approximately 100m northwest of rail bridge	1 slight	1 Cyclist enters the road from footway	Yes (Cyclist)	Cyclist entering road from pavement and failed to look
A4130 at Power Station	1 serious	1 failure to give way	Yes (Cyclist)	Careless
Roundabout A4130 Didcot Northern Perimeter Road / Hawksworth	1 serious, 5 slights	1 failure to see the cyclist	Yes (Cyclist)	Wet conditions, failed to look, distraction outside and careless
		2 failure to give way	No	Wet conditions, failed to look/judge speed - Impaired by alcohol
		1 cyclist was hit while entering a roundabout	Yes (Cyclist)	Failed to look/judge speed
		1 failure to give way	Yes (Cyclist)	Failed to look
		1 shunt	No	Illness. Driver coughs
A4130 approximately 500m west of junction with Sir Frank Williams Way Harwell	2 serious, 2 slights	1 Hitting a motorcycle while turning in a traffic queue	No	Failed to look, poor manoeuvre and careless
		1 shunt	No	Fatigue, failed to look and poor manoeuvre
		2 shunts	No	Junction restart, failed to look, travelling too fast and following too close - Distraction in vehicle, loss of control and swerved
The Oval by house number 30	1 slight	4 year old pedestrian ran in front of the vehicle	Yes (Pedestrian)	Dangerous action in carriageway, crossed road masked by stationary or parked vehicle and failed to look
Roundabout B4493 Station Road / Foxhall Road	6 slights	2 cyclists were hit while entering a roundabout	Yes (Cyclist)	Failed to look/judge speed, junction overshoot, exceeding speed limit, disobeyed give way/stop signs and careless
		2 failure to give way	Yes (Cyclist)	The vehicle disobeyed give way/stop sign markings - Failed to look
		1 island hit	No	Impaired by alcohol, poor manoeuvre, travelling too fast and exceeding speed limit
		1 shunt	No	Aggressive driving, careless and failed to judge speed

Table 3: Collision register

The collision involving a pedestrian occurred at the Oval by House number 30, which is within the study area, but outside the scheme extents. This involved a 4-year-old child in a group of playing children, who ran across the carriageway and was hit by a car and sustained slight injury.

The conclusions of the collision analysis involving cyclists are as following:

- Of the 21 collisions, 11 (52.4%) happened at/near to the Basil Hill Road/Milton Road roundabout.
- The main contributory factors were “Failed to look properly”, “Failed to judge other person's path/speed” and “Careless/Reckless”.
- According to the report, 95% of the collisions involving cyclists had contributory factors relating to the fault of the vehicle driver.
- Regarding the use of cycle helmets, 43% of the cyclists involved in the collisions wore one, 14% did not, and the rest were not recorded.

Appendix B contains details and balloon diagrams for all the collisions.

2.3 Multi-modal transport services and interchange information

Pedestrians, cyclists and equestrians may combine their modes of travel with public transport as part of a longer trip. As part of this Assessment, public transport services and associated infrastructure such as rail and bus stations (including bus stops) and interchanges have been identified to enable an appropriate assessment of the integration of such modes.

2.3.1 Bus Service

There are no existing bus stops within the scheme extents, or nearby. Bus services do pass through or close to the study area; these have been split between the services around Didcot (**Figure 4**) and those services with connections outside of the Didcot area (**Figure 5**).

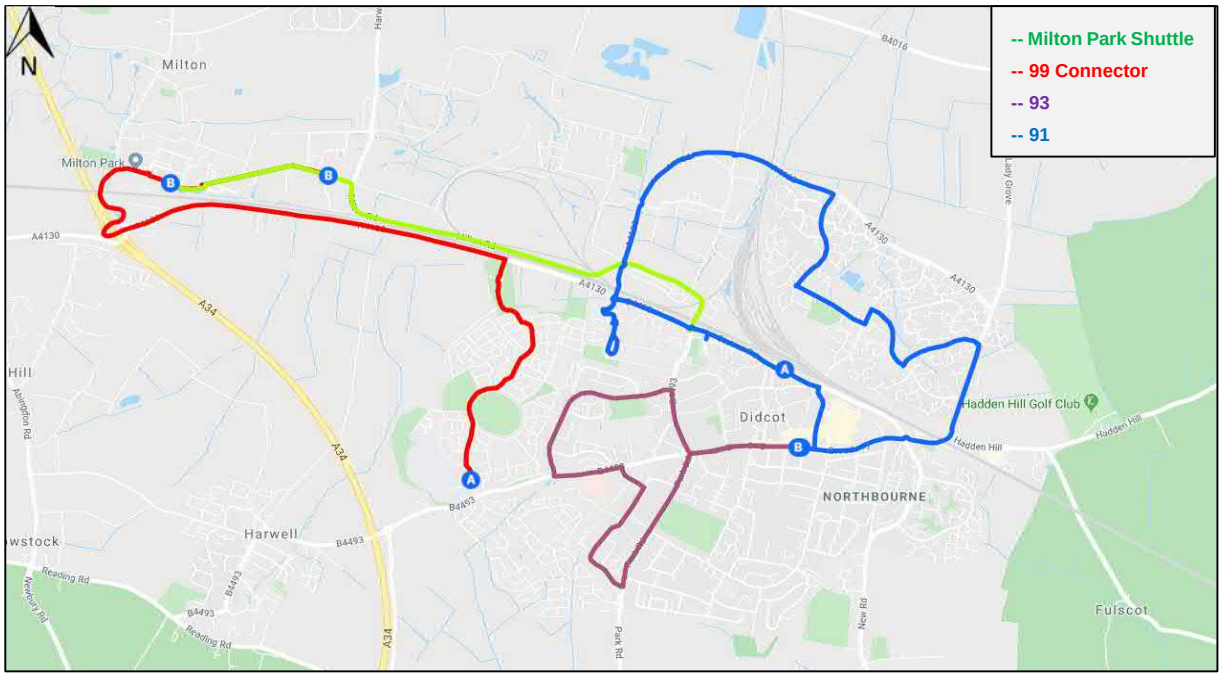


Figure 4: Bus routes around Didcot

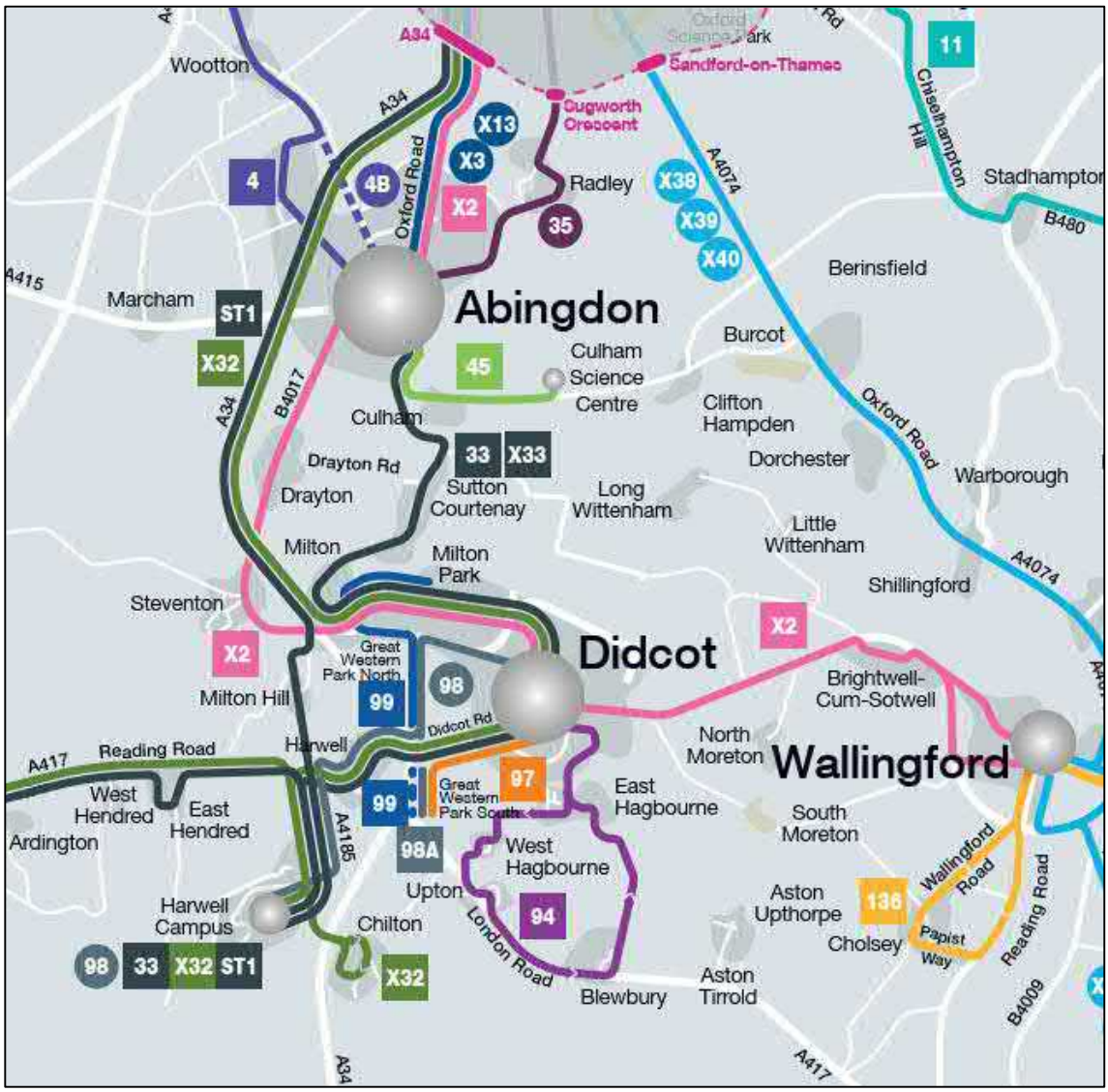


Figure 5: Extract of South Oxfordshire Zone network map

2.3.2 Train Services

While there are no train stations along the Science Bridge scheme, there are two train stations[4] nearby the study area:

Didcot Parkway station is located less than 2km east of the scheme along the B4493 – Station Road. Train services at this station are operated by Great Western Rail, running trains into Oxford, London Paddington, Reading, Cardiff Central, Banbury, Weston Super Mare, Cheltenham Spa, Swansea, Taunton, Bristol Temple Meads and Carmarthen. This station has an average of ten services per hour.

The train station has a ticket office and ticket machine. It also has facilities such as toilets, car parks (1,127 spaces), sheltered cycle storage, bus services, taxi rank and a bike hire station. All station areas have step free access suitable for wheelchairs and ramps for train access.

Appleford railway station is located north in Appleford village and is less than 3km north of the scheme. Train services at this station are operated by Great Western Rail, running trains into Didcot Parkway, Oxford, London Paddington, Reading, Banbury and Moreton in Marsh.

[4] https://www.gwr.com/

The train station is unattended and does not offer toilets, car park, cycle storage or taxi rank, and all station areas are unsuitable for wheelchair access. This station has an average of one service per hour.

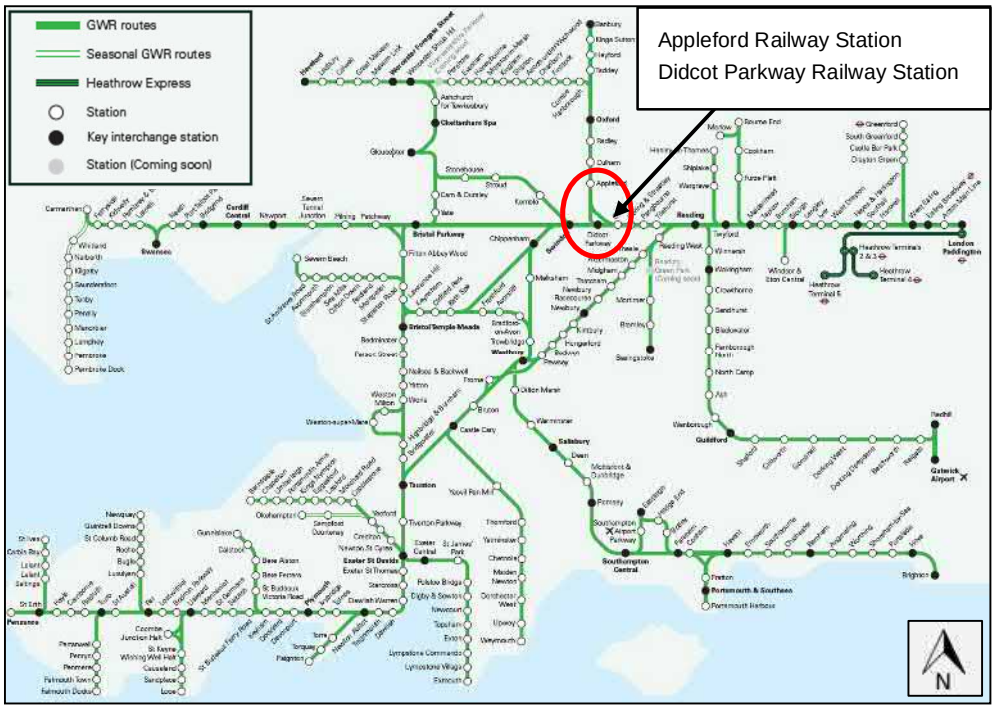


Figure 6: Great Western Railway Network

2.4 Key trip generators and local amenities

2.4.1 Current trip generators

Didcot has a population of 25,140[5], as of the 2011 census, has grown by 1,687 residents (7%) since 2001. Didcot is the largest settlement in South Oxfordshire (19%). Didcot has a higher proportion of flats, terraced housing and semi-detached houses than average for the district and households are less likely to be owner occupied.

Almost half of the journeys to work which end in Didcot also start in the town. There is almost double the number of journeys out of Didcot to work as journeys into the town. Trips to the rest of the Science Vale area make up the largest number (about 20%), and this includes trips to Milton Park, Harwell and Culham Science Parks. The next largest destination is Oxford with other significant destinations being Abingdon, Wallingford and Reading.

The number of vehicle movements into and out of Didcot town increased from 12,544 in 2001 to 13,826 in 2011[6] however cars per household remains below the district average. The overwhelming mode of travel to work in Didcot is as a car driver. Around 80% of journeys to work in Didcot are made by car, either as driver or passenger. There has been an increase in the number of employees driving to work, going by bus and travelling to work on foot.

[5] http://www.oxford.gov.uk/districtdata/downloads/file/61/south_oxon_census_2011_summary_leaflet
[6] http://www.oxford.gov.uk/districtdata/downloads/file/68/didcot_settlement_profile_census_2011

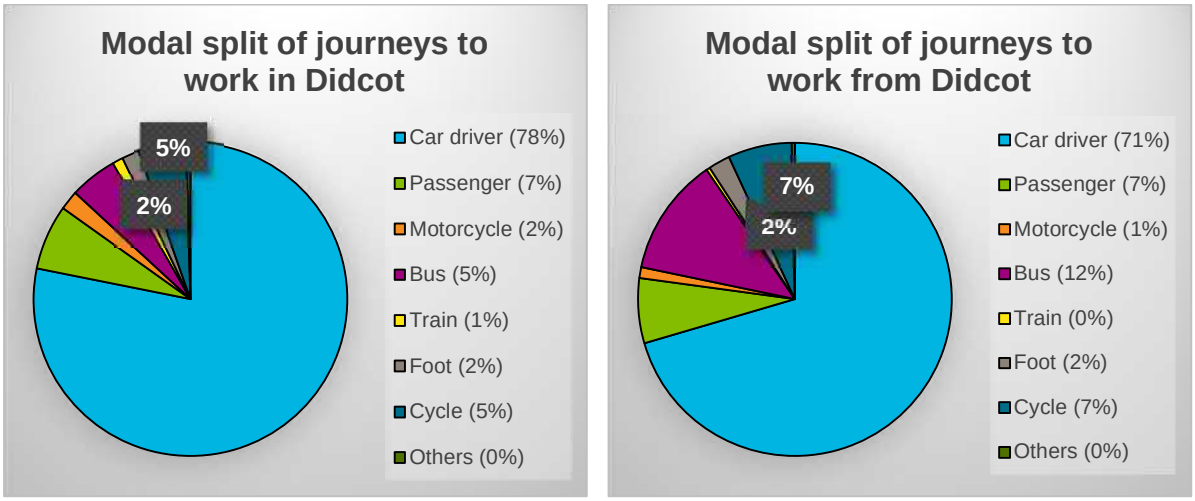


Figure 7: Modal split of journeys to work in and from Didcot

Bus journeys and cycle trips each account for approximately 5% of all journeys to work in Didcot, while the train is used in only 1% of commuter trips and only 2% by foot. Bus trips to work are only significant for trips to elsewhere in Science Vale (which includes Milton Park).

The key trip generators near the proposed scheme that could attract pedestrian and cyclist trips are the following:

Local businesses and key places of interest

Milton Park is a major employer of local staff and from a wider area, increasingly so as it has become a centre for more specialised, higher end activities, and also impacts the balance of in-commuters to out-commuters.

A service area near the Milton Interchange, has businesses such as car dealerships, restaurants, a coffee shop, a fuel station, and hotels.

Didcot Power Station, Southmead Industrial Estate, including Tesco Distribution Centre and the Trident Business Park are also local trip generators. While many Didcot residents use the Didcot Parkway train station to reach destinations further afield.

Residential areas

There are no residential areas that are within the immediate scheme extents. However, there are many within a short distance from the scheme:

Didcot

The town offers a broad range of housing and employment opportunities, as well as key services and facilities including retail, health care, leisure and culture. The Great Western Park development, immediately east of the scheme extents has recently delivered many new homes.

Appleford

This is a small village located north of the scheme. There are no facilities like stores in the village but there is a train station.

There are some other villages outside of the scheme extents such as Sutton Courtenay, Steventon, Milton Hill, Harwell, North Moreton or South Moreton that are close to Didcot. Residents in these areas probably travel frequently to Didcot due to the facilities available, including shopping, restaurants, hospital, banks and fuel stations.

Oxford

The A34 links Didcot with Oxford, which is 14 miles to the north. Oxford has several important functions: a centre of higher education (with two universities), a major shopping centre; a centre for public services and a centre of manufacturing. Oxford is one of the largest employment centres in the South East, in addition to a large student population. Oxford also has a high level of in-commuting for employment, public services, education, health services and over 5 million visitors a year.

2.4.2 Future trip generators

Housing areas are planned for the Valley Park area in south-west Didcot (immediately south of the A4130 Widening scheme), Ladygrove North in north-east Didcot, North-east Wantage, and at other locations including Culham, Berinsfield and Dalton Barracks. Together these will add more than 22,000 houses to the local area.

Major employment development is planned within two Enterprise Zones, Science Vale and Didcot Growth Accelerator, and elsewhere at Milton Park and Didcot Power Station, Grove Airfield, Culham Science Centre and Harwell IBC. If these developments were allowed to progress without any improvements in the capacity of the transport networks, then the result would likely be unacceptable local congestion.

The Oxford Strategic Model (OSM) has been developed to predict traffic growth based on travel conditions in 2013. The model consists of an Highway Assignment Model (HAM) representing vehicle-based movements within and across the Oxfordshire County, the Public Transport Assignment Model (PTAM) representing bus and rail-based movements across the same area and for the same periods and a five-stage multi-modal Demand Model (MMDM) that estimates the choice of frequency, mode, period, destination and sub-mode in response to changes in generalised costs of travel.

These model assignments suggest that in the period 2013-2031 there would be around 25% traffic growth in the Didcot area in the morning and evening peaks, while in the inter-peak periods traffic growth could be 45%. The flow on the A4130 to the A34 is predicted to increase by 30-40% in the peaks and over 50% in the inter-peak periods.

The proposed planning applications that are pertinent to the proposed developments in the study area and extents according to the OCC[7] are the following:

South of Great Western Park, Didcot (P17/S3029/SCO)

Scoping opinion for proposed outline application for the development of land to the south of Great Western Park, for approximately 1,023 dwellings.

Land to the north east of Didcot (P15/S2902/O)

Proposed new and integrated neighbourhood to the northeast of Didcot of up to 1,880 homes, two new primary schools, a new secondary school and a new leisure/ sports facility and sports pitches, including a pavilion. A new neighbourhood centre, a mixed-use Public House/restaurant, a hotel, a new community hall, a residential Extra Care Housing facility, new areas of green infrastructure including amenity green space, allotments and children's play areas, a supporting town-wide and site-specific associated infrastructure.

Car Park, Station Road, Didcot OX11 7NN (P15/S2159/O)

Planning application for demolition of existing buildings and a mixed-use development comprised of up to 300 residential units, a 70-bed hotel, gym, retail uses, commercial office floorspace, a replacement nursery school and a decked car park of up to three levels and supporting infrastructure. Closure of Lydalls Road to allow for redevelopment and altered pedestrian access.

[7] https://www.oxfordshire.gov.uk/residents/environment-and-planning/planning/find-planning-application/major-planning-applications/south-oxfordshire

Land at former Didcot A Power Station, Purchas Road, Didcot (P15/S1880/O)

Mixed-use redevelopment comprising up to 400 dwellings, hotel and pub/restaurant, including link road, related open space, landscaping and drainage infrastructure, together with reservation of land for link road and Science Bridge.

Orchard Shopping Centre, Didcot OX11 7LL (P15/S0433/FUL)

Demolition of existing buildings and construction of 1 and 2 storey buildings comprising retail units, flexible retail units, restaurants and a gym. Replacement public toilets, new public realm, improvements to existing public realm, new landscaping, realignment of drainage channel and alterations to access comprising amendments to the existing parking layout, additional car, motorcycle and cycle parking, new servicing area, new and amended access from the highway (including relocated bus route and closure of the High Street to allow redevelopment for retail use) and altered/ new pedestrian access.

2.5 Site visit

The site visit was undertaken by Andy Blanchard (Project Manager & Lead Assessor), Mike Ager (Design Team Leader), Andrea Blanco (Senior Engineer) and Rebeca Bolado (Graduate Engineer), on 9th December 2019 during daylight hours. The site visit took the form of walking around the current Didcot A Power Station and the A4130 future links within the scheme extents. The weather during the site visit was windy and sunny, with temperatures of 7 degrees Celsius.

The primary findings of the site visit were:

- The unsignalised crossing point over the northern arm of the A4130 / Hawksworth roundabout (the NCN5 alignment) has poor visibility and the crossing waiting time is very long due to high traffic volumes.
- Both pedestrians and cyclists were observed using the bridleway north of the Hawksworth roundabout. One dog walker was seen during the site visit.
- No equestrians were seen during the site visit.
- The eastern footway of the A4130 Northern Perimeter Road (north of the Hawksworth roundabout) has a steep crossfall that makes it uncomfortable to use as a pedestrian or cyclist. The general condition of this footway is poor, although it appears to have been recently “trimmed and sided”.



Figure 8: A4130 Northern Perimeter Road

2.6 Existing pedestrian, cyclist and equestrian facilities

2.6.1 Local facilities

The alignment of the proposed scheme mostly traverses land that is currently private and industrial in use. However, the existing facilities for non-motorised users along the adjacent highway corridor include the following:

- The majority of the east-west & north-south A4130 between Great Western Park and Collett roundabout has street lighting and a footway on at least one side of the road (although there is no footway between the Mendip Heights and Basil Hill roundabouts).
- The southern footway along the east-west section of the A4130 (between Great Western Park and Mendip Hill roundabout is shared use, so cyclists are permitted to use it. On the north-south section of the A4130, there are short sections of shared use footway around the Basil Hill and Hawksworth roundabouts only, allowing cyclists to use these localised sections to navigate the junctions.



Figure 9: A4130 Mendip Heights Roundabout

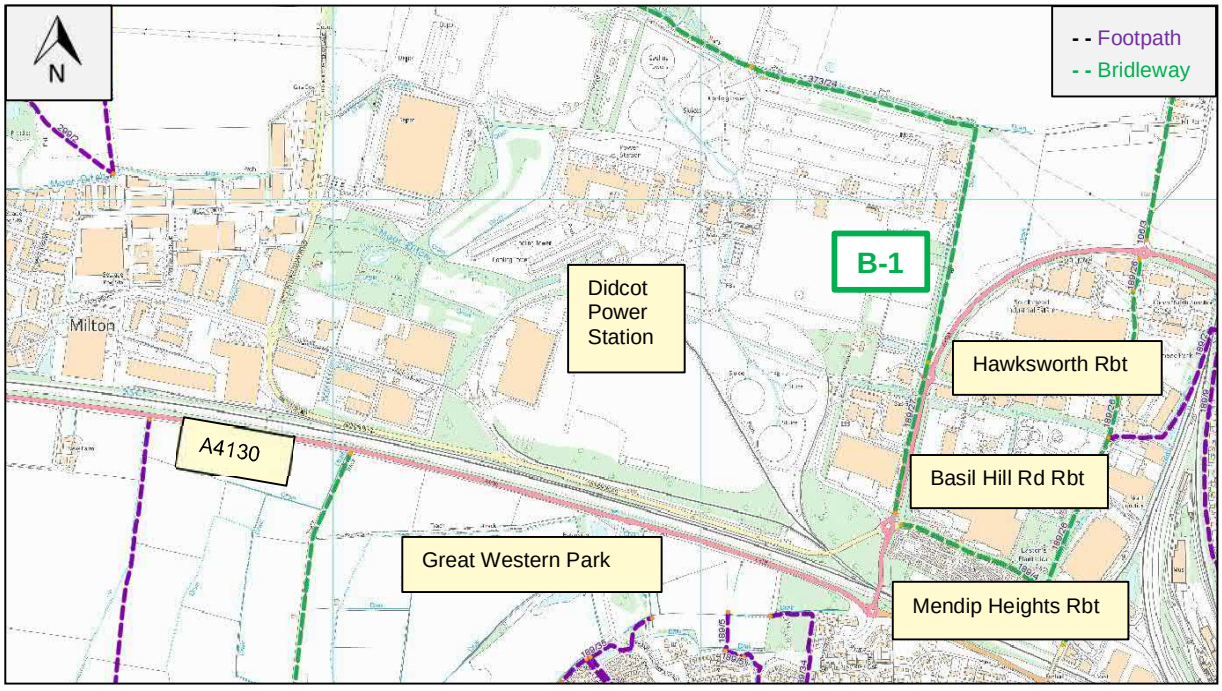


Figure 10: Public Rights of Way within the study area[8]

[8] *https://publicrightsofway.oxfordshire.gov.uk/Web/standardmap.aspx*

The following pedestrian, cyclist and equestrian facilities within the scheme extents have been identified:

Walking network facilities

Bridleway B-1 (373/24/40):



Figure 11: Bridleway entrance indicators and map



Figure 12: Bridleway

This bridleway is 1,250 metres in length and runs from the Purchas Road, A4130 and Hawksworth roundabout to Sutton Courtenay and Appleford On Thames. From south to north, the bridleway does not appear to be present on the ground between Basil Hill Road and Hawksworth roundabouts, but north of here the route follows the perimeter of the Didcot Power Station through green fields, as shown in **Figure 10**.

The proposed scheme implies that this bridleway will be diverted by the planned road, so this information should be taken into account to ensure proper continuation of the PROW route.

Horse-riding network facilities

The bridleway mentioned above is also an equestrian facility.

Cycling network facilities

The National Cycling Network (NCN) Route 5 follows the Bridleway mentioned above, as shown in the **Figure 13** from the Hanson Way leaflet.



Figure 13: Hanson Way cycle route network within the local area (source: Sustrans)

2.6.2 Local facilities at a strategic level

Public Right of Way (PRoW)

Figure 14 below shows the location of the Public Rights of Way (PRoW) at a strategic level.

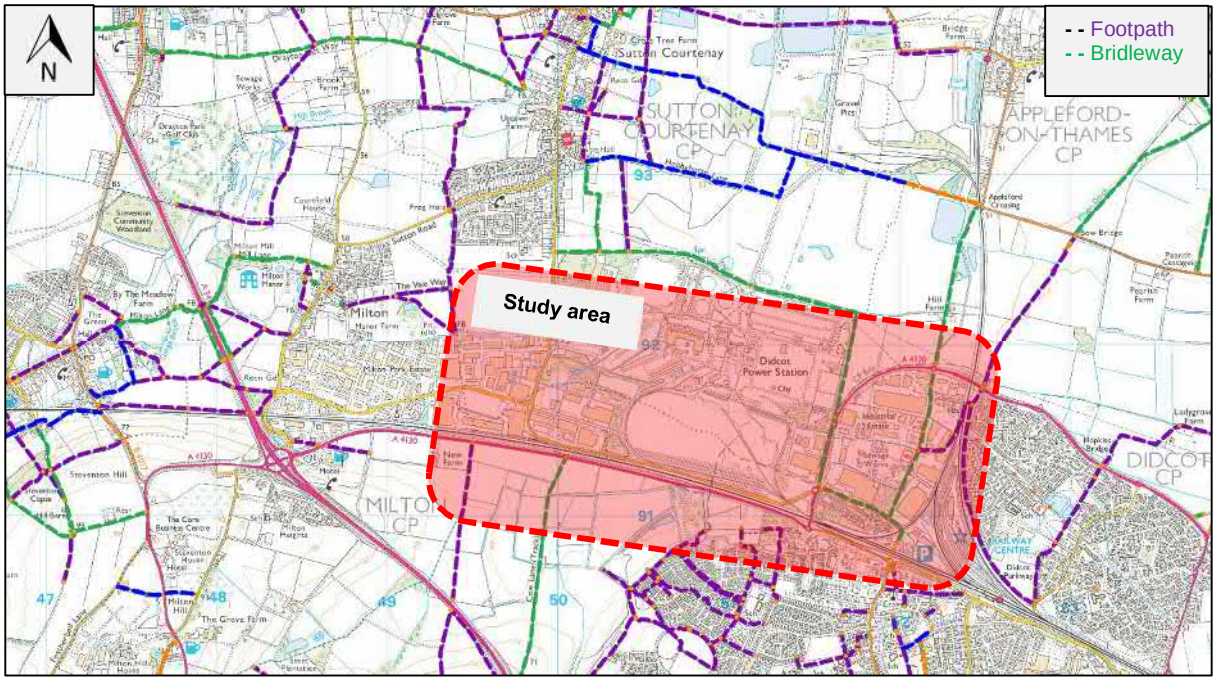


Figure 14: Public Rights of Way outside the study area

Cycling network facilities

There are two National Cycling Network (NCN)[9] routes across the Didcot area, as shown in **Figure 15**.

The local extension of the National Cycle Network Route 5 connects the area with the Didcot Parkway Station. NCN Route 5 is a long-distance route connecting Reading and Holyhead via Oxford, Stratford-upon-Avon, Bromsgrove, Birmingham, Stoke-on-Trent, Chester, Colwyn Bay and Bangor.

National Cycle Network Route 544 connects Didcot and Wantage. It is a 12-mile route on quiet roads, byways and purpose-built paths, offering a tranquil way to explore Southern Oxfordshire.

Some cycle facilities have been completed as part of the planned Science Vale Cycle Network, see **Figure 3**.

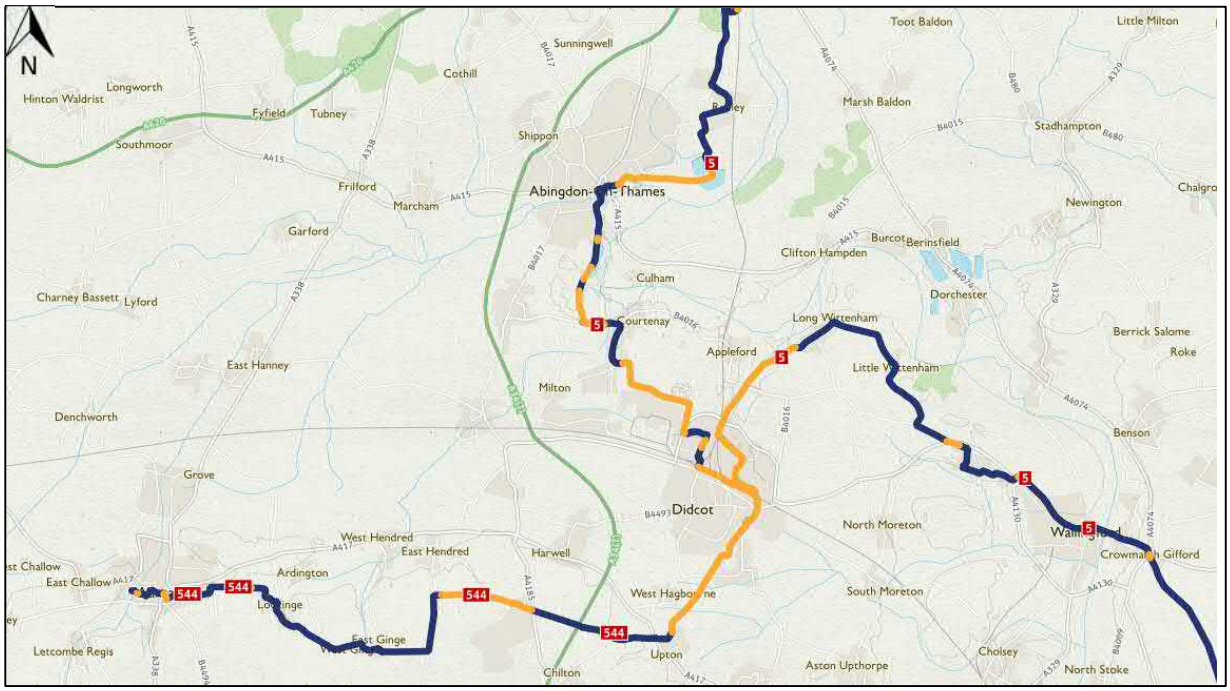


Figure 15: National Cycling Network

Horse-riding network facilities

No equestrian facilities are known, except for the NCN5/bridleway as mentioned above.

[9] *https://osmaps.ordnancesurvey.co.uk/ncn*

2.7 Walking, cycling & horse-riding survey data

A 7-day, 24-hour survey was conducted in November 2019 to collect data on walking, cycling and horse-riding movements at three locations within the scheme extents. This data was collected in order to provide a quantitative understanding of the existing walking, cycling and horse-riding demand in the area, primarily on the existing A4130 alignment that the proposed scheme will provide an alternative route to. Additionally, an Automatic Traffic Count (ATC) was conducted at two locations on the A4130 to collect data on traffic speeds.

The movement surveys were undertaken between Monday 11th November and Sunday 17th November 2019. The surveys were undertaken using video survey techniques to cover walking, cycling and horse-riding movements through each of the junctions.

The count locations are shown in **Table 4** below. A map of these locations is shown in **Appendix C**.

Survey ID	Location	Survey Type	Grid Reference
DSB-01	A4130, B4493 and Mendip Heights Roundabout	All NMU movements	E: 451469 N: 190927
DSB-02	Milton Rd, Purchas Rd, A4130 and Basil Hill Rd Roundabout	All NMU movements	E: 451514 N: 191150
DSB-03	A4130, Purchas Rd and Hawksworth Roundabout	All NMU movements	E: 451626 N: 191540
DSB-04	A4130 North of Basil Hill Road Speed Survey	An ATC speed survey	
DSB-05	A4130 (north) Speed Survey	An ATC speed survey	

Table 4: Locations for WCHAR surveys

2.7.1 ATC speed surveys

The following table provides the total number of vehicles recorded in each direction along A4130 North of Basil Hill Road Speed Survey and A4130 (north) during the survey period and their classification.

Survey ID	Location	Direction	Vehicle Classification (%)					
			Cycles (on road)	Motor/ cycle	Car	LGV	HGV	Buses
DSB-04	A4130 North of Basil Hill Road Speed Survey	Northbound	0.13	0.46	78.00	11.10	5.57	0.53
		Southbound	0.15	0.49	75.40	11.52	6.79	0.79
DSB-05	A4130 (north) Speed Survey	Eastbound	0.12	0.39	82.50	8.77	7.86	0.36
		Westbound	0.07	0.28	70.84	15.58	12.44	0.79

Table 5: Total traffic flow and vehicle classification

The average weekly total traffic flow was the following:

- 60,806 vehicles Northbound.
- 54,259 vehicles Southbound.
- 42,919 vehicles Eastbound.
- 35,387 vehicles Westbound.

The following table shows the average and 85%ile speeds recorded on the A4130. The recorded information shows that the majority of vehicles travel within the speed limit at both locations.

Survey ID	Location	Direction	Speed Limit (mph)	Average speed (mph)	85%ile speed (mph)
DSB-04	A4130 (south) Speed Survey	Northbound	50mph	40.8	46.4
		Southbound	50mph	39.6	45.4
DSB-05	A4130 (north) Speed Survey	Eastbound	50mph	41.2	46.8
		Westbound	50mph	43.8	51.8

Table 6: Surveyed average and 85%ile speeds



Figure 16: East-west section of A4130

2.7.2 NMU surveys

The total pedestrian and cycle movements have been marked on a location plan for each surveyed site. The full survey counts are provided in **Appendix D**.

DSB-01: A4130, B4493 and Mendip Heights Roundabout

This roundabout provides a connection between the over-rail bridge and the southern area. The bridge has no footways but there is clear demand evidenced by worn desire lines through the grass verges. The A4130 west of the roundabout has only a southern footway. Finally, there is a footway on the southern side of the B4493 carriageway. This roundabout has only one uncontrolled crossing on the southern arm.

The pedestrian and cycle movements recorded during the survey period are shown in the following figure. During the survey period, one equestrian, eight wheelchairs and twenty-nine non-motorised scooter riders were recorded during the whole week. The total number of NMUs recorded at this location averaged 174 pedestrians and 125 cyclists on a weekday, and 135 and 73 respectively during the weekend.

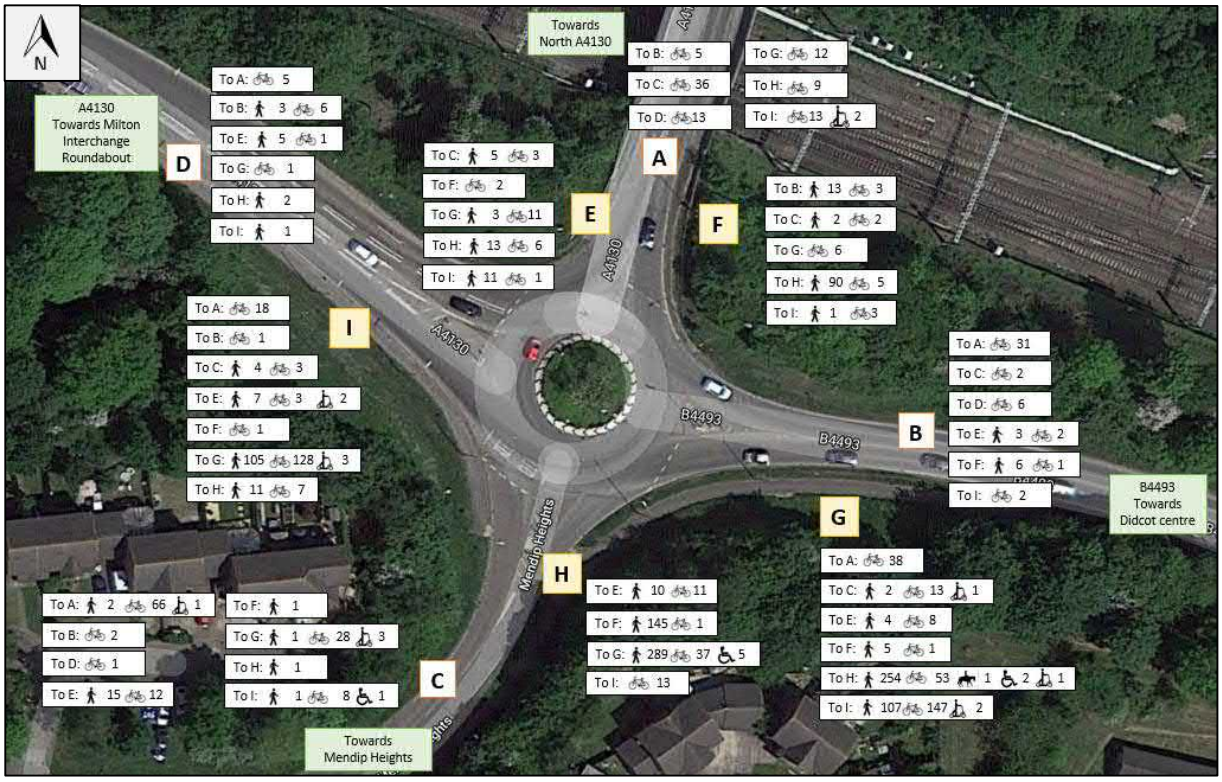


Figure 17: NMU total weekly movements at A4130/ B4493 Roundabout



Figure 18: A4130/B4493 Roundabout

DSB-02: Milton Rd, Purchas Rd, A4130 and Basil Hill Rd Roundabout

This roundabout provides a connection between Milton Park to the west, the former Didcot A Power Station site, the Didcot Northern Perimeter Road, access to the centre of Didcot and the southern area via the over-rail bridge. This roundabout has formal uncontrolled crossings on all arms except on the southern arm where there is no crossing. The bridge has no footways but there is clear demand evidenced by worn desire lines through the grass verges. Milton Road has a southern footway, the northern A4130 has footways on both sides of the carriageway and Basil Hill Road has one in the northern side.

The pedestrian and cycle movements recorded during the survey period are shown in the following figure. During the survey period, no equestrians were counted. Three non-motorised scooter riders were recorded during the whole week. The number of NMUs recorded at location averaged 181 pedestrians and 164 cyclists on a weekday, and 70 and 100 respectively during the weekend.

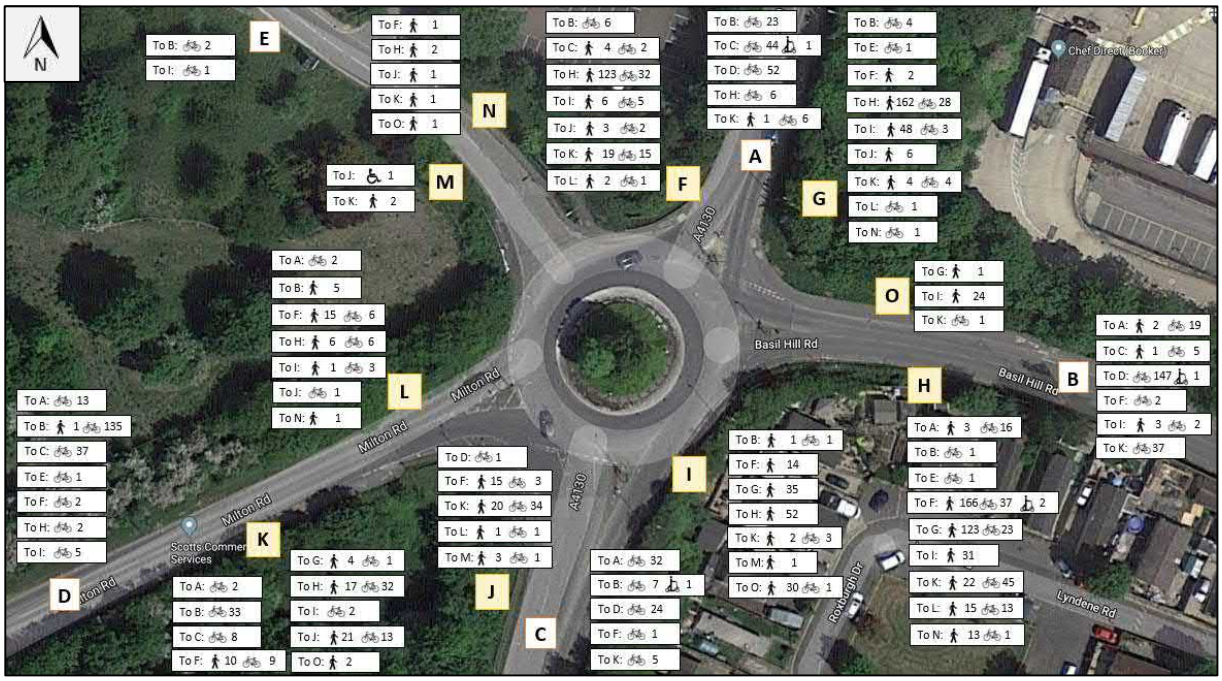


Figure 19: NMU total weekly movements at Purchas Rd, A4130 and Basil Hill Rd Roundabout



Figure 20: Purchas Rd, A4130 and Basil Hill Rd Roundabout

DSB-03: A4130, Purchas Rd and Hawksworth Roundabout

This roundabout provides a connection from the Didcot Northern Perimeter Road to the former Didcot A Power Station site to the west and an industrial area to the east. The southern A4130 arm has footways on both sides of the carriageway but the northern arm has only a footway on the eastern side. There is a direct access to a bridleway (also NCN 5) on the north-western corner of the junction. The eastern arm has footways on both sides of the road. The Purchas Road arm to the power station is privately owned.

The pedestrian and cycle movements recorded during the survey period are shown in the following figure. During the survey period, no equestrians were counted. Two non-motorised scooter riders were recorded during the whole week. The number of NMUs recorded at location averaged 73 pedestrians and 82 cyclists on a weekday, and 66 and 71 respectively during the weekend.

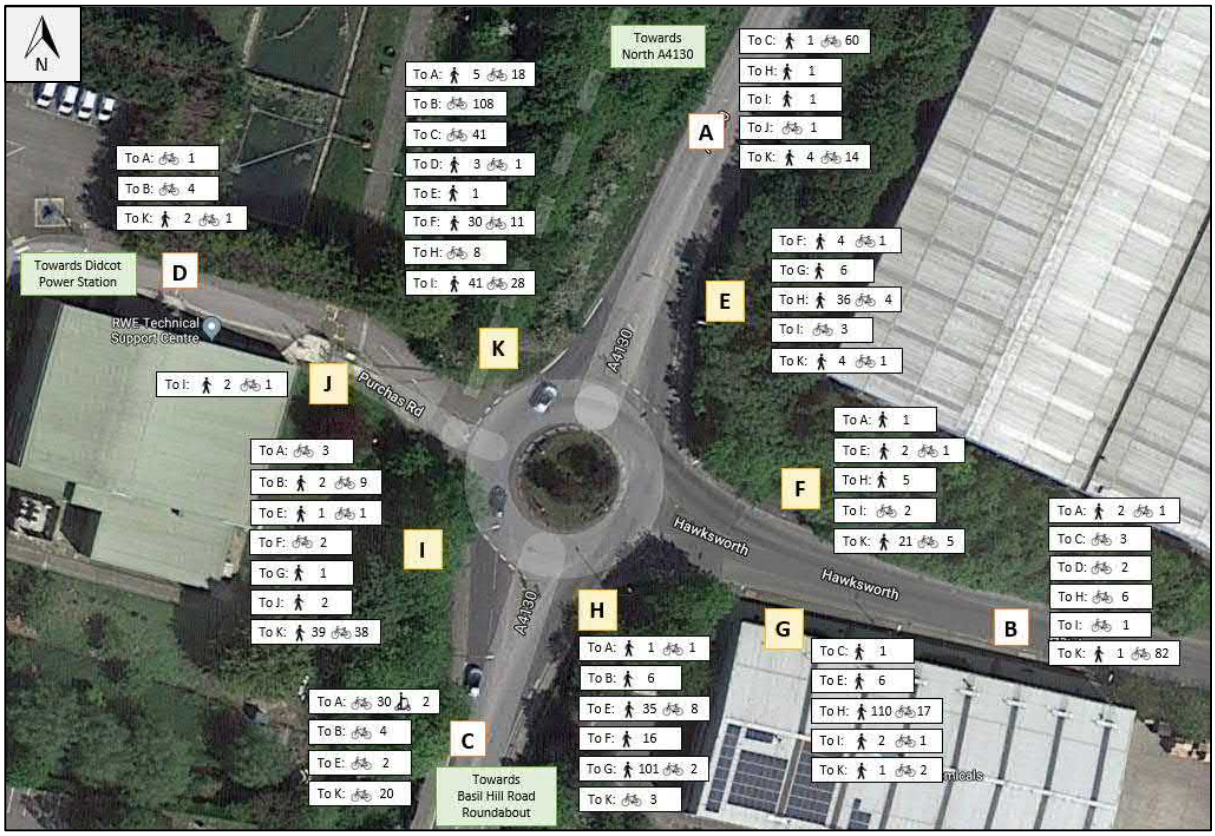


Figure 21: NMU total weekly movements at A4130, Purchas Rd and Hawksworth Roundabout



Figure 22: A4130, Purchas Rd and Hawksworth Roundabout

2.8 Liaison with key stakeholders

In order to be able to incorporate, where appropriate, the comments and views of local people on the preferred alignments into the next stage of the scheme design process of the HIF1 package of schemes an online public consultation was undertaken. This commenced on 20th March and finished on 30th April 2020. Full details of the consultation are available here: www.oxfordshire.gov.uk/didcotupdate.

As a result of Government restrictions on social distancing in response to the COVID-19 pandemic, it was not possible to hold the five public exhibitions that were scheduled for the last two weeks of March 2020. Due to the very tight timescales imposed by Government with respect to the terms of the funding, it was necessary to continue with an online consultation in order to avoid delay to the project programme.

However, to address this OCC undertook additional measures to ensure that as many people as possible were aware of the consultation and were able to access the information. This included sending letters to approximately 22,000 residences in the area, using an innovative virtual exhibition room with live chat function, promoting telephone numbers of officers available to answer questions, and sending printed versions of the materials to those without internet access. This was all in addition to the standard means of engagement (newspaper adverts, press releases, electronic mailouts, OCC website etc).

It should be noted that this scheme was consulted in, alongside the three other Didcot HIF highways schemes. Later in the year, it is intended that stakeholder workshops will be held to invite further input to the design of the walking, cycling, and horse-riding provision in these schemes.

Overall, 24 questionnaires were sent out to a list of identified key stakeholders and user groups and included representatives from the following:

- OCC Public Health
- OCC Public Rights of Way
- Didcot Garden Town Project Manager
- Harwell Campus Bicycle Users Group (HarBUG)
- Sustrans Thames Valley
- CYCLOX / Cycling UK
- Culham Science Centre Bicycle Users Group (CulBUG)
- Milton Park Bike Users' Group (MilBUG)
- Oxfordshire Cycling Network
- Ramblers Association
- Ramblers Association Oxon (& Oxford Fieldpaths Society)
- British Horse Society
- Oxfordshire Association for the Blind
- Oxfordshire Unlimited
- Guide Dogs
- Oxfordshire Transport & Access Group (OXTRAG).

In total, seven replies were received. In general, all respondents supported walking and cycling improvements, even if this means less space for other road traffic.

Table 7 provides a summary of the stakeholder responses relating to the proposed A4130 Widening received during the consultation. A copy of the questionnaire and the full responses received are included in **Appendix E**.

Consultee	Summary of Responses
Oxfordshire County Council Public Health	• Related to pedestrians improvements OCC Public Health commented that: – Providing high quality pedestrian infrastructure will enable people making short trips to walk, but that new routes should be safe and convenient -i.e. providing short cuts and avoiding long wait times at crossings. – Improve walking and cycling conditions in locations where traffic flows are expected to fall by reducing speed limits and/or narrowing existing carriageways in 'decongested' localities. – Reduced traffic congestion could induce demand for more private vehicle journeys and exacerbate the overall long-term trend away from walking. • Related to cyclists improvements OCC Public Health advised the following: – Providing high quality cycle infrastructure will improve people's cycling experience, but should be part of a safe network, and be more direct and convenient than driving to encourage more people to cycle, more often. – Strongly support the full segregation and features such as raised pedestrian and cycle crossings. – Concerns about the proposal impacts on carbon reduction priorities due to the risk that it could induce more traffic.
Public Rights of Way Access Strategy & Develop-ment (OCC PRoW)	• OCC PRoW noted that the improvements for pedestrians are relatively close to traffic and won't encourage new walkers due to the distances involved, but they would enable people who already walk or run on roads in the area to do so more safely. • Recommend creating alternative traffic free routes well away from carriageways and within settlements instead. • Considered that the segregated proposals will provide safer and more convenient facilities for confident cyclists and encourage less confident cyclists to use their bikes for utility and social journeys, provided there were complementary facilities within the neighbouring developments. • OCC PRoW highlighted several potential improvements: – Speaking to local and national British Horse Society (BHS) to identify the needs of equestrians, because they noted that there is no provision for them. – Provide connections for bridleway users. – Just widen the cycle-only path, as facilities will be for bikes. – Focus on facilities within settlements - these must have traffic-free or physically separate routes to encourage non-cyclists to get on bicycles. • Consult the statutory Oxfordshire Countryside Access Forum.
Harwell Campus Bicycle Users Group (HarBUG)	• People will walk along the route for short distances to get to places but not for pleasure alongside a main road, as it is unpleasant, and pedestrians will want to get away from the road as soon as possible. • Pleased with proposed connection between West Didcot and Milton Park, Culham Science Centre and the Power Station site. • Cycle paths and facilities must provide direct and convenient connections to existing and new Didcot housing developments, so that cyclists can easily join and leave the new paths. • Cycle paths need to be integrated into the Science Vale Cycling Network – could form a new route from Culham Science Centre to the Harwell Campus via Valley Park and Harwell Village. • Key general points relating to improved provision for people who wish to walk, cycle or ride a horse outlined below: – Cycle and pedestrian access slips from Science Bridge onto Milton Road would provide a considerable time advantage to cycling versus using car. – Cycle and pedestrian links to Power Station site to avoid another car dependent development. • Concern about the Toucan crossing at Southmead Industrial Estate to ensure it is the re-routed NCN route 5 and connects to the path at the back of the power station.

Consultee	Summary of Responses
	• Concern about the Science Bridge suitability for cyclists regarding the gradients (LTN2/08). • Suggestion of Science Vale Cycle Network route naming is used, as proposed in their *Proposal for Network Naming Convention and Routes*, April 2019.
Cyclox	• Cyclox welcome the improvements proposed to encourage people to walk and cycle more often, as they are safer and reduce motorised threat. • Provisions are not all in the most obvious locations. Crossings should be as close as possible to all junctions – be direct and convenient. • Staggered crossings should be avoided for the convenience of people cycling. • Provide convenient and frequent access into adjacent developments, for pedestrians and cyclists. • Make the designs reduce distances and increase roadside and road-facing development as much as possible, in line with current guidance (Manuals for Streets 1&2). • Concerns about the steeper ramps if a connection is made between the bridge and Milton Road – use cycle wheeling ramps? • Asymmetric cycling provision over the bridge is not appropriate for a new facility. • Raised parallel crossing on the Bridge road is too distant from the junction. • More direct crossing points over future development accesses are preferable. • Concerned that area's current and future residents will travel by car, creating more congestion, pollution and health problems.
Milton Park Bike Users' Group (MilBUG)	• Improvements would encourage people to walk and cycle more often but only if the new infrastructure has proper connections to destinations within the area, including access points to housing and employment areas. • Walking along traffic-busy roads is unpleasant and will be affected unless good segregation (e.g. through planting) can be achieved. • MilBUG highlighted several improvements for consideration: – Safe, direct crossing points with sensor-controlled traffic signals to minimise wait times for cyclists and raised parallel crossings on access roads. – Provide direct connections between the bridge and Milton Road to avoid the detour which would otherwise limit the usefulness of the Science Bridge for cyclists accessing Milton Park. – Gradient of bridge and any accesses to Milton Road for cyclists should be reviewed. Too steep gradients might deter less fit cyclists from using it.
OCN	• OCN welcome the improvements proposed to encourage people to walk and cycle more often but cautioned that if easy driving still remains that good walking and cycling facilities may not encourage a switch to these modes. • Cyclists will be most benefited by the proposals due to the longer distances involved. The routes can form part of a leisure cycling ride while people would use them for 'function' and not for 'pleasure'. • Supported walking and cycling improvements as they are separated from motor vehicles and pedestrians and cyclists are segregated. Crossings are well-designed crossings, particularly the inclusion of parallel crossings. • Suggested further improvements: – Add walking and cycling access to Milton Road from Science Bridge. – Ensure all side road crossings have cycle priority. Parallel crossings suggested to achieve this. – Check gradients.
OXTRAG	• OXTRAG welcomes the improvements for encourage people to walk and cycle more often. • Agree with the walking and cycling facilities proposed and are pleased that there will be an off-carriageway cycleway. • Do not expect anyone to want to ride a horse along the proposed road.

Table 7: Summary of Stakeholder Response to Consultation

3. User Opportunities

The opportunities highlighted below are deemed to be relevant to the highway scheme and should be considered by the design team leader throughout the progression of the highway scheme design in addition to any further opportunities that may arise through the ongoing development of the design phases.

It is noted that opportunities labelled “KS-X” have been identified through key stakeholder consultation carried out in April 2020 and have only been raised following the completion of the feasibility design stage due to programme constraints. Additional opportunities identified are to be reviewed by designers at the preliminary design stage and to be included in the next stage WCHAR review.

3.1 General

Opportunity 1

Ensure future pedestrian and cyclist facilities within the public highway are integrated with proposed facilities within new developments, to provide a joined up optimal walking and cycling networks. Seek funding from developers to deliver the overall networks.

Opportunity 2

Improvement and levelling of the existing footway to avoid potholes and other discontinuities that may cause the users to feel unsafe and discomfort.

Opportunity 3

Provision of appropriate crossings to enable users to safely cross the new road including consideration for a Pegasus crossing where Bridleway B1 crosses the proposed road link.

Opportunity KS-1

Provide priority for pedestrians and cyclists across development access roads, to promote active travel.

Opportunity KS-2

Provision of convenient, frequent and direct links into the future development areas from the proposed link road.

3.2 Strategic opportunities

Opportunity 4

Provision of a segregated cycle track and footway along the new road link, to avoid potential discomfort and conflict between pedestrians and cyclists, as walking and cycling demand increases.

Opportunity 5

Minimize the severance caused by the rail line, and between future development areas.

Opportunity 6

Provision of bus services along the new route.

Opportunity 7

Provide high quality link between the proposed scheme, the existing Public Rights of Way, and integrated with the Science Vale Cycle Network and the National Cycle Network (NCN), so that can be fully utilised. Ensure the bridleway and NCN 5 are upgraded, and any severance resulting from the proposed road is minimised.

Opportunity 8

Provide improved facilities along the whole alignment. The new Science Bridge will remove traffic to the old roundabouts.

Opportunity KS-3

Provide an appropriate gradient for pedestrians and cyclists on the Science Bridge approaches, so these users are not discouraged.

Opportunity KS-4

Consider provision of direct connections between Milton Road and the Science Bridge to improve access to the eastern end of Milton Park, and make walking and cycling more convenient than by car.

3.3 Pedestrian specific opportunities

Opportunity 9

Conversion of the existing shared-use facilities to segregated facilities throughout the scheme would provide a safety benefit for all users. People whose mobility is reduced due to a disability, because of their age, as a result of pregnancy or with young children in pushchairs, will avoid conflicts with cyclist due to sharing space and will feel more comfortable. (see also Opportunity #10).

3.4 Cyclist specific opportunities

Opportunity 10

Convert the shared existing footways to a segregated cycle track throughout the scheme to make off road facilities more attractive and usable, particularly for the less confident cyclists. Provision of a segregated cycle track will minimise the potential for conflict between pedestrians and cyclists, as walking and cycling demand increases. (see also Opportunity #8).

Opportunity 11

A4130/Milton Road/Basil Hill Road – Existing off-carriageway cycle facilities are provided between Milton Road and Basil Hill Road, however this junction has been identified as a cluster site (in the Didcot to Culham River Crossing WCHAR Assessment Report) due to the number of collisions reported over the 5-year study period involving vehicles failing to give way to cyclists negotiating the roundabout. Consideration shall be made to providing improvements at the junction to improve the attractiveness of the off-carriageway facilities to cyclists or improving warning and visibility of cyclists to approaching vehicles.

3.5 Equestrian specific opportunities

Opportunity 12

Provision of an equestrian link to the area by using the current bridleway.

4. Walking, Cycling and Horse-Riding Assessment Team Statement

As Lead Assessor, I confirm that this walking, cycling and horse-riding assessment report has been generally compiled in accordance with DMRB GG 142 (refer to section 1 for exceptions). The walking, cycling and horse-riding assessment was undertaken by the following assessment and review team:

Name	Andy Blanchard
Position	Associate Director - WCHAR Lead Assessor
Organisation	AECOM
Signed	
Date	15/05/2020

Name	Rebeca Bolado Fernandez
Position	Graduate Engineer - WCHAR Assessor
Organisation	AECOM

As the design team leader, I confirm that the assessment has been undertaken at the appropriate stage of the highway scheme development.

I confirm that in my professional opinion the appointed Lead Assessor has the appropriate experience for the role making reference to the expected competencies contained in GG 142.

Name	Mike Ager
Position	Principal Engineer - Design team leader
Organisation	AECOM
Signed	
Date	15/05/2020



Didcot Garden Town HIF1 - Didcot to Culham River Crossing

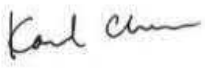
Walking, Cycling and Horse-Riding Assessment Report

Oxfordshire County Council

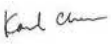
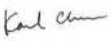
Project reference: Didcot Garden Town HIF1
Project number: 60606782

May 2020

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Kin-Yun Lo Senior Engineer	Andy Blanchard Associate Director	Hein Pretorius Principal Engineer	Karl Chan Associate Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
P01	19/12/2019	DRAFT		Karl Chan	Associate Director
P02	15/05/2020	FINAL		Karl Chan	Associate Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name
-	Y	Aron Wisdom, Oxfordshire County Council
-	Y	Will Pedley, Oxfordshire County Council
-	Y	Harry Davis, Oxfordshire County Council
-	Y	Gavin Belcher, Oxfordshire County Council

Prepared for:

Oxfordshire County Council
County Hall
New Road
Oxford
OX1 1ND

Prepared by:

Kin-Yun Lo
Senior Engineer, Transportation
M: T +44 7990 074297
E: kinyun.lo@aecom.com

AECOM Infrastructure & Environment UK Limited
AECOM House
63-77 Victoria Street
St Albans
Hertfordshire AL1 3ER
United Kingdom

T: +44(0)1727 535000
aecom.com

© 2020 AECOM Infrastructure & Environment UK Limited. All Rights Reserved.

This document has been prepared by AECOM Infrastructure & Environment UK Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

Executive summary 6
1. Background and highways scheme description 8
1.1 Background 8
1.2 Proposed highway scheme 9
1.3 WCHAR study area 10
2. WCHAR assessment 11
2.1 Assessment of walking, cycling and horse-riding policies and strategies 11
2.2 Collision data 14
2.3 Multi-modal transport services and interchange information 17
2.4 Key trip generators and local amenities 20
2.5 Site visit 22
2.6 Existing walking, cycling & horse-riding network facilities 27
2.7 Walking, cycling & horse-riding survey data 29
2.8 Consultation with key stakeholders and local user groups 34
3. User opportunities 39
3.1 General 39
3.2 Strategic opportunities 39
3.3 Pedestrian specific opportunities 40
3.4 Cyclist specific opportunities 40
3.5 Equestrian specific opportunities 41
4. Walking, Cycling and Horse-Riding Assessment Team Statement 42
Appendix A – Feasibility design 43
Appendix B - Collision data and bubble diagram 44
Appendix C – WCHAR survey locations 45
Appendix D – WCHAR survey data 46
Appendix E – Stakeholder consultation records 47
Appendix F – Stakeholder consultation Indicative scheme plans 48

Figures

Figure 1 Science Vale Area 8
Figure 2: Site Location Plan 9
Figure 3: WCHAR study area location plan 10
Figure 4 Proposed Science Vale Cycle Network route map 11
Figure 5 Proposed Science Vale strategic cycle network 13
Figure 6 Extract of South Oxfordshire Zone network map 18
Figure 7: Great Western Railway Network Map 19
Figure 8 Oxfordshire County Council Planning Application Interactive Mapping 22
Figure 9 Appleford Level Crossing – west of railway line 23
Figure 10 Main Road, east of Appleford Level Crossing 23
Figure 11 Appleford Station, eastern access 24
Figure 12 Main Road, approach to Appleford Station 24
Figure 13 B4016, east of Appleford Station 24
Figure 14 Appleford Station, western access – view to east 24
Figure 15 Thames Path, towards Culham Lock 25
Figure 16 Thames Path, east of Tollgate Road, Culham 25
Figure 17 A415 Abingdon Road, shared use footways 25
Figure 18 A415 Abingdon Road, west of farm access 25
Figure 19 Cycle parking at Culham Railway Station 26
Figure 20 Culham Railway Station – eastern approach 26
Figure 21 Station Road - Shared cycle-pedestrian footways 26
Figure 22 Station Road – Uncontrolled crossing at station car park entrance 26
Figure 23 Extract of OCC Public Right of Way Map 28
Figure 24: Extract of Sustrans National Cycle Network Map 29
Figure 25 RIV-01: Culham Railway Station Entrance – Total NMUs observed (7-day survey period) 31
Figure 26 RIV-02 Station Road and Abingdon Road Junction – Total NMUs observed (7-day survey) 31
Figure 27 RIV-04 Thames Path at Tollgate Road – Total NMUs observed (7-day survey period) 32
Figure 28 RIV-06 Appleford Railway Station – Total NMUs observed (7-day survey period) 32
Figure 29 RIV-07 Appleford Level Crossing – Total NMUs observed (7-day survey period). 33
Figure 30 RIV-08 A4130 and Collett Road junction – Total NMUs observed (7-day survey period) 34

Tables

Table 1: Total collisions by severity 14
Table 2: Total casualties by severity 15
Table 3 Collision summary by location 17
Table 4: Bus routes Didcot – Appleford – Culham 17
Table 5: Locations for WCHAR surveys 30
Table 6: Surveyed average and 85%ile speeds 30
Table 7 Surveyed 2-way traffic flow and vehicle classification 30
Table 8 Summary of stakeholder responses to consultation 38

Executive summary

This report outlines the Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) prepared for Oxfordshire County Council for the proposed Didcot to Culham River Crossing scheme. This scheme is one of four that comprise the HIF1 Didcot Garden Town infrastructure project. Whilst the process set out in the Design Manual for Roads and Bridges (DMRB) GG 142 document has generally been followed in preparing this WCHAR Report, as this scheme is not a trunk road some alterations have been made to reflect this, such as a reduced study area.

