6 TRANSPORT & ACCESS

6.1 INTRODUCTION

6.1.1 This Chapter, which was prepared by Mewies Engineering Consultants Ltd (M-EC), presents an assessment of the likely significant effects of the Proposed Development in relation to transport and access.

6.1.2 The transport planning policy context against which the Proposed Development should be assessed at national, regional, and local levels is considered. This Chapter describes the baseline transport conditions in the vicinity of the Site, the assessment methodology used to forecast the trip generation and the potential effects of the Proposed Development on all transport modes. Changes to highway traffic volumes, and capacity, together with effects on public transport accessibility and capacity are also considered. The mitigation measures required to prevent, reduce or offset any adverse effects of the Proposed Development are outlined and the residual effects described.

6.1.3 This Chapter should be read in conjunction with the Transport Assessment (TA) prepared by M-EC (presented as **Appendix 6.1**) and Framework Travel Plan (FTP) (presented as **Appendix 6.2**), which provide the context for, and background to, this Chapter.

6.1.4 The Proposed Development is for a residential development of up to 525 dwellings, with associated infrastructure, open space and new vehicular access to Newport Pagnell Road. The details of the application are presented at Chapter 3. This Transport Chapter also assesses the transport impact of delivering the northern land parcel of the Site only, located to the north of The Green (115 dwellings); or the southern land parcel of the Site only to the south of The Green (410 dwellings).

6.2 METHODOLOGY

Assessment Methodology

6.2.1 The methodology used in this Chapter reflects the guidance set out in the Institute of Environmental Assessment's (now known as the Institute of Environmental Management & Assessment (IEMA)) 'Guidelines for the Environmental Assessment of Road Traffic' (1993) and Volume 11, Section 2 of the Design Manual for Roads and Bridges (DMRB) 'Environmental Assessment' (2008) published by the strategic highway authorities of the United Kingdom. These guidelines are recommended for the assessment of environmental effects of road traffic and they identify appropriate standard methodologies for assessment.

6.2.2 The assessment of the environmental effects of transportation requires a number of stages as follows:

- Collation of existing transport data (the existing situation or baseline);
- Forecasting the change in the existing situation as a result of known committed developments and transport infrastructure in the future without the Proposed Development (without development scenario);
- Assessing the effects of the Proposed Development against a 'without development' scenario (i.e. including cumulative effects and background growth);
- Forecasting the changes in travel demand as a result of the Proposed Development; and
- Identifying any necessary mitigation measures.

Consultation

6.2.3 As part of the pre-application transport scoping process, discussions have been held with Northamptonshire County Council (as the local highway authority) and Highways England (as the strategic highway authority) to agree the extent of the highway network (study area) to be assessed for development trip impact. It was agreed that the following junctions should be included in the study area:

- A45 Brackmills roundabout;
- Pavilion Drive/ Nene Valley Way South slip road junction;
- Caswell Road/ Rhosili Road/ Pavilion Drive roundabout;
- Caswell Road/ Gowerton Road roundabout;
- Gowerton Road/ Landimore Road roundabout;
- Newport Pagnell Road/ Landimore Road/ Wooldale Road roundabout;
- Newport Pagnell Road/ The Warren/ Wootton Hope Drive roundabout;
- Newport Pagnell Road/ Hermitage Way/ Northampton High School Access roundabout;
- A45 Queen Eleanor roundabout;
- Wooldale Road/ Caroline Chisholm School Access roundabout;
- Wooldale Road/ Quinton Road roundabout;
- Wooldale Road/ Berry Lane roundabout;
- A45 London Road slip road/ Berry Lane junction;
- London Road/ Rowtree Road/ Wooldale Road roundabout;
- Newport Pagnell Road/ The Green junction; and
- Bridge Meadow Way/ A45 Slip Road roundabout.

6.2.4 It was also agreed with Northamptonshire County Council and Highways England that the traffic impact assessments undertaken would assess a base year of 2017 (registration of the planning application) and a future year of 2031 (which is requested by Northamptonshire County Council for all planning applications), by which time the Proposed Development is expected to be built-out. The 2031 future year also considers the cumulative impact of traffic in the study area from background increases in traffic flows (accounted for through applying TEMPro growth factors to baseline traffic flows), committed development trips and trips generated by the Proposed Development.

Assessment Scenarios

6.2.5 The following assessment scenarios are assessed in respect of the Proposed Development, as agreed with Northamptonshire County Council and Highways England:

- 2017 Base Year (baseline of existing conditions);
- 2031 Future Base Year (including background growth and committed development but without the Proposed Development or mitigation); and
- 2031 Future Year (including the Proposed Development with 'built-in' mitigation).

6.2.6 The 2017 Base Year scenario is derived from 2016 baseline traffic survey data and provides the baseline against which the 2031 Future Base Year (Do Minimum) will be derived and assessed.

6.2.7 The 2031 Future Base Year (Do Minimum) scenario provides an assessment of the change between the 2017 Base Year and 2031 Future Base Year taking into account the background increases in traffic flows (using TEMPro growth factors) and committed development trips but does not include development trips. The 2031 Future Base Year (Do Minimum) scenario provides the baseline against which the 2031 Do Something scenario will be assessed.

6.2.8 The 2031 Future Year (Do Something) scenario considers traffic flows as per the 2031 Future Base Year (Do Minimum) scenario (i.e. background increases in traffic flows and committed development trips) in addition to vehicle trip generation expected from the Proposed Development; therefore, the assessment of transport and traffic impacts in this scenario take into account the cumulative impacts of background traffic growth, committed development trips and Proposed Development trips on the highway network and sensitive receptors in the study area.

6.2.9 The IEMA Guidelines establish two broad rules for assessing the threshold at which a change in traffic flows should be considered. These are either a 30% change in traffic flows on a highway link (or increase in the HGV component of traffic flows by 30% or more), and/ or a 10% change in traffic flows in a sensitive location. Weekday AM and PM network peak hours of 0800-0900 hours and 1700-1800 hours respectively have been assessed in the TA; however, this Chapter considers traffic impacts for an 18-hour average weekday (0600-0000) and 24-hour average day in line with relevant guidance.

6.3 ASSESSMENT APPROACH

Highway Capacity and Change in Traffic Flow

6.3.1 The principal means of determining the magnitude and significance of the effect of the Proposed Development on transport and access is via the assessment of its traffic effect in terms of highway capacity and changes in traffic flows.

6.3.2 In addition to the above, the IEMA guidance identifies a number of environmental effects that could arise from changes in vehicular travel demand as follows:

- Noise;
- Vibration;
- Visual effects;
- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian amenity;
- Fear and intimidation;
- Accidents and safety;
- Hazardous loads;
- Air pollution;
- Dust and dirt;
- Ecological effects; and
- Heritage and conservation areas.

6.3.3 The following paragraphs detail the assessment criteria relevant to each of the identified environmental indicators.

Noise and Vibration

6.3.4 Traffic related noise and vibration is considered within the accompanying Noise and Vibration Report. Therefore, no further consideration is given to noise and vibration in this Chapter.

Visual Effects

6.3.5 In terms of transport, visual effects relate to the visual intrusion of traffic in areas of scenic beauty or conservation interest. In this context, the Proposed Development is considered unlikely to result in visual intrusion of this nature given that traffic to and from the Site will access onto the main radial route and use established routes away from such sensitive receptors.

6.3.6 No further consideration is given to visual effects in this Chapter.

Severance

6.3.7 The IEMA defines severance at Paragraph 4.27 of its 'Guidelines for the Environmental Assessment of Road Traffic' as:

> **'...the perceived division that can occur within a community when it becomes separated by a major traffic artery.'**

6.3.8 The IEMA guidelines acknowledge that the measurement and prediction of severance is extremely difficult and that the correlation between the extent of severance and the physical barrier of a road is not clear and that there are no predictive formulae which give simple relationships between traffic factors and levels of severance. However, the IEMA guidelines accept that in general, marginal changes in traffic flows are, by themselves, unlikely to create or remove severance.

6.3.9 Factors which need to be considered when determining whether severance is likely to be an important issue include road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross an affected route. It should also be noted that different groups within a community may be affected in different ways; generally speaking the elderly and children are considered more likely to be affected by severance than others.

6.3.10 Three main indicators for the assessment of severance have been formulated from studies of changes in traffic flow on observed links and are discussed in the Guidelines for the Environmental Assessment of Road Traffic. These comprise:

- Change in flow of up to 30% - slight separation effects;
- Change in flow of up to 60% - moderate separation effects; and
- Change in flow of up to 90% - substantial separation effects.

6.3.11 It should be recognised that these are guidelines only, and are highly dependent on existing ambient traffic levels. They are in no way definitive measures of severance.

6.3.12 These categories of change for determining the impact of new severance from development are also outlined in DMRB 'Volume 11, Section 3, Part 8: Pedestrians, Cyclists, Equestrians and Community Effects' (1993). The guidance states that these categories *'should be coupled with an estimate of the numbers of people affected, their location and the community facilities from which they are severed.'* Two-way Annual Average Daily Traffic (AADT) thresholds have also been identified for each level of severance within a community; these have been provided in **Table 6.1** and will inform the magnitude of impact assessments for severance.

Table 6.1: Severance Levels and AADT Thresholds

Severance Level	Change in Traffic Flow	Two-way AADT Threshold
Slight	30%	<8,000
Moderate	60%	8,000 to 16,000
Substantial	90%	>16,000

Source: derived from DMRB (1993) 'Volume 11, Section 3, Part 8: Pedestrians, Cyclists, Equestrians and Community Effects' and the IEMA Guidelines

Driver Delay

6.3.13 Traffic delays due to development related traffic can occur at several points on the network surrounding the Site, including:

- At the Site accesses, where there will be additional turning movements;
- On the highways passing the Site where there is likely to be additional road traffic; and
- At other key junctions along the highway which might be affected by increased road traffic.

6.3.14 Values for driver delay can be determined by the use of industry standard junction modelling software (e.g. LinSig for signal-controlled junctions). The modelling software produces estimates of average delay (seconds) per Passenger Car Unit (PCU) and mean maximum queues at a junction. As such, driver delay has been identified by comparing the 'without development' and 'with development' scenarios.

6.3.15 The IEMA guidance states that driver delay is only likely to be significant at locations that are already at, or near, capacity.

Pedestrian Delay

6.3.16 Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. Generally speaking, increases in traffic are likely to correspond to increased pedestrian delay. Pedestrian delay will also depend upon the level of pedestrian activity, visibility and physical conditions. The IEMA guidance does not recommend any thresholds for absolute or actual changes in delay and instead directs assessors to use their own judgement as to whether or not pedestrian delay is a significant effect, although guidelines for the calculation of pedestrian delay are identified in DMRB Volume 11, Section 3.

