UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks and adjoining land, Bedford

Chapter 5 – Traffic and Transport

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UNIVERSAL DESTINATIONS & EXPERIENCES

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UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Environmental Statement Volume 1
Chapter 5 Traffic and Transport

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5. TRAFFIC AND TRANSPORT

5.1. INTRODUCTION

5.1.1. This chapter has been prepared in support of the planning proposal for the Proposed Development as described in **Chapter 2: Description of the Proposed Development (Volume 1)** of the Environmental Statement (ES). This reports the outcome of the assessment of likely significant effects arising from the Proposed Development in relation to Traffic and Transport during construction and operation.

SUPPORTING DOCUMENTATION

5.1.2. This chapter is intended to be read in conjunction with the following supporting figures (**ES Volume 2**) and appendices (**ES Volume 3**):

- **Figure 5.1: Assessed Link Locations (Volume 2);**
- **Figure 5.2: Classified Turning Count (CTC) Survey Locations (Volume 2);**
- **Figure 5.3: Automatic Traffic Count (ATC) Survey Locations (Volume 2);**
- **Figure 5.4: WebTRIS Locations (Volume 2);**
- **Figure 5.5: ANPR Cordon (Volume 2);**
- **Figure 5.6: Wixams East Station Approved Layout (Volume 2);**
- **Figure 5.7: Location of Sensitive Receptors (Volume 2);**
- **Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3);**
- **Appendix 3.1: Legislation, Policy and Guidance for all ES Technical Topics (Volume 3);**
- **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3);**
- **Appendix 5.1: Transport Assessment (Volume 3);**
- **Appendix 5.2: Link Sensitivity Review (Volume 3);**
- **Appendix 5.3: 18-Hour AAWT Flows (Volume 3);**
- **Appendix 5.4: Traffic Flows for Sensitivity Testing Scenario 5a (Volume 3);**
- **Appendix 5.5: Traffic Flows for Sensitivity Testing Scenario 5b (Volume 3); and**
- **Appendix 5.6: Travel Plan.**

LEGISLATIVE FRAMEWORK, POLICY AND GUIDANCE

5.1.3. The relevant legislation, policy, and guidance to the assessment of Traffic and Transport effects associated with the Proposed Development are detailed in **Appendix 3.1: Legislation, Policy and Guidance for all ES Technical Topics (Volume 3)**.

5.2. ASSUMPTIONS

5.2.1. The assessment presented in this chapter has been based on the Proposed Development as described in **Chapter 2: Description of the Proposed Development** (**Volume 1**). This chapter has also used the following assumptions to build on the information in **Chapter 2: Description of the Proposed Development** (**Volume 1**) to support undertaking an assessment of a cautious worst case[1]:

- **Appendix 3.4: Table 1 – Summary of Assumptions – Transport** sets out all the assumptions in relation to Transport;

- Closure of Public Rights of Way (PROW) which cross the Site explained in **Appendix 5.1: Transport Assessment (Volume 3)**;
- Further detailed description regarding the assessment scenarios and what infrastructure is determined to be in place for each (Section 6 of **Appendix 5.1: Transport Assessment (Volume 3)**);
- Specifically on Manor Road rail crossing the approach taken is explained within Section 5 of **Appendix 5.1: Transport Assessment (Volume 3)**;
- Committed development - **Appendix 5.1: Transport Assessment (Volume 3)** and associated documents have assessed the committed developments as agreed with National Highways in early 2024 to inform the traffic modelling exercise undertaken. This is explained in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**. As with any Transport Assessment which includes strategic assessment, it is an assessment undertaken at a point in time to predict the likely effects of the Proposed Development and identify any necessary mitigation. An updated review of committed developments was undertaken in February 2025 for robustness. This has been agreed with National Highways as set out within the Summary of Agreed Position (Appendix 4 of the Planning Statement (**Doc Ref 6.1.0**).;
- Multi-modal trip generation for the Proposed Development is summarised in Section 7 of **Appendix 5.1: Transport Assessment (Volume 3)**;
- Assessment of the impact of the Proposed Development on the wider highway network (study area), including journey time assessments and network statistics (Section 8 and Section 9 of the **Appendix 5.1: Transport Assessment (Volume 3)**;
- Information regarding the anticipated construction programme, daily construction worker profile, daily HDV and LGV delivery vehicle profile and construction access routes (Section 12 of **Appendix 5.1: Transport Assessment (Volume 3)**);
- Details regarding the assessment of Average Construction and Peak Construction Year, as well as potential construction activity while the Proposed Development is operational (Section 6 of **Appendix 5.1: Transport Assessment (Volume 3)**); and
- Details of construction management measures **(Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3)**).

5.3. ENGAGEMENT, SCOPE AND STUDY AREA

ENGAGEMENT

5.3.1. **Table 5-1** provides a summary of the engagement activities undertaken in support of the preparation of this assessment.

Table 5-1 - Summary of engagement undertaken

Body/organisation	Individual/stat body/organisation	Meeting dates and other forms of engagement	Summary of outcome of discussions
Bedford Borough Council (Bedford BC)	Statutory Body	5th September 2023	Transport Briefing to Bedford BC
Bedford BC/East West Rail (EWR)	Statutory Body	20th September 2023	Transport Briefing to EWR
Bedford BC	Statutory Body	27th September 2023	Active Travel route discussion
EWR	Statutory Body	11th October 2023	Trip forecasts for EWR
Department for Transport (DfT)	Statutory Body	12th October 2023	Transport Briefing to DfT
DfT/EWR	Statutory Body	13th October 2023	Transport Briefing to DfT/EWR
DfT	Statutory Body	9th November 2023	Trip forecasts for Wixams Station
National Highways (NH)	Statutory Body	28th November 2023	Transport Briefing to NH
NH	Statutory Body	19th January 2024	Discussion on Access Options
DfT/NH	Statutory Body	23rd January 2024	Regular bi-weekly update call
DfT (rail)	Statutory Body	24th January 2024	Regular bi-weekly update call
DfT	Statutory Body	30th January 2024	Monthly update call
Greater Thameslink	Statutory Body	30th January 2024	Transport Briefing
DfT (rail)	Statutory Body	31st January 2024	Trip forecast for Wixams Rail Station
NH	Statutory Body	1st February 2024	Trip forecast for road network
NH	Statutory Body	1st February 2024	Access Options Review
DfT/NH	Statutory Body	6th February 2024	Regular bi-weekly update call
NH	Statutory Body	6th February 2024	Traffic Model Briefing
DfT/EWR	Statutory Body	8th February 2024	Regular bi-weekly update call

Body/organisation	Individual/stat body/organisation	Meeting dates and other forms of engagement	Summary of outcome of discussions
NH	Statutory Body	8th February 2024	Trip forecast for road network
DfT/EWR	Statutory Body	14th February 2024	Station Design/Passenger Demand Discussion
NH	Statutory Body	15th February 2024	Trip forecast for road network
NH	Statutory Body	16th February 2024	Access Options Review
NH	Statutory Body	19th February 2024	Traffic Model Discussion
DfT/NH	Statutory Body	20th February 2024	Regular bi-weekly update call
DfT (rail)	Statutory Body	21st February 2024	Regular bi-weekly update call
DfT/EWR	Statutory Body	22nd February 2024	Regular bi-weekly update call
DfT (rail)	Statutory Body	28th February 2024	Passenger demand forecasts
NH	Statutory Body	29th February 2024	Technical modelling discussion
DfT	Statutory Body	29th February 2024	Monthly update call
DfT/NH	Statutory Body	5th March 2024	Regular bi-weekly update call
DfT/EWR	Statutory Body	6th March 2024	Rail Strategy
DfT/EWR	Statutory Body	7th March 2024	Regular bi-weekly update call
EWR	Statutory Body	11th March 2024	Passenger demand analysis
Bedford BC	Statutory Body	12th March 2024	Briefing to wider Council
DfT/EWR	Statutory Body	13th March 2024	Rail Strategy
NH	Statutory Body	14th March 2024	Technical modelling discussion
EWR	Statutory Body	15th March 2024	Red line boundary and level crossings

Body/organisation	Individual/stat body/organisation	Meeting dates and other forms of engagement	Summary of outcome of discussions
DfT/NH	Statutory Body	19th March 2024	Regular bi-weekly update call
DfT (rail)	Statutory Body	20th March 2024	Regular bi-weekly update call
Bedford BC	Statutory Body	20th March 2024	Construction Access
EWR	Statutory Body	21st March 2024	Regular bi-weekly update call
Bedford BC	Statutory Body	25th March 2024	Active travel routes
EWR	Statutory Body	27th March 2024	EWR strategy
DfT	Statutory Body	28h March 2024	Monthly update call
EWR	Statutory Body	3rd April 2024	Communication strategy
NH	Statutory Body	10th April 2024	Technical modelling discussion
EWR	Statutory Body	18th April 2024	Rail strategy
DfT	Statutory Body	26th April 2024	Analysis of Wixams Station capacity
DfT/NH	Statutory Body	30th April 2024	Regular bi-weekly update call
DfT (rail)	Statutory Body	1st May 2024	Regular bi-weekly update call
Bedford BC	Statutory Body	7th May 2024	Active travel routes and Wixams Station
DfT	Statutory Body	8th May 2024	Construction timeline and Manor Road
DfT/NH	Statutory Body	14th May 2024	Regular bi-weekly update call
DfT/EWR	Statutory Body	15th May 2024	Regular bi-weekly update call
DfT/EWR	Statutory Body	16th May 2024	Regular bi-weekly update call
DCMS	Statutory Body	16th May 2024	Rail strategy
DCMS	Statutory Body	17th May 2024	Rail strategy

Body/organisation	Individual/stat body/organisation	Meeting dates and other forms of engagement	Summary of outcome of discussions
DCMS	Statutory Body	11th June 2024	Transport strategy
DCMS	Statutory Body	14th June 2024	Transport strategy
DCMS	Statutory Body	21st June 2024	Transport strategy
Department for Levelling Up, Housing and Communities (Ministry of Housing, Communities and Local Government (MHCLG))	Statutory Body	24th June 2024	Key assumptions and EIA methodology
DfT/EWR	Statutory Body	26th June 2024	Network Rail bridge on Manor Road
DCMS	Statutory Body	28th June 2024	Transport strategy
NH	Statutory Body	3rd July 2024	Trip forecasting
MHCLG	Statutory Body	9th July 2024	Infrastructure – road and rail
MHCLG	Statutory Body	24th July 2024	**Chapter 2: Description of the Proposed Development (Volume 1)**, planning statement and material considerations, and design standards
MHCLG	Statutory Body	25th July 2024	Phasing, triggers and decision making
Bedford BC	Statutory Body	26th July 2024	Transport strategy
Milton Keynes Council	Statutory Body	6th August 2024	Milton Keynes Forecourt
DfT/EWR	Statutory Body	6th August 2024	EWR Demand Assumptions
DfT/EWR	Statutory Body	7th August 2024	EWR Demand Assumptions
DfT/EWR	Statutory Body	12th August 2024	EWR Demand Assumptions
MHCLG	Statutory Body	10th April 2025	Assumptions, Phasing, Conclusions and Agreed Position

Body/organisation	Individual/stat body/organisation	Meeting dates and other forms of engagement	Summary of outcome of discussions
DfT	Statutory Body	16th April 2025	Assumptions, Phasing, Conclusions and Agreed Position
DfT	Statutory Body	30th April 2025	Highway Scheme Delivery
MHCLG	Statutory Body	2nd May 2025	Assumptions, Phasing, Conclusions and Agreed Position
Bedford BC	Statutory Body	9th May 2025	Highway Scheme Delivery
DfT/EWR	Statutory Body	29th May 2025	EWR Demand Assumptions

5.3.2. Regular meetings on the planning proposal, in addition to those included in **Table 5-1**, have taken place with MHCLG, and these have included discussions on transport, in the round.

5.3.3. Summary of Agreed Positions with key stakeholders have been signed and are contained within Appendix 4 of the Planning Statement (**Document Reference 6.1.0**).

SCOPE OF THE ASSESSMENT

5.3.4. The assessment of Traffic and Transport has considered the potential for the Construction Phase and Operational Phase of the Proposed Development resulting in likely significant effects. The scenarios which will be assessed are described in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**.

5.3.5. The elements shown in **Table 5-2** are considered to have the potential to give rise to likely significant effects during construction and/or operation of the Proposed Development and have therefore been considered within this assessment:

Table 5-2 – Elements scoped into the assessment

Element scoped in	Construction Phase	Operational Phase
Severance	✓	✓
Driver Delay	✓	✓
Non-Motorised User Delay	✓	✓
Non-Motorised User Amenity	✓	✓
Fear and Intimidation	✓	✓
Accidents and Safety	✓	✓

Elements Scoped out of the assessment

5.3.6. The elements shown in **Table 5-3** are not considered to give rise to likely significant effects as a result of the Proposed Development and have therefore not been considered within this assessment.

Table 5-3 - Elements scoped out of the assessment

Element scoped out	Justification
Hazardous Loads	The construction and operation of the Proposed Development is not expected to generate significant volumes of hazardous materials which would require transporting either to/from the Site. If/when these may be required then all vehicles will use agreed routing to/from the Strategic Road Network (SRN) via the new A421 junction to avoid impacts on any sensitive receptors.

Rail-Based Demand

5.3.7. As per IEMA guidelines (Paragraph 1.28) (**Ref 5.5**), user groups who may be sensitive to changes in traffic conditions should be identified. This includes public transport users, for example people walking along a road to access a bus stop or rail station, as well as bus users in relation to delay caused by congestion.

5.3.8. Where bus stops and potential public transport users are located along a road within the study area (discussed below), these have been considered.

5.3.9. The impact of the Proposed Development on rail capacity has not been assessed within this chapter. This is addressed within **Appendix 5.1: Transport Assessment (Volume 3)** and relies on information provided by external parties. Except for the Full Wixams Rail Station, the Proposed Development is not reliant on providing additional rail infrastructure, and additional passengers on rail services are not receptors affected by changes in traffic conditions.

EXTENT OF THE STUDY AREA

5.3.10. The study area for the assessment of Traffic and Transport is shown in **Figure 5.1: Assessed Link Locations (Volume 2)**. The extent of the study area has been determined based on a review of the highway and Non-motorised Users (NMU) network and where material changes in traffic flows are anticipated which could impact users (motorised and non-motorised). The extent of the study area has been agreed with National Highways.

5.3.11. It includes the A421 corridor between the M1 and the A1 Black Cat Roundabout, M1 Junction 13, the A6 Branston Way and the A6 extending past Wixams, as well as local roads around the Site such as Manor Road, Woburn Road, B530 Ampthill Road, as well as roads through Stewartby and Wixams. In addition, the study area includes Public Rights of Way (PRoW).

5.4. METHODOLOGY

METHOD OF EXISTING SITUATION DATA COLLATION

Desk Study

5.4.1. A range of desktop data sources have been used to inform the assessment of Traffic and Transport:

- Aerial photography;
- Digital mapping;
- PROW information from the Local Authority;
- Personal Injury Collision (PIC) data from the Local Authority and from Crashmap (online source);
- Department for Transport (DfT) traffic counts of the Trunk Road Network (TRN);
- Online public transport timetables;
- Adopted highway information from the Local Authority; and
- Online information regarding infrastructure proposals, including highway improvements, East West Rail programme and Wixams East Station.

Site Visit and Surveys

5.4.2. Site visits were undertaken on the following dates:

- 22.08.2022 (General Site visit);
- 13.03.2023 (Observation of highway conditions during traffic surveys);
- 18.01.2024 (General Site visit);
- 31.01.2024 (Site walk-over for drainage and highway data gathering);
- 12.04.2024 (General Site visit);
- 11.03.2024 (Walking, cycling, horse-riding assessment);
- 04.05.2024 (General Site visit);
- 06.07.2024 (General Site visit);
- 11.08.2024 (General Site visit); and
- 13.08.2024 (General Site visit).

5.4.3. Observed traffic data has been collected for the purpose of informing traffic volumes within the Paramics model. The Paramics model has been used to understand the assignment of the Proposed Development generated vehicle trips onto the road network around the Site. A micro-simulation traffic model (Paramics model) considers the layout of the highway network modelled in detail and models each vehicle across the network individually. This provides an understanding of the interactions between vehicles and an understanding of the likely operation of the network under different scenarios.

5.4.4. The Paramics model focused on the A421 between the M1 Junction 13 in the southwest to the Black Cat Junction in the northeast. It also includes the network of roads surrounding the Site including the A6 to Wixams, the B530 Ampthill Road to south of Stewartby Way, the key roads through the Wixams development between the A6 and the B530, the C94 Woburn Road/Bedford Road between the A421 Marsh Leys Interchange and the A421 Marston Moretaine Interchange, Green Lane, Broadmead Road, Stewartby Way, Manor Road and links into Wooton (Fields Road), Marston Moretaine (Beancroft Road) and into Bedford (the A5141 Ampthill Road, and the A6 Branston Way).

5.4.5. To develop a base model that accurately reflects existing network conditions, turning count surveys, in the form of Classified Turn Counts (CTCs), and link counts, in the form of Automatic Traffic Counts (ATCs), have been undertaken.

5.4.6. In total, three separate collection periods were used. The main collection was conducted within March 2023 and included the initial proposed model network of the entire A421 corridor and the local roads around Stewartby and Kempston Hardwick. ATC surveys were conducted over two weeks, inclusive of between 7th and 20th March 2023, with CTCs collected on a neutral weekday, Tuesday 14th of March, and a Saturday, Saturday 11th of March.

5.4.7. Following a request from Bedford BC to extend the model network, additional traffic surveys were collected during November 2023. These included an extension north along the A6 and A4151 plus the local roads of Wootton and Houghton Conquest. The ATCs for this period were conducted over a weeklong period between 2nd and 8th November 2023, with weekday and Saturday CTC counts on Thursday 2nd and Saturday 4th of November, respectively.

5.4.8. However, due to the lengthy road closure on the A6, north of Bedford, throughout the second half of 2023, it was not possible to collect all the surveys required during that period. Therefore, the final CTC surveys on the A6 were collected on Thursday 11th and Saturday 13th January 2024, several weeks after the road re-opened.

Junction Counts (CTCs)

5.4.9. A total of 55 CTCs were collected using mobile CCTV/video surveys, in order to establish existing traffic conditions within the study area. The locations of these counts are shown in **Figure 5.2: Classified Turning Count (CTC) Survey Locations (Volume 2).**

5.4.10. The distribution of counts shown in **Figure 5.2: Classified Turning Count (CTC) Survey Locations (Volume 2)** highlights the extensive coverage of the surveys, and the data collected across the study area. The CTC data was collected over a 13-hour period between 07:00 and 20:00.

Link Counts (ATCs)

5.4.11. In addition to the CTC surveys, 23 distinct link counts were collected within March and November 2023, for use in model validation. To ensure consistency in the traffic volumes between collection periods, the initial ATC surveys close to the extended network were also undertaken again during November 2023.

5.4.12. The ATC counts were collected for 24-hour periods over a full week, therefore covering the full modelled period of 07:00 to 22:00.

5.4.13. The locations and corresponding time periods of all surveyed links are shown in **Figure 5.3: Automatic Traffic Count (ATC) Survey Locations (Volume 2).** These locations were chosen in order to establish existing traffic flows across the main vehicle routes within the study area.

WebTRIS Counts

5.4.14. To inform the flows on the A421 mainline, as well as the M1 and A1, count data for 25 different sites was downloaded from National Highways WebTRIS database. These datasets were chosen in order to obtain existing flows for these key links which form part of the study area and to validate survey data. The data was taken from Saturday 11th March and Tuesday 14th March and processed for inclusion as link counts alongside the ATCs.

5.4.15. The locations and reference numbers for the counts is given within **Figure 5.4: WebTRIS Locations (Volume 2).**

Automatic Number Plate Recognition (ANPR) Surveys

5.4.16. An Automatic Number Plate Recognition (ANPR) survey was undertaken on the same weekday and Saturday as the initial CTCs were collected. The ANPR sites were located on six major external loading points to capture trip patterns and journey times through the network/study area.

5.4.17. The full ANPR cordon is shown in **Figure 5.5: ANPR Cordon (Volume 2).**

TomTom Journey Time Data

5.4.18. Journey time data for the network has also been used to determine the existing situation, using the TomTom database during the period of 1st March 2023 to 31st March 2023, matching the dates of the initial survey collection.

5.4.19. Separate timing data was collected for all neutral weekdays, inclusive of Monday to Thursday, and Saturdays across the period. The TomTom network covers the study area as shown in **Figure 5.1: Assessed Link Locations (Volume 2)**.

ASSESSMENT METHODOLOGY

5.4.20. **Table 5-4** sets out the methodology used in the assessment of the elements scoped in for Traffic and Transport. Further details on the methodology used in the assessment of Traffic and Transport are presented in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**.

Table 5-4 - Assessment Methodology

Elements scoped in	Methodology
Severance	Determination of change in traffic flows as a result of the Proposed Development and application of IEMA thresholds in relation to magnitude of change.
Driver Delay	Application of professional judgement based on overall network statistics and journey time assessments from the Paramics Model.
Non-Motorised User Delay	Identifying links with two-way traffic flows exceeding 1,400 vehicles per hour in the assessed AM and PM peak hours and applying professional judgement regarding the change in traffic flows on these links because of the Proposed Development, considering local context and characteristics.
Non-Motorised User Amenity	Application of professional judgement for links with a change in traffic flow of over 100% as a result of the Proposed Development
Fear and Intimidation	Application of IEMA weighting system to determine a degree of hazard score.
Accidents and Safety	Application of professional judgement based on qualitative analysis set out in **Appendix 5.1: Transport Assessment (Volume 3).**

SIGNIFICANCE CRITERIA

Sensitive Receptors

5.4.21. Sensitive receptors have been identified as relevant to Traffic and Transport within the study area based on the principles set out in **Table 5-5**.

5.4.22. The sensitivity of receptors will be considered on a scale of high, medium, low or negligible. The sensitivity of a receptor can be defined by the vulnerability of the user group who may be affected by changes in traffic conditions, for example, elderly people or children.

5.4.23. A sensitive receptor may be related to an area where pedestrian activity is high, for example a road in the vicinity of a school.

5.4.24. The existing character of a road and its receptors is also considered. For example, an 'A' road is likely to have lower sensitivity to changes in traffic flows than a minor residential road as it is less likely to be used by pedestrians/cyclists (receptors), and it will already be used by a larger volume of traffic and therefore a small increase would have a smaller impact, and therefore create a smaller change in the character of that road.

Table 5-5 - Sensitivity of Receptors for Traffic and Transport

Receptor Type	Receptor Sensitivity
Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident clusters[1], retirement homes, roads without footways that are used by pedestrians.	High
Traffic flow sensitive receptors: congested junctions[2], doctors' surgeries, hospital, shopping areas with roadside frontage, roads with narrow footways, recreation facilities.	Medium
Receptors with some sensitivity to traffic flow: place of worship, public open space, tourist attractions and residential areas with adequate footway provision.	Low
Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions: links where no pedestrian activity occurs and where there is no provision for pedestrians. For example, strategic roads such and motorways as trunk roads or rural roads where there are no pedestrian-generating land uses within the vicinity.	Negligible

[1]Collision clusters are defined as a location where more than one collision has been caused by the highway layout/infrastructure; [2]There is no definition of a congested junction provided within IEMA Guidelines. This is described further within the section titled Sensitive Receptors.

Magnitude of Impact

5.4.25. A summary of the criteria that have been used to determine magnitude of change from the existing conditions as a result of the Proposed Development are set out in **Table 5-6**.

5.4.26. Further details on the methodology used in the assessment of Traffic and Transport are presented in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**.

Table 5-6 - Definitions of Magnitude of Change

Effects	Negligible	Low	Medium	High
Severance	Change in total traffic or HDV flows of less than 30%	Change in total traffic or HDV flows of 30-60%	Change in total traffic or HDV flows of 60-90%	Change in total traffic or HDV flows over 90%
Driver Delay	A professional judgement based on the overall network statistics and journey time assessment within the traffic model.			
Non-Motorised User Delay	Two-way traffic flows < 1,400 vehicles per hour	A professional judgement based on the road links with two-way traffic flow exceeding 1,400 vehicles per hour in the context of the individual characteristics		
Non-Motorised User Amenity	Change in total traffic or HDV < 100%	A professional judgement based on the routes with > 100% change in the context of their individual characteristics.		
Fear and Intimidation	No change in step level	One step change in level, with <400 vehicle increase in average 18-hour average vehicle two-way all vehicle flow; and/or <500 heavy vehicle increase in total 18-hour heavy vehicle flow.	One step change in level, with >400 vehicle increase in average 18-hour average vehicle two-way all vehicle flow; and/or >500 heavy vehicle increase in total 18-hour heavy vehicle flow.	Two step changes in level
Accidents and Safety	A professional judgement based on quantitative analysis as set out in the Transport Assessment.			

Significance of Effect

5.4.27. The predicted significance of the impacts, based on the receptor sensitivity and the magnitude of change is summarised in **Table 5-7**. Further details on the methodology used in the assessment of Traffic and Transport are presented in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3).**

Table 5-7 - Significance evaluation matrix

Magnitude of Change	Receptor Sensitivity			
	High	Medium	Low	Negligible
High	Major (Significant)	Major (Significant)	Moderate (Significant or Not Significant)	Minor (Not Significant)
Medium	Major (Significant)	Moderate (Significant or Not Significant)	Minor (Not Significant)	Minor (Not Significant)
Low	Moderate (Significant or Not Significant)	Minor (Not Significant)	Minor (Not Significant)	Negligible (Not Significant)
Negligible	Minor (Not Significant)	Minor (Not Significant)	Negligible (Not Significant)	Negligible (Not Significant)

5.4.28. Potential effects are therefore concluded to be of negligible, minor, moderate or major significance. For each effect, it has been concluded whether the effect is 'beneficial' or 'adverse'. Major significance effects are significant in terms of EIA guidance. Moderate significance effects require further investigation and the application of professional judgement to determine whether they are significant in terms of EIA guidance and the context of Proposed Development and surrounding area.

5.4.29. Finally, the temporal scope of the study is essential to consider within the assessment and will identify whether the resultant effects of the Proposed Development will be permanent or temporary in nature and categorised as follows:

- Permanent – these are effects that will remain even when the Project is complete, although these effects may be caused by environmental changes that are permanent or temporary; and
- Temporary – these are effects that are related to environmental changes associated with an activity and that will cease when that activity finishes (construction activity). Temporary effects can be further categorised by the time period of which they will last; short-term (0 to 2-year impact), medium-term (3 to 5-year impact) and long-term (5 to 10-year impact).

5.5. EXISTING & PREDICTED FUTURE CONDITIONS

5.5.1. A full, detailed review of the existing and future conditions is provided within **Appendix 5.1: Transport Assessment (Volume 3).**

5.5.2. Details of the existing conditions are described at Section 3 of **Appendix 5.1: Transport Assessment (Volume 3)**.

5.5.3. Details of the future conditions in the Primary Opening Year and Future Year are described at Section 6 of **Appendix 5.1: Transport Assessment (Volume 3)**, with a summary provided below.

PRIMARY OPENING YEAR

5.5.4. A description of key infrastructure projects and changes to the future situation arising up to the Primary Opening Year without the Proposed Development coming forward are provided below.

Black Cat

5.5.5. The Black Cat improvement scheme is a current committed National Highways scheme comprising an upgrade to the route between the Black Cat roundabout and Caxton Gibbet. A new 10-mile dual carriageway will connect the Black Cat roundabout and Caxton Gibbet roundabout.

5.5.6. According to the National Highways website, the proposals include:

- A new three tier junction at Black Cat roundabout which will allow traffic to flow freely on the A1 by travelling under the junction and on the new dual carriageway over the junction;
- New junctions at Caxton Gibbet and Cambridge Road, connecting the new dual carriageway to the existing A428 and increasing the local road network's ability to cope with unforeseen incidents;
- New Roxton Road link to connect Wyboston and Chawston;
- New bridges crossing over the new dual carriageway at Roxton Road, Barford Road and Toseland Road;
- New bridges over the River Great Ouse and East Coast Main Line railway;
- Retention of the existing A428 between St Neots and Caxton Gibbet for local traffic and public transport;
- Retention of existing bus stops on the A1;
- All local roads maintained although direct access to the A1 from some roads will be removed for safety reasons; and
- Safer and alternative access to side roads at Chawston, Wyboston and Eltisley.

5.5.7. The scheme is under construction, fully-funded and due to be complete in 2027.

Wixams Rail Station

5.5.8. Wixams East Station is part of the original masterplan for the Wixams garden village site, which has been under construction since 2007.

5.5.9. Wixams East Station separately achieved planning permission from Bedford BC in February 2023 under planning application references 23/02629/MDC3 and 23/02136/M73.

5.5.10. The proposed station as part of Wixams garden village is situated on the Midland Main Railway Line (MMRL) between Bedford and Flitwick stations and has the potential to 'open-up' the Site to local and national rail services on the MMRL.

5.5.11. At this stage, the consented and fully funded Bedford BC scheme expects that Wixams East Station will be served by up to four Thameslink trains per hour in each direction, likely to be the trains operating between Bedford and Brighton via London, stopping at many local stations en-route. The railway station will provide two platforms, both with seating and shelters, a station building with toilets, waiting rooms and café, parking for all vehicle types and cycles, passenger drop-off/pick-up areas, bus stops and taxi ranks and ticket machines and real-time information boards.

5.5.12. A plan showing the approved layout is included at **Figure 5.6: Wixams East Station Approved Layout (Volume 2).**

FUTURE YEAR

5.5.13. A description of key infrastructure projects and changes up to the Future Year, without the Proposed Development coming forward are provided below.

East West Rail

5.5.14. EWR is a nationally significant railway project which will, if completed in full, deliver a rail connection between Oxford and Cambridge, and as such support the planned sustainable growth in the Ox-Cam arc. The Ox-Cam arc is a globally significant area between Oxford, Milton Keynes and Cambridge and was announced by the government as a focus for innovation and economic growth.

5.5.15. To deliver this, the following stages of the project have been completed:

- Upgrading the existing section of railway between Oxford and Bicester – A major upgrade of the railway line between Oxford and Bicester was delivered in 2016. In order to support increased passenger numbers at Oxford Station, funding has been secured to provide platform capacity enhancements;
- Bringing back an existing section of railway between Bicester and Bletchley – Works are complete on the sections of railway line between Bicester and Bletchley with Government currently selecting an operator for the services to be introduced in 2025. Bletchley (near Milton Keynes) is on the West Coast Main Line;

5.5.16. Non-statutory consultation has been undertaken on the remainder of the line from Bletchley to Bedford and Bedford to Cambridge. It is anticipated that in due course a formal statutory consultation will be undertaken in accordance with the provisions of the Planning Act 2008.

5.5.17. The Marston Vale Railway Line runs through the Proposed Development site and will form a section of the EWR scheme which is part of the non-statutory consultation. Plans for EWR along this line have evolved over time.

5.5.18. For the purpose of assessment in this chapter, the Proposed Development assumes that the EWR line is completed from Oxford to Milton Keynes by the Primary Opening Year. It does not rely on the line continuing further, and it does not rely on a new EWR Station at the Site. However, it supports an extension of EWR beyond Milton Keynes if this were to come forward.

5.5.19. The Proposed Development safeguards land that would enable a new station to be constructed. The Construction Phase assessment allows for the effects of construction of a new station concurrent with construction of the Proposed Development.

Manor Road Level Crossing/Bridge (Network Rail)

5.5.20. Network Rail has permission to close the Kempston Hardwick level crossing and replace it with a new highway bridge and it has been advised by the DfT that the bridge is a committed development. The Proposed Development relationship with the Manor Road Level Crossing has been considered thoroughly and three options have been developed. These are described and assessed in detail in **Appendix 5.1: Transport Assessment (Volume 3)**. The following receptors have been assessed:

- Motorised users of the road network; and
- Non-motorised users of the study area (including PROW).

5.5.21. Based on the criteria of receptor sensitivity in **Table 5-5,** the sensitivity of each link in the study area has been defined. This has taken account of the character of each link and its users, facilities available for non-motorised users, collision clusters which are the result of the highway layout/facilities and potential impacts of the Proposed Development on congestion. As there is no definition of 'congestion' in IEMA guidelines, for the purposes of assessment congestion has been defined as a reduction in speed from the Reference Case of 5mph or more in the assessed AM and PM peak hours.