The aims of this study are to gain an understanding of all relevant existing facilities for pedestrians, cyclists and equestrians (the users) in the local area, to provide background user information that can be referred to throughout the design process and to identify opportunities for improvement for users.

The WCHAR process is divided into two phases:

- Assessment (this report): undertaken during the options or concept stage of a highway scheme to capture the existing conditions for pedestrians, cyclists and equestrians, and identify the opportunities for improvement for these modes.
- Review: shall be completed as an ongoing review during the various design stages of the highway scheme and shall record the design decisions relating to the provision of walking, cycling and horse-riding facilities.

The proposed Didcot to Culham River Crossing will deliver a new link road connecting the A4130 at Didcot with the A415 Abingdon Road near the Culham Science Centre entrance, including a new full standard river crossing.

This Assessment Report documents the relevant local and national relevant policies and strategies. Within the study area, there has been a total of 36 recorded collision in the five-year study period, of which 8 were serious and 28 were slight in severity. One cluster site was identified at the A4130/Milton Road roundabout. There are a number of local and regional bus services in the area, however none of which serve the route between Didcot and Culham Science Centre.

Movement within the study area is dominated by the private car. The key trip generators in the area include the Culham Science Centre, Southmead Industrial Estate, Hanson, FCC Environment waste transfer site. The numbers of pedestrians and cyclists observed during the site visit and throughout the surveys conducted in November 2019 was generally low, however cycle demand was observed along the main connector roads within the scheme extents including the A415 Abingdon Road, along B4016 Main Road through Appleford and the A4130 at Southmead Industrial Estate.

A public information event covering the four HIF1 schemes was held throughout April 2020, and relevant WCHAR stakeholders were sent a targeted questionnaire to capture their views on the feasibility designs and needs of the local users. Their responses are summarised in this report.

Identified user opportunities as part of the assessment included:

- Provision of dedicated, safe and direct cycle and pedestrian facilities along the proposed new route with good quality links to existing cycle routes, proposed cycle routes as part of the Science Vale Cycle Network, and existing Public Rights of Ways within the scheme extents.

- Improvements to pedestrian and cycle access to Appleford Railway Station, and cycle facilities provided at railways stations.
- Improvements to the connection between Ladygrove Estate and Southmead Industrial Estate
- Improvements to existing cycle facilities along the A415 to cater to cycle demand along the commuter route and encourage cycling off-carriageway.

1. Background and highways scheme description

1.1 Background

The proposed Didcot to Culham River Crossing scheme is one of the four major road schemes identified in the Access to Science Vale Options Appraisal Report, which were developed by a working group of county and district officers.

The A4130 Widening scheme is located in the Science Vale area, shown in Figure 1, which comprises the towns of Didcot (including Milton Park and Didcot Power Station) and Wantage (& Grove) together with the established research centres at Culham Science Centre (CSC) and Harwell International Business Centre (IBC) together with the area between these settlements.

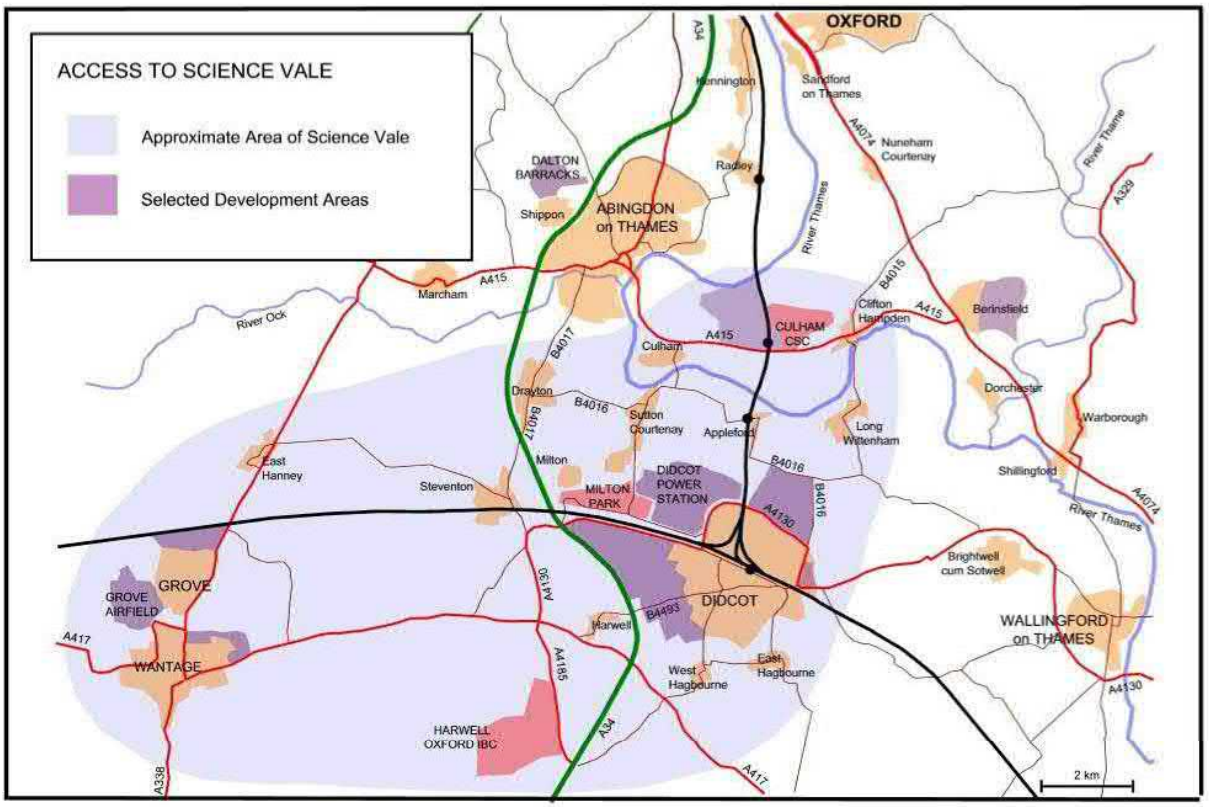


Figure 1 Science Vale Area

The scheme will have a significant impact on the highways network in the area and therefore OCC have requested that the GG 142 WCHAR is completed to inform the scheme design.

In accordance with GG 142, the scale of the scheme has been assessed (by the Lead Assessor) and is considered to qualify as a 'large' scheme for the purposes of this assessment, by virtue of the nature and extent of the proposed improvements. The scheme will therefore be subject to a Walking, Cycling & Horse-Riding Assessment (this document) during the feasibility design stage of the proposed highway scheme. This will then be followed by Walking, Cycling & Horse-Riding Reviews at preliminary and detailed design stages. However, the assessment will be based on the extent for a small scheme by virtue of this not being a trunk road, to which GG 142 applies.

1.2 Proposed highway scheme

The Didcot to Culham River Crossing lies to the west of the Didcot to Oxford rail line and links the A4130 to the south at Didcot and the A415 Abingdon Road to the north at Culham. The route will also provide a connection to B4016 at Appleford.

A site location plan is shown in Figure 2.



Figure 2: Site Location Plan[1]

The Didcot to Culham River Crossing (the feasibility design is provided in **Appendix A**) is to provide a new link road connecting the A4130 at Didcot with the A415 Abingdon Road to the west of the Culham Science Centre entrance, including a new full standard river crossing. This corridor will link with the proposed Clifton Hampden Bypass to the north east of the corridor at Culham Science Centre, and also the proposed Science Bridge and the A4130 Widening towards Milton Interchange. It shall be noted that this Assessment, with the exception of the stakeholder consultation covered in Section 2.8 of this report, has been carried out based on the feasibility design developed by Atkins in October 2019, and provided by OCC (drawing no. 5189452-ATK-DRG-HW-0004 to 0006).

Currently the River Thames provides a barrier within the Science Vale area, separating Culham Science Centre and the rest of the area to the south of the Thames. There are two bridges which currently provide a link across the river, located at Culham and Clifton Hampden however these are low standard, single track crossings controlled by traffic signals. The main objective of the new corridor is to improve accessibility and provide congestion relief on the existing road network by providing an alternative, direct route between Didcot, Appleford and Culham. The proposed new highway will also provide the required infrastructure to support the proposed employment and housing growth in Didcot and the surrounding Science Vale area and will also open an opportunity to provide a bus service between Didcot and Culham.

The scheme objectives include improving conditions for walking, cycling and horse-riding in the area, as there are currently no direct connections or facilities along the route. This is likely to include segregated facilities for pedestrians and cyclists along the corridor with crossings at any junctions and connection to any adjacent routes wherever possible.

[1] *"Google Map™ and Google Streetview™ have been used, unmodified, within this document. This imagery has been used within the extents of the AECOM license agreement with Google Inc."*

The proposal includes a single carriageway in the north-south direction between an upgraded roundabout at the A4130/Collett junction and a point to the west of the Appleford Railway Station at the B4016 Main Road. A new roundabout is proposed to the west of Appleford Station. To the north of the Appleford / B4016 roundabout, is a proposed section of single carriageway which will provide a direct connection to the A415 to the west of the Culham Science Centre. This will involve a new bridge across the River Thames and a proposed new 4-arm roundabout on the A415 Abingdon Road. The road corridor will be approximately 3-4km in length and will include a two-way segregated 4m cycleway and 2m footway on the western side of the carriageway.

1.3 WCHAR study area

The GG 142 requires a minimum radius of 5km for the study area of a large scheme on the trunk road network. However, this scheme does not form part of the trunk road network, and after careful review of the requirements and proposed works, a reduced local study area extent (1km radius) has been agreed with OCC to be appropriate for this study.

Figure 3 shows the study area.

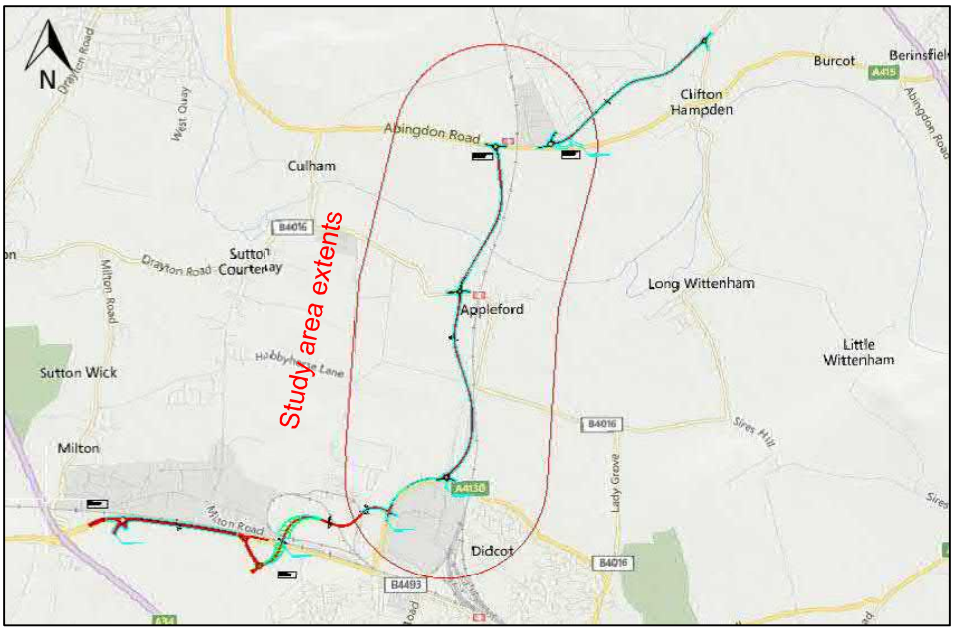


Figure 3: WCHAR study area location plan[2]

[2] *"Google Map™ and Google Streetview™ have been used, unmodified, within this document. This imagery has been used within the extents of the AECOM license agreement with Google Inc."*

2. WCHAR assessment

2.1 Assessment of walking, cycling and horse-riding policies and strategies

The following policy documents have been reviewed as part of the Assessment:

Connecting Oxfordshire: Volume 4 Local Transport Plan 2013-2031 (Adopted 2016) - Active & Healthy Travel Strategy.

The strategy states that the number of people who usually drive short journeys to work in Oxfordshire is increasing and therefore roads are becoming more congested. Oxfordshire County Council have a vision to make cycling a safe, simple and accessible option for people of all ages, and in turn make cycling a major mode of travel and reduce air pollution in Oxfordshire. This will include an increase in multimodal door-to-door trips by integrating the cycling and public transport networks to allow bike-rail and bike-bus journeys.

As part of the Strategy, a Cycle Premium Route between Didcot to Culham Science Centre, via the existing National Cycle Route 5 between Didcot and Long Wittenham and then on-road towards Culham Science Centre via Clifton Hampden Bridge, has been identified as part of the proposed Science Vale Cycle Network as shown in Figure 4. This cycle network has been identified to be a focus for future investment to cycling in the area. Given the importance of the route between the two key attractors in the region, and the existing site constraints at the Clifton Hampden Bridge, the proposed Didcot to Culham river crossing will provide an opportunity for a high quality cycle route as an alternative to the existing.

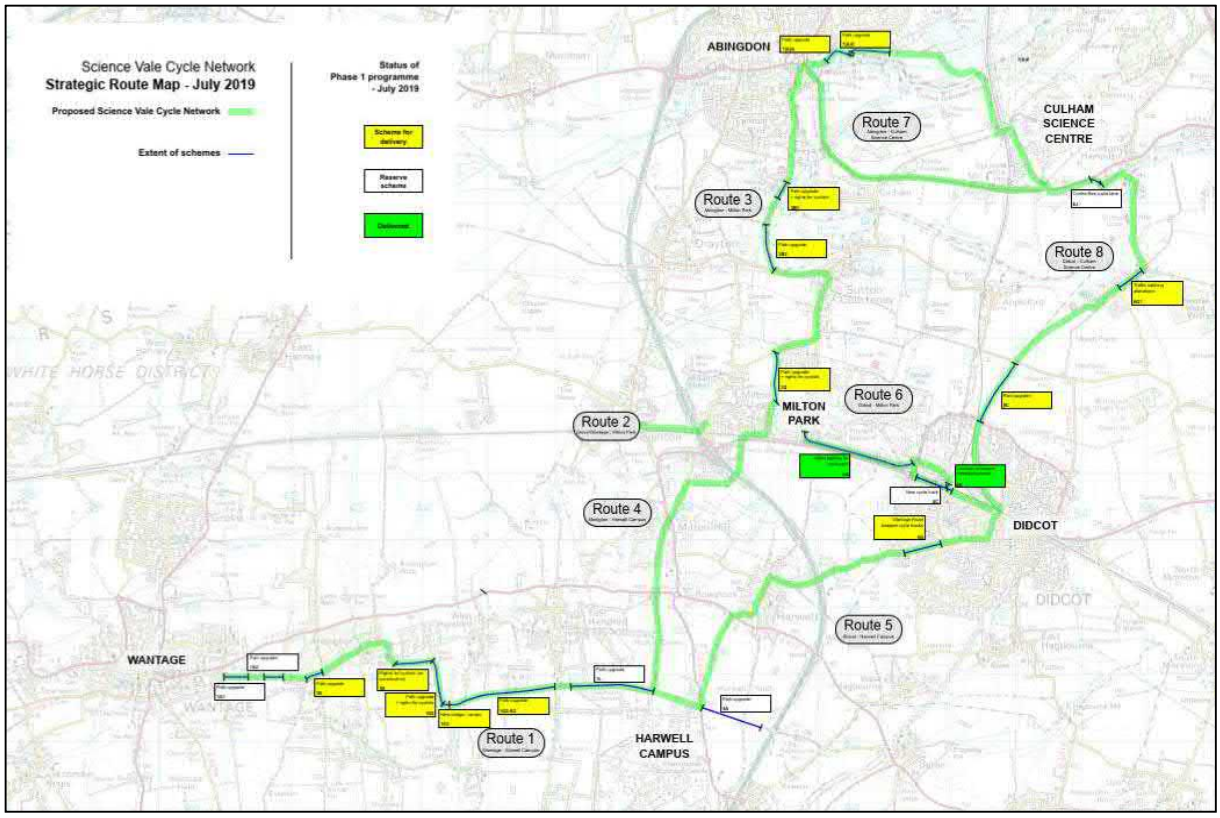


Figure 4 Proposed Science Vale Cycle Network route map3

[3] Oxfordshire County Council, Science Vale Cycling Network [online] (December 2019) https://www.oxfordshire.gov.uk/sites/default/files/file/roads-and-transport-major-projects/science_vale_cycle_network.pdf

Oxfordshire County Council also have an overall aspiration to enable and encourage walking to be a travel mode of choice for short trips and the most popular and accessible form of recreational activity. The ambition is to make all streets and public spaces to be accessible to all users.

This scheme shall therefore ensure that walking and cycling facilities, suitable for all types of users, are provided along the proposed highways, and provide improvements to the overall walking, cycling and horse-riding network across the area.

Oxfordshire Rights of Way Management Plan 2015-2025

The Rights of Way Management Plan is a 'daughter' document to the Oxfordshire Local Transport Plan and supports the delivery of the Councils overarching strategic goals. The main strategic objectives which are relevant to the proposals and considered as part of this Assessment include:

- Improve public health and wellbeing by increasing levels of walking and cycling, and enabling inclusive access to jobs, education and services.
- Reduce the proportion of journeys made by private car by making the use of public transport, walking and cycling more attractive.
- Maximise the use and value of existing and planned sustainable transport investment, by linking and integrating this with planned development to allow continued and increased use of the right of way network.

Vale of White Horse District Council – Local Plan 2031 (February 2018)

The focus for the South East Vale area is to "ensure that employment growth centred on the Enterprise Zone and Science Vale sits alongside strategic housing and infrastructure to support sustainable growth".

On the district boundary, located in neighbouring South Oxfordshire, is Didcot which has been identified as a location for strategic growth within the adopted South Oxfordshire Core Strategy, which allocates 6,300 homes within South Oxfordshire at Didcot. The Core Strategy identifies the need for significant regeneration with proposals for improvements to the town centre and railway station. As there is significant change proposed around Didcot, including housing, employment and large infrastructure projects, it is recognised that investments must be made to deliver strategic schemes such as the "Culham Crossing" and the Science Vale strategic cycle network, which includes a direct cycle route between Didcot and Culham (see Figure 5).

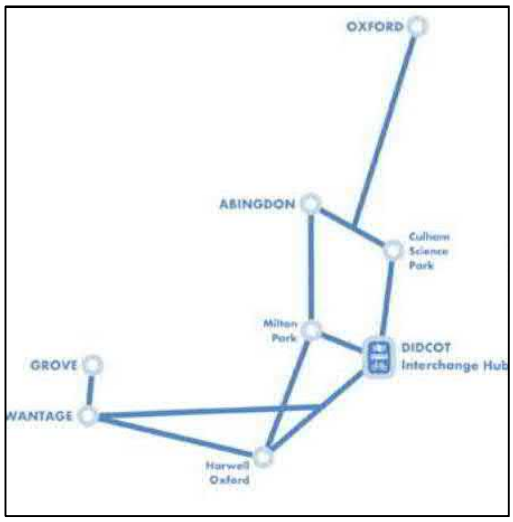


Figure **5** Proposed Science Vale strategic cycle network[4]

South Oxfordshire District Council – Emerging Local Plan 2011-2034 (January 2019)

A new Thames road crossing between Culham and Didcot Garden Town has been identified in the emerging plan as one of the strategic transport schemes in which land should be safeguarded for (Policy TRANS1).

It states that "This crossing has strategic transport benefits and is required to support development proposed in the emerging South Oxfordshire Local Plan, as well as development allocated in the Vale Local Plan Part 1 and development proposed in the emerging Vale Local Plan Part 2. It is also part of a package of transport infrastructure in this area as identified in the Science Vale Area Transport Strategy in the Oxfordshire Local Plan, which includes the Clifton Hampden Bypass and the Didcot Northern Perimeter Road."

South Oxfordshire District Council – Core Strategy 2027 (adopted December 2012)

The Core Strategy states that large amounts of economic investment and housing are planned in the Science Vale Area, and "improvements are needed to ease access around this area particularly in respect of east-west movements".

One of the key development objectives is the "redevelopment of parts of Culham Science Centre to provide further high value jobs". South Oxfordshire District Council has committed to proactively working with Culham to develop an agreed masterplan that facilitates this growth and considers the wider traffic implications of proposals.

The proposed Didcot to Culham river crossing scheme will support the movement that strengthens links between key places and will provide the necessary infrastructure to support the redevelopment of Culham Science Centre and the proposed increase in jobs; as well as the developments in Didcot.

South Oxfordshire Infrastructure Delivery Plan (January 2019 update)

As part of the delivery plan, land adjacent to Culham Science Centre has been identified for the delivery of 3500 dwellings. In order to support these proposed developments, key infrastructure requirements for Culham include contributions towards the Culham - Didcot Thames River Crossing, Clifton Hampden bypass and the upgrading of the A4074/B4015 Golden Balls junction; as well as the enhancements to encourage sustainable travel.

[4] Vale of White Horse District Council, Vale of White Horse - Local Plan 2031 (adopted December 2016)

Didcot Garden Town Delivery Plan (October 2017)

The Didcot Garden Town vision recognises that Didcot will grow from approximately 26,000 people to over 60,000 by 2031. With this growth, Didcot is expected to become the largest town in Southern Oxfordshire and if the means by which residents move around the town remains unchanged, town wide journeys by car will double. This will result in pressure on the existing highways network, and investment is required to provide the necessary infrastructure to enable a modal shift away from private cars towards other modes of transport.

The east-west movement corridors and Science Bridge have been identified as one of the key proposals to achieve sustainable movement across the area. One component of these corridors is the Didcot to Culham River Crossing as reviewed as part of this Assessment.

A new cycle route between Harwell, Didcot and Culham, referred to as the Garden Line, has also been identified in the delivery plan. This is proposed to include upgrading of the route to Culham and a new river crossing to the east of the railway line.

Design standards

The following design standards have also been identified and considered during the assessment:

- Oxfordshire Walking Design Standards (A guide for Developers, Planners and engineers, summer 2017)
- Oxfordshire Cycling Design Standards (A guide for Developers, Planners and engineers, summer 2017)
- CD195 Designing for Cycle Traffic
- CD143 Designing for walking, cycling and horse-riding
- Advice on road crossings for horses (The British Horse Society)

2.2 Collision data

Collision data has been provided to AECOM by Oxfordshire County Council for a 5-year period between 9th June 2014 and 8th June 2019. There was a total of 36 collisions recorded within the scheme extents, with 47 casualties, the severity is summarised by year in Table 1 and Table 2. As shown, total yearly collisions do not show any clear evidence of deterioration or improvement in road safety along the local highways.

Severity / Year	2014	2015	2016	2017	2018	2019	Total
Fatal	0	0	0	0	0	0	0
Serious	1	2	2	1	2	0	8
Slight	8	4	3	7	4	2	28
Total	9	6	5	8	6	2	36

Table 1: Total collisions by severity

Severity/ Year	2014	2015	2016	2017	2018	2019	Total
Fatal	0	0	0	0	0	0	0
Serious	1	2	2	1	2	0	8
Slight	12	6	5	8	6	2	39
Total	13	8	7	9	8	2	47

Table 2: Total casualties by severity

For the purpose of this assessment, a cluster site has been defined as an area with seven or more collisions within a 100m radius over a 5-year study period. A single cluster site was identified in study area at the A4130/Milton Road roundabout. A total of 12 collisions were reported within the study period, of which 5 were serious and 7 were slight in severity. All 5 serious collisions involved vehicles entering the roundabout from the A4130 and failure to give way to cyclists negotiating the roundabout from Milton Road on the west towards Basil Hill Road on the east. 3 of these collisions occurred during the hours of darkness and 2 during daylight hours. 1 incident reported glare from the sun as a possible contributory factor.

Of the 7 slight collisions, 5 collisions involved a vehicle entering the roundabout from the A4130 and failure to give way to cyclists negotiating the roundabout from Milton Road on the west towards Basil Hill Road on the east. All these collisions occurred during daylight hours, 3 of these took place in wet conditions. The 2 remaining slight collisions involved a HGV failing to give way to a motorcyclist during dry, dark conditions, and an incident involving a vehicle colliding with a cyclist travelling on the nearside on the A4130 approach to the Milton Road roundabout.

Table 3 provides a summary of the collisions based on location, severity and type. **Appendix B** contains the full details of the collisions, which are also presented with bubble diagrams on the plot included in drawing CHB-ACM-HGN-SW_ZZ_ZZ_ZZ-DR-Z-0001.

Location	Collision severity	Collision type	Pedestrians / cyclist / horse-rider involved?	Contributory factors
Culham				
A415 Abingdon Road/ Station Road junction	1 slight	1 shunt	No	Failure to look - right turning vehicle
A415 Abingdon Road, west of Culham Science Centre entrance	1 serious, 2 slight	3 shunt	No	Failure to look - overtaking, stationary vehicle. Sudden braking
A415 Abingdon Road, east of Europa School UK	1 slight	1 head-on collision	No	Failure to look – overtaking
Appleford				
B4016, west of Appleford station	1 slight	1 shunt	Yes (Cyclist travelling to school)	Failure to judge speed

Location	Collision severity	Collision type	Pedestrians / cyclist / horse-rider involved?	Contributory factors
B4016, Bridge Farm House access	1 slight	1 shunt	No	Following too close - right-turning vehicle
B4016, Appleford station	1 slight	1 pedestrian collision	Yes (Pedestrian)	Driving too close, no footway at station
B4016 Main Road / Chambrai Close & Church Lane	1 slight	1 shunt	No	Following too close - right-turning vehicle
	1 serious,	1 stationary vehicle collision	Yes (Cyclist)	Failure to see stationary vehicle
	2 slight	2 loss of control	No	Impaired by alcohol Fatigue/illness
B4016, east of Appleford Level Crossing at NCR5 access	1 slight	1 cyclist collision	Yes (Cyclist)	Failure to look – right turning cyclist
Didcot				
A4130 / Collett	3 slight	1 cyclist collision	Yes (Cyclist)	Failure to look/judge speed (hours of darkness)
		1 failure to give way	No	Failure to look properly/poor manoeuvre
		1 loss of control	No	Illness
A4130 / Avon Way	2 slight	1 failure to give way	No	Failure to look/obstructed view
		1 loss of control	No	Wet conditions, deposits on road
Avon Way / Brunstock Beck	1 slight	1 failure to give way	Yes	Failure to look properly
Basil Hill Road / Thames Water access road	1 sight	1 cyclist collision	Yes (Cyclist)	Failure to look properly, cyclist attempting to turn right
A1430 / Hawksworth / Purchas Road	3 slight	1 shunt	No	Failure to look properly/judge speed
		1 failure to give way	No	Impaired by alcohol
		1 failure to give way	Yes (Cyclist)	Failure to look properly / dark and wet conditions
A4130 / Milton Road **(Cluster site)**	5 serious, 7 slight	10 cyclist collision	Yes (Cyclist)	Failure to give way to cyclist negotiating roundabout.
		1 cyclist collision	Yes (Cyclist)	A4130 SB approach, cyclist on nearside hit by car

Location	Collision severity	Collision type	Pedestrians / cyclist / horse-rider involved?	Contributory factors
				on approach to junction
		1 motorcyclist collision	No	HGV failure to give way to motorcyclist on roundabout, travelling from Milton Road to Basil Hill Road.

Table 3 Collision summary by location

2.3 Multi-modal transport services and interchange information

Pedestrians, cyclists and equestrians may combine their modes of travel with public transport as part of a longer trip. As part of this Assessment, public transport services and associated infrastructure such as rail and bus stations (including bus stops) and interchanges have been identified to enable an appropriate assessment of the integration of such modes.

2.3.1 Bus services

As the proposed corridor passes over currently undeveloped agricultural lands, there are no existing bus services which run along this route.

There are no bus routes which currently run between Didcot and Culham Science Centre, and no buses currently serve Appleford. However, there is a single bus (route 45) which runs between Abingdon and Culham Science Centre during weekdays during the AM and PM peak only. Bus services (connector route 33 and X33) are also available between Didcot and Abingdon.

Table 4 outlines the bus routes available, which is also presented within the network map on Figure 6.

Bus route	Operator	Frequency	Days of service	Route connections
X33 / 33 Connector	Thames Travel	Hourly 05:30 to 20:20, Additional peak service 17:00 to 17:30	Monday - Friday	Abingdon to Wantage, via Culham, Sutton Courtenay and Milton
		Hourly 07:45 to 19:35	Saturday	
		No service	Sunday	
45	Thames Travel	Every 30 mins (07:30 to 08:52 16:20 to 17:45) midday service on Fridays only.	Monday - Friday	Abingdon to Culham Science Centre
		No service	Saturday/Sunday	

Table 4: Bus routes Didcot – Appleford – Culham

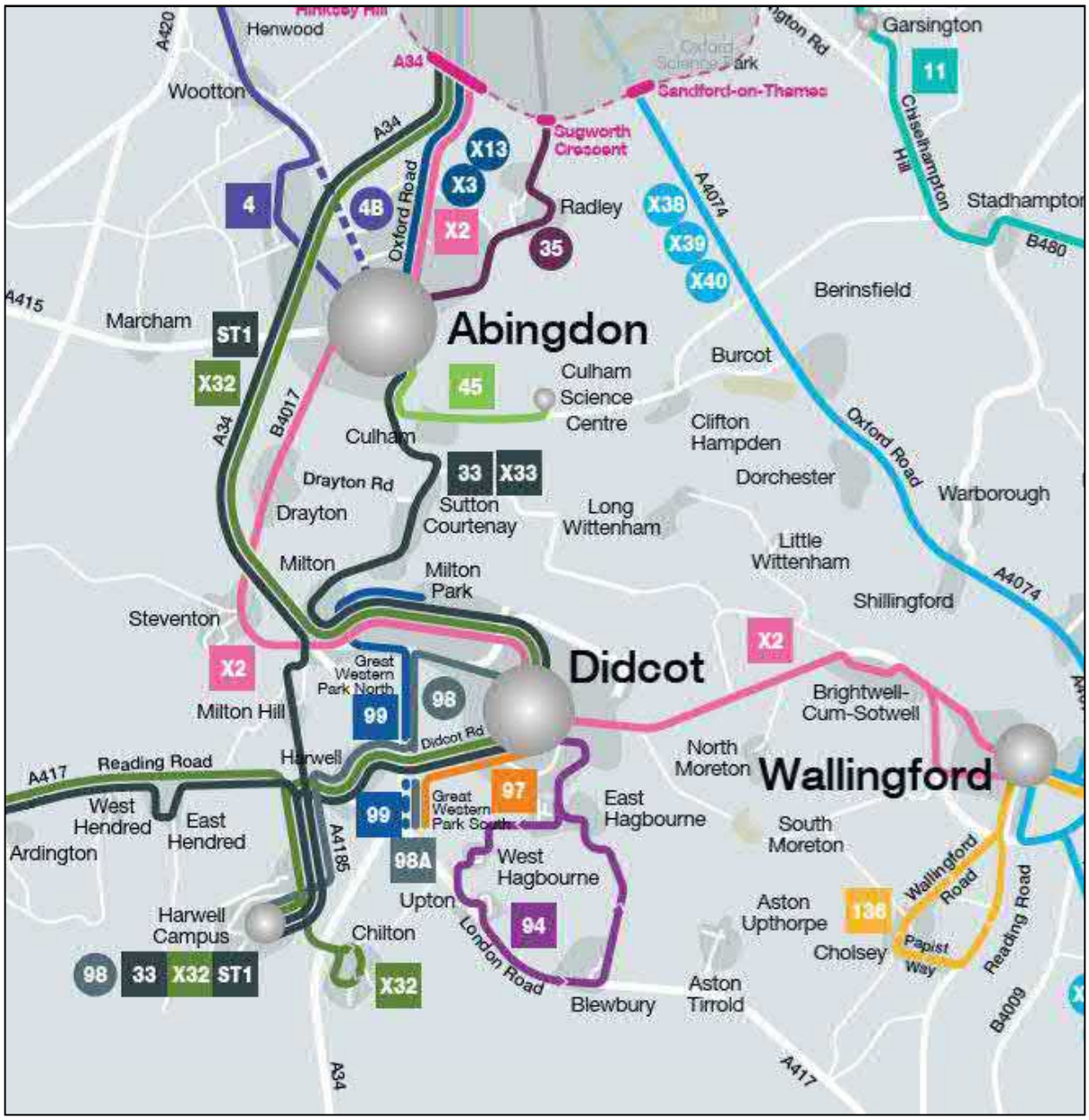


Figure 6 Extract of South Oxfordshire Zone network map

2.3.2 Train service

The proposed Didcot to Culham River Crossing runs parallel to the Oxford to Didcot Railway line, along part of the route also known as “The Oxford Canal Line”.

Train services along this route are operated by Great Western Rail, with services directly into Reading, Didcot Parkway, Oxford and Banbury. With an interchange at either Didcot Parkway or Reading, Great Western Rail train services can also be into London Paddington, Cardiff Central, Weston Super Mare, Cheltenham Spa, Swansea, Taunton, Bristol Temple Meads and Carmarthen as shown in the network map included in Figure 7.

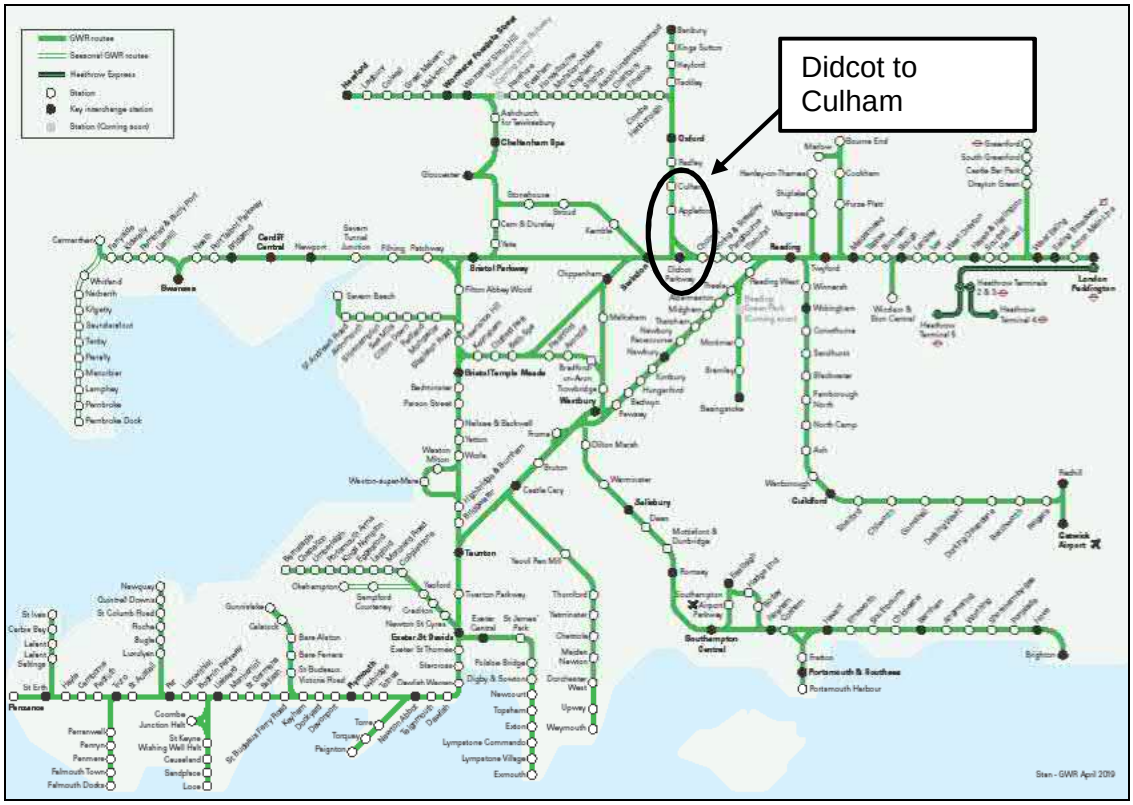


Figure 7: Great Western Railway Network Map

There are two railway stations located within the study extents: Appleford and Culham.

Culham Railway Station

Culham railway station is located approximately 0.5km to the west of Culham Science Centre and 2.4km to the east of Culham village. The station is unattended with limited facilities. The station car park has 8 spaces. Sheltered cycle parking with 26 storage spaces is also available.

Train services which currently serve Culham are infrequent, and summarised as follows based on GWR published timetables:

- Monday to Friday:
  - 2 early morning, and 1 late morning service
  - Half-hourly services during peak times between 07:30 and 09:00, and between 17:00 and 18:20
  - 1 midday and 1 mid-afternoon services
  - 2 evening services (19:30 – 21:00).

- Saturday – 2-hourly service between 07:30 and 10:00; 13:30 and 16:00; 19:30 – 22:00, with 2 early morning services.
- Sunday – No services.

Appleford Railway Station

Appleford railway station is located to the west of the Appleford village. The station is unattended with limited facilities, no car park or cycle storage facilities.

Train services which currently serve Appleford are infrequent, and summarised as follows based on GWR published timetables:

- Monday to Friday:
  - 3 early morning services
  - Half-hourly AM peak services between 07:30 and 09:00
  - 1 midday service
  - Half hourly service between 16:00 and 18:00
  - 2 evening services.
- Saturday – 2-hourly service between 09:00 and 21:00, with 2 early morning services.
- Sunday – No services.

Didcot Parkway Railway Station

Didcot Parkway Railway station is located approximately 1.35km to the south of the proposed new corridor and is a busy railway interchange station, connecting east-west services between London and Wales, with north-south services to Oxford and Banbury.

2.4 Key trip generators and local amenities

2.4.1 Key trip generators

The key trip generators in the vicinity of the proposed improvements include the following:

Local businesses and key places of interest

- Culham Railway Station
- Culham Science Centre
- Appleford Railway Station
- Southmead Industrial Estate, including Tesco Distribution Centre
- Trident Business Park
- RWE Didcot Power Station
- Hanson Ready-mixed Concrete, Sutton Courtenay
- FCC Environment, Sutton Courtenay – Waste transfer site
- Milton Park
- Didcot Parkway Railway Station

Residential areas within the study area

- Appleford Village
- North of Ladygrove Estate
- Foxhall Manor Park – Motor home park

Residential areas – outside of 1 km of study area

- Sutton Courtenay
- Culham Village

2.4.2 Future trip generators

Housing areas are planned for Great Western Park and Valley Park in south-east Didcot, Ladygrove North in north-east Didcot, north-east Wantage, and at other locations including Culham, Berinsfield and Dalton Barracks. This amounts to more than 22,000 houses planned for the local area. Major employment development is planned for within the two Enterprise Zones, Science Vale and Didcot Growth Accelerator, and elsewhere at Milton Park and Didcot Power Station, for Grove Airfield, Culham Science Centre and Harwell IBC. If these developments were allowed to progress without any improvements in the capacity of the transport networks, then the result would be likely to be unacceptable local congestion.

The Oxford Strategic Model (OSM) was developed using 2013 as the base conditions to assess the predicted traffic growth in the area. Model outputs suggest that in 2031, with all the planned housing development, there would be around a 25% traffic growth in the Didcot area in the morning and evening peaks, while in the inter-peak periods traffic growth could be 45%. The flows across the existing river crossing are also predicted to increase on Culham Bridge and Clifton Hampden Bridge by around 30% in the peak periods and around 40% in the inter-peak.

According to the Council planning website there are several proposed developments in the study area. These include the following:

- **Land to the north east of Didcot (P13/S0750/SCO, P15/S2902/O)**

  Proposed new and integrated neighbourhood to the northeast of Didcot of up to 1,880 homes, two new primary schools; a new secondary school; a new leisure/sports facility and sports pitches. Neighbourhood centre is also proposed to comprise of retail units, a mixed-use Public House/restaurant; a hotel; a new community hall; a residential Extra Care Housing facility; new areas of green infrastructure including amenity green space, allotments and children's play areas; and a supporting town-wide and site-specific associated infrastructure

- **Land at Culham Science Village Culham Oxfordshire (P17/S3719/SCO)**

  Proposed residential led mixed-use development at Culham Science Village.

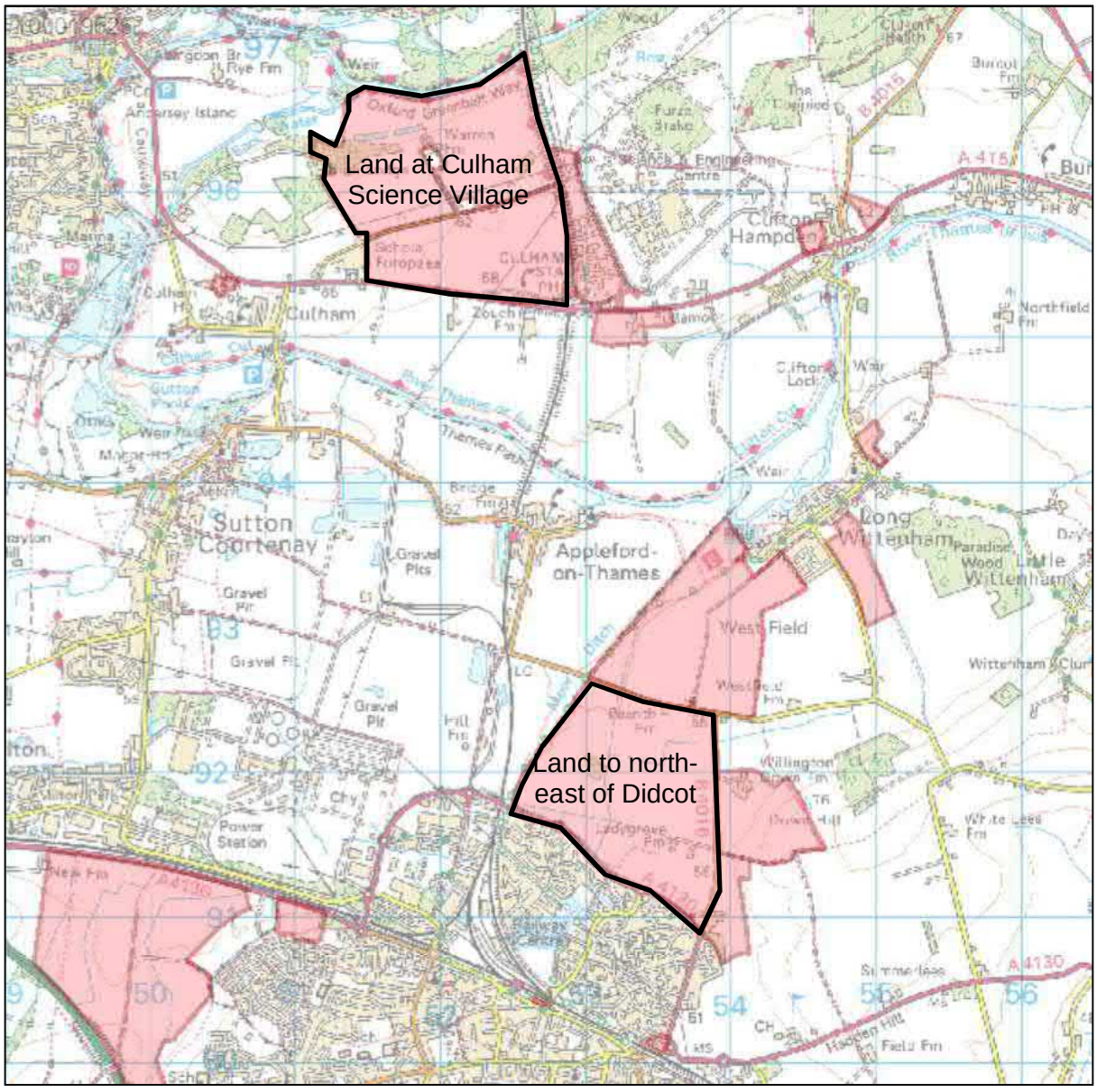


Figure 8 Oxfordshire County Council Planning Application Interactive Mapping

2.5 Site visit

A site visit was undertaken on the 10th November 2019, with Hein Pretorius (Highways Design Lead) and Karl Chan (Project Manager) between 09:00 and 15:00 during daylight. The site visit took the form of walking along the available pedestrian facilities along the proposed corridor at Appleford Level Crossing, Appleford Village and outside Culham Science Centre. The weather during the site visit was cold, with light showers.

The primary findings of the site visit were:

- **A4130 Ring Road** – Footways are provided on the south of the A4130 into Southmead Park. 1 pedestrian who appeared to be a worker in the industrial estate was seen walking on the footway, when passing by during the site visit.
- **A4130 Ring Road to Appleford Level Crossing/Appleford Sidings Access** – This route is signed on site as a public path from the A4130. A high volume of HGVs and refuse vehicles were seen along the route, making it appear an undesirable route for pedestrians, cyclist or equestrians.

- **Appleford Level Crossing –** The level crossing is operated by push button. To the east of the level crossing, surfacing is poor, and ponding was visible, as shown in Figure 9 . White lining has been provided on approach to the level crossing with vehicle stop lines and pedestrians waiting areas. To the west of the rail line, narrow footways are provided along Main Road towards Appleford Village, as shown in Figure 10. No NMUs were seen at the location during the site visit.



Figure 9 Appleford Level Crossing – west of railway line



Figure 10 Main Road, east of Appleford Level Crossing

- **Appleford Railway Station** – On the B4016, the footway currently terminates to the east of Appleford railway station. There is a pinch-point on approach to the station access, with the fencing protruding out from the access as shown in Figure 11. The access to the platform to the west of the railway line is via the main carriageway, with no dedicated pedestrian facilities. Warning signage and slow markings are provided to warn oncoming vehicles of pedestrians in the road or crossing, as shown in Figure 12.



Figure 11 Appleford Station, eastern access



Figure 12 Main Road, approach to Appleford Station

From the western access to the station platform, visibility is poor to the right with approaching vehicles coming around a bend as shown in Figure 14. There are no footways on either side of this entry along the B4015 as shown in Figure 13.



Figure 13 B4016, east of Appleford Station



Figure 14 Appleford Station, western access – view to east

- **Thames Path –** At Culham Village, the access to the Thames Path is signed and gated. To the west of Tollgate Road to Culham Lock, the route is surfaced, as shown in Figure 15. The route is well-used, and during the site visit a large group of over 10 people were seen walking the route. To the east towards Appleford and the proposed site of the scheme, the path is formed of a worn track as shown in Figure 16, and is similar throughout its length across the study area.



Figure 15 Thames Path, towards Culham Lock



Figure 16 Thames Path, east of Tollgate Road, Culham

- **A415 Abingdon Road, Culham –** Shared cycle-pedestrian footways are provided on the northern side of the carriageway along the length of Abingdon Road from Culham Village to Culham Science Centre. To the west of the private farm access, there is no physical separation between the footway and the carriageway as shown in Figure 17. White lining is provided along the footway to delineate its edge, however was observed to have worn away.

  To the east of the farm access, a grass verge segregation strip is provided between the footway and carriageway as shown in Figure 18 which is more suitable for the high-speed road with operating with a national speed limit. One cyclist was seen using the facilities during the site observations.



Figure 17 A415 Abingdon Road, shared use footways



Figure 18 A415 Abingdon Road, west of farm access

- **Culham Railway Station** – Pedestrian and cyclist provision on the western approach to Culham railway station are greater than that on the western approach from Culham Village, which is likely to suit demand. On the eastern approach, the cyclists are signed down the local road to the Railway Inn where there is limited cycle parking within the station. All sheltered cycle storage is on the eastern platform side.

  From the eastern approach shared cycle-pedestrian footways are provided from Culham Science Centre, along Station Road and terminating at the station entrance as shown in Figure 20.



Figure 19 Cycle parking at Culham Railway Station



Figure 20 Culham Railway Station – eastern approach

An uncontrolled crossing is provided near the station car park entrance on Station Road, as shown in Figure 22. On-street parking was observed adjacent to the crossing shown in Figure 21, limiting visibility of oncoming vehicles, however traffic volumes and speeds are low so is not considered a safety concern. A segregation strip is provided on the footways, delineated by white lining where there is no verge. At the time of the site visit, works were being carried out at the junction of A415 Abingdon Road and Station Road.



Figure 21 Station Road - Shared cycle-pedestrian footways



Figure 22 Station Road – Uncontrolled crossing at station car park entrance

2.6 Existing walking, cycling & horse-riding network facilities

2.6.1 Local facilities

The existing facilities for non-motorised users along the proposed highways corridor include the following:

- A4130 / Collett junction – existing narrow footways on the southern side of the carriageway for access into Southmead industrial park.
- A4130 Ring Road, Didcot to Appleford Level Crossing (See B-1 on Figure 23) – signed bridleway comprises of a single unmarked road for access to a local farm, Sutton Courtenay Sidings and the site of a waste recycling company. There are no dedicated facilities along this route, however traffic volumes are low. There is no street lighting.
- B4016 Main Road, Appleford – footways east of the over-bridge across the railway line at Appleford Station to Appleford village. No pedestrian, cyclist or equestrian facilities are provided across the railway bridge or west of the railway line.
- A415 Abingdon Road – shared cycle-pedestrian footways are currently provided on the northern side of the carriageway between Cullham Village and Culham Science Centre, with connection to entry of Culham railway station car park.

2.6.2 Local routes and strategic networks

The following pedestrian, cyclist and equestrian routes within the study extents have been identified, which are of relevance to the Assessment and are also shown on Figure 23.

- **B-1**: North-south bridleway between the A4130 Ring Road at Didcot to the Appleford Level Crossing.
- **B-2:** East-west bridleway between Appleford and Long Witthenham. This route is rural and runs predominantly along the border fence lines of fields through the area. The route joins to the surfaced and signed National Cycle Route (NCR) 5 outside of Long Wittenham.
- **RB-1**: East-west restricted byway between Appleford Level Crossing and local farm, for use by NMUs including horse-riders only. This route is surfaced, wide and in a rural location, with low traffic volumes. No street lighting.
- **RB-2**: East-west restricted byway along Thames Lane and promoted as part of the Green Belt Way.
- **FP-1**: North-south cycle-footway between Ladygrove Estate towards Long Wittenham. Surfaced and signed route, with access stairs from the A4130 and level, gated access at the B4016 to the east of Appleford.
- **FP-2**: East-west footpath between Appleford Station and Sutton Courtenay. Facilities provided along this route are unclear, with narrow highways verges and no footways provided on the B4016 to the east of Appleford railway station
- **FP-3**: Thames Path – Signed and well-advertised National Trail following the River Thames. At this study location the route comprises of a narrow-worn track running through fields. There are no dedicated facilities or street lighting and will be used for leisure purposes.
- Based on the British Horse Society Equestrian Access Mapping, there are no official rides or trails within the study area.

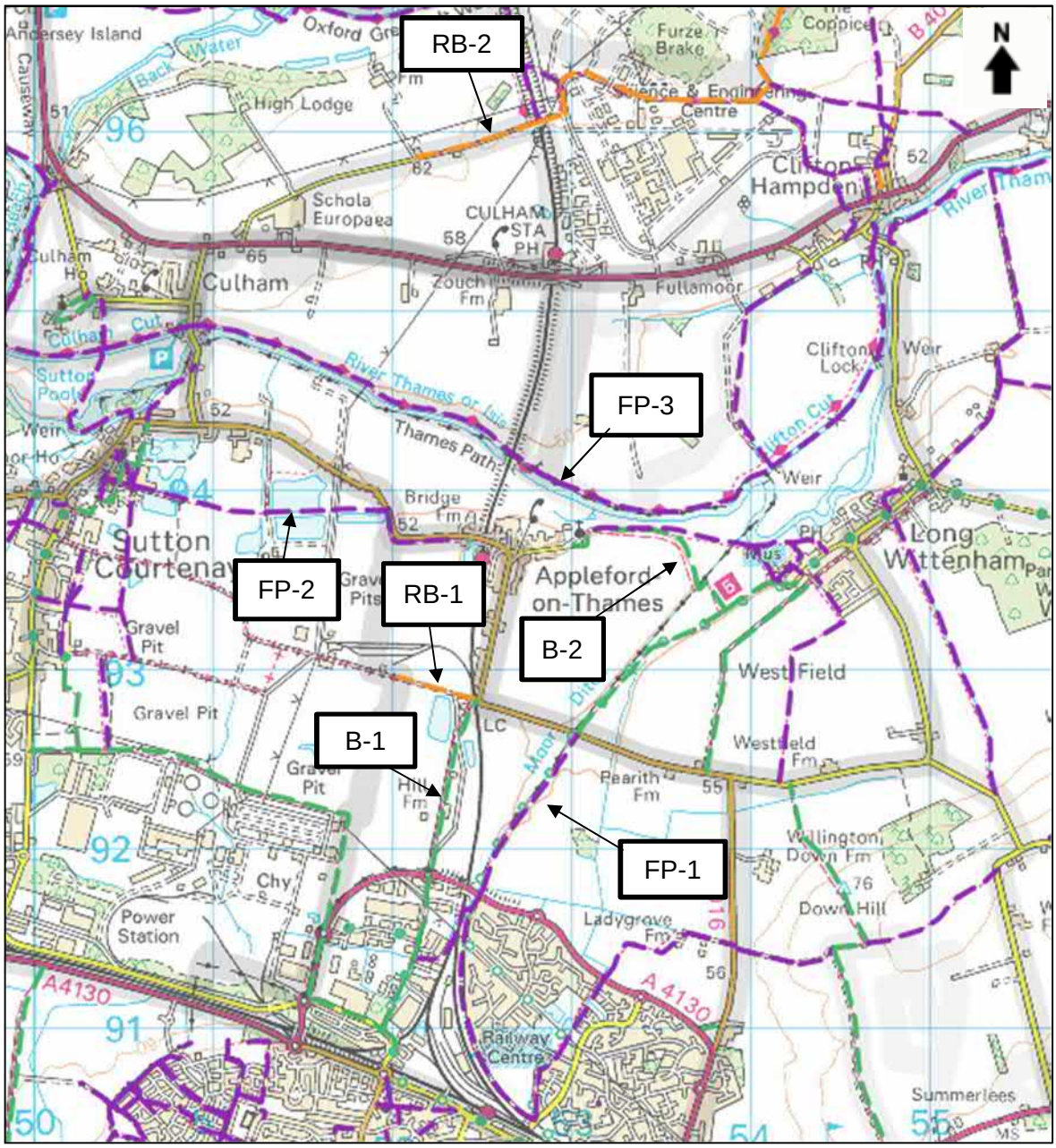


Figure 23 Extract of OCC Public Right of Way Map

2.6.3 National Cycle Route

National Cycle Network (NCN) Route 5 is the closest regional route to the proposed scheme and is a long-distance route which connects Reading and Holyhead via Oxford, Stratford-upon-Avon, Bromsgrove, Birmingham, Stoke-on-Trent, Chester, Colwyn Bay and Bangor. From Didcot, the NCR5 branches in two directions from Cow Lane located to the west of Didcot Railway Station:

- One of the routes heads north-west through Ladygrove Estate and crosses the A4130 just west of the railway line. The route then continues in a north-easterly direction alongside Moor Ditch towards Long Whittenham.
- The other route, heads north-west through Southmead Industrial Estate on road and continues along a segregated track to Sutton, Sutton Courtenay and on to Abingdon.

The NCN 5 also links with NCN 544 on Cow Lane and continues to Wantage.

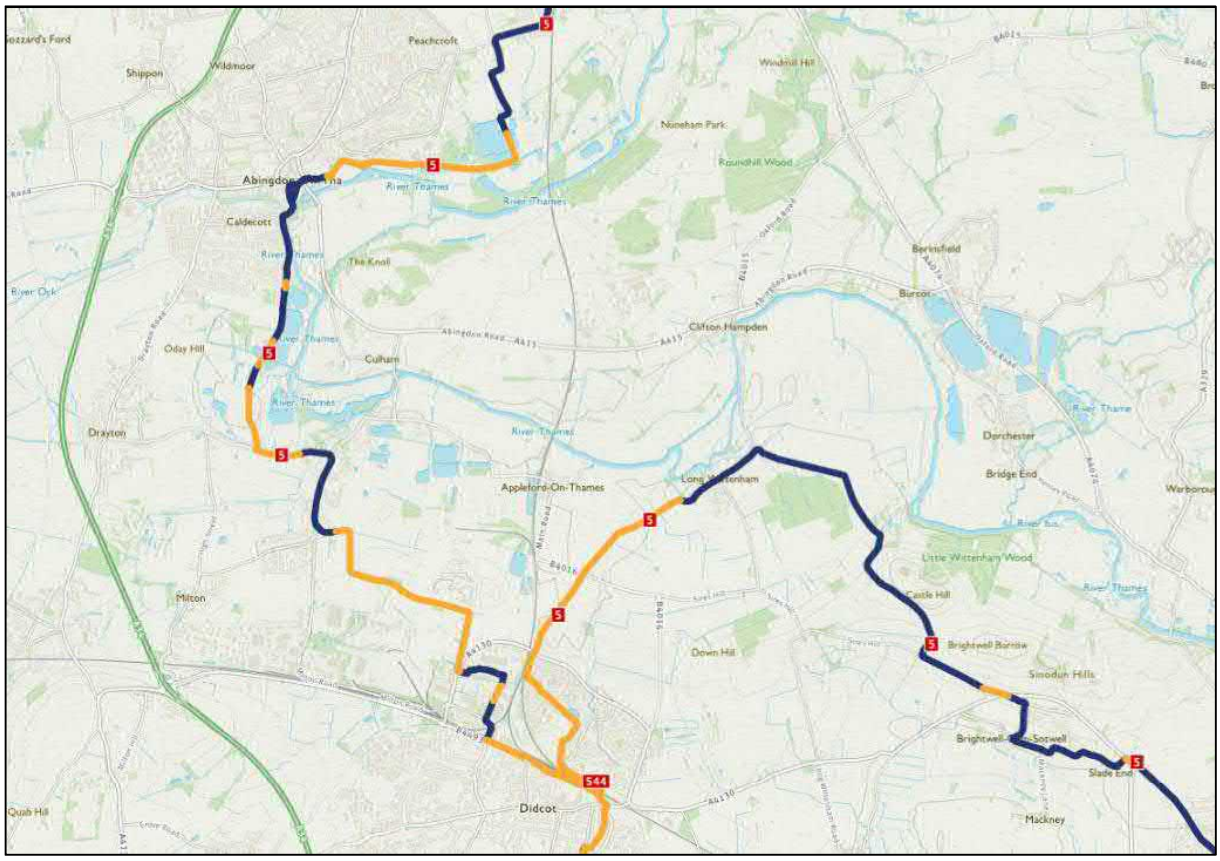


Figure 24: Extract of Sustrans National Cycle Network Map

2.7 Walking, cycling & horse-riding survey data

AECOM commissioned Traffic Data Centre (TDC) to undertake a 7-day, 24-hour video survey in November 2019 to collect data on walking, cycling and horse-riding movements at four locations within the scheme extents. This data was collected in order to provide a quantitative understanding of walking, cycling and horse-riding demand and understand the use of junctions in the scheme.

The surveys were undertaken Monday 11th to Sunday 17th November 2019. The surveys were undertaken using video survey to cover walking, cycling and horse-riding movements through the junctions and surrounding area. The count locations are shown in Table 5 below. A map of these locations is included in **Appendix C**.

Survey ID	Location	Survey Type	Grid Reference
RIV-01	Culham Railway Station Entrance	Classified NMU OD count	E: 452766 N: 195252
RIV-02	Station Road and Abingdon Road Junction	Classified NMU OD count	E: 452685 N: 195206
RIV-03	Abingdon Road, Culham	ATC speed survey	
RIV-04	Thames Path at Tollgate Road, Culham	Classified NMU OD count	E: 450874 N: 194916
RIV-05	B4016 Road, Appleford	ATC speed survey	
RIV-06	Appleford Railway Station	Classified NMU OD count	E: 452528 N: 193726

Survey ID	Location	Survey Type	Grid Reference
RIV-07	Appleford Level Crossing	Classified NMU OD count	E: 452394 N: 191864
RIV-08	A4130 and Collett Road junction	Classified NMU OD count	E:452208 N: 191864

Table 5: Locations for WCHAR surveys

2.7.1 ATC speed surveys

Table 6 provides a summary of the average and 85%ile speeds recorded on the B4016, Appleford and the A415 Abingdon Road. Surveys suggest that typical vehicles are travelling below the speed limit on both roads, with an average of speed of 48mph on Abingdon Road in Culham and 38mph on the B4016 in Appleford.

Survey ID	Location	Direction	Speed limit (mph)	Average speed (mph)	85%ile speed (mph)
RIV-03	Abingdon Road, Culham	Eastbound	60mph	47.8	54.7
		Westbound	60mph	48.6	55.2
RIV-05	B4016 Road, Appleford	Eastbound	60mph	37.9	43.5
		Westbound	60mph	38.3	43.6

Table 6: Surveyed average and 85%ile speeds

Table 7 provides a summary of the total number of vehicles recorded along Abingdon Road and the B4016 during the survey period, and their classification. Surveys suggests that the majority of vehicles currently using the two roads are private cars, comprising of 82- 83% of total traffic recorded.

Survey ID	Location	Total 2-way weekly traffic	Vehicle classification (%)					
			Cycles	Motorcycle	Car	LGV	HGV	Buses
RIV-03	Abingdon Road, Culham	71389	0.11	0.86	82.77	15.29	0.57	0.40
RIV-05	B4016 Road, Appleford	25306	0.73	0.52	81.80	16.54	0.26	0.14

Table 7 Surveyed 2-way traffic flow and vehicle classification

2.7.2 NMU surveys

The total pedestrian, cyclist and equestrian movements observed over the survey periods have been marked on a location plan for each site. The full survey counts are provided in **Appendix D**.

No equestrians or wheelchair users were observed at any of the survey locations, over the duration of the survey.

RIV-01: Culham Railway Station Entrance

The number of NMUs recorded at location are low, with an average of 41 NMU trips on a weekday and 7 during a weekend day. There is little demand for this route providing access only to the railway station with infrequent services and the local pub.

The total NMU movements observed over the survey period is shown in Figure 24.

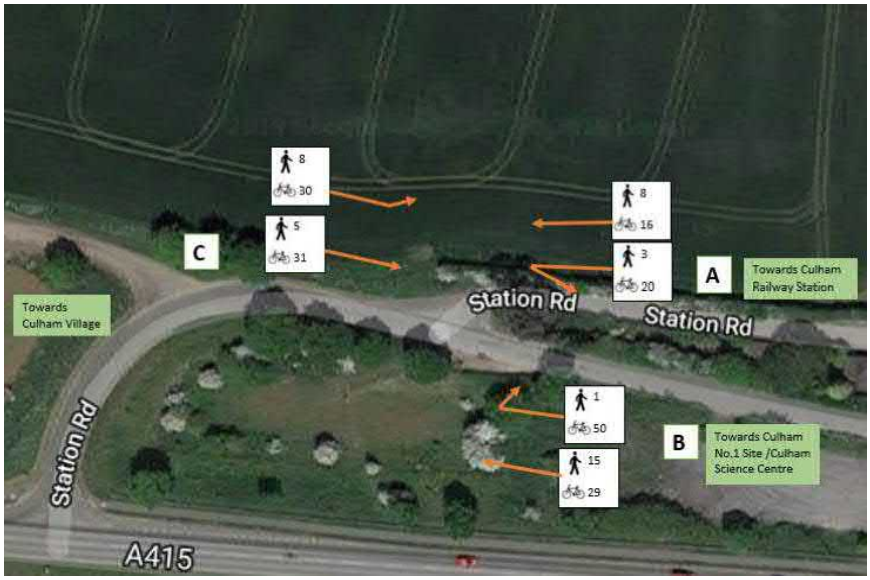


Figure 25 RIV-01: Culham Railway Station Entrance – Total NMUs observed (7-day survey period)

RIV-02: Station Road and Abingdon Road Junction

The majority of the NMU trips recorded at this location (947 cycle trips) involved cyclists travelling straight along the A415 Abingdon Road, of which 92% were using the existing shared use footways.

The trips are made mainly by commuters, with the daily average trips on the weekend (52 trips) much lower than on a weekday (201 trips). The greatest hourly number of trips record on weekdays between 8 and 9am, and between 4:30 and 5:30pm.

The total NMU movements observed over the survey period is shown in Figure 25.

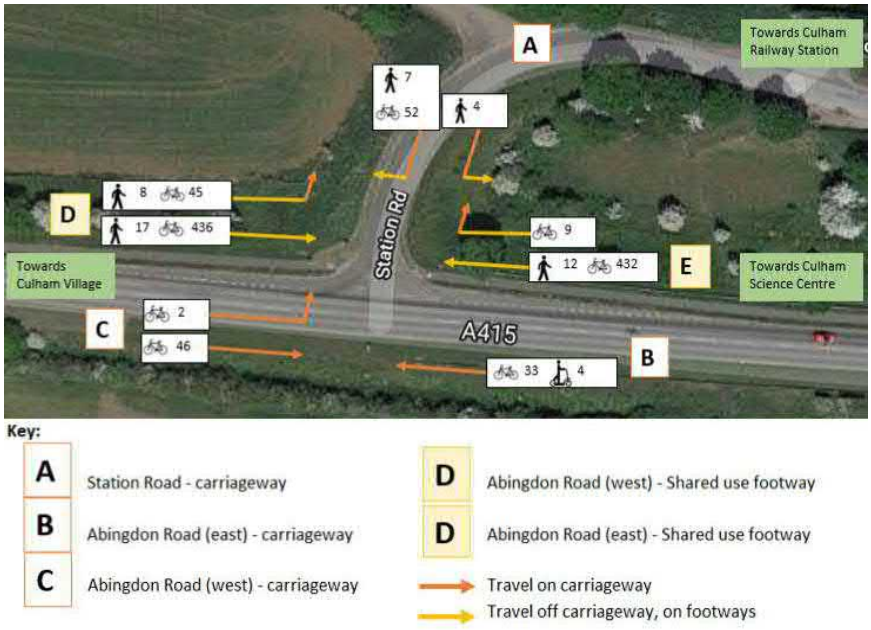


Figure 26 RIV-02 Station Road and Abingdon Road Junction – Total NMUs observed (7-day survey)

RIV-04: Thames Path at Tollgate Road, Culham

The number of NMUs recorded at location during the weekend were greater than on weekdays, an average of 152 NMU trips during the weekend days in comparison to an average of 35 on a weekday showing that this route is used predominately for leisure trips.