6.3.17 The determination of what constitutes a material effect on pedestrian delay and amenity is generally left to the judgement of the assessor and knowledge of local factors and conditions.

Pedestrian Amenity

6.3.18 Pedestrian amenity is broadly defined as the relative 'pleasantness' of a journey. It is considered to be affected by traffic flows, traffic composition, footway widths and the degree of pedestrian separation from traffic. The IEMA guidance suggests that a tentative threshold for judging the significance of changes in pedestrian amenity will be where traffic flows (or its HGV component) is halved or doubled.

Fear and Intimidation

6.3.19 A number of factors are considered relevant in determining changes in the level of fear and intimidation experienced by pedestrians and cyclists including changes in traffic volumes, its HGV content, its speed, its proximity to people and the availability and quality of pedestrian infrastructure.

6.3.20 The IEMA guidelines make reference to a 1981 study by Crompton which sets out the criteria summarised in **Table 6.2** for measuring the effects of fear and intimidation. The guidelines do, however, stress the need for professional judgement when applying these criteria.

Table 6.2: Fear and Intimidation Assessment Criteria

Degree of Hazard	Average Traffic Flow over 18hr day (veh/ hr)	Total 18hr HGV Flow	Average Speed over 18hr day (mph)
Extreme	1800+	3000+	20+
Great	1200-1800	2000-3000	15-20
Moderate	600-1200	1000-2000	10-15

Source: derived from the IEMA Guidelines

Accidents and Safety

6.3.21 The potential effect of the Proposed Development on personal injury accidents and highway safety can be derived via statistical assessment of the likely increase or decrease in the number of PIAs resulting from changes to traffic flows and composition based on an initial assessment of recorded PIAs in the locale.

6.3.22 The IEMA Guidelines stress the need for professional judgement in determining the implications of local circumstances or factors which may elevate or lessen the risk of accidents occurring. The primary factor considered in this assessment is the increase in traffic flow and changes to the composition of traffic resulting from the Proposed Development.

Hazardous Loads

6.3.23 The transport of hazardous and abnormal loads on the public highway is controlled by 'The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009'. Any goods transported will be carried in appropriate vehicles with the necessary warning livery attached.

Air Pollution

6.3.24 The effect on air pollution resulting from changes to traffic flow is considered in supporting Air Quality Report. Therefore, no further consideration is given to Air Quality in this Chapter.

Dust and Dirt

6.3.25 Dust and dirt are often considered within the environmental impact assessment of traffic in the context of construction vehicles. The effect of dust in relation to construction activities is considered in the accompanying Air Quality Report. Therefore, no further consideration is given to dust and dirt in this Chapter.

Ecological Effects

6.3.26 The effect on ecological receptors is considered within Chapter 7: Ecology. Therefore, no further consideration is given to ecological effects in this Chapter.

Heritage and Conservations Areas

6.3.27 The effect on heritage and conservations areas are not considered within this ES. Therefore, no further consideration is given to historical effects in this Chapter.

Public Transport

6.3.28 There are no industry wide recognised criteria for assessing the effect of development proposals on the public transport network. As a result, assessment is defined as effects on accessibility of services.

Significance Criteria

6.3.29 Each of the identified effects is assessed in terms of their:

- Type – beneficial or adverse;
- Duration – permanent or temporary, long-term or short-term; and
- Nature – direct, indirect, primary, secondary or cumulative.

6.3.30 The significance of each effect is assessed using the following four-point category scale, before and after development (i.e. potential effect in the reference case and residual effect post development respectively) for both the operational and construction phases. In the absence of published guidelines, the following terms are used:

- Major – considerable effect (by extent, duration or magnitude) of more than local significance (which can be beneficial or adverse);
- Moderate – limited effect (by extent, duration or magnitude) which may be considered significant (which can be beneficial or adverse);
- Minor – slight, very short or highly localised effect of local significance (which can be beneficial or adverse); and
- Negligible – no discernible beneficial or adverse effect to the existing environment.

6.3.31 The generic criteria for determining the significance of environmental effects has been set out in Chapter 2 of this Environmental Statement. However, as the generic criteria for magnitude of impact does not enable a quantitative assessment of traffic impacts to be made, criteria have been derived from the IEMA Guidelines to enable magnitude of impact to be quantified based on the assumptions that 30%, 60% and 90% changes in traffic levels are considered as low, medium and high impacts respectively. These assumptions have been incorporated into the magnitude of impact categories set out in Chapter 2. It should be noted that a change of less than 10% is not considered significant and therefore the magnitude of impact would be classified as 'no change'.

6.3.32 The absolute change in traffic levels has been considered in the assessments to ensure that very small changes on links with low baseline flows are not considered as more significant.

6.3.33 This Chapter considers all effects which are 'moderate' or 'substantial' as significant effects from the Proposed Development (either beneficially or adversely).

Policy Background

6.3.34 This section provides a summary of the national, regional and local planning policy context in relation to transport and demonstrates how the Proposed Development aligns with key pieces of planning policy and guidance. Further details of the planning policy context of the Proposed Development are provided in the supporting TA (**Appendix 6.1**) and FTP (**Appendix 6.2**).

National Policy

6.3.35 The National Planning Policy Framework (NPPF) published in March 2012 sets out the Government's planning policies for England and Wales and how these are expected to be applied.

6.3.36 With respect to local policies, the NPPF has full force for all Local Authorities with a Local Plan that was adopted prior to 2004.

6.3.37 At the heart of the Framework is a presumption in favour of sustainable development

6.3.38 The Framework states that all developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment and a Travel Plan (ref: NPPF, paragraphs 24 and 36).

6.3.39 It is stated that planning decisions should take account of whether:

> **'The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;**
>
> **Safe and suitable access to the site can be achieved for all people; and**
>
> **Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe'** (ref: NPPF, paragraph 24).

6.3.40 In addition, it is stated that:

> **'Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised'** (ref: NPPF, paragraph 34).

6.3.41 With respect to the location and design of developments, it is stated that:

> **'Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to:**
>
> - **Accommodate the efficient delivery of goods and supplies;**
> - **Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;**

- **Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;**

- **Incorporate facilities for charging plug-in and other ultra-low emission vehicles; and**

- **Consider the needs of people with disabilities by all modes of transport'** (ref: NPPF, paragraph 35).

6.3.42 With respect to parking, it is stated that:

- **'If setting local parking standards for residential and non-residential development, local planning authorities should take into account:**

- **The accessibility of the development;**

- **The type, mix and use of development;**

- **The availability of and opportunities for public transport;**

- **Local car ownership levels; and**

- **An overall need to reduce the use of high-emission vehicles'** (ref: NPPF, paragraph 39).

6.3.43 Furthermore, it is noted that National Policy promotes large scale residential developments which provide a mix of land uses thereby providing opportunities to undertake day-to-day activities including work on-site. Where practical within large-scale developments, key facilities such as primary schools and local shops should be located within walking distance of most properties.

6.3.44 The Proposed Development supports sustainable development and the objectives outlined within the NPPF through the provision of new pedestrian and cycle facilities within the Site, and the creation of a new pedestrian/ cycle link along The Green towards Newport Pagnell Road. The availability to travel via sustainable mode of transport is also enhanced through the provision of improving public transport within and around the Site via a potential bus diversion within the Site, and annual funding to improve regularity of services.

Local Policy

West Northamptonshire Joint Core Strategy (2012)

6.3.45 The relevant transport related policies of the Join Core Strategy are outlined below with evidence to suggest how the Proposed Development will adhere to those policies:

- *Policy C1: Changing Behaviour and Achieving Modal Shift.* Focus should be given to proposed transport schemes that will contribute to behavioural change.
- Both the TA and FTP produced outline package of measures which will encourage behavioural change away from private car use. Furthermore, the County Council guidance for all new developments is to achieve a 20% reduction in the number of single car occupancy trips to and from the Site. Through the various package of measures proposed, it can be concluded that the Proposed Development adheres to the above policy.

- *Policy C2: New Developments.* All new developments will be expected to achieve their modal shift targets as outlined to the local authority to reduce single car occupancy trips.

  The package of measures outlined within both the TA and FTP will adhere to the modal shift targets proposed. In addition, the Proposed Development will be required to ensure that new or enhanced public transport services are secured on occupation of the first dwelling where appropriate.
- *Policy C3: Strategic Connections.* Priority should be given to enhance West Northamptonshire's strategic connections by working with and to support relevant transport providers.

  Discussions have been undertaken with Northamptonshire County Council and Highways England to outline development flows and where these flows may impact upon.
- *Policy C5: Enhancing Local and Neighbourhood Connections.* – Connections within urban areas will be strengthened by improving; local bus networks, local cycle networks and cycle infrastructure, walking routes and providing travel planning.

  A FTP which will have specific targets and a dedicated FTP Coordinator will be implemented at the Site. Where feasible, pedestrian links have been improved with new links provided to adhere to Policy C1 and C5.
- *Policy INF2: Contributions to Infrastructure Requirements.* – Whereby the development impacts upon a specific section of road network, contributions are to be provided to mitigate development impact.

  The West Northamptonshire Joint Core Strategy outlines various other policies which link directly to; connectivity, highway network improvements and sustainable travel. The development proposals conform with guidance within this document and have been outlined further within the TA and FTP.

Scoping Assessment Stage

6.3.46 A robust scope and methodology for the TA has been agreed with Northamptonshire County Council and Highways England through the scoping process which was submitted in November 2016. The details of this exercise can be seen in Chapter 2: Assessment Scope and Methodology. Full details of the assessment methodologies are provided in the TA contained in Appendix 6.1.

6.4 BASELINE ENVIRONMENT

Existing Baseline

Site Description and Context

6.4.1 The Site covers an area of approximately 24.9 hectares of land to the south-east of Northampton. The Site sits within the District Boundaries of two Local Planning Authorities. The northern section of the Site is 6.8 hectares in size and is within Northampton Borough Council (NBC) and the southern section is 18.1 hectares in size and is within South Northamptonshire Council (SNC). The Site is made up of an area of arable land (northern section) and a parcel of land, formerly landfill, which comprises of semi improved grassland and a broadleaved plantation (southern section).