5.5.22. Further information on how the sensitivity of receptors on each link within the study area have been assigned is provided at **Appendix 5.2: Link Sensitivity Review (Volume 3).**

5.5.23. High-sensitivity users of links within the study area are highlighted in bold red text. This is summarised in Table 5-8. A plan showing the location of sensitive links is included at **Figure 5.7: Location of Sensitive Receptors (Volume 2).**

Table 5-8 - Receptor Sensitivity

Link	Sensitivity of Receptors on Link
1 - A507 Bedford Road	Negligible
2 - Ridgmont Interchange	Negligible
3 - A421	Medium
4 - A421	Medium
5 - M1	Negligible
6 - M1	Negligible
7 - A421 Salford Road	Medium
8 - Salford Road	Low
9 - A421	Low
10 - Beancroft Road	Negligible
11 - Lower Shelton Road	Medium
12 - Beancroft Road	Low
13 - Beancroft Road	Low
14 - Marston Moretaine	Low
15 - Beancroft Road	Medium
16 - Marston Moretaine	Medium
17 - A421	Negligible
18 - Bedford Road	Low
19 - Bedford Road	Negligible
20 - Green Lane	**High**

Link	Sensitivity of Receptors on Link
21 - Stewartby Way	Medium
22 - Broadmead Road	Low
23 - Broadmead Road	Low
24 - Broadmead Road	Medium
25 - Stewartby Way	Low
26 - Stewartby Way	**High**
27 - B530 Hazelwood Lane	**High**
28 - B530 Ampthill Road	**High**
29 - Bedford Road	Negligible
30 - B530 Ampthill Road	Low
31 - Wootton	Medium
32 - Fields Road	Medium
33 - Fields Road	**High**
34 - Burgoyne Avenue	Low
35 - Woburn Road	Low
36 - Manor Road	**High**
37 - Bedford Road	Medium
38 - B530 Ampthill Road	Medium
39 - Meadow Road	Low
40 - Meadow Road	Low
41 - Loverose Way	Low
42 - Fisherwood Road	Medium
43 - Hardwick Hill	Low
44 - A6 The Branston Way	Medium
45 - A6 The Branston Way	Medium
46 - Woburn Road	Low
47 - Woburn Road	**High**
48 - A421 Bedford Southern Bypass	Medium
49 - The Causeway	Medium
50 - Wilstead Road	Low

Link	Sensitivity of Receptors on Link
51 - A6 Wilstead Bypass	Medium
52 - A6 Wilstead Bypass	Negligible
53 - A6 Wilstead Bypass	Negligible
54 - A6 Wilstead Bypass	Negligible
55 - Wilstead Road	Medium
56 - Elstow Interchange SW	Negligible
57 - A5141	Medium
58 - B530 Ampthill Road	Medium
59 - A5141	Medium
60 - A5141 Ampthill Road	**High**
61 - A5141 Ampthill Road	Low
62 - A5134 West End	Low
63 - A421 Bedford Southern Bypass	Medium
64 - A600 Harrowden Road	Medium
65 - A600	Medium
66 - A600 The Highway	Medium
67 - Wallis Way	Low
68 - A603 Cardington Road	Medium
69 - Bedford Road	**High**
70 - Stannard Way	Medium
71 - A603 Cambridge Road	Medium
72 - A421 Bedford Southern Bypass	Negligible
73 - Water End	Low
74 - A4280 St. Neots Road	Low
75 - Renhold Junction	Low
76 - St. Neots Road	Medium
77 - A421 Great Barford Bypass	Negligible
78 - Black Cat Services	Low
79 - A1 Great North Road	Medium
80 - A1 Great North Road	Low

Link	Sensitivity of Receptors on Link
81 - Bedford Road	Medium
82 - A421	Negligible

5.6. ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

5.6.1. This section describes the potential effects of the Construction Phase and Operational Phase of the Proposed Development.

5.6.2. Full details of vehicle trip generation during construction are provided in **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.3. Full details regarding the trip generation potential of the Proposed Development in the Primary Opening Year and Future Year, as well as the distribution of vehicle trips onto the links in the study area, are provided in **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.4. Full details of the trip generation potential of the Proposed Development in Scenario 4a (Primary Opening Year - Reference Case plus Development plus Construction) vehicle trip generation are provided in the **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.5. The assessment presented in this chapter relies on “Embedded Mitigation” which is secured by the controlling documents and set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**]. No additional mitigation measures have been identified as required for the Proposed Development.

5.6.6. The scenarios that are assessed within this chapter are explained in detail in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** and are summarised below and in **Table 5-9**:

- Scenario 1- 2023 Existing;
- Scenario 2- 2023 Existing plus Peak Construction;
- Scenario 2a- 2023 Existing plus Average Construction;
- Scenario 3- Reference Case;
- Scenario 4- Primary Opening Year - Reference Case plus Development;
- Scenario 4a- Primary Opening Year - Reference Case plus Development plus Construction.
- Scenario 5- Future Year - Reference Case plus Development; and
- Scenario 5a – Future Year - Reference Case plus Development plus full EWR
- Scenario 5b - Future Year - Reference Case plus Development plus removal of Rail Discount

5.6.7. The Reference Case considered in this assessment forms the basis against which the transport implications of development proposals can be tested. This is set out in Section 6 of **Appendix 5.1: Transport Assessment (Volume 3) and Annex 10 of the Transport Assessment.**

Table 5-9 - Assessment Scenarios

Scenario Number	Scenario Name	Test	Description
1	2023 Existing	Core Scenario	This is assessing the existing road network and existing traffic
2	2023 Existing plus Peak Construction	Core Scenario	This is the existing road network and traffic, plus traffic associated with peak construction. The assessment is made against the 2023 Existing traffic flows as this represents the greatest proportional increase in traffic and because peak construction traffic could occur at any time before 2029. In addition, by 2029 other mitigation/ infrastructure improvements may have come forward which could offset the potential impacts of construction traffic
2a	2023 Existing plus Average Construction	Core Scenario	This is the existing road network and traffic, plus traffic associated with average construction. This has also been assessed against 2023 Existing traffic flows for the reasons set out above.
3	Reference Case	Core Scenario	This is the existing road network and traffic, plus traffic associated with agreed committed developments
4	Primary Opening Year - Reference Case plus Development	Core Scenario	This is the existing road network and traffic, plus traffic associated with agreed committed developments plus Primary Opening Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario does not include trip generating development on either the Lake Zone or West Gateway Zone (There may be some drainage or other infrastructure works required on the Lake Zone and West Gateway Zone to support the delivery of development on the Core Zone). This is a cautious worst case in terms of the Primary Opening Year, as EWR is assessed to Milton Keynes only, and not to Bedford, as is proposed by EWR.
4a	Primary Opening Year - Reference Case plus Development plus Construction	Core Scenario	This is the existing road network and traffic plus traffic, associated with agreed committed developments plus Primary Opening Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers construction activities in the Core Zone, Lake Zone and West Gateway Zone. This represents a cautious worst case in relation to the potential impact on the study area, as it includes operational trips associated with Scenario 4, plus construction traffic and assesses the potential impacts of this against the Reference Case, which does not include any of the Proposed Development. There would not be any construction occurring on the Core Zone, Lake Zone and West Gateway Zone, without the Theme Park operating in the Core Zone, and therefore the traffic associated with Scenario 4 would be a reasonable baseline to compare

Scenario Number	Scenario Name	Test	Description
			Scenario 4a traffic against in relation to infrastructure design (this is the basis of the Transport Assessment); however, for the ES assessment set out within this chapter, Scenario 4a traffic flows will be assessed against the Reference Case (Scenario 3) only.
5	Future Year - Reference Case plus Development	Core Scenario	This is the existing road network and traffic, plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone and West Gateway Zone.
5a	Future Year - Reference Case plus Development plus full EWR	Sensitivity Test	This is the existing road network and traffic, plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Cambridge with a new station within the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone and West Gateway Zone. This has been undertaken as a sensitivity test, rather than a core scenario as there is no certainty regarding the completion of EWR.
5b	Future Year - Reference Case plus Development plus removal of Rail Discount	Sensitivity Test	This is the existing road network and traffic plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone or West Gateway Zone. In this scenario, there is no rail discount applied for visitors. This has been undertaken as a sensitivity test rather than a core scenario as the high volume of new rail passengers to the network serving the Proposed Development, means that assuming a form of rail discount for visitors is a cautious worst-case assessment. Assessing the removal of this discount has simply been undertaken to examine the potential impacts of any resultant mode shift.

5.6.8. **Appendix 5.1: Transport Assessment (Volume 3)** also assesses a further scenario titled Scenario 5c - Future Year – Reference Case plus Development plus M1 Junction 13 as a constraint. This is a Scenario of the existing road network and traffic plus traffic associated with agreed committed developments plus Future Year related demands from the Site. This is based on the Full Wixams Station being open, EWR running between Oxford and Milton Keynes only with a shuttle bus service operating between Milton Keynes and the Site and the new A421 Junction being complete. For clarity this scenario considers full development of the Lake Zone or West Gateway Zone. This scenario is based on a version of the micro-simulation model that considers likely supressed demand that would naturally occur at M1J13 as a response to existing and predicted capacity

constraints at the junction. This assessment only effects travel during the peak hour and not across a day and as such it is not relevant to the consideration of daily traffic which is the purpose of the ES chapter.

5.6.9. The network AM peak hour (08:00 to 09:00), network PM peak hour (17:00 to 18:00) and 24-hour AADT scenarios are assessed for each scenario. 18-hour AAWT flows are used for the purposes of assessing the impact on fear & intimidation.

5.6.10. The assessments for construction and operation of the Proposed Development are based on the inclusion of embedded mitigation measures. These are described in detail within Section 5 of **Appendix 5.1: Transport Assessment (Volume 3)** and are summarised below:

Construction Phase Embedded Mitigation

- An Outline Construction Environmental Management Plan (OCEMP) **(Appendix 2.3: Outline Construction Environmental Management Plan (OCEMP) (Volume 3))** forms part of the Proposed Development's management documents. Section 3.3 of **Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3)** includes an Outline Construction Traffic Management Plan (OCTMP), while the OCEMP also sets out the phasing and strategy, the management measures, the monitoring approach and the compliance structure, and includes the proposed routing strategy using the SRN and avoiding local roads where possible;
- Creation of a direct construction access from Broadmead Road via Woburn Road; and
- The junction of Broadmead Road and Woburn Road/Bedford Road will be signalised when required.

Operational Phase Embedded Mitigation

- Broadmead Road Junction Signalisation - The junction of Broadmead Road and Woburn Road/Bedford Road will be signalised as part of the works associated with creating the new A421 Junction. The form and location of the works, while similar in nature to those during the Construction Phase, are slightly different as the tie-in between Woburn Road/Bedford Road and Broadmead Road changes as a result of the new A421 Junction;
- Manor Road improvements - Realigned and upgraded Manor Road to a dual carriageway access road between Ampthill Road and the Marston Vale Railway Line.
- Pedestrian and cycle routes as shown on the Parameter Plan – Active Travel (**Document Reference 1.12.0**).
- Rail services to a Full Wixams Rail Station, a new west-facing plaza and last-mile connection to the Proposed Development.
- Shuttle buses between Milton Keynes Rail Station and the Site as set out in **Appendix 5.6: Travel Plan (Volume 3)**
- Implementation of the agreed Monitor and Manage Plan, as controlled in this Travel Plan.
- A new A421 Junction - A new road junction on the A421, including a new eastbound off slip into the Site, a new westbound off slip into the Site and a new westbound on slip away from the Site;
- Public Road A, and Public Road B, segments 1 and 2 as shown in Parameter Plan – Access and Roadways (Document Reference 1.11.0).

CONSTRUCTION PHASE

Core Assessment

5.6.11. Details of the construction programme, number of workers, number of deliveries, phasing and vehicle routing are included in Section 12 of **Appendix 5.1: Transport Assessment (Volume 3).** The basis for assessment is set out in **Appendix 2.1: Environmental Statement Basis of Assessment** of the ES.

Extended Hours and Out of Hours Working Assessment

5.6.12. Some activities may require 24-hour working and where this is the case, the key stakeholders (as set out in **Appendix 2.3: OCEMP (Volume 3))** will be notified in advance, including details of any applicable noise control measures. In addition, there will be activities which do not require exceptions and these are set out in the OCEMP, presented in **Appendix 2.3: OCEMP (Volume 3)**.

5.6.13. 'Out of hours' (i.e., beyond 07:00 to 19:00) working will largely occur in the last 18 months of the Primary Phase of the project. Construction access for this period will be via Woburn Road onto the new roads within the West Gateway Zone.

5.6.14. During this period, except in abnormal circumstance, all commercial vehicles, including HDVs and LGVs, will be required to follow the routing secured via the Outline Construction Environmental Management Plan, included at **Appendix 2.3: OCEMP (Volume 3).**

5.6.15. Furthermore, the volume of movement of HDVs will be in the order of 20 vehicles and the number of staff approximately 300. These movements will be spread overnight and therefore will not have a material transport impact on any individual link.

Early Enabling Works and Manor Road

5.6.16. At the time of writing there is a possibility that early enabling works would be required in an area around Manor Road interacting with the Lake Zone and the Core Zone. These works could be accessed from Manor Road (east).

5.6.17. The assessment undertaken in this chapter considers the implications of a proportion of Primary Phase Construction and Peak Construction Year traffic accessing the Site via Manor Road (east), based on proposed routing strategies.

5.6.18. The amount of construction traffic identified as using Manor Road (east) in the Peak Construction Year assessment scenario, will be set as the upper limit of construction related traffic movements permitted along the link. This upper limit will apply to any traffic movements associated with early enabling works which may require the use of Manor Road (east).

5.6.19. Section 8 of **Appendix 5.1: Transport Assessment (Volume 3)** provides a summary of the 24-hour traffic envelope available for early works on Manor Road (east) and on the B530 north of Manor Road as the set access route to Manor Road (east).

5.6.20. It is considered acceptable for Universal Destinations & Experiences (UDX) to use Manor Road (east) and the approach to the Site from the B530 north as a construction access for early enabling works as long as construction traffic during these early works do not exceed the Peak Construction Year traffic. There will therefore be no additional material impact on these routes.

SCENARIO 2 2023 EXISTING PLUS PEAK CONSTRUCTION

5.6.21. **Tables 5-10 – 5-12** summarise the impact of the Peak Construction Year on the 2023 Existing traffic. 18-hour AAWT traffic flows, used to assess the magnitude of change in relation to fear and intimidation, are included at **Appendix 5.3: 18 Hour AAWT Flows (Volume 3)**. As described previously, full details of the construction methodology are included in Section 12 of **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.22. As described in **Appendix 5.1: Transport Assessment (Volume 3)**, the Peak Construction Year is predicted to be 2029, however the peak in construction vehicle movements could occur before then.

5.6.23. Therefore, in order to provide a robust assessment, a comparison to the 2023 Existing traffic has been undertaken, as this will represent the largest proportional increase in traffic and assesses the impacts on the existing study area, without any mitigation/infrastructure improvements coming forward.

5.6.24. The potential effects, following the magnitude of change and scale of effect criteria set out in **Table 5-6** and **Table 5-7**, are summarised in **Table 5-13**. It should be noted that as per IEMA guidelines, the individual characteristics of each link has been considered when applying magnitude of change criteria. For example, where percentage changes in traffic flows may be deemed significant, the actual increase in traffic may be just a few vehicles, if the existing flows are low. This has been noted when defining the residual effects. In addition, in some cases, strategic links may not permit pedestrian/cycle activity. Where this is the case, this is noted and there is deemed to be no impact on Severance, NMU Delay, NMU Amenity and Fear and Intimidation.

5.6.25. A review of PIC data has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. Where no existing collision issue (that is the result of the highway layout or other infrastructure) has been identified and where professional judgement concludes that no material change in traffic is likely to occur (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be negligible. Where there is no existing collision issue but there is a material change in traffic (accounting for the characteristics of the link and its receptors), the magnitude of change is concluded to be low.

5.6.26. A detailed journey time assessment has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.27. Subsequently, further assessment of the change in average vehicle speeds along each link have been reviewed to identify within the overall routes, where specific delay to drivers may be experienced. As described at **Appendix 5.2: Link Sensitivity Review (Volume 3)**, links with a reduction in average vehicle speed of 5mph or more during the assessed AM and PM peak hours, an interpeak hour of 11:00-12:00 and a night-time hour of 21:00-22:00, have been identified. Where the change in speed is below 5pmh, the magnitude of change is categorised as negligible. Where the change in speed is over 5mph, professional judgement is applied. This takes into account the 2023 Existing traffic speeds on the link, the posted speed limit, the character of the link, and the severity of the change in speed.

5.6.28. For example, on a link with a posted speed limit of 50mph, with average speeds of 50mph, a 5mph reduction as a result of peak construction traffic is not considered to represent a material change to the character of the link, and therefore the magnitude of change would be classed as low. If the reduction in speed was greater than this, for example 10mph, then professional judgement would again be applied, and it is likely that this would constitute a medium magnitude of change.

5.6.29. As described previously, it is important to note that there is no established definition of 'congestion' and driver delay in IEMA guidelines and the application of professional judgement is required.

Table 5-10 – Scenario 2 2023 Existing plus Peak Construction (24-hour AADT)

Link	2023 Existing		2023 Existing plus Peak Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	17134	1997	17108	1968	0%	-1%
2 - Ridgmont Interchange	16865	1662	17023	1664	1%	0%
3 - A421	31109	4348	32268	4518	4%	4%
4 - A421	33331	3463	33988	3422	2%	-1%
5 - M1	114107	20928	115292	21139	1%	1%
6 - M1	102199	20112	103366	20250	1%	1%
7 - A421 Salford Road	19687	2289	20922	2453	6%	7%
8 - Salford Road	4613	208	4677	200	1%	-4%
9 - A421	54404	6427	57358	6701	5%	4%
10 - Beancroft Road	5880	198	5908	195	0%	-2%
11 - Lower Shelton Road	953	155	951	149	0%	-4%
12 - Beancroft Road	11164	869	11622	789	4%	-9%
13 - Beancroft Road	15062	871	16035	848	6%	-3%
14 - Marston Moretaine	5937	149	5928	147	0%	-1%
15 - Beancroft Road	8247	143	8340	141	1%	-1%
16 - Marston Moretaine	8299	636	8928	639	8%	0%
17 - A421	54556	6560	55401	6718	2%	2%
18 - Bedford Road	9382	629	11419	715	22%	14%
19 - Bedford Road	7326	393	9181	651	25%	66%

20 - Green Lane	4902	425	5487	468	12%	10%
21 - Stewartby Way	5550	432	8003	388	44%	-10%
22 - Broadmead Road	3826	94	4940	66	29%	-30%
23 - Broadmead Road	4221	81	5524	71	31%	-12%
24 - Broadmead Road	3532	43	5943	76	68%	77%
25 - Stewartby Way	5268	465	7415	335	41%	-28%
26 - Stewartby Way	5324	521	7344	328	38%	-37%
27 - B530 Hazelwood Lane	11423	335	12302	312	8%	-7%
28 - B530 Ampthill Road	11170	546	11151	351	0%	-36%
29 - Bedford Road	2505	69	2570	69	3%	0%
30 - B530 Ampthill Road	11784	571	11603	376	-2%	-34%
31 - Wootton	10150	433	14373	1407	42%	225%
32 - Fields Road	11040	337	11100	323	1%	-4%
33 - Fields Road	10984	328	11085	319	1%	-3%
34 - Burgoyne Avenue	3377	255	3380	246	0%	-4%
35 - Woburn Road	13027	237	16799	1219	29%	414%
36 - Manor Road	2983	52	1864	0	-38%	-100%
37 - Bedford Road	11689	593	10803	487	-8%	-18%
38 - B530 Ampthill Road	11142	608	10294	425	-8%	-30%
39 - Meadow Road	3996	166	4182	184	5%	11%
40 - Meadow Road	1613	72	1687	71	5%	-1%
41 - Loverose Way	0	0	0	0	0%	0%
42 - Fisherwood Road	3149	495	3247	503	3%	2%
43 - Hardwick Hill	9930	662	11463	750	15%	13%
44 - A6 The Branston Way	24394	1083	24744	1098	1%	1%
45 - A6 The Branston Way	21646	811	21998	842	2%	4%
46 - Woburn Road	16205	575	16396	561	1%	-2%
47 - Woburn Road	2136	527	2088	509	-2%	-3%

48 - A421 Bedford Southern Bypass	68056	6628	71704	6915	5%	4%
49 - The Causeway	8757	627	8883	626	1%	0%
50 - Wilstead Road	469	310	371	212	-21%	-32%
51 - A6 Wilstead Bypass	18254	688	18233	663	0%	-4%
52 - A6 Wilstead Bypass	23616	784	23582	755	0%	-4%
53 - A6 Wilstead Bypass	28597	1290	28662	1258	0%	-4%
54 - A6 Wilstead Bypass	28818	1956	28742	1797	0%	-8%
55 - Wilstead Road	2337	549	2213	433	-5%	-21%
56 - Elstow Interchange	3338	392	3330	381	0%	-3%
57 - A5141	32014	1231	34791	1384	9%	12%
58 - B530 Ampthill Road	22122	845	24399	978	10%	16%
59 - A5141	31765	1194	34528	1348	9%	13%
60 - A5141 Ampthill Road	29873	581	29956	580	0%	0%
61 - A5141 Ampthill Road	23501	507	23563	504	0%	-1%
62 - A5134 West End	15683	242	15834	238	1%	-2%
63 - A421 Bedford Southern Bypass	60237	5996	60643	5944	1%	-1%
64 - A600 Harrowden Road	18647	521	18615	505	0%	-3%
65 - A600	18431	833	18338	798	-1%	-4%
66 - A600 The Highway	17178	609	17146	583	0%	-4%
67 - Wallis Way	3662	599	3480	583	-5%	-3%
68 - A603 Cardington Road	15275	1075	15002	817	-2%	-24%
69 - Bedford Road	2738	165	2727	156	0%	-5%
70 - Stannard Way	3513	428	3487	407	-1%	-5%
71 - A603 Cambridge Road	17272	1082	17295	1025	0%	-5%
72 - A421 Bedford Southern Bypass	42627	4488	43404	4688	2%	4%
73 - Water End	1841	196	1798	193	-2%	-2%
74 - A4280 St. Neots Road	23916	1082	23958	1068	0%	-1%

75 - Renhold Junction	16664	818	16633	802	0%	-2%
76 - St. Neots Road	8421	453	8429	450	0%	-1%
77 - A421 Great Barford Bypass	35459	4164	36212	4378	2%	5%
78 - Black Cat Services	722	706	706	690	-2%	-2%
79 - A1 Great North Road	54156	6427	54938	6693	1%	4%
80 - A1 Great North Road	27389	4267	27485	4256	0%	0%
81 - Bedford Road	4376	432	4267	409	-2%	-5%
82 - A421	35963	4035	37767	4158	5%	3%

Table 5-11 – Scenario 2 2023 Existing plus Peak Construction (Weekday AM Peak 08:00 to 09:00)

Link	2023 Existing		2023 Existing plus Peak Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1525	178	1543	176	1%	-1%
2 - Ridgmont Interchange	1357	141	1403	140	3%	-1%
3 - A421	2533	350	2665	359	5%	3%
4 - A421	2687	286	2829	278	5%	-3%
5 - M1	8557	1562	8646	1570	1%	1%
6 - M1	7744	1525	7918	1534	2%	1%
7 - A421 Salford Road	1868	206	2053	218	10%	6%
8 - Salford Road	469	17	483	16	3%	-6%
9 - A421	4768	571	5132	582	8%	2%
10 - Beancroft Road	586	12	588	11	0%	8%
11 - Lower Shelton Road	95	9	96	9	1%	0%
12 - Beancroft Road	983	58	1234	52	26%	-10%
13 - Beancroft Road	1478	73	1661	68	12%	-7%
14 - Marston Moretaine	648	12	650	12	0%	0%
15 - Beancroft Road	781	11	814	12	4%	9%

16 - Marston Moretaine	860	51	992	48	15%	-6%
17 - A421	4842	561	4956	562	2%	0%
18 - Bedford Road	870	50	1116	52	28%	4%
19 - Bedford Road	745	31	993	43	33%	39%
20 - Green Lane	645	32	751	31	16%	-3%
21 - Stewartby Way	611	36	878	29	44%	-19%
22 - Broadmead Road	409	5	503	4	23%	-20%
23 - Broadmead Road	459	4	569	5	24%	25%
24 - Broadmead Road	340	2	545	5	60%	150%
25 - Stewartby Way	571	38	786	28	38%	-26%
26 - Stewartby Way	580	40	780	25	34%	-38%
27 - B530 Hazelwood Lane	1011	33	1120	29	11%	-12%
28 - B530 Ampthill Road	1023	44	1063	30	4%	-32%
29 - Bedford Road	215	3	226	4	5%	33%
30 - B530 Ampthill Road	1052	44	1085	30	3%	-32%
31 - Wootton	1047	33	1398	79	34%	139%
32 - Fields Road	1014	24	1025	25	1%	4%
33 - Fields Road	1006	24	1023	25	2%	4%
34 - Burgoyne Avenue	348	19	353	19	1%	0%
35 - Woburn Road	1230	15	1563	63	27%	320%
36 - Manor Road	290	5	324	0	12%	-100%
37 - Bedford Road	943	47	953	41	1%	-13%
38 - B530 Ampthill Road	912	48	903	35	-1%	-27%
39 - Meadow Road	388	12	404	14	4%	17%
40 - Meadow Road	166	5	179	4	8%	-20%
41 - Loverose Way	0	0	0	0	0%	0%
42 - Fisherwood Road	290	42	303	42	4%	0%
43 - Hardwick Hill	812	51	958	54	18%	6%

44 - A6 The Branston Way	2140	100	2170	91	1%	-9%
45 - A6 The Branston Way	1747	86	1759	78	1%	-9%
46 - Woburn Road	1605	59	1614	57	1%	-3%
47 - Woburn Road	132	42	127	40	-4%	-5%
48 - A421 Bedford Southern Bypass	6182	557	6595	570	7%	2%
49 - The Causeway	867	64	864	58	0%	-9%
50 - Wilstead Road	40	31	27	17	-33%	-45%
51 - A6 Wilstead Bypass	1544	69	1520	66	-2%	-4%
52 - A6 Wilstead Bypass	2038	75	2016	75	-1%	0%
53 - A6 Wilstead Bypass	2571	133	2561	125	0%	-6%
54 - A6 Wilstead Bypass	2460	190	2425	173	-1%	-9%
55 - Wilstead Road	308	60	307	58	0%	-3%
56 - Elstow Interchange	238	38	227	37	-5%	-3%
57 - A5141	2416	93	2740	101	13%	9%
58 - B530 Ampthill Road	1146	52	1358	61	18%	17%
59 - A5141	2349	90	2690	98	15%	9%
60 - A5141 Ampthill Road	2276	50	2288	47	1%	-6%
61 - A5141 Ampthill Road	1736	47	1747	43	1%	-9%
62 - A5134 West End	1392	19	1318	18	-5%	-5%
63 - A421 Bedford Southern Bypass	5540	485	5537	481	0%	-1%
64 - A600 Harrowden Road	1770	47	1762	46	0%	-2%
65 - A600	1716	82	1703	79	-1%	-4%
66 - A600 The Highway	1639	60	1634	58	0%	-3%
67 - Wallis Way	344	58	320	55	-7%	-5%
68 - A603 Cardington Road	1477	80	1472	79	0%	-1%
69 - Bedford Road	191	18	193	17	1%	-6%
70 - Stannard Way	584	35	573	33	-2%	-6%
71 - A603 Cambridge Road	1650	88	1646	87	0%	-1%

72 - A421 Bedford Southern Bypass	3852	367	3885	376	1%	2%
73 - Water End	216	13	207	11	-4%	-15%
74 - A4280 St. Neots Road	2147	101	2150	100	0%	-1%
75 - Renhold Junction	1547	77	1553	77	0%	0%
76 - St. Neots Road	782	40	787	39	1%	-3%
77 - A421 Great Barford Bypass	2963	335	2995	351	1%	5%
78 - Black Cat Services	48	48	54	54	13%	13%
79 - A1 Great North Road	3985	433	4017	449	1%	4%
80 - A1 Great North Road	1853	257	1858	257	0%	0%
81 - Bedford Road	349	33	326	34	-7%	3%
82 - A421	3173	361	3440	370	8%	2%

Table 5-12 - 2023 Existing plus Peak Construction (Weekday PM Peak 17:00 to 18:00)

Link	2023 Existing		2023 Existing plus Peak Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1560	116	1555	113	0%	-3%
2 - Ridgmont Interchange	1635	103	1658	102	1%	-1%
3 - A421	2701	263	2823	273	5%	4%
4 - A421	2699	196	2744	196	2%	0%
5 - M1	9052	1295	9149	1308	1%	1%
6 - M1	7903	1256	8044	1259	2%	0%
7 - A421 Salford Road	1723	129	1832	134	6%	4%
8 - Salford Road	728	10	727	11	0%	10%
9 - A421	4908	360	5312	394	8%	9%
10 - Beancroft Road	603	11	641	10	6%	-9%
11 - Lower Shelton Road	62	9	62	10	0%	11%
12 - Beancroft Road	1107	47	1238	39	12%	-17%
13 - Beancroft Road	1446	46	1857	46	28%	0%

14 - Marston Moretaine	671	6	767	7	14%	17%
15 - Beancroft Road	787	7	910	7	16%	0%
16 - Marston Moretaine	822	36	1135	36	38%	0%
17 - A421	4871	362	5026	389	3%	7%
18 - Bedford Road	918	36	1276	41	39%	14%
19 - Bedford Road	696	17	925	33	33%	94%
20 - Green Lane	442	26	545	25	23%	-4%
21 - Stewartby Way	583	32	924	23	58%	-28%
22 - Broadmead Road	410	5	561	4	37%	-20%
23 - Broadmead Road	455	4	615	5	35%	25%
24 - Broadmead Road	330	2	614	4	86%	100%
25 - Stewartby Way	544	34	863	22	59%	-35%
26 - Stewartby Way	528	35	837	21	59%	-40%
27 - B530 Hazelwood Lane	1090	19	1233	16	13%	-16%
28 - B530 Ampthill Road	1016	34	1131	21	11%	-38%
29 - Bedford Road	230	5	246	7	7%	40%
30 - B530 Ampthill Road	1031	36	1138	24	10%	-33%
31 - Wootton	957	20	1341	87	40%	335%
32 - Fields Road	1057	14	1092	16	3%	14%
33 - Fields Road	1052	14	1087	15	3%	7%
34 - Burgoyne Avenue	326	12	334	14	2%	17%
35 - Woburn Road	1244	7	1530	70	23%	900%
36 - Manor Road	309	3	239	0	-23%	-100%
37 - Bedford Road	1024	34	1093	30	7%	-12%
38 - B530 Ampthill Road	961	36	1011	24	5%	-33%
39 - Meadow Road	317	10	373	11	18%	10%
40 - Meadow Road	123	5	138	5	12%	0%
41 - Loverose Way	0	0	0	0	0%	0%

42 - Fisherwood Road	232	23	245	21	6%	-9%
43 - Hardwick Hill	838	37	1091	48	30%	30%
44 - A6 The Branston Way	1976	40	1983	43	0%	8%
45 - A6 The Branston Way	1841	22	1852	26	1%	18%
46 - Woburn Road	1722	21	1747	23	1%	10%
47 - Woburn Road	113	26	115	25	2%	-4%
48 - A421 Bedford Southern Bypass	6264	351	6753	380	8%	8%
49 - The Causeway	774	35	805	34	4%	-3%
50 - Wilstead Road	27	17	17	8	-37%	-53%
51 - A6 Wilstead Bypass	1703	28	1708	28	0%	0%
52 - A6 Wilstead Bypass	2095	31	2099	33	0%	6%
53 - A6 Wilstead Bypass	2540	60	2550	60	0%	0%
54 - A6 Wilstead Bypass	2532	100	2548	96	1%	-4%
55 - Wilstead Road	221	38	216	35	-2%	-8%
56 - Elstow Interchange	215	11	201	12	-7%	9%
57 - A5141	2606	59	2998	78	15%	32%
58 - B530 Ampthill Road	1579	55	1909	70	21%	27%
59 - A5141	2552	58	2953	77	16%	33%
60 - A5141 Ampthill Road	2193	27	2231	29	2%	7%
61 - A5141 Ampthill Road	1587	25	1618	26	2%	4%
62 - A5134 West End	1374	13	1413	12	3%	-8%
63 - A421 Bedford Southern Bypass	5747	301	5796	314	1%	4%
64 - A600 Harrowden Road	1842	26	1842	24	0%	-8%
65 - A600	1867	41	1861	40	0%	-2%
66 - A600 The Highway	1612	24	1614	25	0%	4%
67 - Wallis Way	341	30	326	26	-4%	-13%
68 - A603 Cardington Road	1313	53	1314	52	0%	-2%
69 - Bedford Road	282	14	279	13	-1%	-7%

70 - Stannard Way	511	31	511	31	0%	0%
71 - A603 Cambridge Road	1503	57	1528	56	2%	-2%
72 - A421 Bedford Southern Bypass	3835	217	3863	236	1%	9%
73 - Water End	118	8	114	8	-3%	0%
74 - A4280 St. Neots Road	2330	55	2350	56	1%	2%
75 - Renhold Junction	1791	47	1799	47	0%	0%
76 - St. Neots Road	940	23	946	26	1%	13%
77 - A421 Great Barford Bypass	2779	193	2787	209	0%	8%
78 - Black Cat Services	23	23	22	22	-4%	-4%
79 - A1 Great North Road	4476	254	4421	267	-1%	5%
80 - A1 Great North Road	2042	155	2036	155	0%	0%
81 - Bedford Road	457	24	443	20	-3%	-17%
82 - A421	3147	226	3325	233	6%	3%

5.6.30. The following links require further assessment based on the screening protocol (Rule 1 and Rule 2):

- Link 16- Marston Moretaine;
- Link 18- Bedford Road;
- Link 19- Bedford Road;
- Link 20- Green Lane;
- Link 21- Stewartby Way;
- Link 22- Broadmead Road;
- Link 23- Broadmead Road;
- Link 24- Broadmead Road;
- Link 25- Stewartby Way;
- Link 26- Stewartby Way;
- Link 27- B530 Hazelwood Lane;
- Link 28- B530 Ampthill Road;
- Link 29- Bedford Road
- Link 30- B530 Ampthill Road;
- Link 31- Wootton (Woburn Road);
- Link 35- Woburn Road;
- Link 36- Manor Road;
- Link 38- B530 Ampthill Road;
- Link 43- Hardwick Hill;
- Link 50- Wilstead Road;
- Link 57- A5141; and
- Link 59- A5141.