The total NMU movements observed over the survey period is shown in Figure 27.

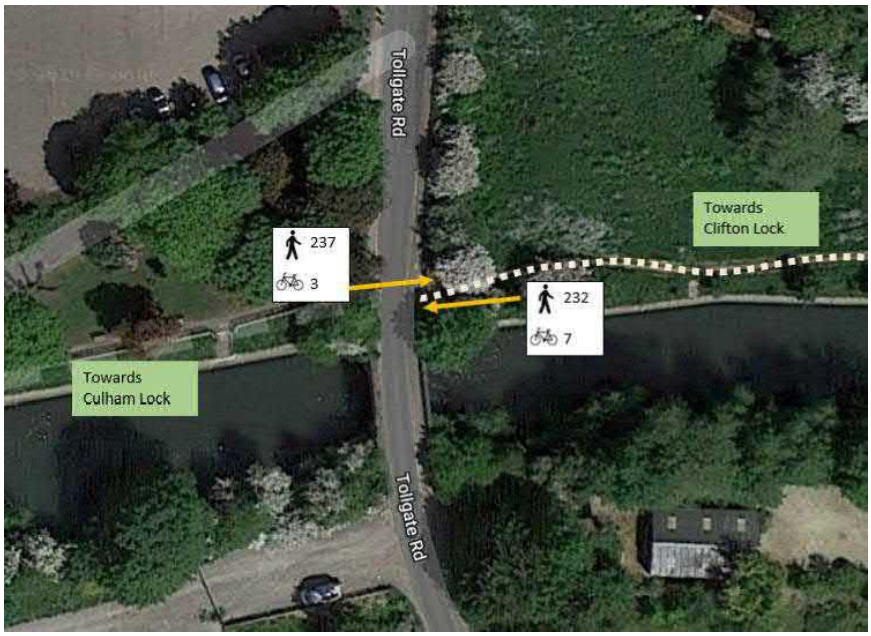


Figure 27 RIV-04 Thames Path at Tollgate Road – Total NMUs observed (7-day survey period)

RIV-06: Appleford Railway Station

56% of all NMU trips observed at this location were by cyclists. Of those trips, 304 involved cyclists travelling straight across the railway bridge along the B4016. Both platforms at Appleford station are used, with pedestrians observed to walk across the railway bridge in the carriageway, as no footways are provided at this location.

On average, a greater number of NMU trips at this location take place during a weekend day with an average of 111 trips compared to an average of 75 on a weekday.

The total NMU movements observed over the survey period is shown in Figure 28.

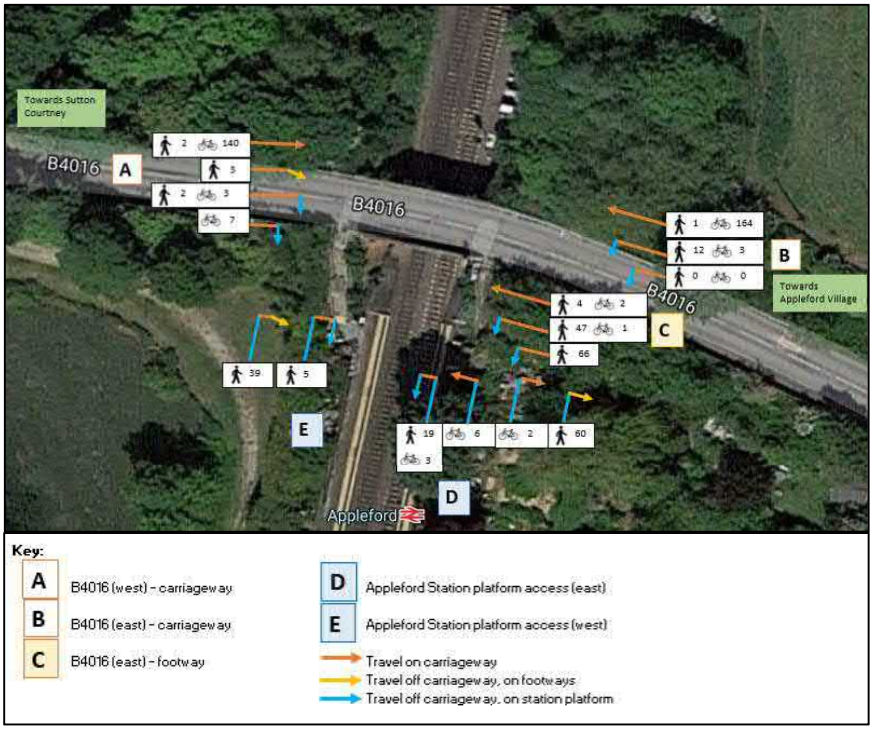


Figure 28 RIV-06 Appleford Railway Station – Total NMUs observed (7-day survey period)

RIV-07: Appleford Level Crossing

There is some observed usage of the Appleford Level crossing, although number of trips across this were relatively low.

The majority of the trips at this location were by cyclists travelling along the B4016 Main Road, without passing the level crossing.

On average the total daily NMUs were greater during the weekend with an average of 115 trips in comparison to 41 on the weekdays, suggesting that most of the trips are for leisure.

The total NMU movements observed over the survey period is shown in Figure 28.

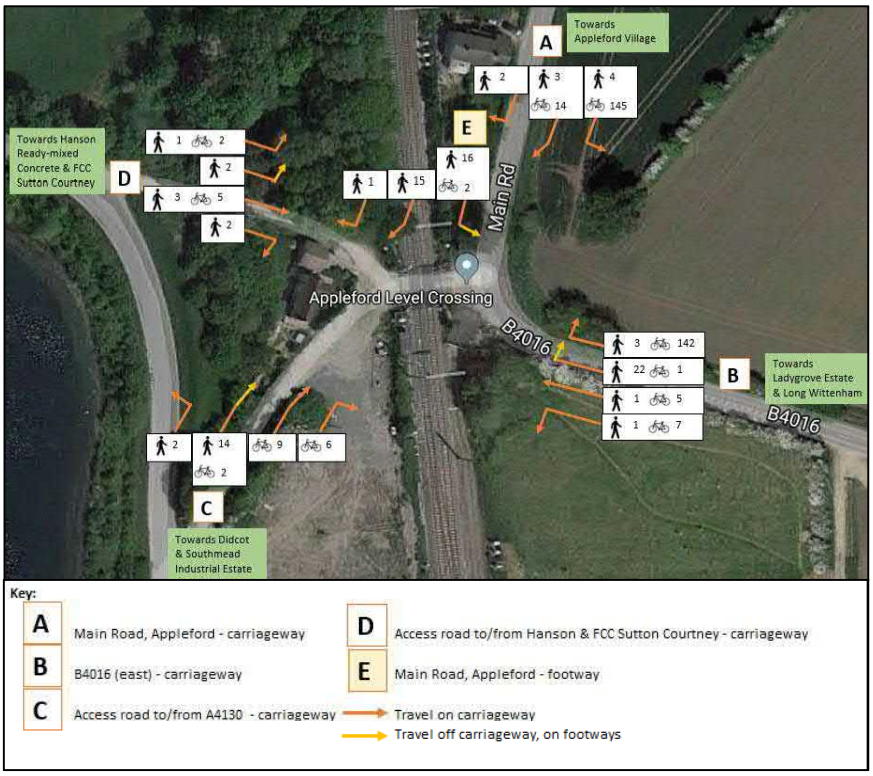


Figure 29 RIV-07 Appleford Level Crossing – Total NMUs observed (7-day survey period)

RIV-08: A4130 and Collett junction

Daily totals of NMUs observed at this junction were relatively even across the full survey week, with marginally higher numbers recorded on a weekend day with an average of 92 NMU trips in comparison to 64 on a weekday. On a weekday, hourly NMUs trips peaked at 7-8am suggesting some of these trips may be related to travel to work although are few.

Cyclists travelling straight across the junction along A4130 in both directions were seen travelling along the carriageway, whereas only a few were seen on the footway. On the eastern side of the junction, the footways are well-used by cyclists travelling between Collett and the A4130 (east) towards Ladygrove Estate. The total NMU movements observed over the survey period is shown in Figure 30.

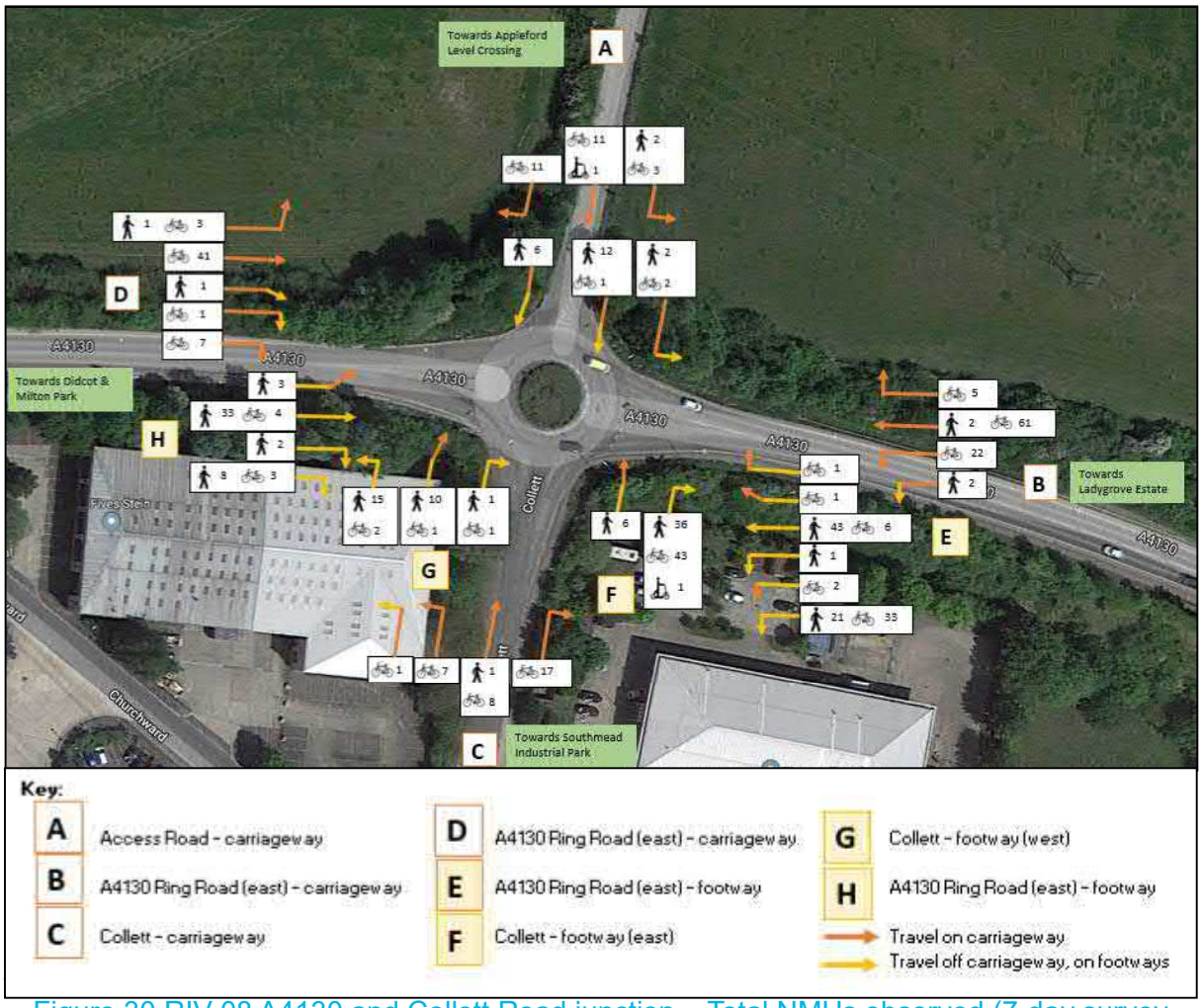


Figure 30 RIV-08 A4130 and Collett Road junction – Total NMUs observed (7-day survey period)

2.8 Consultation with key stakeholders and local user groups

In order to be able to incorporate, where appropriate, the comments and views of local people on the preferred alignments into the next stage of the scheme design process of the HIF1 package of schemes an online public consultation was undertaken. This commenced on 20th March and finished on 30th April 2020. Full details of the consultation are available online: www.oxfordshire.gov.uk/didcotupdate. The consultation plans shared for the Didcot to Culham River Crossing scheme are included in Appendix F. It is noted that due to the timing of the consultation and aim to provide stakeholders with the most-up to date designs, this component of the Assessment has been carried out based on updated AECOM feasibility design drawings (rev P01).

As a result of Government restrictions on social distancing in response to the COVID-19 pandemic, it was not possible to hold the five public exhibitions that were scheduled for the last two weeks of March 2020. Due to the very tight timescales imposed by Government with respect to the terms of the funding, it was necessary to continue with an online consultation in order to avoid delay to the project programme.

However, to address this OCC undertook additional measures to ensure that as many people as possible were aware of the consultation and were able to access the information. This included sending letters to approximately 22,000 residences in the area, using an innovative virtual exhibition room with live chat function, promoting telephone numbers of officers available to answer questions, and sending printed versions of the materials to those without

internet access. This was all in addition to the standard means of engagement (newspaper adverts, press releases, electronic mailouts, OCC website etc).

Additionally, targeted questionnaires were sent out to local government departments and representatives of local user groups, seeking views on walking, cycling, and horse-riding elements of the infrastructure proposals. It should be noted that this scheme was consulted alongside the three other Didcot HIF highways schemes. Later in the year, it is intended that stakeholder workshops will be held to invite further input to the design of the walking, cycling, and horse-riding provision in all four proposed schemes.

Overall, 24 questionnaires were sent out to a list of identified key stakeholders and user groups and included representatives from the following:

- OCC Active and Healthy Travel
- OCC Public Rights of Way
- Didcot Garden Town Project Manager
- Harwell Campus Bicycle Users Group (HarBUG)
- Sustrans Thames Valley
- Cyclox / Cycling UK
- Culham Science Centre Bicycle Users Group (CulBUG)
- Milton Park Bike Users' Group (MilBUG)
- Oxfordshire Cycling Network
- Ramblers Association
- Ramblers Association Oxon (& Oxford Fieldpaths Society)
- British Horse Society
- Oxfordshire Association for the Blind
- Oxfordshire Unlimited
- Guide Dogs
- Oxfordshire Transport & Access Group (OXTRAG)

In total, seven replies were received. In general, all respondees supported walking and cycling improvements, even if this means less space for other road traffic.

Table 8 provides a summary of the stakeholder responses relating to the proposed Didcot to Culham River Crossing received during the consultation. A copy of the questionnaire and the full responses received are included in **Appendix E.**

Consultee	Summary of Response
OCC Public Health	• OCC Public Health agreed that the proposed scheme would encourage walking and cycling. However, it is suggested that suitable complementary measures to improve pedestrian and cycle conditions are needed in decongested area to ensure that the reduction in congestion by introducing the new highways will not lead to increase in demand for private vehicle use. • Strong support was expressed for the full segregation and setting back of walking and cycling facilities.

Consultee	Summary of Response
	• Concern was expressed relating to the proposed tangential roundabout design which may result in high vehicle speeds at the roundabout and safety concerns for pedestrians using the uncontrolled crossings on the roundabout. • Suggestion was made to consider a radial roundabout layout, and further measures to reduce traffic speeds and improve the pedestrian environment at the roundabouts including the consideration of green infrastructure (planting).
OCC Public Rights of Way	• OCC PRoW were positive about the proposals but noted that the improvements for pedestrians are relatively close to traffic and has not included creation of alternative traffic free routes well away from carriageways and within local settlements. • It was also noted that complementary cycle routes within settlements must be provided to equal standard and traffic free where possible to encourage less confident cyclists to use their bikes. • OCC PRoW made the following suggestions: – Provide a cycle-only corridor for cyclists instead of shared use facilities to make the cycle-commuting faster and safe, as pedestrian use is likely to be low given the length of the corridor. – Install a barrier or sign to prevent unlawful cycle access to the River Thames National Trail. – Further consideration for equestrian provision and onwards connections, by discussion with local and national representative of the British Horse Society and better understanding of their needs. – Formal consultation to be carried out with the statutory Oxfordshire Countryside Access Forum.
Harwell Campus Bicycle Users Group (HarBUG)	• HarBUG were positive about the improvements and agreed in part that they would encourage walking and cycling however noted that pedestrian facilities along the route would only be used by people for short distance as a means to get to places but it would generally be an unpleasant environment and unlikely used for leisure. • It was noted that cycling will be encouraged by the proposals, only if direct and convenient connections to existing and new Didcot housing developments are provided and that all these routes are integrated into the Science Vale Cycling Network. • Concern was raised for how the segregated cycle path along the route will be access from Didcot, Ladygrove and the new Didcot North East development, as there is currently only a pedestrian path from the Northern Perimeter Road and Ladygrove Bridge, and also the cycle ramp on the railway footbridge is unusable due to recent railways works. • HarBUG made the following suggestions to improve the provision for walkers, cyclists and equestrians: – Install a properly designed Bike Wheeling Ramp on to the railway footbridge between Ladygrove Estate to Southmead Industrial Estate to enable cycle access across the railway and to the new corridor. – Construct a new shared use path from Moor Ditch Path (Sustrans route 5) junction with B4016 to Appleford Level Crossing. From the crossing, provide a ramp up to a new unsignalized crossing on the new carriageway and a ramp down on the other side to maintain the existing right of way.

Consultee	Summary of Response
	– Reconsideration of the design of the proposed crossings at the roundabouts, including the possibility of introducing raised parallel crossings, to improve safety of pedestrians and cyclists.
Milton Park Bike Users' Group (MilBUG)	• MilBUG were positive about the proposed walking and cycling improvements, however mentioned that cycle facilities must have good quality, safe and convenient onwards connections to places of local interest. • A number of suggestions were also raised: – Good segregation between footways and the carriageway to improve walking environment, including consideration for planting/landscaping – Raised parallel crossings or signalised crossings with sensor equipment on access roads to provide cycle priority at crossings – Improved connection to the northern perimeter road • Upgrade of connecting routes including across Ladygrove Bridge, at the Northern Perimeter Road, from the north of Milton Park to the new corridor and also towards Sutton Courtenay across Kelart's Field, and integration of all new routes into the Science Vale Network.
Cyclox	• In general, Cycling UK were welcoming of the walking and cycling improvements proposed as part of the scheme to encourage and allow people to walk and cycle more often, however they had some concerns on the proposals in general and whether the schemes were promoting private car usage rather than walking and cycling. • The following comments/concerns were raised on the proposals: – For safety and convenience, compact roundabouts as referred to in DMRB CD116 should be provided rather than "normal" style roundabouts. – Fully signalised or grade-separated crossing facilities should be provided based on demand and speeds along the new highways. – Staggered crossing should be avoided for convenience and conformity in use. – Pedestrian and cycling provision on the roundabout to the north of Southmead Industrial estate is incomplete, and active travel provision should be considered on all arms. • Cycling UK also queried the chosen alignment of the corridor and whether a connectivity study has been carried out to assess the options, as their benefits to cycling and walking.
Oxfordshire Cycling Network (OCN)	• OCN were positive about the improvements and agreed in part that they would encourage walking and cycling however noted that walking will likely be for 'function' rather than pleasure due to the distances involved and that the new highways will also likely increase the attractiveness of driving. • OCN supported the proposals and agreed that the specification of the route and crossings was good, however suggested that the following should be considered: – Proposals will increase traffic on the A415 - The existing quality of the A415 cycle path is not great and should be improved as part of the scheme. – Connections to Didcot Parkway, Ladygrove and NE Didcot need to be clear and good quality

Consultee	Summary of Response
	– Change of unsignalised crossings or Toucan crossings to parallel crossings where safe to do so. – Closure of Sutton bridge to motor traffic.
Oxfordshire Transport & Access Group (OXTRAG)	• OXTRAG welcomes the improvements for encourage people to walk and cycle more often. • Agree with the walking and cycling facilities proposed and are pleased that there will be an off-carriageway cycleway, however it was suggested that: – A cycleway or cycle lanes should also be provided along the A415 between this road and the junction with the proposed Clifton Hampden Bypass. – Depending on demand, provide a wider verge or footway and designate it as a bridleway.

Table 8 Summary of stakeholder responses to consultation

3. User opportunities

The opportunities highlighted below are deemed to be relevant to the highway scheme and should be considered by the design team leader throughout the progression of the highway scheme design in addition to any further opportunities that may arise through the ongoing development of the design phases.

It shall be noted that opportunities labelled “KS” have been identified through key stakeholder consultation carried out in April 2020 and have only been raised following the completion of the feasibility stage design due to the programme. Additional opportunities identified are to be reviewed by designers at the next stage of the design and to be included in the next stage WCHAR review.

3.1 General

Opportunity 1:

Provide an additional link to the proposed Science Vale Cycle Network, offering a more direct alternative to the current proposed route. Consistent style and approach to wayfinding signage proposed across this network shall be provided at connections to the proposed Didcot to Culham River Crossing corridor.

Opportunity 2:

Review Garden Line proposals for a new river crossing for the proposed cycle route and provide this as part of the proposed scheme. Upgrade cycle route from Ladygrove Estate at access to NCN 5 on the A4130, to provide new cycle connection to the new corridor.

Opportunity KS-1:

Consideration to be given to introduction of raised parallel crossings at junction where safe to do so, to give priority to pedestrians and cyclists.

3.2 Strategic opportunities

Opportunity 3:

Provide a missing connection to the facilities along Thames Path, providing a pedestrian/cycle route between Didcot/Culham to the Thames Path.

Opportunity 4:

Provide infrastructure along the corridor to support the Council’s ambition to provide a direct Didcot to Culham Science Centre bus service. Consideration to be given to providing/upgrading bus stop which may be served by a new service route (Appleford /Culham)

Opportunity 5:

Provide dedicated NMU facilities to the west of Appleford Station towards Sutton Courtenay, providing the missing footway link along a route. This route is currently a signed route along the highways verge but not accessible for all types of users.

3.3 Pedestrian specific opportunities

Opportunity 6:

Appleford railway station pedestrian access – Provide an extension of the footways on the B4016 at Appleford railway station across the railway bridge, connecting the existing footway to the east of the bridge and the western platform access to address the current missing footway link. Improvements of visibility of approaching vehicles and traffic calming measures shall also be considered to improve pedestrian accessibility at the location.

Opportunity KS-2:

Retain the existing public right of way at Appleford Level Crossing to land to the west of new highway, by considering provision of a new shared use path from Moor Ditch Path junction with the B4016 to Appleford Crossing, and access ramps and a new unsignalised crossing on the new carriageway.

Opportunity KS-3:

A4130 / Collett Roundabout – Introduction of pedestrian (and cyclist) facilities across all arms of the roundabout to improve accessibility and safety of pedestrians at the junction.

3.4 Cyclist specific opportunities

Opportunity 8:

Provision of additional cycle stands at Culham Science Centre and Culham Station, to further encourage cycling as a means to travel to work.

Opportunity 9:

Improve safety and accessibility to the NCR 5 on the B4016 to the east of Appleford Level Crossing. Consideration to be given to providing cycle crossing facilities and introducing traffic calming measures on approach.

Opportunity 10:

A4130/Milton Road/Basil Hill Road – Existing off-carriageway cycle facilities are provided between Milton Road and Basil Hill Road, however this junction has been identified as a cluster site due to the number of collisions reported over the 5-year study period involving vehicles failing to give way to cyclists negotiating the roundabout. Consideration shall be made to providing improvements at the junction to improve the attractiveness of the off-carriageway facilities to cyclists or improving warning and visibility of cyclists to approaching vehicles.

Opportunity KS-4:

Provide an improved and clearer connection from Ladygrove Estate towards Southmead Industrial Estate, including the consideration for installing a properly designed Bike Wheeling Ramp at the railway footbridge to enable cycle access across the railway.

Opportunity KS-5:

Prevention of unlawful cycle access to the River Thames Path by improved access treatment and signage.

Opportunity KS-6:

A415 Cycle Path – Improvement of the existing shared use cycle facilities along the A415 to meet demand.

Opportunity KS-7:

Upgrade of connecting routes to /from the new corridor including across Ladygrove Bridge, at the Northern Perimeter Road, from the north of Milton Park to the new corridor and also towards Sutton Cortney. Integration of all new routes into the Science Vale Network, with clear wayfinding signage.

3.5 Equestrian specific opportunities

Liaison with key stakeholders and local user groups has not identified any key equestrian desire lines or demand within the scheme study area and therefore no equestrian opportunities have been identified for consideration.

British Horse Society (BHS) have been included as part of the consultation, however, did not respond within the consultation period.

Opportunity KS-8:

To consult with BHS during the development of the design to ensure that equestrian demand is catered for, and future aspirations for equestrian routes have been considered as part of the design.

4. Walking, Cycling and Horse-Riding Assessment Team Statement

As Lead Assessor, I confirm that this Walking, Cycling and Horse-Riding Assessment Report has been compiled in accordance with DMRB GG 142 and thus contains the appropriate information for the wider design team. The Walking, Cycling and Horse-Riding Assessment was undertaken by the following Assessment and Review Team:

Walking, Cycling and Horse-Riding Lead Assessor

Name: Andy Blanchard Signed:

Position: Associate Director Date: 15/05/2020

Company: AECOM

Walking, Cycling and Horse-Riding Assessor

Name: Kin-Yun Lo Signed:

Position: Senior Engineer Date: 15/05/2020

Company: AECOM

As design team leader I confirm that the assessment has been undertaken at the appropriate stage of scheme development and that the wider design team has been involved in the process.

I confirm that in my professional opinion the appointed Lead Assessor has the appropriate experience for the role making reference to the expected competencies contained in GG 142.

Design Team Leader

Name: Hein Pretorius Signed:

Position: Principal Engineer Date: 15/05/2020

Company: AECOM

Appendix A – Feasibility design

(Note: This Assessment reviews the Atkins feasibility design which was the latest design provided at the time of the assessment in December 2019)



Didcot Garden Town HIF1 - Clifton Hampden Bypass

Walking, Cycling and Horse-Riding Assessment Report

Oxfordshire County Council

Project reference: Didcot Garden Town HIF1
Project number: 60606782

May 2020

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Kin-Yun Lo Senior Engineer	Andy Blanchard Associate Director	Shaun Wilkinson Technical Director	Grant Paxton Principal Engineer

Revision History

Revision	Revision date	Details	Authorized	Name	Position
P01	18/12/2019	DRAFT	Y	Grant Paxton	Project Manager
P02	26/05/2020	FINAL	Y	Grant Paxton	Project Manager

Distribution List

# Hard Copies	PDF Required	Association / Company Name
-	Y	Aron Wisdom, Oxfordshire County Council
-	Y	Will Pedley, Oxfordshire County Council
-	Y	Harry Davis, Oxfordshire County Council

Prepared for:

Oxfordshire County Council
County Hall
New Road
Oxford
OX1 1ND

Prepared by:

Kin-Yun Lo
Senior Engineer, Transportation
M: T +44 7990 074297
E: kinyun.lo@aecom.com

AECOM Infrastructure & Environnent UK Limited
AECOM House
63-77 Victoria Street
St Albans
Hertfordshire AL1 3ER
United Kingdom

T: +44(0)1727 535000
aecom.com

© 2020 AECOM Infrastructure & Environment UK Limited. All Rights Reserved.

This document has been prepared by AECOM Infrastructure & Environment UK Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

Executive summary 6
1. Background and highways scheme description 7
1.1 Background 7
1.2 Proposed highway scheme 7
1.3 WCHAR study area 8
2. WCHAR assessment 10
2.1 Assessment of walking, cycling and horse-riding policies and strategies 10
2.2 Collision data 12
2.3 Public transport services and interchange information 14
2.4 Key trip generators and local amenities 16
2.5 Site visit 18
2.6 Existing walking, cycling & horse-riding network facilities 20
2.7 Walking, cycling & horse-riding survey data 22
2.8 Consultation with key stakeholders and local user groups 27
3. User opportunities 31
3.1 General 31
3.2 Strategic opportunities 31
3.3 Pedestrian specific opportunities 32
3.4 Cyclist specific opportunities 32
3.5 Equestrian specific opportunities 33
4. Walking, Cycling and Horse-Riding Assessment Team Statement 34
Appendix A – Feasibility design 35
Appendix B - Collision data and balloon diagram 36
Appendix C – WCHAR survey locations 37
Appendix D – WCHAR survey data 38
Appendix E – Stakeholder consultation records 39
Appendix F – Stakeholder consultation: Indicative scheme plans 40

Figures

Figure 1: Site Location Plan 7
Figure 2: Study area location plan for the WCHAR 9
Figure 3 Proposed Science Vale Cycle Network route map 10
Figure 4 Extract of South Oxfordshire Zone network map 15
Figure 5: Great Western Railway network map 16
Figure 6 Oxfordshire County Council Planning application interactive mapping 17
Figure 7 A415 Abingdon Road, shared use footways 18
Figure 8 A415 Abingdon Road, west of farm access 18
Figure 9 Cycle parking at Culham Railway Station 19
Figure 10 Culham Railway Station – eastern approach 19
Figure 11 Station Road - Shared cycle-pedestrian footways 19
Figure 12 Station Road – uncontrolled crossing 19
Figure 13 Extract of OCC Public Right of Way Map 21
Figure 14: Extract of Sustrans National Cycle Network Map 22
Figure 15 CHB-02 B4015 Oxford Road/The Coppice House – Total NMUs observed (7-day survey period) 24
Figure 16 CHB-03 Footpath north of Clifton Hampden – Total NMUs observed (3-day survey period) 24
Figure 17 CHB-05 Footpath at A415 Abingdon Road – Total NMUs observed (3-day survey period) 25
Figure 18 CHB-06 Culham Science Centre, Main Avenue – Total NMUs observed (7-day survey period) 26
Figure 19 CHB-07 Station Road (east) junction on A415 Abingdon Road– Total NMUs observed (7-day survey period) 27

Tables

Table 1: Total collisions by severity 12
Table 2: Total casualties by severity 13
Table 3 Collision summary by location 14
Table 4: Bus stops and bus route - Culham and Clifton Hampden 15
Table 5: Locations for WCHAR surveys 23
Table 6: Surveyed average and 85%ile speeds 23
Table 7 Surveyed 2-way traffic flow and vehicle classification 23
Table 8 Summary of stakeholder responses to consultation 28

Executive summary

This report outlines the Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) prepared for Oxfordshire County Council for the proposed Clifton Hampden scheme. This scheme is one of four that comprise the HIF1 Didcot Garden Town infrastructure project. Whilst the process set out in the Design Manual for Roads and Bridges (DMRB) GG 142 document has generally been followed in preparing this WCHAR Report, as this scheme is not a trunk road some alterations have been made to reflect this, such as a reduced study area.

The aims of this study are to gain an understanding of all relevant existing facilities for pedestrians, cyclists and equestrians (the users) in the local area, to provide background user information that can be referred to throughout the design process and to identify opportunities for improvement for users.

The WCHAR process is divided into two phases:

- Assessment (this report): undertaken during the options or concept stage of a highway scheme to capture the existing conditions for pedestrians, cyclists and equestrians, and identify the opportunities for improvement for these modes.
- Review: shall be completed as an ongoing review during the various design stages of the highway scheme and shall record the design decisions relating to the provision of walking, cycling and horse-riding facilities.

The proposed Clifton Hampden Bypass will deliver a new link road connecting the A415 Abingdon Road at Culham Science Centre with the B4015 Oxford Road to the north of Clifton Hampden, with a short section of online upgrading on the northern section of the link towards the junction with the A4074 at the Golden Balls Roundabout.

This Assessment Report documents the relevant local and national relevant policies and strategies. Within the study area, there has been a total of 14 recorded collision in the five-year study period, of which 3 were serious and 11 were slight in severity. There are a number of local and regional bus services in the area, with bus stops located at the Culham Science Centre and the Golden Balls Roundabout. Culham Railway Station is just west of the scheme.

The key trip generators in the area include the Culham Science Centre, Europa School and the businesses within the Culham No.1 Site. Movement within the study area is dominated by the private car. This is self-reinforcing since the high level of vehicular traffic makes walking and cycling less attractive. Few pedestrians and cyclists were observed during the site visit and throughout the surveys conducted in November 2019, with the majority observed travelling between the Culham Science Centre entrance, the railway station and the areas to the north of the Science Centre.

A public information event covering the four HIF1 schemes was held throughout April 2020, and relevant WCHAR stakeholders were sent a targeted questionnaire to capture their views on the feasibility designs and needs of the local users. Their responses are summarised in this report.

Identified user opportunities as part of the assessment included:

- Provision of dedicated, safe and direct cycle and pedestrian facilities along the proposed new bypass with links to existing cycle routes, Public Rights of Way within the scheme extents.
- Improvements to access and wayfinding signage to the Oxford Greenbelt Way and key routes/areas of interest.
- Improvements and upgrade of existing cycle facilities along the A415.

1. Background and highways scheme description

1.1 Background

The proposed Clifton Hampden Bypass scheme is one of the four major road schemes identified in the Access to Science Vale option assessment report (OAR), which were developed by a working group of Council and district officers.

The scheme will have a significant impact on the highways network in the area and therefore Oxfordshire County Council (OCC) have requested that the GG 142 Walking, Cycling & Horse-Riding Assessment and Review is completed to inform the scheme design.

In accordance with GG 142, the scale of the scheme has been assessed (by the Lead Assessor) and is considered to qualify as a 'large' scheme for the purposes of this assessment, by virtue of the extent of the proposed improvements. The scheme will therefore be subject to a Walking, Cycling & Horse-Riding Assessment (this document) during the preliminary design stage of the proposed highway scheme. This will then be followed by Walking, Cycling & Horse-Riding Reviews at the detailed design stage.

1.2 Proposed highway scheme

The Clifton Hampden Bypass will lie in the southwest-northeast direction, linking the A415 Abingdon Road, at Culham Science Centre with the B4015 Oxford Road, just north of Clifton Hampden. The site location plan is shown in Figure 1.

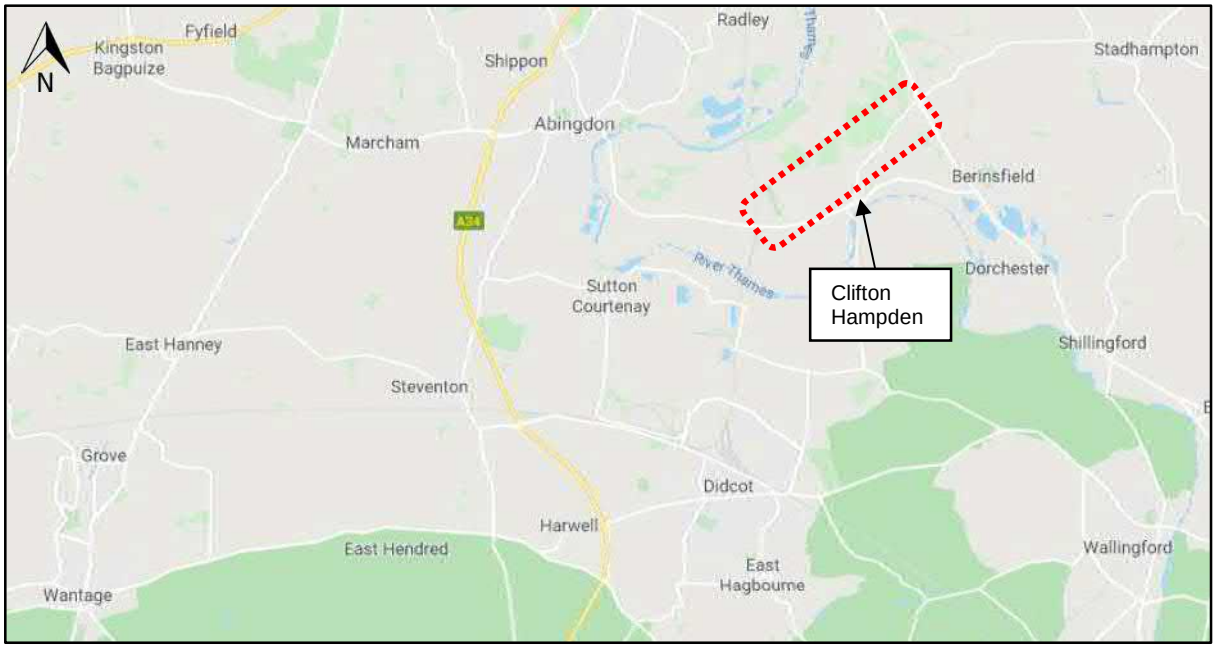


Figure 1: Site Location Plan[1]

The Clifton Hampden Bypass (the feasibility design is provided in Appendix A) is to provide a new link road connecting the A415 Abingdon Road at Culham Science Centre with the current B4015 Oxford Road to the north of Clifton Hampden, with online upgrading of the northern section of the link towards the junction with the A4074 at the Golden Balls Roundabout. At the southern end of the bypass, this corridor will link with the proposed Didcot to Culham River

[1] *"Google Map™ and Google Streetview™ have been used, unmodified, within this document. This imagery has been used within the extents of the AECOM license agreement with Google Inc."*

Crossing via a new junction on the A415 to the west of Culham Railway Station. This will also link to the proposed Science Bridge and the A4130 Widening towards Milton Interchange. It shall be noted that this Assessment, with the exception of the stakeholder consultation covered in section 2.8, has been carried out based on the feasibility design (drawing no. 5189452-ATK-DRG-HW-0006 to 0008 included in Appendix A) developed by Atkins in October 2019, and provided by OCC.

The main objective of the new corridor is to improve accessibility and provide congestion relief on the existing road network by providing an upgraded and more direct route between Culham to Oxford, via the A4074, and bypassing Clifton Hampden. The proposed new highways will also provide the required highways infrastructure to support the proposed employment and housing growth in Culham and the surrounding Science Vale area.

The scheme objectives include improving conditions for walking, cycling and horse-riding, as there are limited facilities in the area. This is likely to include improved facilities between Culham railway station and Culham Science Centre with new footways and crossings at the junction; a shared cycle-pedestrian footway along the new bypass link; and new footway along Oxford Road. The existing footpath connecting Clifton Hampden with Thame Lane and the farmland to the north of Culham Science Centre will be modified but retained.

The proposal includes the introduction of a new dumbbell roundabout junction on the A415 Abingdon Road, to the west of the existing entrance of Culham Science Centre. This new junction will provide an upgraded connection between the A415, Station Road to Culham railway station, Culham Site No. 1, Culham Science Centre and the new proposed bypass. The new bypass link is proposed to be approximately 1.75km in length, and will follow the existing alignment of Thame Lane, with a new connection to the B4015 Oxford Road at the northern end. A new 3-arm roundabout is also proposed on the B4015 Oxford Road to the north of Clifton Hampden, providing a new junction connecting the new bypass link to Culham Science Centre, Oxford Road towards the A4074, and Oxford Road towards Clifton Hampden. Upgrades will also be carried out along Oxford Road on the approach to the new roundabout.

1.3 WCHAR study area

The GG 142 requires a minimum radius of 5km for the study area of a large scheme on the trunk road network. However, this scheme does not form part of the trunk road network, and after careful review of the proposed works, a reduced local study area extent (1km radius) has been agreed with OCC to be appropriate for this study. Figure 2 shows the study area.

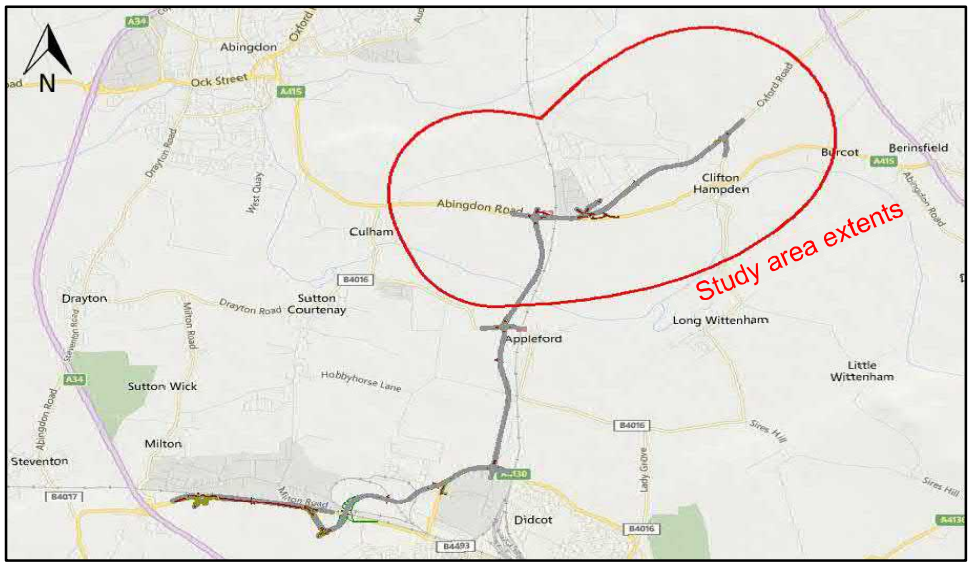


Figure 2[2]: Study area location plan for the WCHAR

[2] *"Google Map™ and Google Streetview™ have been used, unmodified, within this document. This imagery has been used within the extents of the AECOM license agreement with Google Inc."*

2. WCHAR assessment

2.1 Assessment of walking, cycling and horse-riding policies and strategies

The following regional and local planning policy documents have been reviewed as part of the Assessment.

Connecting Oxfordshire: Volume 4 Local Transport Plan 2013-2031 (Adopted 2016) - Active & Healthy Travel Strategy

The strategy states that the number of people who usually drive short journeys to work in Oxfordshire is increasing and therefore roads are becoming more congested. Oxfordshire County Council have a vision to make cycling a safe, simple and accessible option for people of all ages, and in turn make cycling a major mode of travel and reduce air pollution in Oxfordshire. This will include an increase in multimodal door-to-door trips by integrating the cycling and public transport networks to allow bike-rail and bike-bus journeys.

As part of the Strategy, a Cycle Premium Route between Didcot to Culham Science Centre, via the existing National Cycle Route 5 between Didcot and Long Wittenham and then on-road towards Culham Science Centre via Clifton Hampden Bridge, has been identified as part of the proposed Science Vale Cycle Network as shown in Figure 3. This cycle network has been identified to be a focus for future investment to cycling in the area. Given the importance of the route between the two key attractors in the region, and the existing site constraints at the Clifton Hampden Bridge, measures to reduce traffic through Clifton Hampden shall be prioritised to improve the cycle environment. The proposed Clifton Hampden Bypass will provide a new route from the B4015 Oxford Road to Culham Science Centre, which will unlock the opportunity to provide a high-quality cycle route through Clifton Hampden.

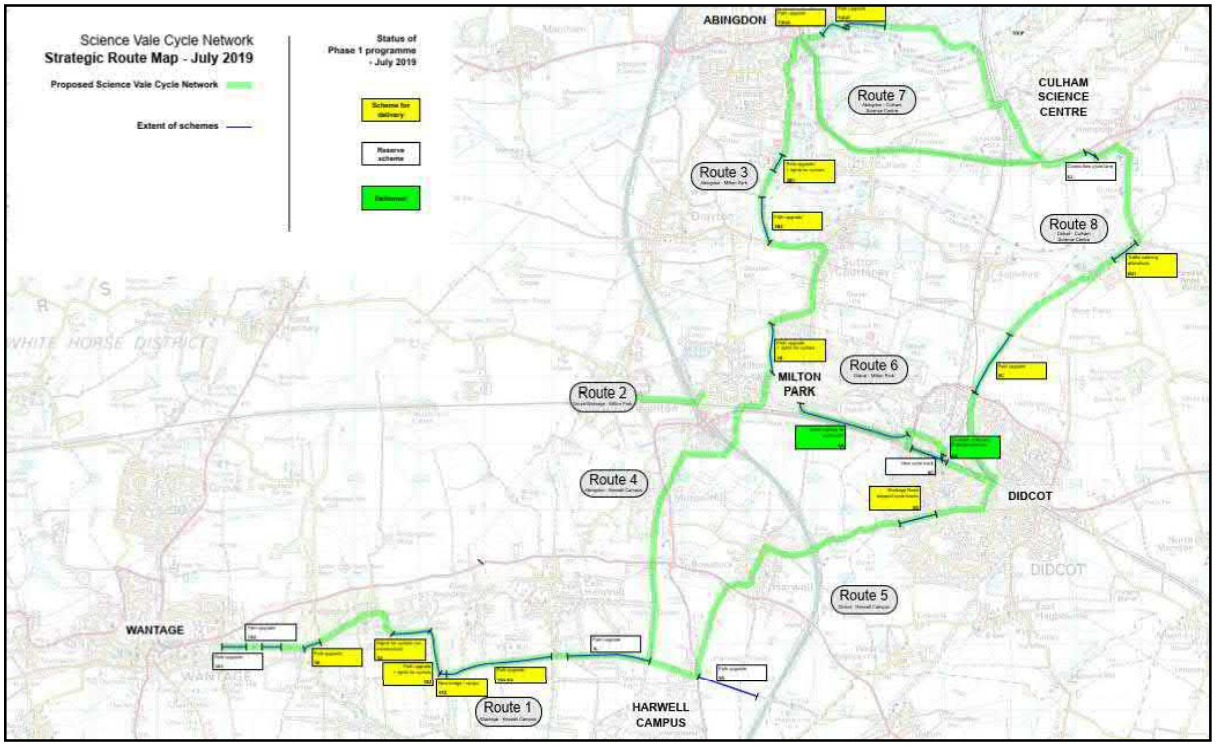


Figure 3 Proposed Science Vale Cycle Network route map[3]

[3] Oxfordshire County Council, Science Vale Cycling Network [online] (December 2019) https://www.oxfordshire.gov.uk/sites/default/files/file/roads-and-transport-major-projects/science_vale_cycle_network.pdf

Oxfordshire County Council also have an overall aspiration to enable and encourage walking to be a travel mode of choice for short trips and the most popular and accessible form of recreational activity. The ambition is to make all streets and public spaces to be accessible to all users.

This scheme shall therefore ensure that walking and cycling facilities, suitable for all types of users, are provided along the proposed highways, and provide improvements to the overall walking, cycling and horse-riding network across the area.

Oxfordshire Rights of Way Management Plan 2015-2025 (November 2014)

The Rights of Way Management Plan is a 'daughter' document to the Oxfordshire Local Transport Plan and supports the delivery of the Councils overarching strategic goals. The main strategic objectives which are relevant to the proposals and considered as part of this Assessment include:

- Improve public health and wellbeing by increasing levels of walking and cycling, and enabling inclusive access to jobs, education and services.
- Reduce the proportion of journeys made by private car by making the use of public transport, walking and cycling more attractive.
- Maximise the use and value of existing and planned sustainable transport investment, by linking and integrating this with planned development to allow continued and increased use of the right of way network.

South Oxfordshire District Council – Emerging Local Plan 2011-2034 (January 2019)

The Clifton Hampden bypass has been identified in the emerging plan as one of the strategic transport schemes in which land should be safeguarded to support this (Policy TRANS1),

It states that this scheme, along with the proposed Didcot to Culham river crossing scheme will have "strategic transport benefits and is required to support development proposed in the emerging South Oxfordshire Local Plan, as well as development allocated in the Vale Local Plan Part 1 and development proposed in the emerging Vale Local Plan Part 2. It is also part of a package of transport infrastructure in this area as identified in the Science Vale Area Transport Strategy in the Oxfordshire Local Plan, which includes the Clifton Hampden Bypass and the Didcot Northern Perimeter Road."

South Oxfordshire District Council – Core Strategy 2027 (adopted December 2012)

The Core Strategy states that large amounts of economic investment and housing are planned in the Science Vale Area, and "improvements are needed to ease access around this area particularly in respect of east-west movements".

One of the key development objectives is the "redevelopment of parts of Culham Science Centre to provide further high value jobs". South Oxfordshire District Council has committed to proactively working with Culham to develop an agreed masterplan that facilitates this growth and considers the wider traffic implications of proposals.

The proposed Clifton Hampden Bypass will support the movement that strengthens links between key places and will provide the necessary infrastructure to support the redevelopment of Culham Science Centre and the proposed increase in jobs.

South Oxfordshire Infrastructure Delivery Plan (January 2019 update)

As part of the delivery plan, land adjacent to Culham Science Centre has been identified for the delivery of 3500 dwellings. In order to support these proposed developments, key infrastructure requirements for Culham include contributions towards the Didcot to Culham Thames River Crossing, Clifton Hampden bypass and the upgrading of the A4074/B4015 Golden Balls junction; as well as the enhancements to encourage sustainable travel.

Didcot Garden Town Delivery Plan (October 2017)

The Didcot Garden Town vision recognises that Didcot will grow from approximately 26,000 people to over 60,000 by 2031. With this growth, Didcot is expected to become the largest town in Southern Oxfordshire and if the means by which residents move around the town remains unchanged, town wide journeys by car will double. This will result in pressure on the existing highways network, and investment is required to provide the necessary infrastructure to enable a modal shift away from private cars towards other modes of transport.

The east-west movement corridors and Science Bridge have been identified as one of the key proposals to achieve sustainable movement across the area. One component of these corridors is the Didcot to Culham River Crossing as reviewed as part of this Assessment.

A new cycle route between Harwell, Didcot and Culham, referred to as the Garden Line, has also been identified in the delivery plan. This is proposed to include upgrading of the route to Culham and a new river crossing to the east of the railway line.

Design Standards

The following design standards have also been identified and considered during the assessment:

- Oxfordshire Walking Design Standards (A guide for Developers, Planners and engineers, summer 2017).
- Oxfordshire Cycling Design Standards (A guide for Developers, Planners and engineers, summer 2017).
- CD195 Designing for Cycle Traffic
- CD143 Designing for walking, cycling and horse-riding
- Advice on Road crossings for horses (The British Horse Society).

2.2 Collision data

Collision data has been provided to AECOM by Oxfordshire County Council for a 5-year period between 9th June 2014 and 8th June 2019. There was a total of 14 collisions recorded within the scheme extents, with 18 casualties, the severity is summarised by year in Table 1 and Table 2. As shown total yearly collisions do not show any evidence of deterioration or improvement in road safety along the local highways.

Severity / Year	2014	2015	2016	2017	2018	2019	Total
Fatal	0	0	0	0	0	0	0
Serious	0	2	1	0	0	0	3
Slight	2	2	2	2	2	1	11
Total	2	4	3	2	2	1	14

Table 1: Total collisions by severity

Severity / Year	2014	2015	2016	2017	2018	2019	Total
Fatal	0	0	0	0	0	0	0
Serious	0	2	1	0	0	0	3
Slight	2	2	4	3	3	1	11
Total	2	4	5	3	3	1	18

Table 2: Total casualties by severity

For the purpose of this Assessment, a cluster site has been defined as an area with seven or more collisions within a 100m radius over a 5-year study period. No cluster sites have been identified within the study area.

Table 3 provides a summary of the collisions based on location, severity and type. **Appendix B** contains the full details of the collisions, which are also presented with balloon diagrams on the plot included in drawing CHB-ACM-HGN-SW_ZZ_ZZ_ZZ-DR-Z-0001.

Location	Collision Severity	Collision Type	Pedestrians/Cyclist involved?	Contributory Factors
A415 Abingdon Road/ Station Road junction	1 slight	1 shunt	No	Failure to look - right turning vehicle
A415 Abingdon Road, west of Culham Science Centre entrance	1 serious, 2 slight	3 shunts	No	Failure to look - overtaking, stationary vehicle. Sudden braking
A415 Abingdon Road, Turnpike Petrol Station/High Street	1 serious	1 right turn collision	No	Failure to look - right turning vehicle
	2 slight	1 shunt 1 right turn collisions	No No	Failure to look - right turning vehicle Stationary vehicle waiting to turn right
	1 slight	1 shunt	No	Sudden braking
A415 Abingdon Road, Clifton Hampden	2 slight	1 shunt 1 cycle/pedestrian collision	No Yes	Failure to look – traffic signals
High Street, Clifton Hampden	1 slight	1 stationary vehicle/passenger collision (slight)	Yes	Failure to look

	1 serious, 1 slight	1 loss of control – No M/C 1 loss of control - LGV	Slippery road, and road layout

Table 3 Collision summary by location

2.3 Public transport services and interchange information

Pedestrians, cyclists and equestrians may combine their modes of travel with public transport as part of a longer trip. As part of this Assessment, public transport services and associated infrastructure such as rail and bus stations (including bus stops) and interchanges have been identified to enable an appropriate assessment of the integration of such modes.

2.3.1 Bus Service

Bus stops are located within the study extents at the following locations:

- Culham Science Centre entrance
- Village Hall, A415 Abingdon Road at Clifton Hampden
- Post Office, High Street, Clifton Hampden
- A4074, Golden Balls Roundabout

Table 4 summarises the bus services currently operating within the study extents, their frequency and routing. The main routes are also shown in the South Oxfordshire Zone network map shown in Figure 4.

Bus stop	Bus Route	Operator	Frequency	Days of service	Route connections
Culham Science Centre	45	Thames Travel	Hourly 05:30 to 20:20, Additional peak service between 17:00 and 17:30	Monday - Friday	Abingdon to Wantage, via Culham, Sutton Courtney and Milton
			Hourly 07:45 to 19:35	Saturday	
			No service	Sunday	
	BB1B	Thames Travel	1 AM and 1 PM service	School days only	Berinsfield to Didcot Schools via Burcot, Clifton Hampden, Drayton, Steventon and Milton Heights
Village Hall, A415 Abingdon Road, Clifton Hampden	BB1B	Thames Travel	1 AM and 1 PM service	School days only	Berinsfield to Didcot Schools via Burcot, Clifton Hampden, Drayton, Steventon and Milton Heights
Post Office, High Street, Clifton Hampden	D1	Going Forward Buses	1AM service	Monday	Berinsfield to Didcot, via Long Wittenham and Clifton Hampden
			1AM and 2 PM	Wednesday	
A4074, Golden Balls	NX40 River Rapids	Thames Travel	Every 20mins	Monday - Friday	

Roundabout (request stop)	X38 River Rapids	Every 20mins	Saturday	Oxford – Wallingford - Reading/Henley
	X39 River Rapids	Hourly	Sunday	
	X40 River Rapids			

Table 4: Bus stops and bus route - Culham and Clifton Hampden

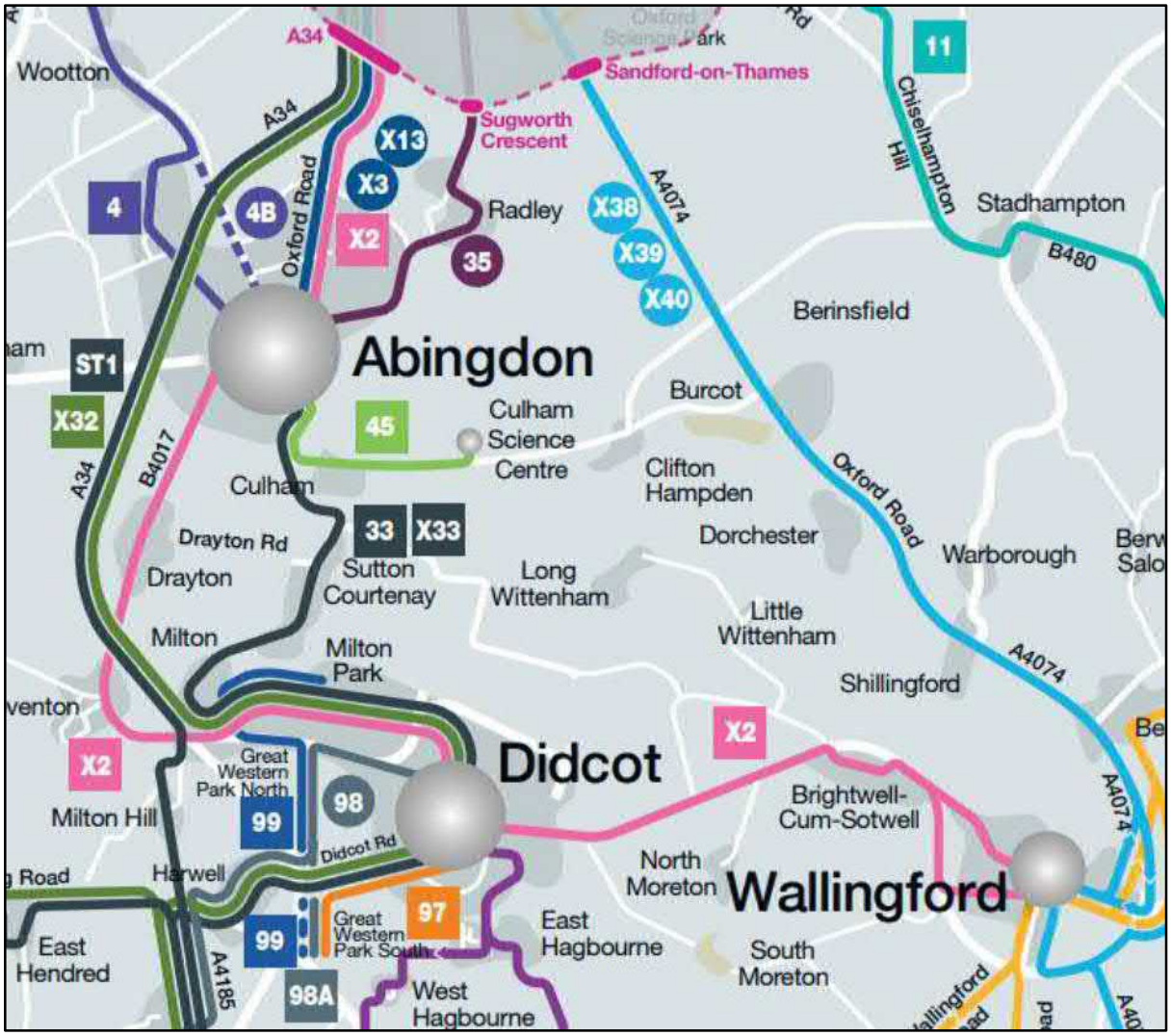


Figure 4 Extract of South Oxfordshire Zone network map

2.3.2 Train service

The proposed Clifton Hampden Bypass runs towards the west of the Oxford to Didcot railway line. There is a single train station location with the study extents at Culham. Train services along this route are operated by Great Western Rail, with services directly into Reading, Didcot Parkway, Oxford and Banbury. With an interchange at either Didcot Parkway or Reading, Great Western Rail train services can also be used to reach London Paddington, Cardiff Central, Weston Super Mare, Cheltenham Spa, Swansea, Taunton, Bristol Temple Meads and Carmarthen as shown in the network map included in Figure 5.

Culham railway station is located approximately 0.5km to the west of Culham Science Centre and 2.4km to the east of Culham village. The station is unattended with limited facilities. The station car park has 8 spaces. Sheltered cycle parking with 26 storage spaces is also available.

Train services which currently serve Culham are infrequent, and summarised as follows based on GWR published timetables:

- Monday to Friday:
  - 2 early morning, and 1 late morning service
  - Half-hourly services during peak times between 07:30 and 09:00, and between 17:00 and 18:20
  - 1 midday and 1 mid-afternoon services
  - 2 evening services (19:30 – 21:00).
- Saturday – 2-hourly service between 07:30 and 10:00; 13:30 and 16:00; 19:30 – 22:00, with 2 early morning services.
- Sunday – No services.

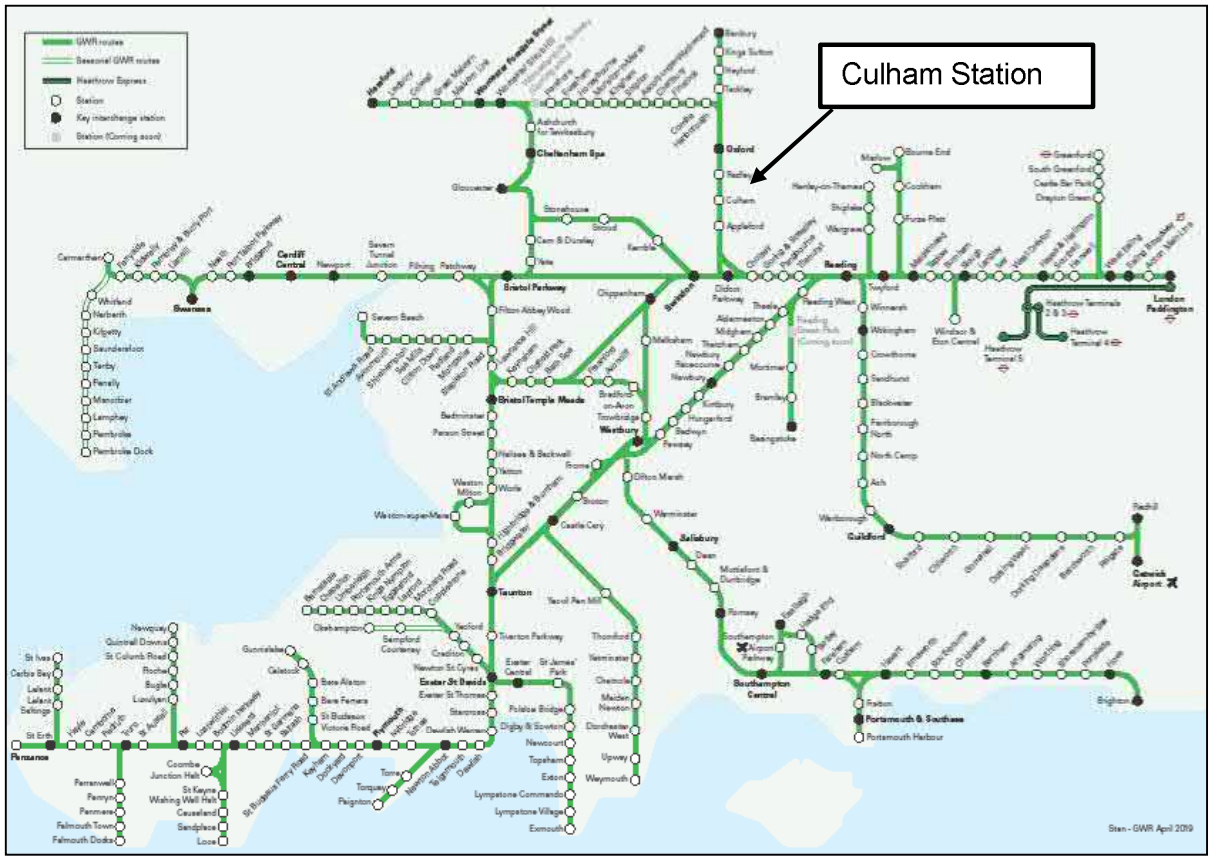


Figure 5: Great Western Railway network map

2.4 Key trip generators and local amenities

2.4.1 Key trip generators

The key trip generators in the vicinity of the proposed improvements include the following:

Local businesses and key places of interest

- Culham Railway Station
- Culham Science Centre
- Culham No.1 Site including High Ropes Oxford, Oxford Adventure Park
- Europa School UK, Culham

Residential areas within the study area

- Clifton Hampden
- Burcot

Residential areas – outside of 1 km of study area

- Culham Village
- Berinsfield
- Long Wittenham

2.4.2 Committed developments

Housing areas are planned for Great Western Park and Valley Park in south-east Didcot, Ladygrove North in north-east Didcot, North-east Wantage, and at other locations including Culham, Berinsfield and Dalton Barracks[4]. This amounts to more than 22,000 houses planned for the local area. Major employment development is planned for within the two Enterprise Zones, Science Vale and Didcot Growth Accelerator, and elsewhere at Milton Park and Didcot Power Station, for Grove Airfield, Culham Science Centre and Harwell IBC. If these developments were allowed to progress without any improvements in the capacity of the transport networks, then the result would be likely to be unacceptable local congestion.

The Oxford Strategic Model (OSM) was developed using 2013 as the base conditions to assess the predicted traffic growth in the area. Model outputs suggest that in 2031, with all the planned developments, there would be around a 30% traffic growth in flows across Culham Bridge; and Clifton Hampden Bridge by around 30% in the peak periods and around 40% in the inter-peak.

According to the South Oxfordshire District Council planning website there is a large proposed development located at the land at Culham Science Village, Culham Oxfordshire (P17/S3719/SCO), as outlined in Figure 6. The proposed development is a residential led mixed-use development and is at the scoping stage.