6.4.2 The Site is located approximately 0.16km south of Brackmills Industrial Estate and the outskirts of Northampton are separated from the southern boundary of the Site by Newport Pagnell Road. Separating the two parcels of the Site is 'The Green'. To the south the Site is bounded by Newport Pagnell Road, beyond which lies the Morris Homes development which is currently under construction. Land along the southern boundary has previously be used as landfill.

6.4.3 Current vehicular access through the Site is via two access points off Newport Pagnell Road in to the southern parcel of land and then a single access point of a small road called 'The Green' which forms the southern boundary of the northern parcel.

Walking and Cycling

6.4.4 This section provides an overview of the existing pedestrian and cycling provisions within the vicinity of the Site.

6.4.5 No Public Rights of Way (PROWs) traverse the Site; however, there is a footpath (KM1) which ends on the other side of Newport Pagnell Road. There are further PROWs within 600m of the Site. These are footpaths KM3 and KN4 to the south; KN6 to the north west and KU15 to the east.

6.4.6 There are currently good pedestrian and cycle links into Wootton, Hardingstone and the employment area of Brackmills, located to the north of the Site. Access to these areas can be taken via the existing footways and off-road PROWs. It is noted that some of the existing routes outlined benefit from a combined foot/ cycleway.

6.4.7 Existing street-lit footways are located along the western side of Newport Pagnell Road which provide access to the Morris Homes development. Street-lit footways are also provided along the eastern side of Newport Pagnell Road, to the north of The Green/ Newport Pagnell Road junction.

6.4.8 Lady Hollow Drive, which is situated to the west of the Site, has footways of suitable width located either side of the carriageway. These footways, which are offset from the carriageway edge via a grass verge, are street-lit, and provide access to bus stops and a local post box. Access towards the street-lit footways along Wooldale Road can also be taken via Lady Hollow Drive.

6.4.9 Many of the junctions located within immediate vicinity of the Site comprise dropped kerbs to assist with pedestrian crossing. At the Newport Pagnell Road/ Lady Hollow Drive junction, a pedestrian refuge island also provides suitable aid for those journeys on foot.

6.4.10 An off-road traffic free cycleway also exists along Landimore Road extending north from the Newport Pagnell Road/ Wooldale Road roundabout into the Brackmills employment area. It is considered this is a key link to provide cycle access from the Site into Brackmills.

6.4.11 Existing cycle links are located close to the Site area with National Cycle Network Route 6 providing a link between Oxford and Derby. The 'NORBITAL' route runs to the north of the Site and provides an 18 mile circular cycle route around Northampton connecting residential areas with employment and the main University campuses.

Public Transport

Bus

6.4.12 There are a number of bus stops serving a wide range of services within the vicinity of the Site. The main bus stops are located at:

- Newport Pagnell Road, circa 520m from the centre of the Site. The stop is located along the southern side of the carriageway and is a flag-and-pole stop with timetable information. This stop is served by service number 3 operating on an hourly frequency Monday to Saturday; and
- Lady Hollows Drive, circa 680m walking distance from the Site centre. The stop is located along the southern side of the carriageway and is a flag-and-pole stop

with timetable information. This stop is also served by the number 3 service, coupled with the number 1 service which operates on a 30-minute frequency Monday to Sunday.

Rail

6.4.13 The nearest railway station is to the Site is Northampton Rail Station, situated approximately 5.6km and is accessible via bus. It is served by the London Midland network and serves a number of destinations including London, Birmingham, Coventry, Rugby and Milton Keynes.

Local Highway Network

6.4.14 This sub-section provides an overview of the highway network in the vicinity of the Site.

6.4.15 Newport Pagnell Road is a single carriageway road, circa 6.5m in width, which for the majority of the Site frontage has grass verges present on either side of the carriageway. The road consists of a speed limit of 40mph north-west of the Site, which reduces to a 30mph limit beyond the Landimore Road/ Wooldale Road/ Newport Pagnell Road roundabout. The carriageway increases to 60mph to the south-east of the Site towards Hackleton and Horton where a more rural nature to the carriageway begins.

6.4.16 Newport Pagnell Road is the main route from the Site towards the A45 carriageway and Northampton Town Centre. A number of facilities and amenities are situated either side of the carriageway with a number of transport links utilising Newport Pagnell Road towards Northampton. Pedestrian crossings are noted along the carriageway close to both the Waitrose and Northampton High School to assist with pedestrian movements to the footways which line the carriageway edge to the northwest towards the A45. Beyond The Green, Newport Pagnell Road becomes residential with a number of housing estates taking direct access off the carriageway.

6.4.17 The Green is a single carriageway country lane, approximately 3.0m in width which forms the administrative boundary between North and South Northamptonshire. At its western end The Green forms a priority junction with Newport Pagnell Road. It then proceeds northeast, bisecting the Site before bearing north, passing through the village of Great Houghton and forming a junction at its northern end with the A428 Bedford Road. Being narrow and rural in nature, The Green has a derestricted speed limit with no footways either side of the carriageway. On-site observations illustrated low vehicle movements along the carriageway.

6.4.18 Landimore Road, which is a single carriageway of approximately 7.0m in width, has a 40mph speed limit, with a shared foot/ cycleway along the eastern side of the carriageway. There is a designated crossing point, which comprises dropped kerbs and tactile paving, for pedestrians and cyclists located circa 280m north of the Landimore Road/ Newport Pagnell Road roundabout. The crossing itself connects to a PRoW which proceeds to the north. A further designated crossing is located approximately 100m west of the Landimore Road/ Gowerton Road roundabout.

6.4.19 Wooldale Road, also a single carriageway road, measures as being approximately 9.0m in providing a ring route for the south-eastern boundary of Wootton. The road provides a link to the A45 and by virtue the M1 via Junction 15. The road also provides a link to Caroline Chisholm School which could be accessed using the 1.4m wide cycle paths along each side of the carriageway.

Study Area

6.4.20 The study area for this Chapter is broadly based on that used in the TA. For the purposes of the assessments in this Chapter, the study area has been broken down by link to enable reporting of assessment outcomes on a link-by-link basis in line with the changes in link traffic flows. **Table 6.3** lists the links that comprise the study area with a figure illustrating the locations of the links provided in **Appendix 6.3**.

Table 6.3: Links Comprising the Study Area

Link No	Link Name	Link Description
1	The Green (1)	North-east of spine road
2	The Green (2)	South-west of spine road
3	Newport Pagnell Road (1)	South-east of Site access
4	Newport Pagnell Road (2)	North-west of Site access
5	Newport Pagnell Road (3)	Between Landimore Road and The Warren
6	Newport Pagnell Road (4)	Between The Warren and Hermitage Way
7	Newport Pagnell Road (5)	Between Hermitage Way and A45
8	Landimore Road	Between Newport Pagnell Road and Gowerton Road
9	Gowerton Road	Between Landimore Road and Caswell Road
10	Caswell Road (1)	Between Gowerton Road and Pavilion Drive
11	Caswell Road (2)	Between Pavilion Drive and A45
12	A45	Between Brackmills and Queen Eleanor Roundabouts
13	Wooldale Road (1)	Between Newport Pagnell Road and Caroline Chisholm School Roundabout
14	Wooldale Road (2)	Between Wooldale Road and Quinton Road
15	Wooldale Road (3)	Between Quinton Road and Berry Lane
16	South of Wooldale Road	Between Berry Lane and Bridge Meadow Way

Receptors

6.4.21 The links within the study area have been reviewed to identify the presence of receptors as these form the basis of the assessments in this Chapter. The identified receptors and their sensitivity levels to road traffic have been listed in **Table 6.4** which shows that residents and children attending local schools are the highest sensitivity receptors in study area.

Table 6.4 Receptors in the Study Area

Link No	Link Name	Receptors	Sensitivity
1	The Green (1)	Residents	High
		Open Space	Low
2	The Green (2)	Residents	High
		Open Space	Low
3	Newport Pagnell Road (1)	Residents	High
		Open Space	Low
4	Newport Pagnell Road (2)	Residents	High
		Open Space	Low
5	Newport Pagnell Road (3)	Residents	High
		Open Space	Low
6	Newport Pagnell Road (4)	Residents	High
		School	High
7	Newport Pagnell Road (5)	Residents	High
		School	High
		Retail	Medium
		Employment	Medium
		Recreation (Public House/ Hotel)	Medium
8	Landimore Road	Residents	High
		Employment	Medium
		Open Space	Low
9	Gowerton Road	Employment	Medium
		Open Space	Low
10	Caswell Road (1)	Employment	Medium
11	Caswell Road (2)	Employment	Medium
12	A45	Employment	Medium
		Open Space	Low
13	Wooldale Road (1)	Residents	High
		Open Space	Low
14	Wooldale Road (2)	Residents	High
		School	High
		Open Space	Low
15	Wooldale Road (3)	Residents	High
		Open Space	Low
16	South of Wooldale Road	Open Space	Low

Baseline Survey Information (Traffic Flows)

6.4.22 Manual Classified Count (MCC) traffic surveys were undertaken on Tuesday 12th July 2016 and Wednesday 13th July 2016 at the junctions listed in paragraph 6.2.3 of this Chapter. Automatic Traffic Counter (ATC) traffic surveys were also placed at the following locations for a period of 7-days between Friday 7th July and Thursday 14th July 2016:

- Newport Pagnell Road – north of Hermitage Way roundabout;
- Newport Pagnell Road – between Hermitage Way and The Warren;
- Newport Pagnell Road – between The Warren and Landimore Road;
- Landimore Road – between Newport Pagnell Road and Gowerton Road;
- Wooldale Road – between Newport Pagnell Road and the Centre for Learning;
- The Green – east of development parcels towards Great Goughton; and
- Newport Pagnell Road – south of The Green towards Hackleton.

6.4.23 2016 baseline Annual Average Weekday Traffic (AAWT) and AADT flows have been derived from 2016 ATC and MCC traffic survey data for each link in the study area. The resulting traffic flows are presented in **Table 6.5** and have been used to generate 2017 Base Year traffic flows by applying TEMPro growth factors (see **Table 6.6**).