5.6.31. Some links within the study area are expected to experience reductions in total traffic and/or HDV traffic flows. This is the result of the Paramics modelling software creating a dynamic model, whereby traffic is reassigned to the most convenient route if its chosen route becomes less convenient. For example, if additional traffic associated with construction is allocated to specific links via a routing strategy, some background traffic may be displaced to other links which provide a more convenient option in this situation.

5.6.32. As noted under 'assumptions', existing PROW which cross the Site will be permanently closed at the start of the construction phasing, as detailed in **Annex 3: Construction Access and Phasing** of the OCEMP (**Appendix 2.3: OCEMP (Volume 3)**).

5.6.33. The potential effects, following the magnitude of change and scale of effect criteria set out in **Table 5-6** and **Table 5-7**, are summarised below in **Table 5-13**. It should be noted that as per IEMA guidelines, the individual characteristics of each link has been considered when applying magnitude of change criteria. For example, where percentage changes in traffic flows may be deemed significant, the actual increase in traffic may be just a few vehicles, if the existing flows are low. This has been noted when defining the residual effects. In addition, in some cases, strategic links may not permit pedestrian/cycle activity. Where this is the case, this is noted and there is deemed to be no impact on Severance, NMU Delay, NMU Amenity and Fear and Intimidation.

Table 5-13 - Assessment of potential effects, embedded mitigation, residual effects and monitoring during Peak Construction Year

Sensitive Receptor	Potential Effects/Embedded Mitigation/Residual Effects and Monitoring	
Link 16-Marston Moretaine (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Medium magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the PM peak, an increase in total traffic flows of 38% (313 vehicle movements) is anticipated. No material changes in HDV flows or in flows across the 24-hour period or AM peak occur. Link 16 provides a single lane in each direction and is subject to the national speed limit. Due to the strategic nature of this link, no pedestrian and cycle facilities are provided. It is unlikely that any pedestrian activity would be present, although some cyclists may use this route. There are no immediate desire lines, apart from potentially for longer distance commuting between Marston Moretaine and Bedford or to settlements such as Wootton. An increase of 343 vehicle movements is not considered to change the character of the link, which is strategic in nature. This link has been identified as experiencing a material reduction in vehicle speeds because of peak construction, based on criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. On this link, there is predicted to be a reduction of 22mph in the PM peak in the southbound direction. No material changes are anticipated in the AM peak. The reduction in speed is significant

		and takes average speeds from 52mph, which is slightly below the posted speed limit (60mph) to 30mph. The magnitude of change is therefore classed as medium based on professional judgement as this reduction is only in one direction of travel, it is only for a maximum duration of two hours out of a 24 hour period and it is only temporary and therefore the magnitude is proposed to be revised to low. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Low magnitude of change; • Driver Delay: Low magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 16 is medium. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is high. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 18- Bedford Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the PM peak, an increase in total traffic flows of 39% (358 vehicles) is anticipated. No changes in HDV flows or in flows across the 24-hour period or AM peak above 30% occur. This is a strategic link with very few properties fronting it. A small number of residential properties are located at the south of the link, but these are separated by a wide grass verge, with an

		access lane beyond this providing vehicle and pedestrian access to the houses. To the north of this, a shared footway/cycleway extends along the east side of the link, from the residential access lane, north to a pedestrian crossing at Hoo Lane. The crossing provides dropped kerbs, tactile paving and a refuge island. This crossing provides an onwards connection under the A421 to the small village of Wootton Green. The footway along the link also connects into a commercial property at this point. The footway/cycleway does not continue north to connect with Green Lane at the northern end of the link, however it is concluded that the pedestrian and cycle facilities provided match the likely desire key desire lines and there is unlikely to be material volumes of pedestrians and cyclists along the link. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 18 and there is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The increase of 343 vehicle movements in the PM peak hour is not considered to change the character of the link, which is strategic in nature and provides pedestrian/cycle facilities along likely desire lines. No changes are therefore proposed to the magnitude of change in relation to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 18 is low. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
	Potential Effects	• Severance: High magnitude of change;

Link 19- Bedford Road (Negligible Sensitivity)		• Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 66% increase in HDV traffic is expected across the 24-hour period. A 33% increase in total traffic and a 39% increase in HDVs is expected in the AM peak hour, equating to 248 total vehicles and just 12 HDVs. A 33% increase in total traffic and a 94% increase in HDV traffic is expected in the PM peak hour. The increase in HDV traffic is 94% in the PM peak hour, defined as a high magnitude of change in relation to severance, however the actual increase in HDVs is just 16 vehicles. This is a strategic link providing a single lane in each direction and subject to a 50mph speed limit. This link provides no footways and there are no obvious pedestrian desire lines. Cycle lanes are not provided, although cyclists may be present as part of longer distance journeys. The actual magnitude of change in relation to severance when taking into account these characteristics and the context is considered to be low. This matches the magnitude of change based on the increase in total traffic flows in the AM and PM peak hours, which constitute a low magnitude of change. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 19 and there is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 19 is negligible. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Negligible Adverse (Not Significant)**;

		• Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 20-Green Lane (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in total traffic of 627 vehicles (an increase of 12%) and 53 HDVs (an increase of 10%) is anticipated across the 24-hour period. An increase in total traffic of 16% (106 vehicles) is anticipated in the AM peak hour and an increase in total traffic of 23% (+103 vehicles) in the PM peak hour. Kimberley Sixth Form College is located along this link, and its receptors (pedestrians and cyclists of school-age accessing the college) are therefore classed as 'high' sensitivity. A signalised crossing is already provided at Kimberley Sixth Form College, which is where the main pedestrian desire line is considered to be. Dropped kerbs and tactile paving are provided. This allows pedestrians to cross the carriageway 'on demand', without having to wait for a gap in traffic. As a result, the potential ability to cross the road and potential delay incurred is not directly correlated with the volume of traffic. Therefore, a negligible magnitude of change in relation to Severance and NMU Delay is considered appropriate, based on the criteria in Table 5-6. Continuous footways are provided between the College and Stewartby Village, along the desire line. The footways do not extend west of the College. Pedestrians and cyclists are required to utilise a level crossing across the existing Marston Vale Railway Line, which currently operates one service per hour. Collision records demonstrate that no collisions resulting in personal injury have been recorded at this level crossing. There are NMU facilities provided and the change in traffic flows does not change the character of the link. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 20 and there is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance**

		Criteria for all ES Technical Topics (Volume 3). The magnitude of change in relation to driver delay is therefore negligible. The expected changes in traffic are not considered to materially alter the character of the link and therefore no amendments are proposed to the magnitude of change in relation to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 20 is high. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Averse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 21- Stewartby Way (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across the 24-hour period, an increase in total traffic of 44% (2,453 vehicles) is expected. In the AM peak hour, an increase of 44% total traffic (267 vehicles) is expected. In the PM peak hour, an increase of 58% (341 vehicles) is expected. In all assessment periods, no material change in HDV traffic is expected. Link 21 is residential in character, subject to a 30mph speed limit and 'Slow' markings are provided on the carriageway. Direct driveway access is provided to a number of residential properties. A vehicle size restriction is in place, restricting access to HDVs over 7.5T, except for loading. The footways are generally set back from the carriageway and separated by landscaping, and a Zebra crossing is provided at the east end of the link, adjacent to the junction with The Crescent. This is considered to be suitable provision for pedestrians in the context of the character of the Link. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES**

		Technical Topics (Volume 3). The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The anticipated changes in traffic flows are not considered to change the character of the link, and therefore no amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 21 is medium. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 22-Broadmead Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A single lane is provided in each direction. The former Stewartby Brickworks lies to the west and Stewartby settlement to the east. A footway is provided on the east side of the carriageway where developments are located and where desire lines are. There is no real need to cross the link at present. A 37% increase in total traffic (+151 vehicles) is anticipated in the PM peak hour. A 30% reduction in HDVs (-28 HDVs) is expected across a 24-hour period. No changes requiring further assessment are expected in the AM peak hour. An increase of 37% total traffic represents a low magnitude of change in relation to severance. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible.

		There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The anticipated changes in traffic flows are not considered to change the character of the link, and therefore no amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 22 is low. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 23-Broadmead Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in total traffic of 31% (1,303 vehicle movements) is anticipated across a 24-hour period, with an increase in total traffic of 35% (160 vehicle movements) in the PM peak. No changes requiring further assessment are expected in relation to HDV traffic or in the AM peak hour. A single lane is provided in each direction. The former Stewartby Brickworks lies to the west and Stewartby settlement to the east. A footway is provided on the east side of the carriageway where developments are located and where desire lines are. There is no real need to cross the link at present. An informal crossing provided at north of link, at the roundabout with Kiln Drive. An increase of 31% and 35% total traffic represent a low magnitude of change in relation to severance. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible.

		There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The anticipated changes in traffic flows are not considered to change the character of the link, and therefore no amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 23 is low. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is Ne**gligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 24-Broadmead Road (Medium Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Low magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, an increase in total vehicle traffic flows of 68% (2,411 vehicles) and an increase in HDV flows of 77% (33 HDVs) is expected. In the AM peak hour, an increase in total vehicle traffic flows of 60% (205 vehicles) and an increase in HDV flows of 150% (3 HDVs) is expected. In the PM peak hour, an increase in total vehicle traffic flows of 86% (284 vehicles) and an increase in HDV flows of 100% (2 HDVs) is expected. A single lane is provided in each direction. The link is subject to a 30mph speed limit for approximately 250m north of the roundabout with Kiln Drive. Beyond this, a national speed limit restriction is in place. Footways are not provided on this link beyond the roundabout with Kiln Drive. The presence of pedestrians beyond this point is therefore highly unlikely at present. The Proposed Development

		will eventually connect to Broadmead Road via an emergency access with pedestrian connection, but this will not be open during the Peak Construction Year. At the roundabout, a pedestrian refuge island crossing is provided, allowing people to cross in stages. In relation to severance, the magnitude of change is classed as medium for total traffic and high for HDVs according to IEMA criteria, however, the increase in HDVs in numerical terms is Not Significant (just three HDVs in the AM peak and two in the PM peak). Given the character of the link, the increases in total traffic flows are not considered to be material, as pedestrians are unlikely to be present during construction. The magnitude of change is downgraded to low, to reflect the increase in total traffic, rather than the percentage increase in HDV traffic Due to the lack of pedestrian desire lines, the actual magnitude of change is concluded to be low, as there are no reasons for pedestrians to be present or wish to cross this link. No further mitigation is proposed. Cycle facilities are not provided; however cyclists may be present cycling on-carriageway. A level crossing is present at Broadmead Road. No collisions resulting in personal injury have been recorded at the level crossing, according to published data. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. In relation to driver delay, signalisation of the Broadmead Road/ Bedford Road junction is proposed for the duration of construction until access is constructed via the A421. With the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 24. As there is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic, the magnitude of change in relation to driver delay is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Medium magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Low magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 24 is medium. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is medium. The effect is **Moderate Adverse (Not Significant)**. The effect is Not Significant based on the character of the link and the likely usage by NMUs;

		• Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 25-Stewartby Way (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in total traffic flows of 38% (215 vehicle movements) and 59% (319 vehicle movements) are expected in the AM and PM peak hours respectively, and 41% (2,147 vehicle movements) across the 24-hour period. Reductions in HDV traffic flows are expected in all time periods. Link 25 is residential in character and subject to a 30mph speed limit. Direct driveway access is provided to a number of residential properties on the northern side of the link. A vehicle size restriction is in place, restricting access to HDVs over 7.5T, except for loading. A footway is provided on the northern side of the link and is set back from the carriageway and separated by landscaping. A Zebra crossing is provided at the west end of the link, adjacent to the junction with The Crescent. This is considered to be suitable provision in the context of the character of the Link. Increases of 38% and 59% total traffic represent a low magnitude of change in relation to severance. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.

	Residual Effects and Monitoring	The sensitivity of Link 25 is low. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 26-Stewartby Way (High Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, an increase in total vehicle traffic flows of 38% (2,020 vehicles) and a reduction in HDV flows of 37% (-193 HDVs) is expected. In the AM peak hour, an increase in total vehicle traffic flows of 34% (200 vehicles) and a reduction in HDV flows of 38% (-15 HDVs) is expected. In the PM peak hour, an increase in total vehicle traffic flows of 59% (309 vehicles) and a reduction in HDV flows of 35% (-14 HDVs) is expected. The western section of this link is residential in nature and subject to a 30mph speed limit. Residential properties front the link, with driveway access for properties on the northern side. The link extends east under the Midland Main Railway Line and a footway is provided on the north side of the link only. Beyond this, the speed limit increases to 60mph (national speed limit). The link is classed as high sensitivity as there is a pedestrian footway on the north side but an access to a PROW on the south side with no crossing point at this desire line. This is located approximately 300m east of the rail line. The level of demand by NMUs on this link is not known, however it is not unreasonable to assume that this is not a key, high demand, day-to-day desire line. Access to the PROW is most likely to be associated with leisure use, rather than a walking route used during peak hours for the purpose of commuting for example. Therefore, any impacts on NMU's are not predicted to be significant in relation severance. The change in traffic flows in each assessed time period constitutes a low magnitude of change in relation to severance.

		The installation of an informal crossing (dropped kerbs, tactile paving, signage) would improve connectivity to this PROW and this should be investigated as part of the wider aspirations of Bedford BC to improve pedestrian and cycling facilities in the vicinity of the Proposed Development. The existing and potential future demand by NMUs along this link should, be investigated as part of this, to understand the extent of improvements that may be required, or not required. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 26 is high. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Moderate Adverse (Not Significant)**. The effect is Significant given the character of the link and likely presence of NMUs; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 27- B530 Hazelwood Lane (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the AM peak hour, an increase in total vehicle traffic flows of 11% (109 vehicles) and a reduction in HDV flows of 12% (-4 HDVs) is expected.

		In the PM peak hour, an increase in total vehicle traffic flows of 13% (143 vehicles) and a reduction in HDV flows of 16% (-3 HDVs) is expected. The link has been classed as high sensitivity due to the presence of a bus stop on the east side of the carriageway, for which a pedestrian crossing is not provided. It should be noted however, that this bus stop is approximately 570m from the closest residence in Stewartby. Two routes serve this stop. Route 68 runs on an hourly basis, but also stops in Stewartby, significantly closer to residents, and therefore it is unlikely that users of this route will be attracted to this bus stop. Route FL5 only runs twice per day and does not call at this bus stop during the PM peak hour. It is therefore concluded that there is unlikely to be any pedestrian activity during the PM peak. The magnitude of change in relation to Severance, NMU delay, NMU amenity and Fear and Intimidation are therefore classed as negligible. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 27 is high. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 28- B530 Ampthill Road (High Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: High magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		The link has been classed as high sensitivity due to the presence of a bus stop on the east side of the carriageway, for which a pedestrian crossing is not provided. It should be noted however, that this bus stop is approximately 570m from the closest residence in Stewartby. Two routes serve this stop. Route 68 runs on an hourly basis, but also stops in Stewartby, significantly closer to residents, and therefore it is unlikely that users of this route will be attracted to this bus stop. Route FL5 only runs twice per day and does not call at this bus stop during the PM peak hour. It is therefore concluded that there is unlikely to be any pedestrian activity during the PM peak. There is a reduction in HDV traffic along this link in the AM peak hour from 44 HDVs to 30 HDVs (-32%), and in the PM peak hour from 34 HDV movements to 21 HDV movements (-38%), which are beneficial. An increase in total traffic of 11% is expected in the PM peak, which is just over the threshold required for further assessment, but numerically, this increase is just 115 vehicles across the hour. The increase in light vehicles is not considered to be material in the context of the link characteristics. The reduction in HDV traffic, although breaching the thresholds requiring further assessment (beneficial impact) is unlikely to represent a material change, again given the characteristics of the link. Given the anticipated change in traffic flows and the character of the link, the magnitude of change in relation to Severance, NMU delay, NMU amenity and Fear and Intimidation are therefore classed as negligible, based on the increase in light vehicle traffic in the PM Peak hour. There is a material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. Average speeds in the PM peak reduce from 53mph to 32mph (-21mph) in a single direction for a single hour not classed as significant due to the temporary nature. The magnitude of change in relation to driver delay is therefore low as across the day this does not occur. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Negligible magnitude of change; • Driver Delay: Low magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.

	Residual Effects and Monitoring	The sensitivity of Link 28 is high. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 29- Bedford Road (Negligible Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Low magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 33% increase in HDV traffic (+1 HDV) is expected in the AM Peak and a 40% increase in HDV traffic (+2 HDVs), Link 29 Bedford Road extends from B530 Ampthill Road to the village of Houghton Conquest. It is a rural road with no pedestrian or cycle facilities, but no pedestrian desire lines within a reasonable walking distance. It is subject to the national speed limit for the majority of the link, reducing to 40mph on approach to Houghton Conquest. Footways are provided once the link meets Houghton Conquest. A 5.2mph reduction in average vehicle speeds is anticipated in the PM Peak. This exceeds the thresholds included at **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** and reduces speeds from just under 36mph to just under 31mph. The magnitude of change is considered to be low, based on the change in speeds. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 29 is negligible. All residual effects are direct, temporary and medium-term.

		• Severance: The magnitude of change, following mitigation, is low. The effect is **Negligible Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is low. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 30- B530 Ampthill Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. No material increases in total traffic flow, requiring further assessment, are anticipated on this link. Reductions in HDV movements are anticipated in the AM peak hour (-32%), PM peak hour (-33%) and across a 24-hour period (-34%). This equates to 14 HDVs in the AM peak and 12 in the PM peak. Link 30 is characterised as a rural, distributor road, providing a single lane in each direction. A 40mph gateway feature is in place approximately 280m south of the roundabout with Meadow Road at the northern end of the link. To the south of this, the national speed limit is in place. A very short section of shared footway/cycleway is provided on the east side of the link; however this only extends south for a short distance to Thickthorn Lane. Beyond this, cyclists are instructed to rejoin the carriageway, and no footways are provided. In relation to driver delay, although there is a reduction in HDV traffic, indicating a beneficial impact, there is a small increase in total traffic, albeit this is not material enough to warrant further assessment based on the screening thresholds. The effects are considered to be beneficial in relation to severance, NMU delay, NMU amenity, fear and intimidation and accidents and safety. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in

		relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 30 is low. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 31- Wootton – Woburn Road (Medium Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: High magnitude of change; • Fear and Intimidation: Medium magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Link 31 is a medium sensitivity link but is anticipated to experience a material increase in traffic, including in HDVs, during the Peak Construction Year. An increase of 4,223 total vehicle movements (+42%) and an increase of 974 HDV movements (+225%) is expected across the 24-hour period. An increase of 351 total vehicle movements (+34%) is expected in the AM peak and 384 (+40%) in the PM peak. An increase from 33 to 79 HDV movements (+139%) is expected in the AM Peak and an increase from 20 to 87 HDV movements (+335%) in the PM Peak. A footway is provided on the east side of the carriageway south from Fields Road to an existing commercial property. There is a PROW access just south of this commercial property, but no footway provision. It is important to note that there is no desire line to cross to the west side of the carriageway and therefore low magnitude of change in relation to severance. There is also unlikely to be material levels of pedestrian demand on this link. As part of the Proposed Development, a new footway

		will be constructed along the east side of this link, where current provision is missing, although this may not be in place at the point of the Peak Construction Year. In this context, given the proposed embedded mitigation, desire lines and character of the link, the magnitude of change in relation to severance is reduced to low. The magnitude of change in relation to NMU Amenity and Fear & intimidation has been adjusted to reflect the very limited potential for NMU's on this link based on observations during Site visits and the lack of continuous desire lines, cyclists may be present on the carriageway. The magnitude of change in relation to NMU Delay is negligible, as hourly flows in the AM and PM peak hours fall below 1,400 two-way vehicle movements. With the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 31. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Medium magnitude of change; • Fear and Intimidation: Medium magnitude of change; and • Accidents and Safety: Negligible magnitude of change/
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 31 is medium. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is medium. The effect is **Moderate Adverse (Significant)**; and

		• Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 35- Woburn Road (Low Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Low magnitude of change; • NMU Delay: Medium magnitude of change; • NMU Amenity: High magnitude of change; • Fear and Intimidation: High magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase of 982 HDV movements (+414%) is expected across the 24-hour period. An increase of 48 HDV movements (+320%) is expected across the AM peak hour. An increase of 63 HDV movements (+900%) is expected across the PM peak hour Significant increases in HDV traffic are anticipated during the Peak Construction Year. There are no real pedestrian facilities and only a small section of footway extends from the Fields Road roundabout north for approximately 85m and then stops. No further footways are provided. During the Peak Construction Year, due to the lack of desire lines and reasons to cross this link, severance is downgraded to a low magnitude of change. In relation to NMU Delay, the increases in HDV flows are over 100% and this could have a material impact on pedestrians and cyclists present. Given the lack of pedestrian facilities and lack of clear desire lines, pedestrians are unlikely to experience delay, as they are unlikely to be present. Cyclists may experience some delay, if present on the link, associated with the increase in vehicle activity and vehicles slowing at the junctions at either end. In relation to NMU Amenity, the increases in HDV traffic flows significantly exceed 100%. As described previously, pedestrian activity is not anticipated during the Peak Construction Year due to a lack of desire lines. Cyclists may be present on the link and may be impacted by the increase in HDV movements. There is a minor change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** in the AM Peak in the southbound direction of travel because of peak construction traffic. A 5.2mph reduction in speed is expected and this slightly exceeds the 5mph threshold. No material change is anticipated in the PM peak. The magnitude of change in relation to driver delay is therefore low. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in HDV traffic flows and the character of the link is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Low magnitude of change; • Driver Delay: Low magnitude of change; • NMU Delay: Medium magnitude of change;

		• NMU Amenity: High magnitude of change; • Fear and Intimidation: High magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 35 is low. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is medium. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 36- Manor Road (High Sensitivity)	**Potential Effects**	During construction, it has been assumed that Manor Road will be closed off to through traffic during the Peak Construction Year for this assessment purpose only. This may only be a short period of time but this assessment is a cautious worst case. As a result there are reductions in traffic on Manor Road but this will potentially only be for a limited and temporary period of time. • Severance: N/A; • Driver Delay: N/A; • NMU Delay: N/A; • NMU Amenity: N/A; • Fear and Intimidation: N/A; and • Accidents and Safety: N/A.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	• Severance: N/A; • Driver Delay: N/A; • NMU Delay: N/A; • NMU Amenity: N/A; • Fear and Intimidation: N/A; and • Accidents and Safety: N/A.
Link 38- B530 Ampthill Road (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		A reduction in HDV traffic of 30% (-183 HDVs) is expected across the 24-hour period. A reduction in HDV traffic of 33% (-12 HDVs) is expected in the PM peak hour. No material change in traffic flows is expected in the AM peak. At the north of the link, a pedestrian refuge island crossing is provided at the roundabout with Kiln Road. A shared footway/cycleway is provided along the west side of the carriageway which extends south under the Midland Main Railway Line. Where it passes under the rail line, the footway/cycleway is separated from the carriageway with guard railing. To the south of the rail line, a footway is also provided on the east side of the link, set back from the road and separated by landscaping. Two further pedestrian island crossings are provided along the link. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 38 is medium. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 43- Hardwick Hill (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and

		• Accidents and Safety: Negligible magnitude of change. An increase of 30% in total traffic flows (+253 vehicle movements) and 30% in HDV flows (+11 HDVs) is anticipated in the PM peak. No changes above 30% are expected across the 24-hour period or in the AM peak hour. Link 43 extends from the Interchange Retail Park to the north to Manor Road at the south. It is characterised as a rural distributor road, and the majority is subject to the national speed limit. Pedestrian and cycle facilities are not provided, although cyclists may be present on-carriageway. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 43 is low. All residual effects are direct temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 50-Wilstead Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		A 32% reduction in HDV traffic (-98 HDVs) is anticipated across the 24-hour period. A 33% reduction in total traffic (-13 vehicles) and a 45% reduction in HDV traffic (14 HDVs) is expected in the AM peak hour. A 37% reduction in total traffic (-10 vehicles) and a 53% reduction in HDV traffic (-9 HDVs) is expected in the PM peak hour. The link is characterised as a local access road, providing access at the south to Wixams Retirement Village. A Bus Gate prevents general traffic travelling north beyond this. A continuous footway is provided along the east side of the link, extending north to the A6. The footway then becomes grade-separated from the carriageway and continues under the roundabout junction. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. As reductions in traffic are expected, the effects are considered to be beneficial.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 50 is low. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 57-A5141 (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and

		• Accidents and Safety: Negligible magnitude of change. There is expected to be a 32% increase in HDVs (+19 HDVs) in the PM peak hour. Link 57 is part of a strategic A-road route, and its character reflects this. The footway/cycleway is completely segregated from carriageway (strategic route) and a signalised crossing is provided at the end of the link. In relation to severance, NMU Delay, NMU Amenity and Fear and Intimidation, there is likely to be little to no impact of this change in HDV traffic due to the presence of a signalised crossing and the segregated nature of the NMU facilities. Traffic flows are over 1,400 vehicles per hour (both in the 2023 Existing and with construction traffic) but the provision of a signalised crossing means NMU's are less impacted by traffic flows compared with informal crossing provision. The magnitude of change in relation to NMU Delay is therefore low. This is the lowest classification that can be applied for a link with traffic flows over 1,400 vehicles per hour. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 57 is medium. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 59-A5141	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change;

(Medium Sensitivity)		• NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. There is expected to be a 33% increase in HDVs in the PM peak hour, equating to 19 additional HDV movements. Therefore, there will be a low magnitude of impact in relation to severance. All other changes in traffic flows fall below 30%. Link 59 is strategic in nature. It is a dual carriageway, and the shared footway/cycleway is entirely segregated from the carriageway. There is no opportunity for pedestrians/cyclists to cross the link apart from at the signalised crossing. Traffic flows exceed 1,400 vehicles per hour in the AM and PM peak and therefore professional judgement has been applied to classifying the magnitude of change in relation to NMU Delay. Given the presence of the signalised crossing and the fact that NMUs cannot cross this link at any other locations, the magnitude of change is low. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 59 is medium. All residual effects are direct, temporary and short-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.

SCENARIO 2A 2023 EXISTING PLUS AVERAGE CONSTRUCTION

5.6.34. As described previously, full details of the construction methodology for the Primary Phase Construction are included in Section 12 of **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.35. As described previously, A detailed review of PIC data has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. Where no existing collision issue (that is the result of the highway layout or other infrastructure) has been identified and where professional judgement concludes that no material change in traffic is likely to occur (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be negligible. Where there is no existing collision issue but there is a material change in traffic (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be low.

5.6.36. As described previously, existing PROW which cross the Site will be permanently closed at the start of construction.

5.6.37. A detailed journey time assessment has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. A summary is provided below.

5.6.38. The analysis demonstrates that the introduction of construction traffic is predicted to result in no material impact on journey times along key routes through the modelled road network around the Site.

5.6.39. Subsequently, further assessment of the change in average vehicle speeds along each link have been reviewed to identify within the overall routes, where specific delay to drivers may be experienced. As described at **Appendix 5.2: Link Sensitivity Review (Volume 3)**, links with a reduction in average vehicle speed of 5mph or more during the assessed AM and PM peak hours, an interpeak hour of 11:00-12:00 and a night-time hour of 21:00-22:00, have been identified. Where the change in speed is below 5pmh, the magnitude of change is categorised as negligible. Where the change in speed is over 5mph, professional judgement is applied. This takes into account the 2023 Existing traffic speeds on the link, the posted speed limit, the character of the link, and the severity of the change in speed.

5.6.40. For example, on a link with a posted speed limit of 50mph, with average speeds of 50mph, a 5mph reduction as a result of average construction traffic is not considered to represent a material change to the character of the link, and therefore the magnitude of change would be classed as low. If the reduction in speed was greater than this, for example 10mph, then professional judgement would again be applied and it is likely that this would constitute a medium magnitude of change.

5.6.41. As described previously, it is important to note that there is no established definition of ‘congestion’ and driver delay in IEMA guidelines and the application of professional judgement is required.