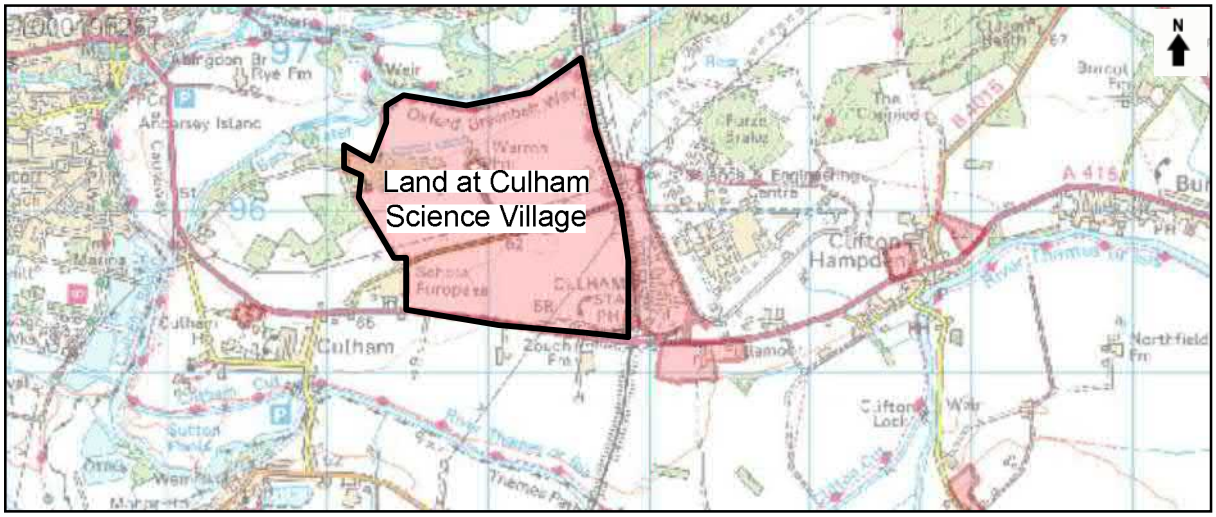


Figure 6 Oxfordshire County Council Planning application interactive mapping

[4] Access to Science Vale – Option Assessment Report (OAR)

2.5 Site visit

A site visit was undertaken on the 10th November 2019, between 10:00 and 12:00. The site visit took the form of walking along the available public pedestrian and cyclist facilities within the proposed corridor. The weather during the site visit was cold, with light showers.

The primary findings of the site visit were:

- **A415 Abingdon Road, Culham** – Shared cycle-pedestrian footways are provided on the northern side of the carriageway along the length of Abingdon Road from Culham Village to Culham Science Centre. To the west of the private farm access, there is no physical separation between the footway and the carriageway as shown in Figure 7. White lining is provided along the footway to delineate its edge; however, this was observed to have worn away.

  To the east of the farm access, a grass verge segregation strip is provided between the footway and carriageway as shown in Figure 8 which is considered more suitable for the high-speed road with a national speed limit. One cyclist was seen using the facilities during the site observations.



Figure 7 A415 Abingdon Road, shared use footways



Figure 8 A415 Abingdon Road, west of farm access

- **Culham Railway Station** – On the approach to the station from the west, the cyclists are signed down the local road to the Railway Inn where there is limited cycle parking within the station. All sheltered cycle storage is on the eastern platform side, which appears to match the demand.

  From the eastern approach shared cycle-pedestrian footways are provided from Culham Science Centre, along Station Road and terminating at the station entrance as shown in Figure 10.



Figure 9 Cycle parking at Culham Railway Station



Figure 10 Culham Railway Station – eastern approach

An uncontrolled crossing is provided near the station car park entrance on Station Road, as shown in Figure 12. On-street parking was observed adjacent to the crossing shown in Figure 11, limiting visibility of oncoming vehicles, however traffic volumes and speeds are low so this was not considered a critical safety concern. A segregation strip is provided on the footways, delineated by white lining where there is no verge. At the time of the site visit, works were being carried out at the junction of A415 Abingdon Road and Station Road.



Figure 11 Station Road - Shared cycle-pedestrian footways



Figure 12 Station Road – uncontrolled crossing

Culham Science Centre Access – Shared cycle-pedestrian facilities between the Station Road and the entrance of the Science Centre appeared to be well-maintained and well-signed, and away from the main vehicular entrance. Bus stops provided outside the Science Centre have shelters and bus cage markings, no passengers or buses were observed at the time of the site visit. An uncontrolled crossing point was noted on the A415, near the eastbound bus stop, providing access to the shared footways on the southern side of Abingdon Road. This footway continues east at the crossing towards the bus stop but terminates to the west of the stop.

2.6 Existing walking, cycling & horse-riding network facilities

2.6.1 Local facilities

The existing facilities for non-motorised users along the proposed highway corridor include the following:

- A415 Abingdon Road – shared use footways from Culham village to the entrance of Culham Science Centre
- Station Road – shared use footways from A415 Abingdon Road to the entrance of the Culham railway station car park
- B4015 Oxford Road – There are no footways or dedicated NMU facilities to the north of Clifton Hampden. Footways are currently provided through the village but terminate at the access with Orchard Barn located just north of the junction with Courtiers Green.

2.6.2 Local routes and strategic networks

The following pedestrian, cyclist and equestrian routes within the study extents have been identified, which are of relevance to the Assessment and are also shown on Figure 13.

- **RB-1**: East-west restricted byway to the north of Culham Science Centre along Thame Lane and Thame Lane (path). This byway is part of the Green Belt Way which forms a 50mile circular walking route around Oxford. To the west of the railway, the Green Belt Way route continues alongside the River Isis.
- **FP-1**: North-south footpath between Clifton Hampden and the Green Belt Way, to the east of Culham Science Centre. The route is formed of an unsurfaced, worn path along the boundary of fields. At Abingdon Road the access to the path is gated and located just within the 30mph speed limit. No crossing facilities are currently provided for connectivity to the existing footway on Abingdon Road or the onward footpath to Clifton Hampden village. Visibility at the access appears to be poor.
- **FP-2:** North-south public footpath between Clifton Hampden and Thame Lane (path), where the route continues through Nuneham Courtney along the Oxford Greenbelt Way.
- **FP-3:** Signed east-west public footpath between Oxford Road, and the restricted byway along Thame Lane and the Green Belt Way.
- **FP-4**: Signed east-west public footpath through a farmer's field, connecting Croft Cottages, located on Abingdon Road in Burcot, with Oxford Road to the north of Clifton Hampden. The route appears to have low usage, and the exact location of the access to the path on Oxford Road is unclear. Based on mapping, this route connects to FP-3 on the western side of Oxford Road.
- Based on the British Horse Society Equestrian Access Mapping, there are no official rides or trails within the study area.

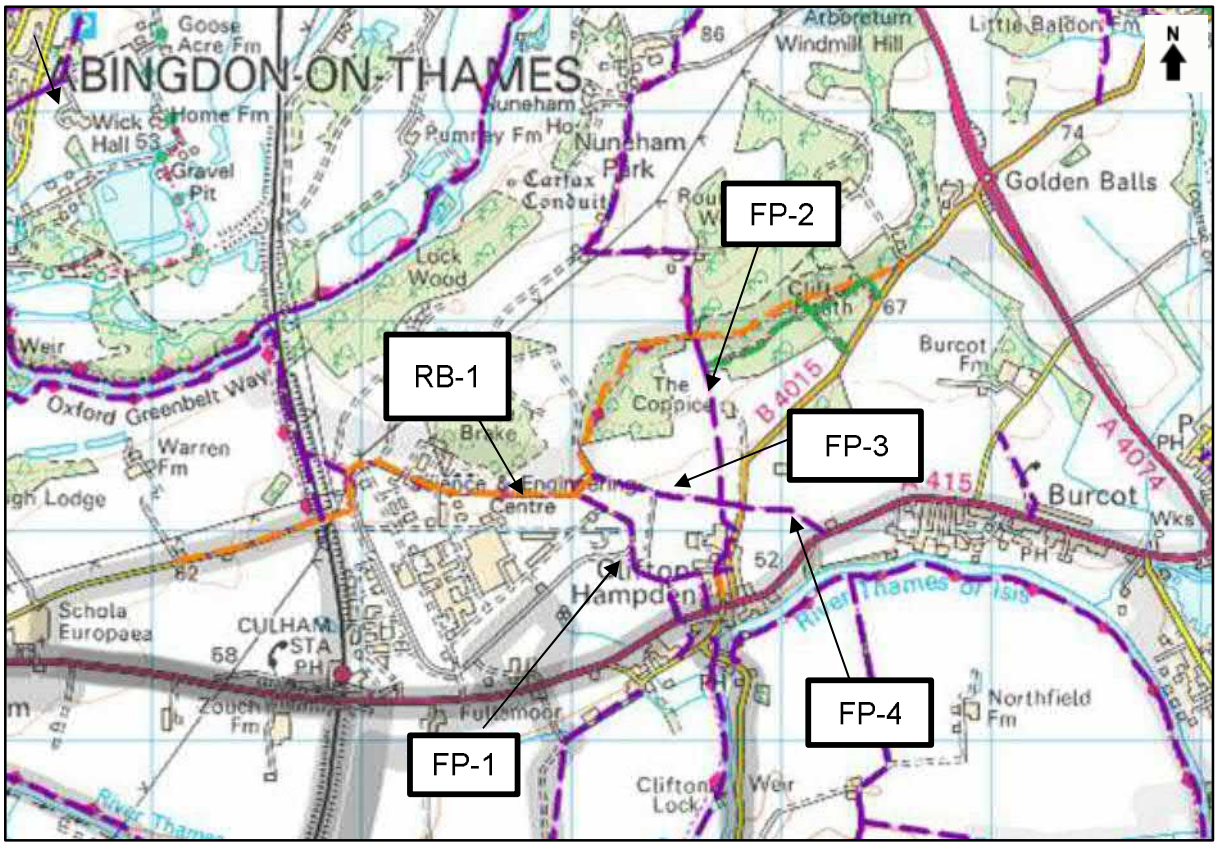


Figure 13 Extract of OCC Public Right of Way Map

2.6.3 National Cycle Route

National Cycle Route (NCR) 5 is the closest regional route to the proposed scheme and is a long-distance route which connects Reading and Holyhead via Oxford, Stratford-upon-Avon, Bromsgrove, Birmingham, Stoke-on-Trent, Chester, Colwyn Bay and Bangor.

The closest point on the NCR5 to the proposed scheme is the on-road route at Long Wittenham. To the east of Long Wittenham, the route continues in a south-easterly direction towards Wallingford, and to the west, the route continues in a south-westerly direction towards Didcot.

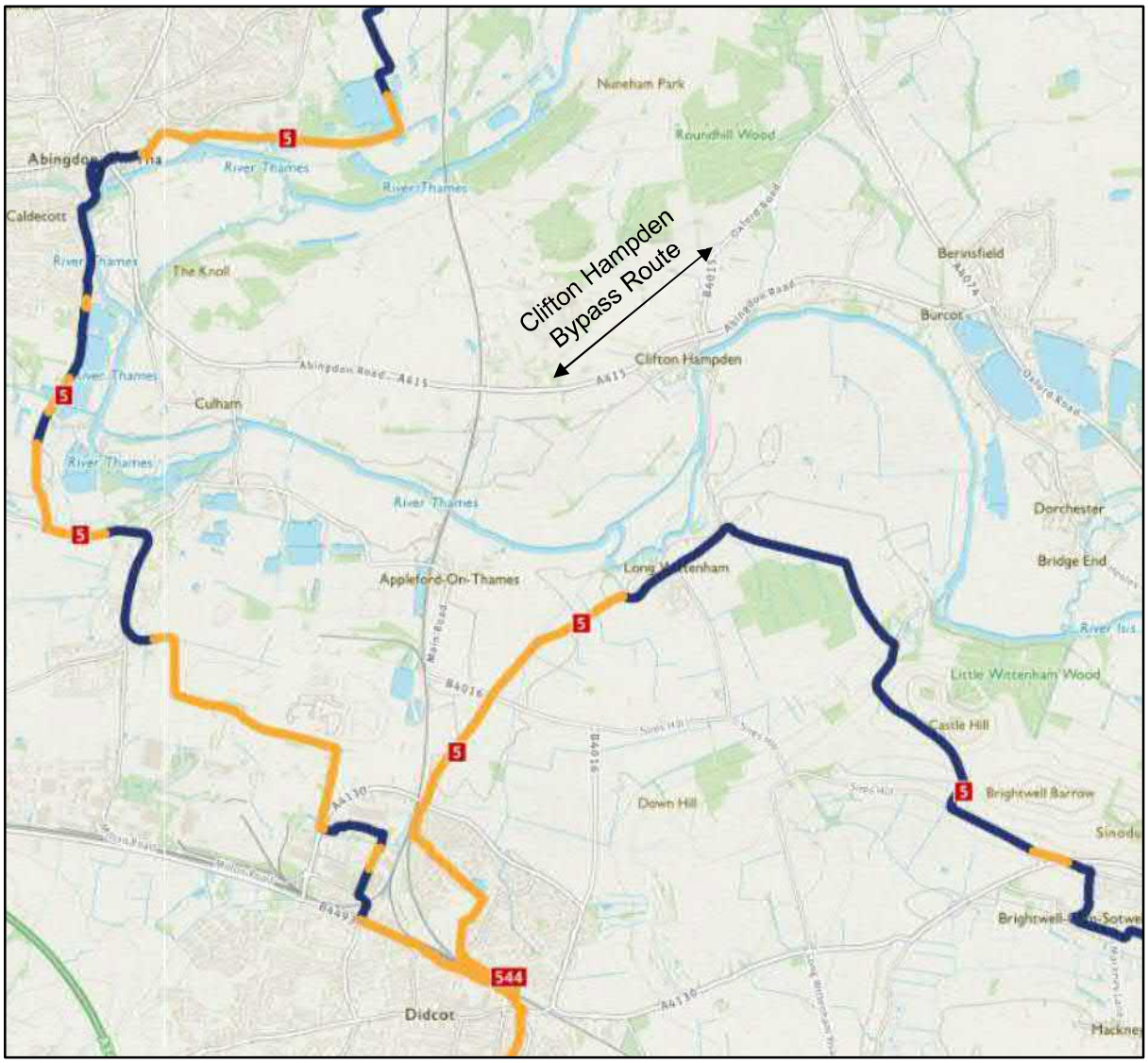


Figure 14: Extract of Sustrans National Cycle Network Map

2.7 Walking, cycling & horse-riding survey data

AECOM commissioned Traffic Data Centre (TDC) to undertake a survey in November 2019 to collect data on walking, cycling and horse-riding movements at four locations within the scheme extents. Where located on the public highway these surveys were conducted over a 7-day, 24-hour period using video cameras. Where located on public footpaths, these surveys were undertaken manually on one weekday, Saturday and Sunday during daylight hours only. The data was collected in order to provide a quantitative understanding of walking, cycling and horse-riding demand and understand the use of junctions in the scheme.

The surveys were undertaken between Monday 11th November to Sunday 17th November 2019. The surveys were undertaken to capture walking, cycling and horse-riding movements through the junctions and surrounding area. Weather throughout the survey period was predominantly cloudy, with sun only on the Monday 11th November. There were also showers from Thursday to Sunday.

The count locations are shown in Table 5. Two ATC counts were also completed to identify traffic speeds and volumes in the area. A map of these locations is shown on drawing 60606782_NMUSURVEY_002 Revision A, included in Appendix C.

Survey ID	Location	Survey type	Grid reference
CHB-01	B4015 Oxford Road	ATC speed survey	
CHB-02	Junction on B4015	Classified NMU OD count	E: 454813 N: 196306
CHB-03	Footpath North of Clifton Hampden	Manual Classified NMU OD count (Friday and weekend survey only)	E: 454717 N: 196138
CHB-04	A415 Abingdon Road to west of High Street, Clifton Hamden	ATC speed survey	
CHB-05	Footpath, junction on A415 Abingdon Road	Manual Classified NMU OD count (Friday and weekend survey only)	E: 454511 N: 195566
CHB-06	Culham Science Centre (Main Avenue) Junction on A415 Abingdon Road	Classified NMU OD count	E: 453486 N: 195200
CHB-07	Station Road (east) junction on A415 Abingdon Road	Classified NMU OD count	E: 453196 N: 195184

Table 5: Locations for WCHAR surveys

2.7.1 ATC speed surveys

Table 6 provides a summary of the average and 85%ile speeds recorded on the B4015 Oxford Road and the A415 Abingdon Road, Culham. Surveys suggest that typical vehicles are travelling below the speed limit on both roads, with an average of speed of 41mph on Oxford Road to the north of Clifton Hampden and 32mph on the A415 Abingdon Road, Clifton Hampden to the west of High Street and the existing speed limit change signs.

Survey ID	Location	Direction	Speed limit (mph)	Average speed (mph)	85%ile speed (mph)
CHB-01	B4015 Oxford Road	Northbound	50mph	41.0	45.9
		Southbound	50mph	41.7	49.0
CHB-04	A415 Abingdon Road to west of High Street, Clifton Hamden	Eastbound	50mph	28.3	39.5
		Westbound	50mph	35.0	40.2

Table 6: Surveyed average and 85%ile speeds

Table 7 provides a summary of the total number of vehicles recorded along B4015 Oxford Road and the B4016 during the survey period, and their classification. Surveys suggests that most vehicles currently using the two roads are private cars, comprising of 84- 86% of total traffic recorded.

Survey ID	Location	Total 2-way weekly traffic	Vehicle classification (%)					
			Cycles	Motorcycle	Car	LGV	HGV	Buses
CHB-01	B4015 Oxford Rd	55,593	0.17	0.80	85.60	13.10	0.25	0.08
CHB-04	A415 Abingdon Rd to west of High St	66,425	0.18	0.83	84.28	13.73	0.60	0.38

Table 7 Surveyed 2-way traffic flow and vehicle classification

2.7.2 NMU surveys

The total pedestrian, cyclist and equestrian movements observed over the survey periods have been marked on a location plan for each site. The full survey counts are provided in **Appendix D**.

No equestrians or wheelchair users were observed at any of the survey locations, over the survey period.

CHB-02: Junction on B4015

The number of NMUs recorded at this location during the weekend is greater than on weekdays, an average of 30 NMUs during the weekend in comparison to an average of 14 on a weekday suggesting this route is used predominately for leisure trips. There is a reasonably high number of cyclists travelling along the B4015 Oxford Road, although there are no dedicated facilities.

The total NMUs observed over the survey period is shown in Figure 15.

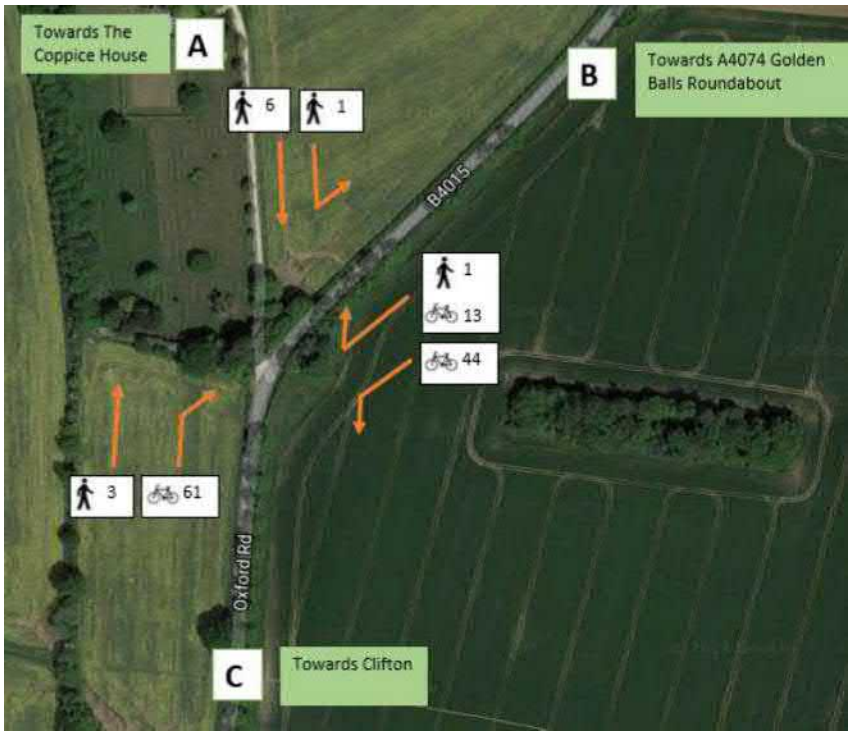


Figure 15 CHB-02 B4015 Oxford Road/The Coppice House – Total NMUs observed (7-day survey period)

CHB-03: Footpath to north of Clifton Hampden

The number of NMUs recorded at this location across the 3 survey days was relatively even, with the greatest number recorded on the Saturday (total of 20 users). Most users were seen after 10am.

The total NMUs observed over the 3-day survey period is shown in Figure 16.

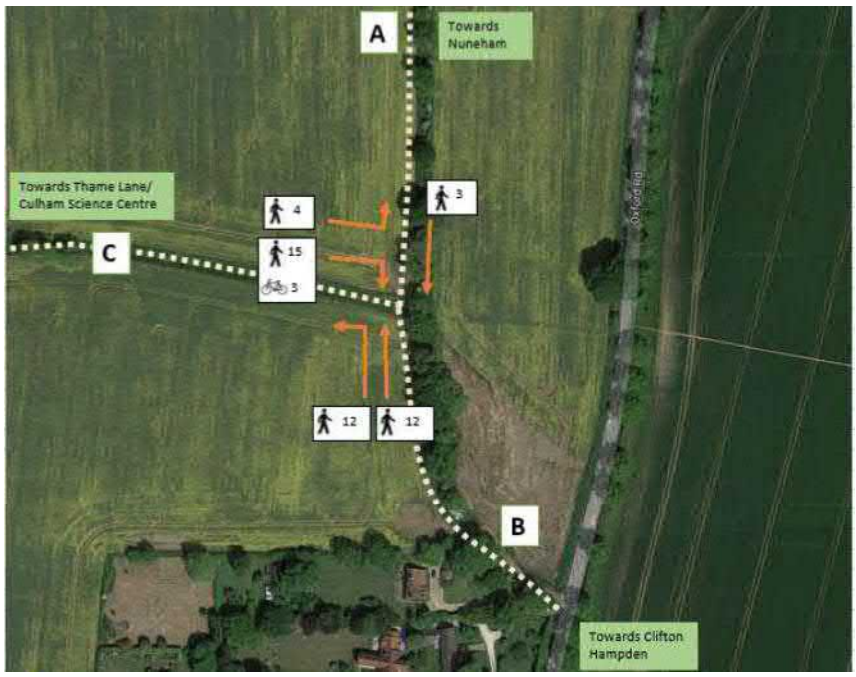


Figure 16 CHB-03 Footpath north of Clifton Hampden – Total NMUs observed (3-day survey period)

CHB-05: Footpath, junction on A415 Abingdon Road

The number of NMUs at this location recorded during the survey period on the Sunday (95 users) and Saturday (81 users), is much greater than the number observed on the Friday (21 users), suggesting this is a well-used and important local leisure route.

The total NMUs observed over the survey period is shown in Figure 17.

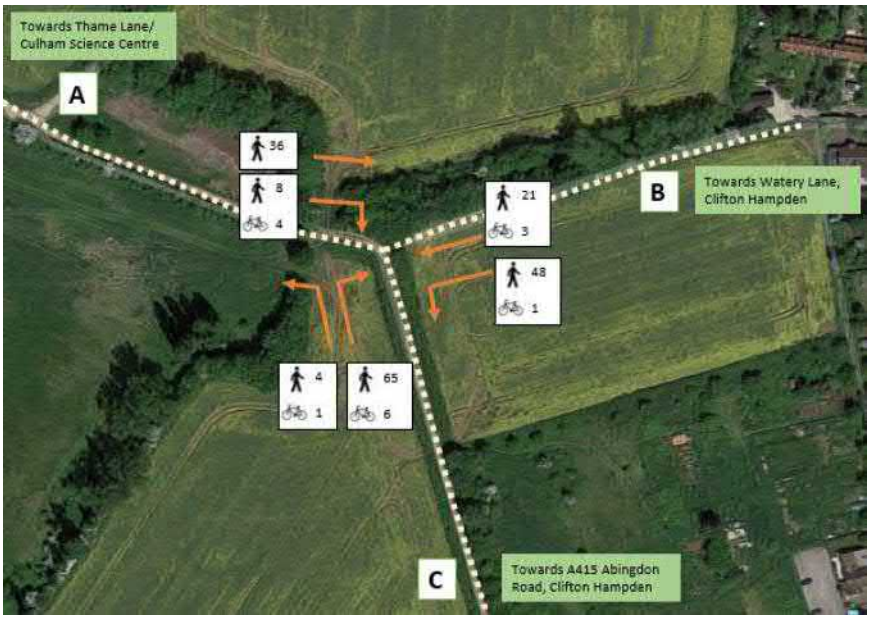


Figure 17 CHB-05 Footpath at A415 Abingdon Road – Total NMUs observed (3-day survey period)

CHB-06: Culham Science Centre (Main Avenue) Junction on A415 Abingdon Road

NMUs observed at this location were greater during the weekdays with an average of 86 each day, in comparison to 39 on a weekend day. The highest hourly numbers of NMUs were recorded between 8 to 9am, and 4 to 6pm suggesting that these are work related trips.

The existing shared use footways are well used by cyclists and although there are no formal facilities to cross between the shared use on the southern side of Abingdon Road to Culham Science Centre, this is done by almost half the cyclists.

The total NMUs observed over the survey period is shown in

Figure 18.

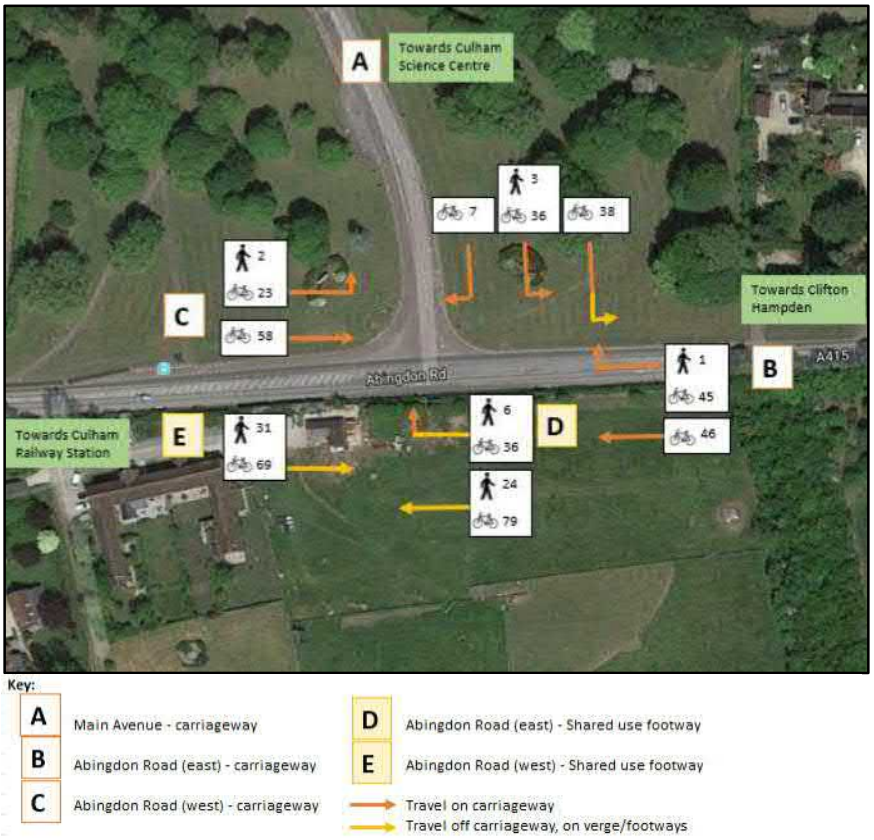


Figure 18 CHB-06 Culham Science Centre, Main Avenue – Total NMUs observed (7-day survey period)

CHB-07: Station Road (east) junction on A415 Abingdon Road

NMUs observed at this location were greater during the weekdays with an average of 666 each day, in comparison to 55 on a weekend day. On the weekdays, the highest hourly numbers of NMUs were recorded between 8 to 9am, and 5 to 6pm on suggesting that these are work related trips.

The existing shared use footways are well used by both pedestrians and cyclists. Given that the numbers at this location are significantly higher than that recorded at the Culham Science Centre Main Avenue/A415 Abingdon Road junction, the majority of pedestrian and cyclists are assumed to be travelling to and from the Science Centre but are using the existing shared use route which cuts through the landscaped area to the west of the main vehicular access rather than the main road where there are no facilities.

The total NMUs observed over the survey period is shown in Figure 19.

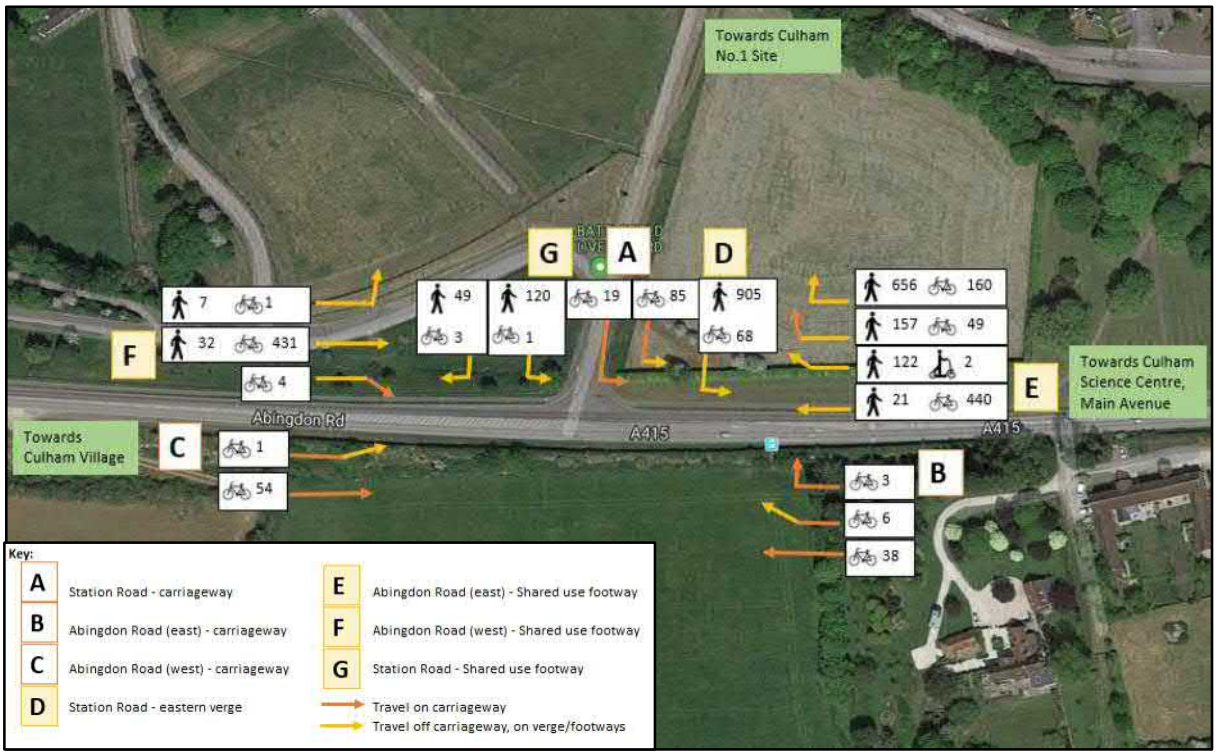


Figure 19 CHB-07 Station Road (east) junction on A415 Abingdon Road– Total NMUs observed (7-day survey period)

2.8 Consultation with key stakeholders and local user groups

In order to be able to incorporate, where appropriate, the comments and views of local people on the preferred alignments into the next stage of the scheme design process of the HIF1 package of schemes an online public consultation was undertaken. This commenced on 20th March and finished on 30th April 2020. Full details of the consultation are available online: www.oxfordshire.gov.uk/didcotupdate. The consultation plans shared for the Clifton Hampden Bypass scheme are included in Appendix F. It is noted that due to the timing of the consultation and aim to provide stakeholders with the most-up to date designs, this component of the Assessment has been carried out based on updated AECOM feasibility design drawings (rev P01).

As a result of Government restrictions on social distancing in response to the COVID-19 pandemic, it was not possible to hold the five public exhibitions that were scheduled for the last two weeks of March 2020. Due to the very tight timescales imposed by Government with respect to the terms of the funding, it was necessary to continue with an online consultation in order to avoid delay to the project programme.

However, to address this, OCC undertook additional measures to ensure that as many people as possible were aware of the consultation and were able to access the information. This included sending letters to approximately 22,000 residences in the area, using an innovative virtual exhibition room with live chat function, promoting telephone numbers of officers available to answer questions, and sending printed versions of the materials to those without internet access. This was all in addition to the standard means of engagement (newspaper adverts, press releases, electronic mailouts, OCC website etc).

Additionally, targeted questionnaires were sent out to local government departments and representatives of local user groups, seeking views on walking, cycling, and horse-riding elements of the infrastructure proposals. It should be noted that this scheme was consulted alongside the three other Didcot HIF highways schemes. Later in the year, it is intended that stakeholder workshops will be held to invite further input to the design of the walking, cycling,

and horse-riding provision in all four proposed schemes. Overall, 24 questionnaires were sent out to a list of identified key stakeholders and user groups and included representatives from the following:

- OCC Active and Healthy Travel
- OCC Public Rights of Way
- Didcot Garden Town Project Manager
- Harwell Campus Bicycle Users Group (HarBUG)
- Sustrans Thames Valley
- Cyclox (Cycling UK local)
- Culham Science Centre Bicycle Users Group (CulBUG)
- Milton Park Bike Users' Group (MilBUG)
- Oxfordshire Cycling Network
- Ramblers Association
- Ramblers Association Oxon (& Oxford Fieldpaths Society)
- British Horse Society
- Oxfordshire Association for the Blind
- Oxfordshire Unlimited
- Guide Dogs
- Oxfordshire Transport & Access Group (OXTRAG)

In total, seven replies were received. In general, all respondees supported walking and cycling improvements, even if this means less space for other road traffic.

Table 8 provides a summary of the stakeholder responses relating to the proposed Clifton Hampden Bypass received during the consultation. A copy of the questionnaire and the full responses received are included in **Appendix E.**

Table 8 Summary of stakeholder responses to consultation

Consultee	Summary of Response
OCC Public Health	• OCC Public Health agreed that the proposed scheme would encourage walking and cycling. However, it is suggested that suitable complementary measures to improve pedestrian and cycle conditions are needed in decongested area to ensure that the reduction in congestion by introducing the new highways will not lead to increase in demand for private vehicle use. 'Whole place' improvements and reducing speed limits were suggested for these areas. • Strong support was expressed for the full segregation and setting back of walking and cycling facilities, and the shared use "short cuts" that will enable people to avoid busy junctions and roundabouts. • Concern was expressed relating to the proposed tangential roundabout design which may result in high vehicle speeds at the roundabout and safety concerns for pedestrians using the uncontrolled crossings on the roundabout. • Suggestion was made to consider a radial roundabout layout, and further measures to reduce traffic speeds and improve the pedestrian

Consultee	Summary of Response
	environment at the roundabouts including the consideration of green infrastructure. Measures to mitigate noise impacts was also mentioned.
OCC Public Rights of Way – Access Strategy & Development	• OCC PRoW were positive about the proposals but noted that the improvements for pedestrians are relatively close to traffic and has not included creation of alternative traffic free routes well away from carriageways and within local settlements. • It was also noted that complementary cycle routes within settlements must be provided to equal standard and traffic free where possible to encourage less confident cyclists to use their bikes. • OCC PRoW made the following suggestions: – Provide a wider cycle path to make the cycle-commuting faster and safe, as pedestrian use is likely to be low given the length of the corridor. – Further consideration for equestrian provision and onwards connections, by discussion with local and national representative of the British Horse Society and better understanding of their needs. – Formal consultation to be carried out with the statutory Oxfordshire Countryside Access Forum.
Harwell Campus Bicycle Users Group (HarBUG)	• HarBUG supported the proposed improvements along the Clifton Hampden Bypass and agreed that they will make cycling to Culham Science Centre easier from Didcot and, in parts, from Abingdon. • In general, they agreed that proposals would encourage walking and cycling however noted that pedestrian facilities along the route would only be used by people for short distance as a means to get places, but it would generally be an unpleasant environment and unlikely used for leisure. • It was noted that cycling will be encouraged by the proposals, only if direct and convenient connections to existing and new housing developments are provided and that all these routes are integrated into the Science Vale Cycling Network. • HarBUG raised concerns about the proposed unsignalised pedestrian and cycle crossings on the roundabout and that this should be reconsidered. It was also suggested that the cycle route from Abingdon to Culham Science Centre should be upgraded and improved so cycle commuters have a good alternative to using the main carriageway.
Milton Park Bike Users' Group (MilBUG)	• MilBUG were positive about the proposed walking and cycling improvements, however mentioned that cycle facilities must have good quality, safe and convenient onwards connections to places of local interest. • A number of suggestions were also raised: – Good segregation between footways and the carriageway to improve walking environment, including consideration for planting/landscaping – Signalised crossings or raised parallel crossings at junction to provide cycle priority at crossings. – New facilities and cycle route should encourage more people to cycle between Culham, Milton Park and other areas of Didcot.
Cyclox	• In general, Cycling UK were welcoming of the walking and cycling improvements proposed as part of the scheme to encourage and allow people to walk and cycle more often, however they had some significant concerns on the proposals in general and whether the schemes were promoting private car usage rather than walking and cycling.

Consultee	Summary of Response
	• Cycling UK, did not support the walking and cycling proposals as part of the Clifton Hampden Bypass, suggesting that: – Cycling will be diminished and made unattractive by the proposed new roads and lack of priority crossings. – Design of the roundabouts with unsignalised crossings or Toucan crossings is not attractive or safe to cyclists. – The location of the pedestrian crossing on the bypass at Culham Science Centre appears to be away from the main access gate and may not meet desire lines.
Oxfordshire Cycling Network (OCN)	• OCN were positive about the improvements and agreed in part that they would encourage walking and cycling however noted that walking will likely be for 'function' rather than pleasure due to the distances involved and that the new highways will also likely increase the attractiveness of driving. • OCN supported the proposals and agreed that the specification of the bypass itself was good for cycling and offers benefit for future connectivity, however the following should be considered: – Creation of a quiet lane along the A415 to Berensfield by reallocating road space and reduction of speeds, to enable the extension of the cycle route from Culham Science Centre / Clifton Hampden to Berensfield / Dorchester. – Provision of a parallel crossing rather than an unsignalised crossing at the Culham Science Centre roundabout.
Oxfordshire Transport & Access Group (OXTRAG)	• OXTRAG welcomes the improvements for encourage people to walk and cycle more often. • Agree with the walking and cycling facilities proposed and are pleased that there will be an off-carriageway cycleway/footway, however suggested that: – A link to the highways through an underpass should be provided. – The cycleway/footway should be extended north-westwards as far as the Golden Balls Roundabout. – Links are provided to the nearby bridleway to the north.

3. User opportunities

The opportunities highlighted below are deemed to be relevant to the highway scheme and should be considered by the design team leader throughout the progression of the highway scheme design in addition to any further opportunities that may arise through the ongoing development of the design phases.

It shall be noted that opportunities labelled "KS" have been identified through key stakeholder consultation carried out in April 2020 and have only been raised following the completion of the feasibility stage design due to the programme. Additional opportunities identified are to be reviewed by designers at the next stage of the design and to be included in the next stage WCHAR review.

3.1 General

Opportunity 1

Inclusion of dedicated pedestrian and cycle facilities along the proposed new highways corridor and up to the Golden Balls Roundabout to improve the accessibility for NMUs between Culham Railway Station, Culham Science Centre and areas to the north-east of Clifton Hampden.

Opportunity KS-1

Provision of well-designed junctions with safe and direct crossings, to provide a route which caters to all user. Consideration to be given to introduction of parallel crossings where safe to do so, to give priority to pedestrians and cyclists; or signalised crossings.

Opportunity KS-2

Inclusion of green infrastructure and landscaping, and maximise segregation distance between motor vehicles and NMUs, in order to provide a high-quality pedestrian and cycling environment and mitigate noise impacts.

Opportunity KS-3

Provision of complementary cycle routes and improvements to existing cycle infrastructure, and traffic calming measures within Clifton Hampden Village to encourage an uptake in cycling in areas where vehicle traffic may reduce due to the proposed new bypass.

Opportunity KS-4

Inclusion of the new cycle route along the Clifton Hampden Bypass into the proposed Science Vale Cycle Network, providing a consistent style and approach to wayfinding signage as proposed for the network.

3.2 Strategic opportunities

Opportunity 2

Provide a new signed link from Culham Railway Station to the Green Belt Way, via the new bypass. This will enable any leisure users to easily access the circular route who are using the train services.

Opportunity 3

Provide a new link between the two branches of the NCR 5, to provide a more direct route between Abingdon, Long Wittenham and Wallingford, without passing through Didcot.

Opportunity 4

Provide a connection between the promoted and well-used Thames Path at Clifton Hampden and the Oxford Green Belt Way to the north east of Culham Science Centre. This shall include consideration for an upgraded crossing on the A415 Abingdon Road and a crossing of the proposed bypass.

3.3 Pedestrian specific opportunities

Opportunity 5

Provide missing footway links between the Clifton Hampden Village and existing public footpaths accessed along Oxford Road. Simplification of the routes in the area shall also be considered to enable easier maintenance and allow for a high quality, maintained route to be provided from Oxford Road towards the Green Belt Way.

Opportunity 6

Upgrade access and wayfinding signage for the existing footpath between Clifton Hampden and Oxford Green Belt Way. Options to be considered shall include improved signage from the village, improved access treatment and visibility on Abingdon Road.

Opportunity 7

Renew the white lining on the existing shared cycle-pedestrian footways along A415 Abingdon Road.

Opportunity 8

As many of the routes are rural, provision of street lighting along key NMUs routes should be considered to encourage use throughout the year in all season, and weather conditions.

3.4 Cyclist specific opportunities

Opportunity 9

Provision of additional cycle stands at Culham Science Centre and Culham Station, to further encourage cycling as a means to travel to work.

Opportunity 10

Improve access to the existing shared footways on the southern side of Abingdon Road from Culham Science Centre. This shall include the consideration for providing crossing facilities near Culham Science Centre, to assist pedestrians and cyclists to access the off-carriageway facilities to travel towards Clifton Hampden.

Opportunity KS-5

Upgrade and improve the existing cycle facilities along the A415 from Abingdon to Culham Science Centre to cater for commuter demand and further encourage use of off-carriageway facilities. Installation of additional wayfinding signage and incorporation of improvements proposed along this route as part of the Science Vale Cycle Network.

Opportunity KS-6

Consider the possibility of extending the cycle route from Culham Science Centre / Clifton Hampden to Berensfield / Dorchester by improving the pedestrian and cyclist environment along the A415 to Berensfield. Measures to be considered shall include wayfinding signage, reallocating road space and reduction of speeds.

3.5 Equestrian specific opportunities

Liaison with key stakeholders and local user groups has not identified any key equestrian desire lines or demand within the scheme study area. British Horse Society have been included as part of the consultation, however, did not respond within the consultation period.

It has however been suggested during public consultation that further consideration should be given to equestrian provision and onwards connection to the nearby bridleways to the north of the proposed bypass.

Opportunity KS-7

To consult with BHS during the development of the design to ensure that equestrian demand is catered for, and future aspirations for equestrian routes have been considered as part of the design.

4. Walking, Cycling and Horse-Riding Assessment Team Statement

As Lead Assessor, I confirm that this Walking, Cycling and Horse-Riding Assessment Report has been compiled in accordance with DMRB GG 142 and thus contains the appropriate information for the wider design team. The Walking, Cycling and Horse-Riding Assessment was undertaken by the following Assessment and Review Team:

Walking, Cycling and Horse-Riding Lead Assessor

Name: Andy Blanchard Signed:

Position: Associate Director Date: 19/05/2020

Company: AECOM

Walking, Cycling and Horse-Riding Assessor

Name: Kin-Yun Lo Signed:

Position: Senior Engineer Date: 15/05/2020

Company: AECOM

As design team leader I confirm that the assessment has been undertaken at the appropriate stage of scheme development and that the wider design team has been involved in the process.

I confirm that in my professional opinion the appointed Lead Assessor has the appropriate experience for the role making reference to the expected competencies contained in GG 142.

Design Team Leader

Name: Shaun Wilkinson Signed:

Position: Technical Direction Date: 21/05/2020

Company: AECOM

Appendix B – Off-Site Junction Capacity Assessment Outputs

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 2 Junction-A4130_Service Area - Final.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF2 - Junction 18-A4130_Service Area
Report generation date: 02/07/2021 08:54:37

»2020, AM
»2020, PM
»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Stream B-AC	D1	1.5	18.87	0.60	C	D2	1.2	15.27	0.55	C
Stream C-AB		0.4	10.74	0.31	B		0.6	11.74	0.38	B
	2024 with									
Stream B-AC	D3	1.0	17.49	0.49	C	D4	1.9	27.17	0.66	D
Stream C-AB		0.5	13.06	0.34	B		0.7	15.87	0.43	C
	2024 without									
Stream B-AC	D5	1.5	20.82	0.61	C	D6	1.4	17.41	0.59	C
Stream C-AB		0.5	12.27	0.33	B		0.6	12.29	0.40	B
	2034 with									
Stream B-AC	D7	2.3	28.23	0.71	D	D8	0.7	12.78	0.40	B
Stream C-AB		0.5	12.54	0.35	B		0.6	12.89	0.38	B
	2034 without									
Stream B-AC	D9	18.3	206.83	1.07	F	D10	3.1	34.40	0.77	D
Stream C-AB		1.4	31.09	0.60	D		0.9	16.31	0.47	C

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	19/11/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		2.49	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A4130		Major
B	Service Area		Minor
C	A4130		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	14.68	✓	1.22	✓	3.63	204.0	✓	15.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	5.00	250	46

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	718	0.079	0.200	0.126	0.286
B-C	784	0.075	0.189	-	-
C-B	800	0.193	0.193	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1173	100.000
B		✓	263	100.000
C		✓	1196	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	78	1095
	B	0	0	263
	C	1061	135	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	13	7
	B	0	0	11
	C	9	10	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.60	18.87	1.5	C
C-AB	0.31	10.74	0.4	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	198	551	0.359	196	0.6	10.063	B
C-AB	102	561	0.181	101	0.2	7.810	A
C-A	799			799			
A-B	59			59			
A-C	824			824			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	236	521	0.454	235	0.8	12.544	B
C-AB	121	529	0.230	121	0.3	8.828	A
C-A	954			954			
A-B	70			70			
A-C	984			984			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	290	480	0.603	287	1.5	18.422	C
C-AB	149	484	0.307	148	0.4	10.701	B
C-A	1168			1168			
A-B	86			86			
A-C	1206			1206			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	290	480	0.603	289	1.5	18.871	C
C-AB	149	484	0.307	149	0.4	10.737	B
C-A	1168			1168			
A-B	86			86			
A-C	1206			1206			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	236	521	0.454	239	0.9	12.862	B
C-AB	121	529	0.230	122	0.3	8.865	A
C-A	954			954			
A-B	70			70			
A-C	984			984			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	198	551	0.359	199	0.6	10.253	B
C-AB	102	561	0.181	102	0.2	7.852	A
C-A	799			799			
A-B	59			59			
A-C	824			824			

2020, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		2.63	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1123	100.000
B		✓	257	100.000
C		✓	946	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	108	1015
	B	0	0	257
	C	773	173	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	4	4
	B	0	0	7
	C	6	11	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.55	15.27	1.2	C
C-AB	0.38	11.74	0.6	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	193	586	0.330	192	0.5	9.080	A
C-AB	130	568	0.229	129	0.3	8.184	A
C-A	582			582			
A-B	81			81			
A-C	764			764			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	231	558	0.414	230	0.7	10.963	B
C-AB	156	538	0.289	155	0.4	9.388	A
C-A	695			695			
A-B	97			97			
A-C	912			912			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	283	518	0.546	281	1.2	15.043	C
C-AB	190	497	0.383	190	0.6	11.674	B
C-A	851			851			
A-B	119			119			
A-C	1118			1118			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	283	518	0.546	283	1.2	15.267	C
C-AB	190	497	0.383	190	0.6	11.736	B
C-A	851			851			
A-B	119			119			
A-C	1118			1118			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	231	558	0.414	233	0.7	11.143	B
C-AB	156	538	0.289	156	0.4	9.448	A
C-A	695			695			
A-B	97			97			
A-C	912			912			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	193	586	0.330	194	0.5	9.212	A
C-AB	130	568	0.229	131	0.3	8.244	A
C-A	582			582			
A-B	81			81			
A-C	764			764			

2024 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		1.76	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1510	100.000
B		✓	182	100.000
C		✓	1158	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	66	1444
	B	0	0	182
	C	1030	128	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	18	6
	B	0	0	13
	C	10	10	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.49	17.49	1.0	C
C-AB	0.34	13.06	0.5	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	137	497	0.276	136	0.4	9.922	A
C-AB	96	515	0.187	95	0.2	8.569	A
C-A	775			775			
A-B	50			50			
A-C	1087			1087			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	164	459	0.357	163	0.5	12.142	B
C-AB	115	474	0.243	115	0.3	10.021	B
C-A	926			926			
A-B	59			59			
A-C	1298			1298			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	200	406	0.494	199	0.9	17.240	C
C-AB	141	417	0.338	140	0.5	12.990	B
C-A	1134			1134			
A-B	73			73			
A-C	1590			1590			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	200	406	0.494	200	1.0	17.488	C
C-AB	141	417	0.338	141	0.5	13.056	B
C-A	1134			1134			
A-B	73			73			
A-C	1590			1590			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	164	459	0.357	165	0.6	12.328	B
C-AB	115	474	0.243	116	0.3	10.083	B
C-A	926			926			
A-B	59			59			
A-C	1298			1298			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	137	497	0.276	138	0.4	10.044	B
C-AB	96	515	0.187	97	0.2	8.618	A
C-A	775			775			
A-B	50			50			
A-C	1087			1087			

2024 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		2.83	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1589	100.000
B		✓	234	100.000
C		✓	1381	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	78	1511
	B	0	0	234
	C	1226	155	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	17	7
	B	0	0	13
	C	10	10	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.66	27.17	1.9	D
C-AB	0.43	15.87	0.7	C
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	176	485	0.363	174	0.6	11.480	B
C-AB	117	502	0.233	115	0.3	9.294	A
C-A	923			923			
A-B	59			59			
A-C	1138			1138			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	210	445	0.473	209	0.9	15.180	C
C-AB	139	458	0.304	139	0.4	11.263	B
C-A	1102			1102			
A-B	70			70			
A-C	1358			1358			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	258	389	0.662	254	1.8	25.907	D
C-AB	171	397	0.429	169	0.7	15.710	C
C-A	1350			1350			
A-B	86			86			
A-C	1664			1664			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	258	389	0.662	257	1.9	27.166	D
C-AB	171	397	0.429	171	0.7	15.867	C
C-A	1350			1350			
A-B	86			86			
A-C	1664			1664			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	210	445	0.473	214	0.9	15.841	C
C-AB	139	458	0.304	141	0.4	11.387	B
C-A	1102			1102			
A-B	70			70			
A-C	1358			1358			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	176	485	0.363	178	0.6	11.745	B
C-AB	117	502	0.233	117	0.3	9.378	A
C-A	923			923			
A-B	59			59			
A-C	1138			1138			

2024 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		2.49	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1410	100.000
B		✓	240	100.000
C		✓	1054	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	93	1317
	B	0	0	240
	C	923	131	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	12	6
	B	0	0	11
	C	11	10	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.61	20.82	1.5	C
C-AB	0.33	12.27	0.5	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	181	522	0.346	179	0.5	10.430	B
C-AB	99	529	0.186	98	0.2	8.328	A
C-A	695			695			
A-B	70			70			
A-C	992			992			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	216	486	0.444	215	0.8	13.218	B
C-AB	118	491	0.240	117	0.3	9.637	A
C-A	830			830			
A-B	84			84			
A-C	1184			1184			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	264	437	0.605	262	1.5	20.251	C
C-AB	144	438	0.330	144	0.5	12.217	B
C-A	1016			1016			
A-B	102			102			
A-C	1450			1450			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	264	437	0.605	264	1.5	20.821	C
C-AB	144	438	0.330	144	0.5	12.272	B
C-A	1016			1016			
A-B	102			102			
A-C	1450			1450			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	216	486	0.444	218	0.8	13.586	B
C-AB	118	491	0.240	118	0.3	9.690	A
C-A	830			830			
A-B	84			84			
A-C	1184			1184			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	181	522	0.346	182	0.5	10.623	B
C-AB	99	529	0.186	99	0.2	8.376	A
C-A	695			695			
A-B	70			70			
A-C	992			992			

2024 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		2.60	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1198	100.000
B		✓	273	100.000
C		✓	1272	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	120	1078
	B	0	0	273
	C	1098	174	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	3	3
	B	0	0	7
	C	5	11	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.59	17.41	1.4	C
C-AB	0.40	12.29	0.6	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	206	578	0.355	203	0.5	9.548	A
C-AB	131	559	0.234	130	0.3	8.362	A
C-A	827			827			
A-B	90			90			
A-C	812			812			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	245	548	0.448	244	0.8	11.805	B
C-AB	156	528	0.296	156	0.4	9.670	A
C-A	987			987			
A-B	108			108			
A-C	969			969			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	301	507	0.593	298	1.4	17.042	C
C-AB	192	484	0.395	191	0.6	12.214	B
C-A	1209			1209			
A-B	132			132			
A-C	1187			1187			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	301	507	0.593	300	1.4	17.405	C
C-AB	192	484	0.395	192	0.6	12.286	B
C-A	1209			1209			
A-B	132			132			
A-C	1187			1187			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	245	548	0.448	248	0.8	12.073	B
C-AB	156	528	0.296	157	0.4	9.740	A
C-A	987			987			
A-B	108			108			
A-C	969			969			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	206	578	0.355	207	0.6	9.716	A
C-AB	131	559	0.234	131	0.3	8.426	A
C-A	827			827			
A-B	90			90			
A-C	812			812			

2034 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		3.04	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1387	100.000
B		✓	277	100.000
C		✓	1552	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	53	1334
	B	0	0	277
	C	1409	143	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	23	8
	B	0	0	11
	C	8	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.71	28.23	2.3	D
C-AB	0.35	12.54	0.5	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	209	518	0.403	206	0.7	11.441	B
C-AB	108	538	0.200	107	0.2	8.325	A
C-A	1061			1061			
A-B	40			40			
A-C	1004			1004			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	249	482	0.517	248	1.0	15.281	C
C-AB	129	499	0.258	128	0.3	9.703	A
C-A	1267			1267			
A-B	48			48			
A-C	1199			1199			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	305	431	0.707	300	2.2	26.604	D
C-AB	157	444	0.354	157	0.5	12.469	B
C-A	1551			1551			
A-B	58			58			
A-C	1469			1469			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	305	431	0.707	305	2.3	28.229	D
C-AB	157	444	0.354	157	0.5	12.539	B
C-A	1551			1551			
A-B	58			58			
A-C	1469			1469			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	249	482	0.517	254	1.1	16.118	C
C-AB	129	499	0.258	129	0.4	9.762	A
C-A	1267			1267			
A-B	48			48			
A-C	1199			1199			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	209	518	0.403	210	0.7	11.758	B
C-AB	108	538	0.200	108	0.3	8.380	A
C-A	1061			1061			
A-B	40			40			
A-C	1004			1004			

2034 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		1.25	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1378	100.000
B		✓	172	100.000
C		✓	2016	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	121	1257
	B	0	0	172
	C	1858	158	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	3	3
	B	0	0	7
	C	2	10	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.40	12.78	0.7	B
C-AB	0.38	12.89	0.6	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	129	554	0.234	128	0.3	8.440	A
C-AB	119	540	0.220	118	0.3	8.511	A
C-A	1399			1399			
A-B	91			91			
A-C	946			946			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	519	0.298	154	0.4	9.854	A
C-AB	142	503	0.282	142	0.4	9.938	A
C-A	1670			1670			
A-B	109			109			
A-C	1130			1130			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	189	471	0.402	188	0.7	12.693	B
C-AB	174	453	0.384	173	0.6	12.814	B
C-A	2046			2046			
A-B	133			133			
A-C	1384			1384			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	189	471	0.402	189	0.7	12.775	B
C-AB	174	453	0.384	174	0.6	12.893	B
C-A	2046			2046			
A-B	133			133			
A-C	1384			1384			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	519	0.298	156	0.4	9.932	A
C-AB	142	503	0.282	143	0.4	10.012	B
C-A	1670			1670			
A-B	109			109			
A-C	1130			1130			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	129	554	0.234	130	0.3	8.507	A
C-AB	119	540	0.220	119	0.3	8.574	A
C-A	1399			1399			
A-B	91			91			
A-C	946			946			

2034 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		16.26	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	2182	100.000
B		✓	282	100.000
C		✓	1544	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	119	2063
	B	0	0	282
	C	1388	156	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	10	5
	B	0	0	11
	C	10	9	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	1.07	206.83	18.3	F
C-AB	0.60	31.09	1.4	D
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	212	422	0.503	208	1.0	16.593	C
C-AB	117	428	0.275	116	0.4	11.493	B
C-A	1045			1045			
A-B	90			90			
A-C	1553			1553			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	254	367	0.692	249	2.0	29.562	D
C-AB	140	368	0.381	139	0.6	15.654	C
C-A	1248			1248			
A-B	107			107			
A-C	1855			1855			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	310	290	1.070	272	11.6	116.805	F
C-AB	173	288	0.600	169	1.4	29.692	D
C-A	1527			1527			
A-B	131			131			
A-C	2271			2271			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	310	290	1.070	284	18.3	206.832	F
C-AB	173	288	0.600	172	1.4	31.090	D
C-A	1527			1527			
A-B	131			131			
A-C	2271			2271			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	254	367	0.692	316	2.7	96.357	F
C-AB	140	368	0.381	143	0.6	16.226	C
C-A	1248			1248			
A-B	107			107			
A-C	1855			1855			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	212	422	0.503	219	1.1	18.265	C
C-AB	117	428	0.275	118	0.4	11.675	B
C-A	1045			1045			
A-B	90			90			
A-C	1553			1553			

2034 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF2	A4130/Service Area	T-Junction	Two-way		3.44	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	1541	100.000
B		✓	309	100.000
C		✓	2209	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	121	1420
	B	0	0	309
	C	2031	178	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	5	3
	B	0	0	6
	C	3	11	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.77	34.40	3.1	D
C-AB	0.47	16.31	0.9	C
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	233	536	0.434	230	0.7	11.634	B
C-AB	134	513	0.261	133	0.3	9.441	A
C-A	1529			1529			
A-B	91			91			
A-C	1069			1069			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	278	497	0.559	276	1.2	16.152	C
C-AB	160	472	0.339	159	0.5	11.484	B
C-A	1826			1826			
A-B	109			109			
A-C	1277			1277			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	340	442	0.769	333	2.9	31.278	D
C-AB	196	417	0.471	195	0.9	16.115	C
C-A	2236			2236			
A-B	133			133			
A-C	1563			1563			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	340	442	0.769	339	3.1	34.395	D
C-AB	196	417	0.471	196	0.9	16.311	C
C-A	2236			2236			
A-B	133			133			
A-C	1563			1563			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	278	497	0.559	285	1.3	17.507	C
C-AB	160	472	0.339	161	0.5	11.633	B
C-A	1826			1826			
A-B	109			109			
A-C	1277			1277			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	233	536	0.434	235	0.8	12.024	B
C-AB	134	513	0.261	135	0.4	9.541	A
C-A	1529			1529			
A-B	91			91			
A-C	1069			1069			

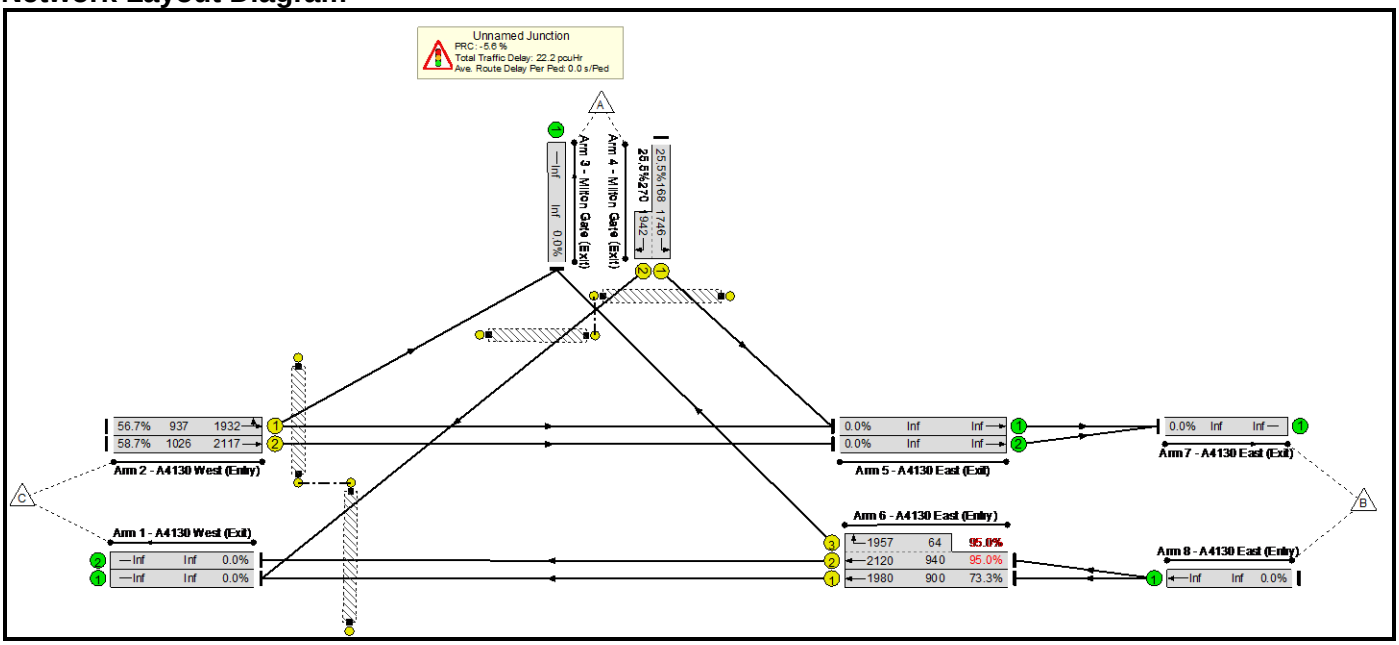
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	OFF 3 Milton Gate Signals_for reporting.lsg3x
Author:	
Company:	
Address:	

Scenario 5: '2024 With AM' (FG5: '2024 With AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



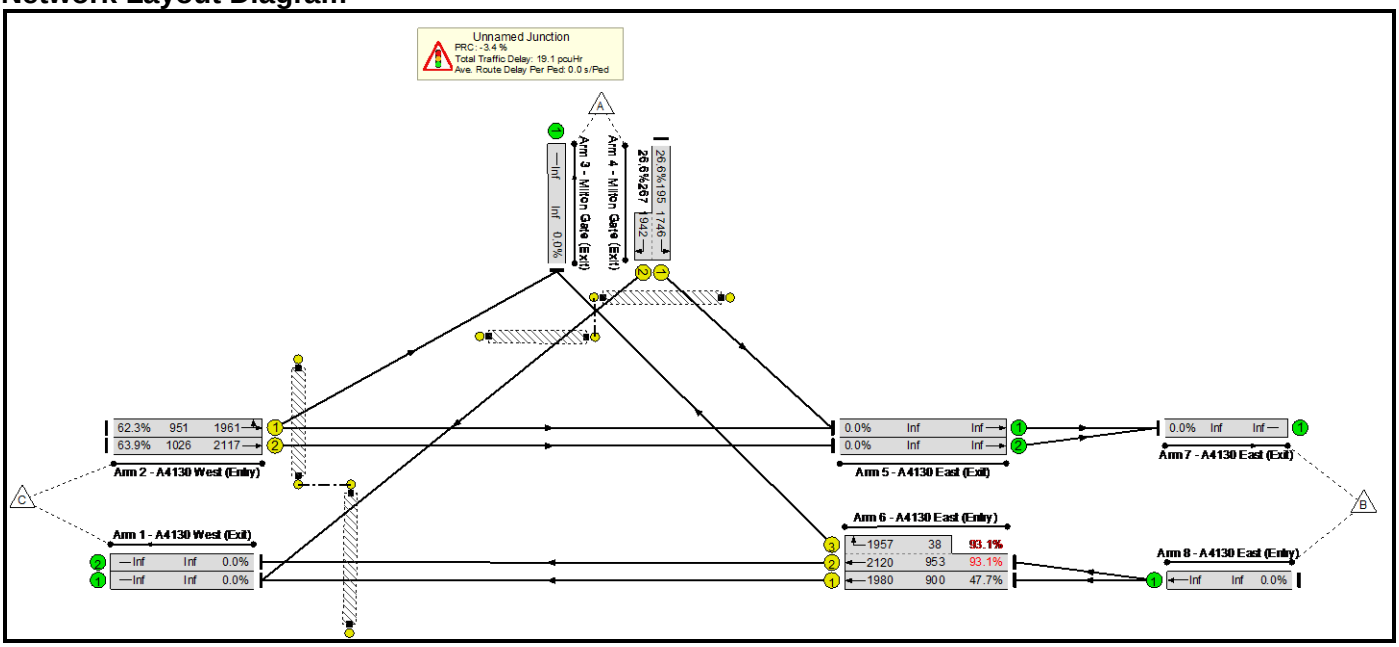
Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**95.0%**	**0**	**0**	**0**	**22.2**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**95.0%**	**0**	**0**	**0**	**22.2**	-	-
2/1	A4130 West (Entry) Left Ahead	U	A		1	31	-	531	1932	937	56.7%	-	-	-	2.4	16.5	7.4
2/2	A4130 West (Entry) Ahead	U	A		1	31	-	603	2117	1026	58.7%	-	-	-	2.8	16.5	8.6
4/1+4/2	Milton Gate (Exit) Right Left	U	E D		1	19:9	-	112	1746:1942	168+270	25.5 : 25.5%	-	-	-	0.8	27.0	1.3
6/1	A4130 East (Entry) Ahead	U	B		1	29	-	660	1980	900	73.3%	-	-	-	4.1	22.1	11.3
6/2+6/3	A4130 East (Entry) Ahead Right	U	B C		1	29:7	-	954	2120:1957	940+64	95.0 : 95.0%	-	-	-	12.1	45.6	23.5
Ped Link: P1	Unnamed Ped Link	-	F		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	22	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	24	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	H		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -5.6 Total Delay for Signalled Lanes (pcuHr): 22.17 Cycle Time (s): 66
PRC Over All Lanes (%): -5.6 Total Delay Over All Lanes(pcuHr): 22.17