Table 6.5: 2016 Baseline Traffic Flows

Link No	Link Name	Two-way Vehicle Flows			
		All Vehicles AAWT (18 hour)	HGVs >3.5T (18 hour)	All Vehicles AADT (24 hour)	HGVs >3.5T (24 hour)
1	The Green (1)	766	23	805	24
2	The Green (2)	766	23	805	24
3	Newport Pagnell Road (1)	7,028	153	7,378	161
4	Newport Pagnell Road (2)	8,533	182	8,958	191
5	Newport Pagnell Road (3)	9,719	165	10,204	173
6	Newport Pagnell Road (4)	15,538	238	16,313	250
7	Newport Pagnell Road (5)	17,230	290	18,089	304
8	Landimore Road	9,265	159	9,727	167
9	Gowerton Road	8,595	914	9,023	960
10	Caswell Road (1)	13,659	1,817	14,340	1,907
11	Caswell Road (2)	15,856	2,515	16,646	2,640
12	A45	20,829	1,873	21,867	1,967
13	Wooldale Road (1)	11,252	182	11,813	191
14	Wooldale Road (2)	12,183	176	12,790	185
15	Wooldale Road (3)	15,498	272	16,271	286
16	South of Wooldale Road	14,522	335	15,246	352

6.4.24 The speed limit for each link in the study area has also been provided in **Table 6.6** which will be used in the absence of 85th percentile speed data as part of the fear and intimidation assessments. As speed limits on all links are more than 20mph, and therefore fall under the 'extreme' degree of hazard for fear and intimidation, it is considered that speed limit data provides a robust estimate of traffic speeds.

Table 6.6: 2017 Baseline Traffic Flows

Link No	Link Name	Speed Limit (mph)	Two-way Vehicle Flows			
			All Vehicles AAWT (18 hour)	HGVs >3.5T (18 hour)	All Vehicles AADT (24 hour)	HGVs >3.5T (24 hour)
1	The Green (1)	60	778	23	816	24
2	The Green (2)	60	778	23	816	24
3	Newport Pagnell Road (1)	60	7,131	156	7,486	163
4	Newport Pagnell Road (2)	40	8,657	184	9,089	194
5	Newport Pagnell Road (3)	30	9,861	167	10,353	175
6	Newport Pagnell Road (4)	30	15,765	242	16,551	254
7	Newport Pagnell Road (5)	30	17,481	294	18,353	308
8	Landimore Road	40	9,400	161	9,869	169
9	Gowerton Road	30	8,720	927	9,155	974
10	Caswell Road (1)	30	13,858	1,843	14,549	1,935
11	Caswell Road (2)	30	16,088	2,552	16,890	2,679
12	A45	70	21,133	1,901	22,187	1,996
13	Wooldale Road (1)	30	11,416	184	11,985	194
14	Wooldale Road (2)	30	12,361	179	12,977	187
15	Wooldale Road (3)	40	15,724	276	16,508	290
16	South of Wooldale Road	40	14,734	340	15,468	357

Personal Injury Accident (PIA) Data

6.4.25 PIA data has been obtained from Northamptonshire County Council for the most recently available period (01/03/2011 to 31/03/2017) along the road links and junctions within the immediate vicinity of the Site and also at the junctions to be considered as part of the TA.

6.4.26 The PIA data showed that a total of 105 PIAs occurred within the study area; of these, 89 were of slight severity, 15 were of severe severity and 1 was a fatal PIA.

6.4.27 It was noted that there were no accidents along Newport Pagnell Road within vicinity of the Site access. From the Site access to the A45, a total of six PIAs were recorded along Newport Pagnell Road, a low number in comparison to the AADT vehicle flows which use the carriageway.

6.4.28 Most of the PIAs which occurred within the study area were at the Queen Eleanor Roundabout and associated A45 carriageway, which is expected due to the high number of vehicles which use this link on a daily basis.

6.4.29 No other PIAs were considered to be key in relation to the Proposed Development and local highway network safety.

Future Baseline

6.4.30 This section provides the 2031 future year baseline which represents the 2031 Do Minimum scenario, against which the 2031 Do Something development options will be assessed. The 2031 Future Base Year (Do Minimum) scenario takes into account background growth of traffic flows and trips generated by committed developments in the vicinity of the Site; it does not include trips generated by the Proposed Development options.

2031 Future Base Year Traffic Flows

6.4.31 TEMPro growth factors have been applied to 2017 Base Year traffic flows to obtain background traffic flows for each of the links in the study area for a future base year of 2031; committed development trips have then also been added to the 2031 background traffic flows to obtain the traffic flows for the 2031 Future Base Year (Do Minimum) scenario which have been presented in **Table 6.7**.

6.4.32 The 2031 Future Base Year (Do Minimum) traffic flows form the basis against which magnitude of impact from development traffic will be determined and in turn the significance of effect on sensitive receptors present within the study area.

Table 6.7: 2031 Future Base Year Traffic Flows (Do Minimum)

Link No	Link Name	Two-way Vehicle Flows			
		All Vehicles AAWT (18 hour)	HGVs >3.5T (18 hour)	All Vehicles AADT (24 hour)	HGVs >3.5T (24 hour)
1	The Green (1)	930	27	976	29
2	The Green (2)	930	27	976	29
3	Newport Pagnell Road (1)	13,970	184	14,667	193
4	Newport Pagnell Road (2)	15,780	218	16,567	229
5	Newport Pagnell Road (3)	16,074	198	16,876	207
6	Newport Pagnell Road (4)	23,201	286	24,357	300
7	Newport Pagnell Road (5)	25,275	347	26,535	365
8	Landimore Road	15,667	191	16,448	200
9	Gowerton Road	15,220	1,096	15,979	1,151
10	Caswell Road (1)	20,755	2,179	21,790	2,288
11	Caswell Road (2)	22,693	3,017	23,824	3,167
12	A45	26,882	2,247	28,223	2,359
13	Wooldale Road (1)	17,376	218	18,243	229
14	Wooldale Road (2)	18,525	211	19,448	222
15	Wooldale Road (3)	26,089	327	27,390	343
16	South of Wooldale Road	23,963	402	25,158	422

6.4.33 **Table 6.8** presents the percentage change between 2017 Base Year and 2031 Future Base Year (Do Minimum) traffic flows and shows that the greatest magnitude of impact (major) is experienced on link 3: Newport Pagnell Road (1) with a 96% increase in all vehicle traffic flows, the majority of which result from committed development within the vicinity of the Site. Moderate magnitude of impact levels are also experienced on links 4, 5, 8, 9, 15 and 16 with the greatest change in this category an 82% increase in traffic flows on link 4: Newport Pagnell Road (2). Background traffic growth on all links between 2017 and 2031 accounts for around 18% of the increases in traffic flows.

Table 6.8: Percentage Change between 2017 Base Year and 2031 Future Base Year (Do Minimum) Traffic Flows

Link No	Link Name	Two-way Vehicle Flows			
		All Vehicles AAWT (18 hour)	HGVs >3.5T (18 hour)	All Vehicles AADT (24 hour)	HGVs >3.5T (24 hour)
1	The Green (1)	20%	18%	20%	18%
2	The Green (2)	20%	18%	20%	18%
3	Newport Pagnell Road (1)	96%	18%	96%	18%
4	Newport Pagnell Road (2)	82%	18%	82%	18%
5	Newport Pagnell Road (3)	63%	18%	63%	18%
6	Newport Pagnell Road (4)	47%	18%	47%	18%
7	Newport Pagnell Road (5)	45%	18%	45%	18%
8	Landimore Road	67%	18%	67%	18%
9	Gowerton Road	75%	18%	75%	18%
10	Caswell Road (1)	50%	18%	50%	18%
11	Caswell Road (2)	41%	18%	41%	18%
12	A45	27%	18%	27%	18%
13	Wooldale Road (1)	52%	18%	52%	18%
14	Wooldale Road (2)	50%	18%	50%	18%
15	Wooldale Road (3)	66%	18%	66%	18%
16	South of Wooldale Road	63%	18%	63%	18%

Severance

6.4.34 A summary of the severance levels anticipated on the links within the study area in the 2031 Future Base Year (Do Minimum) scenario have been provided in **Table 6.9**. As the AADT on the majority of links is above 16,000 two-way vehicles, the severance level is generally substantial. Links 1 and 2 (The Green) are anticipated to have slight severance levels with link 3: Newport Pagnell Road (1) and link 9: Gowerton Road anticipated to have moderate severance levels.

6.4.35 There are existing pedestrian crossings (signalised and non-signalised) located at various points along Newport Pagnell Road and in proximity to all links which are anticipated to experience substantial levels of severance (apart from link 12: A45) which aid crossing of these carriageway and therefore reduce the actual level of severance that may be experienced by sensitive receptors within the study area.

Table 6.9: 2031 Future Base Year (Do Minimum) Severance Levels

Link No	Link Name	All Vehicles Two-Way AADT (24 hour)	Severance Level
1	The Green (1)	976	Slight
2	The Green (2)	976	Slight
3	Newport Pagnell Road (1)	14,667	Moderate
4	Newport Pagnell Road (2)	16,567	Substantial
5	Newport Pagnell Road (3)	16,876	Substantial
6	Newport Pagnell Road (4)	24,357	Substantial
7	Newport Pagnell Road (5)	26,535	Substantial
8	Landimore Road	16,448	Substantial
9	Gowerton Road	15,979	Moderate
10	Caswell Road (1)	21,790	Substantial
11	Caswell Road (2)	23,824	Substantial
12	A45	28,223	Substantial
13	Wooldale Road (1)	18,243	Substantial
14	Wooldale Road (2)	19,448	Substantial
15	Wooldale Road (3)	27,390	Substantial
16	South of Wooldale Road	25,158	Substantial

Driver Delay

6.4.36 Background traffic levels on some of the links within the study area are anticipated to increase significantly between the 2017 Base Year and 2031 Future Base Year (Do Minimum); therefore, it is expected that there will be some impact on existing trips along the links within the study area.

6.4.37 Junction capacity assessments undertaken for the 2031 Do Minimum scenario (see TA in **Appendix 6.1**) show that driver delay is most notably impacted at the following junctions in the study area:

- Pavilion Drive/ Nene Valley Way South slip road priority junction (link 12);
- Queen Eleanor roundabout (between link 7: Newport Pagnell Road (5) and link 12: A45); and
- Wooldale Road/ Berry Lane roundabout (between link 15: Wooldale Road (3) and link 16: South of Wooldale Road).

6.4.38 The junction capacity assessments show queuing at these junctions of in excess of 50 vehicles during the peak hours, with the Pavilion Drive/ Nene Valley Way South slip road priority junction only suffering congestion during the evening peak hour. Mitigation measures have been proposed for these junctions as part of the committed developments proposals; however, have not yet been implemented.

Pedestrian Delay

6.4.39 There are a number of existing crossing facilities within the study area that aid safer crossing of the carriageways by pedestrians and cyclists. Existing crossing facilities within the vicinity of the Site are considered adequate and therefore, background changes to traffic flows are not expected to adversely affect pedestrian delay in the study area.