5.6.42. **Table 5-14 – Table 5-16** below summarise the impact of Scenario 2a traffic on the 2023 Existing traffic flows. 18-hour AAWT traffic flows, used to assess the magnitude of change in relation to fear and intimidation, are included at **Appendix 5.3: 18 Hour AAWT Flows (Volume 3).**

Table 5-14 - 2023 Existing plus Average Construction (24-hour AADT)

Link	2023 Existing		2023 Existing plus Average Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	17134	1997	17033	1962	-1%	-2%
2 - Ridgmont Interchange	16865	1662	16838	1648	0%	-1%
3 - A421	31109	4348	31333	4423	1%	2%
4 - A421	33331	3463	33502	3445	1%	-1%
5 - M1	114107	20928	114177	21009	0%	0%
6 - M1	102199	20112	102570	20176	0%	0%
7 - A421 Salford Road	19687	2289	20084	2354	2%	3%
8 - Salford Road	4613	208	4637	207	1%	0%
9 - A421	54404	6427	55331	6497	2%	1%
10 - Beancroft Road	5880	198	5845	190	-1%	-4%
11 - Lower Shelton Road	953	155	939	148	-1%	-5%
12 - Beancroft Road	11164	869	10954	786	-2%	-10%
13 - Beancroft Road	15062	871	14791	860	-2%	-1%
14 - Marston Moretaine	5937	149	5907	146	-1%	-2%
15 - Beancroft Road	8247	143	8351	139	1%	-3%
16 - Marston Moretaine	8299	636	7688	662	-7%	4%
17 - A421	54556	6560	54203	6466	-1%	-1%
18 - Bedford Road	9382	629	10363	736	10%	17%
19 - Bedford Road	7326	393	8498	669	16%	70%
20 - Green Lane	4902	425	4924	468	0%	10%
21 - Stewartby Way	5550	432	7252	401	31%	-7%
22 - Broadmead Road	3826	94	4608	72	20%	-23%
23 - Broadmead Road	4221	81	5231	74	24%	-9%

24 - Broadmead Road	3532	43	5868	72	66%	67%
25 - Stewartby Way	5268	465	6656	349	26%	-25%
26 - Stewartby Way	5324	521	6583	335	24%	-36%
27 - B530 Hazelwood Lane	11423	335	11720	321	3%	-4%
28 - B530 Ampthill Road	11170	546	10382	342	-7%	-37%
29 - Bedford Road	2505	69	2536	71	1%	3%
30 - B530 Ampthill Road	11784	571	10810	370	-8%	-35%
31 - Wootton	10150	433	13205	1105	30%	155%
32 - Fields Road	11040	337	11051	331	0%	-2%
33 - Fields Road	10984	328	11042	325	1%	-1%
34 - Burgoyne Avenue	3377	255	3396	251	1%	-2%
35 - Woburn Road	13027	237	15710	906	21%	282%
36 - Manor Road	2983	52	**558**	0	-81%	-100%
37 - Bedford Road	11689	593	9890	486	-15%	-18%
38 - B530 Ampthill Road	11142	608	9477	424	-15%	-30%
39 - Meadow Road	3996	166	4081	179	2%	8%
40 - Meadow Road	1613	72	1625	71	1%	-1%
41 - Loverose Way	0	0	0	0	0%	0%
42 - Fisherwood Road	3149	495	3051	497	-3%	0%
43 - Hardwick Hill	9930	662	**10524**	**661**	6%	0%
44 - A6 The Branston Way	24394	1083	24474	1084	0%	0%
45 - A6 The Branston Way	21646	811	21724	840	0%	4%
46 - Woburn Road	16205	575	16186	571	0%	-1%
47 - Woburn Road	2136	527	1977	506	-7%	-4%
48 - A421 Bedford Southern Bypass	68056	6628	70286	6752	3%	2%
49 - The Causeway	8757	627	8648	632	-1%	1%
50 - Wilstead Road	469	310	370	213	-21%	-31%
51 - A6 Wilstead Bypass	18254	688	18225	695	0%	1%

52 - A6 Wilstead Bypass	23616	784	23561	784	0%	0%
53 - A6 Wilstead Bypass	28597	1290	28452	1284	-1%	0%
54 - A6 Wilstead Bypass	28818	1956	28537	1817	-1%	-7%
55 - Wilstead Road	2337	549	2175	416	-7%	-24%
56 - Elstow Interchange	3338	392	3272	365	-2%	-7%
57 - A5141	32014	1231	33862	1299	6%	6%
58 - B530 Ampthill Road	22122	845	23538	896	6%	6%
59 - A5141	31765	1194	33593	1263	6%	6%
60 - A5141 Ampthill Road	29873	581	29909	596	0%	3%
61 - A5141 Ampthill Road	23501	507	23583	510	0%	1%
62 - A5134 West End	15683	242	15666	237	0%	-2%
63 - A421 Bedford Southern Bypass	60237	5996	59803	5794	-1%	-3%
64 - A600 Harrowden Road	18647	521	18608	505	0%	-3%
65 - A600	18431	833	18346	800	0%	-4%
66 - A600 The Highway	17178	609	17101	581	0%	-5%
67 - Wallis Way	3662	599	3433	574	-6%	-4%
68 - A603 Cardington Road	15275	1075	14942	795	-2%	-26%
69 - Bedford Road	2738	165	2740	170	0%	3%
70 - Stannard Way	3513	428	3440	393	-2%	-8%
71 - A603 Cambridge Road	17272	1082	17171	1031	-1%	-5%
72 - A421 Bedford Southern Bypass	42627	4488	42745	4531	0%	1%
73 - Water End	1841	196	1790	193	-3%	-2%
74 - A4280 St. Neots Road	23916	1082	23848	1043	0%	-4%
75 - Renhold Junction	16664	818	16525	797	-1%	-3%
76 - St. Neots Road	8421	453	8351	454	-1%	0%
77 - A421 Great Barford Bypass	35459	4164	35668	4237	1%	2%
78 - Black Cat Services	722	706	708	692	-2%	-2%

79 - A1 Great North Road	54156	6427	54559	6598	1%	3%
80 - A1 Great North Road	27389	4267	27620	4307	1%	1%
81 - Bedford Road	4376	432	4275	401	-2%	-7%
82 - A421	35963	4035	36544	4059	2%	1%

Table 5-15 - 2023 Existing plus Average Construction (Weekday AM Peak 08:00 to 09:00)

Link	2023 Existing		2023 Existing plus Average Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1525	178	1549	179	2%	1%
2 - Ridgmont Interchange	1357	141	1396	141	3%	0%
3 - A421	2533	350	2602	356	3%	2%
4 - A421	2687	286	2795	284	4%	-1%
5 - M1	8557	1562	8591	1570	0%	1%
6 - M1	7744	1525	7870	1534	2%	1%
7 - A421 Salford Road	1868	206	1979	211	6%	2%
8 - Salford Road	469	17	485	17	3%	0%
9 - A421	4768	571	4927	572	3%	0%
10 - Beancroft Road	586	12	585	12	0%	0%
11 - Lower Shelton Road	95	9	97	11	2%	22%
12 - Beancroft Road	983	58	1088	54	11%	-7%
13 - Beancroft Road	1478	73	1525	66	3%	-10%
14 - Marston Moretaine	648	12	648	11	0%	-8%
15 - Beancroft Road	781	11	813	11	4%	0%
16 - Marston Moretaine	860	51	842	49	-2%	-4%
17 - A421	4842	561	4877	551	1%	-2%
18 - Bedford Road	870	50	946	54	9%	8%
19 - Bedford Road	745	31	869	47	17%	52%

20 - Green Lane	645	32	628	29	-3%	9%
21 - Stewartby Way	611	36	749	26	23%	-28%
22 - Broadmead Road	409	5	464	4	13%	-20%
23 - Broadmead Road	459	4	532	4	16%	-0%
24 - Broadmead Road	340	2	545	3	60%	50%
25 - Stewartby Way	571	38	662	25	16%	-34%
26 - Stewartby Way	580	40	659	22	14%	-45%
27 - B530 Hazelwood Lane	1011	33	1042	28	3%	-15%
28 - B530 Ampthill Road	1023	44	939	29	-8%	-34%
29 - Bedford Road	215	3	216	3	0%	0%
30 - B530 Ampthill Road	1052	44	959	29	-9%	-34%
31 - Wootton	1047	33	1280	68	22%	106%
32 - Fields Road	1014	24	1016	23	0%	-4%
33 - Fields Road	1006	24	1013	23	1%	-4%
34 - Burgoyne Avenue	348	19	358	19	3%	0%
35 - Woburn Road	1230	15	1433	50	17%	233%
36 - Manor Road	290	5	86	0	-70%	-100%
37 - Bedford Road	943	47	812	40	-14%	-15%
38 - B530 Ampthill Road	912	48	769	35	-16%	-27%
39 - Meadow Road	388	12	381	14	-2%	17%
40 - Meadow Road	166	5	159	4	-4%	-20%
41 - Loverose Way	0	0	0	0	0%	0%
42 - Fisherwood Road	290	42	287	42	-1%	0%
43 - Hardwick Hill	812	51	880	49	8%	-4%
44 - A6 The Branston Way	2140	100	2179	97	2%	-3%
45 - A6 The Branston Way	1747	86	1767	85	1%	-1%
46 - Woburn Road	1605	59	1605	58	0%	-2%
47 - Woburn Road	132	42	127	41	-4%	-2%

48 - A421 Bedford Southern Bypass	6182	557	6492	561	5%	1%
49 - The Causeway	867	64	846	60	-2%	-6%
50 - Wilstead Road	40	31	26	16	-35%	-48%
51 - A6 Wilstead Bypass	1544	69	1525	64	-1%	-7%
52 - A6 Wilstead Bypass	2038	75	2023	73	-1%	-3%
53 - A6 Wilstead Bypass	2571	133	2545	126	-1%	-5%
54 - A6 Wilstead Bypass	2460	190	2418	176	-2%	-7%
55 - Wilstead Road	308	60	304	60	-1%	0%
56 - Elstow Interchange	238	38	231	38	-3%	0%
57 - A5141	2416	93	2647	92	10%	-1%
58 - B530 Ampthill Road	1146	52	1275	56	11%	8%
59 - A5141	2349	90	2594	90	10%	0%
60 - A5141 Ampthill Road	2276	50	2298	45	1%	-10%
61 - A5141 Ampthill Road	1736	47	1747	43	1%	-9%
62 - A5134 West End	1392	19	1309	17	-6%	-11%
63 - A421 Bedford Southern Bypass	5540	485	5493	482	-1%	-1%
64 - A600 Harrowden Road	1770	47	1767	49	0%	4%
65 - A600	1716	82	1704	82	-1%	0%
66 - A600 The Highway	1639	60	1630	57	-1%	-5%
67 - Wallis Way	344	58	323	57	-6%	-2%
68 - A603 Cardington Road	1477	80	1475	79	0%	-1%
69 - Bedford Road	191	18	195	17	2%	-6%
70 - Stannard Way	584	35	577	33	-1%	-6%
71 - A603 Cambridge Road	1650	88	1637	88	-1%	0%
72 - A421 Bedford Southern Bypass	3852	367	3840	367	0%	0%
73 - Water End	216	13	208	12	-4%	-8%
74 - A4280 St. Neots Road	2147	101	2151	101	0%	0%

75 - Renhold Junction	1547	77	1541	76	0%	-1%
76 - St. Neots Road	782	40	780	39	0%	-3%
77 - A421 Great Barford Bypass	2963	335	2959	340	0%	1%
78 - Black Cat Services	48	48	55	55	15%	15%
79 - A1 Great North Road	3985	433	3991	439	0%	1%
80 - A1 Great North Road	1853	257	1858	259	0%	1%
81 - Bedford Road	349	33	323	33	-7%	0%
82 - A421	3173	361	3326	367	5%	2%

Table 5-16 - 2023 Existing plus Average Construction (Weekday PM Peak 17:00 to 18:00)

Link	2023 Existing		2023 Existing plus Average Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1560	116	1558	110	0%	-5%
2 - Ridgmont Interchange	1635	103	1617	98	-1%	-5%
3 - A421	2701	263	2782	267	3%	2%
4 - A421	2699	196	2696	197	0%	1%
5 - M1	9052	1295	9096	1304	0%	1%
6 - M1	7903	1256	7962	1263	1%	1%
7 - A421 Salford Road	1723	129	1742	137	1%	6%
8 - Salford Road	728	10	731	12	0%	20%
9 - A421	4908	360	4990	374	2%	4%
10 - Beancroft Road	603	11	609	13	1%	18%
11 - Lower Shelton Road	62	9	62	9	0%	0%
12 - Beancroft Road	1107	47	1095	39	-1%	-17%
13 - Beancroft Road	1446	46	1462	45	1%	-2%
14 - Marston Moretaine	671	6	670	5	0%	-17%
15 - Beancroft Road	787	7	806	8	2%	14%

16 - Marston Moretaine	822	36	800	38	-3%	6%
17 - A421	4871	362	4784	372	-2%	3%
18 - Bedford Road	918	36	1050	42	14%	17%
19 - Bedford Road	696	17	821	35	18%	106%
20 - Green Lane	442	26	421	27	-5%	4%
21 - Stewartby Way	583	32	764	25	31%	-22%
22 - Broadmead Road	410	5	501	3	22%	-40%
23 - Broadmead Road	455	4	564	3	24%	-25%
24 - Broadmead Road	330	2	599	4	82%	100%
25 - Stewartby Way	544	34	701	24	29%	-29%
26 - Stewartby Way	528	35	673	21	27%	-40%
27 - B530 Hazelwood Lane	1090	19	1120	17	3%	-11%
28 - B530 Ampthill Road	1016	34	940	20	-7%	-41%
29 - Bedford Road	230	5	234	6	2%	20%
30 - B530 Ampthill Road	1031	36	945	23	-8%	-36%
31 - Wootton	957	20	1260	64	32%	220%
32 - Fields Road	1057	14	1068	16	1%	14%
33 - Fields Road	1052	14	1066	16	1%	14%
34 - Burgoyne Avenue	326	12	331	13	2%	8%
35 - Woburn Road	1244	7	1512	50	22%	614%
36 - Manor Road	309	3	62	0	-80%	-100%
37 - Bedford Road	1024	34	866	28	-15%	-18%
38 - B530 Ampthill Road	961	36	824	24	-14%	-33%
39 - Meadow Road	317	10	335	11	6%	10%
40 - Meadow Road	123	5	128	4	4%	-20%
41 - Loverose Way	0	0	0	0	0%	0%
42 - Fisherwood Road	232	23	237	24	2%	4%
43 - Hardwick Hill	838	37	899	40	7%	8%

44 - A6 The Branston Way	1976	40	1971	42	0%	15%
45 - A6 The Branston Way	1841	22	1848	27	0%	23%
46 - Woburn Road	1722	21	1730	23	0%	10%
47 - Woburn Road	113	26	115	27	2%	4%
48 - A421 Bedford Southern Bypass	6264	351	6461	372	3%	6%
49 - The Causeway	774	35	781	36	1%	3%
50 - Wilstead Road	27	17	17	8	-37%	-53%
51 - A6 Wilstead Bypass	1703	28	1699	28	0%	0%
52 - A6 Wilstead Bypass	2095	31	2091	32	0%	3%
53 - A6 Wilstead Bypass	2540	60	2537	60	0%	0%
54 - A6 Wilstead Bypass	2532	100	2535	100	0%	0%
55 - Wilstead Road	221	38	222	40	0%	5%
56 - Elstow Interchange	215	11	221	14	3%	27%
57 - A5141	2606	59	2831	75	9%	27%
58 - B530 Ampthill Road	1579	55	1723	65	9%	18%
59 - A5141	2552	58	2787	74	9%	28%
60 - A5141 Ampthill Road	2193	27	2214	31	1%	15%
61 - A5141 Ampthill Road	1587	25	1597	28	1%	12%
62 - A5134 West End	1374	13	1391	13	1%	-0%
63 - A421 Bedford Southern Bypass	5747	301	5681	304	-1%	1%
64 - A600 Harrowden Road	1842	26	1846	24	0%	-8%
65 - A600	1867	41	1855	41	-1%	0%
66 - A600 The Highway	1612	24	1603	25	-1%	4%
67 - Wallis Way	341	30	329	29	-4%	-3%
68 - A603 Cardington Road	1313	53	1309	49	0%	-8%
69 - Bedford Road	282	14	279	13	-1%	-7%
70 - Stannard Way	511	31	510	31	0%	-0%

71 - A603 Cambridge Road	1503	57	1499	59	0%	4%
72 - A421 Bedford Southern Bypass	3835	217	3789	221	-1%	2%
73 - Water End	118	8	113	8	-4%	0%
74 - A4280 St. Neots Road	2330	55	2331	54	0%	-2%
75 - Renhold Junction	1791	47	1788	46	0%	-2%
76 - St. Neots Road	940	23	938	23	0%	0%
77 - A421 Great Barford Bypass	2779	193	2738	198	-1%	3%
78 - Black Cat Services	23	23	24	24	4%	4%
79 - A1 Great North Road	4476	254	4420	261	-1%	3%
80 - A1 Great North Road	2042	155	2036	154	0%	-1%
81 - Bedford Road	457	24	444	22	-3%	-8%
82 - A421	3147	226	3228	233	3%	3%

5.6.43. The following links require further assessment based on the screening protocol (Rule 1 and Rule 2):

- Link 19- Bedford Road;
- Link 20- Green Lane;
- Link 21- Stewartby Way;
- Link 22- Broadmead Road;
- Link 24- Broadmead Road;
- Link 25- Stewartby Way;
- Link 26- Stewartby Way;
- Link 27- Hazelwood Lane;
- Link 28- B530 Ampthill Road;
- Link 30- B530 Ampthill Road;
- Link 31- Wootton – Woburn Road;
- Link 33- Fields Road;
- Link 35- Woburn Road;
- Link 36- Manor Road;
- Link 38- B530 Ampthill Road;
- Link 50- Wilstead Road; and
- Link 60- A5141 Ampthill Road.

5.6.44. Some links within the study area are expected to experience reductions in total traffic and/or HDV traffic flows. This is the result of the Paramics modelling software creating a dynamic model, whereby traffic is reassigned to the most convenient route if its chosen route becomes less convenient. For example, if additional traffic associated with construction is allocated to specific links via a routing strategy, some background traffic may be displaced to other links which provide a more convenient option in this situation.

5.6.45. As described previously, existing PROW which cross the Site will be permanently closed at the start of the construction phasing, as detailed in **Annex 3: Construction Access and Phasing** of the OCEMP (**Appendix 2.3: OCEMP (Volume 3)**).

5.6.46. The potential effects, following the magnitude of change and scale of effect criteria set out in **Table 5-6** and **Table 5-7,** are summarised below in **Table 5-17.** It should be noted that as per IEMA guidelines, the individual characteristics of each link has been considered when applying magnitude of change criteria. For example, where percentage changes in traffic flows may be deemed significant, the actual increase in traffic may be just a few vehicles, if the existing flows are low. This has been noted when defining the residual effects. In addition, in some cases, strategic links may not permit pedestrian/cycle activity. Where this is the case, this is noted and there is deemed to be no impact on Severance, NMU Delay, NMU Amenity and Fear and Intimidation.

Table 5-17 - Assessment of potential effects, embedded mitigation, residual effects and monitoring during Scenario 2a

Sensitive Receptor	Potential Effects/Embedded Mitigation/Residual Effects and Monitoring	
Link 19- Bedford Road (Negligible Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in HDV traffic of 70% (+276 HDVs) is expected across 24-hours. An increase in HDV traffic of 52% (+16 HDVs) and 106% (+18 HDVs) is expected in the AM and PM peak hours respectively. This is a strategic link providing a single lane in each direction and subject to a 50mph speed limit. This link provides no footways and there are no obvious pedestrian desire lines. Cycle lanes are not provided, although cyclists may be present as part of longer distance journeys. In relation to severance, a percentage increase in HDV traffic of 106% represents a high magnitude of change. In reality, this actually equates to just 18 HDV movements across the hour. Given the sensitivity of receptors, the characteristics of the link as a strategic route and the lack of pedestrian and cycle facilities, the magnitude of change in relation to severance when taking these aspects into account is considered to be negligible. The character of the link is not altered. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 19. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** and therefore the magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.

		The revised magnitude of change for each effect are summarised below: • Severance: Negligible magnitude of change • Driver Delay: Negligible magnitude of change • NMU Delay: Negligible magnitude of change • NMU Amenity: Negligible magnitude of change • Fear and Intimidation: Negligible magnitude of change • Accidents and Safety: Negligible magnitude of change
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 19 is negligible. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 20-Green Lane (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase of 43 HDVs (+10%) is anticipated across the 24-hour period. No other changes in traffic flows exceed 10%. Kimberley Sixth Form College is located along this link, and its receptors (pedestrians and cyclists of school-age accessing the college) are therefore classed as 'high' sensitivity. A signalised crossing is already provided at Kimberley Sixth Form College, which is where the main pedestrian desire line is considered to be. Dropped kerbs and tactile paving are provided. This allows pedestrians to cross the carriageway 'on demand', without having to wait for a gap in traffic. As a result, the potential ability to cross the road and potential delay incurred is not directly correlated with the volume of traffic. Therefore, a negligible magnitude of change in relation to Severance and NMU Delay is considered appropriate based on the criteria in Table 5-6. Continuous footways are provided

		between the College and Stewartby Village, along the desire line. The footways do not extend west of the College and there is no desire line beyond this. Pedestrians and cyclists are required to utilise a level crossing across the existing Marston Vale Railway Line, which currently operates one service per hour. Collision records demonstrate that no collisions resulting in personal injury have been recorded at this level crossing. There are NMU facilities provided and the change in traffic flows does not change the character of the link. There are also no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction and there is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** and therefore the magnitude of change in relation to driver delay is therefore negligible. The expected changes in traffic are not considered to materially alter the character of the link and therefore no amendments are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 20 is high. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 21-Stewartby (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in total traffic flow of 31% is expected across the 24-hour period. An increase of 31% in total traffic (+181 vehicles) is

		expected in the PM Peak hour. All other changes in traffic flows are below 30% Link 21 is residential in character, subject to a 30mph speed limit and 'Slow' markings are provided on the carriageway. Direct driveway access is provided to a number of residential properties. A vehicle size restriction is in place, restricting access to HDVs over 7.5T, except for loading. The footways are generally set back from the carriageway and separated by landscaping, and a Zebra crossing is provided at the east end of the link, adjacent to the junction with The Crescent. This is considered to be suitable provision for pedestrians in the context of the character of the Link. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The anticipated changes in traffic flows are not considered to change the character of the link, and therefore no amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 21 is medium. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 22-Broadmead Road (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		A 40% reduction in HDV traffic is expected in the PM peak hour. No changes requiring further assessment are expected in total traffic flows or across a 24-hour period or in the AM peak hour. The reductions in HDV traffic are considered to have a beneficial effect on the link. A single lane is provided in each direction. The former Stewartby Brickworks lies to the west and Stewartby settlement to the east. A footway is provided on the east side of the carriageway where developments are located and where desire lines are. There is no real need to cross the link at present. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The anticipated changes in traffic flows are not considered to change the character of the link, and therefore no amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 22 is low. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 24-Broadmead Road (Medium Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Low magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and. • Accidents and Safety: Negligible magnitude of change

		Across a 24-hour period, an increase in total vehicle traffic flows of 66% (2,336 vehicles) and an increase in HDV flows of 67% (29 HDVs) is expected. In the AM peak hour, an increase in total vehicle traffic flows of 60% (205 vehicles) and an increase in HDV flows of 50% (1 HDV) is expected. In the PM peak hour, an increase in total vehicle traffic flows of 82% (269 vehicles) and an increase in HDV flows of 100% (2 HDVs) is expected. A single lane is provided in each direction. The link is subject to a 30mph speed limit for approximately 250m north of the roundabout with Kiln Drive. Beyond this, a national speed limit restriction is in place. Footways are not provided on this link beyond the roundabout with Kiln Drive. The presence of pedestrians beyond this point is therefore highly unlikely at present. At the roundabout, a pedestrian refuge island crossing is provided, allowing people to cross in stages. In relation to severance, the magnitude of change is classed as medium for total traffic and high for HDVs according to IEMA criteria, however, the increase in HDVs in numerical terms is Not Significant (just 1 HDV in the AM peak and two in the PM peak). Given the character of the link, the increases in total traffic flows are also not considered to be material, however the magnitude of change is downgraded to medium, to reflect the change in total traffic. Due to the lack of pedestrian desire lines, the actual magnitude of change is concluded to be low, as there are no reasons for pedestrians to be present or wish to cross this link. The Proposed Development will eventually connect to Broadmead Road via an emergency access with pedestrian connection, but this will not be open during the Primary Phase Construction. No further mitigation is proposed. Cycle facilities are not provided; however, cyclists may be present cycling on-carriageway. A level crossing is present at Broadmead Road. No collisions resulting in personal injury have been recorded at the level crossing, according to published data. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 24. As there is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic, the magnitude of change in relation to driver delay is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Medium magnitude of change; • Driver Delay: Negligible magnitude of change;

		• NMU Delay: Negligible magnitude of change; • NMU Amenity: Low magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 24 is medium. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is medium. The effect is **Moderate Adverse (Not Significant)**. The effect is Not Significant based on the character of the link and likely presence of NMUs; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 25- Stewartby Way (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. No increases in total traffic flows above 30% are expected. A reduction in HDV traffic of 34% (-13 HDVs) is expected in the AM peak. This reduction in HDV traffic will have a beneficial impact. Link 25 is residential in character and subject to a 30mph speed limit. Direct driveway access is provided to a number of residential properties on the northern side of the link. A vehicle size restriction is in place, restricting access to HDVs over 7.5T, except for loading. A footway is provided on the northern side of the link and is set back from the carriageway and separated by landscaping. A Zebra crossing is provided at the west end of the link, adjacent to the junction with The Crescent. This is considered to be suitable provision in the context of the character of the Link. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in

		relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 25 is low. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 26- Stewartby Way (High Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and. • Accidents and Safety: Negligible magnitude of change Across a 24-hour period, an increase in total vehicle traffic flows of 24% (+1,259 vehicles) and a reduction in HDV flows of 36% (-186 HDVs) is expected. In the AM peak hour, an increase in total vehicle traffic flows of 14% (+79 vehicles) and a reduction in HDV flows of 45% (-22 HDVs) is expected. In the PM peak hour, an increase in total vehicle traffic flows of 27% (+145 vehicles) and a reduction in HDV flows of 40% (-14 HDVs) is expected. The western section of this link is residential in nature and subject to a 30mph speed limit. Residential properties front the link, with driveway access for properties on the northern side. The link extends east under the Midland Main Railway Line and a footway is provided on the north side of the link only. Beyond this, the speed limit increases to 60mph (national speed limit). The link is classed as high sensitivity as there is a pedestrian footway on the north side but an access to a PROW on the south side with no crossing point at this desire line. This is located approximately 300m east of the rail line. The level of demand by

		NMUs on this link is not known, however it is not unreasonable to assume that this is not a key, high demand, day-to-day desire line. Access to the PROW is most likely to be associated with leisure use, rather than a walking route used during peak hours for the purpose of commuting for example. The change in total traffic flows in each assessment period constitute a negligible magnitude of change in relation to severance, which is adverse, although the reduction in HDV traffic constitutes a low magnitude of change and would be classed as beneficial. For the purposes of assessment, the increase in total traffic has been used as this represents a cautious worst case. As a result, the magnitude of change in relation to Severance, NMU Delay and NMU Amenity is low. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 26 is high. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 27- B530 Hazelwood Lane (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		In the PM peak hour, a reduction in HDV flows of 15% (-5 HDVs) is expected. No other changes in traffic flows are over 10%. The reduction in HDV traffic will have a beneficial effect. The link has been classed as high sensitivity due to the presence of a bus stop on the east side of the carriageway, for which a pedestrian crossing is not provided. It should be noted however, that this bus stop is approximately 570m from the closest residence in Stewartby. Two routes serve this stop. Route 68 runs on an hourly basis, but also stops in Stewartby, significantly closer to residents, and therefore it is unlikely that users of this route will be attracted to this bus stop. Route FL5 only runs twice per day and does not call at this bus stop during the PM peak hour. It is therefore concluded that there is unlikely to be any pedestrian activity during the PM peak. The magnitude of change in relation to Severance, NMU delay, NMU amenity and Fear and Intimidation are therefore classed as negligible. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.
	Embedded Mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 27 is high. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
	Potential Effects	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change;

Link 28-B530 Ampthill Road (High Sensitivity)		• NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. The link has been classed as high sensitivity due to the presence of a bus stop on the east side of the carriageway, for which a pedestrian crossing is not provided. It should be noted however, that this bus stop is approximately 570m from the closest residence in Stewartby. Two routes serve this stop. Route 68 runs on an hourly basis, but also stops in Stewartby, significantly closer to residents, and therefore it is unlikely that users of this route will be attracted to this bus stop. Route FL5 only runs twice per day and does not call at this bus stop during the PM peak hour. It is therefore concluded that there is unlikely to be any pedestrian activity during the PM peak. There are reductions in HDV traffic in each assessment period of over 30%. Minor reductions in total traffic flows (below 10% are also expected). Across 24-hours, a reduction of 37% (-204 HDVs) is expected. In the AM and PM peak hours, reductions in HDV traffic of 34% (-15 HDVs) and 41% (-14 HDVs) are expected respectively, which are beneficial. The reduction in HDV traffic, although breaching the thresholds requiring further assessment (beneficial impact) is unlikely to represent a material change, again given the characteristics of the link. Given the anticipated change in traffic flows and the character of the link, the magnitude of change in relation to Severance, NMU delay, NMU amenity and Fear and Intimidation are therefore classed as negligible. The effects are classed as beneficial due to the reduction in heavy vehicle traffic. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 28 is high. All residual effects are direct, temporary and medium-term.

		• Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 30-B530 Ampthill Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. No material increases in total traffic flow, requiring further assessment, are anticipated on this link. A reduction in HDV movements of 35% (-199 HDVs) is anticipated across the 24-hour period. Reductions of 34% (-15 HDVs) and 36% (-13 HDVs) are expected in the AM and PM peak hours respectively. No material impacts are expected as a result of the change in traffic. Link 30 is characterised as a rural, distributor road, providing a single lane in each direction. A 40mph gateway feature is in place approximately 280m south of the roundabout with Meadow Road at the northern end of the link. To the south of this, the national speed limit is in place. A very short section of shared footway/cycleway is provided on the east side of the link; however, this only extends south for a short distance to Thickthorn Lane. Beyond this, cyclists are instructed to rejoin the carriageway, and no footways are provided. In relation to driver delay, although there is a reduction in HDV traffic, indicating a beneficial impact, there is a small increase in total traffic, albeit this is not material enough to warrant further assessment based on the screening thresholds. The effects are considered to be beneficial in relation to severance, NMU delay, NMU amenity, fear and intimidation and accidents and safety. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic.

		The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 30 is low. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 31- Wootton – Woburn Road (Medium Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: High magnitude of change; • Fear and Intimidation: Medium magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Link 31 is a medium sensitivity link and is anticipated to experience a material increase in traffic, including in HDVs. Across a 24-hour period, a 30% increase in total traffic and a 155% increase in HDV movements are expected. An increase of 106% in HDV movements (+35 HDVs) is expected in the AM peak. An increase of 32% total vehicle movements (+303 vehicles) and 220% HDV movements (+44 HDVs) is expected in the PM Peak. A footway is provided on the east side of the carriageway south from Fields Road to an existing commercial property. There is a PROW access just south of this commercial property, but no footway provision. It is important to note that there is no desire line to cross to the west side of the carriageway and therefore low magnitude of change in relation to severance.

		There is also unlikely to be material levels of pedestrian demand on this link. During construction this will not form a desire line. As part of the Proposed Development (when this will form part of a desire line), a new footway will be constructed along the east side of this link, where current provision is missing, although this may not be in place during Primary Phase Construction. In this context, given the proposed embedded mitigation, desire lines and character of the link, the magnitude of change in relation to severance is reduced to low. The magnitude of change in relation to NMU Amenity and Fear & intimidation has been adjusted to reflect the very limited potential for NMU's on this link based on observations during Site visits and the lack of continuous desire lines, cyclists may be present on the carriageway. The magnitude of change in relation to NMU Delay is negligible, as hourly flows in the AM and PM peak hours fall below 1,400 two-way vehicle movements. With the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 31. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Medium magnitude of change; • Fear and Intimidation: Medium magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 31 is medium. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**;

		• Fear and Intimidation: The magnitude of change, following mitigation, is medium. The effect is **Moderate Adverse (Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 33- Fields Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in HDV traffic of 14%, equating to just two HDVs is expected in the PM Peak hour. An additional two HDV movements are unlikely to have any discernible effect on the operation of this link, or on any NMU's present. For the purposes of assessment, the effects are categorised as adverse. Link 33 connects Wootton with Woburn Road, adjacent to the Site. The link passes over the A421 and is subject to a 30mph speed limit in the vicinity of Wootton, and 60mph beyond that. Within Wootton, shared footway/cycleways are provided on both sides of the carriageway and a signalised Toucan crossing is provided. Beyond Wootton, a footway continues on the north side of the link and extends round to connect with Woburn Road. Signage is not provided indicating whether this is a shared facility or footway only. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The expected increase in HDV traffic is not considered to be material in numerical terms and in the context of the link's characteristics. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 33 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**;

		• NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 35-Woburn Road (Low Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: High magnitude of change; • Fear and Intimidation: High magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase of 669 HDV movements (+282%) is expected across the 24-hour period. An increase of 35 HDV movements (+233%) is expected across the AM peak hour. An increase of 43 HDV movements (+614%) is expected across the PM peak hour Significant increases in HDV traffic are anticipated. There are no real pedestrian facilities and only a small section of footway extends from the Fields Road roundabout north for approximately 85m and then stops. No further footways are provided. During construction, due to the lack of desire lines and reasons to cross this link, severance is downgraded to a low magnitude of change. In relation to NMU Delay, the increases in HDV flows are over 100% and this could have a material impact on pedestrians and cyclists present. Given the lack of pedestrian facilities and lack of clear desire lines, pedestrians are unlikely to experience delay, as they are unlikely to be present. Cyclists may experience some delay, if present on the link, associated with the increase in vehicle activity and vehicles slowing at the junctions at either end. In relation to NMU Amenity, the increases in HDV traffic flows significantly exceed 100%. As described previously, pedestrian activity is not anticipated during construction due to a lack of desire lines. Cyclists may be present on the link and may be impacted by the increase in HDV movements. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.

		The revised magnitude of change for each effect are summarised below: • Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: High magnitude of change; • Fear and Intimidation: High magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 35 is low. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant**); • NMU Delay: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 36- Manor Road (High Sensitivity)	**Potential Effects**	During construction, it has been assumed that Manor Road will be closed off to through traffic during the Construction Year for this assessment purpose only. As a result there are reductions in traffic on Manor Road but this will potentially only be for a limited and temporary period of time. • Severance: N/A; • Driver Delay: N/A; • NMU Delay: N/A; • NMU Amenity: N/A; • Fear and Intimidation: N/A; and • Accidents and Safety: N/A.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	• Severance: N/A; • Driver Delay: N/A; • NMU Delay: N/A; • NMU Amenity: N/A; • Fear and Intimidation: N/A; and • Accidents and Safety: N/A.