Basic Results Summary
Scenario 6: '2024 With PM' (FG6: '2024 With PM', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Basic Results Summary

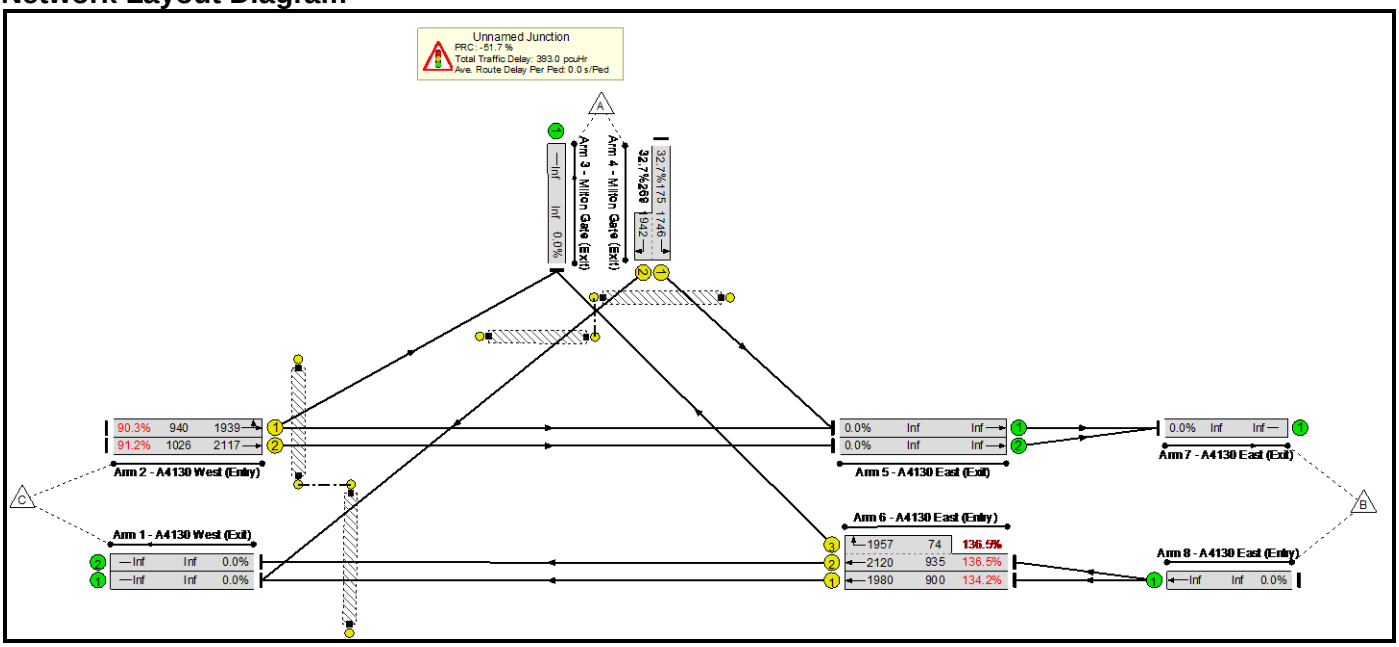
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**93.1%**	**0**	**0**	**0**	**19.1**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**93.1%**	**0**	**0**	**0**	**19.1**	-	-
2/1	A4130 West (Entry) Left Ahead	U	A		1	31	-	592	1961	951	62.3%	-	-	-	2.9	17.5	8.7
2/2	A4130 West (Entry) Ahead	U	A		1	31	-	656	2117	1026	63.9%	-	-	-	3.2	17.5	9.8
4/1+4/2	Milton Gate (Exit) Right Left	U	E D		1	19:9	-	123	1746:1942	195+267	26.6 : 26.6%	-	-	-	0.9	26.6	1.3
6/1	A4130 East (Entry) Ahead	U	B		1	29	-	429	1980	900	47.7%	-	-	-	1.9	16.3	5.8
6/2+6/3	A4130 East (Entry) Ahead Right	U	B C		1	29:7	-	922	2120:1957	953+38	93.1 : 93.1%	-	-	-	10.2	39.7	21.3
Ped Link: P1	Unnamed Ped Link	-	F		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	22	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	24	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	H		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -3.4 Total Delay for Signalled Lanes (pcuHr): 19.11 Cycle Time (s): 66
PRC Over All Lanes (%): -3.4 Total Delay Over All Lanes(pcuHr): 19.11

Scenario 7: '2034 Without AM' (FG7: '2034 Without AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

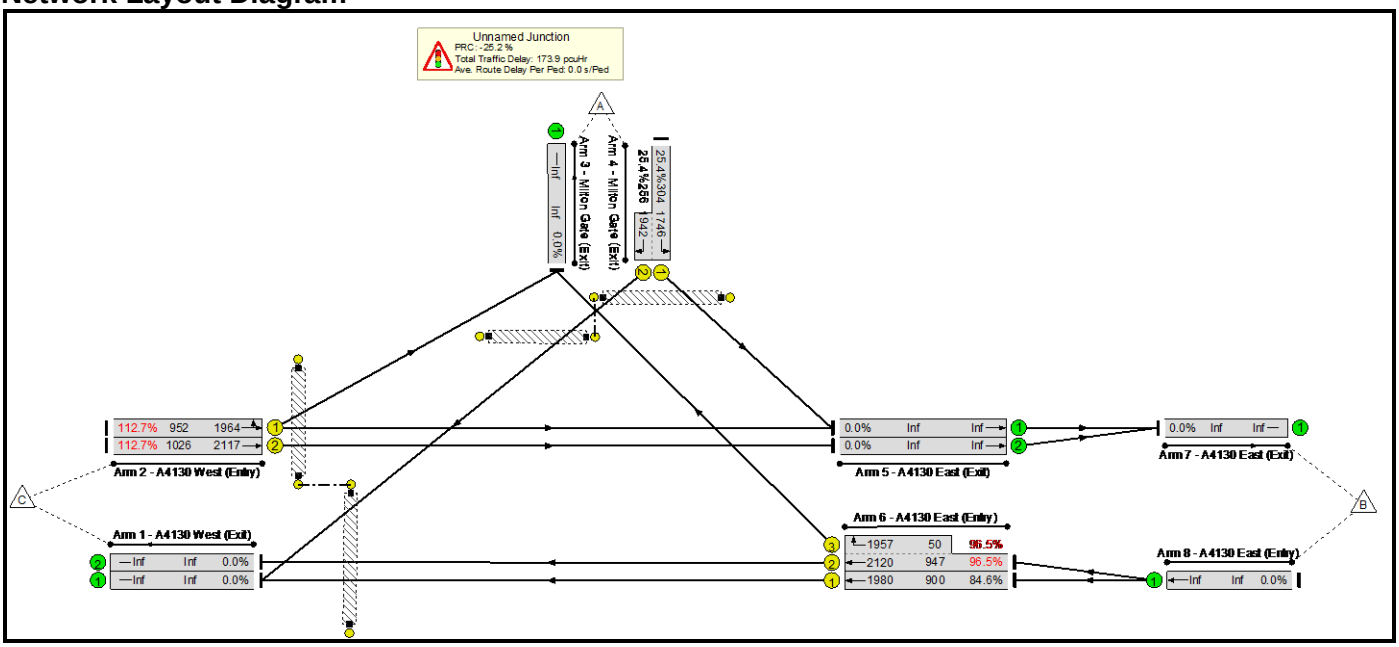
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**136.5%**	**0**	**0**	**0**	**393.0**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**136.5%**	**0**	**0**	**0**	**393.0**	-	-
2/1	A4130 West (Entry) Left Ahead	U	A		1	31	-	849	1939	940	90.3%	-	-	-	7.9	33.6	18.4
2/2	A4130 West (Entry) Ahead	U	A		1	31	-	936	2117	1026	91.2%	-	-	-	8.8	33.7	20.3
4/1+4/2	Milton Gate (Exit) Right Left	U	E D		1	19:9	-	145	1746:1942	175+269	32.7 : 32.7%	-	-	-	1.1	27.7	1.7
6/1	A4130 East (Entry) Ahead	U	B		1	29	-	1208	1980	900	134.2%	-	-	-	171.2	510.1	183.7
6/2+6/3	A4130 East (Entry) Ahead Right	U	B C		1	29:7	-	1377	2120:1957	935+74	136.5 : 136.5%	-	-	-	204.0	533.4	219.6
Ped Link: P1	Unnamed Ped Link	-	F		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	22	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	24	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	H		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -51.7 Total Delay for Signalled Lanes (pcuHr): 393.03 Cycle Time (s): 66
PRC Over All Lanes (%): -51.7 Total Delay Over All Lanes(pcuHr): 393.03

Basic Results Summary

Scenario 8: '2034 Without PM' (FG8: '2034 Without PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

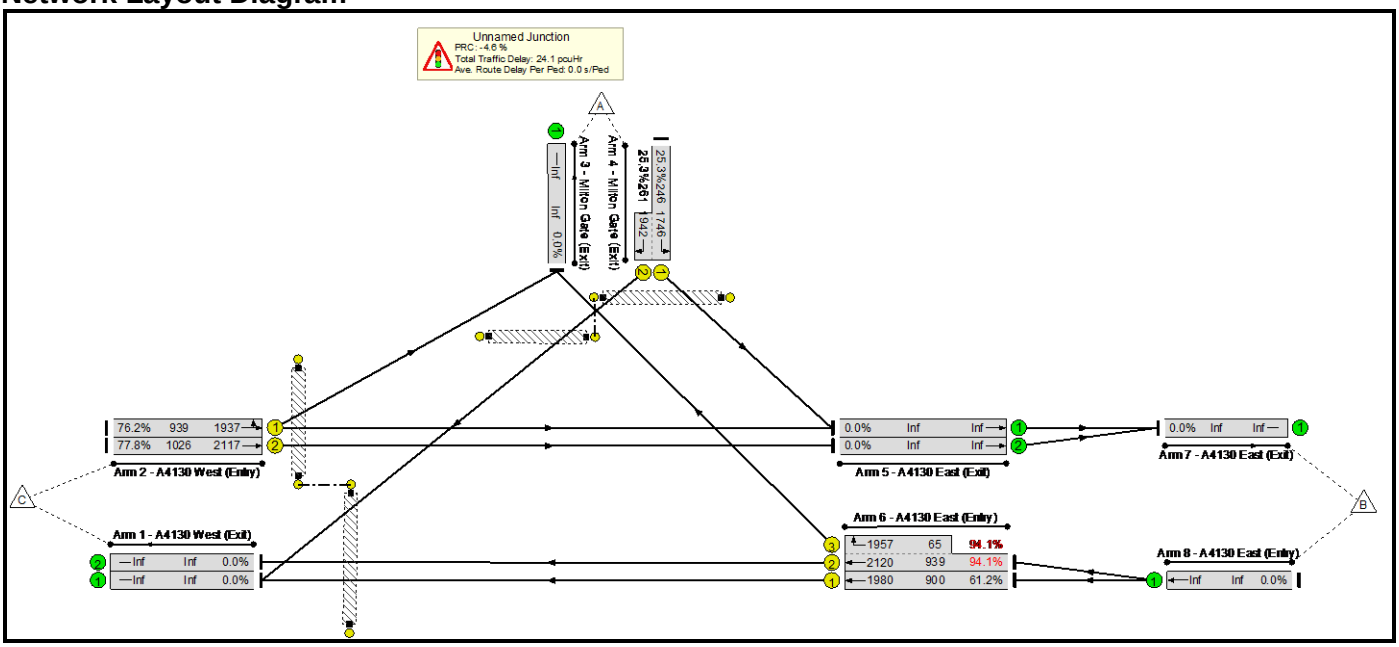
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**112.7%**	**0**	**0**	**0**	**173.9**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**112.7%**	**0**	**0**	**0**	**173.9**	-	-
2/1	A4130 West (Entry) Left Ahead	U	A		1	31	-	1073	1964	952	112.7%	-	-	-	73.7	247.2	86.4
2/2	A4130 West (Entry) Ahead	U	A		1	31	-	1157	2117	1026	112.7%	-	-	-	79.3	246.8	93.1
4/1+4/2	Milton Gate (Exit) Right Left	U	E D		1	19:9	-	142	1746:1942	304+256	25.4 : 25.4%	-	-	-	1.0	24.7	1.2
6/1	A4130 East (Entry) Ahead	U	B		1	29	-	761	1980	900	84.6%	-	-	-	6.0	28.4	14.9
6/2+6/3	A4130 East (Entry) Ahead Right	U	B C		1	29:7	-	962	2120:1957	947+50	96.5 : 96.5%	-	-	-	13.9	51.9	25.7
Ped Link: P1	Unnamed Ped Link	-	F		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	22	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	24	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	H		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -25.2 Total Delay for Signalled Lanes (pcuHr): 173.85 Cycle Time (s): 66
PRC Over All Lanes (%): -25.2 Total Delay Over All Lanes(pcuHr): 173.85

Basic Results Summary

Scenario 9: '2034 With AM' (FG9: '2034 With AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

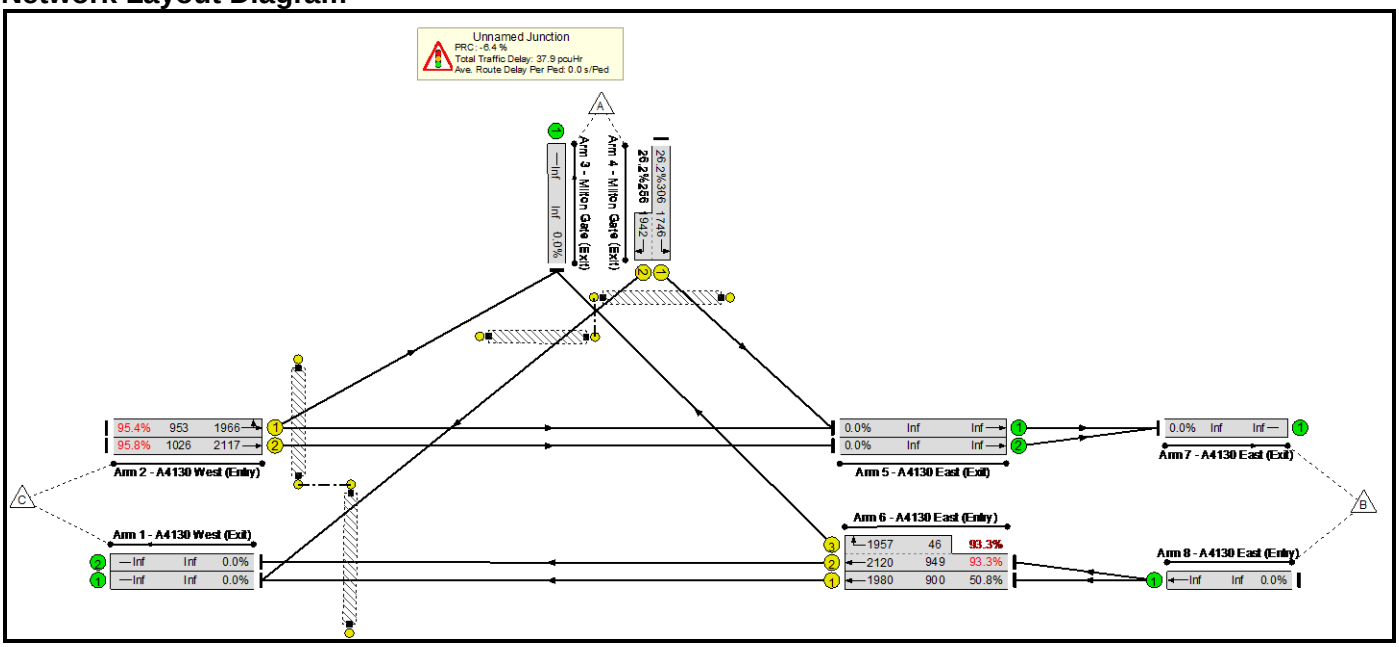
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**94.1%**	**0**	**0**	**0**	**24.1**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**94.1%**	**0**	**0**	**0**	**24.1**	-	-
2/1	A4130 West (Entry) Left Ahead	U	A		1	31	-	716	1937	939	76.2%	-	-	-	4.3	21.8	12.1
2/2	A4130 West (Entry) Ahead	U	A		1	31	-	799	2117	1026	77.8%	-	-	-	4.9	21.9	13.7
4/1+4/2	Milton Gate (Exit) Right Left	U	E D		1	19:9	-	128	1746:1942	246+261	25.3 : 25.3%	-	-	-	0.9	25.5	1.2
6/1	A4130 East (Entry) Ahead	U	B		1	29	-	551	1980	900	61.2%	-	-	-	2.9	18.7	8.3
6/2+6/3	A4130 East (Entry) Ahead Right	U	B C		1	29:7	-	945	2120:1957	939+65	94.1 : 94.1%	-	-	-	11.2	42.5	22.2
Ped Link: P1	Unnamed Ped Link	-	F		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	22	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	24	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	H		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -4.6 Total Delay for Signalled Lanes (pcuHr): 24.13 Cycle Time (s): 66
PRC Over All Lanes (%): -4.6 Total Delay Over All Lanes(pcuHr): 24.13

Scenario 10: '2034 With PM' (FG10: '2034 With PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**95.8%**	**0**	**0**	**0**	**37.9**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**95.8%**	**0**	**0**	**0**	**37.9**	-	-
2/1	A4130 West (Entry) Left Ahead	U	A		1	31	-	909	1966	953	95.4%	-	-	-	11.8	46.5	23.5
2/2	A4130 West (Entry) Ahead	U	A		1	31	-	983	2117	1026	95.8%	-	-	-	12.7	46.4	25.4
4/1+4/2	Milton Gate (Exit) Right Left	U	E D		1	19:9	-	147	1746:1942	306+256	26.2 : 26.2%	-	-	-	1.0	24.7	1.3
6/1	A4130 East (Entry) Ahead	U	B		1	29	-	457	1980	900	50.8%	-	-	-	2.1	16.8	6.4
6/2+6/3	A4130 East (Entry) Ahead Right	U	B C		1	29:7	-	928	2120:1957	949+46	93.3 : 93.3%	-	-	-	10.4	40.2	21.5
Ped Link: P1	Unnamed Ped Link	-	F		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	22	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	24	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	H		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -6.4 Total Delay for Signalled Lanes (pcuHr): 37.95 Cycle Time (s): 66
PRC Over All Lanes (%): -6.4 Total Delay Over All Lanes(pcuHr): 37.95

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 4 Junction -A4130_Mendip Heights_A415_2020.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF4 - Junction 19-A4130_Mendip Heights_A415
Report generation date: 09/09/2021 13:49:00

»2020, AM
»2020, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Arm 1	D1	1.0	8.22	0.49	A	D2	1.9	10.28	0.66	B
Arm 2		1.2	5.91	0.54	A		2.6	10.56	0.73	B
Arm 3		0.1	5.27	0.08	A		0.1	7.00	0.10	A
Arm 4		1.6	4.93	0.62	A		0.8	3.02	0.43	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	19/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	5.85	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4130 (N)	
2	B4493	
3	Mendip Heights	
4	A4130 (W)	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
1	3.65	6.00	6.5	20.0	35.0	18.0	
2	3.56	6.50	11.2	40.0	35.0	23.0	
3	3.44	6.50	5.3	30.0	35.0	19.0	
4	3.85	9.46	44.3	16.0	35.0	28.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.623	1497
2	0.654	1640
3	0.616	1442
4	0.784	2364

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	383	100.000
2		✓	660	100.000
3		✓	56	100.000
4		✓	1091	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	3	116	5	259
	2	261	0	9	390
	3	12	22	0	22
	4	445	631	15	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	21	1	6	27
	2	5	0	0	3
	3	7	0	0	1
	4	15	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.49	8.22	1.0	A
2	0.54	5.91	1.2	A
3	0.08	5.27	0.1	A
4	0.62	4.93	1.6	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	288	501	987	0.292	287	0.4	5.130	A
2	497	211	1414	0.351	495	0.5	3.909	A
3	42	684	959	0.044	42	0.0	3.925	A
4	821	223	2010	0.409	819	0.7	3.016	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	344	600	933	0.369	344	0.6	6.100	A
2	593	253	1381	0.430	592	0.7	4.562	A
3	50	819	868	0.058	50	0.1	4.400	A
4	981	268	1977	0.496	980	1.0	3.606	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	422	734	860	0.490	420	0.9	8.155	A
2	727	309	1336	0.544	725	1.2	5.873	A
3	62	1003	746	0.083	62	0.1	5.258	A
4	1201	327	1931	0.622	1199	1.6	4.896	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	422	735	859	0.491	422	1.0	8.224	A
2	727	310	1335	0.544	727	1.2	5.913	A
3	62	1005	744	0.083	62	0.1	5.272	A
4	1201	328	1931	0.622	1201	1.6	4.935	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	344	602	932	0.369	346	0.6	6.158	A
2	593	255	1379	0.430	595	0.8	4.600	A
3	50	823	866	0.058	50	0.1	4.417	A
4	981	269	1976	0.496	983	1.0	3.636	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	288	504	986	0.293	289	0.4	5.173	A
2	497	213	1412	0.352	498	0.5	3.939	A
3	42	689	956	0.044	42	0.0	3.940	A
4	821	225	2009	0.409	823	0.7	3.039	A

2020, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	7.70	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	629	100.000
2		✓	817	100.000
3		✓	50	100.000
4		✓	816	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	12	158	28	431
	2	116	0	22	679
	3	13	21	0	16
	4	294	498	24	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	1	4	0	9
	2	3	0	0	1
	3	0	0	0	0
	4	14	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.66	10.28	1.9	B
2	0.73	10.56	2.6	B
3	0.10	7.00	0.1	A
4	0.43	3.02	0.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	474	408	1155	0.410	471	0.7	5.241	A
2	615	371	1361	0.452	612	0.8	4.782	A
3	38	927	849	0.044	37	0.0	4.436	A
4	614	121	2133	0.288	613	0.4	2.366	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	565	488	1108	0.511	564	1.0	6.609	A
2	734	444	1310	0.561	733	1.3	6.217	A
3	45	1110	731	0.061	45	0.1	5.245	A
4	734	145	2115	0.347	733	0.5	2.605	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	693	597	1043	0.664	689	1.9	10.073	B
2	900	542	1241	0.725	894	2.5	10.225	B
3	55	1356	574	0.096	55	0.1	6.932	A
4	898	177	2091	0.430	898	0.7	3.016	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	693	598	1042	0.664	692	1.9	10.275	B
2	900	545	1240	0.726	899	2.6	10.559	B
3	55	1363	570	0.097	55	0.1	6.996	A
4	898	178	2090	0.430	898	0.8	3.020	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	565	489	1107	0.511	569	1.1	6.737	A
2	734	448	1307	0.562	740	1.3	6.397	A
3	45	1120	725	0.062	45	0.1	5.297	A
4	734	147	2114	0.347	734	0.5	2.612	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	474	409	1154	0.410	475	0.7	5.311	A
2	615	374	1359	0.453	617	0.8	4.865	A
3	38	935	844	0.045	38	0.0	4.467	A
4	614	122	2132	0.288	615	0.4	2.374	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 4 JunRedesigned_V1.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF4 - Junction 19-A4130_Mendip Heights_A415 \Redesign
Report generation date: 28/07/2021 11:18:28

»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2024 with									
Arm 1	D3	0.3	4.34	0.24	A	D4	1.1	6.11	0.52	A
Arm 2		2.7	8.04	0.74	A		2.8	8.89	0.74	A
Arm 3		0.2	6.14	0.14	A		0.1	5.00	0.07	A
Arm 4		0.7	3.18	0.41	A		0.4	2.23	0.29	A
	2024 without									
Arm 1	D5	3.4	14.11	0.78	B	D6	6.2	23.00	0.87	C
Arm 2		31.0	80.86	1.02	F		33.1	84.08	1.02	F
Arm 3		0.2	6.70	0.14	A		0.1	5.97	0.09	A
Arm 4		1.3	4.53	0.56	A		1.1	3.61	0.52	A
	2034 with									
Arm 1	D7	0.5	5.22	0.32	A	D8	1.1	6.57	0.53	A
Arm 2		2.6	7.96	0.73	A		1.2	4.89	0.54	A
Arm 3		0.2	6.43	0.20	A		0.1	4.17	0.08	A
Arm 4		1.4	4.82	0.58	A		0.5	2.41	0.34	A
	2034 without									
Arm 1	D9	144.0	464.89	1.27	F	D10	228.5	746.89	1.42	F
Arm 2		458.5	1359.44	1.47	F		260.7	705.62	1.29	F
Arm 3		0.3	7.22	0.22	A		0.2	6.74	0.14	A
Arm 4		11.5	27.46	0.93	D		7.9	15.81	0.90	C

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	19/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 with, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	5.89	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4130 (N)	
2	B4493	
3	Mendip Heights	
4	A4130 (W)	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
1	3.58	6.59	9.0	65.6	39.0	16.0	
2	3.73	7.16	12.7	99.0	39.0	19.0	
3	3.21	6.56	7.9	30.6	39.0	17.0	
4	2.66	10.12	82.3	31.5	39.0	26.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.660	1652
2	0.691	1818
3	0.621	1489
4	0.842	2639

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	239	100.000
2		✓	1127	100.000
3		✓	84	100.000
4		✓	723	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	2	151	79	7
	2	575	0	15	537
	3	22	27	0	35
	4	204	505	14	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	1	5	30	14
	2	2	0	0	2
	3	5	5	0	3
	4	12	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.24	4.34	0.3	A
2	0.74	8.04	2.7	A
3	0.14	6.14	0.2	A
4	0.41	3.18	0.7	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	180	410	1208	0.149	179	0.2	3.499	A
2	848	77	1718	0.494	844	1.0	4.102	A
3	63	840	918	0.069	63	0.1	4.207	A
4	544	469	2105	0.259	543	0.3	2.303	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	215	490	1159	0.185	215	0.2	3.812	A
2	1013	92	1705	0.594	1011	1.4	5.170	A
3	76	1006	818	0.092	75	0.1	4.850	A
4	650	562	2030	0.320	649	0.5	2.608	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	263	600	1092	0.241	263	0.3	4.336	A
2	1241	112	1688	0.735	1236	2.7	7.871	A
3	92	1229	682	0.136	92	0.2	6.106	A
4	796	687	1928	0.413	795	0.7	3.173	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	263	601	1092	0.241	263	0.3	4.342	A
2	1241	112	1688	0.735	1241	2.7	8.036	A
3	92	1234	679	0.136	92	0.2	6.138	A
4	796	689	1926	0.413	796	0.7	3.184	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	215	492	1158	0.185	215	0.2	3.817	A
2	1013	92	1705	0.594	1018	1.5	5.274	A
3	76	1013	814	0.093	76	0.1	4.880	A
4	650	565	2027	0.321	651	0.5	2.618	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	180	411	1207	0.149	180	0.2	3.506	A
2	848	77	1718	0.494	850	1.0	4.160	A
3	63	846	915	0.069	63	0.1	4.229	A
4	544	472	2102	0.259	545	0.4	2.314	A

2024 with, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	6.29	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	568	100.000
2		✓	1043	100.000
3		✓	53	100.000
4		✓	612	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	1	264	283	20
	2	267	0	35	741
	3	17	16	0	20
	4	61	532	19	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	0	1	2	1
	2	1	0	0	1
	3	0	0	0	0
	4	13	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.52	6.11	1.1	A
2	0.74	8.89	2.8	A
3	0.07	5.00	0.1	A
4	0.29	2.23	0.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	428	426	1345	0.318	426	0.5	3.906	A
2	785	242	1632	0.481	782	0.9	4.217	A
3	40	771	1006	0.040	40	0.0	3.726	A
4	461	226	2376	0.194	460	0.2	1.879	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	511	509	1290	0.396	510	0.6	4.610	A
2	938	290	1598	0.587	936	1.4	5.417	A
3	48	923	910	0.052	48	0.1	4.172	A
4	550	270	2339	0.235	550	0.3	2.012	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	625	624	1214	0.515	624	1.0	6.080	A
2	1148	355	1553	0.739	1143	2.7	8.663	A
3	58	1128	782	0.075	58	0.1	4.973	A
4	674	330	2289	0.294	673	0.4	2.227	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	625	624	1214	0.515	625	1.1	6.113	A
2	1148	356	1553	0.740	1148	2.8	8.888	A
3	58	1133	779	0.075	58	0.1	4.995	A
4	674	331	2288	0.294	674	0.4	2.229	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	511	510	1290	0.396	512	0.7	4.639	A
2	938	291	1598	0.587	943	1.4	5.546	A
3	48	930	906	0.053	48	0.1	4.197	A
4	550	272	2337	0.235	551	0.3	2.015	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	428	427	1345	0.318	428	0.5	3.932	A
2	785	244	1631	0.482	787	0.9	4.279	A
3	40	777	1002	0.040	40	0.0	3.740	A
4	461	227	2374	0.194	461	0.2	1.883	A

2024 without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	36.57	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	809	100.000
2		✓	1215	100.000
3		✓	82	100.000
4		✓	920	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	38	296	466	9
	2	633	3	13	566
	3	26	22	0	34
	4	467	440	13	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	2	5	19	1
	2	3	0	0	2
	3	2	1	0	3
	4	14	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.78	14.11	3.4	B
2	1.02	80.86	31.0	F
3	0.14	6.70	0.2	A
4	0.56	4.53	1.3	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	609	359	1246	0.489	605	0.9	5.588	A
2	915	394	1463	0.625	908	1.6	6.415	A
3	62	934	876	0.070	61	0.1	4.417	A
4	693	540	1992	0.348	691	0.5	2.761	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	727	429	1203	0.605	725	1.5	7.496	A
2	1092	471	1402	0.779	1085	3.3	11.146	B
3	74	1116	763	0.097	74	0.1	5.224	A
4	827	645	1908	0.433	826	0.8	3.324	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	891	525	1145	0.778	884	3.3	13.415	B
2	1338	575	1320	1.013	1269	20.5	45.052	E
3	90	1307	644	0.140	90	0.2	6.497	A
4	1013	759	1818	0.557	1011	1.2	4.448	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	891	526	1144	0.778	890	3.4	14.107	B
2	1338	579	1317	1.016	1296	31.0	80.857	F
3	90	1334	627	0.144	90	0.2	6.705	A
4	1013	773	1807	0.561	1013	1.3	4.534	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	727	431	1202	0.605	735	1.6	7.818	A
2	1092	478	1397	0.782	1201	3.9	27.130	D
3	74	1231	691	0.107	74	0.1	5.832	A
4	827	706	1860	0.445	829	0.8	3.498	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	609	360	1245	0.489	611	1.0	5.706	A
2	915	398	1460	0.627	923	1.7	6.812	A
3	62	949	867	0.071	62	0.1	4.473	A
4	693	548	1985	0.349	694	0.5	2.791	A

2024 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	39.54	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	928	100.000
2		✓	1232	100.000
3		✓	51	100.000
4		✓	993	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	19	354	533	22
	2	426	3	29	774
	3	18	14	0	19
	4	435	537	21	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	0	3	6	1
	2	1	0	0	1
	3	0	0	0	0
	4	10	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.87	23.00	6.2	C
2	1.02	84.08	33.1	F
3	0.09	5.97	0.1	A
4	0.52	3.61	1.1	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	699	432	1302	0.537	694	1.1	5.882	A
2	928	445	1479	0.627	921	1.6	6.376	A
3	38	930	906	0.042	38	0.0	4.146	A
4	748	359	2214	0.338	746	0.5	2.449	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	834	516	1247	0.669	831	2.0	8.578	A
2	1108	533	1416	0.782	1101	3.4	11.169	B
3	46	1111	792	0.058	46	0.1	4.821	A
4	893	429	2157	0.414	892	0.7	2.844	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1022	632	1173	0.871	1007	5.8	20.028	C
2	1356	646	1334	1.016	1285	21.3	45.803	E
3	56	1299	675	0.083	56	0.1	5.818	A
4	1093	503	2097	0.521	1092	1.1	3.576	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1022	633	1172	0.871	1020	6.2	22.999	C
2	1356	654	1328	1.021	1309	33.1	84.082	F
3	56	1324	659	0.085	56	0.1	5.967	A
4	1093	512	2090	0.523	1093	1.1	3.610	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	834	518	1246	0.669	851	2.1	9.458	A
2	1108	545	1407	0.787	1224	4.0	29.878	D
3	46	1232	717	0.064	46	0.1	5.370	A
4	893	472	2122	0.421	894	0.7	2.934	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	699	433	1301	0.537	702	1.2	6.054	A
2	928	450	1476	0.629	937	1.7	6.790	A
3	38	946	896	0.043	38	0.0	4.197	A
4	748	365	2209	0.338	748	0.5	2.466	A

2034 with, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	6.33	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	292	100.000
2		✓	1104	100.000
3		✓	126	100.000
4		✓	929	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	11	186	83	12
	2	728	1	12	363
	3	66	31	0	29
	4	287	619	23	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	1	4	37	11
	2	1	0	1	3
	3	2	0	0	5
	4	9	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.32	5.22	0.5	A
2	0.73	7.96	2.6	A
3	0.20	6.43	0.2	A
4	0.58	4.82	1.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	220	506	1152	0.191	219	0.2	3.852	A
2	831	97	1706	0.487	827	0.9	4.081	A
3	95	836	941	0.101	94	0.1	4.253	A
4	699	627	2009	0.348	697	0.5	2.740	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	263	605	1093	0.240	262	0.3	4.332	A
2	992	116	1690	0.587	991	1.4	5.136	A
3	113	1001	839	0.135	113	0.2	4.960	A
4	835	751	1908	0.438	834	0.8	3.349	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	321	740	1012	0.318	321	0.5	5.201	A
2	1216	142	1668	0.729	1211	2.6	7.797	A
3	139	1223	701	0.198	138	0.2	6.391	A
4	1023	918	1773	0.577	1021	1.3	4.772	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	321	742	1011	0.318	321	0.5	5.217	A
2	1216	142	1667	0.729	1215	2.6	7.956	A
3	139	1227	698	0.199	139	0.2	6.431	A
4	1023	921	1770	0.578	1023	1.4	4.818	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	263	608	1092	0.240	263	0.3	4.348	A
2	992	116	1689	0.588	997	1.4	5.239	A
3	113	1007	835	0.136	114	0.2	4.997	A
4	835	756	1904	0.439	837	0.8	3.381	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	220	508	1151	0.191	220	0.2	3.868	A
2	831	97	1705	0.487	833	1.0	4.137	A
3	95	841	937	0.101	95	0.1	4.276	A
4	699	632	2005	0.349	700	0.5	2.762	A

2034 with, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	4.46	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	551	100.000
2		✓	789	100.000
3		✓	69	100.000
4		✓	710	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	4	338	180	29
	2	265	1	31	492
	3	25	25	0	19
	4	88	594	28	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	0	1	3	0
	2	1	0	0	2
	3	0	0	0	0
	4	10	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.53	6.57	1.1	A
2	0.54	4.89	1.2	A
3	0.08	4.17	0.1	A
4	0.34	2.41	0.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	415	487	1304	0.318	413	0.5	4.032	A
2	594	181	1664	0.357	592	0.6	3.350	A
3	52	593	1115	0.047	52	0.0	3.385	A
4	535	240	2367	0.226	533	0.3	1.963	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	495	582	1241	0.399	495	0.7	4.818	A
2	709	216	1639	0.433	708	0.8	3.865	A
3	62	710	1041	0.060	62	0.1	3.675	A
4	638	287	2328	0.274	638	0.4	2.130	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	607	713	1155	0.525	605	1.1	6.528	A
2	869	265	1605	0.541	867	1.2	4.864	A
3	76	869	941	0.081	76	0.1	4.161	A
4	782	352	2274	0.344	781	0.5	2.411	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	607	713	1154	0.526	607	1.1	6.574	A
2	869	265	1605	0.541	869	1.2	4.888	A
3	76	871	940	0.081	76	0.1	4.166	A
4	782	352	2274	0.344	782	0.5	2.412	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	495	583	1240	0.399	497	0.7	4.853	A
2	709	217	1638	0.433	711	0.8	3.887	A
3	62	713	1040	0.060	62	0.1	3.685	A
4	638	288	2327	0.274	639	0.4	2.134	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	415	488	1303	0.318	416	0.5	4.059	A
2	594	182	1663	0.357	595	0.6	3.374	A
3	52	596	1113	0.047	52	0.0	3.394	A
4	535	241	2366	0.226	535	0.3	1.966	A

2034 without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	628.84	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	1149	100.000
2		✓	1680	100.000
3		✓	126	100.000
4		✓	1454	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	70	410	656	13
	2	973	9	21	677
	3	52	23	0	51
	4	771	660	23	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	2	4	18	15
	2	2	0	0	2
	3	3	0	0	4
	4	15	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	1.27	464.89	144.0	F
2	1.47	1359.44	458.5	F
3	0.22	7.22	0.3	A
4	0.93	27.46	11.5	D

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	865	535	1148	0.753	853	2.9	11.797	B
2	1265	566	1338	0.945	1222	10.6	25.532	D
3	95	1269	666	0.142	94	0.2	6.290	A
4	1095	823	1761	0.622	1088	1.6	5.304	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1033	639	1085	0.952	1002	10.7	34.625	D
2	1510	665	1260	1.198	1255	74.5	132.105	F
3	113	1311	640	0.177	113	0.2	6.834	A
4	1307	862	1730	0.756	1302	3.0	8.297	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1265	771	1004	1.260	1000	77.0	168.837	F
2	1850	668	1258	1.470	1258	222.5	430.499	F
3	139	1314	638	0.218	138	0.3	7.207	A
4	1601	879	1717	0.933	1572	10.1	21.624	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1265	782	997	1.268	997	144.0	397.514	F
2	1850	666	1260	1.469	1259	370.0	862.699	F
3	139	1316	637	0.218	139	0.3	7.224	A
4	1601	880	1716	0.933	1595	11.5	27.456	D

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1033	657	1074	0.962	1066	135.7	464.887	F
2	1510	707	1227	1.231	1227	440.8	1201.430	F
3	113	1289	653	0.173	114	0.2	6.672	A
4	1307	850	1739	0.752	1340	3.1	9.727	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	865	541	1145	0.756	1136	67.9	324.330	F
2	1265	748	1194	1.059	1194	458.5	1359.439	F
3	95	1261	670	0.142	95	0.2	6.258	A
4	1095	824	1760	0.622	1101	1.7	5.510	A

2034 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 4	A4130/Mendip Heights/A415	Standard Roundabout		1, 2, 3, 4	445.42	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	1209	100.000
2		✓	1593	100.000
3		✓	82	100.000
4		✓	1716	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	30	467	687	25
	2	533	6	32	1022
	3	32	18	0	32
	4	811	871	34	0

Vehicle Mix

HV %s

		To			
		1	2	3	4
From	1	1	3	5	2
	2	1	0	0	1
	3	0	0	0	0
	4	6	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	1.42	746.89	228.5	F
2	1.29	705.62	260.7	F
3	0.14	6.74	0.2	A
4	0.90	15.81	7.9	C

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	910	696	1142	0.797	896	3.6	13.903	B
2	1199	575	1389	0.864	1177	5.6	15.662	C
3	62	1194	740	0.083	61	0.1	5.300	A
4	1292	458	2177	0.593	1286	1.4	4.014	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1087	832	1055	1.030	1017	21.1	57.034	F
2	1432	655	1332	1.075	1309	36.4	69.012	F
3	74	1329	656	0.112	74	0.1	6.179	A
4	1543	513	2132	0.723	1538	2.6	6.014	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1331	1011	940	1.415	939	119.0	278.237	F
2	1754	614	1362	1.288	1361	134.7	233.555	F
3	90	1376	626	0.144	90	0.2	6.712	A
4	1889	539	2111	0.895	1870	7.4	13.919	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1331	1020	934	1.424	934	218.2	626.234	F
2	1754	611	1364	1.286	1363	232.4	495.168	F
3	90	1379	625	0.145	90	0.2	6.735	A
4	1889	540	2110	0.895	1887	7.9	15.806	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1087	846	1046	1.039	1046	228.5	746.892	F
2	1432	673	1319	1.086	1319	260.7	684.399	F
3	74	1340	649	0.114	74	0.1	6.261	A
4	1543	517	2129	0.725	1564	2.7	6.596	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	910	702	1138	0.800	1133	172.8	638.165	F
2	1199	721	1284	0.934	1279	240.7	705.620	F
3	62	1305	671	0.092	62	0.1	5.915	A
4	1292	499	2144	0.603	1297	1.5	4.273	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 5-A4130_Milton Road_Power Station Roundabout_2020.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF5 - Junction 20-A4130_Milton Road_Power Station Roundabout
Report generation date: 09/09/2021 13:51:04

»2020, AM
»2020, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Arm 1	D1	3.6	15.26	0.79	C	D2	1.5	9.13	0.61	A
Arm 2		2.5	24.45	0.72	C		1.2	12.08	0.54	B
Arm 3		1.4	6.52	0.59	A		0.4	3.06	0.29	A
Arm 4		1.2	11.58	0.56	B		76.9	278.37	1.16	F
Arm 5		0.1	7.30	0.08	A		0.1	8.93	0.12	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	19/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	13.07	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4130 (N)	
2	Basil Hill Road	
3	A4130 (S)	
4	Milton Road	
5	Access Road	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
1	3.65	6.23	4.7	14.0	39.0	23.0	
2	3.05	4.20	3.3	16.0	39.0	24.0	
3	3.65	12.00	23.4	12.0	39.0	38.0	
4	3.50	3.50	0.0	17.0	39.0	21.0	
5	2.97	5.65	4.4	10.0	39.0	26.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.584	1393
2	0.526	1098
3	0.716	2149
4	0.528	1084
5	0.520	1135

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	804	100.000
2		✓	344	100.000
3		✓	715	100.000
4		✓	352	100.000
5		✓	39	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	55	258	481	10
	2	80	0	19	238	7
	3	368	22	0	309	16
	4	134	105	98	0	15
	5	8	5	11	15	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	7	21	1	5
	2	4	0	39	3	0
	3	13	55	0	4	23
	4	8	9	7	0	5
	5	14	3	38	5	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.79	15.26	3.6	C
2	0.72	24.45	2.5	C
3	0.59	6.52	1.4	A
4	0.56	11.58	1.2	B
5	0.08	7.30	0.1	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	605	191	1175	0.515	601	1.0	6.234	A
2	259	653	691	0.375	257	0.6	8.246	A
3	538	621	1533	0.351	536	0.5	3.605	A
4	265	377	796	0.333	263	0.5	6.729	A
5	29	604	678	0.043	29	0.0	5.548	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	723	229	1151	0.628	720	1.6	8.308	A
2	309	782	621	0.498	308	1.0	11.446	B
3	643	744	1451	0.443	642	0.8	4.441	A
4	316	451	755	0.419	316	0.7	8.177	A
5	35	724	618	0.057	35	0.1	6.173	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	885	280	1120	0.790	878	3.5	14.425	B
2	379	954	528	0.717	373	2.3	22.511	C
3	787	905	1345	0.585	785	1.4	6.400	A
4	388	551	700	0.554	386	1.2	11.391	B
5	43	884	538	0.080	43	0.1	7.265	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	885	282	1119	0.791	885	3.6	15.258	C
2	379	961	524	0.723	378	2.5	24.448	C
3	787	914	1339	0.588	787	1.4	6.519	A
4	388	554	698	0.555	387	1.2	11.581	B
5	43	888	536	0.080	43	0.1	7.298	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	723	231	1150	0.628	730	1.7	8.726	A
2	309	793	615	0.503	315	1.0	12.207	B
3	643	757	1443	0.446	645	0.8	4.528	A
4	316	455	753	0.420	318	0.7	8.323	A
5	35	730	615	0.057	35	0.1	6.210	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	605	193	1173	0.516	608	1.1	6.394	A
2	259	660	687	0.377	261	0.6	8.477	A
3	538	629	1527	0.352	539	0.5	3.646	A
4	265	380	795	0.334	266	0.5	6.823	A
5	29	609	675	0.043	29	0.0	5.574	A

2020, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	112.23	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	549	100.000
2		✓	318	100.000
3		✓	433	100.000
4		✓	892	100.000
5		✓	48	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	70	340	134	5
	2	59	0	57	197	5
	3	260	8	0	155	10
	4	367	299	217	0	9
	5	6	12	15	15	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	1	10	1	26
	2	0	0	6	4	0
	3	12	54	0	4	9
	4	1	2	2	0	5
	5	22	2	9	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.61	9.13	1.5	A
2	0.54	12.08	1.2	B
3	0.29	3.06	0.4	A
4	1.16	278.37	76.9	F
5	0.12	8.93	0.1	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	413	420	1069	0.387	411	0.6	5.452	A
2	239	542	769	0.311	238	0.4	6.754	A
3	326	310	1749	0.186	325	0.2	2.527	A
4	672	260	917	0.732	661	2.6	13.563	B
5	36	900	609	0.059	36	0.1	6.278	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	494	499	1024	0.482	492	0.9	6.753	A
2	286	647	712	0.401	285	0.7	8.411	A
3	389	372	1708	0.228	389	0.3	2.730	A
4	802	312	888	0.903	785	6.9	30.600	D
5	43	1070	522	0.082	43	0.1	7.512	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	604	540	1001	0.604	602	1.5	8.979	A
2	350	762	650	0.539	348	1.1	11.862	B
3	477	455	1652	0.289	476	0.4	3.061	A
4	982	381	848	1.159	838	42.9	120.882	F
5	53	1189	460	0.115	53	0.1	8.839	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	604	544	998	0.606	604	1.5	9.134	A
2	350	766	648	0.540	350	1.2	12.082	B
3	477	457	1651	0.289	477	0.4	3.065	A
4	982	382	847	1.159	846	76.9	262.744	F
5	53	1197	456	0.116	53	0.1	8.928	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	494	552	995	0.496	496	1.0	7.242	A
2	286	672	699	0.409	288	0.7	8.789	A
3	389	375	1705	0.228	390	0.3	2.736	A
4	802	313	887	0.904	876	58.4	278.374	F
5	43	1162	477	0.090	43	0.1	8.309	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	413	553	994	0.416	414	0.7	6.218	A
2	239	601	738	0.324	240	0.5	7.243	A
3	326	313	1747	0.187	326	0.2	2.536	A
4	672	262	917	0.733	890	3.7	127.078	F
5	36	1128	496	0.073	36	0.1	7.839	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 5 JunRedesigned_V1.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF5 - Junction 20-A4130_Milton Road_Power Station Roundabout\Redesign
Report generation date: 28/07/2021 11:29:58

»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2024 with									
Arm 1	D3	0.3	2.50	0.22	A	D4	0.3	2.77	0.23	A
Arm 2		0.7	7.86	0.42	A		0.3	6.55	0.26	A
Arm 3		0.5	5.99	0.33	A		0.2	3.79	0.18	A
Arm 4		0.3	3.55	0.25	A		1.4	5.83	0.59	A
Arm 5		0.1	2.84	0.10	A		0.1	3.39	0.08	A
	2024 without									
Arm 1	D5	2.0	5.96	0.67	A	D6	0.9	4.14	0.46	A
Arm 2		2.4	45.16	0.73	E		0.3	10.88	0.25	B
Arm 3		2.5	16.30	0.72	C		1.1	6.91	0.53	A
Arm 4		0.9	6.24	0.49	A		4.7	16.74	0.83	C
Arm 5		0.1	4.57	0.05	A		0.1	5.37	0.08	A
	2034 with									
Arm 1	D7	0.3	2.77	0.26	A	D8	0.2	2.72	0.15	A
Arm 2		1.2	10.98	0.54	B		0.6	7.88	0.37	A
Arm 3		0.6	6.89	0.37	A		0.2	3.95	0.15	A
Arm 4		0.5	4.21	0.34	A		1.8	6.76	0.65	A
Arm 5		0.2	3.32	0.19	A		0.2	3.80	0.18	A
	2034 without									
Arm 1	D9	12.4	31.30	0.94	D	D10	2.3	7.49	0.70	A
Arm 2		121.7	6101.93	38.01	F		1.3	34.70	0.58	D
Arm 3		54.0	214.29	1.10	F		17.6	71.05	0.98	F
Arm 4		2.0	11.24	0.67	B		56.6	172.43	1.11	F
Arm 5		0.3	6.28	0.25	A		0.4	7.87	0.31	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	19/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 with, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	5.02	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4130 (N)	
2	Basil Hill Road	
3	A4130 (S)	
4	Milton Road	
5	Access Road	

Roundabout Geometry

Arm	V (m)	E (m)	I' (m)	R (m)	D (m)	PHI (deg)	Exit only
1	3.65	10.06	87.8	5.3	37.0	42.5	
2	2.91	4.69	4.6	19.3	37.0	16.0	
3	4.08	4.55	11.2	26.8	37.0	36.5	
4	3.23	5.83	97.4	20.8	37.0	26.0	
5	3.65	14.40	13.0	12.0	37.0	27.0	

Bypass

Arm	Arm has bypass	Bypass Util (%)
1		
2		
3	✓	100
4		
5		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.694	2199
2	0.556	1174
3	0.574	1348
4	0.659	1731
5	0.693	1954

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	365	100.000
2		✓	301	100.000
3		✓	802	100.000
4		✓	306	100.000
5		✓	134	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	67	73	224	1
	2	58	0	18	165	60
	3	220	19	0	531	32
	4	78	103	107	0	18
	5	1	20	40	73	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	6	6	1	38
	2	2	0	49	5	6
	3	2	62	0	3	16
	4	4	9	3	0	12
	5	0	2	12	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.22	2.50	0.3	A
2	0.42	7.86	0.7	A
3	0.33	5.99	0.5	A
4	0.25	3.55	0.3	A
5	0.10	2.84	0.1	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	275	0	272	1936	0.142	274	0.2	2.165	A
2	227	0	389	886	0.256	225	0.3	5.434	A
3	586	400	436	1011	0.202	203	0.3	4.449	A
4	230	0	292	1442	0.160	230	0.2	2.968	A
5	101	0	439	1556	0.065	101	0.1	2.473	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	328	0	325	1897	0.173	328	0.2	2.294	A
2	271	0	465	846	0.320	270	0.5	6.251	A
3	699	477	522	964	0.253	243	0.3	4.993	A
4	275	0	350	1403	0.196	275	0.2	3.189	A
5	120	0	525	1496	0.081	120	0.1	2.617	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	402	0	398	1843	0.218	402	0.3	2.497	A
2	331	0	570	790	0.420	330	0.7	7.823	A
3	857	585	639	900	0.332	298	0.5	5.971	A
4	337	0	428	1351	0.249	337	0.3	3.547	A
5	148	0	643	1414	0.104	147	0.1	2.842	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	402	0	399	1843	0.218	402	0.3	2.497	A
2	331	0	570	789	0.420	331	0.7	7.861	A
3	857	585	640	899	0.332	298	0.5	5.989	A
4	337	0	429	1351	0.249	337	0.3	3.550	A
5	148	0	644	1413	0.104	148	0.1	2.844	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	328	0	326	1896	0.173	328	0.2	2.298	A
2	271	0	466	845	0.320	272	0.5	6.289	A
3	699	477	523	963	0.253	244	0.3	5.014	A
4	275	0	352	1402	0.196	275	0.2	3.194	A
5	120	0	527	1495	0.081	121	0.1	2.621	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	275	0	273	1935	0.142	275	0.2	2.168	A
2	227	0	390	886	0.256	227	0.3	5.472	A
3	586	400	438	1010	0.202	204	0.3	4.471	A
4	230	0	294	1441	0.160	231	0.2	2.974	A
5	101	0	441	1554	0.065	101	0.1	2.478	A

2024 with, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	4.77	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	359	100.000
2		✓	171	100.000
3		✓	345	100.000
4		✓	813	100.000
5		✓	89	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	111	195	53	0
	2	35	0	27	62	47
	3	164	8	0	159	14
	4	263	219	306	0	25
	5	1	18	44	26	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	1	1	2	0
	2	1	0	11	13	0
	3	1	59	0	3	9
	4	0	3	1	0	2
	5	17	1	2	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.23	2.77	0.3	A
2	0.26	6.55	0.3	A
3	0.18	3.79	0.2	A
4	0.59	5.83	1.4	A
5	0.08	3.39	0.1	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	270	0	466	1846	0.146	270	0.2	2.282	A
2	129	0	468	854	0.151	128	0.2	4.958	A
3	258	120	167	1199	0.117	140	0.1	3.397	A
4	612	0	201	1575	0.389	610	0.6	3.718	A
5	67	0	746	1402	0.048	67	0.1	2.696	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	323	0	558	1782	0.181	323	0.2	2.467	A
2	154	0	560	805	0.191	153	0.2	5.525	A
3	309	143	200	1180	0.142	167	0.2	3.554	A
4	731	0	241	1549	0.472	730	0.9	4.391	A
5	80	0	893	1300	0.062	80	0.1	2.950	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	395	0	682	1694	0.233	395	0.3	2.771	A
2	188	0	686	739	0.255	188	0.3	6.532	A
3	378	175	245	1154	0.178	205	0.2	3.792	A
4	895	0	295	1512	0.592	893	1.4	5.788	A
5	98	0	1093	1162	0.084	98	0.1	3.382	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	395	0	684	1693	0.234	395	0.3	2.773	A
2	188	0	687	738	0.255	188	0.3	6.547	A
3	378	175	246	1154	0.178	205	0.2	3.793	A
4	895	0	295	1512	0.592	895	1.4	5.833	A
5	98	0	1095	1160	0.084	98	0.1	3.387	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	323	0	560	1780	0.181	323	0.2	2.471	A
2	154	0	562	804	0.191	154	0.2	5.542	A
3	309	143	201	1179	0.142	167	0.2	3.557	A
4	731	0	241	1548	0.472	733	0.9	4.427	A
5	80	0	897	1298	0.062	80	0.1	2.956	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	270	0	468	1844	0.147	270	0.2	2.287	A
2	129	0	470	852	0.151	129	0.2	4.979	A
3	258	120	168	1198	0.117	140	0.1	3.402	A
4	612	0	202	1575	0.389	613	0.6	3.750	A
5	67	0	750	1399	0.048	67	0.1	2.703	A

2024 without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	12.47	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	1132	100.000
2		✓	188	100.000
3		✓	1143	100.000
4		✓	501	100.000
5		✓	40	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	1	49	527	541	14
	2	64	0	29	90	5
	3	473	16	0	632	22
	4	201	56	232	0	12
	5	9	2	22	7	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	11	2	2	20
	2	5	0	24	8	17
	3	10	60	0	3	19
	4	7	16	13	0	8
	5	20	23	38	14	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.67	5.96	2.0	A
2	0.73	45.16	2.4	E
3	0.72	16.30	2.5	C
4	0.49	6.24	0.9	A
5	0.05	4.57	0.1	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	852	0	251	1944	0.438	849	0.8	3.279	A
2	142	0	1008	535	0.265	140	0.4	9.089	A
3	822	476	541	917	0.420	382	0.7	6.695	A
4	377	0	445	1268	0.298	375	0.4	4.027	A
5	30	0	780	1050	0.028	30	0.0	3.527	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1018	0	300	1904	0.534	1016	1.1	4.047	A
2	169	0	1207	429	0.394	168	0.6	13.712	B
3	982	568	647	860	0.534	458	1.1	8.905	A
4	450	0	533	1209	0.372	450	0.6	4.736	A
5	36	0	935	958	0.037	36	0.0	3.902	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1246	0	368	1851	0.673	1243	2.0	5.886	A
2	207	0	1476	286	0.723	201	2.3	39.427	E
3	1203	696	788	786	0.716	558	2.4	15.441	C
4	552	0	648	1133	0.487	550	0.9	6.161	A
5	44	0	1140	836	0.052	44	0.1	4.542	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1246	0	368	1850	0.674	1246	2.0	5.959	A
2	207	0	1480	284	0.728	206	2.4	45.163	E
3	1203	696	794	782	0.719	562	2.5	16.296	C
4	552	0	654	1129	0.489	552	0.9	6.238	A
5	44	0	1148	832	0.053	44	0.1	4.568	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1018	0	302	1903	0.535	1021	1.2	4.098	A
2	169	0	1212	426	0.397	176	0.7	14.774	B
3	982	568	657	855	0.537	465	1.2	9.335	A
4	450	0	543	1203	0.374	452	0.6	4.801	A
5	36	0	946	951	0.038	36	0.0	3.931	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	852	0	252	1942	0.439	854	0.8	3.313	A
2	142	0	1014	532	0.266	143	0.4	9.283	A
3	822	476	545	914	0.421	387	0.7	6.844	A
4	377	0	450	1264	0.298	378	0.4	4.067	A
5	30	0	788	1046	0.029	30	0.0	3.543	A

2024 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	9.75	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	680	100.000
2		✓	102	100.000
3		✓	894	100.000
4		✓	954	100.000
5		✓	50	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	43	472	158	7
	2	28	0	27	47	0
	3	497	10	0	370	17
	4	384	167	399	0	4
	5	10	6	28	7	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	2	7	2	24
	2	0	0	13	15	0
	3	7	45	0	3	11
	4	2	5	2	0	7
	5	13	2	5	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.46	4.14	0.9	A
2	0.25	10.88	0.3	B
3	0.53	6.91	1.1	A
4	0.83	16.74	4.7	C
5	0.08	5.37	0.1	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	512	0	461	1766	0.290	510	0.4	2.863	A
2	77	0	803	641	0.120	76	0.1	6.369	A
3	661	279	185	1147	0.344	392	0.5	4.763	A
4	718	0	419	1399	0.514	714	1.0	5.228	A
5	38	0	1112	1080	0.035	38	0.0	3.454	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	611	0	553	1704	0.359	611	0.6	3.290	A
2	92	0	961	558	0.164	91	0.2	7.715	A
3	789	333	221	1126	0.418	470	0.7	5.482	A
4	858	0	502	1341	0.640	855	1.7	7.361	A
5	45	0	1331	931	0.049	45	0.1	4.064	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	749	0	672	1623	0.461	748	0.8	4.109	A
2	112	0	1173	446	0.252	112	0.3	10.755	B
3	966	407	271	1098	0.525	575	1.1	6.864	A
4	1050	0	614	1263	0.831	1039	4.5	15.361	C
5	56	0	1622	734	0.076	55	0.1	5.306	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	749	0	678	1618	0.463	749	0.9	4.138	A
2	112	0	1178	443	0.253	112	0.3	10.880	B
3	966	407	272	1098	0.525	577	1.1	6.907	A
4	1050	0	615	1262	0.832	1049	4.7	16.738	C
5	56	0	1634	726	0.077	56	0.1	5.368	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	611	0	561	1698	0.360	612	0.6	3.318	A
2	92	0	968	554	0.166	92	0.2	7.810	A
3	789	333	222	1125	0.419	473	0.7	5.527	A
4	858	0	504	1339	0.640	869	1.8	7.836	A
5	45	0	1348	920	0.049	46	0.1	4.117	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	512	0	466	1763	0.290	513	0.4	2.882	A
2	77	0	808	638	0.120	77	0.1	6.418	A
3	661	279	186	1146	0.344	395	0.5	4.802	A
4	718	0	422	1396	0.514	721	1.1	5.354	A
5	38	0	1122	1073	0.035	38	0.0	3.477	A

2034 with, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	6.02	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	407	100.000
2		✓	350	100.000
3		✓	1081	100.000
4		✓	398	100.000
5		✓	236	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	72	103	228	4
	2	62	0	20	207	61
	3	214	21	0	798	48
	4	112	107	125	0	54
	5	21	32	43	140	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	6	5	1	11
	2	2	0	39	4	6
	3	1	54	0	2	13
	4	3	10	16	0	7
	5	0	7	19	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.26	2.77	0.3	A
2	0.54	10.98	1.2	B
3	0.37	6.89	0.6	A
4	0.34	4.21	0.5	A
5	0.19	3.32	0.2	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	306	0	351	1870	0.164	305	0.2	2.300	A
2	263	0	482	839	0.314	262	0.5	6.222	A
3	786	601	526	970	0.220	212	0.3	4.742	A
4	300	0	307	1385	0.216	299	0.3	3.310	A
5	178	0	480	1503	0.118	177	0.1	2.713	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	366	0	420	1818	0.201	365	0.3	2.478	A
2	315	0	577	786	0.401	314	0.7	7.615	A
3	938	717	630	913	0.279	254	0.4	5.462	A
4	358	0	368	1346	0.266	357	0.4	3.641	A
5	212	0	575	1437	0.148	212	0.2	2.939	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	448	0	515	1746	0.256	447	0.3	2.771	A
2	385	0	707	713	0.540	383	1.1	10.846	B
3	1149	879	770	835	0.373	311	0.6	6.855	A
4	438	0	449	1294	0.339	438	0.5	4.201	A
5	260	0	704	1346	0.193	260	0.2	3.313	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	448	0	515	1746	0.256	448	0.3	2.772	A
2	385	0	708	713	0.540	385	1.2	10.981	B
3	1149	879	772	834	0.374	312	0.6	6.892	A
4	438	0	451	1293	0.339	438	0.5	4.211	A
5	260	0	706	1345	0.193	260	0.2	3.316	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	366	0	421	1817	0.201	366	0.3	2.483	A
2	315	0	578	785	0.401	317	0.7	7.717	A
3	938	717	633	911	0.279	255	0.4	5.497	A
4	358	0	370	1345	0.266	358	0.4	3.650	A
5	212	0	578	1435	0.148	212	0.2	2.944	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	306	0	353	1869	0.164	306	0.2	2.304	A
2	263	0	484	838	0.315	264	0.5	6.292	A
3	786	601	529	968	0.220	213	0.3	4.775	A
4	300	0	309	1384	0.217	300	0.3	3.322	A
5	178	0	483	1501	0.118	178	0.1	2.722	A

2034 with, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	5.62	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	214	100.000
2		✓	249	100.000
3		✓	382	100.000
4		✓	890	100.000
5		✓	185	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	85	82	45	2
	2	65	0	28	110	46
	3	105	9	0	232	36
	4	229	227	390	0	44
	5	17	31	58	79	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	1	1	2	7
	2	1	0	13	7	1
	3	1	47	0	2	3
	4	1	3	1	0	1
	5	0	0	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.15	2.72	0.2	A
2	0.37	7.88	0.6	A
3	0.15	3.95	0.2	A
4	0.65	6.76	1.8	A
5	0.18	3.80	0.2	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	161	0	595	1755	0.092	161	0.1	2.258	A
2	187	0	492	855	0.219	186	0.3	5.379	A
3	284	175	260	1146	0.099	112	0.1	3.482	A
4	670	0	197	1574	0.426	667	0.7	3.957	A
5	139	0	768	1402	0.099	139	0.1	2.850	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	192	0	713	1673	0.115	192	0.1	2.431	A
2	224	0	589	803	0.279	223	0.4	6.212	A
3	339	209	311	1116	0.121	135	0.1	3.666	A
4	800	0	236	1548	0.517	799	1.1	4.799	A
5	166	0	920	1296	0.128	166	0.1	3.186	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	236	0	872	1562	0.151	235	0.2	2.714	A
2	274	0	721	732	0.375	273	0.6	7.833	A
3	415	255	381	1077	0.153	165	0.2	3.948	A
4	980	0	289	1512	0.648	977	1.8	6.685	A
5	204	0	1125	1152	0.177	203	0.2	3.795	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	236	0	874	1560	0.151	236	0.2	2.717	A
2	274	0	722	731	0.375	274	0.6	7.876	A
3	415	255	382	1076	0.153	165	0.2	3.950	A
4	980	0	290	1512	0.648	980	1.8	6.761	A
5	204	0	1128	1150	0.177	204	0.2	3.803	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	192	0	716	1671	0.115	193	0.1	2.437	A
2	224	0	591	801	0.279	225	0.4	6.253	A
3	339	209	313	1116	0.121	135	0.1	3.673	A
4	800	0	237	1547	0.517	803	1.1	4.858	A
5	166	0	925	1293	0.129	167	0.1	3.199	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	161	0	599	1753	0.092	161	0.1	2.263	A
2	187	0	495	853	0.220	188	0.3	5.416	A
3	284	175	262	1145	0.099	113	0.1	3.491	A
4	670	0	198	1573	0.426	671	0.7	3.998	A
5	139	0	773	1399	0.100	139	0.1	2.858	A