Pedestrian Amenity

6.4.40 The increase in background traffic levels in the 2031 Future Base Year (Do Minimum) scenario are not anticipated to significantly affect pedestrian amenity as the HGV component of traffic flows are not expected to increase by more than 50 per cent. Further, as the increase in traffic flows in the 2031 Future Base Year (Do Minimum) scenario are largely associated with the delivery of committed development, it is assumed that pedestrian amenity has been considered as part of the committed development proposals and mitigated appropriately, where required.

Fear and Intimidation

6.4.41 A summary of the fear and intimidation assessment for the 2031 Future Base Year (Do Minimum) scenario has been provided in **Table 6.10**. The results show that for the assessment based on the speed limit of the road, all of the links in the study area experience an extreme degree of hazard; this is because the speed limit on all links is greater than 20mph.

6.4.42 Based on changes in the average two-way traffic flow over an 18-hour day (vehicles per hour), six links (including two on Newport Pagnell Road) are expected to experience a great degree of hazard, with a further eight of the links (including three links on Newport Pagnell Road) expected to experience a moderate degree of hazard.

6.4.43 Link 12: A45 is expected to experience a great degree of hazard based on both average two-way traffic flow over an 18-hour day (vehicles per hour) and total two-way HGV flow over an 18-hour day; this would be expected due to the strategic nature of the A45.

Table 6.10: 2031 Do Minimum Fear and Intimidation Levels

Link No	Link Name	Degree of Hazard		
		Average two-way traffic flow over 18 hour day: vehicles per hour	Total two-way HGV flow over 18 hour day	Speed Limit (mph)
1	The Green (1)	Negligible	Negligible	Extreme
2	The Green (2)	Negligible	Negligible	Extreme
3	Newport Pagnell Road (1)	Moderate	Negligible	Extreme
4	Newport Pagnell Road (2)	Moderate	Negligible	Extreme
5	Newport Pagnell Road (3)	Moderate	Negligible	Extreme
6	Newport Pagnell Road (4)	Great	Negligible	Extreme
7	Newport Pagnell Road (5)	Great	Negligible	Extreme
8	Landimore Road	Moderate	Negligible	Extreme
9	Gowerton Road	Moderate	Moderate	Extreme
10	Caswell Road (1)	Moderate	Great	Extreme
11	Caswell Road (2)	Great	Extreme	Extreme
12	A45	Great	Great	Extreme
13	Wooldale Road (1)	Moderate	Negligible	Extreme
14	Wooldale Road (2)	Moderate	Negligible	Extreme
15	Wooldale Road (3)	Great	Negligible	Extreme
16	South of Wooldale Road	Great	Negligible	Extreme

Accidents and Safety

6.4.44 It is not anticipated that there would be any worsening of the PIC levels in the 2031 Future Base Year (Do Minimum) from those recorded in the most recent five-year period available (01/03/2011 to 29/02/2016).

Hazardous Loads

6.4.45 No significant sources of hazardous loads are expected on the road links within the study area.

6.5 LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE SCHEME

6.5.1 This section assesses the potential effects of the Proposed Development both during site clearance and construction and following completion. As stated in the methodology, effects are measured by comparing the future transport situation without and with the Proposed Development. The assessments for the operational phase (2031 Do Something scenario) are cumulative assessments which consider background growth in traffic flows and trips generated from both committed development in the vicinity of the Site and the Proposed Development options (northern land parcel, southern land parcel and all development).

6.5.2 A description of the proposal in terms of highway alterations, access and carparking etc is provided within the TA (Appendix 6.1); however, the main proposal is to construct a new four-arm roundabout onto Newport Pagnell Road with a spine road proceeding through the Site which will link the northern parcel of land to the southern parcel and will connect into the neighbouring HCA Development

6.5.3 In addition, new and improved pedestrian and cycle access points connecting into the existing provision are proposed, which include:

- A circular dog walking footpath through both sections of the Site measuring 1.6km;
- A section of 'The Green' to become foot/ cycleway only; and
- New links into Brackmills Country Park.

6.5.4 The detail of these proposals can be seen on Figure 4.3 Access & Movement Parameter Plan.

Construction Phase Effects

6.5.5 The main construction activities considered will be both the on-site works (earthworks, infrastructure development and construction of new buildings) and off-site highway works. It is considered that the majority of vehicle movements to and from the Site will consist of material deliveries by HGVs and light vehicles, along with construction personnel.

6.5.6 An assessment of potential peak two-way daily construction traffic flows for the three development options (northern land parcel only, southern land parcel only and both parcels of the development) has been undertaken based on a first-principles approach as the assessment has been completed in advance of appointing a contractor or defining the detailed construction activities and programme for the Proposed Development options. It has also been assumed that there would be 1.5 operatives per light vehicle car-sharing when travelling to and from the Site.

6.5.7 The activities assumed to generate the greatest construction vehicle movements are:

- Construction workers travelling to and from the Site;
- On-site earthworks and landscaping; although there is an expectation that a cut and fill materials balance will be achieved on-site;
- Construction of the proposed access road(s) off The Green and/ or Newport Pagnell Road;
- Highways and utilities works; and
- Construction and fit out of the new buildings.

6.5.8 The assessment found that for all three development options, the potential maximum two-way vehicle movements that could be generated during the construction phase would occur during the earthworks and construction of the access road(s) phase; the outputs from this assessment are summarised in **Table 6.11**.

6.5.9 However, it should be noted that following the initial earthworks and build-out of the Site access road(s), the potential maximum two-way vehicle movements that could be generated during the construction phase reduce for the remaining build-out period for all three development options (see **Table 6.12**). Furthermore, it should also be noted that as multiple stages of construction activity could occur simultaneously, the potential peak combined trip generation from construction activities would not realistically occur therefore, would be lower than suggested in both **Table 6.11** and **Table 6.12**.

Table 6.11: Estimated Highest Daily Two-Way Construction Trips by Land Parcel: Earthworks and Build-Out of Site Access Roads

Construction Activity	Maximum two-way movements per day		
	Light Vehicles	HGVs	Total vehicles
Northern Land Parcel Only			
Earthworks	5	2	7
Site Access: The Green	20	88	108
Total	**25**	**90**	**115**
Southern Land Parcel Only			
Earthworks	9	4	13
Site Access: Newport Pagnell Road	40	176	216
Total	**49**	**180**	**229**
Both Parcels of Development			
Earthworks	9	4	13
Site Access: The Green	20	88	108
Site Access: Newport Pagnell Road	40	176	216
Total	**69**	**268**	**337**

Table 6.12: Estimated Highest Daily Two-Way Construction Trips by Land Parcel: On-site Infrastructure, House Construction and Highways and Utilities Works

Construction Activity	Maximum two-way movements per day		
	Light Vehicles	HGVs	Total vehicles
Northern Land Parcel Only			
On-site Infrastructure	13	10	23
House Construction	27	4	31
Highways & Utilities Works	5	16	21
Total	**45**	**30**	**75**
Southern Land Parcel Only			
On-site Infrastructure	25	20	45
House Construction	55	8	63
Highways & Utilities Works	11	32	43
Total	**91**	**60**	**151**
Both Parcels of Development			
On-site Infrastructure	25	20	45
House Construction	55	8	63
Highways & Utilities Works	11	32	43
Total	**91**	**60**	**151**

6.5.10 A worst-case assessment of daily construction traffic flows has also been undertaken; the purpose of this assessment is to identify the link(s) in the study area which would be impacted the greatest by construction traffic. For the purpose of this assessment, it has been assumed that all the construction traffic would route via Newport Pagnell Road towards the A45 which is the main route to the Site; therefore, links 4, 5, 6 and 7 which respectively are Newport Pagnell Road (2), (3), (4), and (5), have been considered in this assessment.

6.5.11 On the basis of the maximum number of construction activities occurring on-site at the same time (as presented in **Table 6.11**), it is anticipated that all vehicle AAWTs could increase by 2% on links 6 and 7 in the all development option (see **Table 6.13**); whilst it is probable that some of the light vehicle construction traffic would route via other roads, namely Wooldale Road, this is unlikely to be significant. HGV construction traffic could increase by approximately 123% on link 4 and 136% on link 5 for the all development option; however, as the development would be phased it is unlikely that the HGV component of traffic would double; therefore, this increase is not considered significant.

Table 6.13: Worst Case Construction Traffic Impacts (Daily) – Newport Pagnell Road

Link No	2031 Do Minimum Two-way 18 Hour Flows (AAWT)		Estimated Construction Traffic		% Increase	
	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
Northern Land Parcel Only						
4	15,780	218	115	90	1%	41%
5	16,074	198	115	90	1%	46%
6	23,201	286	115	90	0%	31%
7	25,275	347	115	90	0%	26%
Southern Land Parcel Only						
4	15,780	218	229	180	1%	83%
5	16,074	198	229	180	1%	91%
6	23,201	286	229	180	1%	63%
7	25,275	347	229	180	1%	52%
Both Parcels of Development						
4	15,780	218	337	268	2%	123%
5	16,074	198	337	268	2%	136%
6	23,201	286	337	268	1%	94%
7	25,275	347	337	268	1%	77%

6.5.12 It is anticipated that the majority of construction traffic movements, including commuting by construction workers, would not coincide with the morning and evening peak hours, and instead, construction traffic movements are likely to be scheduled outside of the peak hour periods to avoid unnecessary traffic impacts during periods of high demand.

6.5.13 This assessment assumes a worst-case scenario that would only occur for a short amount of time should all operatives associated with the maximum construction activities be on-site at the same time; therefore, the significance of effect from construction activities is ***negligible adverse***.

Operational Phase

6.5.14 The assessment of operational effects (2031 Do Something scenario) identifies the impacts on receptors, namely residents and children attending local schools, from the changes in traffic flows resulting from the Proposed Development. The 2031 Do Something scenario has been assessed against the outputs from the 2031 Do Minimum scenario and considers a cumulative traffic impact assessment taking into account background increases in traffic flows, committed development trips and trips generated by the Proposed Development for all three development options (northern land parcel (115 dwellings), southern land parcel (410 dwellings) and all development (252 dwellings)).

6.5.15 The operational phase has the potential to result in the following effects:

- Increased traffic congestion through changes in traffic flow;
- Severance;

- Driver delay;
- Pedestrian delay;
- Pedestrian amenity;
- Fear and intimidation; and
- Accidents and safety.