Link 38-B530 Ampthill Road (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A reduction in HDV traffic of 30% (-184 HDVs) is expected across the 24-hour period. A reduction in HDV traffic of 33% (-12 HDVs) is expected in the PM peak hour. No material change in traffic flows is expected in the AM peak. At the north of the link, a pedestrian refuge island crossing is provided at the roundabout with Kiln Road. A shared footway/cycleway is provided along the west side of the carriageway which extends south under the Midland Main Railway Line. Where it passes under the rail line, the footway/cycleway is separated from the carriageway with guard railing. To the south of the rail line, a footway is also provided on the east side of the link, set back from the road and separated by landscaping. Two further pedestrian island crossings are provided along the link. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 38 is medium. All residual effects are direct, temporary and medium-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and

		• Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 50-Wilstead Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 31% reduction in HDV traffic (-97 HDVs) is anticipated across the 24-hour period. A 35% reduction in total traffic (-14 vehicles) and a 48% reduction in HDV traffic (-15 HDVs) is expected in the AM peak hour. A 37% reduction in total traffic (-10 vehicles) and a 53% reduction in HDV traffic (-9 HDVs) is expected in the PM peak hour. The link is characterised as a local access road, providing access at the south to Wixams Retirement Village. A Bus Gate prevents general traffic travelling north beyond this. A continuous footway is provided along the east side of the link, extending north to the A6. The footway then becomes grade-separated from the carriageway and continues under the roundabout junction. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of peak construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. As reductions in traffic are expected, the effects are considered to be beneficial. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 50 is **low**. All residual effects are **direct**, **temporary** and **medium-term**. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**;

		• NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 60-A5141 Ampthill Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A reduction in HDV traffic of 10% (-14 HDVs) is expected in the AM peak and an increase in HDV traffic of 15% (+4 HDVs) in the PM peak Link 60 is a short link, forming part of a strategic route through Bedford. Link 60 is a dual carriageway and signalised pedestrian crossings are provided at either end. Shared footway/cycleways are provided along both sides of the link. Traffic flows in the AM and PM peak hours exceed 1,400 two way vehicle movements and therefore the magnitude of change is based on professional judgement. As the change in total traffic and HDV movements is numerically very few, the magnitude of change is categorised as low (out of low, medium or high). There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The effects are beneficial rather than adverse, due to the reduction in HDV movements. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 60 is high. All residual effects are direct, temporary and medium term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is low. The effect is **Moderate Adverse (Not Significant)**.

		The effect is Not Significant given the very low numerical change in HDV traffic in the context of the character of the link; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.

SCENARIO 4 PRIMARY OPENING YEAR - REFERENCE CASE PLUS DEVELOPMENT

5.6.47. As described within **Appendix 5.1: Transport Assessment (Volume 3),** the proposed Primary Opening Year of the Proposed Development includes development of the Core Zone, along with associated infrastructure.

5.6.48. Full details of the trip generation and distribution associated with this assessment scenario are included in **Appendix 5.1: Transport Assessment (Volume 3).**

5.6.49. As described previously, A detailed review of PIC data has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. Where no existing collision issue (that is the result of the highway layout or other infrastructure) has been identified and where professional judgement concludes that no material change in traffic is likely to occur (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be negligible. Where there is no existing collision issue but there is a material change in traffic (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be low.

5.6.50. As described previously, existing PROW which cross the Site will be permanently closed at the start of construction. The closure of PROW can have a diversionary effect and increase pedestrian activity on surrounding links. As such, this has been taken into consideration when examining the potential impact during operation of the Proposed Development.

5.6.51. There are four PROW which cross the Site, as follows:

- Footpath A1;
- Footpath 8;
- Footpath 1; and
- Footpath 2.

5.6.52. These PROW do not permit cycling or horse riding and are for pedestrians only, and therefore the closure of these routes will not impact cyclists and horse riders.

5.6.53. During Site visits, the use of these PROW was observed. No pedestrians were recorded using these routes at these times. This reflects the fact that these are longer distance routes across open countryside and are unlikely to be used except for leisure purposes.

5.6.54. Upon closure of the PROW, there are no suitable alternative routes which provide continuous footways and as such it has been determined that there will be no change in pedestrian activity on nearby road links in the study area. Any demand for these PROW will have been removed during construction and therefore there will be no impacts during operation.

5.6.55. A detailed journey time assessment has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. A summary is provided below.

5.6.56. The analysis shows that the Proposed Development will not materially affect overall journey times on key routes through the modelled road network around the Site. Overall, the model shows that, there will be slight decreases in average speeds and slight increases in average delay, but these changes are not material and conditions on the wider road network will remain unchanged.

5.6.57. There are some variations that are worth noting, but the assessment carried out does not highlight any significant and consistent increase in journey time on any of the routes studied. The main variations worth noting are highlighted below:

- On the A6 Branston Way, journey times during PM peak periods of a weekday are expected to increase by 44 seconds along the southbound direction and 106 seconds along the northbound direction;
- On the B530 South of A421 route, journey times on an 'Average Weekday' are expected to increase by 13 seconds and 32 seconds across the day in the southbound and northbound direction respectively. For a 'Busy Saturday', journey times across a whole day is expected to increase by 19 seconds and 31 seconds in the southbound and northbound direction respectively;
- On the A6 South of A421 route, journey times on an 'Average Weekday' and 'Busy Saturday' are expected to reduce by 75 seconds and 6 seconds across the whole day in the northbound direction;
- On the A421 Black Cat Junction to Stewartby route, journey times are expected to increase by 26 seconds across a whole 'Average' Weekday in the northbound and southbound directions. For a 'Busy' Saturday, journey times are expected to increase by 62 seconds and 27 seconds across the whole day in the northbound and southbound direction respectively; and
- On the Wixams to Wootton via Manor Road route, journey times are expected to increase by 28 seconds and 58 seconds across an 'Average' Weekday in the eastbound and westbound direction respectively. For a 'Busy' Saturday journey times are expected to increase by 49 seconds and 76 seconds across the whole day in the eastbound and westbound directions respectively.

5.6.58. It should be noted that the analysis also demonstrates that a significant number of additional trips are completed through the modelled network and that the percentage of trips completed across the network does not change as a result of the Proposed Development. This suggests that the proposed infrastructure improvements supporting the Proposed Development deliver adequate capacity at an overall network level to accommodate the Proposed Development in the Primary Opening Year.

5.6.59. Notwithstanding the above, further assessment of the change in average vehicle speeds along each link have been reviewed to identify within the overall routes, where specific delay to drivers may be experienced. As described at **Appendix 5.2: Link Sensitivity Review (Volume 3)**, links with a reduction in average vehicle speed of 5mph or more during the assessed AM and PM peak hours, an interpeak hour of 11:00-12:00 and a night-time hour of 21:00-22:00, have been identified. Where the change in speed is below 5pmh, the magnitude of change is categorised as negligible. Where the change in speed is over 5mph, professional judgement is applied. This takes into account the 2023 Existing traffic speeds on the link, the posted speed limit, the character of the link, and the severity of the change in speed.

5.6.60. For example, on a link with a posted speed limit of 50mph, with average speeds of 50mph, a 5mph reduction as a result of operational traffic is not considered to represent a material change to the character of the link, and therefore the magnitude of change would be classed as low. If the reduction in speed was greater than this, for example 10mph, then professional judgement would again be applied and it is likely that this would constitute a medium magnitude of change.

5.6.61. As described previously, it is important to note that there is no established definition of 'congestion' and driver delay in IEMA guidelines and the application of professional judgement is required.

5.6.62. **Table 5-18 – 5-20** below present the impact of the Proposed Development in the Primary Opening Year. 18-hour AAWT traffic flows, used to assess the magnitude of change in relation to fear and intimidation, are included at **Appendix 5.3: AAWT Flows (Volume 3).**

Table 5-18 – Scenario 4 Primary Opening Year - Reference Case plus Development (24-hour AADT)

Link	Reference Case		Primary Opening Year - Reference Case plus Development		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	19059	2002	19208	2013	1%	1%
2 - Ridgmont Interchange	19716	1638	20167	1643	2%	0%
3 - A421	35225	4335	37791	4420	7%	2%
4 - A421	36198	3524	37412	3818	3%	8%
5 - M1	120575	21276	123250	21465	2%	1%
6 - M1	107219	20447	111335	20563	4%	1%
7 - A421 Salford Road	22554	2323	25119	2434	11%	5%
8 - Salford Road	5105	205	5131	207	1%	1%
9 - A421	60808	6392	66671	6865	10%	7%
10 - Beancroft Road	6346	201	6534	203	3%	1%

11 - Lower Shelton Road	953	155	959	148	1%	-5%
12 - Beancroft Road	12889	841	12056	775	-6%	-8%
13 - Beancroft Road	18203	915	15188	735	-17%	-20%
14 - Marston Moretaine	6498	152	6547	150	1%	-1%
15 - Beancroft Road	8418	145	8516	144	1%	-1%
16 - Marston Moretaine	10996	712	6708	509	-39%	-29%
17 - A421	58207	6340	68670	7026	18%	11%
18 - Bedford Road	13342	786	8965	582	-33%	-26%
19 - Bedford Road	10924	812	6889	621	-37%	-24%
20 - Green Lane	6123	413	6010	408	-2%	-1%
21 - Stewartby Way	8135	323	9150	328	12%	2%
22 - Broadmead Road	5139	69	5257	69	2%	0%
23 - Broadmead Road	5721	73	5887	72	3%	-1%
24 - Broadmead Road	6635	78	7716	84	16%	8%
25 - Stewartby Way	7459	262	8437	264	13%	1%
26 - Stewartby Way	7659	239	8584	247	12%	3%
27 - B530 Hazelwood Lane	16010	322	16801	322	5%	0%
28 - B530 Ampthill Road	16290	253	16554	251	2%	-1%
29 - Bedford Road	3657	71	3667	71	0%	0%
30 - B530 Ampthill Road	17692	283	17946	276	1%	-2%
31 - Wootton	15797	877	15243	996	-4%	14%
32 - Fields Road	15083	334	15271	351	1%	5%
33 - Fields Road	14984	324	15134	330	1%	2%
34 - Burgoyne Avenue	5516	253	5585	261	1%	3%
35 - Woburn Road	18684	684	17868	800	-4%	17%
36 - Manor Road	5658	165	6944	198	23%	20%
37 - Bedford Road	19824	546	19516	541	-2%	-1%
38 - B530 Ampthill Road	18858	379	18642	368	-1%	-3%

39 - Meadow Road	8902	170	8524	164	-4%	-4%
40 - Meadow Road	655	23	558	27	-15%	17%
41 - Loverose Way	3933	54	3784	54	-4%	0%
42 - Fisherwood Road	8243	517	8076	526	-2%	2%
43 - Hardwick Hill	15913	528	16332	526	3%	0%
44 - A6 The Branston Way	28489	1086	29233	1084	3%	0%
45 - A6 The Branston Way	25570	815	26330	832	3%	2%
46 - Woburn Road	16921	578	17410	582	3%	1%
47 - Woburn Road	2551	524	2606	530	2%	1%
48 - A421 Bedford Southern Bypass	75753	6695	81220	6756	7%	1%
49 - The Causeway	13679	640	13603	637	-1%	0%
50 - Wilstead Road	369	211	372	215	1%	2%
51 - A6 Wilstead Bypass	20912	681	21727	685	4%	1%
52 - A6 Wilstead Bypass	26360	773	27185	777	3%	1%
53 - A6 Wilstead Bypass	33290	1282	34762	1288	4%	0%
54 - A6 Wilstead Bypass	33461	1830	34919	1840	4%	1%
55 - Wilstead Road	2659	448	2659	445	0%	-1%
56 - Elstow Interchange	3415	396	3431	392	0%	-1%
57 - A5141	37735	1178	39282	1178	4%	0%
58 - B530 Ampthill Road	28033	771	29082	768	4%	0%
59 - A5141	37441	1145	38793	1140	4%	0%
60 - A5141 Ampthill Road	34972	586	35586	581	2%	-1%
61 - A5141 Ampthill Road	27717	510	28300	504	2%	-1%
62 - A5134 West End	16946	247	17260	246	2%	0%
63 - A421 Bedford Southern Bypass	69247	5804	73392	5903	6%	2%
64 - A600 Harrowden Road	19665	513	20123	518	2%	1%
65 - A600	21027	817	21571	820	3%	0%
66 - A600 The Highway	21195	589	21826	593	3%	1%

67 - Wallis Way	3574	599	3592	598	1%	0%
68 - A603 Cardington Road	15534	833	15651	842	1%	1%
69 - Bedford Road	2784	163	2817	168	1%	3%
70 - Stannard Way	3788	417	3833	412	1%	-1%
71 - A603 Cambridge Road	18584	1048	20031	1077	8%	3%
72 - A421 Bedford Southern Bypass	45344	4523	47220	4604	4%	2%
73 - Water End	1920	196	1940	198	1%	1%
74 - A4280 St. Neots Road	24592	1090	24850	1092	1%	0%
75 - Renhold Junction	17209	821	17385	822	1%	0%
76 - St. Neots Road	8771	463	8892	468	1%	1%
77 - A421 Great Barford Bypass	37164	4214	38862	4298	5%	2%
78 - Black Cat Services	728	712	730	713	0%	0%
79 - A1 Great North Road	55705	6619	57513	6745	3%	2%
80 - A1 Great North Road	27909	4410	28130	4447	1%	1%
81 - Bedford Road	4276	423	4303	422	1%	0%
82 - A421	39733	3974	43099	4346	8%	9%

Table 5-19 – Scenario 4 Primary Opening Year - Reference Case plus Development (Weekday AM Peak 08:00 to 09:00)

Link	Reference Case		Primary Opening Year - Reference Case plus Development		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1736	175	1727	171	-1%	-2%
2 - Ridgmont Interchange	1682	138	1683	128	0%	-7%
3 - A421	2946	353	3055	353	4%	0%
4 - A421	3016	284	3025	292	0%	3%
5 - M1	9191	1589	9321	1598	1%	1%
6 - M1	8316	1559	8501	1564	2%	0%

7 - A421 Salford Road	2178	211	2383	220	9%	4%
8 - Salford Road	522	16	523	19	0%	19%
9 - A421	5370	566	5708	597	6%	5%
10 - Beancroft Road	588	12	630	12	7%	0%
11 - Lower Shelton Road	96	10	96	9	0%	-10%
12 - Beancroft Road	1244	54	1281	49	3%	-9%
13 - Beancroft Road	1868	70	1634	58	-13%	-17%
14 - Marston Moretaine	595	10	699	12	17%	20%
15 - Beancroft Road	639	10	785	12	23%	20%
16 - Marston Moretaine	1300	56	825	38	-37%	-32%
17 - A421	5229	538	6101	586	17%	9%
18 - Bedford Road	1353	60	918	42	-32%	-30%
19 - Bedford Road	1039	59	657	42	-37%	-29%
20 - Green Lane	925	26	907	25	-2%	-4%
21 - Stewartby Way	914	21	999	21	9%	0%
22 - Broadmead Road	529	4	477	3	-10%	-25%
23 - Broadmead Road	580	4	547	3	-6%	-25%
24 - Broadmead Road	528	4	675	5	28%	25%
25 - Stewartby Way	807	20	870	19	8%	-5%
26 - Stewartby Way	830	15	873	16	5%	7%
27 - B530 Hazelwood Lane	1440	28	1491	26	4%	-7%
28 - B530 Ampthill Road	1501	22	1474	20	-2%	-9%
29 - Bedford Road	299	2	301	2	1%	0%
30 - B530 Ampthill Road	1583	21	1548	20	-2%	-5%
31 - Wootton	1466	62	1312	73	-11%	18%
32 - Fields Road	1447	26	1472	25	2%	-4%
33 - Fields Road	1425	24	1454	25	2%	4%
34 - Burgoyne Avenue	660	20	676	19	2%	-5%

35 - Woburn Road	1598	44	1372	57	-14%	30%
36 - Manor Road	522	14	544	15	4%	7%
37 - Bedford Road	1902	43	1836	43	-3%	0%
38 - B530 Ampthill Road	1812	29	1764	28	-3%	-3%
39 - Meadow Road	1092	14	916	15	-16%	7%
40 - Meadow Road	155	2	90	2	-42%	0%
41 - Loverose Way	527	5	359	4	-32%	-20%
42 - Fisherwood Road	837	44	528	35	-37%	-20%
43 - Hardwick Hill	1594	37	1627	40	2%	8%
44 - A6 The Branston Way	2301	91	2336	88	2%	-3%
45 - A6 The Branston Way	1998	80	2024	78	1%	-3%
46 - Woburn Road	1640	58	1682	56	3%	-3%
47 - Woburn Road	164	44	165	40	1%	-9%
48 - A421 Bedford Southern Bypass	6732	555	7065	558	5%	1%
49 - The Causeway	1252	59	984	50	-21%	-15%
50 - Wilstead Road	26	17	27	17	4%	0%
51 - A6 Wilstead Bypass	1737	65	1777	63	2%	-3%
52 - A6 Wilstead Bypass	2239	72	2282	70	2%	-3%
53 - A6 Wilstead Bypass	2669	122	2942	116	10%	-5%
54 - A6 Wilstead Bypass	2552	170	2821	165	11%	-3%
55 - Wilstead Road	337	61	347	60	3%	-2%
56 - Elstow Interchange	211	36	218	36	3%	0%
57 - A5141	2953	88	3090	83	5%	-6%
58 - B530 Ampthill Road	1933	46	1964	45	2%	-2%
59 - A5141	2919	87	3012	80	3%	-8%
60 - A5141 Ampthill Road	2751	49	2738	44	0%	-10%
61 - A5141 Ampthill Road	2114	47	2115	42	0%	-11%
62 - A5134 West End	1520	21	1525	21	0%	0%

63 - A421 Bedford Southern Bypass	6222	479	6428	476	3%	-1%
64 - A600 Harrowden Road	1808	47	1822	45	1%	-4%
65 - A600	1815	81	1820	80	0%	-1%
66 - A600 The Highway	1936	54	1944	55	0%	2%
67 - Wallis Way	324	57	321	57	-1%	0%
68 - A603 Cardington Road	1514	80	1517	83	0%	4%
69 - Bedford Road	200	16	198	16	-1%	0%
70 - Stannard Way	595	35	589	35	-1%	0%
71 - A603 Cambridge Road	1759	87	1839	90	5%	3%
72 - A421 Bedford Southern Bypass	4062	371	4147	369	2%	-1%
73 - Water End	217	13	219	13	1%	0%
74 - A4280 St. Neots Road	2206	104	2214	101	0%	-3%
75 - Renhold Junction	1593	78	1599	78	0%	0%
76 - St. Neots Road	820	42	822	42	0%	0%
77 - A421 Great Barford Bypass	3094	344	3174	342	3%	-1%
78 - Black Cat Services	53	53	53	53	0%	0%
79 - A1 Great North Road	4057	442	4137	444	2%	0%
80 - A1 Great North Road	1881	264	1885	266	0%	1%
81 - Bedford Road	326	36	326	35	0%	-3%
82 - A421	3562	359	3720	376	4%	5%

Table 5-20 – Scenario 4 Primary Opening Year - Reference Case plus Development (Weekday PM Peak 17:00 to 18:00)

Link	Reference Case		Primary Opening Year - Reference Case plus Development		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1759	116	1751	112	0%	-3%
2 - Ridgmont Interchange	1926	98	1997	100	4%	2%
3 - A421	3108	265	3131	268	1%	1%
4 - A421	2918	199	2962	214	2%	8%
5 - M1	9667	1315	9737	1324	1%	1%
6 - M1	8363	1276	8513	1280	2%	0%
7 - A421 Salford Road	1975	131	2163	135	10%	3%
8 - Salford Road	770	10	768	10	0%	0%
9 - A421	5452	366	5706	386	5%	5%
10 - Beancroft Road	650	13	657	11	1%	-15%
11 - Lower Shelton Road	64	11	63	10	-2%	-9%
12 - Beancroft Road	1320	42	1156	42	-12%	0%
13 - Beancroft Road	1770	42	1411	36	-20%	-14%
14 - Marston Moretaine	713	5	722	5	1%	0%
15 - Beancroft Road	803	7	805	6	0%	-14%
16 - Marston Moretaine	1114	34	649	26	-42%	-24%
17 - A421	5392	365	5828	391	8%	7%
18 - Bedford Road	1197	37	836	30	-30%	-19%
19 - Bedford Road	864	39	627	32	-27%	-18%
20 - Green Lane	593	19	492	19	-17%	0%
21 - Stewartby Way	814	17	879	18	8%	6%
22 - Broadmead Road	547	4	533	4	-3%	0%
23 - Broadmead Road	594	4	594	4	0%	0%

24 - Broadmead Road	520	3	719	6	38%	100%
25 - Stewartby Way	753	17	805	17	7%	0%
26 - Stewartby Way	760	14	787	15	4%	7%
27 - B530 Hazelwood Lane	1505	17	1523	18	1%	6%
28 - B530 Ampthill Road	1557	11	1458	12	-6%	9%
29 - Bedford Road	333	6	334	6	0%	0%
30 - B530 Ampthill Road	1640	15	1535	13	-6%	-13%
31 - Wootton	1274	42	1229	50	-4%	19%
32 - Fields Road	1413	15	1434	17	1%	13%
33 - Fields Road	1407	13	1429	15	2%	15%
34 - Burgoyne Avenue	545	12	550	13	1%	8%
35 - Woburn Road	1482	29	1293	35	-13%	21%
36 - Manor Road	534	12	446	11	-16%	-8%
37 - Bedford Road	1803	30	1793	32	-1%	7%
38 - B530 Ampthill Road	1717	18	1698	18	-1%	0%
39 - Meadow Road	790	9	732	7	-7%	-22%
40 - Meadow Road	57	1	60	1	5%	0%
41 - Loverose Way	351	4	267	4	-24%	0%
42 - Fisherwood Road	660	24	554	23	-16%	-4%
43 - Hardwick Hill	1375	29	1448	30	5%	3%
44 - A6 The Branston Way	2389	42	2351	40	-2%	-5%
45 - A6 The Branston Way	2195	26	2172	24	-1%	-8%
46 - Woburn Road	1775	22	1784	24	1%	9%
47 - Woburn Road	145	26	157	26	8%	0%
48 - A421 Bedford Southern Bypass	6971	367	7166	365	3%	-1%
49 - The Causeway	1177	33	1094	34	-7%	3%
50 - Wilstead Road	18	8	17	8	-6%	0%
51 - A6 Wilstead Bypass	1929	27	1959	27	2%	0%

52 - A6 Wilstead Bypass	2324	33	2356	31	1%	-6%
53 - A6 Wilstead Bypass	2899	59	3007	59	4%	0%
54 - A6 Wilstead Bypass	2860	99	2999	98	5%	-1%
55 - Wilstead Road	256	38	257	38	0%	0%
56 - Elstow Interchange	193	11	217	13	12%	18%
57 - A5141	3100	60	3207	60	3%	0%
58 - B530 Ampthill Road	2110	52	2196	51	4%	-2%
59 - A5141	3050	58	3139	58	3%	0%
60 - A5141 Ampthill Road	2638	29	2646	29	0%	0%
61 - A5141 Ampthill Road	1965	26	1986	26	1%	0%
62 - A5134 West End	1482	13	1495	13	1%	0%
63 - A421 Bedford Southern Bypass	6493	309	6588	312	1%	1%
64 - A600 Harrowden Road	1925	25	1942	26	1%	4%
65 - A600	2142	41	2152	41	0%	0%
66 - A600 The Highway	1958	25	1967	24	0%	-4%
67 - Wallis Way	336	30	338	29	1%	-3%
68 - A603 Cardington Road	1356	53	1359	52	0%	-2%
69 - Bedford Road	284	14	282	14	-1%	0%
70 - Stannard Way	538	32	535	31	-1%	-3%
71 - A603 Cambridge Road	1623	60	1665	60	3%	0%
72 - A421 Bedford Southern Bypass	4013	230	4090	232	2%	1%
73 - Water End	125	7	126	9	1%	29%
74 - A4280 St. Neots Road	2387	59	2397	58	0%	-2%
75 - Renhold Junction	1856	51	1860	51	0%	0%
76 - St. Neots Road	973	27	976	26	0%	-4%
77 - A421 Great Barford Bypass	2873	207	2937	210	2%	1%
78 - Black Cat Services	40	40	44	44	10%	10%
79 - A1 Great North Road	4492	262	4560	263	2%	0%

80 - A1 Great North Road	2070	164	2075	164	0%	0%
81 - Bedford Road	441	23	441	22	0%	-4%
82 - A421	3448	229	3491	245	1%	7%

5.6.63. The following links require further assessment based on the screening protocol (Rule 1 and Rule 2):

- Link 16- Marston Moretaine;
- Link 18- Bedford Road;
- Link 19- Bedford Road;
- Link 24- Broadmead Road;
- Link 26- Stewartby Way;
- Link 33- Fields Road;
- Link 35- Woburn Road;
- Link 36- Manor Road;
- Link 40- Meadow Road;
- Link 41- Loverose Way; and
- Link 42- Fisherwood Road.

5.6.64. Some links within the study area are expected to experience reductions in total traffic and/or HDV traffic flows. This is the result of the Paramics modelling software creating a dynamic model, whereby traffic is reassigned to the most convenient route if its chosen route becomes less convenient. For example, when additional traffic is generated by the Proposed Development and new highway infrastructure is installed, some background traffic may be displaced to other links which provide a more convenient option.

5.6.65. The potential effects, following the magnitude of change and scale of effect criteria set out in **Table 5-6** and **Table 5-7**, are summarised below in **Table 5-21**. It should be noted that as per IEMA guidelines, the individual characteristics of each link has been considered when applying magnitude of change criteria. For example, where percentage changes in traffic flows may be deemed significant, the actual increase in traffic may be just a few vehicles, if the existing flows are low. This has been noted when defining the residual effects. In addition, in some cases, strategic links may not permit pedestrian/cycle activity. Where this is the case, this is noted and there is deemed to be no impact on Severance, NMU Delay, NMU Amenity and Fear and Intimidation.

Table 5-21 - Assessment of potential effects, embedded mitigation, residual effects and monitoring during Primary Opening Year (Scenario 4)

Sensitive Receptor	Potential Effects/Embedded mitigation/Residual Effects and Monitoring	
Link 16- Marston Moretaine (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 39% reduction in total traffic movements (-4,288 vehicles) and a 29% reduction in HDV movements (-203 HDVs) is expected. In the AM peak hour, a 37% reduction in total traffic movements (-475 vehicles) and a 32% reduction in HDV movements (-18 HDVs) is expected. In the PM peak hour, a 42% reduction in total traffic movements (-465 vehicles) and a 24% reduction in HDV movements (-8 HDVs) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. Link 16 provides a single lane in each direction and is subject to the national speed limit. Due to the strategic nature of this link, no pedestrian and cycle facilities are provided. It is unlikely that any pedestrian activity would be present, although some cyclists may use this route. There are no immediate desire lines, apart from potentially for longer distance commuting between Marston Moretaine and Bedford or to settlements such as Wootton. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 16 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**;

		• Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 18- Bedford Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 33% reduction in total traffic movements (-4,377 vehicles) and a 26% reduction in HDV movements (-204 HDVs) is expected. In the AM peak hour, a 32% reduction in total traffic movements (-435 vehicles) and a 30% reduction in HDV movements (-18 HDVs) is expected. In the PM peak hour, a 30% reduction in total traffic movements (-361 vehicles) and a 19% reduction in HDV movements (-7 HDVs) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. This is a strategic link with very few properties fronting it. A small number of residential properties are located at the south of the link, but these are separated by a wide grass verge, with an access lane beyond this providing vehicle and pedestrian access to the houses. To the north of this, a shared footway/cycleway extends along the east side of the link, from the residential access lane, north to a pedestrian crossing at Hoo Lane. The crossing provides dropped kerbs, tactile paving and a refuge island. This crossing provides an onwards connection under the A421 to the small village of Wootton Green. The footway along the link also connects into a commercial property at this point. The footway/cycleway does not continue north to connect with Green Lane at the northern end of the link, however it is concluded that the pedestrian and cycle facilities provided match the likely desire key desire lines and there is unlikely to be material volumes of pedestrians and cyclists along the link. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 18. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic.

		The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 18 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 19- Bedford Road (Negligible Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 37% reduction in total traffic movements (-4,035 vehicles) and a 24% reduction in HDV movements (-191 HDVs) is expected. In the AM peak hour, a 37% reduction in total traffic movements (-382 vehicles) and a 29% reduction in HDV movements (-17 HDVs) is expected. In the PM peak hour, a 27% reduction in total traffic movements (-237 vehicles) and a 18% reduction in HDV movements (-7 HDVs) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. This is a strategic link providing a single lane in each direction and subject to a 50mph speed limit. This link provides no footways and there are no obvious pedestrian desire lines. Cycle lanes are not

		provided, although cyclists may be present as part of longer distance journeys. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 19 is negligible. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Negligible Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 24-Broadmead Road (Medium Sensitivity)	**Potential Effects**	• Severance: High magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Low magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Medium magnitude of change. Changes in traffic flows above 30% occur only in the PM peak. A 38% increase in total traffic flows (199 vehicles) and a 100% increase in HDV flows (3 HDVs) are expected in the PM peak hour. A single lane is provided in each direction. The link is subject to a 30mph speed limit for approximately 250m north of the roundabout with Kiln Drive. Beyond this, a national speed limit restriction is in place. The magnitude of change in relation to severance is high, based on the increase in HDV traffic. In reality, this equates to a numerical increase of just three HDVs. The magnitude of change is therefore re-categorised as low, based on the change in total traffic flows.

		A level crossing is present at Broadmead Road. No collisions resulting in personal injury have been recorded at the level crossing, according to published data. Footways are not provided on this link beyond the roundabout with Kiln Drive. Currently, the presence of pedestrians beyond this point is unlikely. It is not possible to quantify how many pedestrians may use this route in future, although it is considered unlikely to attract large volumes, given the lack of pedestrian facilities. As a result, the magnitude of change has been defined as medium in relation to accidents and safety, based on professional judgement. Cycle facilities are not provided; however cyclists may also be present cycling on-carriageway. In relation to driver delay, signalisation of the Broadmead Road/ Bedford Road junction will be provided as part of the Proposed Development. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. The revised magnitude of change for each effect are summarised below: • Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Low magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Medium magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 24 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is medium. The effect is **Moderate Adverse (Significant)**.
Link 26- Stewartby Way (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		A 12% increase in total traffic flow (+925 vehicle movements) is anticipated over 24-hour period, with no material impact in the AM and PM peak hours and no impact in relation to HDV traffic. The western section of this link is residential in nature and subject to a 30mph speed limit. Residential properties front the link, with driveway access for properties on the northern side. The link extends east under the Midland Main Railway Line and a footway is provided on the north side of the link only. Beyond this, the speed limit increases to 60mph (national speed limit). The link is classed as high sensitivity as there is a pedestrian footway on the north side but an access to a PROW on the south side with no crossing point at this desire line. This is located approximately 300m east of the rail line. The change in total traffic flows constitutes a negligible magnitude of change in relation to severance, which is adverse. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 26 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 33- Fields Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		An increase in HDV traffic of 15%, equating to just two HDVs is expected in the PM Peak hour. An additional two HDV movements are unlikely to have any discernible effect on the operation of this link, or on any NMU's present. For the purposes of assessment, the effects are categorised as adverse. Link 33 connects Wootton with Woburn Road, adjacent to the Site. The link passes over the A421 and is subject to a 30mph speed limit in the vicinity of Wootton, and 60mph beyond that. Within Wootton, shared footway/cycleways are provided on both sides of the carriageway and a signalised Toucan crossing is provided. Beyond Wootton, a footway continues on the north side of the link and extends round to connect with Woburn Road. Signage is not provided indicating whether this is a shared facility or footway only. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The expected increase in HDV traffic is not considered to be material in numerical terms and in the context of the link's characteristics. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 33 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Moderate Adverse (Not Significant**) due to small volumetric increase in traffic flows on this link; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 35- Woburn Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Medium magnitude of change.