2034 without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	424.30	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	1380	100.000
2		✓	214	100.000
3		✓	1866	100.000
4		✓	592	100.000
5		✓	170	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	57	681	599	43
	2	42	1	47	118	6
	3	716	21	1	1030	98
	4	207	63	308	1	13
	5	27	16	116	11	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	8	10	2	13
	2	10	0	17	10	17
	3	9	52	0	5	12
	4	7	22	14	0	5
	5	24	7	19	9	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.94	31.30	12.4	D
2	38.01	6101.93	121.7	F
3	1.10	214.29	54.0	F
4	0.67	11.24	2.0	B
5	0.25	6.28	0.3	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1039	0	403	1757	0.591	1033	1.4	4.937	A
2	161	0	1318	338	0.477	158	0.9	19.598	C
3	1367	775	613	889	0.708	620	2.3	13.006	B
4	446	0	688	1096	0.407	443	0.7	5.491	A
5	128	0	1012	996	0.129	127	0.1	4.142	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1241	0	482	1696	0.731	1236	2.6	7.734	A
2	192	0	1576	198	0.972	172	5.9	144.537	F
3	1632	926	720	831	0.905	733	6.9	32.138	D
4	532	0	811	1016	0.524	531	1.1	7.386	A
5	153	0	1201	873	0.175	153	0.2	4.997	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1519	0	586	1617	0.940	1487	10.6	23.511	C
2	236	0	1905	20	11.761	20	59.8	6101.927	F
3	1999	1134	721	835	1.103	821	31.8	99.636	F
4	652	0	872	977	0.667	648	1.9	10.846	B
5	187	0	1363	767	0.244	187	0.3	6.205	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1519	0	589	1615	0.941	1512	12.4	31.300	D
2	236	0	1931	6	38.013	6	117.2	2285.072	F
3	1999	1134	722	835	1.103	831	54.0	197.909	F
4	652	0	880	972	0.671	652	2.0	11.236	B
5	187	0	1372	760	0.246	187	0.3	6.280	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1241	0	487	1692	0.733	1279	2.8	9.476	A
2	192	0	1621	174	1.103	174	121.7	1739.220	F
3	1632	926	742	819	0.918	804	40.9	214.286	F
4	532	0	884	969	0.549	535	1.2	8.354	A
5	153	0	1268	829	0.184	153	0.2	5.330	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1039	0	411	1750	0.594	1044	1.5	5.143	A
2	161	0	1331	331	0.487	328	80.0	1109.483	F
3	1367	775	751	810	0.777	774	4.6	105.138	F
4	446	0	882	970	0.459	447	0.9	6.901	A
5	128	0	1187	883	0.145	128	0.2	4.772	A

2034 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF5	A4130/Milton Road (Power Station Roundabout)	Standard Roundabout		1, 2, 3, 4, 5	75.23	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	996	100.000
2		✓	129	100.000
3		✓	1399	100.000
4		✓	966	100.000
5		✓	186	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	1	61	663	235	36
	2	28	1	31	68	1
	3	715	12	0	567	105
	4	379	190	392	1	4
	5	36	27	114	9	0

Vehicle Mix

HV %s

		To				
		1	2	3	4	5
From	1	0	1	6	2	10
	2	1	1	12	16	0
	3	5	48	0	2	100
	4	1	5	2	25	4
	5	5	1	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.70	7.49	2.3	A
2	0.58	34.70	1.3	D
3	0.98	71.05	17.6	F
4	1.11	172.43	56.6	F
5	0.31	7.87	0.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	750	0	557	1714	0.437	747	0.8	3.707	A
2	97	0	1087	488	0.199	96	0.2	9.157	A
3	997	427	284	1000	0.626	620	1.6	9.314	A
4	727	0	670	1189	0.612	721	1.5	7.594	A
5	140	0	1282	1004	0.139	139	0.2	4.160	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	895	0	665	1640	0.546	894	1.2	4.810	A
2	116	0	1299	378	0.307	115	0.4	13.667	B
3	1190	510	341	971	0.770	742	3.1	15.295	C
4	868	0	802	1090	0.797	860	3.6	15.139	C
5	167	0	1532	830	0.201	167	0.2	5.424	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1097	0	755	1578	0.695	1092	2.2	7.346	A
2	142	0	1550	247	0.574	139	1.2	32.256	D
3	1457	624	415	933	0.981	876	13.0	45.617	E
4	1064	0	949	979	1.086	957	30.3	77.388	F
5	204	0	1751	677	0.302	204	0.4	7.605	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1097	0	757	1577	0.695	1096	2.3	7.487	A
2	142	0	1555	245	0.580	142	1.3	34.703	D
3	1457	624	418	932	0.983	898	17.6	71.049	F
4	1064	0	972	962	1.105	958	56.6	172.427	F
5	204	0	1772	662	0.309	204	0.4	7.875	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	895	0	766	1571	0.570	899	1.3	5.383	A
2	116	0	1372	341	0.340	119	0.5	16.445	C
3	1190	510	345	969	0.772	803	3.7	27.387	D
4	868	0	865	1043	0.833	1024	17.6	135.035	F
5	167	0	1750	679	0.246	167	0.3	7.050	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Bypass demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	750	0	601	1685	0.445	752	0.8	3.868	A
2	97	0	1121	471	0.206	98	0.3	9.689	A
3	997	427	288	999	0.627	634	1.7	10.083	B
4	727	0	685	1178	0.617	791	1.7	10.905	B
5	140	0	1365	947	0.148	140	0.2	4.467	A

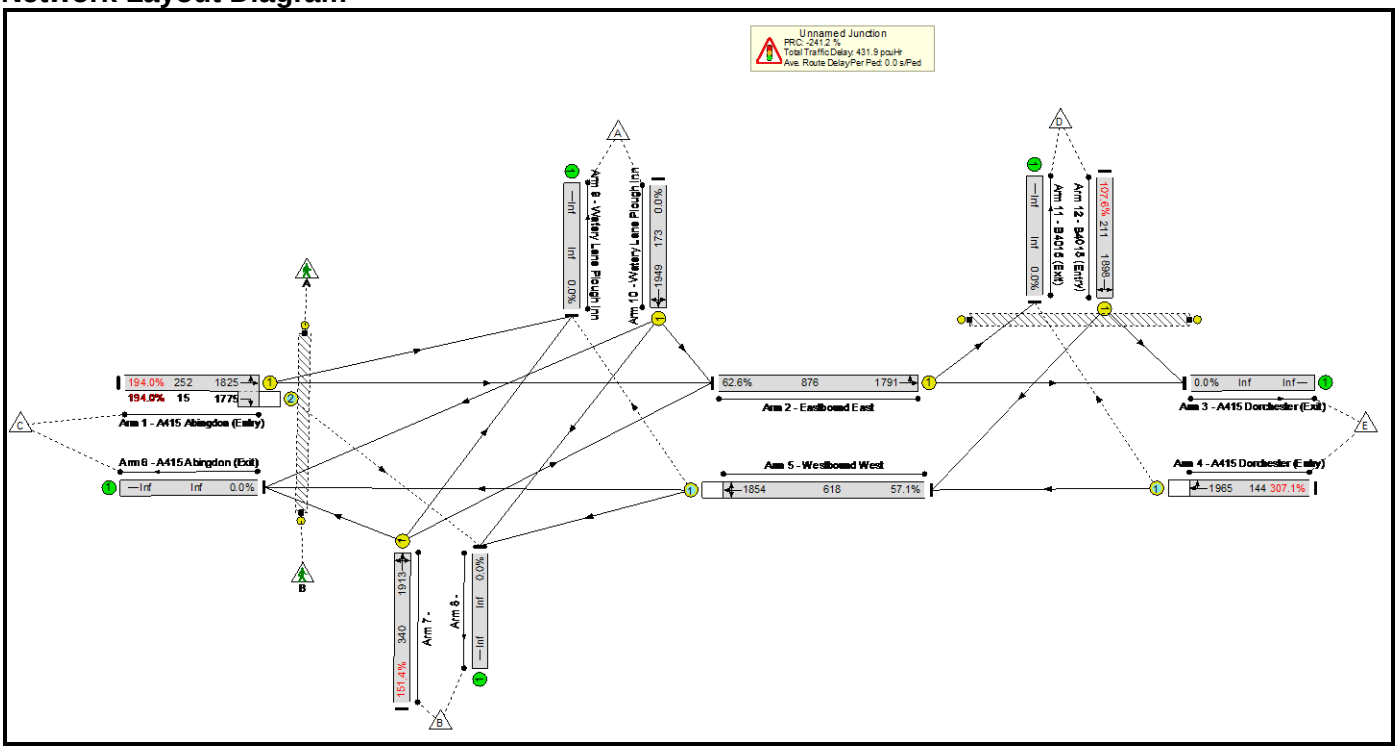
Basic Results Summary

User and Project Details

Project:	**Didcot Garden Town – HIF1**
Title:	**Clifton Hampden Signals**
Location:	
Additional detail:	
File name:	OFF 6 OFF 7_Clifton Hampden Signals_v2.lsg3x
Author:	
Company:	AECOM
Address:	

Scenario 1: '2020 AM' (FG1: '2020 AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



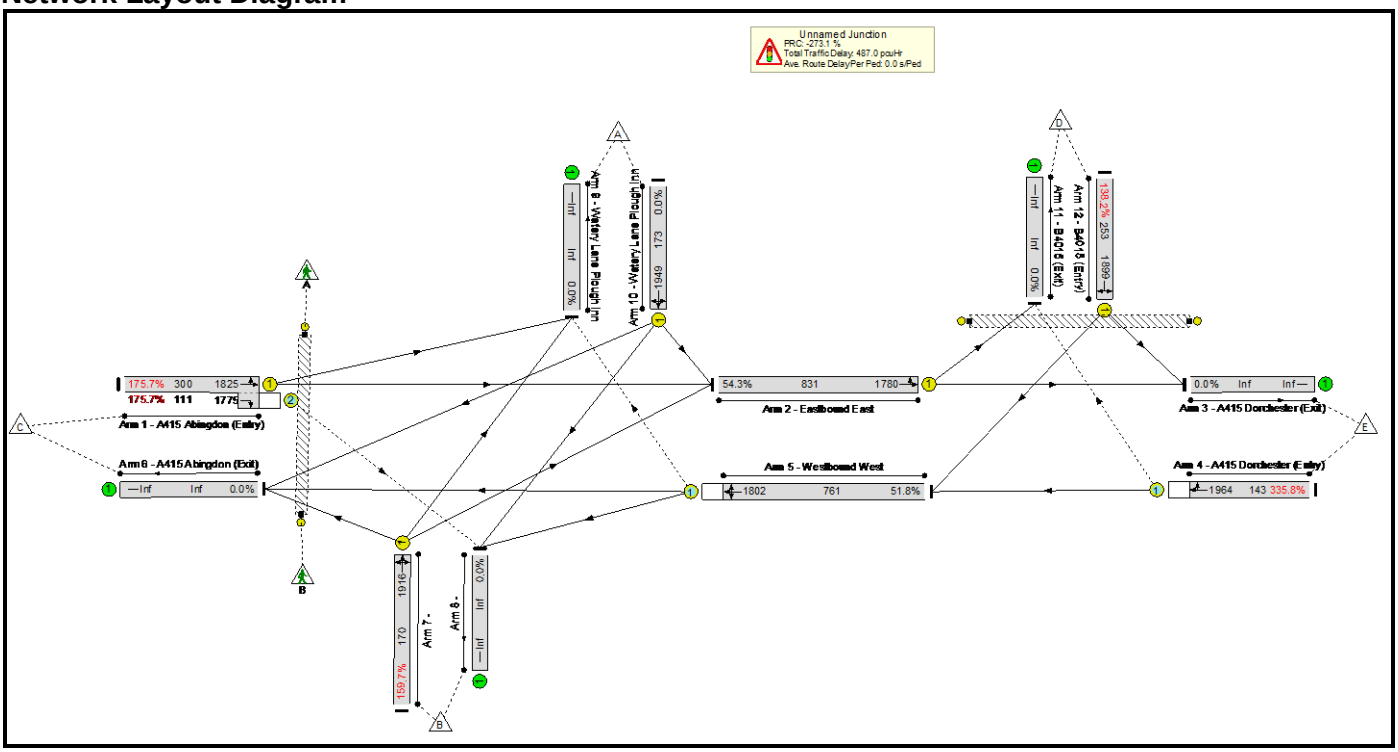
Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**307.1%**	**15**	**0**	**0**	**431.9**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**307.1%**	**15**	**0**	**0**	**431.9**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	12	-	518	1825:1775	252+15	194.0 : 194.0%	15	0	0	143.7	998.9	149.1
2/1	Eastbound East Ahead Left	U	F		1	43	-	937	1791	876	62.6%	-	-	-	1.5	10.1	2.3
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	9	-	442	1965	144	307.1%	0	0	0	168.4	1371.5	173.3
5/1	Westbound West Ahead Left Right	O	G		2	28	-	666	1854	618	57.1%	0	0	0	1.7	17.1	6.4
7/1	Right Left Ahead	U	D		1	15	-	515	1913	340	151.4%	-	-	-	101.0	705.8	106.2
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	9	-	227	1898	211	107.6%	-	-	-	15.6	247.2	18.6
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -241.2 Total Delay for Signalled Lanes (pcuHr): 431.90 Cycle Time (s): 90
PRC Over All Lanes (%): -241.2 Total Delay Over All Lanes(pcuHr): 431.90

Basic Results Summary
Scenario 2: '2020 PM' (FG2: '2020 PM', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Basic Results Summary

Network Results

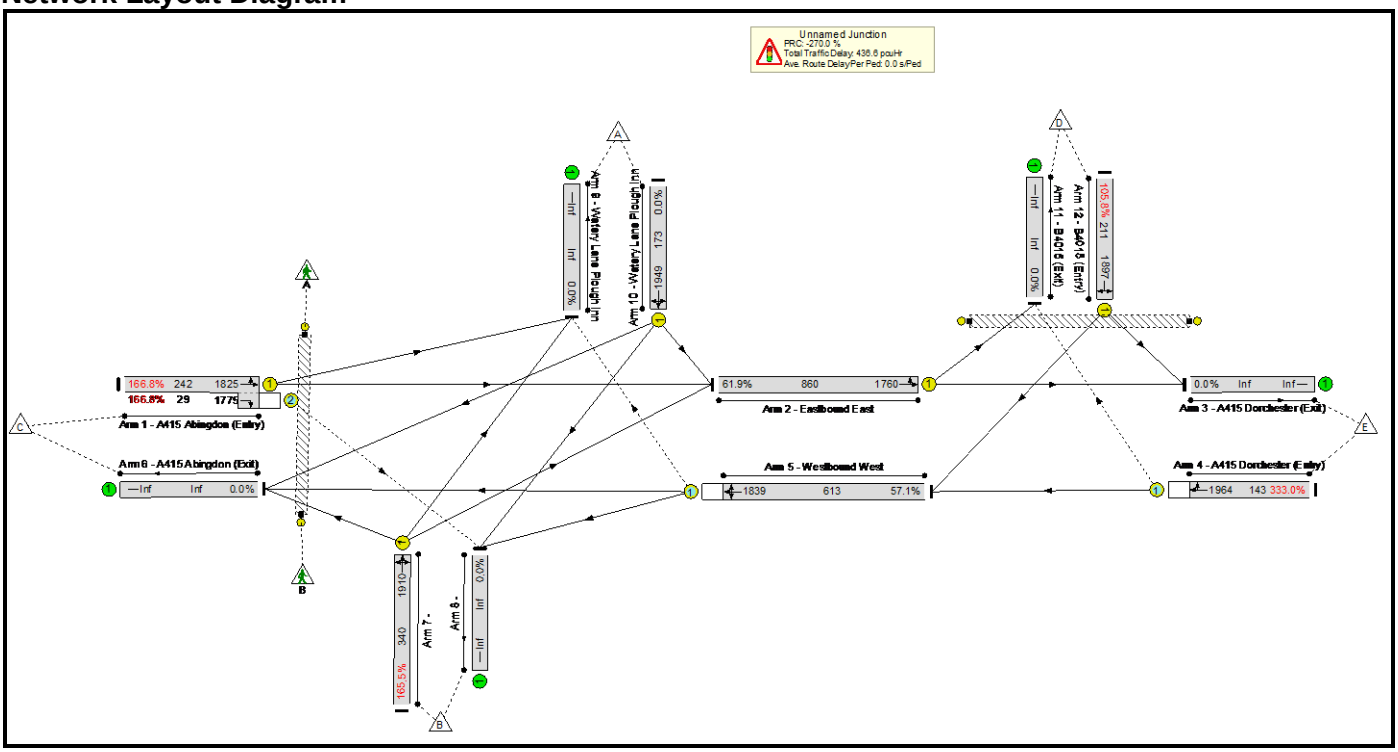
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**335.8%**	**111**	**0**	**0**	**487.0**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**335.8%**	**111**	**0**	**0**	**487.0**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	18	-	723	1825:1775	300+111	175.7 : 175.7%	111	0	0	178.2	887.4	184.6
2/1	Eastbound East Ahead Left	U	F		1	41	-	768	1780	831	54.3%	-	-	-	1.3	10.5	2.0
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	15	-	479	1964	143	335.8%	0	0	0	188.9	1419.4	194.2
5/1	Westbound West Ahead Left Right	O	G		2	36	-	825	1802	761	51.8%	0	0	0	1.6	14.3	7.2
7/1	Right Left Ahead	U	D		1	7	-	272	1916	170	159.7%	-	-	-	59.1	782.6	61.5
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	11	-	350	1899	253	138.2%	-	-	-	57.9	595.5	62.3
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -273.1 Total Delay for Signalled Lanes (pcuHr): 486.99 Cycle Time (s): 90
PRC Over All Lanes (%): -273.1 Total Delay Over All Lanes(pcuHr): 486.99

Basic Results Summary

Scenario 3: '2024 Without AM' (FG3: '2024 Without AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

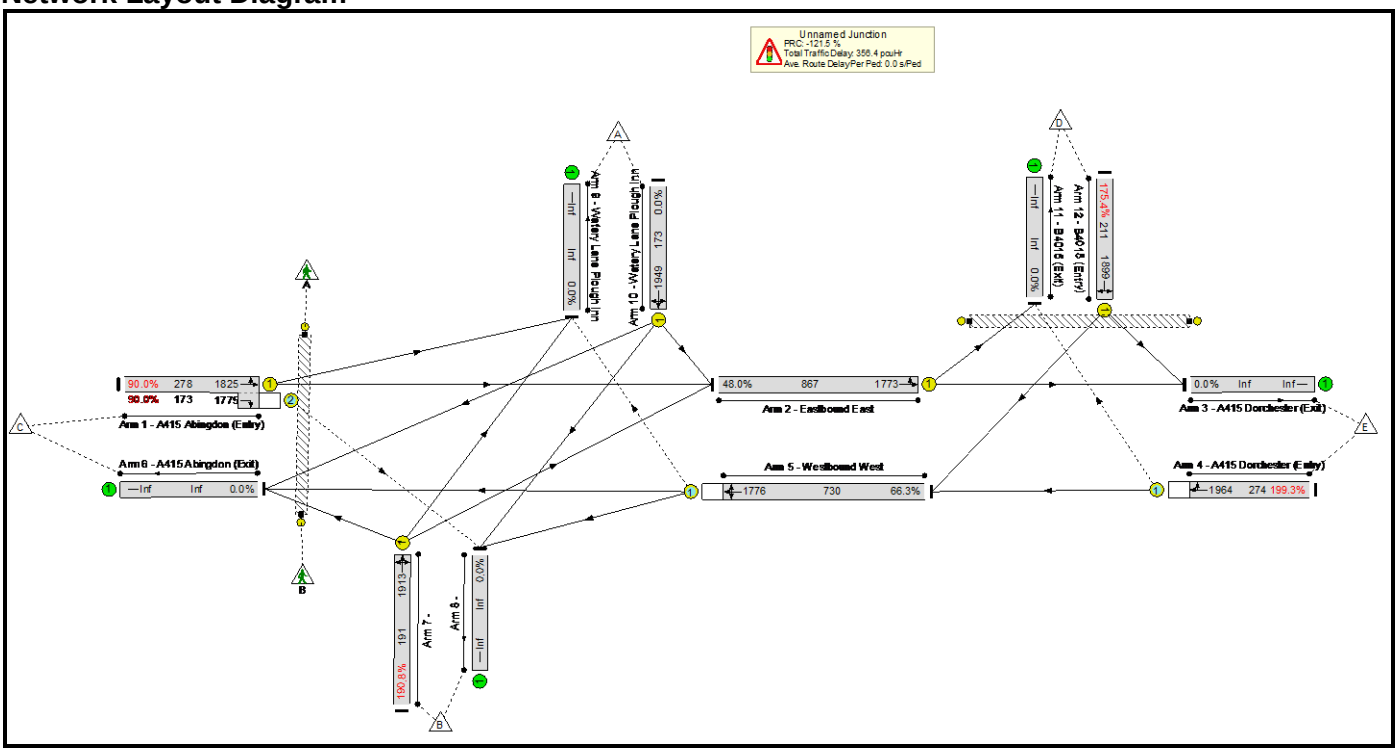
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**333.0%**	**30**	**0**	**0**	**436.6**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**333.0%**	**30**	**0**	**0**	**436.6**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	12	-	453	1825:1775	242+29	166.8 : 166.8%	29	0	0	105.2	835.7	109.5
2/1	Eastbound East Ahead Left	U	F		1	43	-	885	1760	860	61.9%	-	-	-	1.5	10.2	2.2
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	9	-	475	1964	143	333.0%	0	0	0	187.4	1420.6	192.7
5/1	Westbound West Ahead Left Right	O	G		2	28	-	693	1839	613	57.1%	0	0	0	1.7	17.2	6.4
7/1	Right Left Ahead	U	D		1	15	-	562	1910	340	165.5%	-	-	-	126.9	812.7	132.1
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	9	-	223	1897	211	105.8%	-	-	-	14.0	225.6	17.0
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -270.0 Total Delay for Signalled Lanes (pcuHr): 436.63 Cycle Time (s): 90
PRC Over All Lanes (%): -270.0 Total Delay Over All Lanes(pcuHr): 436.63

Basic Results Summary

Scenario 4: '2024 Without PM' (FG4: '2024 Without PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

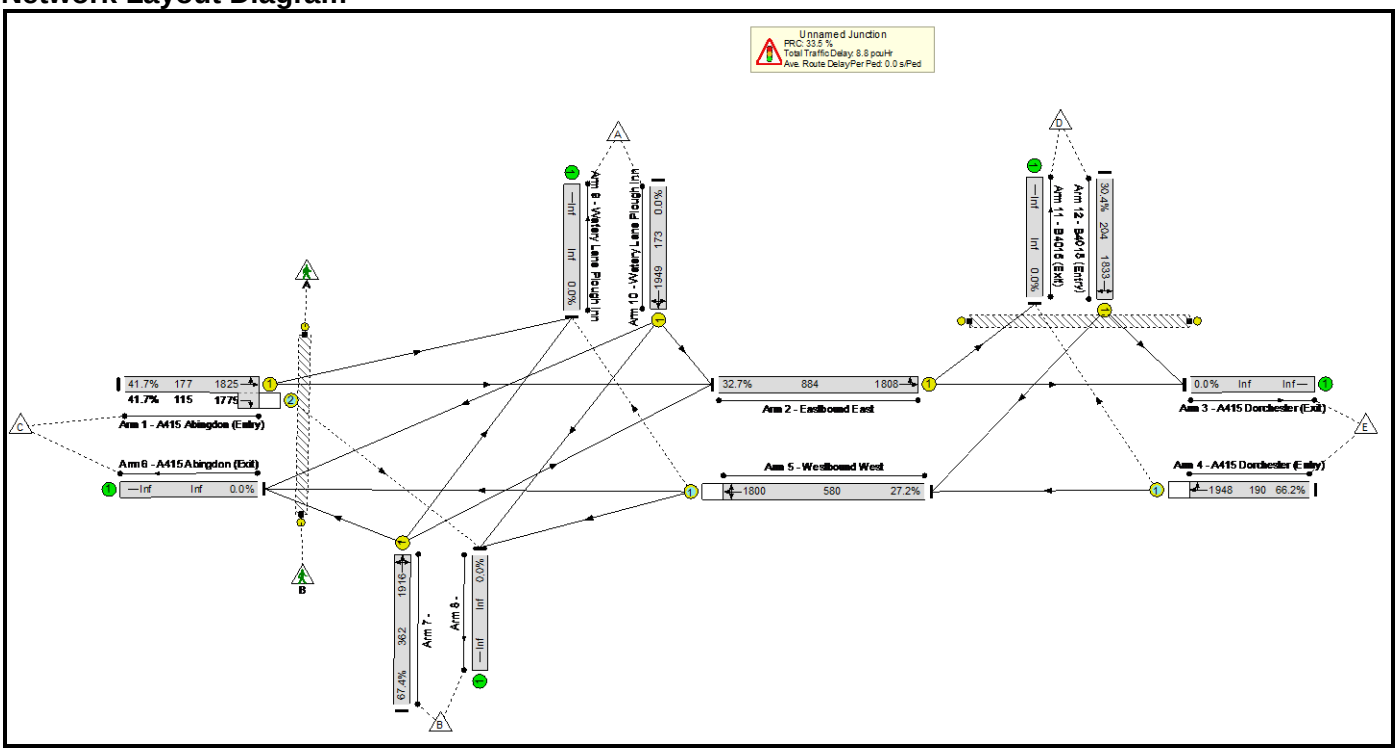
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**199.3%**	**157**	**0**	**0**	**356.4**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**199.3%**	**157**	**0**	**0**	**356.4**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	19	-	406	1825:1775	278+173	90.0 : 90.0%	156	0	0	7.7	68.0	12.4
2/1	Eastbound East Ahead Left	U	F		1	43	-	567	1773	867	48.0%	-	-	-	1.2	10.0	1.8
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	16	-	546	1964	274	199.3%	1	0	0	154.8	1020.9	160.2
5/1	Westbound West Ahead Left Right	O	G		2	35	-	912	1776	730	66.3%	0	0	0	1.9	14.5	6.3
7/1	Right Left Ahead	U	D		1	8	-	365	1913	191	190.8%	-	-	-	98.7	973.9	101.5
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	9	-	370	1899	211	175.4%	-	-	-	92.1	895.8	96.3
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -121.5 Total Delay for Signalled Lanes (pcuHr): 356.41 Cycle Time (s): 90
PRC Over All Lanes (%): -121.5 Total Delay Over All Lanes(pcuHr): 356.41

Basic Results Summary

Scenario 5: '2024 With AM' (FG5: '2024 With AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

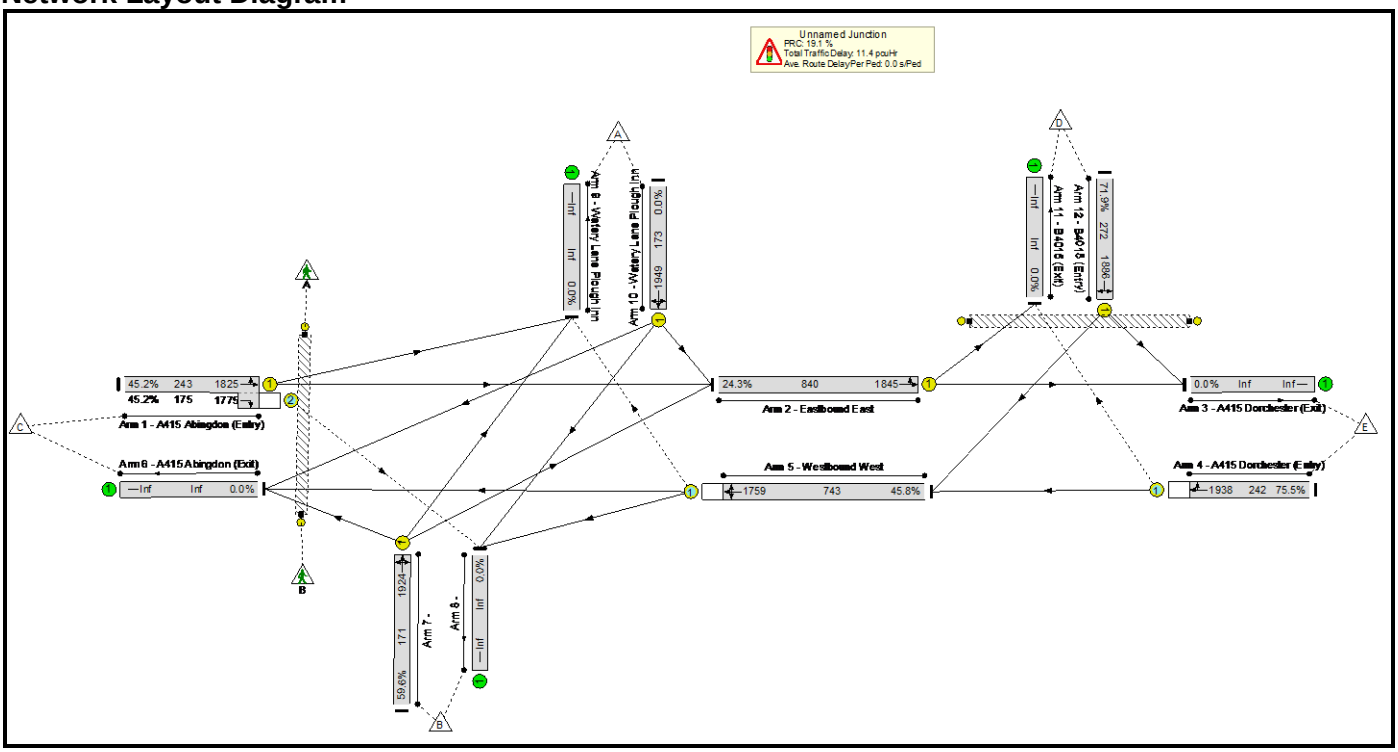
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**67.4%**	**59**	**0**	**1**	**8.8**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**67.4%**	**59**	**0**	**1**	**8.8**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	11	-	122	1825:1775	177+115	41.7 : 41.7%	48	0	0	1.5	45.7	2.0
2/1	Eastbound East Ahead Left	U	F		1	43	-	289	1808	884	32.7%	-	-	-	0.4	4.8	0.5
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	8	-	126	1948	190	66.2%	11	0	1	2.3	66.6	4.0
5/1	Westbound West Ahead Left Right	O	G		2	27	-	158	1800	580	27.2%	0	0	0	0.3	7.4	1.3
7/1	Right Left Ahead	U	D		1	16	-	244	1916	362	67.4%	-	-	-	3.3	48.9	6.6
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	9	-	62	1833	204	30.4%	-	-	-	0.9	49.5	1.6
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): 33.5 Total Delay for Signalled Lanes (pcuHr): 8.76 Cycle Time (s): 90
PRC Over All Lanes (%): 33.5 Total Delay Over All Lanes(pcuHr): 8.76

Basic Results Summary

Scenario 6: '2024 With PM' (FG6: '2024 With PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

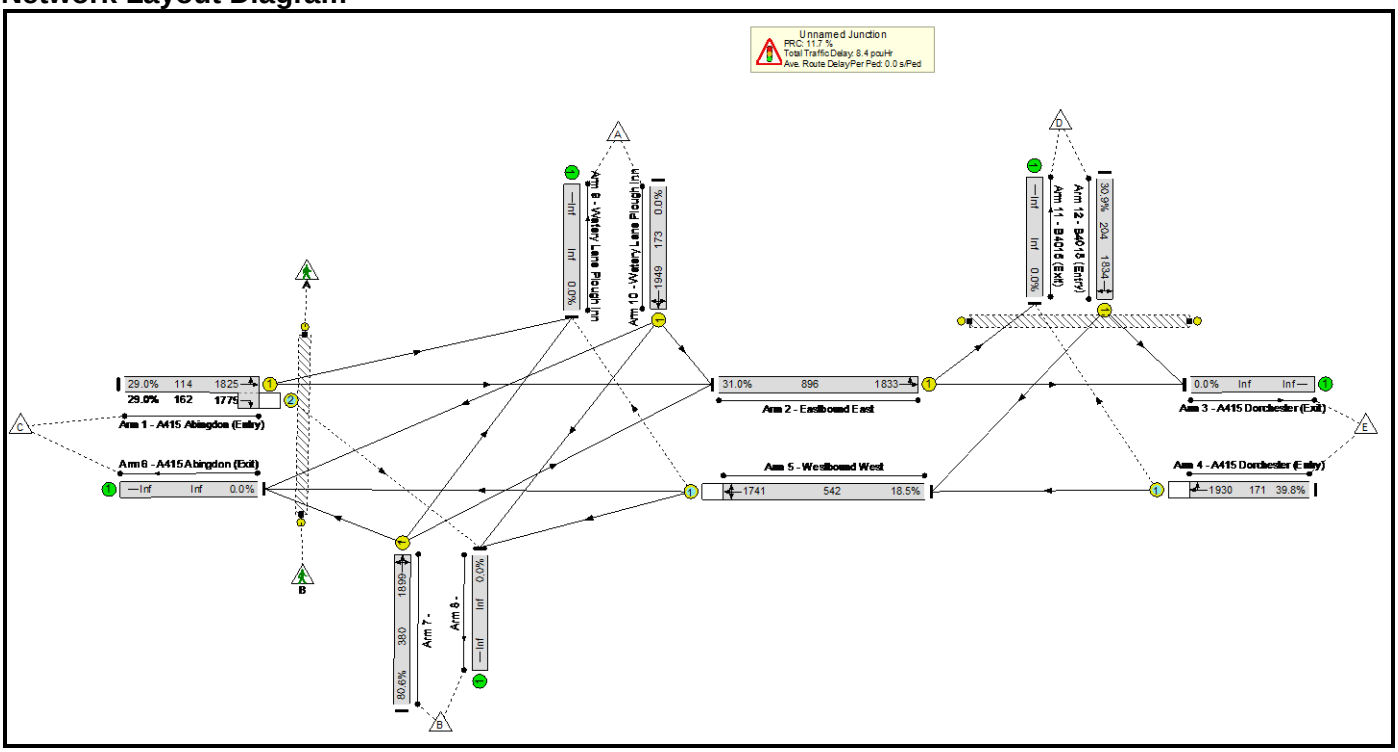
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**75.5%**	**103**	**0**	**3**	**11.4**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**75.5%**	**103**	**0**	**3**	**11.4**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	17	-	189	1825:1775	243+175	45.2 : 45.2%	79	0	0	2.0	38.6	3.0
2/1	Eastbound East Ahead Left	U	F		1	40	-	204	1845	840	24.3%	-	-	-	0.4	6.5	0.6
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	14	-	183	1938	242	75.5%	24	0	3	3.3	64.6	5.8
5/1	Westbound West Ahead Left Right	O	G		2	36	-	340	1759	743	45.8%	0	0	0	0.6	6.7	4.4
7/1	Right Left Ahead	U	D		1	7	-	102	1924	171	59.6%	-	-	-	1.8	65.0	3.2
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	12	-	196	1886	272	71.9%	-	-	-	3.2	59.6	5.9
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): 19.1 Total Delay for Signalled Lanes (pcuHr): 11.40 Cycle Time (s): 90
PRC Over All Lanes (%): 19.1 Total Delay Over All Lanes(pcuHr): 11.40

Basic Results Summary

Scenario 9: '2034 With AM' (FG9: '2034 With AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

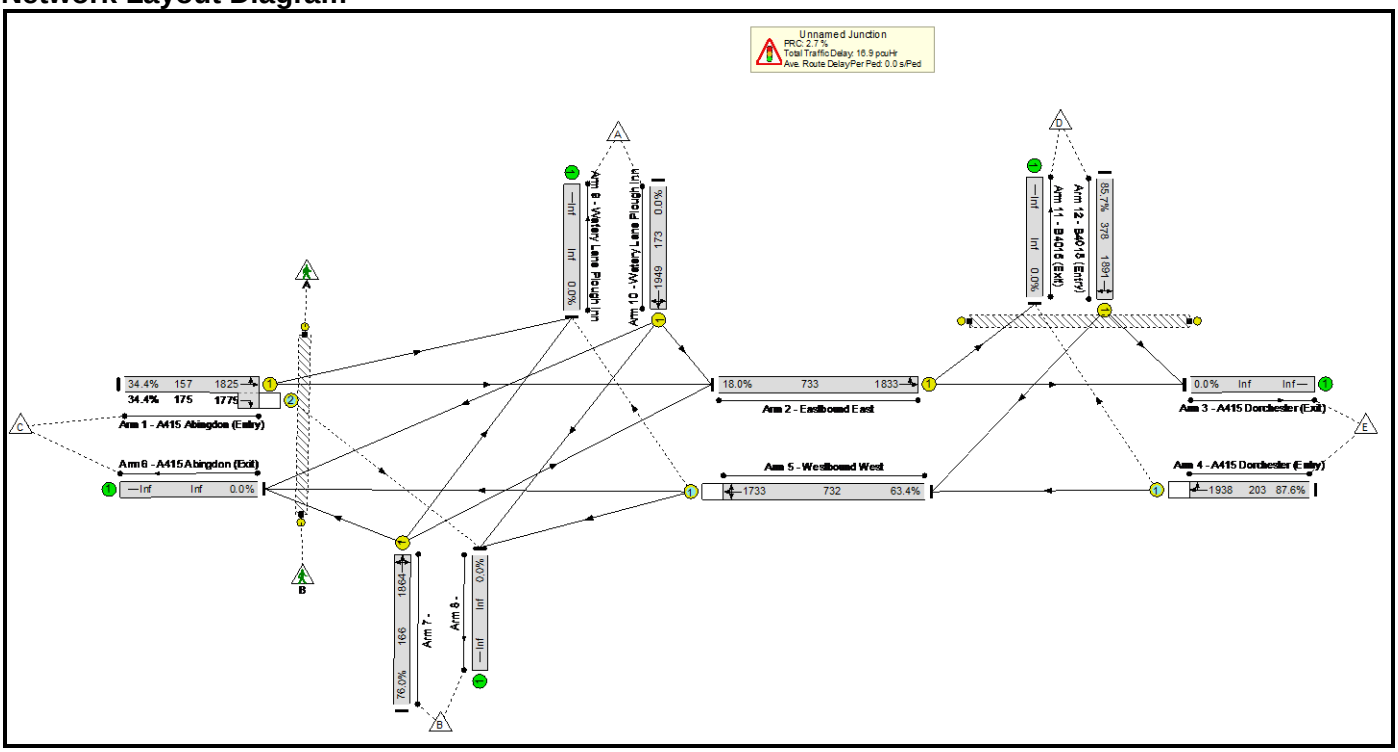
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**80.6%**	**60**	**0**	**0**	**8.4**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**80.6%**	**60**	**0**	**0**	**8.4**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	10	-	80	1825:1775	114+162	29.0 : 29.0%	47	0	0	1.0	44.8	1.3
2/1	Eastbound East Ahead Left	U	F		1	43	-	278	1833	896	31.0%	-	-	-	0.4	5.6	0.7
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	7	-	68	1930	171	39.8%	13	0	0	1.1	56.5	1.9
5/1	Westbound West Ahead Left Right	O	G		2	26	-	100	1741	542	18.5%	0	0	0	0.2	6.5	0.4
7/1	Right Left Ahead	U	D		1	17	-	306	1899	380	80.6%	-	-	-	4.9	57.5	9.2
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	9	-	63	1834	204	30.9%	-	-	-	0.9	49.6	1.7
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): 11.7 Total Delay for Signalled Lanes (pcuHr): 8.43 Cycle Time (s): 90
PRC Over All Lanes (%): 11.7 Total Delay Over All Lanes(pcuHr): 8.43

Basic Results Summary

Scenario 10: '2034 With PM' (FG10: '2034 With PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

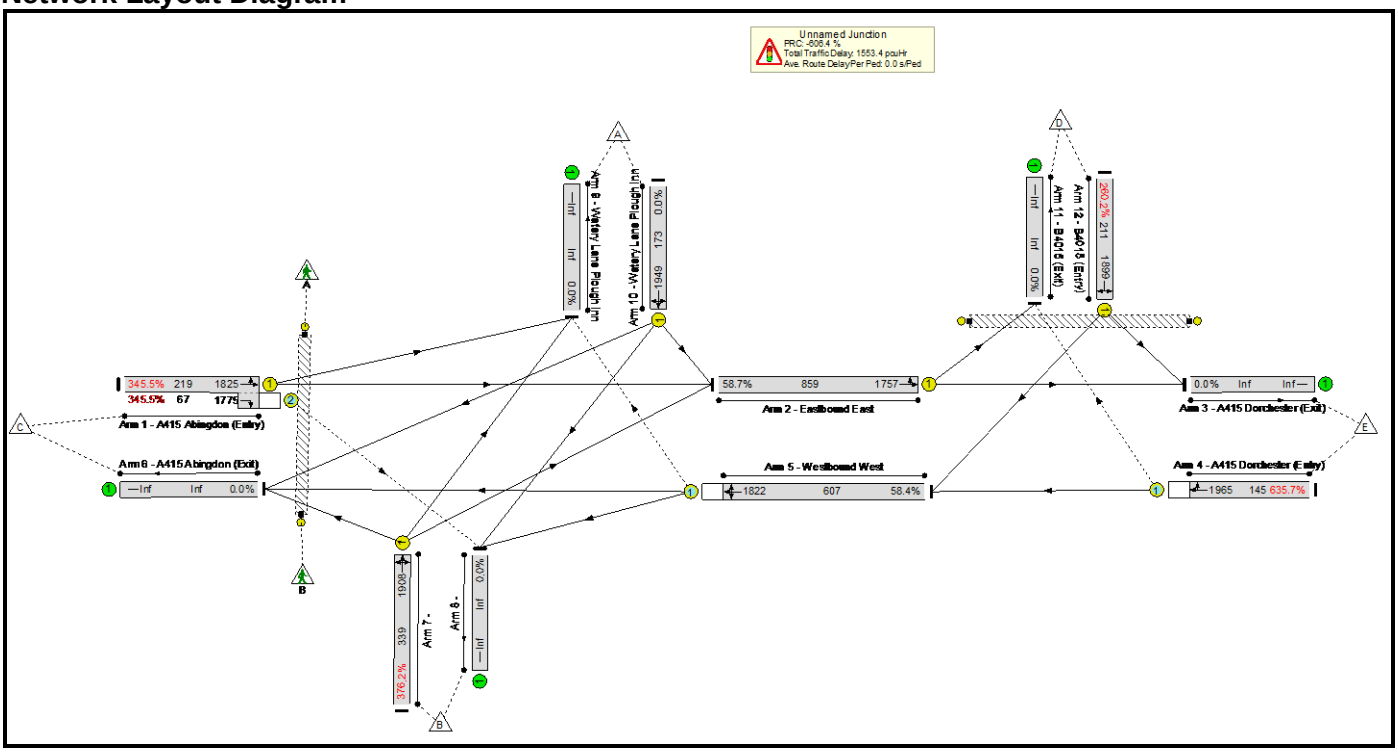
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**87.6%**	**78**	**0**	**8**	**16.9**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**87.6%**	**78**	**0**	**8**	**16.9**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	12	-	114	1825:1775	157+175	34.4 : 34.4%	60	0	0	1.4	43.1	1.6
2/1	Eastbound East Ahead Left	U	F		1	35	-	132	1833	733	18.0%	-	-	-	0.4	9.9	0.6
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	9	-	178	1938	203	87.6%	18	0	8	4.9	98.9	7.2
5/1	Westbound West Ahead Left Right	O	G		2	36	-	464	1733	732	63.4%	0	0	0	1.5	11.8	9.4
7/1	Right Left Ahead	U	D		1	7	-	126	1864	166	76.0%	-	-	-	2.9	82.3	4.5
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	17	-	324	1891	378	85.7%	-	-	-	5.8	64.9	10.5
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): 2.7 Total Delay for Signalled Lanes (pcuHr): 16.86 Cycle Time (s): 90
PRC Over All Lanes (%): 2.7 Total Delay Over All Lanes(pcuHr): 16.86

Scenario 17: '2034 Without AM' (FG17: '2034 Without AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

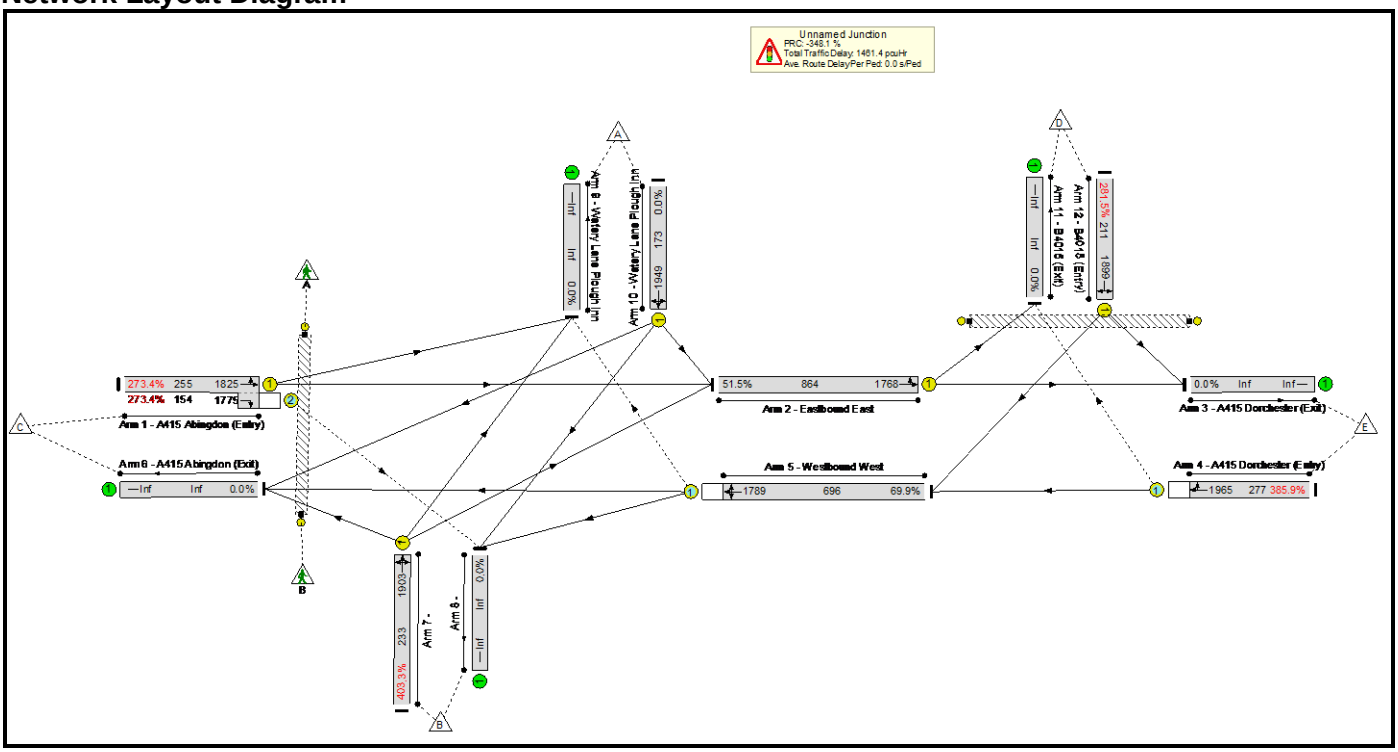
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**635.7%**	**68**	**0**	**0**	**1553.4**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**635.7%**	**68**	**0**	**0**	**1553.4**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	12	-	988	1825:1775	219+67	345.5 : 345.5%	67	0	0	394.8	1438.6	405.4
2/1	Eastbound East Ahead Left	U	F		1	43	-	1829	1757	859	58.7%	-	-	-	1.4	10.0	2.1
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	9	-	920	1965	145	635.7%	0	0	0	435.6	1704.5	446.4
5/1	Westbound West Ahead Left Right	O	G		2	28	-	1465	1822	607	58.4%	0	0	0	1.7	17.7	6.5
7/1	Right Left Ahead	U	D		1	15	-	1276	1908	339	376.2%	-	-	-	527.4	1487.9	539.3
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	9	-	549	1899	211	260.2%	-	-	-	192.4	1261.9	198.1
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -606.4 Total Delay for Signalled Lanes (pcuHr): 1553.38 Cycle Time (s): 90
PRC Over All Lanes (%): -606.4 Total Delay Over All Lanes(pcuHr): 1553.38

Basic Results Summary

Scenario 18: '2034 Without PM' (FG18: '2034 Without PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**403.3%**	**147**	**0**	**8**	**1461.4**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**403.3%**	**147**	**0**	**8**	**1461.4**	-	-
1/1+1/2	A415 Abingdon (Entry) Ahead Right Left	U+O	A		1	17	-	1119	1825:1775	255+154	273.4 : 273.4%	147	0	7	399.3	1284.6	410.1
2/1	Eastbound East Ahead Left	U	F		1	43	-	1465	1768	864	51.5%	-	-	-	1.2	9.6	1.9
4/1	A415 Dorchester (Entry) Ahead Right	O	B		1	14	-	1067	1965	277	385.9%	0	0	0	443.4	1495.9	455.2
5/1	Westbound West Ahead Left Right	O	G		2	33	-	1657	1789	696	69.9%	0	0	0	2.4	17.6	7.1
7/1	Right Left Ahead	U	D		1	10	-	938	1903	233	403.3%	-	-	-	397.5	1525.4	406.3
10/1	Watery Lane Plough Inn Left Right Ahead	U	E		1	7	-	0	1949	173	0.0%	-	-	-	0.0	0.0	0.0
12/1	B4015 (Entry) Left Right	U	C		1	9	-	594	1899	211	281.5%	-	-	-	217.7	1319.6	223.8
Ped Link: P1	Unnamed Ped Link	-	H		1	7	-	0	-	5600	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	B4015	-	I		1	11	-	0	-	0	0.0%	-	-	-	-	-	-

C1 PRC for Signalled Lanes (%): -348.1 Total Delay for Signalled Lanes (pcuHr): 1461.40 Cycle Time (s): 90
PRC Over All Lanes (%): -348.1 Total Delay Over All Lanes(pcuHr): 1461.40

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 8 Junction-Harwell Road_Milton Road_High Street.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF8 - Junction 25-Harwell Road_Milton Road_High Street
Report generation date: 02/07/2021 08:59:25

»2020, AM
»2020, PM
»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Arm 1	D1	0.6	6.45	0.39	A	D2	0.3	4.68	0.26	A
Arm 2		0.3	4.30	0.21	A		1.2	7.15	0.54	A
Arm 3		0.4	6.04	0.27	A		0.2	6.80	0.17	A
	2024 with									
Arm 1	D3	0.6	5.88	0.37	A	D4	0.3	4.49	0.22	A
Arm 2		0.2	4.00	0.17	A		0.4	4.68	0.29	A
Arm 3		0.4	5.86	0.27	A		0.2	5.35	0.15	A
	2024 without									
Arm 1	D5	0.8	7.10	0.44	A	D6	0.4	4.93	0.29	A
Arm 2		0.9	6.28	0.47	A		1.7	8.77	0.63	A
Arm 3		0.6	8.71	0.36	A		0.3	7.92	0.21	A
	2034 with									
Arm 1	D7	1.0	7.37	0.49	A	D8	0.7	6.02	0.43	A
Arm 2		0.3	4.33	0.24	A		0.8	5.92	0.44	A
Arm 3		0.4	6.33	0.29	A		0.3	6.50	0.22	A
	2034 without									
Arm 1	D9	1.2	8.54	0.54	A	D10	0.5	5.27	0.33	A
Arm 2		15.1	54.76	0.97	F		25.0	80.44	1.00	F
Arm 3		2.5	40.96	0.74	E		0.8	18.75	0.44	C

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

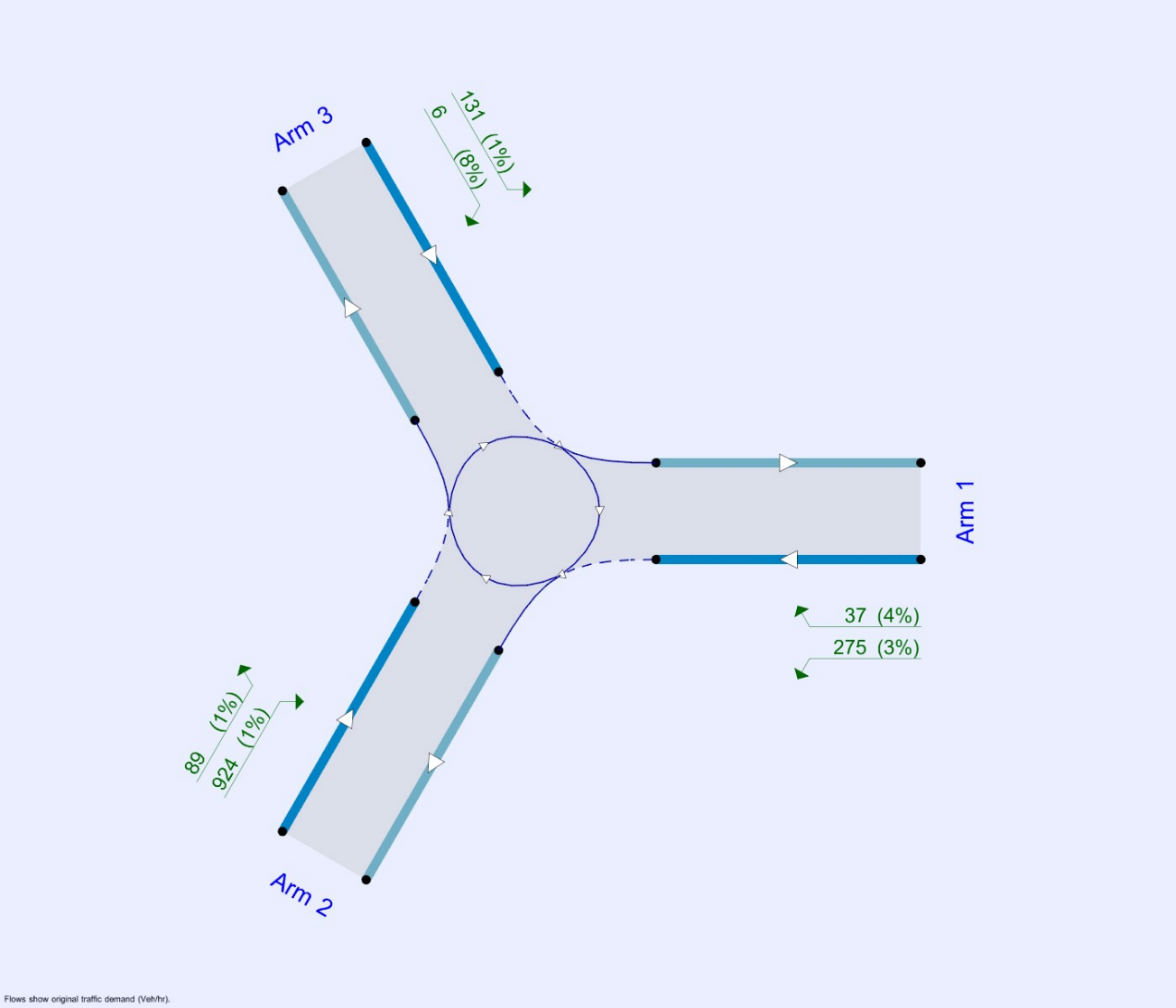
File summary

File Description

Title	
Location	
Site number	
Date	03/11/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Mini-roundabout model	Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
JUNCTIONS 9			0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	5.74	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Name	Description
1	High Street	
2	Harwell Road	
3	Milton Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.06	3.06	4.72	3.0	8.00	6.00	0.0	
2	2.57	2.57	9.65	8.0	7.00	8.00	0.0	
3	3.20	3.20	3.20	0.0	11.00	10.00	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.615	1063
2	0.645	1148
3	0.600	946

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	326	100.000
2		✓	203	100.000
3		✓	203	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	281	45
	2	177	0	26
	3	81	122	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	8	0
	2	6	0	0
	3	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.39	6.45	0.6	A
2	0.21	4.30	0.3	A
3	0.27	6.04	0.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	245	91	942	0.261	244	0.3	5.150	A
2	153	34	1071	0.143	152	0.2	3.917	A
3	153	133	859	0.178	152	0.2	5.087	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	293	110	931	0.315	293	0.5	5.634	A
2	182	40	1066	0.171	182	0.2	4.072	A
3	182	159	842	0.217	182	0.3	5.455	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	359	134	917	0.391	358	0.6	6.434	A
2	224	49	1061	0.211	223	0.3	4.297	A
3	224	195	819	0.273	223	0.4	6.033	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	359	134	917	0.391	359	0.6	6.451	A
2	224	50	1061	0.211	224	0.3	4.299	A
3	224	195	819	0.273	224	0.4	6.041	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	293	110	931	0.315	294	0.5	5.657	A
2	182	41	1066	0.171	183	0.2	4.076	A
3	182	159	842	0.217	183	0.3	5.468	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	245	92	941	0.261	246	0.4	5.181	A
2	153	34	1070	0.143	153	0.2	3.924	A
3	153	133	858	0.178	153	0.2	5.108	A

2020, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 2 have 88% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	6.42	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	240	100.000
2		✓	535	100.000
3		✓	97	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	175	65
	2	451	0	84
	3	91	6	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	3	1
	2	1	0	0
	3	1	11	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.26	4.68	0.3	A
2	0.54	7.15	1.2	A
3	0.17	6.80	0.2	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	181	4	1035	0.175	180	0.2	4.207	A
2	403	49	1107	0.364	401	0.6	5.078	A
3	73	338	730	0.099	72	0.1	5.465	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	216	5	1034	0.209	216	0.3	4.397	A
2	481	58	1101	0.437	480	0.8	5.792	A
3	87	405	690	0.126	87	0.1	5.960	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	264	6	1033	0.256	264	0.3	4.677	A
2	589	71	1093	0.539	588	1.2	7.107	A
3	106	495	636	0.167	106	0.2	6.783	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	264	6	1033	0.256	264	0.3	4.681	A
2	589	72	1092	0.539	589	1.2	7.150	A
3	106	497	636	0.167	106	0.2	6.798	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	216	5	1034	0.209	216	0.3	4.402	A
2	481	59	1101	0.437	482	0.8	5.837	A
3	87	407	689	0.126	87	0.1	5.978	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	181	4	1035	0.175	181	0.2	4.218	A
2	403	49	1107	0.364	404	0.6	5.125	A
3	73	340	729	0.100	73	0.1	5.487	A

2024 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	5.42	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	321	100.000
2		✓	168	100.000
3		✓	210	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	**2**	**3**
From	**1**	0	272	49
	2	143	0	25
	3	102	108	0

Vehicle Mix

HV %s

		To		
		1	**2**	**3**
From	**1**	0	3	0
	2	3	0	0
	3	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.37	5.88	0.6	A
2	0.17	4.00	0.2	A
3	0.27	5.86	0.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	242	81	988	0.245	240	0.3	4.808	A
2	126	37	1097	0.115	126	0.1	3.707	A
3	158	107	876	0.180	157	0.2	5.002	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	289	97	978	0.295	288	0.4	5.215	A
2	151	44	1092	0.138	151	0.2	3.824	A
3	189	128	863	0.219	189	0.3	5.337	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	353	119	965	0.366	353	0.6	5.872	A
2	185	54	1086	0.170	185	0.2	3.994	A
3	231	157	845	0.274	231	0.4	5.856	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	353	119	965	0.366	353	0.6	5.885	A
2	185	54	1086	0.170	185	0.2	3.996	A
3	231	157	845	0.274	231	0.4	5.863	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	289	97	978	0.295	289	0.4	5.230	A
2	151	44	1092	0.138	151	0.2	3.829	A
3	189	129	863	0.219	189	0.3	5.349	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	242	81	988	0.245	242	0.3	4.830	A
2	126	37	1096	0.115	127	0.1	3.714	A
3	158	108	876	0.181	158	0.2	5.022	A

2024 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	4.73	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	209	100.000
2		✓	290	100.000
3		✓	107	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	138	71
	2	211	0	79
	3	101	6	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	3	2
	2	1	0	0
	3	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.22	4.49	0.3	A
2	0.29	4.68	0.4	A
3	0.15	5.35	0.2	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	157	4	1033	0.152	157	0.2	4.106	A
2	218	53	1105	0.198	217	0.2	4.050	A
3	81	158	835	0.096	80	0.1	4.768	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	188	5	1032	0.182	188	0.2	4.262	A
2	261	64	1098	0.237	260	0.3	4.295	A
3	96	189	816	0.118	96	0.1	4.998	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	230	7	1031	0.223	230	0.3	4.491	A
2	319	78	1089	0.293	319	0.4	4.673	A
3	118	232	791	0.149	118	0.2	5.344	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	230	7	1031	0.223	230	0.3	4.492	A
2	319	78	1089	0.293	319	0.4	4.677	A
3	118	232	791	0.149	118	0.2	5.348	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	188	5	1032	0.182	188	0.2	4.266	A
2	261	64	1098	0.237	261	0.3	4.302	A
3	96	190	816	0.118	96	0.1	5.005	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	157	4	1033	0.152	158	0.2	4.114	A
2	218	54	1105	0.198	219	0.2	4.063	A
3	81	159	834	0.097	81	0.1	4.776	A

2024 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	7.05	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	369	100.000
2		✓	465	100.000
3		✓	210	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	324	45
	2	440	0	25
	3	96	114	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	9	0
	2	3	0	0
	3	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.44	7.10	0.8	A
2	0.47	6.28	0.9	A
3	0.36	8.71	0.6	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	278	85	936	0.297	276	0.4	5.440	A
2	350	34	1095	0.320	348	0.5	4.806	A
3	158	329	740	0.214	157	0.3	6.169	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	332	102	927	0.358	331	0.6	6.041	A
2	418	40	1091	0.383	417	0.6	5.338	A
3	189	395	699	0.270	188	0.4	7.043	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	406	125	914	0.445	405	0.8	7.070	A
2	512	49	1086	0.472	511	0.9	6.253	A
3	231	483	645	0.359	230	0.6	8.671	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	406	126	913	0.445	406	0.8	7.098	A
2	512	50	1086	0.472	512	0.9	6.276	A
3	231	484	644	0.359	231	0.6	8.715	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	332	103	926	0.358	333	0.6	6.073	A
2	418	41	1091	0.383	419	0.6	5.364	A
3	189	397	698	0.270	190	0.4	7.084	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	278	86	936	0.297	278	0.4	5.481	A
2	350	34	1095	0.320	351	0.5	4.838	A
3	158	332	738	0.214	158	0.3	6.217	A

2024 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 2 have 89% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	7.62	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	274	100.000
2		✓	627	100.000
3		✓	107	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	223	51
	2	549	0	78
	3	101	6	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	3	1
	2	1	0	1
	3	1	9	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.29	4.93	0.4	A
2	0.63	8.77	1.7	A
3	0.21	7.92	0.3	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	206	4	1033	0.200	205	0.2	4.345	A
2	472	38	1112	0.424	469	0.7	5.574	A
3	81	411	688	0.117	80	0.1	5.919	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	246	5	1032	0.239	246	0.3	4.579	A
2	564	46	1107	0.509	562	1.0	6.592	A
3	96	493	639	0.151	96	0.2	6.630	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	302	7	1031	0.293	301	0.4	4.930	A
2	690	56	1101	0.627	688	1.6	8.667	A
3	118	602	573	0.205	117	0.3	7.891	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	302	7	1031	0.293	302	0.4	4.933	A
2	690	56	1101	0.627	690	1.7	8.767	A
3	118	604	572	0.206	118	0.3	7.924	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	246	5	1032	0.239	247	0.3	4.586	A
2	564	46	1107	0.509	566	1.1	6.680	A
3	96	496	637	0.151	97	0.2	6.666	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	206	5	1033	0.200	207	0.3	4.359	A
2	472	38	1112	0.424	473	0.7	5.647	A
3	81	414	686	0.118	81	0.1	5.956	A

2034 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	6.31	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	426	100.000
2		✓	232	100.000
3		✓	212	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	379	47
	2	206	0	26
	3	107	105	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	4	0
	2	3	0	0
	3	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.49	7.37	1.0	A
2	0.24	4.33	0.3	A
3	0.29	6.33	0.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	321	79	980	0.327	319	0.5	5.433	A
2	175	35	1096	0.159	174	0.2	3.899	A
3	160	154	847	0.188	159	0.2	5.226	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	383	94	970	0.395	382	0.6	6.117	A
2	209	42	1092	0.191	208	0.2	4.073	A
3	191	185	828	0.230	190	0.3	5.643	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	469	115	958	0.490	468	0.9	7.331	A
2	255	52	1086	0.235	255	0.3	4.332	A
3	233	227	802	0.291	233	0.4	6.312	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	469	116	958	0.490	469	1.0	7.368	A
2	255	52	1086	0.235	255	0.3	4.334	A
3	233	227	802	0.291	233	0.4	6.327	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	383	95	970	0.395	384	0.7	6.158	A
2	209	42	1092	0.191	209	0.2	4.077	A
3	191	185	828	0.230	191	0.3	5.659	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	321	79	979	0.328	321	0.5	5.479	A
2	175	35	1096	0.159	175	0.2	3.907	A
3	160	155	846	0.189	160	0.2	5.246	A

2034 with, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 2 have 85% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	6.05	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	404	100.000
2		✓	428	100.000
3		✓	138	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	322	82
	2	351	0	77
	3	133	5	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	1	4
	2	1	0	0
	3	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.43	6.02	0.7	A
2	0.44	5.92	0.8	A
3	0.22	6.50	0.3	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	304	4	1044	0.291	303	0.4	4.846	A
2	322	61	1098	0.293	321	0.4	4.621	A
3	104	263	779	0.133	103	0.2	5.320	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	363	4	1043	0.348	363	0.5	5.287	A
2	385	74	1090	0.353	384	0.5	5.098	A
3	124	315	748	0.166	124	0.2	5.766	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	445	5	1043	0.427	444	0.7	6.005	A
2	471	90	1079	0.437	470	0.8	5.906	A
3	152	386	706	0.215	152	0.3	6.494	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	445	6	1043	0.427	445	0.7	6.021	A
2	471	90	1079	0.437	471	0.8	5.923	A
3	152	386	705	0.215	152	0.3	6.504	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	363	5	1043	0.348	364	0.5	5.306	A
2	385	74	1090	0.353	386	0.6	5.120	A
3	124	316	747	0.166	124	0.2	5.780	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	304	4	1044	0.291	305	0.4	4.876	A
2	322	62	1098	0.294	323	0.4	4.647	A
3	104	265	778	0.133	104	0.2	5.340	A