2031 Future Year Traffic Flows

6.5.16 Development vehicle trips have been added to 2031 Future Base Year (Do Minimum) traffic flows to obtain traffic flows for the 2031 Do Something scenario and enable a cumulative impact assessment to be undertaken. 2031 Do Something traffic flows for all three development options have been compared with 2031 Future Base Year (Do Minimum) traffic flows to determine the magnitude of impact of the change in traffic flows with the Proposed Development operational.

6.5.17 The outputs of the comparison exercise showed that the largest step change in the magnitude of impact was low which would be experienced on link 3: Newport Pagnell Road (1) and link 4: Newport Pagnell Road (2) for the southern land parcel and all development options. The largest percentage increase (27%) was recorded on link 3: Newport Pagnell Road (1) for the all development option. No change in magnitude of impact was recorded for any of the links for the northern land parcel and the remaining links in the southern land parcel and all development options.

6.5.18 **Table 6.14** provides a comparison of all vehicle two-way AAWT and AADT flows for the all development option as this development option illustrates the greatest increase in traffic flows. As the Proposed Development is residential only, there are no changes to the HGV component of traffic for any of the three development options.

6.5.19 Therefore, as there is no significant change in traffic flows with the northern land parcel only operation, the significance of effect is ***negligible adverse***.

6.5.20 As there are receptors with sensitivity levels of high on the links where there has been a low change in the magnitude of impact for the southern land parcel and all development options, the significance of effect for these development options is ***moderate adverse***.

Table 6.14: Comparison of 2031 Do Minimum and Do Something Traffic Flows: All Vehicles (All Development as Worst Case)

Link No	Link Name	All Vehicles AAWT (18 hour)		All Vehicles AADT (24 hour)		Greatest Impact	
		2031 Do Min	2031 Do Some	2031 Do Min	2031 Do Some	Change	Magnitude of Impact
1	The Green (1)	930	930	976	976	0%	No change
2	The Green (2)	930	0	976	0	-100%	No change
3	Newport Pagnell Road (1)	13,970	17,677	14,667	18,559	27%	Low
4	Newport Pagnell Road (2)	15,780	19,272	16,567	20,232	22%	Low
5	Newport Pagnell Road (3)	16,074	17,522	16,876	18,396	9%	No change
6	Newport Pagnell Road (4)	23,201	24,614	24,357	25,841	6%	No change
7	Newport Pagnell Road (5)	25,275	26,689	26,535	28,019	6%	No change
8	Landimore Road	15,667	16,836	16,448	17,675	7%	No change
9	Gowerton Road	15,220	16,390	15,979	17,207	8%	No change
10	Caswell Road (1)	20,755	21,924	21,790	23,017	6%	No change
11	Caswell Road (2)	22,693	23,862	23,824	25,052	5%	No change
12	A45	26,882	26,882	28,223	28,223	0%	No change
13	Wooldale Road (1)	17,376	18,256	18,243	19,167	5%	No change
14	Wooldale Road (2)	18,525	19,405	19,448	20,372	5%	No change
15	Wooldale Road (3)	26,089	26,850	27,390	28,189	3%	No change
16	South of Wooldale Road	23,963	24,332	25,158	25,545	2%	No change

6.5.21 Upon completion of the Proposed Development, an increase in vehicle flows onto the local highway network will be generated, or redistributed. Mitigation measures have been proposed at eight off-site junctions in order to alleviate the potential increase in vehicle flows along the local highway network. The following mitigation measures have been proposed at each of the junctions:

- Caswell Road/ Rhosili Road/ Pavilion Drive roundabout – increase entry width to 7.7m from Caswell Road North with an increase in flare length to 0.3m. There will also be an increase in entry width from Caswell Road South to 7.5m with a flare increase to 6m. Pavilion Drive will also see an increase in entry width to 9.6m, with a flare increase to 6m;
- Gowerton Road/ Landimore Road roundabout – increase in entry width from Landimore Road to 7.2m with an increase in flare length to 13m;
- Newport Pagnell Road/ Landimore Road/ Wooldale Road roundabout – Increase in entry width from Landimore Road to 7.3m. There will be an increase in flare length to 24.5m and an increase entry width to 7.3m along Newport Pagnell Road East with a flare increase of 16.5m;

- Wooldale Road/ Caroline Chisholm School Access roundabout – increase in entry width from Wooldale Road North to 7m with an increase in flare length to 8m;
- Wooldale Road/ Quinton Road roundabout – increase in entry width along Quinton Road North to 6.8m. There is also an increase in entry width along Wooldale Road East to 7m and Wooldale Road West to 7.3m;
- Wooldale Road/ Berry Lane roundabout – increase entry width to 6.9m, 6.5m and 6.5m along Berry Lane, Wooldale Road East and Southern Arm respectively. There will also be increase in entry width to the Wooldale Road West arm to 7m, with an increase in flare length of 5m;
- London Road/ Rowtree Road/ Wooldale Road roundabout – there will be an increase in entry width to 9.5m along the A45 Sliproad South arm with an increase in flare length to 11m. Wooldale Road will also have an entry width increase to 5.25m and an increased flare of 2m. Rowtree road will see an entry width increase to 4.8m; and
- Bridge Meadow Way/ A45 Slip Road roundabout – both the Northern approach and Bridge Meadow Way will see an increase in entry width to 8.5m.

6.5.22 Due to the pedestrianisation of The Green (link 2) from the spine road within the Site towards Newport Pagnell Road, there will be no vehicle movements along the carriageway. Existing vehicle flows have subsequently been redistributed within the Site via the proposed spine road, before being taken into consideration along Newport Pagnell Road. This would result in a significance of effect of ***major beneficial*** on this link (as the traffic flow would reduce by 100%).

6.5.23 Overall it is considered the significance of effect would be ***negligible beneficial***.

Severance

6.5.24 A comparison assessment of severance levels for the 2031 Future Base Year (Do Minimum) and 2031 Do Something scenarios has been undertaken which showed that the severance level on link 3: Newport Pagnell Road (1) is expected to change from moderate to substantial for the southern land parcel and all development options (low change in magnitude of impact); and moderate to substantial on link 9: Gowerton Road for all three development options (low change in magnitude of impact). The severance assessment for the southern land parcel and all development options has been provided in **Table 6.15** as these options showed the most change in severance levels.

6.5.25 Therefore, as there is no significant change in traffic flows with the northern land parcel only operation, the significance of effect is ***negligible adverse***.

6.5.26 As there are receptors with sensitivity levels of high and medium on the links where there has been a low change in the magnitude of impact for the southern land parcel and all development options, the overall significance of effect for these development options is considered ***minor to moderate adverse***.

Table 6.15: Comparison of 2031 Do Minimum and Do Something Severance Levels: Southern Land Parcel and All Development

Link No	Link Name	Greatest Receptor Sensitivity Level	2031 Do Minimum Severance Level	2031 Do Something	
				Severance Level	Magnitude of Impact
1	The Green (1)	High	Slight	Slight	No change
2	The Green (2)	High	Slight	Slight	No change
3	Newport Pagnell Road (1)	High	Moderate	Substantial	Low
4	Newport Pagnell Road (2)	High	Substantial	Substantial	No change
5	Newport Pagnell Road (3)	High	Substantial	Substantial	No change
6	Newport Pagnell Road (4)	High	Substantial	Substantial	No change
7	Newport Pagnell Road (5)	High	Substantial	Substantial	No change
8	Landimore Road	High	Substantial	Substantial	No change
9	Gowerton Road	Medium	Moderate	Substantial	Low
10	Caswell Road (1)	Medium	Substantial	Substantial	No change
11	Caswell Road (2)	Medium	Substantial	Substantial	No change
12	A45	Medium	Substantial	Substantial	No change
13	Wooldale Road (1)	High	Substantial	Substantial	No change
14	Wooldale Road (2)	High	Substantial	Substantial	No change
15	Wooldale Road (3)	High	Substantial	Substantial	No change
16	South of Wooldale Road	Low	Substantial	Substantial	No change

6.5.27 However, it is unlikely that these severance levels will be experienced due to the availability of existing pedestrian crossings (signalised and non-signalised) located in proximity to the links within the study area. With regard to the two links that demonstrated a change in severance levels with the Proposed Development operational, a pedestrian refuge island crossing has been installed along link 3: Newport Pagnell Road (1) as part of the committed development to the south-west of the Site; and an existing crossing point is available on Gowerton Road on the approach to its junction with Caswell Road (roundabout). Both of these crossing facilities aid safer crossing of these carriageways and therefore reduce the level of severance that is suggested in **Table 6.15**.

6.5.28 The Proposed Development will also provide pedestrian links into the Site as previously mentioned and the pedestrianisation of The Green will encourage pedestrian movement to/ from the Site thus, making The Green safer for pedestrians and cyclists. Therefore, it is considered that with the existing crossing facilities and proposed 'built-in' scheme mitigation, the overall significance of effect is ***negligible beneficial***.

Driver Delay

6.5.29 Traffic flows on most of the links within the study area are expected to show some level of increase between the 2031 Future Base Year (Do Minimum) and 2031 Do Something scenarios as a result of development traffic on the local road network; therefore, it is expected that there will be some impact on driver delay within the study area.

6.5.30 Within the TA (Appendix 6.1), a detailed review of an extensive range of junction modelling is set out. The junction modelling demonstrates that eight of the junctions in the study area are at capacity in the full development scenario, with minimal changes in predicted delays per vehicle (as detailing fully in the TA); these junctions are:

- Caswell Road/ Rhosili Road/ Pavilion Drive roundabout;
- Gowerton Road/ Landimore Road Roundabout;
- Newport Pagnell Road/ Landimore Road/ Wooldale Road Roundabout;
- Wooldale Road/ Caroline Chisholm School Access Roundabout;
- Wooldale Road/ Quinton Road Roundabout;
- Wooldale Road/ Berry Lane Roundabout;
- London Road/ Rowtree Road/ Wooldale Road Roundabout; and
- Bridge Meadow Way/ A45 Slip Road Roundabout.

6.5.31 Mitigation measures have been proposed for these junctions to reduce anticipated queues and delays; therefore the significance of effect on driver delay is considered ***negligible beneficial***.

Pedestrian Delay

6.5.32 The level of pedestrian activity in the vicinity of the Site will increase with the introduction of the Proposed Development and new/ enhanced pedestrian infrastructure. Whilst there is thus the theoretical potential for increased pedestrian delay, this needs to be considered in the context of the proposal and the infrastructure which has been put in place to accommodate development in this location. Furthermore, the change in vehicular flows is far below the 1,400 threshold in IEMA, considered to result in pedestrian delay. Therefore, due to the pedestrianisation of The Green, introduction of new pedestrian crossings, new foot/ cycleways and low increase in traffic flows, the significance of effect is considered to be ***negligible beneficial***.