		An increase in HDV traffic of 30%, equating to 13 HDVs is expected in the AM Peak hour. This represents a low magnitude of change in relation to severance, and based on the sensitivity of the Link, this does not result in a significant effect. No other changes in traffic flows exceed 30% There are no real pedestrian facilities. A small section of footway extends from the Fields Road roundabout north for approximately 85m and then stops. No further footways are provided. As the Proposed Development will form a new desire line from Bedford, this could encourage pedestrians to travel along this link, if they are not aware of the lack of ongoing pedestrian facilities and as such, may increase the chance of collisions if a suitable footway is not available. It should be noted however, that pedestrians travelling from Bedford would have to pass by Manor Road on the way to this link, and Manor Road will provide a pedestrian route into the Site, and this is more likely to capture desire lines. As such, the magnitude of change in relation to Accidents and Safety is downgraded to low, based on the expected desire line. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. Overall, given the change in traffic flows in the context of the link's characteristics, the following amendments are proposed to the magnitude of change assigned to each effect. • Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Low magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 35 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**.

Link 36- Manor Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. The Proposed Development results in an increase in total traffic of 23% across a 24-hour period, 4% in the AM peak and a reduction of 16% in the PM peak. This assessment has been based on the impact across the 24-hour period to be robust. As part of the Proposed Development (i.e. embedded mitigation), Manor Road between B530 Ampthill Road and the rail line, will be reconstructed. High quality pedestrian and cycle facilities will be provided, including signalised crossing points. The junction of Manor Road/B530 Ampthill Road will be signalised, and the function/character of the link will change to reflect the new vehicle and NMU traffic profiles, through the re-design of the road, which includes dualling. Further detail is provided in the **Appendix 5.1: Transport Assessment (Volume 3)**. There will therefore be a beneficial impact on this section of Manor Road as a result of the Proposed Development. To the west of the rail line, from Woburn Road, an off-road PROW is provided on the north side of Manor Road. This currently stops approximately 135m north of the rail line and requires pedestrians/cyclists to continue on-carriageway. The Network Rail Manor Road bridge proposals include the construction of a new footway on the west side of Manor Road, which will connect to this existing PROW. From the Manor Road bridge, the footway will connect with the active travel network included as part of the Proposed Development. It is therefore considered that the existing PROW provision, combined with the Network Rail proposals and the Proposed Development, is sufficient to accommodate pedestrians and cyclists. However, further clarification is sought regarding the design of the crossing between the PROW and the new footway, and further enhancement including the provision of a shared use footway/cycleway along Manor Road over the rail line is also recommended. With the above embedded mitigation and the Network Rail Manor Road bridge proposals, the impact of the Proposed Development is concluded to be beneficial in terms of severance, driver delay, NMU delay, NMU amenity, fear and intimidation and accidents and safety. Therefore, no additional mitigation is considered to be required, above what is embedded mitigation as part of the Proposed Development. Due to the benefits resulting from the construction of the new footway, the magnitude of change for severance has been increased to low.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 36 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Moderate Beneficial (Significant)**;

		• Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 40- Meadow Road (Low Sensitivity)	**Potential Effects**	• Severance: low magnitude of change; • Driver Delay: negligible magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change. A 42% reduction in total traffic is anticipated in the AM peak (-65 vehicles). Other time periods are below the threshold for assessment based on the sensitivity of the link. Link 40 runs through the new Wixams settlement and is partly residential in nature and partly a route through construction activities. Where residences are located, footways are set back from the road and separated by landscaped verges. In future, this link will provide access to the eastern plaza of the Full Wixams Rail Station, which will be in place by the Primary Opening Year. Appropriate pedestrian and cycle provision will be included as part of the Wixams development. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 40 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and

		• Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 41- Loverose Way (Low Sensitivity)	**Potential Effects**	• Severance: low magnitude of change; • Driver Delay: negligible magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change. A 32% reduction in total traffic flow is expected in the AM peak. Reductions across a 24-hour period and in the PM peak hour are also expected, albeit below 30%. As a result, there is likely to be a beneficial impact of the proposals on this link. Loverose Way is currently a construction route, but by Primary Opening Year will provide residential access to the Wixams development. Appropriate pedestrian and cycle provision is proposed as part of that scheme and appropriate speed limit restrictions will be in place. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 41 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 42- Fisherwood Road (Medium Sensitivity)	**Potential Effects**	• Severance: low magnitude of change; • Driver Delay: high magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change. A 31% reduction in total traffic flows is anticipated in the AM Peak hour. Other time periods are below the threshold for further assessment based on the link sensitivity. As a result, there is likely to be a beneficial impact of the proposals on this link.

		Link 42 is a main traffic route through the Wixams development. It provides a single lane in each direction and is subject to a 30mph speed limit. There is no direct residential frontage on this link. Access to commercial units is provided and some units benefit from dedicated right-turn lane access. Wide shared use footway/cycleways are provided on both sides of the link. Where these cross commercial access points, the footway/cycleway is continued across the access, giving priority to NMUs, and signage is in place to inform drivers of their presence. A Zebra crossing is provided at the eastern end of the link and an informal pedestrian island crossing is provided at the western end. There is expected to be a material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. A reduction in speeds of 23mph is anticipated in the AM Peak hour for a single hour only in one direction, although the percentage change in traffic does not exceed the threshold requiring further assessment. Based on the material reduction in vehicle speeds the magnitude of change in relation to driver delay is therefore reduced to medium. Overall, given the above, the following amendments are proposed to the magnitude of change assigned to each effect. • Severance: low magnitude of change; • Driver Delay: medium magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 42 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.

SCENARIO 4A PRIMARY OPENING YEAR - REFERENCE CASE PLUS DEVELOPMENT PLUS CONSTRUCTION

5.6.66. As described within **Appendix 5.1: Transport Assessment (Volume 3)**, this sensitivity test scenario includes the Proposed Development, including infrastructure during the Primary Opening Year, plus demand associated with a midpoint between the Primary Opening Year and Future Year, as described within the **Appendix 5.1: Transport Assessment (Volume 3)**. This scenario also includes construction related activity associated with building of additional facilities in either the Core Zone, West Gateway Zone and/or Lake Zone.

5.6.67. Full details of the trip generation and distribution associated with this assessment scenario are included in **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.68. As described previously, A detailed review of PIC data has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. Where no existing collision issue (that is the result of the highway layout or other infrastructure) has been identified and where professional judgement concludes that no material change in traffic is likely to occur (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be negligible. Where there is no existing collision issue but there is a material change in traffic (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be low.

5.6.69. As described previously, existing PROW which cross the Site will be permanently closed at the start of construction. The closure of PROW can have a diversionary effect and increase pedestrian activity on surrounding links. As such, this has been taken into consideration when examining the potential impact during operation of the Proposed Development.

5.6.70. There are four PROW which cross the Site, as follows:

- Footpath A1;
- Footpath 8;
- Footpath 1; and
- Footpath 2.

5.6.71. These PROW do not permit cycling or horse riding and are for pedestrians only, and therefore the closure of these routes will not impact cyclists and horse riders.

5.6.72. During Site visits, the use of these PROW was observed. No pedestrians were recorded using these routes at these times. This reflects the fact that these are longer distance routes across open countryside and are unlikely to be used except for leisure purposes.

5.6.73. Upon closure of the PROW, there are no suitable alternative routes which provide continuous footways and as such it has been determined that there will be no change in pedestrian activity on nearby road links in the study area. Any demand for these PROW will have been removed during construction and therefore there will be no impacts during operation.

5.6.74. A detailed journey time assessment has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. The results demonstrate that there is no material change in overall journey times through the network in Scenario 4a.

5.6.75. Further assessment of the change in average vehicle speeds along each link have been reviewed to identify within the overall routes, where specific delay to drivers may be experienced. As described at **Appendix 5.2: Link Sensitivity Review (Volume 3)**, links with a reduction in average vehicle speed of 5mph or more during the assessed AM and PM peak hours, an interpeak hour of 11:00-12:00 and a night-time hour of 21:00-22:00, have been identified. Where the change in speed is below 5pmh, the magnitude of change is categorised as negligible. Where the change in speed is over 5mph, professional judgement is applied. This takes into account the 2023 Existing traffic speeds on the link, the posted speed limit, the character of the link, and the severity of the change in speed.

5.6.76. For example, on a link with a posted speed limit of 50mph, with average speeds of 50mph, a 5mph reduction as a result of operational traffic is not considered to represent a material change to the character of the link, and therefore the magnitude of change would be classed as low. If the reduction in speed was greater than this, for example 10mph, then professional judgement would again be applied, and it is likely that this would constitute a medium magnitude of change.

5.6.77. As described previously, it is important to note that there is no established definition of 'congestion' and driver delay in IEMA guidelines and the application of professional judgement is required.

5.6.78. **Table 5-22 – Table 5-24** present the impact of Scenario 4a.18-hour AAWT traffic flows, used to assess the magnitude of change in relation to fear and intimidation, are included at **Appendix 5.3: AAWT Flows (Volume 3).** Full details regarding the derivation of these flows are included within the **Appendix 5.1: Transport Assessment (Volume 3)**.

Table 5-22 – Scenario 4a Primary Opening Year - Reference Case plus Development plus Construction (24-hour AADT)

Link	Reference Case		Primary Opening Year - Reference Case plus Development plus Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	19059	2002	20093	2188	5%	9%
2 - Ridgmont Interchange	19716	1638	21007	1769	7%	8%
3 - A421	35225	4335	39744	4782	13%	10%
4 - A421	36198	3524	39260	4049	8%	15%
5 - M1	120575	21276	129109	23272	7%	9%
6 - M1	107219	20447	116135	22193	8%	9%
7 - A421 Salford Road	22554	2323	26462	2697	17%	16%
8 - Salford Road	5105	205	5279	225	3%	10%
9 - A421	60808	6392	70296	7473	16%	17%

10 - Beancroft Road	6346	201	6708	216	6%	7%
11 - Lower Shelton Road	953	155	1006	162	6%	5%
12 - Beancroft Road	12889	841	12557	816	-3%	-3%
13 - Beancroft Road	18203	915	15809	797	-13%	-13%
14 - Marston Moretaine	6498	152	6737	159	4%	5%
15 - Beancroft Road	8418	145	8775	153	4%	6%
16 - Marston Moretaine	10996	712	7023	549	-36%	-23%
17 - A421	58207	6340	72411	7612	24%	20%
18 - Bedford Road	13342	786	9237	627	-31%	-20%
19 - Bedford Road	10924	812	7016	659	-36%	-19%
20 - Green Lane	6123	413	6258	435	2%	5%
21 - Stewartby Way	8135	323	9411	351	16%	9%
22 - Broadmead Road	5139	69	5395	78	5%	13%
23 - Broadmead Road	5721	73	6025	81	5%	11%
24 - Broadmead Road	6635	78	7840	97	18%	24%
25 - Stewartby Way	7459	262	8708	287	17%	10%
26 - Stewartby Way	7659	239	8842	266	15%	11%
27 - B530 Hazelwood Lane	16010	322	17289	346	8%	7%
28 - B530 Ampthill Road	16290	253	17024	277	5%	9%
29 - Bedford Road	3657	71	3745	78	2%	10%
30 - B530 Ampthill Road	17692	283	18419	302	4%	7%
31 - Wootton	15797	877	15913	1095	1%	25%
32 - Fields Road	15083	334	15601	399	3%	19%
33 - Fields Road	14984	324	15416	378	3%	17%
34 - Burgoyne Avenue	5516	253	5653	288	2%	14%
35 - Woburn Road	18684	684	18250	898	-2%	31%
36 - Manor Road	**5658**	**165**	7776	218	37%	32%
37 - Bedford Road	19824	546	19915	579	0%	6%

38 - B530 Ampthill Road	18858	379	18941	398	0%	5%
39 - Meadow Road	8902	170	8637	179	-3%	5%
40 - Meadow Road	655	23	552	26	-16%	13%
41 - Loverose Way	3933	54	3880	62	-1%	15%
42 - Fisherwood Road	8243	517	8303	563	1%	9%
43 - Hardwick Hill	**15913**	**528**	16800	604	6%	14%
44 - A6 The Branston Way	28489	1086	30200	1193	6%	10%
45 - A6 The Branston Way	25570	815	27179	910	6%	12%
46 - Woburn Road	16921	578	18060	613	7%	6%
47 - Woburn Road	2551	524	2657	566	4%	8%
48 - A421 Bedford Southern Bypass	75753	6695	84798	7248	12%	8%
49 - The Causeway	13679	640	14014	694	2%	8%
50 - Wilstead Road	369	211	392	230	6%	9%
51 - A6 Wilstead Bypass	20912	681	22618	735	8%	8%
52 - A6 Wilstead Bypass	26360	773	28183	832	7%	8%
53 - A6 Wilstead Bypass	33290	1282	35937	1388	8%	8%
54 - A6 Wilstead Bypass	33461	1830	36101	1961	8%	7%
55 - Wilstead Road	2659	448	2696	455	1%	2%
56 - Elstow Interchange	3415	396	3571	421	5%	6%
57 - A5141	37735	1178	40421	1353	7%	15%
58 - B530 Ampthill Road	28033	771	29721	904	6%	17%
59 - A5141	37441	1145	40118	1313	7%	15%
60 - A5141 Ampthill Road	34972	586	36355	625	4%	7%
61 - A5141 Ampthill Road	27717	510	28905	545	4%	7%
62 - A5134 West End	16946	247	17729	273	5%	11%
63 - A421 Bedford Southern Bypass	69247	5804	76303	6343	10%	9%
64 - A600 Harrowden Road	19665	513	20476	576	4%	12%
65 - A600	21027	817	21949	887	4%	9%

66 - A600 The Highway	21195	589	22234	645	5%	10%
67 - Wallis Way	3574	599	3700	631	4%	5%
68 - A603 Cardington Road	15534	833	16157	922	4%	11%
69 - Bedford Road	2784	163	2976	176	7%	8%
70 - Stannard Way	3788	417	3963	459	5%	10%
71 - A603 Cambridge Road	18584	1048	20816	1176	12%	12%
72 - A421 Bedford Southern Bypass	45344	4523	49381	4963	9%	10%
73 - Water End	1920	196	2016	215	5%	10%
74 - A4280 St. Neots Road	24592	1090	26019	1158	6%	6%
75 - Renhold Junction	17209	821	18182	886	6%	8%
76 - St. Neots Road	8771	463	9401	503	7%	9%
77 - A421 Great Barford Bypass	37164	4214	40819	4624	10%	10%
78 - Black Cat Services	728	712	767	751	5%	5%
79 - A1 Great North Road	55705	6619	60619	7330	9%	11%
80 - A1 Great North Road	27909	4410	29678	4820	6%	9%
81 - Bedford Road	4276	423	4530	447	6%	6%
82 - A421	39733	3974	45297	4679	14%	18%

Table 5-23 – Scenario 4a Primary Opening Year - Reference Case plus Development plus Construction (AM Peak)

Link	Reference Case		Primary Opening Year - Reference Case plus Development plus Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1736	175	1733	178	0%	2%
2 - Ridgmont Interchange	1682	138	1673	131	-1%	-5%
3 - A421	2946	353	3083	355	5%	1%
4 - A421	3016	284	3026	286	0%	1%
5 - M1	9191	1589	9341	1597	2%	1%

6 - M1	8316	1559	8515	1565	2%	0%
7 - A421 Salford Road	2178	211	2398	227	10%	8%
8 - Salford Road	522	16	516	15	-1%	-6%
9 - A421	5370	566	5774	600	8%	6%
10 - Beancroft Road	588	12	625	11	6%	-8%
11 - Lower Shelton Road	96	10	96	9	0%	-10%
12 - Beancroft Road	1244	54	1301	47	5%	-13%
13 - Beancroft Road	1868	70	1625	56	-13%	-20%
14 - Marston Moretaine	595	10	692	11	16%	10%
15 - Beancroft Road	639	10	754	11	18%	10%
16 - Marston Moretaine	1300	56	835	37	-36%	-34%
17 - A421	5229	538	6225	582	19%	8%
18 - Bedford Road	1353	60	925	43	-32%	-28%
19 - Bedford Road	1039	59	665	43	-36%	-27%
20 - Green Lane	925	26	931	25	1%	-4%
21 - Stewartby Way	914	21	1034	23	13%	10%
22 - Broadmead Road	529	4	496	4	-6%	0%
23 - Broadmead Road	580	4	566	4	-2%	0%
24 - Broadmead Road	528	4	687	5	30%	25%
25 - Stewartby Way	807	20	905	21	12%	5%
26 - Stewartby Way	830	15	904	18	9%	20%
27 - B530 Hazelwood Lane	1440	28	1519	30	5%	7%
28 - B530 Ampthill Road	1501	22	1464	24	-2%	9%
29 - Bedford Road	299	2	309	3	3%	50%
30 - B530 Ampthill Road	1583	21	1558	25	-2%	19%
31 - Wootton	1466	62	1353	72	-8%	16%
32 - Fields Road	1447	26	1469	25	2%	-4%
33 - Fields Road	1425	24	1453	25	2%	4%

34 - Burgoyne Avenue	660	20	675	19	2%	-5%
35 - Woburn Road	1598	44	1287	53	-19%	20%
36 - Manor Road	522	14	577	14	11%	0%
37 - Bedford Road	1902	43	1846	45	-3%	5%
38 - B530 Ampthill Road	1812	29	1784	32	-2%	10%
39 - Meadow Road	1092	14	916	17	-16%	21%
40 - Meadow Road	155	2	89	1	-43%	-50%
41 - Loverose Way	527	5	364	6	-31%	20%
42 - Fisherwood Road	837	44	531	36	-37%	-18%
43 - Hardwick Hill	1594	37	1636	45	3%	22%
44 - A6 The Branston Way	2301	91	2350	81	2%	-11%
45 - A6 The Branston Way	1998	80	2022	69	1%	-14%
46 - Woburn Road	1640	58	1686	55	3%	-5%
47 - Woburn Road	164	44	167	42	2%	-5%
48 - A421 Bedford Southern Bypass	6732	555	7130	548	6%	-1%
49 - The Causeway	1252	59	999	51	-20%	-14%
50 - Wilstead Road	26	17	24	15	-8%	-12%
51 - A6 Wilstead Bypass	1737	65	1790	67	3%	3%
52 - A6 Wilstead Bypass	2239	72	2295	74	3%	3%
53 - A6 Wilstead Bypass	2669	122	2961	119	11%	-2%
54 - A6 Wilstead Bypass	2552	170	2825	164	11%	-4%
55 - Wilstead Road	337	61	343	61	2%	0%
56 - Elstow Interchange	211	36	217	37	3%	3%
57 - A5141	2953	88	3130	95	6%	8%
58 - B530 Ampthill Road	1933	46	1993	54	3%	17%
59 - A5141	2919	87	3051	91	5%	5%
60 - A5141 Ampthill Road	2751	49	2740	46	0%	-6%
61 - A5141 Ampthill Road	2114	47	2116	42	0%	-11%

62 - A5134 West End	1520	21	1532	19	1%	-10%
63 - A421 Bedford Southern Bypass	6222	479	6463	479	4%	0%
64 - A600 Harrowden Road	1808	47	1820	47	1%	0%
65 - A600	1815	81	1821	79	0%	-2%
66 - A600 The Highway	1936	54	1947	56	1%	4%
67 - Wallis Way	324	57	319	55	-2%	-4%
68 - A603 Cardington Road	1514	80	1517	84	0%	5%
69 - Bedford Road	200	16	197	17	-2%	6%
70 - Stannard Way	595	35	590	37	-1%	6%
71 - A603 Cambridge Road	1759	87	1851	89	5%	2%
72 - A421 Bedford Southern Bypass	4062	371	4171	371	3%	0%
73 - Water End	217	13	219	12	1%	-8%
74 - A4280 St. Neots Road	2206	104	2210	101	0%	-3%
75 - Renhold Junction	1593	78	1602	79	1%	1%
76 - St. Neots Road	820	42	825	40	1%	-5%
77 - A421 Great Barford Bypass	3094	344	3182	347	3%	1%
78 - Black Cat Services	53	53	51	51	-4%	-4%
79 - A1 Great North Road	4057	442	4151	450	2%	2%
80 - A1 Great North Road	1881	264	1882	265	0%	0%
81 - Bedford Road	326	36	325	35	0%	-3%
82 - A421	3562	359	3765	373	6%	4%

Table 5-24 – Scenario 4a Primary Opening Year - Reference Case plus Development plus Construction (PM Peak)

Link	Reference Case		Primary Opening Year - Reference Case plus Development plus Construction		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1759	116	1759	119	0%	3%
2 - Ridgmont Interchange	1926	98	2009	100	4%	2%
3 - A421	3108	265	3132	273	1%	3%
4 - A421	2918	199	2978	211	2%	6%
5 - M1	9667	1315	9746	1332	1%	1%
6 - M1	8363	1276	8539	1280	2%	0%
7 - A421 Salford Road	1975	131	2208	144	12%	10%
8 - Salford Road	770	10	772	10	0%	0%
9 - A421	5452	366	5787	397	6%	8%
10 - Beancroft Road	650	13	659	11	1%	-15%
11 - Lower Shelton Road	64	11	66	12	3%	9%
12 - Beancroft Road	1320	42	1196	41	-9%	-2%
13 - Beancroft Road	1770	42	1433	37	-19%	-12%
14 - Marston Moretaine	713	5	719	7	1%	40%
15 - Beancroft Road	803	7	806	8	0%	14%
16 - Marston Moretaine	1114	34	673	24	-40%	-29%
17 - A421	5392	365	5962	409	11%	12%
18 - Bedford Road	1197	37	828	27	-31%	-27%
19 - Bedford Road	864	39	602	29	-30%	-26%
20 - Green Lane	593	19	501	18	-16%	-5%
21 - Stewartby Way	814	17	893	14	10%	-18%
22 - Broadmead Road	547	4	538	2	-2%	-50%

23 - Broadmead Road	594	4	597	3	1%	-25%
24 - Broadmead Road	520	3	718	4	38%	33%
25 - Stewartby Way	753	17	821	12	9%	-29%
26 - Stewartby Way	760	14	812	12	7%	-14%
27 - B530 Hazelwood Lane	1505	17	1548	15	3%	-12%
28 - B530 Ampthill Road	1557	11	1475	11	-5%	0%
29 - Bedford Road	333	6	333	5	0%	-17%
30 - B530 Ampthill Road	1640	15	1556	14	-5%	-7%
31 - Wootton	1274	42	1232	50	-3%	19%
32 - Fields Road	1413	15	1420	15	0%	0%
33 - Fields Road	1407	13	1410	15	0%	15%
34 - Burgoyne Avenue	545	12	539	12	-1%	0%
35 - Woburn Road	1482	29	1263	38	-15%	31%
36 - Manor Road	534	12	473	12	-11%	0%
37 - Bedford Road	1803	30	1783	28	-1%	-7%
38 - B530 Ampthill Road	1717	18	1686	16	-2%	-11%
39 - Meadow Road	790	9	725	6	-8%	-33%
40 - Meadow Road	57	1	53	1	-7%	0%
41 - Loverose Way	351	4	282	3	-20%	-25%
42 - Fisherwood Road	660	24	569	24	-14%	0%
43 - Hardwick Hill	1375	29	1480	32	8%	10%
44 - A6 The Branston Way	2389	42	2331	43	-2%	2%
45 - A6 The Branston Way	2195	26	2181	25	-1%	-4%
46 - Woburn Road	1775	22	1796	23	1%	5%
47 - Woburn Road	145	26	169	29	17%	12%
48 - A421 Bedford Southern Bypass	6971	367	7257	374	4%	2%
49 - The Causeway	1177	33	1111	36	-6%	9%
50 - Wilstead Road	18	8	19	9	6%	13%

51 - A6 Wilstead Bypass	1929	27	1956	27	1%	0%
52 - A6 Wilstead Bypass	2324	33	2348	31	1%	-6%
53 - A6 Wilstead Bypass	2899	59	2997	59	3%	0%
54 - A6 Wilstead Bypass	2860	99	3005	100	5%	1%
55 - Wilstead Road	256	38	260	38	2%	0%
56 - Elstow Interchange	193	11	217	12	12%	9%
57 - A5141	3100	60	3233	66	4%	10%
58 - B530 Ampthill Road	2110	52	2229	55	6%	6%
59 - A5141	3050	58	3170	63	4%	9%
60 - A5141 Ampthill Road	2638	29	2656	29	1%	0%
61 - A5141 Ampthill Road	1965	26	1990	26	1%	0%
62 - A5134 West End	1482	13	1501	15	1%	15%
63 - A421 Bedford Southern Bypass	6493	309	6597	314	2%	2%
64 - A600 Harrowden Road	1925	25	1939	25	1%	0%
65 - A600	2142	41	2154	40	1%	-2%
66 - A600 The Highway	1958	25	1972	24	1%	-4%
67 - Wallis Way	336	30	336	30	0%	0%
68 - A603 Cardington Road	1356	53	1355	52	0%	-2%
69 - Bedford Road	284	14	283	12	0%	-14%
70 - Stannard Way	538	32	538	32	0%	0%
71 - A603 Cambridge Road	1623	60	1676	61	3%	2%
72 - A421 Bedford Southern Bypass	4013	230	4124	235	3%	2%
73 - Water End	125	7	126	9	1%	29%
74 - A4280 St. Neots Road	2387	59	2405	57	1%	-3%
75 - Renhold Junction	1856	51	1861	51	0%	0%
76 - St. Neots Road	973	27	979	26	1%	-4%
77 - A421 Great Barford Bypass	2873	207	2960	213	3%	3%
78 - Black Cat Services	40	40	39	39	-3%	-3%

79 - A1 Great North Road	4492	262	4588	270	2%	3%
80 - A1 Great North Road	2070	164	2072	165	0%	1%
81 - Bedford Road	441	23	445	23	1%	0%
82 - A421	3448	229	3513	245	2%	7%

5.6.79. The following links require further assessment based on the screening protocol (Rule 1 and Rule 2):

- Link 14- Marston Moretaine;
- Link 16- Marston Moretaine;
- Link 18- Bedford Road;
- Link 19- Bedford Road;
- Link 20- Green Lane;
- Link 22- Broadmead Road;
- Link 24- Broadmead Road;
- Link 26- Stewartby Way;
- Link 27- B530 Hazelwood Lane;
- Link 29- Bedford Road;
- Link 33- Fields Road;
- Link 35- Woburn Road
- Link 36- Manor Road;
- Link 39- Meadow Road;
- Link 40- Meadow Road;
- Link 41- Loverose Way;
- Link 42- Fisherwood Road;
- Link 47- Woburn Road; and
- Link 69- Bedford Road.

5.6.80. Some links within the study area are expected to experience reductions in total traffic and/or HDV traffic flows. This is the result of the Paramics modelling software creating a dynamic model, whereby traffic is reassigned to the most convenient route if its chosen route becomes less convenient. For example, when additional traffic is generated by the Proposed Development and new highway infrastructure is installed, some background traffic may be displaced to other links which provide a more convenient option.

5.6.81. The potential effects, following the magnitude of change and scale of effect criteria set out in **Table 5-6** and **Table 5-7**, are summarised below in **Table 5-25**. It should be noted that as per IEMA guidelines, the individual characteristics of each link has been considered when applying magnitude of change criteria. For example, where percentage changes in traffic flows may be deemed significant, the actual increase in traffic may be just a few vehicles, if the existing flows are low. In these situations, and taking into account the characteristics of the link and the people using it, professional judgement has been applied to 'downgrade' the magnitude of effect. Where this has implemented this is explained in the table below. In addition, in some cases, strategic links may not permit pedestrian/cycle activity. Where this is the case, this is noted and there is deemed to be no impact on Severance, NMU Delay, NMU Amenity and Fear and Intimidation.

Table 5-25 - Assessment of potential effects, embedded mitigation, residual effects and monitoring during Primary Opening Year plus Construction

Sensitive Receptor	Potential Effects/Embedded mitigation/Residual Effects and Monitoring	
Link 14- Marston Moretaine (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the PM peak, a 40% increase in HDV movements (+2 HDVs) is anticipated. All other changes in traffic flows fall below the threshold for further assessment. The majority of Link 14 is subject to a 30mph speed limit as it runs through Marston Moretaine. A wide shared footway/cycleway is provided on the west side of the carriageway, where residential development is located, and this is separated from the road by a grass verge. There is no pedestrian or cycle provision on the east side, and no desire line to cross the majority of the link. At the north of the link, where it connects with Beancroft Road (which provides a route into the rest of Marston Moretaine), a signalised Toucan crossing is provided and the shared footway/cycleway also continues on the east side of the carriageway and to the roundabout with Beancroft Road. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The increase in HDV movements in numerical terms is not material and will not change the character of the link. No amendments are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 14 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**;

		• Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 16- Marston Moretaine (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 36% reduction in total traffic movements (-3,973 vehicles) is expected. In the AM peak hour, a 36% reduction in total traffic movements (-465 vehicles) and a 34% reduction in HDV movements (-19 HDVs) is expected. In the PM peak hour, a 40% reduction in total traffic movements (-441 vehicles) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. Link 16 provides a single lane in each direction and is subject to the national speed limit. Due to the strategic nature of this link, no pedestrian and cycle facilities are provided. It is unlikely that any pedestrian activity would be present, although some cyclists may use this route. There are no immediate desire lines, apart from potentially for longer distance commuting between Marston Moretaine and Bedford or to settlements such as Wootton. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3).** The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 16 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**;

		• NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 18- Bedford Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 31% reduction in total traffic movements (-4,105 vehicles) is expected. In the AM peak hour, a 32% reduction in total traffic movements (-428 vehicles) is expected. In the PM peak hour, a 31% reduction in total traffic movements (-369 vehicles) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. This is a strategic link with very few properties fronting it. A small number of residential properties are located at the south of the link, but these are separated by a wide grass verge, with an access lane beyond this providing vehicle and pedestrian access to the houses. To the north of this, a shared footway/cycleway extends along the east side of the link, from the residential access lane, north to a pedestrian crossing at Hoo Lane. The crossing provides dropped kerbs, tactile paving and a refuge island. This crossing provides an onwards connection under the A421 to the small village of Wootton Green. The footway along the link also connects into a commercial property at this point. The footway/cycleway does not continue north to connect with Green Lane at the northern end of the link, however it is concluded that the pedestrian and cycle facilities provided match the likely desire key desire lines and there is unlikely to be material volumes of pedestrians and cyclists along the link. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 18. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.