2034 without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 2 have 87% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	39.70	E

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	446	100.000
2		✓	952	100.000
3		✓	216	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	403	43
	2	925	0	27
	3	103	113	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	9	0
	2	3	0	0
	3	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.54	8.54	1.2	A
2	0.97	54.76	15.1	F
3	0.74	40.96	2.5	E

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	336	84	935	0.359	334	0.6	5.965	A
2	717	32	1096	0.654	709	1.8	9.156	A
3	163	689	516	0.315	161	0.5	10.091	B

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	401	101	925	0.433	400	0.8	6.844	A
2	856	39	1092	0.784	850	3.4	14.503	B
3	194	826	432	0.449	193	0.8	14.936	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	491	122	914	0.537	490	1.1	8.456	A
2	1048	47	1086	0.965	1014	12.0	38.028	E
3	238	985	335	0.710	232	2.2	33.425	D

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	491	124	912	0.538	491	1.2	8.538	A
2	1048	47	1086	0.965	1036	15.1	54.763	F
3	238	1006	322	0.739	236	2.5	40.962	E

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	401	105	923	0.434	402	0.8	6.935	A
2	856	39	1091	0.784	901	3.9	22.394	C
3	194	875	402	0.483	200	1.0	18.373	C

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	336	86	934	0.360	337	0.6	6.035	A
2	717	32	1095	0.654	725	1.9	9.907	A
3	163	704	507	0.321	165	0.5	10.581	B

2034 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 2 have 90% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF 8	Harwell Road/Milton Road/High Street	Mini-roundabout		1, 2, 3	58.37	F

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	312	100.000
2		✓	1013	100.000
3		✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	275	37
	2	924	0	89
	3	131	6	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	3	4
	2	1	0	1
	3	1	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.33	5.27	0.5	A
2	1.00	80.44	25.0	F
3	0.44	18.75	0.8	C

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	235	4	1028	0.229	234	0.3	4.527	A
2	763	28	1118	0.682	754	2.1	9.679	A
3	103	688	523	0.197	102	0.2	8.538	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	280	5	1027	0.273	280	0.4	4.817	A
2	911	33	1115	0.817	903	4.1	16.356	C
3	123	823	442	0.279	123	0.4	11.253	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	344	7	1026	0.335	343	0.5	5.264	A
2	1115	41	1110	1.005	1062	17.5	48.666	E
3	151	968	355	0.424	150	0.7	17.375	C

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	344	7	1026	0.335	344	0.5	5.271	A
2	1115	41	1110	1.005	1086	25.0	80.443	F
3	151	990	342	0.441	151	0.8	18.752	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	280	5	1027	0.273	281	0.4	4.829	A
2	911	33	1115	0.817	990	5.1	38.876	E
3	123	903	394	0.312	124	0.5	13.399	B

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	235	5	1028	0.229	235	0.3	4.545	A
2	763	28	1118	0.682	774	2.2	10.781	B
3	103	706	512	0.201	104	0.3	8.839	A

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 9 A Junction-High Street_High Street North.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF9 - Junction 26-High Street_Church Street_Brook Street
Report generation date: 02/07/2021 09:01:30

»2020, AM
»2020, PM
»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Stream B-AC	D1	0.7	10.89	0.41	B	D2	0.6	9.34	0.36	A
Stream C-AB		0.8	10.90	0.44	B		7.2	45.92	0.89	E
	2024 with									
Stream B-AC	D3	0.8	10.54	0.43	B	D4	0.4	8.52	0.30	A
Stream C-AB		0.8	10.60	0.43	B		0.9	10.16	0.45	B
	2024 without									
Stream B-AC	D5	0.9	12.64	0.49	B	D6	0.6	9.76	0.39	A
Stream C-AB		17.7	106.92	1.00	F		43.7	213.76	1.10	F
	2034 with									
Stream B-AC	D7	1.1	12.74	0.53	B	D8	1.6	15.46	0.62	C
Stream C-AB		1.3	13.20	0.55	B		2.4	17.65	0.69	C
	2034 without									
Stream B-AC	D9	1.2	14.28	0.54	B	D10	0.7	10.04	0.40	B
Stream C-AB		493.5	2880.23	1.88	F		447.0	2448.09	1.76	F

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	03/11/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		8.34	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	High Street		Major
B	High Street North		Minor
C	High Street (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.82			30.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.94	57	22

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	504	0.088	0.224	0.141	0.319
B-C	634	0.094	0.237	-	-
C-B	591	0.221	0.221	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	99	100.000
B		✓	206	100.000
C		✓	270	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	99
	B	0	0	206
	C	64	206	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	9
	C	3	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.41	10.89	0.7	B
C-AB	0.44	10.90	0.8	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	565	0.275	154	0.4	8.724	A
C-AB	169	580	0.291	167	0.4	8.688	A
C-A	34			34			
A-B	0			0			
A-C	75			75			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	185	562	0.330	185	0.5	9.540	A
C-AB	206	584	0.352	205	0.6	9.500	A
C-A	37			37			
A-B	0			0			
A-C	89			89			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	227	557	0.407	226	0.7	10.854	B
C-AB	258	589	0.438	257	0.8	10.837	B
C-A	39			39			
A-B	0			0			
A-C	109			109			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	227	557	0.407	227	0.7	10.894	B
C-AB	258	589	0.438	258	0.8	10.897	B
C-A	39			39			
A-B	0			0			
A-C	109			109			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	185	562	0.330	186	0.5	9.602	A
C-AB	206	584	0.352	207	0.6	9.573	A
C-A	37			37			
A-B	0			0			
A-C	89			89			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	565	0.275	156	0.4	8.806	A
C-AB	169	580	0.292	170	0.4	8.784	A
C-A	34			34			
A-B	0			0			
A-C	75			75			

2020, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		32.93	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	33	100.000
B		✓	201	100.000
C		✓	532	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	33
	B	0	0	201
	C	93	439	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	3
	C	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.36	9.34	0.6	A
C-AB	0.89	45.92	7.2	E
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	151	609	0.248	150	0.3	7.817	A
C-AB	372	627	0.593	366	1.5	13.536	B
C-A	28			28			
A-B	0			0			
A-C	25			25			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	181	608	0.297	180	0.4	8.407	A
C-AB	455	636	0.716	451	2.5	19.196	C
C-A	23			23			
A-B	0			0			
A-C	30			30			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	221	607	0.365	221	0.6	9.313	A
C-AB	576	647	0.890	561	6.3	37.214	E
C-A	10			10			
A-B	0			0			
A-C	36			36			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	221	607	0.365	221	0.6	9.343	A
C-AB	579	649	0.891	575	7.2	45.918	E
C-A	7			7			
A-B	0			0			
A-C	36			36			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	181	608	0.297	181	0.4	8.445	A
C-AB	458	638	0.718	475	3.0	24.200	C
C-A	20			20			
A-B	0			0			
A-C	30			30			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	151	609	0.248	152	0.3	7.874	A
C-AB	373	628	0.594	379	1.6	14.767	B
C-A	27			27			
A-B	0			0			
A-C	25			25			

2024 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		8.49	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	80	100.000
B		✓	235	100.000
C		✓	266	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	80
	B	0	0	235
	C	53	213	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.43	10.54	0.8	B
C-AB	0.43	10.60	0.8	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	177	607	0.292	175	0.4	8.313	A
C-AB	172	593	0.290	170	0.4	8.477	A
C-A	28			28			
A-B	0			0			
A-C	60			60			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	211	604	0.350	211	0.5	9.141	A
C-AB	208	596	0.349	208	0.6	9.259	A
C-A	31			31			
A-B	0			0			
A-C	72			72			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	259	600	0.431	258	0.7	10.489	B
C-AB	260	600	0.433	259	0.8	10.539	B
C-A	33			33			
A-B	0			0			
A-C	88			88			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	259	600	0.431	259	0.8	10.541	B
C-AB	260	600	0.433	260	0.8	10.596	B
C-A	33			33			
A-B	0			0			
A-C	88			88			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	211	604	0.350	212	0.5	9.203	A
C-AB	208	596	0.349	209	0.6	9.330	A
C-A	31			31			
A-B	0			0			
A-C	72			72			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	177	607	0.292	177	0.4	8.395	A
C-AB	172	594	0.290	173	0.4	8.570	A
C-A	28			28			
A-B	0			0			
A-C	60			60			

2024 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		7.86	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	34	100.000
B		✓	167	100.000
C		✓	311	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	34
	B	0	0	167
	C	89	222	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	3
	C	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.30	8.52	0.4	A
C-AB	0.45	10.16	0.9	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	126	609	0.206	125	0.3	7.416	A
C-AB	187	625	0.300	185	0.5	8.162	A
C-A	47			47			
A-B	0			0			
A-C	26			26			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	150	608	0.247	150	0.3	7.852	A
C-AB	229	633	0.361	228	0.6	8.890	A
C-A	51			51			
A-B	0			0			
A-C	31			31			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	184	606	0.303	183	0.4	8.502	A
C-AB	289	644	0.449	288	0.9	10.100	B
C-A	54			54			
A-B	0			0			
A-C	37			37			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	184	606	0.303	184	0.4	8.519	A
C-AB	289	644	0.449	289	0.9	10.159	B
C-A	54			54			
A-B	0			0			
A-C	37			37			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	150	608	0.247	151	0.3	7.877	A
C-AB	229	633	0.362	230	0.6	8.965	A
C-A	51			51			
A-B	0			0			
A-C	31			31			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	126	609	0.206	126	0.3	7.456	A
C-AB	187	625	0.300	188	0.5	8.255	A
C-A	47			47			
A-B	0			0			
A-C	26			26			

2024 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		66.57	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	104	100.000
B		✓	246	100.000
C		✓	545	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	104
	B	0	0	246
	C	69	476	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	4
	B	0	0	9
	C	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.49	12.64	0.9	B
C-AB	1.00	106.92	17.7	F
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	185	564	0.329	183	0.5	9.419	A
C-AB	393	592	0.664	385	2.0	16.868	C
C-A	17			17			
A-B	0			0			
A-C	78			78			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	221	560	0.395	221	0.6	10.577	B
C-AB	479	596	0.803	471	3.7	27.580	D
C-A	11			11			
A-B	0			0			
A-C	93			93			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	271	555	0.488	270	0.9	12.544	B
C-AB	600	601	0.999	564	12.7	67.802	F
C-A	0			0			
A-B	0			0			
A-C	115			115			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	271	555	0.488	271	0.9	12.640	B
C-AB	600	601	0.999	580	17.7	106.919	F
C-A	0			0			
A-B	0			0			
A-C	115			115			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	221	560	0.395	222	0.7	10.686	B
C-AB	485	602	0.806	534	5.3	65.505	F
C-A	5			5			
A-B	0			0			
A-C	93			93			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	185	564	0.329	186	0.5	9.546	A
C-AB	395	594	0.665	407	2.2	20.513	C
C-A	16			16			
A-B	0			0			
A-C	78			78			

2024 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		152.56	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	46	100.000
B		✓	213	100.000
C		✓	645	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	46
	B	0	0	213
	C	105	540	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	3
	C	2	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.39	9.76	0.6	A
C-AB	1.10	213.76	43.7	F
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	160	607	0.264	159	0.4	8.035	A
C-AB	465	631	0.737	454	2.7	19.428	C
C-A	21			21			
A-B	0			0			
A-C	35			35			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	605	0.316	191	0.5	8.679	A
C-AB	571	641	0.892	557	6.4	38.278	E
C-A	9			9			
A-B	0			0			
A-C	41			41			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	235	603	0.389	234	0.6	9.727	A
C-AB	710	645	1.102	630	26.4	109.741	F
C-A	0			0			
A-B	0			0			
A-C	51			51			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	235	603	0.389	234	0.6	9.761	A
C-AB	710	645	1.101	641	43.7	210.124	F
C-A	0			0			
A-B	0			0			
A-C	51			51			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	605	0.316	192	0.5	8.726	A
C-AB	580	647	0.896	631	30.8	213.758	F
C-A	0			0			
A-B	0			0			
A-C	41			41			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	160	607	0.264	161	0.4	8.076	A
C-AB	480	644	0.746	588	3.8	90.891	F
C-A	5			5			
A-B	0			0			
A-C	35			35			

2034 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		10.62	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	95	100.000
B		✓	285	100.000
C		✓	332	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	95
	B	0	0	285
	C	62	270	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	2
	C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.53	12.74	1.1	B
C-AB	0.55	13.20	1.3	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	215	604	0.355	212	0.5	9.141	A
C-AB	220	601	0.367	218	0.6	9.353	A
C-A	30			30			
A-B	0			0			
A-C	72			72			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	256	601	0.426	255	0.7	10.401	B
C-AB	268	604	0.443	267	0.8	10.652	B
C-A	31			31			
A-B	0			0			
A-C	85			85			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	314	596	0.526	312	1.1	12.618	B
C-AB	335	608	0.551	333	1.3	13.030	B
C-A	30			30			
A-B	0			0			
A-C	105			105			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	314	596	0.526	314	1.1	12.735	B
C-AB	335	609	0.551	335	1.3	13.196	B
C-A	30			30			
A-B	0			0			
A-C	105			105			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	256	601	0.426	258	0.8	10.528	B
C-AB	268	604	0.443	270	0.9	10.829	B
C-A	31			31			
A-B	0			0			
A-C	85			85			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	215	604	0.355	215	0.6	9.278	A
C-AB	221	601	0.367	222	0.6	9.521	A
C-A	29			29			
A-B	0			0			
A-C	72			72			

2034 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		14.89	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	41	100.000
B		✓	349	100.000
C		✓	452	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	41
	B	0	0	349
	C	113	339	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	1
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.62	15.46	1.6	C
C-AB	0.69	17.65	2.4	C
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	263	620	0.424	260	0.7	9.935	A
C-AB	294	641	0.459	291	0.9	10.182	B
C-A	46			46			
A-B	0			0			
A-C	31			31			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	314	619	0.507	313	1.0	11.721	B
C-AB	362	651	0.555	360	1.3	12.314	B
C-A	45			45			
A-B	0			0			
A-C	37			37			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	384	617	0.623	382	1.6	15.182	C
C-AB	460	665	0.692	456	2.4	17.019	C
C-A	37			37			
A-B	0			0			
A-C	45			45			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	384	617	0.623	384	1.6	15.463	C
C-AB	461	666	0.693	461	2.4	17.651	C
C-A	37			37			
A-B	0			0			
A-C	45			45			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	314	619	0.507	316	1.1	11.985	B
C-AB	363	652	0.556	367	1.4	12.832	B
C-A	44			44			
A-B	0			0			
A-C	37			37			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	263	620	0.424	264	0.7	10.146	B
C-AB	295	642	0.460	297	1.0	10.518	B
C-A	45			45			
A-B	0			0			
A-C	31			31			

2034 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		2051.01	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	117	100.000
B		✓	268	100.000
C		✓	998	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	117
	B	0	0	268
	C	97	901	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	5
	B	0	0	10
	C	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.54	14.28	1.2	B
C-AB	1.88	2880.23	493.5	F
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	202	556	0.363	200	0.6	10.035	B
C-AB	751	594	1.266	580	42.9	144.670	F
C-A	0			0			
A-B	0			0			
A-C	88			88			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	241	552	0.436	240	0.8	11.503	B
C-AB	897	590	1.521	589	119.9	510.200	F
C-A	0			0			
A-B	0			0			
A-C	105			105			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	295	547	0.540	294	1.1	14.119	B
C-AB	1099	584	1.881	584	248.6	1142.773	F
C-A	0			0			
A-B	0			0			
A-C	129			129			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	295	547	0.540	295	1.2	14.278	B
C-AB	1099	584	1.881	584	377.2	1935.889	F
C-A	0			0			
A-B	0			0			
A-C	129			129			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	241	552	0.436	242	0.8	11.672	B
C-AB	897	590	1.521	590	454.1	2533.800	F
C-A	0			0			
A-B	0			0			
A-C	105			105			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	202	556	0.363	203	0.6	10.209	B
C-AB	751	594	1.266	594	493.5	2880.231	F
C-A	0			0			
A-B	0			0			
A-C	88			88			

2034 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9A	High Street/Church Street/Brook Street High Street/Church Street/Brook Street High Street/Church Street/Brook High Street/Church Street/Brook Street	T-Junction	Two-way		1917.11	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	56	100.000
B		✓	220	100.000
C		✓	1012	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	56
	B	0	0	220
	C	141	871	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	3
	C	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.40	10.04	0.7	B
C-AB	1.76	2448.09	447.0	F
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	166	605	0.274	164	0.4	8.133	A
C-AB	762	636	1.198	618	36.1	116.675	F
C-A	0			0			
A-B	0			0			
A-C	42			42			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	198	603	0.328	197	0.5	8.858	A
C-AB	910	634	1.435	633	105.1	412.898	F
C-A	0			0			
A-B	0			0			
A-C	50			50			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	242	601	0.403	241	0.7	10.003	B
C-AB	1114	631	1.765	631	225.9	951.832	F
C-A	0			0			
A-B	0			0			
A-C	62			62			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	242	601	0.403	242	0.7	10.042	B
C-AB	1114	631	1.765	631	346.6	1639.388	F
C-A	0			0			
A-B	0			0			
A-C	62			62			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	198	603	0.328	198	0.5	8.910	A
C-AB	910	634	1.435	634	415.5	2166.706	F
C-A	0			0			
A-B	0			0			
A-C	50			50			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	166	605	0.274	166	0.4	8.206	A
C-AB	762	636	1.198	636	447.0	2448.089	F
C-A	0			0			
A-B	0			0			
A-C	42			42			

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 9 B Junction-Brooks Street_High Street.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF9 - Junction 26-High Street_Church Street_Brook Street
Report generation date: 02/07/2021 09:02:29

»2020, AM
»2020, PM
»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Stream B-AC	D1	1.3	21.63	0.58	C	D2	46.8	376.39	1.19	F
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	2024 with									
Stream B-AC	D3	1.6	24.55	0.62	C	D4	1.4	21.73	0.58	C
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	2024 without									
Stream B-AC	D5	87.4	748.34	1.35	F	D6	134.9	1084.24	1.47	F
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	2034 with									
Stream B-AC	D7	4.4	57.26	0.84	F	D8	20.4	194.32	1.06	F
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	2034 without									
Stream B-AC	D9	654.4	5432.31	2.69	F	D10	577.1	4565.14	2.43	F
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	03/11/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		5.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Church Street		Major
B	High Street		Minor
C	Brooks Street		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.03			33.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.20	83	17

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	523	0.095	0.240	0.151	0.343
B-C	647	0.099	0.250	-	-
C-B	593	0.229	0.229	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	339	100.000
B		✓	206	100.000
C		✓	299	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	206	133
	B	206	0	0
	C	299	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	9	3
	B	5	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.58	21.63	1.3	C
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	426	0.364	153	0.6	13.076	B
C-AB	0	525	0.000	0	0.0	0.000	A
C-A	225			225			
A-B	155			155			
A-C	100			100			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	185	412	0.449	184	0.8	15.736	C
C-AB	0	513	0.000	0	0.0	0.000	A
C-A	269			269			
A-B	185			185			
A-C	120			120			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	227	393	0.578	225	1.3	21.171	C
C-AB	0	497	0.000	0	0.0	0.000	A
C-A	329			329			
A-B	227			227			
A-C	146			146			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	227	393	0.578	227	1.3	21.634	C
C-AB	0	497	0.000	0	0.0	0.000	A
C-A	329			329			
A-B	227			227			
A-C	146			146			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	185	412	0.449	187	0.8	16.146	C
C-AB	0	513	0.000	0	0.0	0.000	A
C-A	269			269			
A-B	185			185			
A-C	120			120			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	426	0.364	156	0.6	13.388	B
C-AB	0	525	0.000	0	0.0	0.000	A
C-A	225			225			
A-B	155			155			
A-C	100			100			

2020, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		158.87	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	440	100.000
B		✓	439	100.000
C		✓	154	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	201	239
	B	439	0	0
	C	154	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	3	1
	B	1	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	1.19	376.39	46.8	F
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	331	442	0.748	320	2.6	27.586	D
C-AB	0	508	0.000	0	0.0	0.000	A
C-A	116			116			
A-B	151			151			
A-C	180			180			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	395	427	0.924	379	6.6	59.741	F
C-AB	0	493	0.000	0	0.0	0.000	A
C-A	138			138			
A-B	181			181			
A-C	215			215			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	483	407	1.188	400	27.3	174.767	F
C-AB	0	473	0.000	0	0.0	0.000	A
C-A	170			170			
A-B	221			221			
A-C	263			263			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	483	407	1.188	405	46.8	342.698	F
C-AB	0	473	0.000	0	0.0	0.000	A
C-A	170			170			
A-B	221			221			
A-C	263			263			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	395	427	0.924	418	40.9	376.387	F
C-AB	0	493	0.000	0	0.0	0.000	A
C-A	138			138			
A-B	181			181			
A-C	215			215			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	331	442	0.748	431	15.7	243.162	F
C-AB	0	508	0.000	0	0.0	0.000	A
C-A	116			116			
A-B	151			151			
A-C	180			180			

2024 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		5.32	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	423	100.000
B		✓	213	100.000
C		✓	345	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	235	188
	B	213	0	0
	C	345	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	3
	B	2	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.62	24.55	1.6	C
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	160	422	0.380	158	0.6	13.509	B
C-AB	0	513	0.000	0	0.0	0.000	A
C-A	260			260			
A-B	177			177			
A-C	142			142			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	405	0.473	190	0.9	16.715	C
C-AB	0	499	0.000	0	0.0	0.000	A
C-A	310			310			
A-B	211			211			
A-C	169			169			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	235	380	0.617	232	1.5	23.800	C
C-AB	0	479	0.000	0	0.0	0.000	A
C-A	380			380			
A-B	259			259			
A-C	207			207			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	235	380	0.617	234	1.6	24.552	C
C-AB	0	479	0.000	0	0.0	0.000	A
C-A	380			380			
A-B	259			259			
A-C	207			207			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	405	0.473	194	0.9	17.287	C
C-AB	0	499	0.000	0	0.0	0.000	A
C-A	310			310			
A-B	211			211			
A-C	169			169			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	160	422	0.380	162	0.6	13.876	B
C-AB	0	513	0.000	0	0.0	0.000	A
C-A	260			260			
A-B	177			177			
A-C	142			142			

2024 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		5.48	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	431	100.000
B		✓	210	100.000
C		✓	189	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	154	277
	B	210	0	0
	C	189	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	1
	B	1	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.58	21.73	1.4	C
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	158	435	0.364	156	0.6	12.812	B
C-AB	0	512	0.000	0	0.0	0.000	A
C-A	142			142			
A-B	116			116			
A-C	209			209			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	189	419	0.451	188	0.8	15.530	C
C-AB	0	498	0.000	0	0.0	0.000	A
C-A	170			170			
A-B	138			138			
A-C	249			249			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	231	396	0.583	229	1.3	21.245	C
C-AB	0	478	0.000	0	0.0	0.000	A
C-A	208			208			
A-B	170			170			
A-C	305			305			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	231	396	0.583	231	1.4	21.735	C
C-AB	0	478	0.000	0	0.0	0.000	A
C-A	208			208			
A-B	170			170			
A-C	305			305			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	189	419	0.451	191	0.8	15.947	C
C-AB	0	498	0.000	0	0.0	0.000	A
C-A	170			170			
A-B	138			138			
A-C	249			249			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	158	435	0.364	159	0.6	13.115	B
C-AB	0	512	0.000	0	0.0	0.000	A
C-A	142			142			
A-B	116			116			
A-C	209			209			

2024 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		294.80	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	395	100.000
B		✓	476	100.000
C		✓	323	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	246	149
	B	476	0	0
	C	323	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	9	3
	B	3	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	1.35	748.34	87.4	F
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	358	425	0.843	342	4.1	37.968	E
C-AB	0	513	0.000	0	0.0	0.000	A
C-A	243			243			
A-B	185			185			
A-C	112			112			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	428	409	1.045	390	13.6	104.101	F
C-AB	0	499	0.000	0	0.0	0.000	A
C-A	290			290			
A-B	221			221			
A-C	134			134			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	524	387	1.354	386	48.2	308.411	F
C-AB	0	479	0.000	0	0.0	0.000	A
C-A	356			356			
A-B	271			271			
A-C	164			164			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	524	387	1.354	387	82.5	610.081	F
C-AB	0	479	0.000	0	0.0	0.000	A
C-A	356			356			
A-B	271			271			
A-C	164			164			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	428	409	1.045	408	87.4	748.344	F
C-AB	0	499	0.000	0	0.0	0.000	A
C-A	290			290			
A-B	221			221			
A-C	134			134			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	358	425	0.843	420	71.9	683.106	F
C-AB	0	513	0.000	0	0.0	0.000	A
C-A	243			243			
A-B	185			185			
A-C	112			112			

2024 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		500.87	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	447	100.000
B		✓	540	100.000
C		✓	176	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	213	234
	B	540	0	0
	C	176	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	3	1
	B	1	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	1.47	1084.24	134.9	F
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	407	440	0.925	381	6.5	49.225	E
C-AB	0	509	0.000	0	0.0	0.000	A
C-A	133			133			
A-B	160			160			
A-C	176			176			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	485	424	1.144	416	23.8	154.182	F
C-AB	0	494	0.000	0	0.0	0.000	A
C-A	158			158			
A-B	191			191			
A-C	210			210			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	595	403	1.474	403	71.7	443.643	F
C-AB	0	473	0.000	0	0.0	0.000	A
C-A	194			194			
A-B	235			235			
A-C	258			258			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	595	403	1.474	403	119.6	845.043	F
C-AB	0	473	0.000	0	0.0	0.000	A
C-A	194			194			
A-B	235			235			
A-C	258			258			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	485	424	1.144	424	134.9	1084.244	F
C-AB	0	494	0.000	0	0.0	0.000	A
C-A	158			158			
A-B	191			191			
A-C	210			210			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	407	440	0.925	436	127.4	1082.222	F
C-AB	0	509	0.000	0	0.0	0.000	A
C-A	133			133			
A-B	160			160			
A-C	176			176			

2034 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		12.83	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	537	100.000
B		✓	270	100.000
C		✓	383	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	285	252
	B	270	0	0
	C	383	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	3
	B	1	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.84	57.26	4.4	F
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	203	406	0.501	199	1.0	17.118	C
C-AB	0	491	0.000	0	0.0	0.000	A
C-A	288			288			
A-B	215			215			
A-C	190			190			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	243	384	0.631	240	1.6	24.496	C
C-AB	0	472	0.000	0	0.0	0.000	A
C-A	344			344			
A-B	256			256			
A-C	227			227			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	297	355	0.839	288	3.9	48.324	E
C-AB	0	447	0.000	0	0.0	0.000	A
C-A	422			422			
A-B	314			314			
A-C	277			277			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	297	355	0.839	295	4.4	57.264	F
C-AB	0	447	0.000	0	0.0	0.000	A
C-A	422			422			
A-B	314			314			
A-C	277			277			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	243	384	0.631	253	1.8	29.152	D
C-AB	0	472	0.000	0	0.0	0.000	A
C-A	344			344			
A-B	256			256			
A-C	227			227			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	203	406	0.501	206	1.0	18.301	C
C-AB	0	491	0.000	0	0.0	0.000	A
C-A	288			288			
A-B	215			215			
A-C	190			190			

2034 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		50.87	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	694	100.000
B		✓	339	100.000
C		✓	250	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	349	345
	B	339	0	0
	C	250	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	1	1
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	1.06	194.32	20.4	F
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	255	406	0.629	249	1.6	22.175	C
C-AB	0	467	0.000	0	0.0	0.000	A
C-A	188			188			
A-B	263			263			
A-C	260			260			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	305	383	0.796	298	3.3	39.566	E
C-AB	0	444	0.000	0	0.0	0.000	A
C-A	225			225			
A-B	314			314			
A-C	310			310			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	373	351	1.062	334	13.2	112.651	F
C-AB	0	412	0.000	0	0.0	0.000	A
C-A	275			275			
A-B	384			384			
A-C	380			380			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	373	351	1.062	344	20.4	194.321	F
C-AB	0	412	0.000	0	0.0	0.000	A
C-A	275			275			
A-B	384			384			
A-C	380			380			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	305	383	0.796	363	5.8	139.487	F
C-AB	0	444	0.000	0	0.0	0.000	A
C-A	225			225			
A-B	314			314			
A-C	310			310			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	255	406	0.629	271	1.8	29.403	D
C-AB	0	467	0.000	0	0.0	0.000	A
C-A	188			188			
A-B	263			263			
A-C	260			260			

2034 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		2820.69	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	453	100.000
B		✓	901	100.000
C		✓	363	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	268	185
	B	901	0	0
	C	363	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	10	3
	B	3	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	2.69	5432.31	654.4	F
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	678	412	1.645	406	68.0	317.219	F
C-AB	0	502	0.000	0	0.0	0.000	A
C-A	273			273			
A-B	202			202			
A-C	139			139			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	810	394	2.056	394	172.0	1156.644	F
C-AB	0	486	0.000	0	0.0	0.000	A
C-A	326			326			
A-B	241			241			
A-C	166			166			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	992	368	2.694	368	328.0	2439.349	F
C-AB	0	463	0.000	0	0.0	0.000	A
C-A	400			400			
A-B	295			295			
A-C	204			204			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	992	368	2.694	368	483.9	3690.163	F
C-AB	0	463	0.000	0	0.0	0.000	A
C-A	400			400			
A-B	295			295			
A-C	204			204			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	810	394	2.056	394	587.9	4728.473	F
C-AB	0	486	0.000	0	0.0	0.000	A
C-A	326			326			
A-B	241			241			
A-C	166			166			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	678	412	1.645	412	654.4	5432.307	F
C-AB	0	502	0.000	0	0.0	0.000	A
C-A	273			273			
A-B	202			202			
A-C	139			139			

2034 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9B	High Street/Church Street/Brook Street	T-Junction	Two-way		2553.00	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	445	100.000
B		✓	871	100.000
C		✓	237	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	220	225
	B	871	0	0
	C	237	0	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	3	0
	B	1	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	2.43	4565.14	577.1	F
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	656	434	1.511	427	57.3	256.083	F
C-AB	0	510	0.000	0	0.0	0.000	A
C-A	178			178			
A-B	166			166			
A-C	169			169			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	783	418	1.874	418	148.6	927.622	F
C-AB	0	495	0.000	0	0.0	0.000	A
C-A	213			213			
A-B	198			198			
A-C	202			202			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	959	395	2.425	395	289.5	2000.170	F
C-AB	0	474	0.000	0	0.0	0.000	A
C-A	261			261			
A-B	242			242			
A-C	248			248			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	959	395	2.425	395	430.4	3108.306	F
C-AB	0	474	0.000	0	0.0	0.000	A
C-A	261			261			
A-B	242			242			
A-C	248			248			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	783	418	1.874	418	521.7	3990.614	F
C-AB	0	495	0.000	0	0.0	0.000	A
C-A	213			213			
A-B	198			198			
A-C	202			202			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	656	434	1.511	434	577.1	4565.139	F
C-AB	0	510	0.000	0	0.0	0.000	A
C-A	178			178			
A-B	166			166			
A-C	169			169			

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 9 C Junction-Church Street_High Street.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF9 - Junction 26-High Street_Church Street_Brook Street
Report generation date: 02/07/2021 09:03:22

»2020, AM
»2020, PM
»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Stream B-AC	D1	0.1	6.02	0.11	A	D2	0.2	6.59	0.16	A
Stream C-AB		0.5	5.93	0.23	A		0.1	5.92	0.07	A
	2024 with									
Stream B-AC	D3	0.1	6.01	0.09	A	D4	0.2	6.72	0.15	A
Stream C-AB		0.4	5.57	0.20	A		0.1	5.81	0.08	A
	2024 without									
Stream B-AC	D5	0.1	6.13	0.11	A	D6	0.2	6.82	0.18	A
Stream C-AB		0.5	6.09	0.26	A		0.2	5.96	0.11	A
	2034 with									
Stream B-AC	D7	0.1	6.40	0.11	A	D8	0.9	27.27	0.49	D
Stream C-AB		0.6	5.88	0.26	A		0.6	9.42	0.21	A
	2034 without									
Stream B-AC	D9	0.2	6.61	0.16	A	D10	0.3	7.22	0.24	A
Stream C-AB		0.7	6.39	0.31	A		0.2	5.75	0.13	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

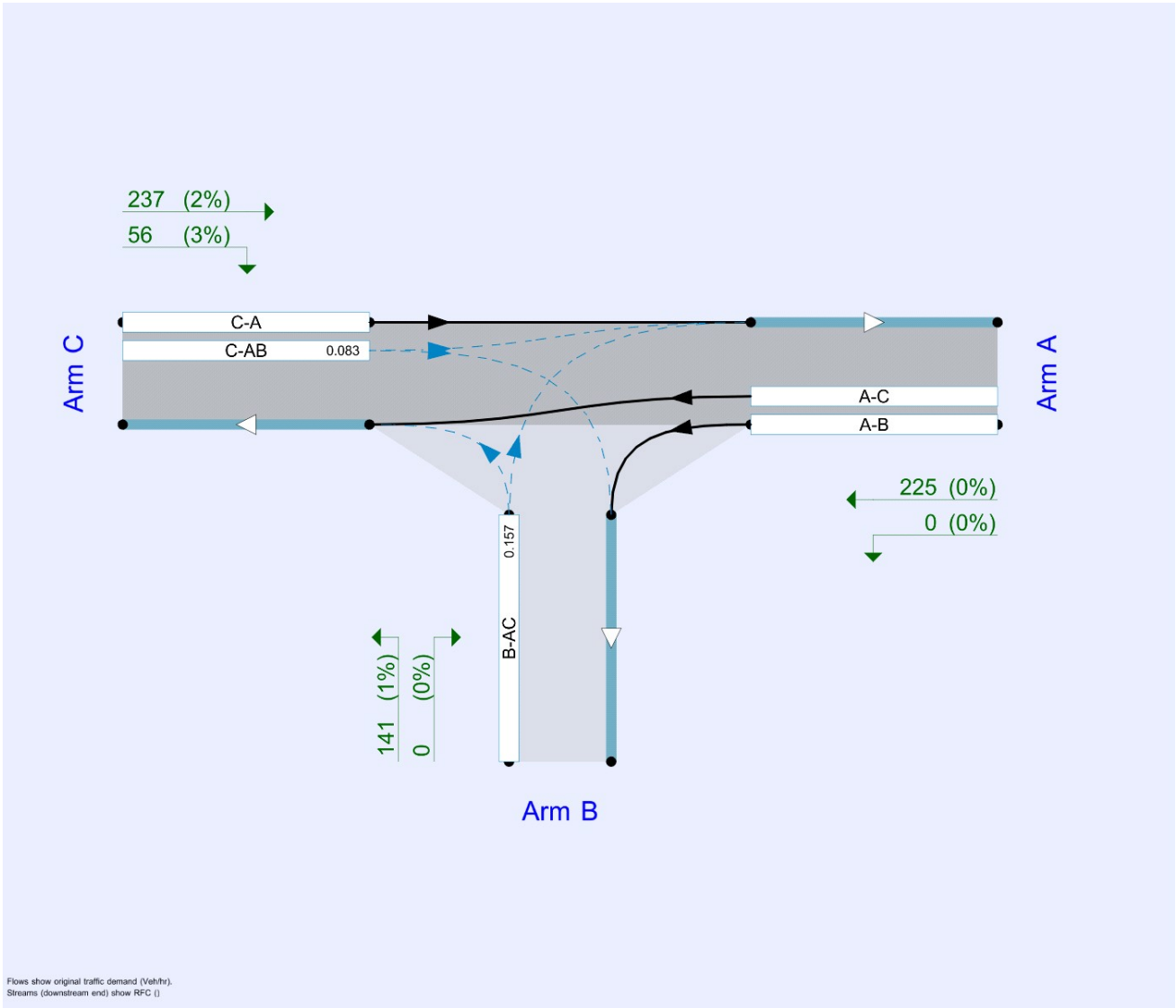
File summary

File Description

Title	
Location	
Site number	
Date	03/11/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		2.21	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Church Street		Major
B	High Street		Minor
C	Brook Street		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	5.55			81.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	4.11	14	55

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	566	0.105	0.265	0.167	0.379
B-C	732	0.114	0.289	-	-
C-B	621	0.245	0.245	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	133	100.000
B		✓	64	100.000
C		✓	398	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	133
	B	0	0	64
	C	299	99	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	3
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.11	6.02	0.1	A
C-AB	0.23	5.93	0.5	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	48	681	0.071	48	0.1	5.679	A
C-AB	107	735	0.146	107	0.2	5.729	A
C-A	192			192			
A-B	0			0			
A-C	100			100			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	676	0.085	57	0.1	5.821	A
C-AB	138	760	0.182	138	0.3	5.792	A
C-A	220			220			
A-B	0			0			
A-C	120			120			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	70	668	0.105	70	0.1	6.023	A
C-AB	187	795	0.235	186	0.5	5.916	A
C-A	252			252			
A-B	0			0			
A-C	146			146			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	70	668	0.105	70	0.1	6.023	A
C-AB	187	795	0.235	187	0.5	5.927	A
C-A	251			251			
A-B	0			0			
A-C	146			146			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	676	0.085	58	0.1	5.823	A
C-AB	138	760	0.182	139	0.3	5.806	A
C-A	219			219			
A-B	0			0			
A-C	120			120			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	48	681	0.071	48	0.1	5.687	A
C-AB	108	735	0.147	108	0.2	5.754	A
C-A	192			192			
A-B	0			0			
A-C	100			100			

2020, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		1.66	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	239	100.000
B		✓	93	100.000
C		✓	187	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	239
	B	0	0	93
	C	154	33	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	1
	B	0	0	1
	C	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.16	6.59	0.2	A
C-AB	0.07	5.92	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	70	672	0.104	70	0.1	5.967	A
C-AB	30	638	0.047	30	0.1	5.915	A
C-A	110			110			
A-B	0			0			
A-C	180			180			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	84	662	0.126	83	0.1	6.216	A
C-AB	37	646	0.058	37	0.1	5.918	A
C-A	130			130			
A-B	0			0			
A-C	215			215			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	102	648	0.158	102	0.2	6.589	A
C-AB	49	657	0.074	48	0.1	5.919	A
C-A	157			157			
A-B	0			0			
A-C	263			263			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	102	648	0.158	102	0.2	6.592	A
C-AB	49	657	0.074	49	0.1	5.924	A
C-A	157			157			
A-B	0			0			
A-C	263			263			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	84	662	0.126	84	0.1	6.222	A
C-AB	37	646	0.058	38	0.1	5.922	A
C-A	130			130			
A-B	0			0			
A-C	215			215			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	70	672	0.104	70	0.1	5.979	A
C-AB	30	638	0.047	30	0.1	5.923	A
C-A	110			110			
A-B	0			0			
A-C	180			180			

2024 with, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		1.63	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	188	100.000
B		✓	53	100.000
C		✓	425	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	188
	B	0	0	53
	C	345	80	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	2
	C	2	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.09	6.01	0.1	A
C-AB	0.20	5.57	0.4	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	40	676	0.059	40	0.1	5.657	A
C-AB	93	744	0.124	92	0.2	5.514	A
C-A	227			227			
A-B	0			0			
A-C	142			142			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	48	668	0.071	48	0.1	5.801	A
C-AB	121	773	0.156	120	0.3	5.522	A
C-A	262			262			
A-B	0			0			
A-C	169			169			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	657	0.089	58	0.1	6.013	A
C-AB	166	813	0.204	165	0.4	5.564	A
C-A	302			302			
A-B	0			0			
A-C	207			207			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	657	0.089	58	0.1	6.013	A
C-AB	166	814	0.204	166	0.4	5.573	A
C-A	302			302			
A-B	0			0			
A-C	207			207			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	48	668	0.071	48	0.1	5.803	A
C-AB	121	773	0.156	121	0.3	5.531	A
C-A	261			261			
A-B	0			0			
A-C	169			169			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	40	676	0.059	40	0.1	5.661	A
C-AB	93	745	0.125	93	0.2	5.534	A
C-A	227			227			
A-B	0			0			
A-C	142			142			

2024 with, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		1.45	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	286	100.000
B		✓	89	100.000
C		✓	222	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	286
	B	0	0	89
	C	188	34	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	1
	B	0	0	1
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.15	6.72	0.2	A
C-AB	0.08	5.81	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	67	662	0.101	67	0.1	6.040	A
C-AB	33	653	0.050	32	0.1	5.797	A
C-A	134			134			
A-B	0			0			
A-C	215			215			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	80	650	0.123	80	0.1	6.310	A
C-AB	41	663	0.062	41	0.1	5.788	A
C-A	158			158			
A-B	0			0			
A-C	257			257			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	98	633	0.155	98	0.2	6.719	A
C-AB	54	677	0.080	54	0.1	5.780	A
C-A	190			190			
A-B	0			0			
A-C	315			315			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	98	633	0.155	98	0.2	6.722	A
C-AB	54	677	0.080	54	0.1	5.785	A
C-A	190			190			
A-B	0			0			
A-C	315			315			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	80	650	0.123	80	0.1	6.319	A
C-AB	41	663	0.062	41	0.1	5.795	A
C-A	158			158			
A-B	0			0			
A-C	257			257			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	67	662	0.101	67	0.1	6.049	A
C-AB	33	653	0.050	33	0.1	5.805	A
C-A	134			134			
A-B	0			0			
A-C	215			215			

2024 without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		2.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	149	100.000
B		✓	69	100.000
C		✓	427	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	149
	B	0	0	69
	C	323	104	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	3
	C	3	4	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.11	6.13	0.1	A
C-AB	0.26	6.09	0.5	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	52	678	0.077	52	0.1	5.745	A
C-AB	117	734	0.160	116	0.3	5.824	A
C-A	204			204			
A-B	0			0			
A-C	112			112			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	62	672	0.092	62	0.1	5.904	A
C-AB	152	761	0.199	151	0.4	5.907	A
C-A	232			232			
A-B	0			0			
A-C	134			134			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	76	663	0.115	76	0.1	6.131	A
C-AB	207	800	0.259	206	0.5	6.078	A
C-A	263			263			
A-B	0			0			
A-C	164			164			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	76	663	0.115	76	0.1	6.131	A
C-AB	207	800	0.259	207	0.5	6.089	A
C-A	263			263			
A-B	0			0			
A-C	164			164			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	62	672	0.092	62	0.1	5.908	A
C-AB	152	762	0.199	153	0.4	5.923	A
C-A	232			232			
A-B	0			0			
A-C	134			134			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	52	678	0.077	52	0.1	5.753	A
C-AB	118	734	0.160	118	0.3	5.851	A
C-A	204			204			
A-B	0			0			
A-C	112			112			

2024 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		1.94	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	234	100.000
B		✓	105	100.000
C		✓	222	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	234
	B	0	0	105
	C	176	46	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	1
	B	0	0	2
	C	2	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.18	6.82	0.2	A
C-AB	0.11	5.96	0.2	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	79	667	0.119	79	0.1	6.112	A
C-AB	43	651	0.067	43	0.1	5.922	A
C-A	124			124			
A-B	0			0			
A-C	176			176			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	94	657	0.144	94	0.2	6.393	A
C-AB	54	661	0.082	54	0.1	5.936	A
C-A	145			145			
A-B	0			0			
A-C	210			210			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	116	644	0.180	115	0.2	6.810	A
C-AB	71	675	0.105	71	0.2	5.962	A
C-A	173			173			
A-B	0			0			
A-C	258			258			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	116	644	0.180	116	0.2	6.816	A
C-AB	71	675	0.105	71	0.2	5.962	A
C-A	173			173			
A-B	0			0			
A-C	258			258			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	94	657	0.144	95	0.2	6.400	A
C-AB	55	661	0.082	55	0.1	5.939	A
C-A	145			145			
A-B	0			0			
A-C	210			210			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	79	667	0.119	79	0.1	6.127	A
C-AB	44	651	0.067	44	0.1	5.929	A
C-A	124			124			
A-B	0			0			
A-C	176			176			

2034 with, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		1.81	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	252	100.000
B		✓	62	100.000
C		✓	478	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	252
	B	0	0	62
	C	383	95	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	3
	C	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.11	6.40	0.1	A
C-AB	0.26	5.88	0.6	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	47	656	0.071	46	0.1	5.906	A
C-AB	116	753	0.154	115	0.3	5.640	A
C-A	244			244			
A-B	0			0			
A-C	190			190			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	56	645	0.086	56	0.1	6.109	A
C-AB	153	784	0.195	152	0.4	5.708	A
C-A	277			277			
A-B	0			0			
A-C	227			227			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	68	630	0.108	68	0.1	6.405	A
C-AB	214	828	0.259	213	0.6	5.869	A
C-A	312			312			
A-B	0			0			
A-C	277			277			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	68	630	0.108	68	0.1	6.405	A
C-AB	215	828	0.259	215	0.6	5.884	A
C-A	312			312			
A-B	0			0			
A-C	277			277			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	56	645	0.086	56	0.1	6.111	A
C-AB	153	785	0.195	154	0.4	5.729	A
C-A	276			276			
A-B	0			0			
A-C	227			227			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	47	656	0.071	47	0.1	5.912	A
C-AB	116	753	0.155	117	0.3	5.667	A
C-A	243			243			
A-B	0			0			
A-C	190			190			

2034 with, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		5.08	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	345	100.000
B		✓	113	100.000
C		✓	291	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	345
	B	0	0	113
	C	250	41	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	100
	B	0	0	100
	C	100	41	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.49	27.27	0.9	D
C-AB	0.21	9.42	0.6	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	291	0.293	83	0.4	17.238	C
C-AB	52	465	0.112	51	0.2	8.692	A
C-A	167			167			
A-B	0			0			
A-C	260			260			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	102	276	0.368	101	0.6	20.458	C
C-AB	71	474	0.149	70	0.4	8.827	A
C-A	191			191			
A-B	0			0			
A-C	310			310			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	124	256	0.486	123	0.9	26.787	D
C-AB	104	489	0.213	103	0.6	9.227	A
C-A	216			216			
A-B	0			0			
A-C	380			380			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	124	256	0.486	124	0.9	27.273	D
C-AB	105	489	0.214	105	0.6	9.416	A
C-A	216			216			
A-B	0			0			
A-C	380			380			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	102	276	0.368	103	0.6	20.917	C
C-AB	71	474	0.150	72	0.4	9.200	A
C-A	191			191			
A-B	0			0			
A-C	310			310			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	291	0.293	86	0.4	17.622	C
C-AB	52	464	0.113	53	0.3	8.922	A
C-A	167			167			
A-B	0			0			
A-C	260			260			

2034 without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		2.60	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	185	100.000
B		✓	97	100.000
C		✓	480	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	185
	B	0	0	97
	C	363	117	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	3
	B	0	0	3
	C	3	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.16	6.61	0.2	A
C-AB	0.31	6.39	0.7	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	73	670	0.109	73	0.1	6.018	A
C-AB	139	744	0.187	138	0.3	5.937	A
C-A	222			222			
A-B	0			0			
A-C	139			139			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	87	662	0.132	87	0.2	6.255	A
C-AB	182	775	0.235	182	0.5	6.082	A
C-A	249			249			
A-B	0			0			
A-C	166			166			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	107	652	0.164	107	0.2	6.605	A
C-AB	253	819	0.309	252	0.7	6.371	A
C-A	275			275			
A-B	0			0			
A-C	204			204			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	107	652	0.164	107	0.2	6.607	A
C-AB	253	819	0.309	253	0.7	6.387	A
C-A	275			275			
A-B	0			0			
A-C	204			204			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	87	662	0.132	87	0.2	6.262	A
C-AB	183	776	0.236	184	0.5	6.101	A
C-A	249			249			
A-B	0			0			
A-C	166			166			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	73	670	0.109	73	0.1	6.032	A
C-AB	140	744	0.188	140	0.3	5.969	A
C-A	221			221			
A-B	0			0			
A-C	139			139			

2034 without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF9C	untitled	T-Junction	Two-way		2.27	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	225	100.000
B		✓	141	100.000
C		✓	293	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	225
	B	0	0	141
	C	237	56	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	0
	B	0	0	1
	C	2	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-AC	0.24	7.22	0.3	A
C-AB	0.13	5.75	0.2	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	106	676	0.157	105	0.2	6.301	A
C-AB	57	684	0.083	57	0.1	5.736	A
C-A	164			164			
A-B	0			0			
A-C	169			169			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	127	667	0.190	127	0.2	6.665	A
C-AB	73	701	0.103	72	0.2	5.733	A
C-A	191			191			
A-B	0			0			
A-C	202			202			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	654	0.238	155	0.3	7.214	A
C-AB	97	724	0.133	96	0.2	5.738	A
C-A	226			226			
A-B	0			0			
A-C	248			248			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	155	654	0.238	155	0.3	7.222	A
C-AB	97	725	0.133	97	0.2	5.739	A
C-A	226			226			
A-B	0			0			
A-C	248			248			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	127	667	0.190	127	0.2	6.674	A
C-AB	73	701	0.104	73	0.2	5.735	A
C-A	191			191			
A-B	0			0			
A-C	202			202			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	106	676	0.157	106	0.2	6.323	A
C-AB	57	684	0.084	57	0.1	5.748	A
C-A	163			163			
A-B	0			0			
A-C	169			169			

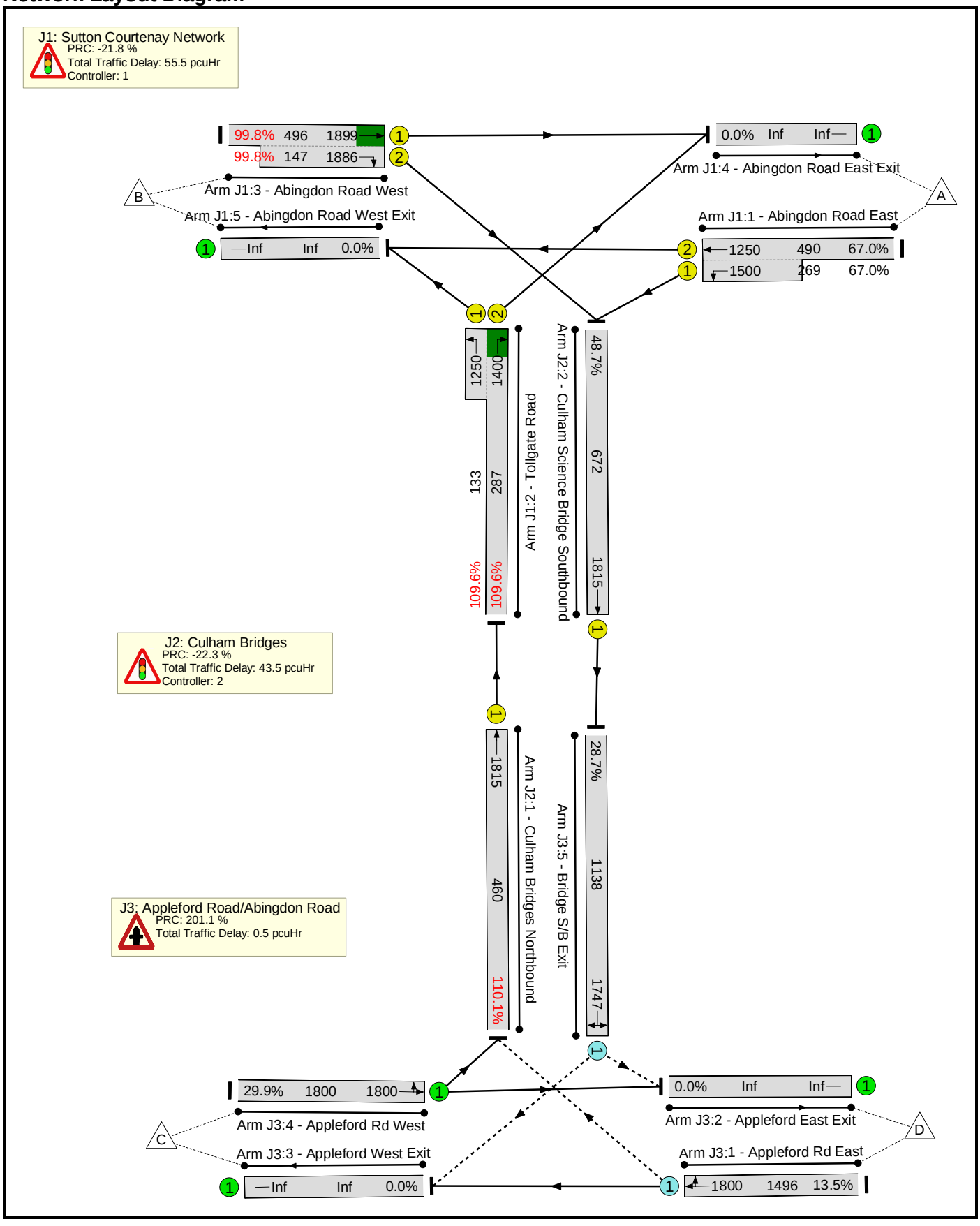
Basic Results Summary

User and Project Details

Project:	**Didcot Garden Town – HIF1**
Title:	**Culham River Crossing (OFF 10 & OFF 11)**
Location:	
Additional detail:	
File name:	NetworkPrioritySptContValidation_aecom2.lsg3x
Author:	SOC
Company:	AECOM
Address:	

Scenario 1: '2020 AM peak' (FG1: '2020 AM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

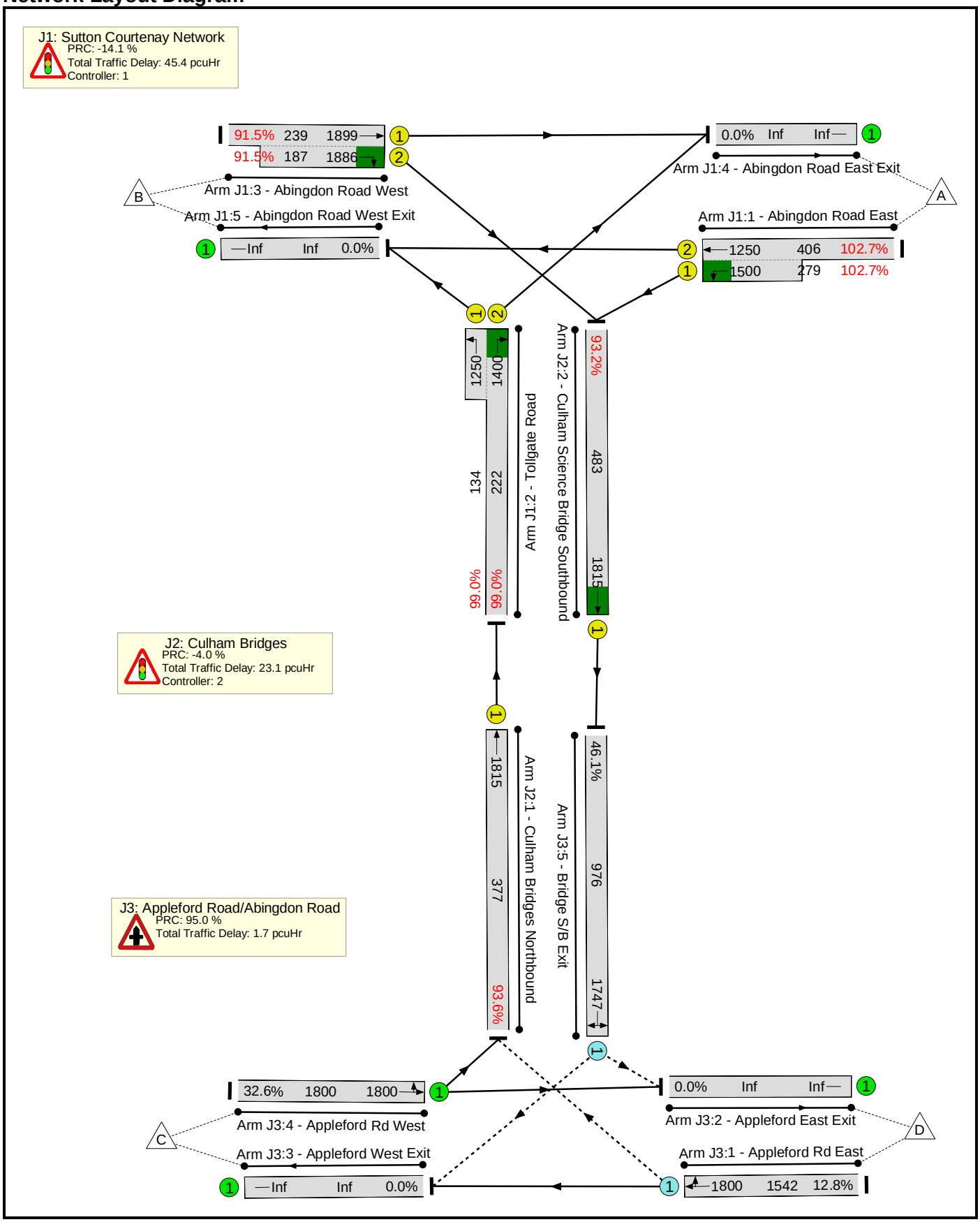
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**110.1%**	**431**	**0**	**0**	**99.5**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**109.6%**	**0**	**0**	**0**	**55.5**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	53	-	508	1250:1500	490+269	67.0 : 67.0%	-	-	-	3.6	25.8	8.1
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	30	-	506	1400:1250	287+133	109.6 : 109.6%	-	-	-	31.8	249.0	38.1
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	67:8	-	642	1899:1886	496+147	99.8 : 99.8%	-	-	-	20.1	112.4	27.5
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**110.1%**	**0**	**0**	**0**	**43.5**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	38	-	506	1815	460	110.1%	-	-	-	39.6	281.9	51.4
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	56	-	327	1815	672	48.7%	-	-	-	3.9	42.5	11.2
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**29.9%**	**431**	**0**	**0**	**0.5**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	202	1800	1496	13.5%	104	0	0	0.1	1.4	0.1
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	538	1800	1800	29.9%	-	-	-	0.2	1.4	0.2
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	327	1747	1138	28.7%	327	0	0	0.2	2.7	6.9

C1	PRC for Signalled Lanes (%):	-21.8	Total Delay for Signalled Lanes (pcuHr):	55.49	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	-22.3	Total Delay for Signalled Lanes (pcuHr):	43.48	Cycle Time (s): 154
	PRC Over All Lanes (%):	-22.3	Total Delay Over All Lanes(pcuHr):	99.50	

Basic Results Summary

Scenario 2: '2020 PM peak' (FG2: '2020 PM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

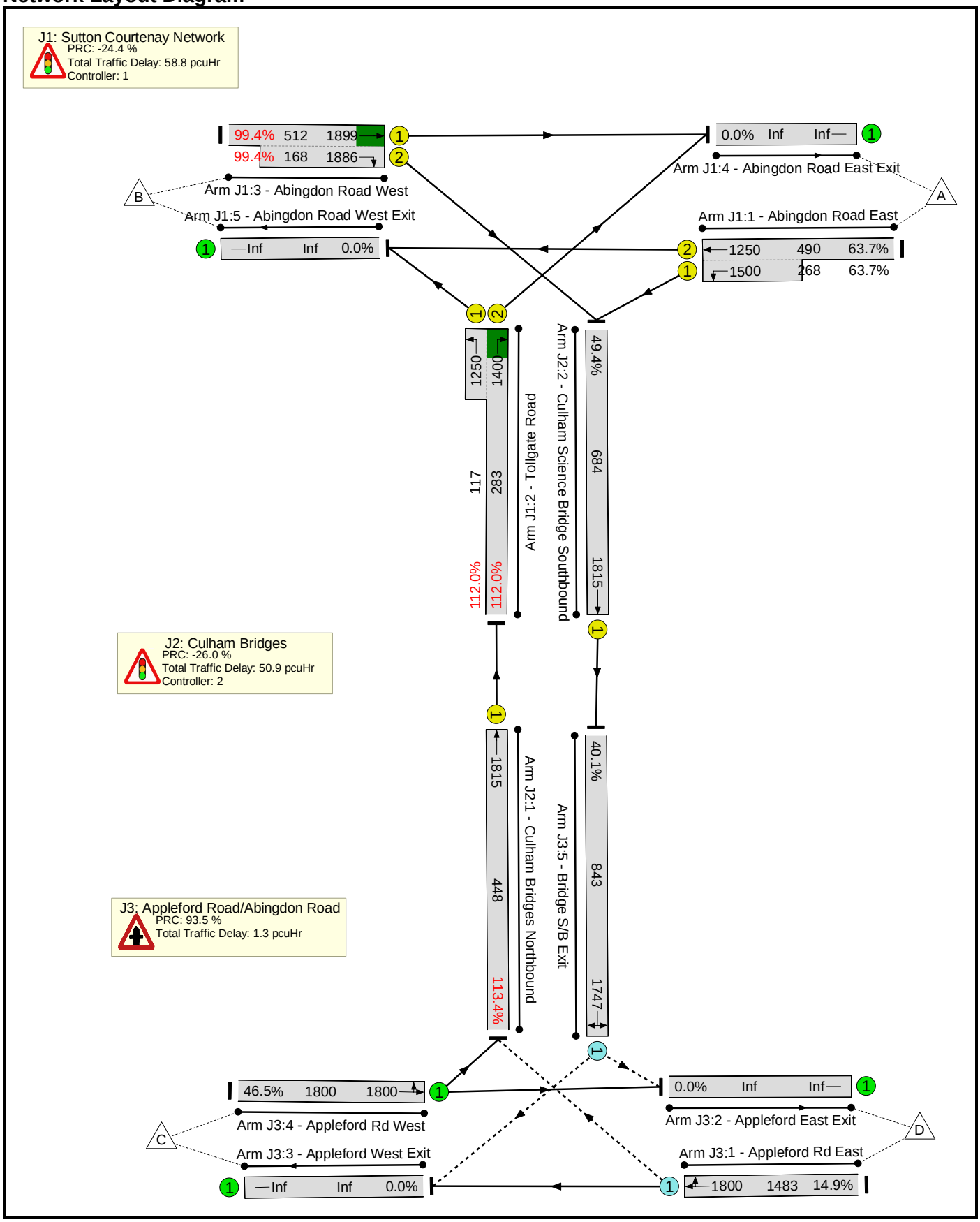
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**102.7%**	**505**	**0**	**0**	**70.3**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**102.7%**	**0**	**0**	**0**	**45.4**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	44	-	704	1250:1500	406+279	102.7 : 102.7%	-	-	-	25.6	131.1	37.4
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	26	-	353	1400:1250	222+134	99.0 : 99.0%	-	-	-	12.6	128.7	16.3
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	71:21	-	390	1899:1886	239+187	91.5 : 91.5%	-	-	-	7.2	66.1	9.5
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**93.6%**	**0**	**0**	**0**	**23.1**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	31	-	353	1815	377	93.6%	-	-	-	11.0	112.3	19.9
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	63	-	458	1815	483	93.2%	-	-	-	12.1	96.8	24.0
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**46.1%**	**505**	**0**	**0**	**1.7**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	198	1800	1542	12.8%	55	0	0	0.1	1.3	0.1
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	587	1800	1800	32.6%	-	-	-	0.2	1.5	0.2
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	458	1747	976	46.1%	450	0	0	1.4	11.1	17.6

C1	PRC for Signalled Lanes (%):	-14.1	Total Delay for Signalled Lanes (pcuHr):	45.43	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	-4.0	Total Delay for Signalled Lanes (pcuHr):	23.12	Cycle Time (s): 154
	PRC Over All Lanes (%):	-14.1	Total Delay Over All Lanes(pcuHr):	70.26	

Basic Results Summary

Scenario 3: '2024 No HIF AM peak' (FG3: '2024 No HIF AM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