Pedestrian Amenity

6.5.33 Although traffic flows on most of the links within the study area are expected to show some level of increase between the 2031 Future Base Year (Do Minimum) and 2031 Do Something scenarios as a result of development traffic, it is unlikely that these increases would result in any adverse impact on pedestrian amenity. Traffic flows are only expected to increase by more than 10% on link 3: Newport Pagnell Road (1) and link 4: Newport Pagnell Road (2) for the southern land parcel and all development options. As there are receptors with high sensitivity levels present on both of these links, the proposed enhancements along the Site frontage on Newport Pagnell Road, together with improvements delivered by nearby committed development are expected to have a positive impact on pedestrian amenity. Further, pedestrianisation of The Green will improve the pleasantness of journeys and no change in the HGV component of traffic flows all contribute to a beneficial impact on pedestrian amenity; therefore, the significance of effect is ***negligible beneficial***.

Fear and Intimidation

6.5.34 It is clear that the greatest changes in traffic flow will be experienced in the immediate vicinity of the Site. Given that there will be no significant changes to the volume of HGV traffic generated from the Proposed Development (due to it being a residential development), the significance of effect is considered to be ***negligible adverse***.

Accidents and Safety

6.5.35 The TA has concluded that the Proposed Development is unlikely to lead to any significant increase in the number of PIAs occurring within the vicinity of the Site. Any effects associated with increased traffic flows are likely to be slight since there are no identified accident patterns that are likely to be affected by increased traffic flows. It is therefore concluded that the significance of effect is ***negligible adverse***.

Hazardous Loads

6.5.36 No significant sources of hazardous loads are expected on the links within the study area; therefore, the significance of effect is ***negligible adverse***.

Decommissioning

6.5.37 Given the nature and intended longevity of the Proposed Development's operational life, decommissioning has not been considered relevant as part of this study. Accordingly, the EIA is to focus on the potential likely significant effects of the Proposed Development during construction and operational phases only.

6.6 MITIGATION AND ENHANCEMENTS

Mitigation by Design

6.6.1 The Indicative Masterplan (Figure 4.6) for the Site and Access and Movement Parameter Plan (Figure 4.3) include the following design mitigations:

- Site Access – implementation of suitable vehicular and pedestrian access into the Site via a new roundabout junction;
- The Green – pedestrianisation of The Green will remove the existing The Green/ Newport Pagnell Road junction;
- Newport Pagnell Road – provision of a foot/ cycleway along Newport Pagnell Road; and
- Bus Provision – the potential to divert bus provision into the Site alongside the provision of bus infrastructure.

6.6.2 These are detailed fully in the TA (Appendix 6.1).

6.6.3 As part of the HCA committed development proposals, there will be an extension of the existing number 1 bus service which operates within close proximity to the Site. The service currently has a 30-minute frequency which would be increased to a 20-minute frequency (or three buses an hour). It is also understood that there are proposals to improve the existing number 3 bus service from an hourly service to a half hourly service as part of the Morris Homes committed development.

6.6.4 Discussions have been undertaken with Stagecoach in relation to diverting the number 3 bus service into the Site. Should this not be feasible, there is potential to extend and enhance the number 1 bus service by diverting it thought the Site. It should be noted that should either of these proposals be delivered, new bus stops will be positioned within the Site, no more than 800m walking distance from the furthest dwelling.

6.7 ADDITIONAL MITIGATION

Construction

6.7.1 The Applicant is committed to ensuring that the Proposed Development is as sustainable as possible in all aspects of its construction, including transport, and has devised a package of appropriate measures to mitigate the potential effects outlined above. In the scenario that only the northern land parcel is granted planning consent, construction traffic access and egress from the Site would be via The Green (rather than Newport Pagnell Road should only the southern land parcel or both land parcels be delivered). As The Green is a single lane carriageway, traffic management measures will be implemented to limit the impact of construction traffic and avoid unnecessary congestion on The Green; this will be managed through a Construction Traffic Management Plan (CTMP) which will be agreed with Northamptonshire County Council.

6.7.2 The potential effects of the construction phase will be managed through a fully developed Construction Environmental Management Plan (CEMP) which will include a Construction Logistics Plan (CLP) to be conditioned to the Phase 1 development and all future reserved matters applications. The remit of these will be to manage traffic effects. An example of such a condition could follow the lines of the following:

"No development shall take place until a Construction Method Statement has been submitted to and approved, in writing, by the Local Planning Authority. The approved Statement shall be adhered to throughout the construction period. The Statement shall provide for:

I. the parking of vehicles of site operatives and visitors

II. loading and unloading of plant and materials

III. storage of plant and materials used in constructing the development

IV. the erection and maintenance of security hoardings including decorative displays and facilities for public viewing, where appropriate

V. wheel washing facilities and the dispersal of water

VI. measures to control the emission of dust and dirt during construction

VII. details of the site office/compound

VIII. construction traffic management plan, to include details of how the site will be accessed and from what point(s), any works required to provide new access or upgrading of existing access routes, lorry routes, haul roads, parking and turning provision to be made on site and a programme for construction

IX. site waste management

X. details of the control measures for air quality, biodiversity, waste management and lighting.

Reason:

In the interests of neighbouring amenity and on the grounds of highway safety.

Any site clearance, construction works or delivery of materials to the site shall not take place outside of 07:30 to 18:00 hours Mondays to Fridays and 08:00 hours to 13:00 hours on Saturdays nor at any time on Sundays or Bank Holidays.

Reason:

In order to protect neighbouring residential amenity."

6.7.3 Construction traffic will be required to route to/ from the Site via an advised heavy goods vehicle route via A category roads where applicable. This will ensure that vehicles use the most appropriate route; likely south from the Site to and from the A299 Thanet Way on and off slips. This will ensure minimal impact on the sensitive receptors.

6.7.4 The chosen demolition and construction contractor will sign up to and adhere to the Considerate Constructors Scheme. Consequently, the CEMP will be prepared for the Site before the commencement of any on-site works.

6.7.5 Deliveries would be limited to working hours, and where possible would not arrive during peak hours. Deliveries will be phased and controlled on a 'just in time' basis to minimise travel time around the Site, stock piling of materials and any associated noise and dust impacts. HGV drivers may have to attend a HGV Cycle Awareness sessions to ensure they are aware of and understand (and look-out for) cyclists on the roads.

6.7.6 All transport to and on the Site will be with vehicles that use rubber tyres.

6.7.7 Wheel washing and road cleaning facilities will be provided at a sufficient level to ensure the surrounding road network is kept clear of spoil and debris.

6.7.8 Consideration will be given to the use of a vehicle booking and management system in order to minimise peaks and increase opportunities for consolidated deliveries. As necessary peak hour restrictions will be applied and enforced.

6.7.9 It is considered that the impact of the temporary increase of HGV traffic associated with construction can be accommodated on the road network. The provision of internal roads and designated areas within the Site for key activities such as storage and preassembly will also minimise the impact on the road network.

6.7.10 To reduce traffic generated from Site, staff vehicles used by the Site labour force will be encouraged to use public transport, such as local bus routes. No parking on public roads will be allowed and the Contractor/ Construction Manager in conjunction with CCC/ KCC should enforce this. Provision will be made within the Site for essential on-site parking. Site personnel will access the Site via security control gates, which will be segregated from vehicular access. Any local traffic management measures for Site access will be agreed with the relevant authorities.

6.7.11 There will be an office compound on-site. The compound will include a Site holding/ consolidation area to allow full loads to be delivered to the Site.

Operation

6.7.12 The Applicant is committed to ensuring that the Proposed Development is as sustainable as possible in all aspects of its operation, including transport, and has devised a package of appropriate measures to mitigate the potential effects outlined above. In particular, mitigation measures will be introduced to enhance pedestrian and cycle infrastructure in the surrounding area to improve access to and from the Site by sustainable modes.

6.7.13 A FTP is provided in **Appendix 6.2** which sets out measures to be implemented to encourage sustainable travel for all future Site users. The FTP sets out a target to achieve a 20% reduction in single occupancy car trips in accordance with Northamptonshire County Council requirements and local policy guidance.

6.7.14 Mitigation measures that will be delivered as part of the Proposed Development, both on- and off-site have been summarised in **Table 6.16** alongside the anticipated funding source to deliver the measures.

Table 6.16: Mitigation Measures and Funding Sources

Ref	Measure to avoid, reduce or manage any adverse effects and/ or to deliver beneficial effects	How measure would be secured		
		By Design	By S.106	By Condition
1	Internal foot/ cycleways	✓		
2	Pedestrianisation of The Green		✓	
3	Foot/ cycleway provision along Newport Pagnell Road		✓	
4	Bus provision into the Site		✓	
5	Framework Travel Plan		✓	
6	Caswell Road/ Rhosili Road/ Pavilion Drive roundabout – increase entry width to 7.7m from Caswell Road North with an increase in flare length to 0.3m. There will also be an increase in entry width from Caswell Road South to 7.5m with a flare increase to 6m. Pavilion Drive will also see an increase in entry width to 9.6m, with a flare increase to 6m		✓	
7	Gowerton Road/ Landimore Road roundabout – Increase in entry width from Landimore Road to 7.2m with an increase in flare length to 13m		✓	
8	Newport Pagnell Road/ Landimore Road/ Wooldale Road roundabout – increase in entry width from Landimore Road to 7.3m. There will be an increase in flare length to 24.5m and an increase entry width to 7.3m along Newport Pagnell Road East with a flare increase of 16.5m	✓		✓
9	Wooldale Road/ Caroline Chisholm School Access roundabout – increase in entry width from Wooldale Road North to 7m with an increase in flare length to 8m		✓	
10	Wooldale Road/ Quinton Road roundabout – increase in entry width along Quinton Road North to 6.8m. There is also an increase in entry width along Wooldale Road East to 7m and Wooldale Road West to 7.3m		✓	
11	Wooldale Road/ Berry Lane roundabout – increase entry width to 6.9m, 6.5m and 6.5m along Berry Lane, Wooldale Road East and Southern Arm respectively. There will also be increase in entry width to the Wooldale Road West arm to 7m, with an increase in flare length of 5m		✓	
12	London Road/ Rowtree Road/ Wooldale Road roundabout – there will be an increase in entry width to 9.5m along		✓	

	the A45 Sliproad South arm with an increase in flare length to 11m. Wooldale Road will also have an entry width increase to 5.25m and an increased flare of 2m. Rowtree road will see an entry width increase to 4.8m			
13	Bridge Meadow Way/ A45 Slip Road roundabout – both the Northern approach and Bridge Meadow Way will see an increase in entry width to 8.5m		✓	
14	Waitrose access junction – upgrade of the existing pedestrian refuge crossing			✓

6.8 CUMULATIVE AND IN-COMBINATION EFFECTS

Construction

6.8.1 As the increase in all vehicle traffic due to construction activities is not significant (2%) when compared to 2031 Future Base Year (Do Minimum) traffic flows, and the HGV component of traffic is not expected to double, there are no significant cumulative effects anticipated on the road network or on sensitive receptors within the study area during the construction phase. A CTMP will also be implemented which will also ensure that construction traffic is well managed and routed away from receptors with high sensitivity levels.