		The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 18 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 19- Bedford Road (Negligible Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 36% reduction in total traffic movements (-3,908 vehicles) is expected. In the AM peak hour, a 36% reduction in total traffic movements (-374 vehicles) is expected. In the PM peak hour, a 30% reduction in total traffic movements (-262 vehicles) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. This is a strategic link providing a single lane in each direction and subject to a 50mph speed limit. This link provides no footways and there are no obvious pedestrian desire lines. Cycle lanes are not provided, although cyclists may be present as part of longer distance journeys. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to

		accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 19 is negligible. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Negligible Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 20- Green Lane (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A reduction in HDV traffic of 16% (-92 HDVs) is expected in the PM peak hour. No other changes in traffic flows exceed the threshold requiring further assessment. Kimberley Sixth Form College is located along this link, and it is therefore classed as 'high' sensitivity. A signalised crossing is already provided at Kimberley Sixth Form College, which is where the main pedestrian desire line is considered to be. Dropped kerbs and tactile paving are provided. Therefore, a negligible magnitude of change in relation to Severance and NMU Delay is considered appropriate. Continuous footways are provided between the College and Stewartby Village, along the desire line. The footways do not extend west of the College. Pedestrians and cyclists are required to utilise a level crossing across the existing Marston Vale Railway Line, which currently operates one service per hour. Collision records demonstrate that no collisions resulting in personal injury have been recorded at this level crossing. There are NMU facilities provided and the change in traffic flows does not change the character of the link. There are also no collision clusters on the remainder of the link attributable to the highway layout or

		infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 20. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. The expected changes in traffic are not considered to materially alter the character of the link and therefore no amendments are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 20 is high. All residual effects are direct, permanent and long term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 22-Broadmead Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 50% reduction in HDV traffic (-2 HDVs) is expected in the PM peak hour. No other changes in traffic flows exceed the threshold requiring further assessment. A single lane is provided in each direction. The former Stewartby Brickworks lies to the west and Stewartby settlement to the east. A footway is provided on the east side of the carriageway where developments are located and where desire lines are. There is no real need to cross the link at present. There is no material change in vehicle speeds as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to

		accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. As there is a reduction in HDV traffic, the impact is considered to be beneficial, although in reality, such a small change in HDV movements will have no discernible effect on the character and operation of the link.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 22 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 24- Broadmead Road (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Medium magnitude of change. An increase in total traffic flows of 30% (+159 vehicles) is anticipated in the AM peak hour. An increase in total traffic flows of 38% (+198 vehicles) and an increase in HDV traffic of 33% (+1 HDV) is expected in the PM peak hour. A single lane is provided in each direction. The link is subject to a 30mph speed limit for approximately 250m north of the roundabout with Kiln Drive. Beyond this, a national speed limit restriction is in place. A level crossing is present at Broadmead Road. No collisions resulting in personal injury have been recorded at the level crossing, according to published data. Footways are not provided on this link beyond the roundabout with Kiln Drive. Currently, the presence of pedestrians beyond this point is unlikely, however, in future an emergency access connection will be created from the Proposed Development to Broadmead Road. The purpose of this is to future proof a connection to a future development site located to the south. This emergency access will provide pedestrian and cycle connectivity and could therefore encourage people travelling to the Proposed Development to walk from Stewartby

		along Broadmead Road. If this did occur, this would increase the chance of collisions occurring between vehicles and NMUs. It is not possible to quantify how many pedestrians may use this route in future, although it is considered unlikely to attract large volumes, given the lack of pedestrian facilities. As a result, the magnitude of change has been defined as medium in relation to accidents and safety, based on professional judgement. Traffic flows fall well below 1,400 vehicles per hour and the actual change in HDV movements is minimal and unlikely to have any discernible impact on the operation or character of the link. The magnitude of change in relation to NMU Delay and NMU Amenity therefore are negligible, even with the potential risk of increasing attractiveness of this route for NMUs. Cycle facilities are not provided; however cyclists may be present cycling on-carriageway. In relation to driver delay, signalisation of the Broadmead Road/ Bedford Road junction will be provided as part of the Proposed Development. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 24 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is medium. The effect is **Moderate Adverse (Significant)**.
Link 26- Stewartby Way (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 15% increase in total traffic (+1,183 vehicles) and an increase of 11% in HDV traffic (+27 HDVs) are expected across the 24-hour period. An increase in HDV traffic of 20% (+3 HDVs) is expected in the AM peak

		A reduction in HDV traffic of 14% (-2 HDVs) is expected in the PM peak. The western section of this link is residential in nature and subject to a 30mph speed limit. Residential properties front the link, with driveway access for properties on the northern side. The link extends east under the Midland Main Railway Line and a footway is provided on the north side of the link only. Beyond this, the speed limit increases to 60mph (national speed limit). The link is classed as high sensitivity as there is a pedestrian footway on the north side but an access to a PROW on the south side with no crossing point at this desire line. This is located approximately 300m east of the rail line. The change in total traffic flows in each assessment period constitute a negligible magnitude of change in relation to severance. Although there is a reduction in HDV traffic in the PM peak, the impacts of traffic are considered to be adverse, based on the increases across the 24-hour period and in the AM peak. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 26 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 27- B530 Hazelwood Lane (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: Negligible magnitude of change;

		• Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the PM peak hour, a reduction in HDV flows of 12% (-2 HDVs) is expected. The link has been classed as high sensitivity due to the presence of a bus stop on the east side of the carriageway, for which a pedestrian crossing is not provided. It should be noted however, that this bus stop is approximately 570m from the closest residence in Stewartby. Two routes serve this stop. Route 68 runs on an hourly basis, but also stops in Stewartby, significantly closer to residents, and therefore it is unlikely that users of this route will be attracted to this bus stop. Route FL5 only runs twice per day and does not call at this bus stop during the PM peak hour. It is therefore concluded that there is unlikely to be any pedestrian activity during the PM peak. Although the magnitude of change in relation to NMU Delay is low, based on the hourly traffic flows exceeding 1,400 vehicles, the actual impact as a result of a reduction in HDV traffic of just two vehicles is unlikely to have any discernible effect on the operation and character of the link. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 27 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is low. The effect is **Moderate Adverse (Not Significant)**. The effect is Not Significant given the numerical reduction in HDV traffic and the likely presence of pedestrians on the link; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 29- Bedford Road (Negligible Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change;

		• Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the AM peak hour, an increase in HDV flows of 50% (1 HDV) is expected. In the PM peak hour and across the 24-hour assessment period, all changes in traffic flows are materially below 30%. Link 29 Bedford Road extends from B530 Ampthill Road to the village of Houghton Conquest. It is a rural road with no pedestrian or cycle facilities, but no pedestrian desire lines within a reasonable walking distance. It is subject to the national speed limit for the majority of the link, reducing to 40mph on approach to Houghton Conquest. Footways are provided once the link meets Houghton Conquest. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 29 is negligible. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Negligible Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 33- Fields Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in HDV traffic of 17% (+54 HDVs) is expected across the 24-hour period. An increase in HDV traffic of 15% (+2 HDVs) is

		expected in the PM peak hour. No other changes in traffic flow exceed 10%. An additional two HDV movements in the PM peak and an additional 54 over 24-hours are unlikely to have any discernible effect on the operation of this link, or on any NMU's present, however for the purposes of assessment, the effects are categorised as adverse. Link 33 connects Wootton with Woburn Road, adjacent to the Site. The link passes over the A421 and is subject to a 30mph speed limit in the vicinity of Wootton, and 60mph beyond that. Within Wootton, shared footway/cycleways are provided on both sides of the carriageway and a signalised Toucan crossing is provided. Beyond Wootton, a footway continues on the north side of the link and extends round to connect with Woburn Road. Signage is not provided indicating whether this is a shared facility or footway only. Two-way traffic flows on the link exceed 1,400 vehicles per hour (1,453 vehicles in the AM peak and 1,410 in the PM peak). As the traffic flows only slightly exceed the 1,400 vehicle threshold and as the change in traffic as a result of the Proposed Development is not material, the magnitude of change in relation to NMU Delay is considered to be low. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational and construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The expected increase in HDV traffic is not considered to be material in numerical terms and in the context of the link's characteristics. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 33 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is low. The effect is **Moderate Adverse (Not Significant)**. The effect is Not Significant based on the actual change in HDV traffic in the context of the character of the link; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and

		• Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 35- Woburn Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Low magnitude of change. An increase in HDV traffic of 31% (+214 HDVs) is expected across the 24-hour period. An increase in HDV traffic of 31% (+9 HDVs) is expected in the PM peak hour. No other changes in traffic flows exceed 30% There are no real pedestrian facilities. A small section of footway extends from the Fields Road roundabout north for approximately 85m and then stops. No further footways are provided. As the Proposed Development will form a new desire line from Bedford, this could encourage pedestrians to travel along this link, if they are not aware of the lack on ongoing pedestrian facilities and as such, may increase the chance of collisions if a suitable footway is not available. It should be noted however, that pedestrians travelling from Bedford would have to pass by Manor Road on the way to this link, and Manor Road will provide a pedestrian route into the Site, and this is more likely to capture desire lines. As such, the magnitude of change in relation to Accidents and Safety is considered to be low, based on the expected desire line. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational and construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 35 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant);** • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and

		• Accidents and Safety: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**.
Link 36- Manor Road (High Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. An increase in total traffic of 37% (+2,118 vehicles) and an increase in HDV traffic of 32% (+53 HDVs) are expected across the 24-hour period. An increase in total traffic of 11% (+55 vehicles) is expected in the AM peak hour. A reduction in total traffic of 11% (-61 vehicles) is expected in the PM peak hour. This assessment has been based on the impact across the 24-hour period as this represents the greatest change in traffic flows. As part of the Proposed Development (i.e. embedded mitigation), Manor Road between B530 Ampthill Road and the rail line, will be reconstructed. High quality pedestrian and cycle facilities will be provided, including signalised crossing points. The junction of Manor Road/B530 Ampthill Road will be signalised, and the function/character of the link will change to reflect the new vehicle and NMU traffic profiles, through the re-design of the road, which includes dualling. Further detail is provided in the **Appendix 5.1: Transport Assessment (Volume 3)**. There will therefore be an overall beneficial impact on this section of Manor Road as a result of the Proposed Development. To the west of the rail line, from Woburn Road, an off-road PROW is provided on the north side of Manor Road. This currently stops approximately 135m north of the rail line and requires pedestrians/cyclists to continue on-carriageway. The Network Rail Manor Road bridge proposals include the construction of a new footway on the west side of Manor Road, which will connect to this existing PROW. From the Manor Road bridge, the footway will connect with the active travel network included as part of the Proposed Development. It is therefore considered that the existing PROW provision, combined with the Network Rail proposals and the Proposed Development, is sufficient to accommodate pedestrians and cyclists. However, further clarification is sought regarding the design of the crossing between the PROW and the new footway, and further enhancement including the provision of a shared use footway/cycleway along Manor Road over the rail line is also recommended. With the above embedded mitigation and the Network Rail Manor Road bridge proposals, the impact of the Proposed Development is concluded to be beneficial in terms of severance, driver delay, NMU delay, NMU amenity, fear and intimidation and accidents and safety. Therefore, no additional mitigation is considered to be required, above what is embedded mitigation as part of the Proposed Development.

	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 36 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Moderate Beneficial (Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 39 – Meadow Road (Low sensitivity)	**Potential Effects**	• Severance: low magnitude of change; • Driver Delay: negligible magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change. A 33% reduction in HGV traffic (-3 HGVs) is expected in the PM peak hour. Link 39 is located at the access to the new Wixams settlement, east of the B530 roundabout, and is residential in nature. Where residences are located, footways are set back from the road and separated by landscaped verges. Appropriate pedestrian and cycle provision will be included as part of the Wixams development. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational and construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 39 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. • The effect is **Minor Beneficial (Not Significant)**;

		• Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant).** • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 40- Meadow Road (Low Sensitivity)	**Potential Effects**	• Severance: low magnitude of change; • Driver Delay: negligible magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change. A 43% reduction in total traffic (-66 vehicles) and a 50% reduction in HDV traffic (-1 HDV) are expected in the AM peak hour. Link 40 runs through the new Wixams settlement and is partly residential in nature and partly a route through construction activities. Where residences are located, footways are set back from the road and separated by landscaped verges. In future, this link will provide access to the eastern plaza of the Full Wixams Rail Station, which will be in place by the Primary Opening Year. Appropriate pedestrian and cycle provision will be included as part of the Wixams development. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational and construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 40 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**;

		• Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 41- Loverose Way (Low Sensitivity)	**Potential Effects**	• Severance: low magnitude of change; • Driver Delay: negligible magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change. A 31% reduction in total traffic (-163 vehicles) is expected in the PM peak hour. Loverose Way is currently a construction route, but by Primary Opening Year will provide residential access to the Wixams development. Appropriate pedestrian and cycle provision is proposed as part of that scheme and appropriate speed limit restrictions will be in place. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**) as a result of operational and construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 41 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 42- Fisherwood	**Potential Effects**	• Severance: low magnitude of change; • Driver Delay: high magnitude of change;

Road (Medium Sensitivity)		• NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change. A 37% reduction in total traffic flows (-306 vehicles) is anticipated in the AM Peak hour. Other time periods are below the threshold for further assessment based on the link sensitivity. As a result, there is likely to be an overall beneficial impact of the proposals on this link. Link 42 is a main traffic route through the Wixams development. It provides a single lane in each direction and is subject to a 30mph speed limit. There is no direct residential frontage on this link. Access to commercial units is provided and some units benefit from dedicated right-turn lane access. Wide shared use footway/cycleways are provided on both sides of the link. Where these cross commercial access points, the footway/cycleway is continued across the access, giving priority to NMUs, and signage is in place to inform drivers of their presence. A Zebra crossing is provided at the eastern end of the link and an informal pedestrian island crossing is provided at the western end. There is a material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational and construction traffic. A reduction in average traffic speeds of 23mph is expected. This is a significant reduction in speed in the AM Peak hour for a single hour only in one direction, although the percentage change in traffic does not exceed the threshold requiring further assessment. Based on the material reduction in vehicle speeds but only for a very limited time the magnitude of change in relation to driver delay is therefore reduced to medium. The resultant impact is also therefore classed as adverse, rather than beneficial, despite the reduction in total traffic expected. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. Overall, given the above, the following amendments are proposed to the magnitude of change assigned to each effect. • Severance: low magnitude of change; • Driver Delay: medium magnitude of change; • NMU Delay: negligible magnitude of change; • NMU Amenity: negligible magnitude of change; • Fear and Intimidation: negligible magnitude of change; and • Accidents and Safety: negligible magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 42 is medium. All residual effects are direct, permanent and long-term.

		• Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 47- Woburn Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 17% increase in total traffic (+24 vehicles) and a 12% increase in HDV traffic (+3 HDVs) are expected in the PM peak hour. Link 47 extends from Marsh Leys Interchange in the north to Manor Road in the south. At the south of the link, adjacent to the junction with Manor Road, a PROW crosses the carriageway. Dropped kerbs and tactile paving are provided. No signage is present indicating to drivers that pedestrians and other NMUs may be crossing the road. The road is subject to the national speed limit at this point. Further north, on the approach to Marsh Leys Interchange, the speed limit reduces to 40mph, within the vicinity of a small number of residential properties. These properties are set back from Woburn Road. A footway is then provided from the residences, north to the Marsh Leys Interchange. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational and construction traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 47 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**;

		• NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 69- Bedford Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A reduction in HDV traffic of 14% (-2 HDVs) is expected in the PM peak. No further changes in traffic flow are expected which would require further assessment. This minor reduction in HDV traffic is unlikely to have a discernible effect on the link, however for the purposes of assessment, the effects are concluded to be beneficial. Link 69 is a rural road, running through the village of Cardington. Where the link connects into Cardington, a speed limit restriction of 30mph is in place. Extending north, this increases to 40mph, then to the national speed limit as the link approaches the A421. A shared footway/cycleway is provided along the west side of the carriageway. There is a narrow bridge at the north of the link and at this point, pedestrians and cyclists are required to travel on the carriageway itself, which could be unsafe, given the road is subject to a 60mph speed limit at this point. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, taking into consideration this potentially unsafe location, is considered to be negligible given the very low change in vehicles (-2 HDVs). There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational and construction traffic. The magnitude of change in relation to driver delay is therefore negligible.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 69 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**;

		• NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.

SCENARIO 5 FUTURE YEAR - REFERENCE CASE PLUS DEVELOPMENT

5.6.82. As described within **Appendix 5.1: Transport Assessment (Volume 3)**, the proposed Future Year of the Proposed Development includes full build-out of the Core Zone, Lake Zone, West Gateway Zone and East Gateway Zone, along with associated infrastructure.

5.6.83. Full details of the trip generation and distribution associated with this assessment scenario are included in **Appendix 5.1: Transport Assessment (Volume 3)**.

5.6.84. As described previously, A detailed review of PIC data has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. Where no existing collision issue (that is the result of the highway layout or other infrastructure) has been identified and where professional judgement concludes that no material change in traffic is likely to occur (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be negligible. Where there is no existing collision issue but there is a material change in traffic (taking into account the characteristics of the link and its receptors), the magnitude of change is concluded to be low.

5.6.85. As described previously, existing PROW which cross the Site will be permanently closed at the start of construction. The closure of PROW can have a diversionary effect and increase pedestrian activity on surrounding links. As such, this has been taken into consideration when examining the potential impact during operation of the Proposed Development.

5.6.86. There are four PROW which cross the Site, as follows:

- Footpath A1;
- Footpath 8;
- Footpath 1; and
- Footpath 2.

5.6.87. These PROW do not permit cycling or horse riding and are for pedestrians only, and therefore the closure of these routes will not impact cyclists and horse riders.

5.6.88. During Site visits, the use of these PROW was observed. No pedestrians were recorded using these routes at these times. This reflects the fact that these are longer distance routes across open countryside and are unlikely to be used except for leisure purposes.

5.6.89. Upon closure of the PROW, there are no suitable alternative routes which provide continuous footways and as such it has been determined that there will be no change in pedestrian activity on nearby road links in the study area. Any demand for these PROW will have been removed during construction and therefore there will be no impacts during operation.

5.6.90. A detailed journey time assessment has been undertaken as part of **Appendix 5.1: Transport Assessment (Volume 3)**. A summary is provided below.

5.6.91. Overall, the analysis shows that with the introduction of the Proposed Development there will be slight decreases in average speeds and slight increases in average delay, but these changes are not material and conditions on the wider road network will remain unchanged with the introduction of the Proposed Development.

5.6.92. The assessment demonstrates that the Proposed Development does not materially affect journey times on key routes through the modelled road network around the Site. There are some punctual variations that are worth noting, but the assessment carried out does not highlight any significant and consistent increase in journey time on any of the routes studied. The main variations worth noting are:

- On the A6 Branston Way, the journey time would increase by 226 seconds northbound in the PM peak. This predicted increase remains relatively low if considered in the context of a longer trip along strategic routes (from the A421 along the A6);
- On the A6 south of the A421, the Proposed Development would lead to a reduction in journey time in the typical weekday peak periods in the northbound direction (by 275 seconds in the AM peak and by 244 seconds in the PM peak), likely due to the development delivering a new alternative route to the A421 to/from Wixams;
- The Proposed Development would not materially affect journey times on the slip roads at M1 Junction 13, or at the A421 Salford Road off slip;
- The Proposed Development would lead to small reduction in journey times on the slip roads at the A421 Marston Moretaine Interchange in the typical weekday PM peak (by 48 seconds on the northbound off slip and by 16 seconds on the southbound off slip), most likely as a result of the Proposed Development delivering an alternative access to/from the A421 south in and out of the Marston Vale area, north of Marston Moretaine;
- The Proposed Development would only affect journey times at the A421 Marsh Leys Interchange, increasing journey time by plus 200 seconds on the northbound off slip in the PM peak. This predicted increase remains relatively low if considered in the context of a longer trip along strategic routes (from the A421 to the A6);
- The Proposed Development would lead to increases in journey time on the eastbound off slip at the A421 Elstow Interchange in the typical weekday peak periods. The predicted increases are in the region of half a minute, so not material; and
- Journey times on routes across the Marston Vale locally (Wixams to Wootton via Manor Road and B530 to Beancroft Road via Green Lane) are Not Significantly affected as a result of the Proposed Development.

5.6.93. Subsequently, further assessment of the change in average vehicle speeds along each link have been reviewed to identify within the overall routes, where specific delay to drivers may be experienced. As described at **Appendix 5.2: Link Sensitivity Review (Volume 3)**, links with a reduction in average vehicle speed of 5mph or more during the assessed AM and PM peak hours, an interpeak hour of 11:00-12:00 and a night-time hour of 21:00-22:00, have been identified. Where the change in speed is below 5pmh, the magnitude of change is categorised as negligible. Where the change in speed is over 5mph, professional judgement is applied. This takes into account the 2023 Existing traffic speeds on the link, the posted speed limit, the character of the link, and the severity of the change in speed.

5.6.94. For example, on a link with a posted speed limit of 50mph, with average speeds of 50mph, a 5mph reduction as a result of operational traffic is not considered to represent a material change to the character of the link, and therefore the magnitude of change would be classed as low. If the reduction in speed was greater than this, for example 10mph, then professional judgement would again be applied and it is likely that this would constitute a medium magnitude of change.

5.6.95. As described previously, it is important to note that there is no established definition of 'congestion' and driver delay in IEMA guidelines and the application of professional judgement is required.

5.6.96. **Tables 5-26 – 5-28** present the impact of the Proposed Development when all aspects of the Proposed Development will be constructed and operational. Full details regarding the derivation of these flows are included within the **Appendix 5.1: Transport Assessment (Volume 3)**. 18-hour AAWT traffic flows, used to assess the magnitude of change in relation to fear and intimidation, are included at **Appendix 5.3: AAWT Flows (Volume 3)**.

Table 5-26 – Scenario 5 Future Year - Reference Case plus Development (24-hour AADT)

Link	Reference Case		Future Year - Reference Case plus Development		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	19059	2002	19220	2013	1%	1%
2 - Ridgmont Interchange	19716	1638	20069	1638	2%	0%
3 - A421	35225	4335	39017	4443	11%	2%
4 - A421	36198	3524	37328	3802	3%	8%
5 - M1	120575	21276	123717	21435	3%	1%
6 - M1	107219	20447	111188	20442	4%	0%
7 - A421 Salford Road	22554	2323	26461	2438	17%	5%
8 - Salford Road	5105	205	5147	207	1%	1%
9 - A421	60808	6392	69648	6900	15%	8%
10 - Beancroft Road	6346	201	6521	200	3%	0%
11 - Lower Shelton Road	953	155	957	151	0%	-3%
12 - Beancroft Road	12889	841	12764	772	-1%	-8%
13 - Beancroft Road	18203	915	15906	724	-13%	-21%
14 - Marston Moretaine	6498	152	6526	149	0%	-2%
15 - Beancroft Road	8418	145	8482	143	1%	-1%

16 - Marston Moretaine	10996	712	7482	498	-32%	-30%
17 - A421	58207	6340	71981	7062	24%	11%
18 - Bedford Road	13342	786	9385	572	-30%	-27%
19 - Bedford Road	10924	812	6993	607	-36%	-25%
20 - Green Lane	6123	413	6397	390	4%	-6%
21 - Stewartby Way	8135	323	9266	317	14%	-2%
22 - Broadmead Road	5139	69	5117	66	0%	-4%
23 - Broadmead Road	5721	73	5735	72	0%	-1%
24 - Broadmead Road	6635	78	7561	89	14%	14%
25 - Stewartby Way	7459	262	8588	259	15%	-1%
26 - Stewartby Way	7659	239	8729	242	14%	1%
27 - B530 Hazelwood Lane	16010	322	17142	326	7%	1%
28 - B530 Ampthill Road	16290	253	16913	256	4%	1%
29 - Bedford Road	3657	71	3677	73	1%	3%
30 - B530 Ampthill Road	17692	283	18311	286	3%	1%
31 - Wootton	15797	877	17069	1000	8%	14%
32 - Fields Road	15083	334	15354	346	2%	4%
33 - Fields Road	14984	324	15208	328	1%	1%
34 - Burgoyne Avenue	5516	253	5542	257	0%	2%
35 - Woburn Road	18684	684	18904	804	1%	18%
36 - Manor Road	5658	165	10127	208	79%	26%
37 - Bedford Road	19824	546	19637	551	-1%	1%
38 - B530 Ampthill Road	18858	379	18738	380	-1%	0%
39 - Meadow Road	8902	170	8623	166	-3%	-2%
40 - Meadow Road	655	23	575	26	-12%	13%
41 - Loverose Way	3933	54	3934	54	0%	0%
42 - Fisherwood Road	8243	517	8203	521	0%	1%
43 - Hardwick Hill	15913	528	15983	539	0%	2%

44 - A6 The Branston Way	28489	1086	29490	1087	4%	0%
45 - A6 The Branston Way	25570	815	26472	823	4%	1%
46 - Woburn Road	16921	578	17389	579	3%	0%
47 - Woburn Road	2551	524	2575	526	1%	0%
48 - A421 Bedford Southern Bypass	75753	6695	82145	6753	8%	1%
49 - The Causeway	13679	640	13702	641	0%	0%
50 - Wilstead Road	369	211	364	210	-1%	0%
51 - A6 Wilstead Bypass	20912	681	21987	684	5%	0%
52 - A6 Wilstead Bypass	26360	773	27520	780	4%	1%
53 - A6 Wilstead Bypass	33290	1282	35152	1292	6%	1%
54 - A6 Wilstead Bypass	33461	1830	35299	1839	5%	0%
55 - Wilstead Road	2659	448	2664	444	0%	-1%
56 - Elstow Interchange	3415	396	3439	394	1%	-1%
57 - A5141	37735	1178	40198	1200	7%	2%
58 - B530 Ampthill Road	28033	771	30841	788	10%	2%
59 - A5141	37441	1145	39899	1162	7%	1%
60 - A5141 Ampthill Road	34972	586	35589	586	2%	0%
61 - A5141 Ampthill Road	27717	510	28120	505	1%	-1%
62 - A5134 West End	16946	247	17239	248	2%	0%
63 - A421 Bedford Southern Bypass	69247	5804	75752	5878	9%	1%
64 - A600 Harrowden Road	19665	513	20132	516	2%	1%
65 - A600	21027	817	21656	813	3%	0%
66 - A600 The Highway	21195	589	21990	589	4%	0%
67 - Wallis Way	3574	599	3597	597	1%	0%
68 - A603 Cardington Road	15534	833	15648	834	1%	0%
69 - Bedford Road	2784	163	2804	164	1%	1%
70 - Stannard Way	3788	417	3811	414	1%	-1%
71 - A603 Cambridge Road	18584	1048	20825	1090	12%	4%

72 - A421 Bedford Southern Bypass	45344	4523	48149	4570	6%	1%
73 - Water End	1920	196	1928	198	0%	1%
74 - A4280 St. Neots Road	24592	1090	24891	1087	1%	0%
75 - Renhold Junction	17209	821	17437	828	1%	1%
76 - St. Neots Road	8771	463	8925	460	2%	-1%
77 - A421 Great Barford Bypass	37164	4214	39480	4261	6%	1%
78 - Black Cat Services	728	712	733	712	1%	0%
79 - A1 Great North Road	55705	6619	57818	6675	4%	1%
80 - A1 Great North Road	27909	4410	28075	4399	1%	0%
81 - Bedford Road	4276	423	4297	414	0%	-2%
82 - A421	39733	3974	44601	4371	12%	10%

Table 5-27 – Scenario 5 Future Year - Reference Case plus Development (Weekday AM Peak 08:00 to 09:00)

Link	Reference Case		Future Year - Reference Case plus Development		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1736	175	1725	171	-1%	-2%
2 - Ridgmont Interchange	1682	138	1678	127	0%	-8%
3 - A421	2946	353	3144	349	7%	-1%
4 - A421	3016	284	3034	291	1%	2%
5 - M1	9191	1589	9408	1594	2%	0%
6 - M1	8316	1559	8543	1559	3%	0%
7 - A421 Salford Road	2178	211	2451	220	13%	4%
8 - Salford Road	522	16	522	17	0%	6%
9 - A421	5370	566	5880	588	9%	4%
10 - Beancroft Road	588	12	626	12	6%	0%
11 - Lower Shelton Road	96	10	95	10	-1%	0%

12 - Beancroft Road	1244	54	1313	46	6%	-15%
13 - Beancroft Road	1868	70	1635	54	-12%	-23%
14 - Marston Moretaine	595	10	690	12	16%	20%
15 - Beancroft Road	639	10	758	11	19%	10%
16 - Marston Moretaine	1300	56	843	35	-35%	-38%
17 - A421	5229	538	6347	586	21%	9%
18 - Bedford Road	1353	60	944	40	-30%	-33%
19 - Bedford Road	1039	59	682	42	-34%	-29%
20 - Green Lane	925	26	940	24	2%	-8%
21 - Stewartby Way	914	21	1022	22	12%	5%
22 - Broadmead Road	529	4	490	5	-7%	25%
23 - Broadmead Road	580	4	558	4	-4%	0%
24 - Broadmead Road	528	4	680	6	29%	50%
25 - Stewartby Way	807	20	890	21	10%	5%
26 - Stewartby Way	830	15	886	18	7%	20%
27 - B530 Hazelwood Lane	1440	28	1520	30	6%	7%
28 - B530 Ampthill Road	1501	22	1462	22	-3%	0%
29 - Bedford Road	299	2	305	3	2%	50%
30 - B530 Ampthill Road	1583	21	1553	22	-2%	5%
31 - Wootton	1466	62	1396	69	-5%	11%
32 - Fields Road	1447	26	1473	24	2%	-8%
33 - Fields Road	1425	24	1455	22	2%	-8%
34 - Burgoyne Avenue	660	20	672	19	2%	-5%
35 - Woburn Road	1598	44	1268	51	-21%	16%
36 - Manor Road	522	14	704	12	35%	-14%
37 - Bedford Road	1902	43	1857	42	-2%	-2%
38 - B530 Ampthill Road	1812	29	1795	31	-1%	7%
39 - Meadow Road	1092	14	934	13	-14%	-7%

40 - Meadow Road	155	2	93	2	-40%	0%
41 - Loverose Way	527	5	377	4	-28%	-20%
42 - Fisherwood Road	837	44	555	38	-34%	-14%
43 - Hardwick Hill	1594	37	1522	39	-5%	5%
44 - A6 The Branston Way	2301	91	2334	88	1%	-3%
45 - A6 The Branston Way	1998	80	2009	75	1%	-6%
46 - Woburn Road	1640	58	1682	58	3%	0%
47 - Woburn Road	164	44	166	39	1%	-11%
48 - A421 Bedford Southern Bypass	6732	555	7132	558	6%	1%
49 - The Causeway	1252	59	994	51	-21%	-14%
50 - Wilstead Road	26	17	26	18	0%	6%
51 - A6 Wilstead Bypass	1737	65	1803	65	4%	0%
52 - A6 Wilstead Bypass	2239	72	2307	70	3%	-3%
53 - A6 Wilstead Bypass	2669	122	2959	118	11%	-3%
54 - A6 Wilstead Bypass	2552	170	2810	164	10%	-4%
55 - Wilstead Road	337	61	343	60	2%	-2%
56 - Elstow Interchange	211	36	228	37	8%	3%
57 - A5141	2953	88	3158	85	7%	-3%
58 - B530 Ampthill Road	1933	46	2098	45	9%	-2%
59 - A5141	2919	87	3086	81	6%	-7%
60 - A5141 Ampthill Road	2751	49	2759	46	0%	-6%
61 - A5141 Ampthill Road	2114	47	2125	43	1%	-9%
62 - A5134 West End	1520	21	1530	20	1%	-5%
63 - A421 Bedford Southern Bypass	6222	479	6611	478	6%	0%
64 - A600 Harrowden Road	1808	47	1827	49	1%	4%
65 - A600	1815	81	1825	80	1%	-1%
66 - A600 The Highway	1936	54	1936	55	0%	2%
67 - Wallis Way	324	57	316	54	-2%	-5%

68 - A603 Cardington Road	1514	80	1525	82	1%	2%
69 - Bedford Road	200	16	201	16	0%	0%
70 - Stannard Way	595	35	592	34	-1%	-3%
71 - A603 Cambridge Road	1759	87	1895	89	8%	2%
72 - A421 Bedford Southern Bypass	4062	371	4229	362	4%	-2%
73 - Water End	217	13	215	12	-1%	-8%
74 - A4280 St. Neots Road	2206	104	2222	103	1%	-1%
75 - Renhold Junction	1593	78	1610	78	1%	0%
76 - St. Neots Road	820	42	829	39	1%	-7%
77 - A421 Great Barford Bypass	3094	344	3222	338	4%	-2%
78 - Black Cat Services	53	53	53	52	0%	-2%
79 - A1 Great North Road	4057	442	4184	442	3%	0%
80 - A1 Great North Road	1881	264	1895	261	1%	-1%
81 - Bedford Road	326	36	325	36	0%	0%
82 - A421	3562	359	3828	370	7%	3%

Table 5-28 – Scenario 5 Future Year - Reference Case plus Development (Weekday PM Peak 17:00 to 18:00)

Link	Reference Case		Future Year - Reference Case plus Development		Net Change	
	Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1 - A507 Bedford Road	1759	116	1766	117	0%	1%
2 - Ridgmont Interchange	1926	98	1985	101	3%	3%
3 - A421	3108	265	3190	270	3%	2%
4 - A421	2918	199	2964	211	2%	6%
5 - M1	9667	1315	9775	1324	1%	1%
6 - M1	8363	1276	8577	1278	3%	0%
7 - A421 Salford Road	1975	131	2231	133	13%	2%

8 - Salford Road	770	10	773	12	0%	20%
9 - A421	5452	366	5873	384	8%	5%
10 - Beancroft Road	650	13	657	10	1%	-23%
11 - Lower Shelton Road	64	11	62	10	-3%	-9%
12 - Beancroft Road	1320	42	1252	39	-5%	-7%
13 - Beancroft Road	1770	42	1500	39	-15%	-7%
14 - Marston Moretaine	713	5	722	7	1%	40%
15 - Beancroft Road	803	7	803	6	0%	-14%
16 - Marston Moretaine	1114	34	736	28	-34%	-18%
17 - A421	5392	365	6107	389	13%	7%
18 - Bedford Road	1197	37	880	32	-26%	-14%
19 - Bedford Road	864	39	605	33	-30%	-15%
20 - Green Lane	593	19	548	20	-8%	5%
21 - Stewartby Way	814	17	895	17	10%	0%
22 - Broadmead Road	547	4	502	3	-8%	-25%
23 - Broadmead Road	594	4	560	4	-6%	0%
24 - Broadmead Road	520	3	688	5	32%	67%
25 - Stewartby Way	753	17	822	15	9%	-12%
26 - Stewartby Way	760	14	805	13	6%	-7%
27 - B530 Hazelwood Lane	1505	17	1536	17	2%	0%
28 - B530 Ampthill Road	1557	11	1446	13	-7%	18%
29 - Bedford Road	333	6	338	7	2%	17%
30 - B530 Ampthill Road	1640	15	1529	16	-7%	7%
31 - Wootton	1274	42	1399	49	10%	17%
32 - Fields Road	1413	15	1404	17	-1%	13%
33 - Fields Road	1407	13	1402	16	0%	23%
34 - Burgoyne Avenue	545	12	542	12	-1%	0%
35 - Woburn Road	1482	29	1196	35	-19%	21%

36 - Manor Road	534	12	597	13	12%	8%
37 - Bedford Road	1803	30	1769	34	-2%	13%
38 - B530 Ampthill Road	1717	18	1675	20	-2%	11%
39 - Meadow Road	790	9	732	8	-7%	-11%
40 - Meadow Road	57	1	56	1	-2%	0%
41 - Loverose Way	351	4	271	4	-23%	0%
42 - Fisherwood Road	660	24	569	24	-14%	0%
43 - Hardwick Hill	1375	29	1395	33	1%	14%
44 - A6 The Branston Way	2389	42	2330	39	-2%	-7%
45 - A6 The Branston Way	2195	26	2172	23	-1%	-12%
46 - Woburn Road	1775	22	1791	23	1%	5%
47 - Woburn Road	145	26	169	28	17%	8%
48 - A421 Bedford Southern Bypass	6971	367	7240	365	4%	-1%
49 - The Causeway	1177	33	1106	34	-6%	3%
50 - Wilstead Road	18	8	18	8	0%	0%
51 - A6 Wilstead Bypass	1929	27	1962	26	2%	-4%
52 - A6 Wilstead Bypass	2324	33	2360	30	2%	-9%
53 - A6 Wilstead Bypass	2899	59	2988	59	3%	0%
54 - A6 Wilstead Bypass	2860	99	2979	95	4%	-4%
55 - Wilstead Road	256	38	253	36	-1%	-5%
56 - Elstow Interchange	193	11	224	12	16%	9%
57 - A5141	3100	60	3290	65	6%	8%
58 - B530 Ampthill Road	2110	52	2306	56	9%	8%
59 - A5141	3050	58	3230	62	6%	7%
60 - A5141 Ampthill Road	2638	29	2661	30	1%	3%
61 - A5141 Ampthill Road	1965	26	1982	27	1%	4%
62 - A5134 West End	1482	13	1491	14	1%	8%
63 - A421 Bedford Southern Bypass	6493	309	6649	313	2%	1%

64 - A600 Harrowden Road	1925	25	1939	27	1%	8%
65 - A600	2142	41	2155	42	1%	2%
66 - A600 The Highway	1958	25	1967	24	0%	-4%
67 - Wallis Way	336	30	339	30	1%	0%
68 - A603 Cardington Road	1356	53	1365	52	1%	-2%
69 - Bedford Road	284	14	285	14	0%	0%
70 - Stannard Way	538	32	537	32	0%	0%
71 - A603 Cambridge Road	1623	60	1699	63	5%	5%
72 - A421 Bedford Southern Bypass	4013	230	4147	227	3%	-1%
73 - Water End	125	7	123	8	-2%	14%
74 - A4280 St. Neots Road	2387	59	2412	58	1%	-2%
75 - Renhold Junction	1856	51	1865	50	0%	-2%
76 - St. Neots Road	973	27	981	25	1%	-7%
77 - A421 Great Barford Bypass	2873	207	2990	208	4%	0%
78 - Black Cat Services	40	40	41	40	2%	0%
79 - A1 Great North Road	4492	262	4604	268	2%	2%
80 - A1 Great North Road	2070	164	2083	164	1%	0%
81 - Bedford Road	441	23	444	20	1%	-13%
82 - A421	3448	229	3572	239	4%	4%

5.6.97. The following links require further assessment based on the screening protocol (Rule 1 and Rule 2):

- Link 14- Marston Moretaine;
- Link 16- Marston Moretaine;
- Link 18- Bedford Road;
- Link 19- Bedford Road;
- Link 24- Broadmead Road;
- Link 26- Stewartby Way;
- Link 29- Bedford Road;
- Link 33- Fields Road;
- Link 36- Manor Road;
- Link 40- Meadow Road;
- Link 42- Fisherwood Road; and
- Link 47- Woburn Road.