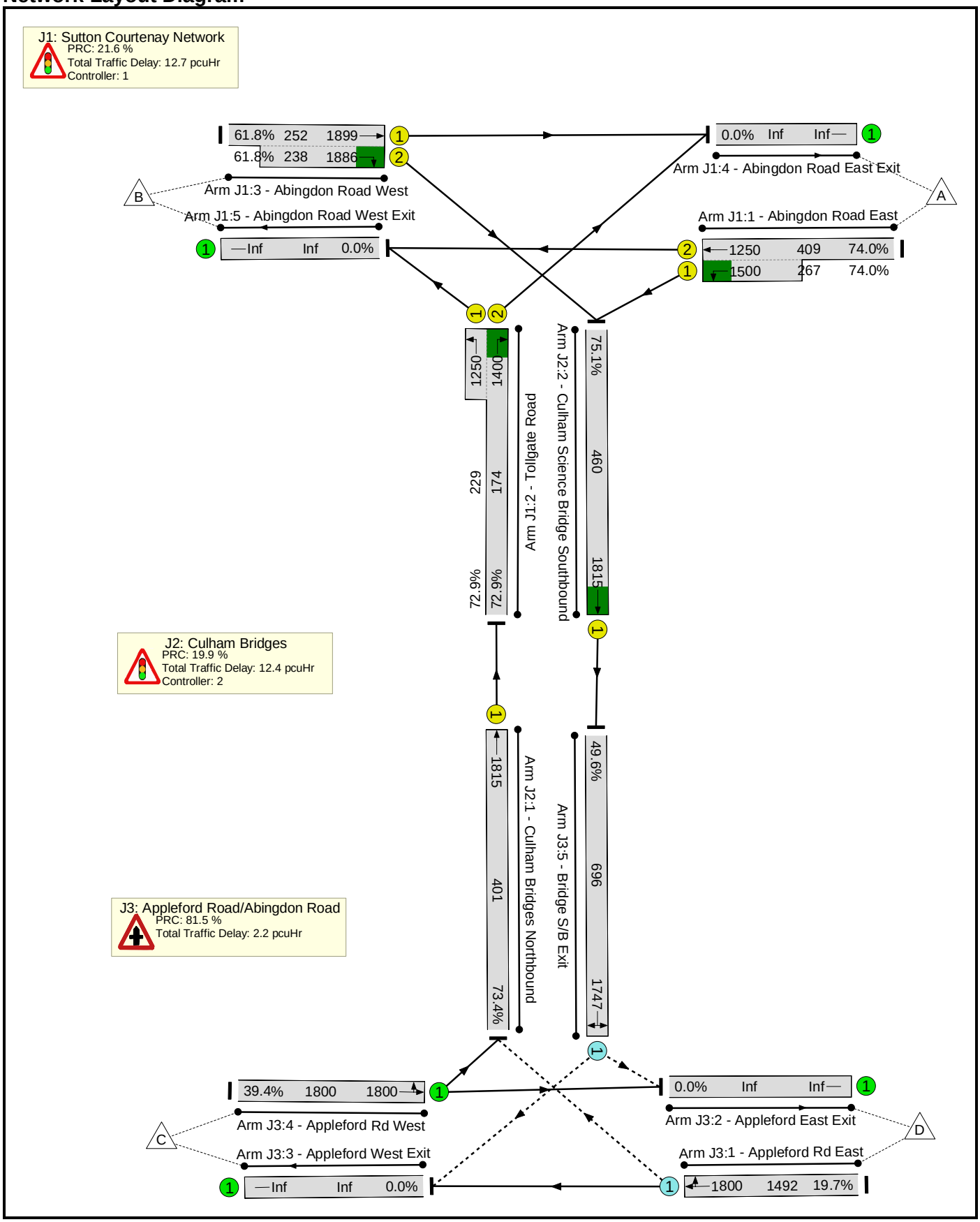
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**113.4%**	**399**	**0**	**0**	**111.0**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**112.0%**	**0**	**0**	**0**	**58.8**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	53	-	483	1250:1500	490+268	63.7 : 63.7%	-	-	-	3.3	24.9	7.4
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	29	-	508	1400:1250	283+117	112.0 : 112.0%	-	-	-	35.4	284.7	41.6
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	68:9	-	676	1899:1886	512+168	99.4 : 99.4%	-	-	-	20.1	106.9	27.9
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**113.4%**	**0**	**0**	**0**	**50.9**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	37	-	508	1815	448	113.4%	-	-	-	47.0	332.8	58.1
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	57	-	338	1815	684	49.4%	-	-	-	3.9	42.0	11.5
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**46.5%**	**399**	**0**	**0**	**1.3**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	221	1800	1483	14.9%	61	0	0	0.1	1.4	0.1
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	837	1800	1800	46.5%	-	-	-	0.4	1.9	0.4
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	338	1747	843	40.1%	338	0	0	0.7	7.9	12.3

C1	PRC for Signalled Lanes (%):	-24.4	Total Delay for Signalled Lanes (pcuHr):	58.84	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	-26.0	Total Delay for Signalled Lanes (pcuHr):	50.90	Cycle Time (s): 154
	PRC Over All Lanes (%):	-26.0	Total Delay Over All Lanes(pcuHr):	111.01	

Basic Results Summary

Scenario 4: '2024 No HIF PM peak' (FG4: '2024 No HIF PM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**75.1%**	**408**	**0**	**0**	**27.4**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**74.0%**	**0**	**0**	**0**	**12.7**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	44	-	501	1250:1500	409+267	74.0 : 74.0%	-	-	-	5.1	37.0	9.0
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	23	-	294	1400:1250	174+229	72.9 : 72.9%	-	-	-	4.6	56.9	5.9
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	74:24	-	303	1899:1886	252+238	61.8 : 61.8%	-	-	-	3.0	35.1	5.1
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**75.1%**	**0**	**0**	**0**	**12.4**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	33	-	294	1815	401	73.4%	-	-	-	5.9	72.2	13.0
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	61	-	345	1815	460	75.1%	-	-	-	6.5	68.3	15.0
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**49.6%**	**408**	**0**	**0**	**2.2**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	294	1800	1492	19.7%	63	0	0	0.1	1.5	0.1
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	710	1800	1800	39.4%	-	-	-	0.3	1.7	0.3
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	345	1747	696	49.6%	345	0	0	1.7	18.0	14.4

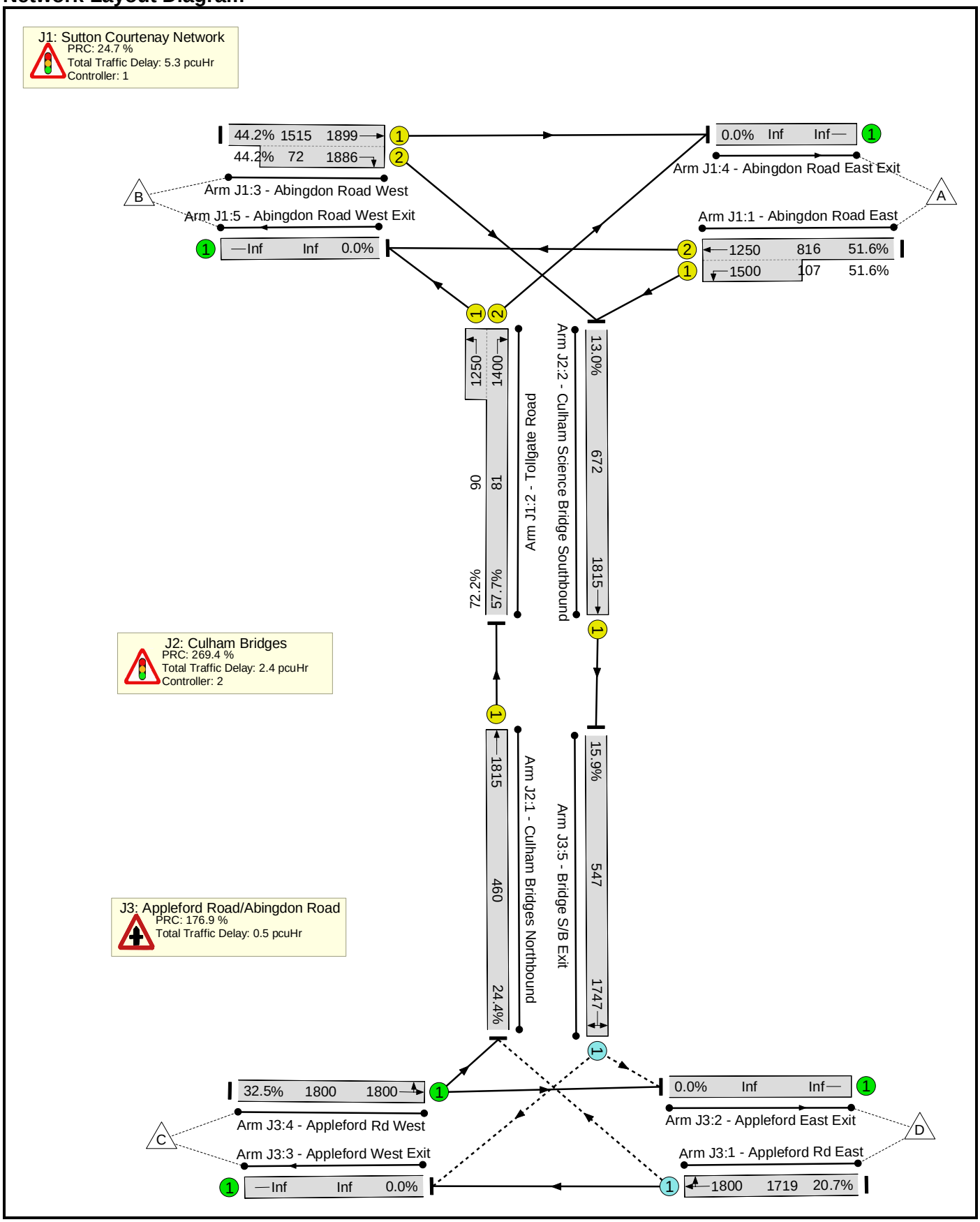
C1 PRC for Signalled Lanes (%): 21.6 Total Delay for Signalled Lanes (pcuHr): 12.75 Cycle Time (s): 111

C2 PRC for Signalled Lanes (%): 19.9 Total Delay for Signalled Lanes (pcuHr): 12.45 Cycle Time (s): 154

PRC Over All Lanes (%): 19.9 Total Delay Over All Lanes(pcuHr): 27.37

Scenario 5: '2024 With HIF AM peak' (FG5: '2024 With HIF AM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

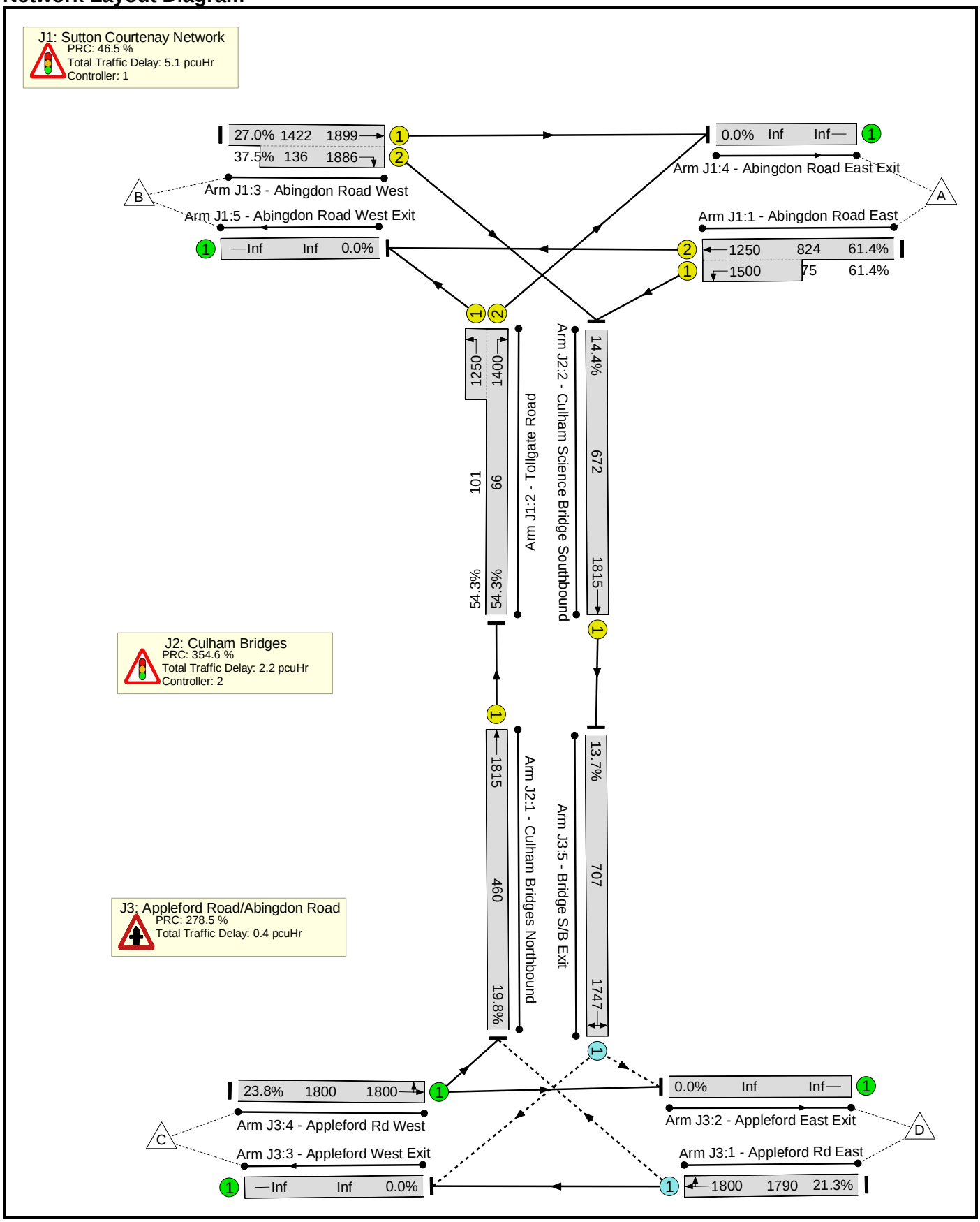
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**72.2%**	**104**	**0**	**0**	**8.2**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**72.2%**	**0**	**0**	**0**	**5.3**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	77	-	476	1250:1500	816+107	51.6 : 51.6%	-	-	-	1.5	11.2	6.3
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	7	-	112	1400:1250	81+90	57.7 : 72.2%	-	-	-	2.5	79.3	2.9
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	90:7	-	702	1899:1886	1515+72	44.2 : 44.2%	-	-	-	1.3	6.9	6.0
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**24.4%**	**0**	**0**	**0**	**2.4**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	38	-	112	1815	460	24.4%	-	-	-	1.6	50.9	4.0
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	56	-	87	1815	672	13.0%	-	-	-	0.8	35.2	2.5
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**32.5%**	**104**	**0**	**0**	**0.5**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	355	1800	1719	20.7%	17	0	0	0.1	1.3	0.1
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	585	1800	1800	32.5%	-	-	-	0.2	1.5	0.2
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	87	1747	547	15.9%	87	0	0	0.1	3.9	0.2

C1	PRC for Signalled Lanes (%):	24.7	Total Delay for Signalled Lanes (pcuHr):	5.29	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	269.4	Total Delay for Signalled Lanes (pcuHr):	2.43	Cycle Time (s): 154
	PRC Over All Lanes (%):	24.7	Total Delay Over All Lanes(pcuHr):	8.19	

Scenario 6: '2024 With HIF PM peak' (FG6: '2024 With HIF PM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

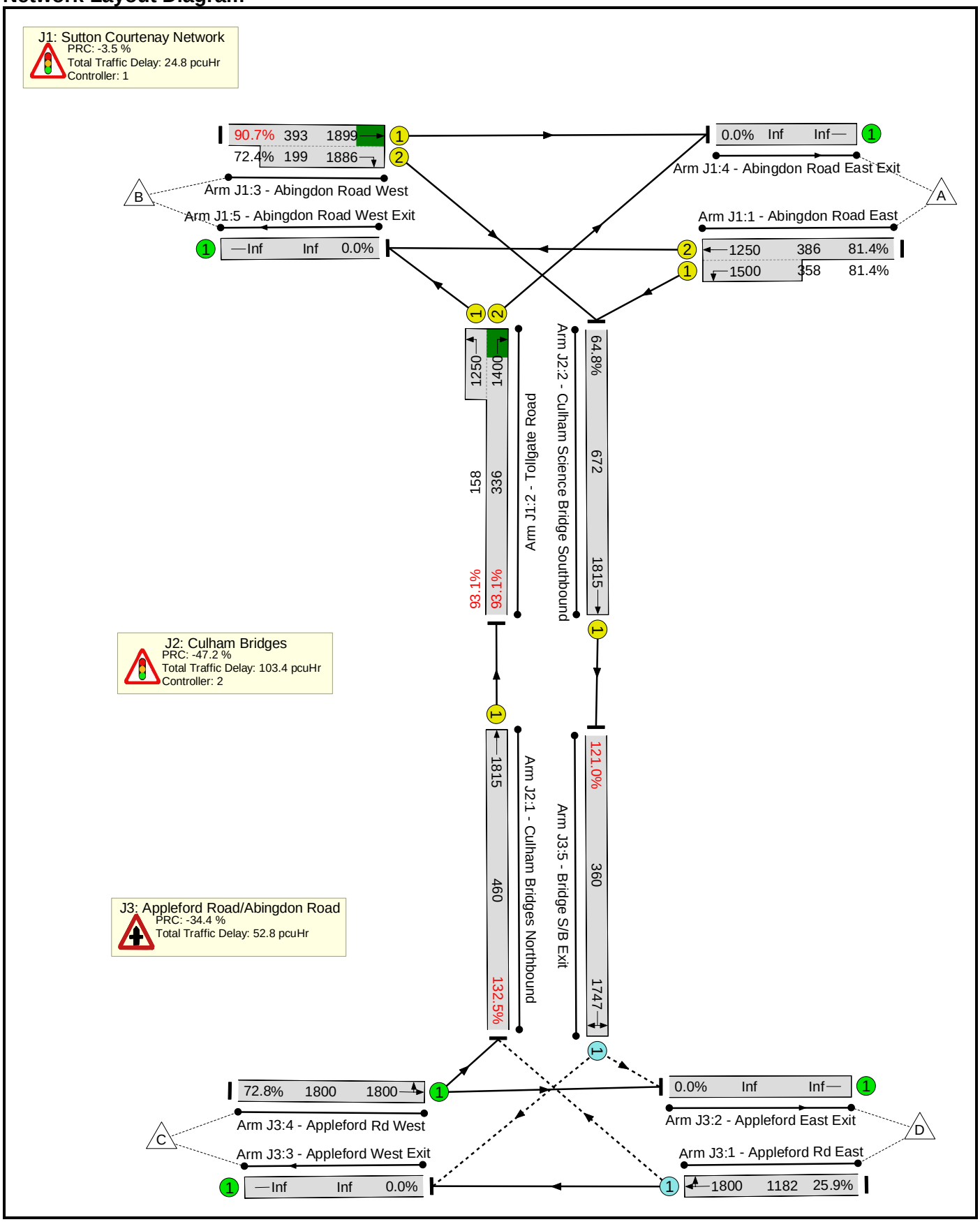
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**61.4%**	**100**	**0**	**0**	**7.7**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**61.4%**	**0**	**0**	**0**	**5.1**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	76	-	552	1250:1500	824+75	61.4 : 61.4%	-	-	-	2.1	13.7	9.0
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	8	-	91	1400:1250	66+101	54.3 : 54.3%	-	-	-	1.8	71.8	2.2
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	89:7	-	435	1899:1886	1422+136	27.0 : 37.5%	-	-	-	1.2	9.6	3.0
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**19.8%**	**0**	**0**	**0**	**2.2**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	38	-	91	1815	460	19.8%	-	-	-	1.3	50.1	3.2
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	56	-	97	1815	672	14.4%	-	-	-	1.0	35.4	2.8
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**23.8%**	**100**	**0**	**0**	**0.4**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	381	1800	1790	21.3%	3	0	0	0.1	1.3	0.1
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	428	1800	1800	23.8%	-	-	-	0.2	1.3	0.2
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	97	1747	707	13.7%	97	0	0	0.1	3.0	0.1

C1	PRC for Signalled Lanes (%):	46.5	Total Delay for Signalled Lanes (pcuHr):	5.06	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	354.6	Total Delay for Signalled Lanes (pcuHr):	2.22	Cycle Time (s): 154
	PRC Over All Lanes (%):	46.5	Total Delay Over All Lanes(pcuHr):	7.66	

Basic Results Summary

Scenario 7: '2034 No HIF AM peak' (FG7: '2034 No HIF AM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

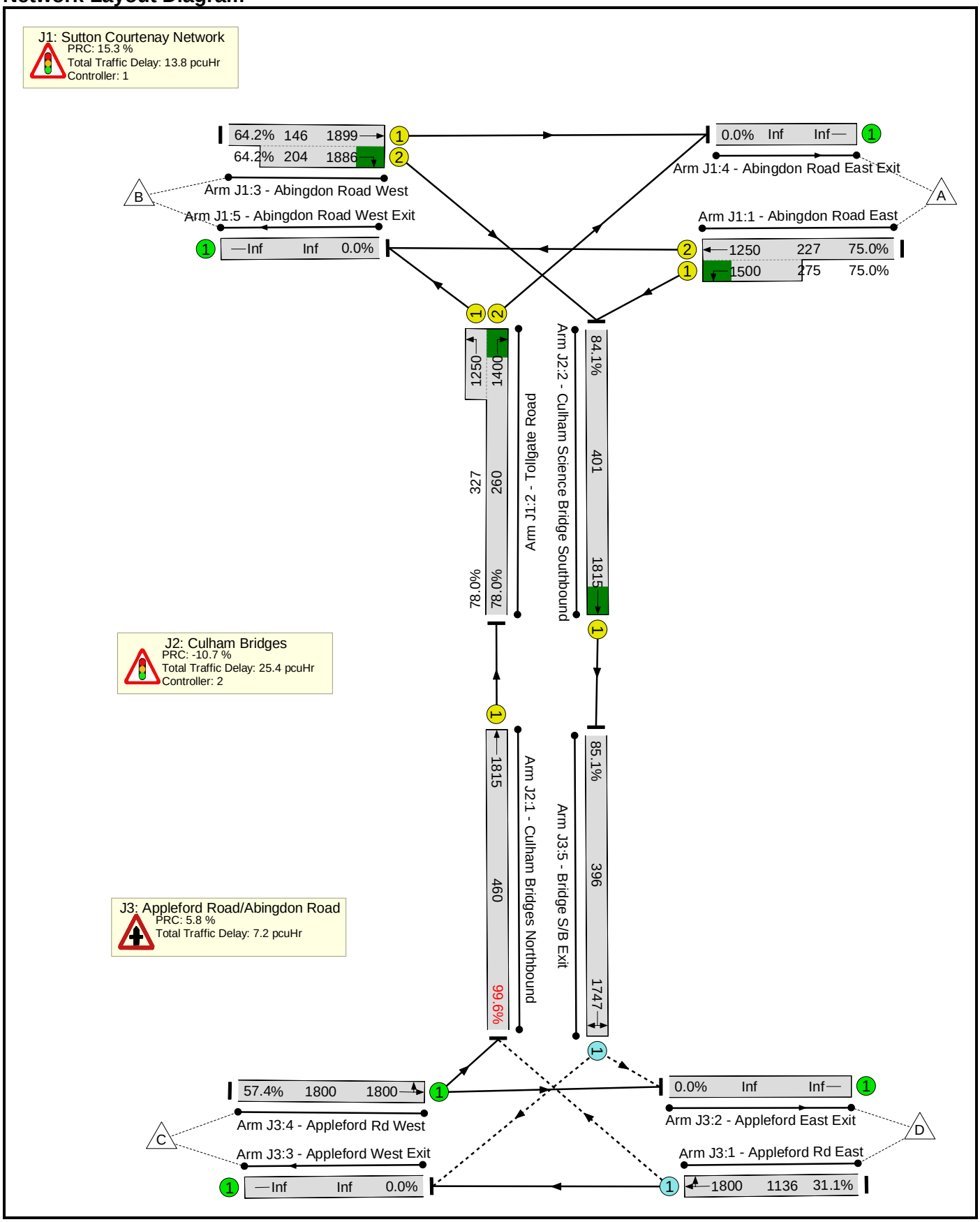
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**132.5%**	**438**	**0**	**0**	**180.9**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**93.1%**	**0**	**0**	**0**	**24.8**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	44	-	605	1250:1500	386+358	81.4 : 81.4%	-	-	-	6.4	38.0	10.8
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	36	-	609	1400:1250	336+158	93.1 : 93.1%	-	-	-	9.6	75.2	16.4
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	61:11	-	501	1899:1886	393+199	90.7 : 72.4%	-	-	-	8.8	63.0	13.3
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**132.5%**	**0**	**0**	**0**	**103.4**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	38	-	609	1815	460	132.5%	-	-	-	97.6	576.9	109.1
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	56	-	435	1815	672	64.8%	-	-	-	5.8	47.7	16.3
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**121.0%**	**438**	**0**	**0**	**52.8**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	306	1800	1182	25.9%	78	0	0	0.2	2.1	0.2
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	1310	1800	1800	72.8%	-	-	-	1.3	3.7	1.3
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	435	1747	360	121.0%	360	0	0	51.3	424.4	86.8

C1	PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	24.76	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	-47.2	Total Delay for Signalled Lanes (pcuHr):	103.36	Cycle Time (s): 154
	PRC Over All Lanes (%):	-47.2	Total Delay Over All Lanes(pcuHr):	180.90	

Basic Results Summary

Scenario 8: '2034 No HIF PM peak' (FG8: '2034 No HIF PM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**99.6%**	**461**	**0**	**0**	**46.5**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**78.0%**	**0**	**0**	**0**	**13.8**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	31	-	376	1250:1500	227+275	75.0 : 75.0%	-	-	-	5.3	50.4	7.2
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	38	-	458	1400:1250	260+327	78.0 : 78.0%	-	-	-	5.6	44.3	9.7
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	59:22	-	225	1899:1886	146+204	64.2 : 64.2%	-	-	-	2.9	47.0	4.7
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**99.6%**	**0**	**0**	**0**	**25.4**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	38	-	458	1815	460	99.6%	-	-	-	17.6	138.4	29.8
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	56	-	337	1815	401	84.1%	-	-	-	7.8	83.6	16.2
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**85.1%**	**461**	**0**	**0**	**7.2**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	353	1800	1136	31.1%	124	0	0	0.2	2.3	0.2
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	1034	1800	1800	57.4%	-	-	-	0.7	2.3	0.7
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	337	1747	396	85.1%	337	0	0	6.3	67.2	16.8

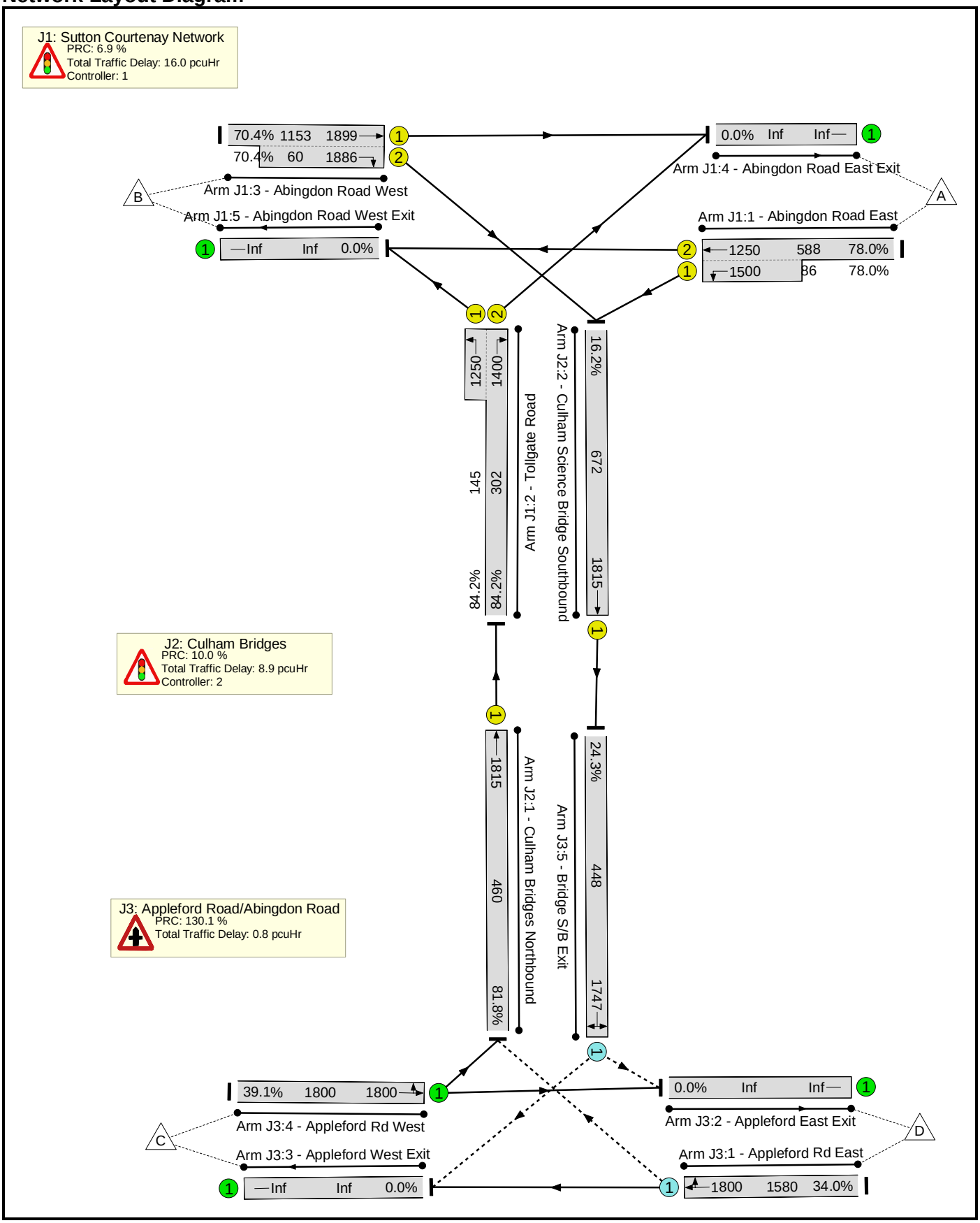
C1 PRC for Signalled Lanes (%): 15.3 Total Delay for Signalled Lanes (pcuHr): 13.84 Cycle Time (s): 111

C2 PRC for Signalled Lanes (%): -10.7 Total Delay for Signalled Lanes (pcuHr): 25.43 Cycle Time (s): 154

PRC Over All Lanes (%): -10.7 Total Delay Over All Lanes(pcuHr): 46.46

Scenario 9: '2034 With HIF AM peak' (FG9: '2034 With HIF AM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

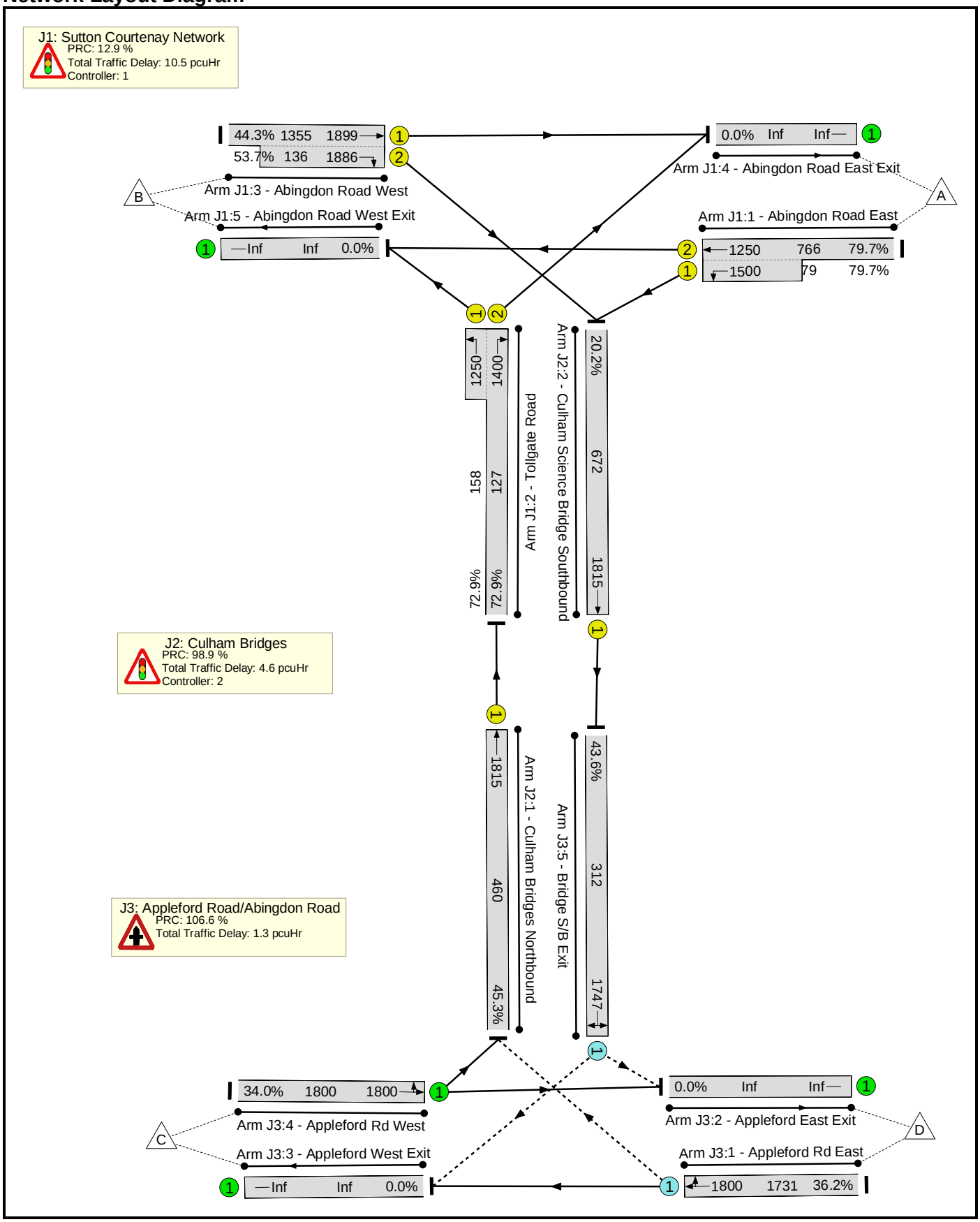
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**84.2%**	**199**	**0**	**0**	**25.6**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**84.2%**	**0**	**0**	**0**	**16.0**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	55	-	526	1250:1500	588+86	78.0 : 78.0%	-	-	-	4.8	33.0	13.7
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	29	-	376	1400:1250	302+145	84.2 : 84.2%	-	-	-	6.3	59.8	10.7
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	68:7	-	854	1899:1886	1153+60	70.4 : 70.4%	-	-	-	4.9	20.6	17.6
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**81.8%**	**0**	**0**	**0**	**8.9**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	38	-	376	1815	460	81.8%	-	-	-	7.8	74.6	17.3
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	56	-	109	1815	672	16.2%	-	-	-	1.1	35.7	3.2
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**39.1%**	**199**	**0**	**0**	**0.8**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	538	1800	1580	34.0%	90	0	0	0.3	1.7	0.3
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	704	1800	1800	39.1%	-	-	-	0.3	1.6	0.3
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	109	1747	448	24.3%	109	0	0	0.2	6.0	2.5

C1	PRC for Signalled Lanes (%):	6.9	Total Delay for Signalled Lanes (pcuHr):	15.96	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	10.0	Total Delay for Signalled Lanes (pcuHr):	8.88	Cycle Time (s): 154
	PRC Over All Lanes (%):	6.9	Total Delay Over All Lanes(pcuHr):	25.59	

Scenario 10: '2034 With HIF PM peak' (FG10: '2034 With HIF PM peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**79.7%**	**165**	**0**	**0**	**16.4**	-	-
J1: Sutton Courtenay Network	-	-	-		-	-	-	-	-	-	**79.7%**	**0**	**0**	**0**	**10.5**	-	-
1/2+1/1	Abingdon Road East Ahead Left	U	C1:B		1	71	-	674	1250:1500	766+79	79.7 : 79.7%	-	-	-	4.4	23.6	16.0
2/2+2/1	Tollgate Road Right Left	U	C1:C		1	13	-	208	1400:1250	127+158	72.9 : 72.9%	-	-	-	4.0	68.7	4.7
3/1+3/2	Abingdon Road West Ahead Right	U	C1:A C1:D		1	84:7	-	673	1899:1886	1355+136	44.3 : 53.7%	-	-	-	2.2	11.6	6.7
J2: Culham Bridges	-	-	-		-	-	-	-	-	-	**45.3%**	**0**	**0**	**0**	**4.6**	-	-
1/1	Culham Bridges Northbound Ahead	U	C2:A		1	38	-	208	1815	460	45.3%	-	-	-	3.2	55.6	7.9
2/1	Culham Science Bridge Southbound Ahead	U	C2:B		1	56	-	136	1815	672	20.2%	-	-	-	1.4	36.4	4.1
J3: Appleford Road/Abingdon Road	-	-	-		-	-	-	-	-	-	**43.6%**	**165**	**0**	**0**	**1.3**	-	-
1/1	Appleford Rd East Right Ahead	O	-		-	-	-	626	1800	1731	36.2%	29	0	0	0.3	1.6	0.3
4/1	Appleford Rd West Left Ahead	U	-		-	-	-	612	1800	1800	34.0%	-	-	-	0.3	1.5	0.3
5/1	Bridge S/B Exit Left Right	O	-		-	-	-	136	1747	312	43.6%	136	0	0	0.7	19.2	5.8

C1	PRC for Signalled Lanes (%):	12.9	Total Delay for Signalled Lanes (pcuHr):	10.54	Cycle Time (s): 111
C2	PRC for Signalled Lanes (%):	98.9	Total Delay for Signalled Lanes (pcuHr):	4.59	Cycle Time (s): 154
	PRC Over All Lanes (%):	12.9	Total Delay Over All Lanes(pcuHr):	16.39	

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 12 Junction-A4130_Lady Grove_Roundabout.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF12 - Junction 32-A4130_Lady Grove
Report generation date: 02/07/2021 09:06:04

»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2024 with									
Arm 1	D3	0.1	2.86	0.12	A	D4	0.3	3.28	0.25	A
Arm 2		1.1	4.96	0.53	A		0.8	4.29	0.43	A
Arm 3		1.0	6.08	0.50	A		0.8	5.04	0.45	A
	2024 without									
Arm 1	D5	0.4	3.11	0.27	A	D6	1.0	4.52	0.50	A
Arm 2		1.1	5.24	0.53	A		0.7	4.60	0.41	A
Arm 3		0.5	4.54	0.34	A		0.5	3.92	0.32	A
	2034 with									
Arm 1	D7	0.2	3.13	0.17	A	D8	0.8	4.82	0.46	A
Arm 2		2.5	8.34	0.72	A		1.5	6.25	0.60	A
Arm 3		1.9	9.89	0.66	A		1.5	7.64	0.61	A
	2034 without									
Arm 1	D9	0.9	4.01	0.46	A	D10	1.6	5.51	0.62	A
Arm 2		1.4	6.28	0.58	A		0.7	4.83	0.41	A
Arm 3		0.2	3.61	0.19	A		0.2	3.12	0.17	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	19/11/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	5.15	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Lady Grove	
2	Abington Road	
3	A4130	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
1	4.41	7.30	18.5	20.0	50.0	46.0	
2	3.50	7.30	17.8	20.0	50.0	46.0	
3	3.50	7.30	20.6	20.0	50.0	52.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.614	1813
2	0.583	1648
3	0.577	1648

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	163	100.000
2		✓	731	100.000
3		✓	536	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	60	103
	2	566	45	120
	3	92	444	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	0	3
	2	4	1	0
	3	2	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.12	2.86	0.1	A
2	0.53	4.96	1.1	A
3	0.50	6.08	1.0	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	123	367	1547	0.079	122	0.1	2.527	A
2	550	77	1552	0.355	548	0.5	3.578	A
3	404	458	1305	0.309	402	0.4	3.978	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	147	439	1500	0.098	146	0.1	2.658	A
2	657	93	1543	0.426	656	0.7	4.055	A
3	482	549	1253	0.385	481	0.6	4.659	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	179	537	1438	0.125	179	0.1	2.859	A
2	805	113	1531	0.526	803	1.1	4.936	A
3	590	672	1183	0.499	589	1.0	6.040	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	179	538	1437	0.125	179	0.1	2.861	A
2	805	113	1531	0.526	805	1.1	4.956	A
3	590	673	1183	0.499	590	1.0	6.075	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	147	441	1499	0.098	147	0.1	2.663	A
2	657	93	1543	0.426	659	0.7	4.077	A
3	482	550	1252	0.385	483	0.6	4.690	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	123	369	1545	0.079	123	0.1	2.530	A
2	550	78	1552	0.355	551	0.6	3.601	A
3	404	461	1303	0.310	404	0.5	4.009	A

2024 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	4.34	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	334	100.000
2		✓	575	100.000
3		✓	539	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	**2**	**3**
From	**1**	0	141	193
	2	440	39	96
	3	86	453	0

Vehicle Mix

HV %s

		To		
		1	**2**	**3**
From	**1**	0	0	1
	2	4	5	0
	3	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.25	3.28	0.3	A
2	0.43	4.29	0.8	A
3	0.45	5.04	0.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	251	369	1573	0.160	251	0.2	2.721	A
2	433	145	1511	0.287	431	0.4	3.330	A
3	406	359	1407	0.288	404	0.4	3.585	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	300	442	1527	0.197	300	0.2	2.933	A
2	517	173	1495	0.346	516	0.5	3.677	A
3	485	430	1365	0.355	484	0.5	4.084	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	368	541	1466	0.251	367	0.3	3.278	A
2	633	212	1473	0.430	632	0.7	4.279	A
3	593	527	1308	0.454	592	0.8	5.024	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	368	542	1465	0.251	368	0.3	3.280	A
2	633	212	1472	0.430	633	0.8	4.288	A
3	593	527	1307	0.454	593	0.8	5.041	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	300	443	1526	0.197	301	0.2	2.939	A
2	517	174	1495	0.346	518	0.5	3.688	A
3	485	431	1364	0.355	486	0.6	4.102	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	251	371	1571	0.160	252	0.2	2.729	A
2	433	145	1511	0.287	433	0.4	3.342	A
3	406	361	1406	0.289	406	0.4	3.607	A

2024 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	4.50	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	383	100.000
2		✓	709	100.000
3		✓	370	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	151	232
	2	568	37	104
	3	119	251	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	2	2
	2	2	0	2
	3	2	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.27	3.11	0.4	A
2	0.53	5.24	1.1	A
3	0.34	4.54	0.5	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	288	216	1641	0.176	287	0.2	2.658	A
2	534	174	1515	0.352	532	0.5	3.652	A
3	279	454	1319	0.211	277	0.3	3.452	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	344	259	1614	0.213	344	0.3	2.834	A
2	637	208	1495	0.426	637	0.7	4.189	A
3	333	543	1269	0.262	332	0.4	3.842	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	422	317	1577	0.267	421	0.4	3.114	A
2	781	255	1468	0.532	779	1.1	5.213	A
3	407	665	1201	0.339	407	0.5	4.529	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	422	317	1577	0.267	422	0.4	3.115	A
2	781	255	1468	0.532	781	1.1	5.237	A
3	407	666	1200	0.339	407	0.5	4.540	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	344	259	1614	0.213	345	0.3	2.839	A
2	637	209	1495	0.426	639	0.7	4.211	A
3	333	545	1268	0.262	333	0.4	3.853	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	288	217	1640	0.176	289	0.2	2.663	A
2	534	175	1515	0.352	535	0.5	3.677	A
3	279	456	1318	0.211	279	0.3	3.467	A

2024 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	4.39	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	711	100.000
2		✓	491	100.000
3		✓	395	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	292	419
	2	366	39	86
	3	110	284	1

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	0	1
	2	4	5	3
	3	2	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.50	4.52	1.0	A
2	0.41	4.60	0.7	A
3	0.32	3.92	0.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	535	243	1651	0.324	533	0.5	3.215	A
2	370	315	1407	0.263	368	0.4	3.460	A
3	297	304	1437	0.207	296	0.3	3.152	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	639	291	1621	0.394	638	0.6	3.662	A
2	441	377	1372	0.322	441	0.5	3.865	A
3	355	364	1402	0.253	355	0.3	3.438	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	783	356	1580	0.495	782	1.0	4.500	A
2	541	462	1324	0.408	540	0.7	4.584	A
3	435	445	1354	0.321	434	0.5	3.914	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	783	357	1580	0.495	783	1.0	4.516	A
2	541	462	1324	0.408	541	0.7	4.596	A
3	435	446	1353	0.321	435	0.5	3.919	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	639	292	1621	0.394	640	0.7	3.677	A
2	441	378	1371	0.322	442	0.5	3.879	A
3	355	365	1401	0.253	356	0.3	3.444	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	535	244	1650	0.324	536	0.5	3.234	A
2	370	317	1406	0.263	370	0.4	3.477	A
3	297	305	1436	0.207	298	0.3	3.164	A

2034 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	8.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	212	100.000
2		✓	1012	100.000
3		✓	645	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	104	108
	2	704	107	201
	3	152	493	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	0	1
	2	3	0	0
	3	2	5	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.17	3.13	0.2	A
2	0.72	8.34	2.5	A
3	0.66	9.89	1.9	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	160	449	1518	0.105	159	0.1	2.648	A
2	762	81	1567	0.486	758	0.9	4.430	A
3	486	608	1236	0.393	483	0.6	4.768	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	191	538	1462	0.130	190	0.1	2.831	A
2	910	97	1558	0.584	908	1.4	5.522	A
3	580	728	1167	0.497	579	1.0	6.100	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	233	657	1386	0.168	233	0.2	3.122	A
2	1114	119	1545	0.721	1110	2.5	8.179	A
3	710	889	1076	0.660	707	1.9	9.657	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	233	660	1384	0.169	233	0.2	3.127	A
2	1114	119	1545	0.721	1114	2.5	8.338	A
3	710	893	1074	0.661	710	1.9	9.889	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	191	543	1459	0.131	191	0.2	2.838	A
2	910	97	1558	0.584	914	1.4	5.633	A
3	580	733	1165	0.498	584	1.0	6.235	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	160	453	1516	0.105	160	0.1	2.653	A
2	762	81	1567	0.486	764	1.0	4.493	A
3	486	612	1233	0.394	487	0.7	4.836	A

2034 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	6.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	578	100.000
2		✓	783	100.000
3		✓	662	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	**2**	**3**
From	**1**	0	307	271
	2	555	99	129
	3	147	515	0

Vehicle Mix

HV %s

		To		
		1	**2**	**3**
From	**1**	0	0	1
	2	3	2	0
	3	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.46	4.82	0.8	A
2	0.60	6.25	1.5	A
3	0.61	7.64	1.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	435	460	1518	0.287	434	0.4	3.315	A
2	589	203	1492	0.395	587	0.6	3.964	A
3	498	490	1334	0.374	496	0.6	4.286	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	520	551	1461	0.356	519	0.5	3.818	A
2	704	243	1469	0.479	703	0.9	4.689	A
3	595	587	1277	0.466	594	0.9	5.261	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	636	674	1385	0.460	635	0.8	4.793	A
2	862	298	1438	0.599	860	1.5	6.206	A
3	729	718	1201	0.607	726	1.5	7.544	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	636	676	1384	0.460	636	0.8	4.817	A
2	862	298	1438	0.600	862	1.5	6.252	A
3	729	720	1200	0.608	729	1.5	7.642	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	520	554	1459	0.356	521	0.6	3.841	A
2	704	244	1469	0.479	706	0.9	4.734	A
3	595	590	1276	0.467	598	0.9	5.330	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	435	463	1516	0.287	436	0.4	3.335	A
2	589	204	1492	0.395	591	0.7	3.998	A
3	498	493	1332	0.374	500	0.6	4.330	A

2034 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	4.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	698	100.000
2		✓	713	100.000
3		✓	216	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	304	394
	2	492	38	183
	3	83	133	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	1	2
	2	3	0	1
	3	3	7	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.46	4.01	0.9	A
2	0.58	6.28	1.4	A
3	0.19	3.61	0.2	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	525	128	1704	0.308	524	0.4	3.047	A
2	537	296	1438	0.373	534	0.6	3.972	A
3	163	397	1339	0.121	162	0.1	3.055	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	627	154	1688	0.372	627	0.6	3.392	A
2	641	354	1405	0.456	640	0.8	4.703	A
3	194	476	1295	0.150	194	0.2	3.268	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	769	188	1666	0.461	767	0.8	4.002	A
2	785	433	1358	0.578	783	1.3	6.232	A
3	238	582	1236	0.192	238	0.2	3.607	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	769	188	1665	0.461	769	0.9	4.013	A
2	785	434	1358	0.578	785	1.4	6.280	A
3	238	584	1235	0.193	238	0.2	3.610	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	627	154	1687	0.372	629	0.6	3.402	A
2	641	355	1404	0.457	643	0.8	4.744	A
3	194	478	1294	0.150	194	0.2	3.273	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	525	129	1703	0.309	526	0.4	3.058	A
2	537	297	1438	0.373	538	0.6	4.004	A
3	163	400	1338	0.122	163	0.1	3.065	A

2034 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
OFF12	untitled	Standard Roundabout		1, 2, 3	4.99	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1		✓	953	100.000
2		✓	479	100.000
3		✓	218	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	431	522
	2	325	21	133
	3	92	126	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	0	1
	2	3	7	2
	3	2	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
1	0.62	5.51	1.6	A
2	0.41	4.83	0.7	A
3	0.17	3.12	0.2	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	717	110	1734	0.414	715	0.7	3.522	A
2	361	391	1377	0.262	359	0.4	3.531	A
3	164	259	1464	0.112	164	0.1	2.768	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	857	132	1721	0.498	856	1.0	4.156	A
2	431	469	1333	0.323	430	0.5	3.985	A
3	196	311	1434	0.137	196	0.2	2.906	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1049	162	1702	0.616	1047	1.6	5.474	A
2	527	573	1273	0.414	526	0.7	4.815	A
3	240	380	1394	0.172	240	0.2	3.119	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1049	162	1702	0.616	1049	1.6	5.514	A
2	527	575	1272	0.414	527	0.7	4.831	A
3	240	381	1393	0.172	240	0.2	3.120	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	857	132	1721	0.498	859	1.0	4.191	A
2	431	471	1332	0.323	432	0.5	4.002	A
3	196	312	1434	0.137	196	0.2	2.908	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	717	111	1734	0.414	719	0.7	3.551	A
2	361	394	1376	0.262	361	0.4	3.547	A
3	164	261	1464	0.112	164	0.1	2.770	A

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
© Copyright TRL Limited, 2019

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: OFF 13 Junction-Lady Grove_Sires Hill.j9
Path: H:\Home\DP\PROJECTS\Didcot Garden Town\Modelling\Models V1\OFF13 - Junction 33-Lady Grove_Sires Hill
Report generation date: 02/07/2021 09:06:47

»2020, AM
»2020, PM
»2024 with, AM
»2024 with, PM
»2024 without, AM
»2024 without, PM
»2034 with, AM
»2034 with, PM
»2034 without, AM
»2034 without, PM

Summary of junction performance

	AM					PM				
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Set ID	Q (Veh)	Delay (s)	RFC	LOS
	2020									
Stream B-C	D1	4.3	164.20	0.94	F	D2	0.1	10.05	0.10	B
Stream B-A		9.6	92.50	0.95	F		0.9	20.13	0.47	C
Stream C-AB		0.3	6.09	0.17	A		1.2	10.24	0.48	B
	2024 with									
Stream B-C	D3	0.0	7.87	0.00	A	D4	0.0	7.45	0.00	A
Stream B-A		1.0	14.27	0.50	B		0.6	13.02	0.39	B
Stream C-AB		0.0	5.03	0.00	A		0.1	6.19	0.10	A
	2024 without									
Stream B-C	D5	0.2	20.48	0.16	C	D6	0.1	9.99	0.05	A
Stream B-A		3.3	41.49	0.79	E		0.7	21.08	0.43	C
Stream C-AB		0.5	5.41	0.23	A		1.2	7.53	0.40	A
	2034 with									
Stream B-C	D7	0.1	18.11	0.11	C	D8	0.0	10.34	0.01	B
Stream B-A		3.6	35.74	0.80	E		1.5	27.16	0.61	D
Stream C-AB		0.0	4.87	0.01	A		1.6	13.00	0.58	B
	2034 without									
Stream B-C	D9	6.2	732.70	1.37	F	D10	2.6	402.73	1.06	F
Stream B-A		49.1	545.05	1.35	F		12.5	230.98	1.07	F
Stream C-AB		3.7	8.92	0.64	A		12.5	35.52	0.88	E

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	03/11/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EU\CrewD
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15
D2	2020	PM	ONE HOUR	16:45	18:15	15
D3	2024 with	AM	ONE HOUR	07:45	09:15	15
D4	2024 with	PM	ONE HOUR	16:45	18:15	15
D5	2024 without	AM	ONE HOUR	07:45	09:15	15
D6	2024 without	PM	ONE HOUR	16:45	18:15	15
D7	2034 with	AM	ONE HOUR	07:45	09:15	15
D8	2034 with	PM	ONE HOUR	16:45	18:15	15
D9	2034 without	AM	ONE HOUR	07:45	09:15	15
D10	2034 without	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		48.04	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Sires Hill (W)		Major
B	Lady Grove		Minor
C	Sires Hill (E)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.98			247.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	5.98	4.16	3.39	3.27	✓	1.00	28	15

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	549	0.096	0.242	0.152	0.346
B-C	640	0.094	0.237	-	-
C-B	717	0.266	0.266	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2020	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	312	100.000
B		✓	447	100.000
C		✓	249	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	231	81
	B	361	0	86
	C	165	84	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	1	2
	B	0	0	7
	C	1	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.94	164.20	4.3	F
B-A	0.95	92.50	9.6	F
C-AB	0.17	6.09	0.3	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	65	403	0.161	64	0.2	10.591	B
B-A	272	470	0.578	267	1.3	17.249	C
C-AB	77	703	0.109	76	0.1	5.737	A
C-A	111			111			
A-B	174			174			
A-C	61			61			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	77	308	0.251	77	0.3	15.556	C
B-A	325	451	0.719	320	2.3	26.640	D
C-AB	96	708	0.135	95	0.2	5.877	A
C-A	128			128			
A-B	208			208			
A-C	73			73			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	95	126	0.752	87	2.2	82.378	F
B-A	397	421	0.945	377	7.4	63.890	F
C-AB	124	716	0.173	124	0.3	6.088	A
C-A	150			150			
A-B	254			254			
A-C	89			89			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	95	101	0.938	86	4.3	164.198	F
B-A	397	417	0.953	388	9.6	92.504	F
C-AB	124	716	0.173	124	0.3	6.089	A
C-A	150			150			
A-B	254			254			
A-C	89			89			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	77	252	0.307	93	0.5	24.691	C
B-A	325	444	0.730	351	3.0	45.300	E
C-AB	96	709	0.135	96	0.2	5.877	A
C-A	128			128			
A-B	208			208			
A-C	73			73			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	65	388	0.167	66	0.2	11.200	B
B-A	272	470	0.579	278	1.4	19.376	C
C-AB	77	704	0.109	77	0.2	5.747	A
C-A	111			111			
A-B	174			174			
A-C	61			61			

2020, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		4.70	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2020	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	704	100.000
B		✓	180	100.000
C		✓	415	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	558	146
	B	144	0	36
	C	225	190	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	1	0
	B	0	0	8
	C	0	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.10	10.05	0.1	B
B-A	0.47	20.13	0.9	C
C-AB	0.48	10.24	1.2	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	27	488	0.056	27	0.1	7.799	A
B-A	108	406	0.267	107	0.4	12.003	B
C-AB	190	685	0.277	188	0.5	7.228	A
C-A	122			122			
A-B	420			420			
A-C	110			110			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	32	457	0.071	32	0.1	8.481	A
B-A	129	377	0.343	129	0.5	14.475	B
C-AB	243	684	0.356	242	0.7	8.165	A
C-A	130			130			
A-B	502			502			
A-C	131			131			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	40	400	0.099	40	0.1	9.986	A
B-A	159	338	0.470	157	0.9	19.798	C
C-AB	330	683	0.482	328	1.2	10.135	B
C-A	127			127			
A-B	614			614			
A-C	161			161			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	40	398	0.100	40	0.1	10.047	B
B-A	159	337	0.470	158	0.9	20.132	C
C-AB	330	684	0.483	330	1.2	10.243	B
C-A	127			127			
A-B	614			614			
A-C	161			161			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	32	455	0.071	32	0.1	8.529	A
B-A	129	376	0.344	131	0.5	14.750	B
C-AB	244	685	0.356	246	0.7	8.264	A
C-A	129			129			
A-B	502			502			
A-C	131			131			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	27	487	0.056	27	0.1	7.838	A
B-A	108	405	0.268	109	0.4	12.205	B
C-AB	191	686	0.278	192	0.5	7.308	A
C-A	122			122			
A-B	420			420			
A-C	110			110			

2024 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		6.35	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	198	100.000
B		✓	228	100.000
C		✓	85	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	137	61
	B	226	0	2
	C	84	1	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	0
	B	1	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.00	7.87	0.0	A
B-A	0.50	14.27	1.0	B
C-AB	0.00	5.03	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	542	0.003	1	0.0	6.664	A
B-A	170	515	0.330	168	0.5	10.326	B
C-AB	0.83	716	0.001	0.82	0.0	5.031	A
C-A	63			63			
A-B	103			103			
A-C	46			46			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	512	0.004	2	0.0	7.061	A
B-A	203	509	0.399	203	0.7	11.710	B
C-AB	1	716	0.001	1	0.0	5.031	A
C-A	75			75			
A-B	123			123			
A-C	55			55			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	461	0.005	2	0.0	7.846	A
B-A	249	501	0.497	248	1.0	14.139	B
C-AB	1	717	0.002	1	0.0	5.030	A
C-A	92			92			
A-B	151			151			
A-C	67			67			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	460	0.005	2	0.0	7.869	A
B-A	249	501	0.497	249	1.0	14.267	B
C-AB	1	717	0.002	1	0.0	5.030	A
C-A	92			92			
A-B	151			151			
A-C	67			67			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	510	0.004	2	0.0	7.083	A
B-A	203	509	0.399	204	0.7	11.855	B
C-AB	1	716	0.001	1	0.0	5.033	A
C-A	75			75			
A-B	123			123			
A-C	55			55			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	540	0.003	2	0.0	6.689	A
B-A	170	515	0.330	171	0.5	10.474	B
C-AB	0.83	716	0.001	0.83	0.0	5.031	A
C-A	63			63			
A-B	103			103			
A-C	46			46			

2024 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		3.52	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	412	100.000
B		✓	161	100.000
C		✓	127	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	297	115
	B	159	0	2
	C	73	54	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	1	0
	B	1	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.00	7.45	0.0	A
B-A	0.39	13.02	0.6	B
C-AB	0.10	6.19	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	546	0.003	1	0.0	6.607	A
B-A	120	482	0.249	118	0.3	9.879	A
C-AB	44	670	0.066	44	0.1	5.752	A
C-A	51			51			
A-B	224			224			
A-C	87			87			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	523	0.003	2	0.0	6.905	A
B-A	143	469	0.305	143	0.4	11.017	B
C-AB	54	661	0.082	54	0.1	5.930	A
C-A	60			60			
A-B	267			267			
A-C	103			103			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	486	0.005	2	0.0	7.445	A
B-A	175	451	0.388	174	0.6	12.952	B
C-AB	68	649	0.105	68	0.1	6.191	A
C-A	72			72			
A-B	327			327			
A-C	127			127			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	485	0.005	2	0.0	7.455	A
B-A	175	451	0.388	175	0.6	13.024	B
C-AB	68	649	0.105	68	0.1	6.192	A
C-A	72			72			
A-B	327			327			
A-C	127			127			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	522	0.003	2	0.0	6.918	A
B-A	143	469	0.305	144	0.4	11.099	B
C-AB	54	661	0.082	54	0.1	5.936	A
C-A	60			60			
A-B	267			267			
A-C	103			103			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	545	0.003	2	0.0	6.621	A
B-A	120	481	0.249	120	0.3	9.980	A
C-AB	44	670	0.066	44	0.1	5.761	A
C-A	51			51			
A-B	224			224			
A-C	87			87			

2024 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		11.21	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2024 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	382	100.000
B		✓	310	100.000
C		✓	467	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	278	104
	B	279	0	31
	C	376	91	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	1	1
	B	0	0	8
	C	1	4	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.16	20.48	0.2	C
B-A	0.79	41.49	3.3	E
C-AB	0.23	5.41	0.5	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	23	435	0.054	23	0.1	8.741	A
B-A	210	443	0.474	207	0.9	15.016	C
C-AB	106	801	0.132	105	0.2	5.174	A
C-A	246			246			
A-B	209			209			
A-C	78			78			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	28	365	0.076	28	0.1	10.686	B
B-A	251	421	0.595	249	1.4	20.601	C
C-AB	139	825	0.169	139	0.3	5.255	A
C-A	281			281			
A-B	250			250			
A-C	93			93			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	34	224	0.152	34	0.2	18.847	C
B-A	307	391	0.786	300	3.1	37.147	E
C-AB	194	860	0.225	193	0.5	5.409	A
C-A	320			320			
A-B	306			306			
A-C	115			115			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	34	210	0.163	34	0.2	20.477	C
B-A	307	391	0.786	306	3.3	41.487	E
C-AB	194	861	0.226	194	0.5	5.413	A
C-A	320			320			
A-B	306			306			
A-C	115			115			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	28	350	0.080	28	0.1	11.192	B
B-A	251	421	0.596	258	1.6	22.947	C
C-AB	139	826	0.169	140	0.3	5.255	A
C-A	280			280			
A-B	250			250			
A-C	93			93			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	23	428	0.054	23	0.1	8.895	A
B-A	210	443	0.475	213	0.9	15.810	C
C-AB	106	801	0.133	107	0.2	5.189	A
C-A	245			245			
A-B	209			209			
A-C	78			78			

2024 without, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		3.03	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2024 without	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	853	100.000
B		✓	136	100.000
C		✓	544	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	621	232
	B	118	0	18
	C	417	127	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	0
	B	1	0	9
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.05	9.99	0.1	A
B-A	0.43	21.08	0.7	C
C-AB	0.40	7.53	1.2	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	14	467	0.029	13	0.0	7.930	A
B-A	89	379	0.234	88	0.3	12.303	B
C-AB	162	765	0.212	161	0.4	5.953	A
C-A	247			247			
A-B	468			468			
A-C	175			175			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	16	437	0.037	16	0.0	8.561	A
B-A	106	346	0.306	106	0.4	14.930	B
C-AB	220	782	0.282	220	0.6	6.417	A
C-A	269			269			
A-B	558			558			
A-C	209			209			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	20	382	0.052	20	0.1	9.943	A
B-A	130	301	0.432	129	0.7	20.754	C
C-AB	326	808	0.404	324	1.2	7.466	A
C-A	273			273			
A-B	684			684			
A-C	255			255			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	20	380	0.052	20	0.1	9.988	A
B-A	130	300	0.432	130	0.7	21.078	C
C-AB	327	809	0.404	327	1.2	7.528	A
C-A	272			272			
A-B	684			684			
A-C	255			255			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	16	435	0.037	16	0.0	8.595	A
B-A	106	345	0.307	107	0.5	15.186	C
C-AB	222	783	0.283	224	0.7	6.482	A
C-A	267			267			
A-B	558			558			
A-C	209			209			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	14	466	0.029	14	0.0	7.955	A
B-A	89	378	0.235	89	0.3	12.482	B
C-AB	163	766	0.213	164	0.4	6.003	A
C-A	246			246			
A-B	468			468			
A-C	175			175			

2034 with, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		16.98	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2034 with	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	230	100.000
B		✓	370	100.000
C		✓	159	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	145	85
	B	347	0	23
	C	154	5	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	1	0
	B	1	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.11	18.11	0.1	C
B-A	0.80	35.74	3.6	E
C-AB	0.01	4.87	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	17	458	0.038	17	0.0	8.172	A
B-A	261	501	0.521	257	1.1	14.513	B
C-AB	4	743	0.006	4	0.0	4.871	A
C-A	115			115			
A-B	109			109			
A-C	64			64			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	21	379	0.055	21	0.1	10.032	B
B-A	312	492	0.634	310	1.6	19.449	C
C-AB	6	749	0.007	6	0.0	4.840	A
C-A	137			137			
A-B	130			130			
A-C	76			76			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	25	238	0.106	25	0.1	16.899	C
B-A	382	480	0.797	375	3.4	32.428	D
C-AB	7	758	0.009	7	0.0	4.796	A
C-A	168			168			
A-B	160			160			
A-C	94			94			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	25	224	0.113	25	0.1	18.111	C
B-A	382	480	0.797	381	3.6	35.737	E
C-AB	7	758	0.009	7	0.0	4.796	A
C-A	168			168			
A-B	160			160			
A-C	94			94			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	21	364	0.057	21	0.1	10.487	B
B-A	312	492	0.634	319	1.8	21.551	C
C-AB	6	749	0.007	6	0.0	4.840	A
C-A	137			137			
A-B	130			130			
A-C	76			76			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	17	449	0.039	17	0.0	8.332	A
B-A	261	501	0.521	264	1.1	15.362	C
C-AB	4	743	0.006	4	0.0	4.871	A
C-A	115			115			
A-B	109			109			
A-C	64			64			

2034 with, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		7.82	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2034 with	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	610	100.000
B		✓	192	100.000
C		✓	412	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	506	104
	B	190	0	2
	C	157	255	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	0
	B	1	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.01	10.34	0.0	B
B-A	0.61	27.16	1.5	D
C-AB	0.58	13.00	1.6	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	505	0.003	1	0.0	7.143	A
B-A	143	407	0.351	141	0.5	13.421	B
C-AB	233	674	0.345	230	0.6	8.084	A
C-A	77			77			
A-B	381			381			
A-C	78			78			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	456	0.004	2	0.0	7.918	A
B-A	171	379	0.450	170	0.8	17.082	C
C-AB	291	668	0.436	290	0.9	9.526	A
C-A	79			79			
A-B	455			455			
A-C	93			93			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	357	0.006	2	0.0	10.158	B
B-A	209	342	0.612	206	1.5	26.085	D
C-AB	382	660	0.578	379	1.6	12.756	B
C-A	72			72			
A-B	557			557			
A-C	115			115			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	350	0.006	2	0.0	10.337	B
B-A	209	341	0.614	209	1.5	27.160	D
C-AB	382	661	0.579	382	1.6	13.001	B
C-A	71			71			
A-B	557			557			
A-C	115			115			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	451	0.004	2	0.0	8.012	A
B-A	171	378	0.452	174	0.9	17.806	C
C-AB	292	669	0.437	295	0.9	9.725	A
C-A	78			78			
A-B	455			455			
A-C	93			93			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	2	502	0.003	2	0.0	7.191	A
B-A	143	406	0.352	144	0.6	13.815	B
C-AB	233	675	0.346	235	0.6	8.218	A
C-A	77			77			
A-B	381			381			
A-C	78			78			

2034 without, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
OFF13	Lady Grove/Sires Hill	T-Junction	Two-way		99.09	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2034 without	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
A		✓	690	100.000
B		✓	339	100.000
C		✓	961	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	523	167
	B	306	0	33
	C	819	142	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	1	0
	B	1	0	5
	C	0	3	0