Operation

6.8.2 In accordance with standard TA methodology, the assessment has accounted for the committed developments in the local area. Discussions at the scoping stage of this application with both Northampton Borough Council (NBC) and South Northamptonshire Council (SNC) determined that two committed development sites should be considered for their cumulative effect; these sites are:

- Land to the East of Hardingstone – HCA Development: planning for up to 1,000 dwellings, a school, retail space and infrastructure; and
- Land East of Wotton Fields – Morris Homes: for up to300 dwellings.

6.8.3 The location of these committed development sites in relation to the Site can be seen in Figure 2.1.

6.8.4 Because both Local Planning Authorities have decided to be determining authorities, there is a risk that one Local Planning Authority approves the section of the Site within their district and the other Local Planning Authority refuses planning permission for the section within their district. Therefore, this Proposed Development is effectively made up of two sections, who's boundaries are set by the Local Planning Authorities district boundaries.

6.8.5 Due to the possibility of such a scenario occurring, the assessment has also considered the cumulative effects of the northern land parcel only and the southern land parcel only with the committed development sites listed above. The cumulative assessment of the whole of the Proposed Development has considered both sections. If the cumulative effect of the whole of the Proposed Development is determined to not be significant it is logical to conclude that generally the cumulative effect of each of the two sections will also not be significant.

6.8.6 As the assessments undertaken in the **Likely significant environmental effects of the scheme** section for the operational phase of the Proposed Development

consider background increases in traffic flows, committed development trip impact and trip impact from the Proposed Development options, it is considered that the cumulative impact of the Proposed Development has already been considered.

6.8.7 Further, junction capacity assessments undertaken as part of the TA and which have informed the driver delay assessments as part of this Transport & Access Chapter, have also considered the cumulative traffic impact from background increases in traffic flows, committed development trips and trips generation from the Proposed Development.

6.8.8 Therefore, no further assessment of the cumulative traffic impact from the Proposed Development is required, and overall, it is considered that there are no significant cumulative effects from the Proposed Development. The modelling results outlined within the TA (Appendix 6.1) illustrate where junctions are experiencing intermittent periods of congestion and increased queue lengths, mitigation measures are proposed.

6.9 SUMMARY

Introduction

6.9.1 This Chapter has considered the potentially significant effects relating to transport and access associated with the Proposed Development during the construction and operational phases of the Proposed Development. Consideration has been given to the three development options comprising the northern land parcel of the Site located to the north of The Green (115 dwellings); the southern land parcel of the Site located to the south of The Green (410 dwellings) and all of the development (525 dwellings).

Baseline Conditions

6.9.2 Baseline conditions show that the Site is accessible by sustainable modes of travel with a network of foot and cycleways in the vicinity of the Site providing connectivity to nearby residential areas and amenities. Bus services operating within the vicinity of the Site also provide connectivity to a number of destinations including Northampton town centre.

Personal Injury Accident (PIA) data was obtained from Northamptonshire County Council for the most recent five-year period (01/03/2011 – 31/03/2017) for the highway network within the vicinity of the Site. A review of the data found that a total of 105 PIAs had been recorded in the search area of which 89 PIAs were of slight severity, 15 were of severe severity and one which resulted in a fatality. It should be noted that there were no PIAs recorded along Newport Pagnell Road within vicinity of the proposed Site access. Overall, the review of the PIAs showed that there were no accident patterns identified which are likely to be affected by increased traffic flows.

6.9.3 Traffic surveys undertaken in 2016 informed the baseline traffic flows for the links comprising the study area. TEMPro growth factors were applied to the baseline traffic flows to obtain traffic flows for a 2017 base year and 2031 future base year with committed development trips also added to the 2031 future base year.

Likely Significant Effects

Construction

6.9.4 The impact of construction traffic on sensitive receptors during the construction phase for the northern land parcel, southern land parcel and both parcels of development land was found to be negligible adverse. A worst case peak daily

construction traffic flow scenario for all three development options was assessed based on all construction activities occurring at the same time. Due to the nature of construction works, deliveries to site and the working hours of most operatives would not coincide with the network peak, thereby limiting the number of light and heavy goods vehicle movements on the highway network during periods of peak demand.

6.9.5 Construction traffic was found to have the greatest impact on Newport Pagnell Road between the proposed site access and the A45, with an increase in base traffic flows for all vehicles by up to 2% and more than a doubling of heavy goods vehicle traffic on two of the Newport Pagnell Road links (for the all development option). This is not considered to have a significant impact as it is unlikely that all construction activities would occur at the same time; further the development will be phased and the routeing of all construction traffic would be along Newport Pagnell Road which provides the most direct access to the strategic road network. Therefore, the significance of effect for all three development options would be negligible adverse.

Operation

6.9.6 The assessments of operational effects were undertaken for three development options entailing the northern land parcel, southern land parcel and all of the development. This was to reflect the location of the Proposed Development across two Local Planning Authority boundaries and possibility that only part of the Proposed Development would be granted planning permission.

The assessment of operational effects assessed the magnitude or level of change of an environmental effect on sensitive receptors with the Proposed Development and compared the outputs to a without development scenario. This assessment was a cumulative assessment as it considered background growth in traffic flows, committed development trips impact and trip generation from the Proposed Development. Overall, the significance of effect was found to be negligible with the proposed 'built-in' mitigation measures resulting in some beneficial impacts.

Mitigation and Enhancement

Construction

6.9.7 Construction traffic will be managed through the implementation of a CTMP, which forms part of the Construction Environmental Management Plan (CEMP). The CTMP aims to minimise potential construction traffic impacts on sensitive receptors and will include details of hours of operation, routes to be used for construction traffic and measures to manage construction traffic on-site. All abnormal loads, such as prefabricated components, will be managed and delivered in discussion with the police and Northamptonshire County Council to minimise any potential traffic disruptions. Therefore, no significant impact from hazardous loads is anticipated.

6.9.8 The implementation of a CTMP will also ensure that construction traffic is well managed and routed away from receptors with high sensitivity levels. If only the northern parcel of land was to gain planning consent, traffic management measures will be put into place along The Green to ensure congestion is minimised.

Operation

6.9.9 A number of 'built-in' mitigation measures have been proposed as part of the development options which would provide direct positive effects from the Proposed Development. These built-in mitigation measures include enhanced and new pedestrian and cycle infrastructure and facilities such as a network of foot/ cycleways on-site, a new foot/ cycleway along Newport Pagnell Road and the pedestrianisation of The Green. Off-

site highway improvements will also improve the operation of the local highway network by increasing capacity and reducing driver delay.

6.9.10 A Framework Travel Plan has also been prepared which sets out a package of hard and soft measures to reduce single car occupancy trip generation from the proposed development by 20% and promote and encourage travel to and from the Site by sustainable travel modes where travel is needed.

6.9.11 Further, opportunities to provide bus provision on-site are also being explored.

Conclusion

6.9.12 In conclusion, as the Proposed Development will be delivered with a range of new and enhanced infrastructure, most notably the pedestrianisation of The Green and will result in some beneficial impacts in the operational/ cumulative scenarios.

6.9.13 No severe impact is anticipated from development traffic during the construction and operational phases of development and therefore no specific mitigation measures are required in addition to the 'built-in' mitigation and proposed off-site highway improvements to address any transport and access impacts highlighted through the assessment process. Measures to encourage sustainable travel where travel is required are promoted in the Framework Travel Plan which will provide an overall benefit to future residents at the Site. These measures aim to reduce single occupancy car tripe through the provision of good quality pedestrian, cycle and public transport links within and within the vicinity of the Site, to existing infrastructure, to residential areas in proximity to the Site and to off-site amenities.

Table 6.16 Summary of Effects, Mitigation and Residual Effects

Description of Effect	Nature of Effect (Permanent/ Temporary/ None)	Sensitivity Value	Magnitude of Impact	Mitigation/ Enhancement Measures	Geographical Importance	Significance of Effects	Residual Effects (Major/ Moderate/ Minor/ Negligible) (Beneficial/ Adverse)
Demolition and Construction							
Construction traffic	Temporary	High	Medium	Construction Traffic Management Plan and routeing construction traffic via Newport Pagnell Road	Local	Negligible Adverse	Negligible Adverse
Operation							
Traffic flows	Permanent	High	Low	Off-site junction improvements and pedestrianisation of The Green	Local	Moderate Adverse	Negligible Beneficial
Severance	Permanent	High/ Medium	Low	Pedestrian crossing as part of committed development, pedestrianisation of The Green and new on- and off-site foot/ cycleways	Local	Minor to Moderate Adverse	Negligible Beneficial
Driver delay	Permanent	High/ Medium/ Low	Low	Off-site junction improvements	Local	-	Negligible Beneficial

Description of Effect	**Nature of Effect (Permanent/ Temporary/ None)**	**Sensitivity Value**	**Magnitude of Impact**	**Mitigation/ Enhancement Measures**	**Geographical Importance**	**Significance of Effects**	**Residual Effects (Major/ Moderate/ Minor/ Negligible) (Beneficial/ Adverse)**
Pedestrian delay	Permanent	High	Low	Pedestrian crossing as part of committed development, pedestrianisation of The Green and new on- and off-site foot/ cycleways	Local	Negligible Beneficial	Negligible Beneficial
Pedestrian amenity	Permanent	High	Low	Pedestrian crossing as part of committed development, pedestrianisation of The Green and new on- and off-site foot/ cycleways	Local	Negligible Beneficial	Negligible Beneficial
Fear and intimidation	Permanent	High	Low	None required	Local	Negligible Adverse	Negligible Adverse
Access and safety	Permanent	High	Low	Off-site junction improvements and pedestrianisation of The Green	Local	Negligible Adverse	Negligible Adverse
Hazardous loads	Permanent	High	Low	None required	Local	Negligible Adverse	Negligible Adverse