5.6.98. Some links within the study area are expected to experience reductions in total traffic and/or HDV traffic flows. This is the result of the Paramics modelling software creating a dynamic model, whereby traffic is reassigned to the most convenient route if its chosen route becomes less convenient. For example, when additional traffic is generated by the Proposed Development and new highway infrastructure is installed, some background traffic may be displaced to other links which provide a more convenient option.

5.6.99. The potential effects, following the magnitude of change and scale of effect criteria set out in **Table 5-6** and **Table 5-7**, are summarised below in **Table 5-29**. It should be noted that as per IEMA guidelines, the individual characteristics of each link has been considered when applying magnitude of change criteria. For example, where percentage changes in traffic flows may be deemed significant, the actual increase in traffic may be just a few vehicles, if the existing flows are low. This has been noted when defining the residual effects. In addition, in some cases, strategic links may not permit pedestrian/cycle activity. Where this is the case, this is noted and there is deemed to be no impact on Severance, NMU Delay, NMU Amenity and Fear and Intimidation.

Table 5-29 - Assessment of potential effects, embedded mitigation, residual effects and monitoring in the Future Year

Sensitive Receptor	Potential Effects/Embedded mitigation/Residual Effects and Monitoring	
Link 14- Marston Moretaine (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the PM peak, a 40% increase in HDV movements (plus2 HDVs) is anticipated. All other changes in traffic flows are below 10%. The majority of Link 14 is subject to a 30mph speed limit as it runs through Marston Moretaine. A wide shared footway/cycleway is provided on the west side of the carriageway, where residential development is located, and this is separated from the road by a grass verge. There is no pedestrian or cycle provision on the east side, and no desire line to cross the majority of the link. At the north of the link, where it connects with Beancroft Road (which provides a route into the rest of Marston Moretaine), a signalised Toucan crossing is provided and the shared footway/cycleway also continues on the east side of the carriageway and to the roundabout with Beancroft Road. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The increase in HDV movements in numerical terms is not material and will not change the character of the link. An increase of 2 HDVs

		across an hour would have no discernible impact on severance and therefore the magnitude of change is downgraded to negligible. The revised magnitude of change for each effect is summarised below. • Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 14 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 16- Marston Moretaine (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 32% reduction in total traffic movements (-3,514 vehicles) and a 30% reduction in HDV movements (-214 HDVs) is expected. In the AM peak hour, a 35% reduction in total traffic movements (-457 vehicles) and a 38% reduction in HDV movements (-21 HDVs) is expected. In the PM peak hour, a 34% reduction in total traffic movements (-378 vehicles) and an 18% reduction in HDV movements (-6 HDVs) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. Link 16 provides a single lane in each direction and is subject to the national speed limit. Due to the strategic nature of this link, no

		pedestrian and cycle facilities are provided. It is unlikely that any pedestrian activity would be present, although some cyclists may use this route. There are no immediate desire lines, apart from potentially for longer distance commuting between Marston Moretaine and Bedford or to settlements such as Wootton. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 16 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 18- Bedford Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 30% reduction in total traffic movements (-3,957 vehicles) and a 27% reduction in HDV movements (-214 HDVs) is expected. In the AM peak hour, a 30% reduction in total traffic movements (-409 vehicles) and a 33% reduction in HDV movements (-20 HDVs) is expected. In the PM peak hour, the reductions in traffic flows are below 30%.

		These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. This is a strategic link with very few properties fronting it. A small number of residential properties are located at the south of the link, but these are separated by a wide grass verge, with an access lane beyond this providing vehicle and pedestrian access to the houses. To the north of this, a shared footway/cycleway extends along the east side of the link, from the residential access lane, north to a pedestrian crossing at Hoo Lane. The crossing provides dropped kerbs, tactile paving and a refuge island. This crossing provides an onwards connection under the A421 to the small village of Wootton Green. The footway along the link also connects into a commercial property at this point. The footway/cycleway does not continue north to connect with Green Lane at the northern end of the link, however it is concluded that the pedestrian and cycle facilities provided match the likely desire key desire lines and there is unlikely to be material volumes of pedestrians and cyclists along the link. In relation to driver delay, with the installation of traffic signals at the Broadmead Road/Bedford Road junction, no material impact is expected on Link 18. As there is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 18 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and

		• Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 19- Bedford Road (Negligible Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across a 24-hour period, a 36% reduction in total traffic movements (-3,931 vehicles) and a 25% reduction in HDV movements (-205 HDVs) is expected. In the AM peak hour, a 34% reduction in total traffic movements (-357 vehicles) and a 29% reduction in HDV movements (-17 HDVs) is expected. In the PM peak hour, a 30% reduction in total traffic movements (-259 vehicles) and a 15% reduction in HDV movements (-6 HDVs) is expected. These reductions are expected as a result of creating a new direct access from the A421, which provides a new route between the B530 Ampthill Road and the A421. This is a strategic link providing a single lane in each direction and subject to a 50mph speed limit. This link provides no footways and there are no obvious pedestrian desire lines. Cycle lanes are not provided, although cyclists may be present as part of longer distance journeys. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The reductions in traffic have a beneficial effect on the operation of the link. No changes are proposed to the magnitude of change in relation to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 19 is negligible. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Negligible Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**;

		• NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 24- Broadmead Road (Medium Sensitivity)	**Potential Effects**	• Severance: Medium magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Medium magnitude of change. In the AM peak hour, an increase in total vehicle traffic flows of 29% (152 vehicles) and an increase in HDV flows of 50% (2 HDVs) is expected. In the PM peak hour, an increase in total vehicle traffic flows of 32% (168 vehicles) and an increase in HDV flows of 67% (2 HDVs) is expected. A single lane is provided in each direction. The link is subject to a 30mph speed limit for approximately 250m north of the roundabout with Kiln Drive. Beyond this, a national speed limit restriction is in place. The change in HDV traffic in the PM peak constitutes a medium magnitude of change, however in numerical terms, this represents an increase of just two HDVs across an hour. The magnitude of change is therefore downgraded to low, to reflect the magnitude of change relating to total traffic flows. Footways are not provided on this link beyond the roundabout with Kiln Drive. Currently, the presence of pedestrians beyond this point is unlikely, however, in future an emergency access connection will be created from the Proposed Development to Broadmead Road. The purpose of this is to future proof a connection to a future development site located to the south. This emergency access will provide pedestrian and cycle connectivity and could therefore encourage people travelling to the Proposed Development to walk from Stewartby along Broadmead Road. If this did occur, this would increase the chance of collisions occurring between vehicles and NMUs. It is not possible to quantify how many pedestrians may use this route in future, although it is considered unlikely to attract large volumes, given the lack of pedestrian facilities. Based on professional judgement, the magnitude of change in relation to accidents and safety is categorised as medium. Traffic flows fall well below 1,400 vehicles per hour and the percentage changes in traffic are below 100%. The magnitude of change in relation to NMU Delay and NMU Amenity therefore remain negligible, even with the potential risk of increasing attractiveness of this route for NMUs. Cycle facilities are not provided; however cyclists may be present cycling on-carriageway.

		A level-crossing is present at Broadmead Road. No collisions resulting in personal injury have been recorded at the level crossing, according to published data. In relation to driver delay, signalisation of the Broadmead Road/ Bedford Road junction will be provided as part of the Proposed Development. The revised magnitude of change in relation to each effect is summarised below. • Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Medium magnitude of change.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 24 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is medium. The effect is **Moderate Adverse (Significant)**.
Link 26- Stewartby Way (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. Across 24-hours, an increase in total vehicle traffic flows of 14% (1,070 vehicles) and an increase in HDV flows of 1% (3 HDVs) is expected. In the AM peak hour, an increase in total vehicle traffic flows of 7% (56 vehicles) and an increase in HDV flows of 20% (3 HDVs) is expected. In the PM peak hour, no changes in traffic flow over 10% are expected. The western section of this link is residential in nature and subject to a 30mph speed limit. Residential properties front the link, with driveway access for properties on the northern side.

		The link extends east under the Midland Main Railway Line and a footway is provided on the north side of the link only. Beyond this, the speed limit increases to 60mph (national speed limit). The link is classed as high sensitivity as there is a pedestrian footway on the north side but an access to a PROW on the south side with no crossing point at this desire line. This is located approximately 300m east of the rail line. The change in total traffic flows in each assessment period constitute a negligible magnitude of change in relation to severance, which is adverse. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of the Proposed Development. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 26 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 29- Bedford Road (Negligible Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. In the AM peak hour, an increase in total vehicle traffic flows of 2% (6 vehicles) and an increase in HDV flows of 50% (1 HDV) is expected. In the PM peak hour and across the 24-hour assessment period, all changes in traffic flows are materially below 30%.

		Link 29 Bedford Road extends from B530 Ampthill Road to the village of Houghton Conquest. It is a rural road with no pedestrian or cycle facilities, but no pedestrian desire lines within a reasonable walking distance. It is subject to the national speed limit for the majority of the link, reducing to 40mph on approach to Houghton Conquest. Footways are provided once the link meets Houghton Conquest. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of the Proposed Development. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. An increase of 10 total vehicles and just one HDV in the PM peak hour will not materially change the character or operation of this link. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 29 is negligible. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Negligible Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Adverse (Not Significant)**.
Link 33- Fields Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Low magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 23% increase in HDV traffic movements (plus3 HDVs) is expected in the PM peak hour. No other changes in traffic flow exceed the thresholds requiring further assessment. Link 33 connects Wootton with Woburn Road, adjacent to the Site. The link passes over the A421 and is subject to a 30mph speed limit in the vicinity of Wootton, and 60mph beyond that. Within Wootton,

		shared footway/cycleways are provided on both sides of the carriageway and a signalised Toucan crossing is provided. Beyond Wootton, a footway continues on the north side of the link and extends round to connect with Woburn Road. Signage is not provided indicating whether this is a shared facility or footway only. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of the Proposed Development. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. Although two-way traffic flows exceed 1,400 vehicles per hour, therefore constituting a low, medium or high magnitude of change, the impact of the Proposed Development is not material in numerical terms and the flows only slightly exceed the 1,400 vehicle per hour threshold. The magnitude of change is therefore considered to be low. The expected increase in HDV traffic is not considered to be material in numerical terms. No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 33 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is low. The effect is **Moderate Adverse (Not Significant)**. The effect is Not Significant given the actual increase in traffic on the link; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.
Link 36- Manor Road (High Sensitivity)	**Potential Effects**	• Severance: Medium magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

		An increase in total vehicle movements of 4,469 (plus 79%) and an increase of 43 HDV movements (plus 26%) is expected across the 24-hour period. An increase of 182 total vehicle movements (plus 35%) is expected across the AM peak hour. A reduction in HDV traffic of 14% (-2 HDVs) is expected. An increase of 63 total vehicle movements (plus12%) is expected across the AM peak hour. As part of the Proposed Development (i.e. embedded mitigation), Manor Road between B530 Ampthill Road and the rail line, will be reconstructed. High quality pedestrian and cycle facilities will be provided, including signalised crossing points. The junction of Manor Road/B530 Ampthill Road will be signalised, and the function/character of the link will change to reflect the new vehicle and NMU traffic profiles, through the re-design of the road, which includes dualling. Further detail is provided in the **Appendix 5.1: Transport Assessment (Volume 3)**. There will therefore be a beneficial impact on this section of Manor Road as a result of the Proposed Development. To the west of the rail line, from Woburn Road, an off-road PROW is provided on the north side of Manor Road. This currently stops approximately 135m north of the rail line and requires pedestrians/cyclists to continue on-carriageway. The Network Rail Manor Road bridge proposals include the construction of a new footway on the west side of Manor Road, which will connect to this existing PROW. From the Manor Road bridge, the footway will connect with the active travel network included as part of the Proposed Development. It is therefore considered that the existing PROW provision, combined with the Network Rail proposals and the Proposed Development, is sufficient to accommodate pedestrians and cyclists. With the above embedded mitigation and the Network Rail Manor Road bridge proposals, the impact of the Proposed Development is concluded to be beneficial in terms of severance, driver delay, NMU delay, NMU amenity, fear and intimidation and accidents and safety. Therefore, no additional mitigation is considered to be required, above what is embedded mitigation as part of the Proposed Development. It is not forecast that the beneficial impact of the new footway will exceed the benefit observed in Scenario 4/4a and therefore the magnitude of change for severance has been reduced to low.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 36 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is medium. The effect is **Moderate Beneficial (Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**;

		• NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 40- Meadow Road (Low Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A reduction of 62 total vehicle movements (-40%) is expected across the AM peak hour. No changes in traffic flows above 30% are expected in the PM peak hour or across the 24-hour period. Link 40 runs through the new Wixams settlement and is partly residential in nature and partly a route through construction activities. Where residences are located, footways are set back from the road and separated by landscaped verges. In future, this link will provide access to the eastern plaza of the Full Wixams Rail Station, which will be in place by the Primary Opening Year. Appropriate pedestrian and cycle provision will be included as part of the Wixams development. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of the Proposed Development. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. No amendments are proposed to the magnitude of change assigned to each effect and the effects are beneficial given the reduction in traffic flows.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 40 is low. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**;

		• Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Negligible Beneficial (Not Significant)**.
Link 42- Fisherwood Road (Medium Sensitivity)	**Potential Effects**	• Severance: Low magnitude of change; • Driver Delay: High magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 34% reduction in total traffic flows (-282 vehicles) is anticipated in the AM Peak hour. Other time periods are below the threshold for further assessment based on the link sensitivity. As a result, there is likely to be a beneficial impact of the proposals on this link. Link 42 is a main traffic route through the Wixams development. It provides a single lane in each direction and is subject to a 30mph speed limit. There is no direct residential frontage on this link. Access to commercial units is provided and some units benefit from dedicated right-turn lane access. Wide shared use footway/cycleways are provided on both sides of the link. Where these cross commercial access points, the footway/cycleway is continued across the access, giving priority to NMUs, and signage is in place to inform drivers of their presence. A Zebra crossing is provided at the eastern end of the link and an informal pedestrian island crossing is provided at the western end. There is expected to be a material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** as a result of operational traffic. This is a significant reduction in speed in the AM Peak hour for a single hour only in one direction, although the percentage change in traffic does not exceed the threshold requiring further assessment. Based on the material reduction in vehicle speeds the magnitude of change in relation to driver delay is therefore reduced to medium. The resultant impact is also therefore classed as adverse, rather than beneficial, despite the reduction in total traffic expected. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible. The revised magnitude of change in relation to each effect is summarised below. • Severance: Low magnitude of change; • Driver Delay: Medium magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change.

	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 42 is medium. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is low. The effect is **Minor Beneficial (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is high. The effect is **Moderate Adverse (Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Beneficial (Not Significant)**.
Link 47- Woburn Road (High Sensitivity)	**Potential Effects**	• Severance: Negligible magnitude of change; • Driver Delay: Negligible magnitude of change; • NMU Delay: Negligible magnitude of change; • NMU Amenity: Negligible magnitude of change; • Fear and Intimidation: Negligible magnitude of change; and • Accidents and Safety: Negligible magnitude of change. A 11% reduction in HDV traffic flows (-5 HDVs) is anticipated in the AM Peak hour. A 17% increase in total traffic flows (plus24 vehicles) is anticipated in the PM peak hour. For the purposes of a robust assessment, the effects are based on the change in traffic flows in the PM peak hour and therefore the effects are determined to be adverse. Link 47 extends from Marsh Leys Interchange in the north to Manor Road in the south. At the south of the link, adjacent to the junction with Manor Road, a PROW crosses the carriageway. Dropped kerbs and tactile paving are provided. No signage is present indicating to drivers that pedestrians and other NMUs may be crossing the road. The road is subject to the national speed limit at this point. Further north, on the approach to Marsh Leys Interchange, the speed limit reduces to 40mph, within the vicinity of a small number of residential properties. These properties are set back from Woburn Road. A footway is then provided from the residences, north to the Marsh Leys Interchange. There is no material change in vehicle speeds (as per the criteria set out in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)** because of the Proposed Development. The magnitude of change in relation to driver delay is therefore negligible. There are no collision clusters on this link attributable to the highway layout or infrastructure. The magnitude of change in relation to accidents and safety, based on the change in traffic flows and the character of the link is therefore negligible.

		No amendments are proposed to the magnitude of change assigned to each effect.
	Embedded mitigation	Embedded mitigation as set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.
	Residual Effects and Monitoring	The sensitivity of Link 47 is high. All residual effects are direct, permanent and long-term. • Severance: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Driver Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Delay: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • NMU Amenity: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; • Fear and Intimidation: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**; and • Accidents and Safety: The magnitude of change, following mitigation, is negligible. The effect is **Minor Adverse (Not Significant)**.

SENSITIVITY TEST- FULL EAST WEST RAIL (SCENARIO 5A)

5.6.100. A sensitivity test has been undertaken to assess the potential effects of the completion of the full EWR line from Oxford to Cambridge in the Future Year. The traffic flows for each link within the study area are summarised within **Appendix 5.4: Traffic Flows for Sensitivity Testing Scenario 5a (Volume 3).**

5.6.101. The results demonstrate that there is no material impact on the operation of the network and no amendments to the conclusions of the Future Year assessment (Scenario 5). Therefore, no additional mitigation, requiring the completion of the full EWR is required.

SENSITIVITY TEST- NO RAIL DISCOUNT (SCENARIO 5B)

5.6.102. A sensitivity test has been undertaken to assess the potential effects of removing the proposed rail discount for visitors travelling to the Site in the Future Year. The traffic flows for each link within the study area are summarised within **Appendix 5.5: Traffic Flows for Sensitivity Testing Scenario 5b (Volume 3).**

5.6.103. The results demonstrate that there is no material impact on the operation of the network and no amendments to the conclusions of the Future Year assessment (Scenario 5). Therefore, no additional mitigation regarding a rail discount is required.

CUMULATIVE EFFECTS

5.6.104. The main assessments described above are cumulative assessments as these include growth from specific committed developments. The growth generated by committed schemes and the derivation of the traffic flows for the Reference Case are described in detail in **Appendix 5.1: Transport Assessment (Volume 3)**, and its associated appendices, including the Forecasting Note.

5.7. OPPORTUNITIES FOR ENVIRONMENTAL ENHANCEMENT

5.7.1. A number of impacts have been identified within the assessment.

5.7.2. Where the impacts have been identified additional mitigation has been considered where possible to minimise the impacts.

5.7.3. **Table 5-30** below summarises the additional mitigation which includes signage, management actions and agreements with Bedford BC in relation to active travel which are referred to within the Statement of Agreed Position (SoAP).

5.8. DIFFICULTIES AND UNCERTAINTIES

5.8.1. The **Appendix 5.1: Transport Assessment (Volume 3)** which has informed this ES chapter, is subject to a number of limitations and assumptions, as set out in **Section 5.2 Assumptions**.

5.8.2. The assessment set out in **Section 5.6 Assessment of Potential Effects, Mitigation and Residual Effects** of this ES chapter assesses Proposed Development-generated traffic flows. The assessment does however take account of the traffic and transport measures embedded into the outline design of the Proposed Development which are set out in detail within **Appendix 5.1: Transport Assessment (Volume 3)** and comprises of the following:

- Active travel improvements;
- New A421 Junction;
- Internal access roads;
- Realigned Manor Road;
- Bus Service/Shuttle Bus Services; and
- New railway connectivity.

5.8.3. The following assumptions have been made:

- The main limitation to the existing conditions presented within this ES chapter is the precision of the traffic counts that form the 2023 Existing scenario (Scenario 1). The link counts were recorded over a week and are typically subject to an accuracy of plus or minus 10%. This is a standard limitation within any transport chapter;
- The precise occupation of some of the committed developments which have planning approval but have not yet been built-out at the time of the traffic surveys is not known. Assumptions have been made based on discussions with key stakeholders and set out within **Appendix 5.1: Transport Assessment (Volume 3)**. This is a standard limitation within any transport chapter;
- A number of assumptions have been made in order to establish the trip generation of the construction and operation of the Proposed Development, including the proportion of new vehicle trips on the local highway network. These are set out in **Appendix 3.4: Table 1 – Summary of Assumptions – Transport**.

5.9. SUMMARY OF LIKELY SIGNIFICANT EFFECTS AND PROPOSED MITIGATION

5.9.1. **Table 5-30** below presents a summary of the likely significant effects relating to Traffic and Transport as a result of the Proposed Development, and the mitigation measures proposed to avoid, prevent, reduce, or offset (if possible and required) any identified significant adverse effects. The table summarises those effects that were identified within the assessment as likely to be significant prior to the consideration of mitigation. Significant effects are identified as major, or some moderate effects. Effects that are identified as negligible or minor are not considered to be significant, and therefore, are not listed in the summary table below.

Table 5-30 – Summary of Likely Significant Effects and Proposed Mitigation

Receptor	Effect and Definition of Term	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
Scenario 2 – 2023 Existing plus Peak Construction and Scenario 2a – 2023 Existing plus Average Construction				
Link 31- Wootton – Woburn Road (Medium Sensitivity)	**NMU Amenity** *(the relative pleasantness of a journey. Affected by traffic along with pavement width/ separation from traffic and NMU activity).* At present, a footway is provided on the east side of the carriageway south from Fields Road to an existing commercial property. There is a PROW access just south of this commercial property, but no footway provision. There is also unlikely to be material levels of pedestrian demand on this link. As part of the Proposed Development, a new footway will be constructed along the east side of this link, where current provision is missing, although this may not be in place at the point of the Peak Construction Year. The magnitude of change in relation to NMU Amenity has been adjusted to reflect the very limited potential for NMU's on this link based on observations during Site visits and the lack of continuous desire lines, cyclists may be present on the carriageway. Given the location, there will be an increase in HDVs of over 100% within Scenario 2 and this will result in medium magnitude of change for NMU Amenity.	**Moderate Adverse (Significant)**	As required by the Travel Plan and detailed in the OCEMP, the Transport Steering Group will review and monitor active travel use and suggest alternative routes for pedestrians and cyclists when and if needed. .	Direct, temporary, short term residual effect of **Moderate Adverse** significance **(Significant)**
	Fear & Intimidation *(Dependent on a traffic volumes, HGV composition, speed of vehicles and proximity of people to traffic).* At present, a footway is provided on the east side of the carriageway south from Fields Road to an existing commercial property. There is a PROW access just south of this commercial property, but no footway provision.	**Moderate Adverse (Significant)**	As required by the Travel Plan and detailed in the OCEMP, the Transport Steering Group will review and monitor active travel	Direct, temporary, short term residual effect of **Moderate Adverse** significance **(Significant)**

	There is also unlikely to be material levels of pedestrian demand on this link. As part of the Proposed Development, a new footway will be constructed along the east side of this link, where current provision is missing, although this may not be in place at the point of the Peak Construction Year. The magnitude of change in relation to Fear & Intimidation has been adjusted to reflect the very limited potential for NMU's on this link based on observations during Site visits and the lack of continuous desire lines, cyclists may be present on the carriageway. Given the location, there will be an increase in HDVs of over 100% within Scenario 2 and this will result in medium magnitude of change for Fear & Intimidation.		use and suggest alternative routes for pedestrians and cyclists when and if needed.	
Link 35-Woburn Road (Low Sensitivity)	**NMU Amenity** There are no real pedestrian facilities and only a small section of footway extends from the Fields Road roundabout north for approximately 85m and then stops. No further footways are provided. In relation to NMU Amenity, the increases in HDV traffic flows significantly exceed 100%. As described previously, pedestrian activity is not anticipated during the Peak Construction Year due to a lack of desire lines. Cyclists may be present on the link and may be impacted by the increase in HDV movements. Given the location, there will be an increase in HDVs of over 100% within Scenario 2 and this will result in medium magnitude of change for NMU Amenity.	**Moderate Adverse (Significant)**	As required by the Travel Plan and detailed in the OCEMP, the Transport Steering Group will review and monitor active travel use and suggest alternative routes for pedestrians and cyclists when and if needed.	Direct, temporary, short term residual effect of **Moderate Adverse** significance **(Significant)**
	Fear & Intimidation There are no real pedestrian facilities and only a small section of footway extends from the Fields Road roundabout north for approximately 85m and then stops. No further footways are provided. In relation to Fear & Intimidation, the increases in HDV traffic flows significantly exceed 100%. As described previously, pedestrian activity is not anticipated during the Peak Construction Year due to a lack of	**Moderate Adverse (Significant)**	As required by the Travel Plan and detailed in the OCEMP, the Transport Steering Group will review and monitor active travel	Direct, temporary, short term residual effect of **Moderate Adverse** significance **(Significant)**

	desire lines. Cyclists may be present on the link and may be impacted by the increase in HDV movements. Given the location, there will be an increase in HDVs of over 100% within Scenario 2 and this will result in high magnitude of change for Fear & Intimidation.		use and suggest alternative routes for pedestrians and cyclists when and if needed.	
Scenario 4 – Primary Opening Year - Reference Case plus Development, Scenario 4a – Primary Opening Year - Reference Case plus Development plus Construction and 5 -– Future Year - Reference Case plus Development				
Link 24-Broadmead Road (Medium Sensitivity)	**Accidents & Safety** *(Professional judgement to assess local circumstance or factors, which may increase of decrease the risk of accidents).* Footways are not provided on this link beyond the roundabout with Kiln Drive. Currently, the presence of pedestrians beyond this point is unlikely. In future, it is considered unlikely to attract large volumes of pedestrians, given the lack of pedestrian facilities. As a result, the magnitude of change has been defined as medium in relation to accidents and safety, based on professional judgement. Cycle facilities are not provided and cyclists will be on-carriageway. Based on professional judgement, it is unlikely that there would be any material change in pedestrian / cycle flows and only a small change in traffic flows; therefore, this effect has been classed as Moderate Adverse, but is unlikely to materialise in practice.	**Moderate Adverse (Significant)**	The proposed active travel connection onto Broadmead Road would not be opened for use until there was wider active travel connections to the south into Stewartby. This would therefore reduce the residual effect to Minor Adverse (Not Significant). As part of the Statement of Agreed Position (SoAP) with Bedford BC it has been agreed that “Bedford BC to work with partners to improve and grow the local connections and other active travel	Direct, permanent, long term residual effect of **Minor Adverse** significance **(Not Significant)**

			networks in the wider community".	
Link 36- Manor Road (High Sensitivity)	**Severance** *(Division that can occur when it becomes separated by a major traffic artery).* High quality pedestrian and cycle facilities will be provided, including signalised crossing points, there will therefore be an overall beneficial impact on this section of Manor Road as a result of the Proposed Development.	**Moderate Beneficial (Significant)**	No additional mitigation is proposed or required as this is beneficial.	Direct, permanent, long term residual effect of **Moderate Beneficial** significance **(Significant)**
Link 42- Fisherwood Road (Medium Sensitivity)	**Driver Delay** *(Delay to motor vehicles, although the effects are only likely to be significant when the traffic on the network is predicted to be at or close to capacity).* Based on the material reduction in vehicle speeds the magnitude of change in relation to driver delay is therefore reduced to medium; however, driver delay will still occur. It is noted that this only occurs in a single hour and in one direction only, and hence limited effect.	**Moderate Adverse (Significant)**	Given the effect is only in a single hour and a single direction there is no additional mitigation proposed.	Direct, permanent, long term residual effect of **Moderate Adverse** significance **(Significant)**

5.10. REFERENCES

Ref. 5.1: Crashmap (n.d.) *CrashMap Data: Great Britain 1999 - 2022.* Available online at: https://www.crashmap.co.uk/Search

Ref. 5.2: National Highways (n.d.) *National Highways WebTRIS database.* Available online at: https://webtris.highwaysengland.co.uk/

Ref. 5.3: National Highways (n.d.) *A428 Black Cat to Caxton Gibbet.* Available online at: https://nationalhighways.co.uk/our-roads/a428-black-cat-to-caxton-gibbet/

Ref. 5.4: East West Rail (n.d.) *East West Rail Route Update*. Available online at: https://eastwestrail.co.uk/routeupdate

Ref 5.5: Davis, S., Hoare, D., Howard, R., Ross, A. (2023) *Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Road Traffic and Movement.* Available at https://www.iema.net/media/5mrmquib/iema-report-environmental-assessment-of-traffic-and-movement-rev07-july-2023.pdf [Accessed: 03 April 2025].

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