11 Transport & Highways

11.1 Introduction

11.1.1 This chapter of the ES assesses the likely significant effects of the Development in terms of transport and incorporates a summary of the Transport Assessment (TA), which is included as **Volume 2** of this ES.

11.1.2 The chapter describes the assessment methodology; the baseline conditions at the Site and surroundings; the potential significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the potential residual effects after these measures have been employed.

11.1.3 The approach to the assessment has been based on the 1993 Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment - IEMA) publication Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic, hereafter referred to as the IEA guidelines, and the 2007 Welsh Assembly Government, Department for Communities and Local Government (DCLG) and the Department for Transport (DfT) publication Guidance on Transport Assessment. Reference has also been made within this assessment to the National Planning Policy Framework (NPPF) as well as other relevant local planning policy documents.

11.2 Assessment Approach

Methodology

Potential Receptors

11.2.1 The methodology used in this ES chapter (adopting that advocated by the IEMA guidelines) includes evaluating:

- Potential effects on local roads and the users of these roads, including public transport users, pedestrians and cyclists; and
- Potential effects on land uses and environmental resources fronting those roads, including the relevant occupiers and users.

11.2.2 The IEMA guidelines also identify groups, locations and areas which may be sensitive to changes in traffic conditions and which should be considered for assessment. These potentially affected parties are summarised in Table 11.1.

Table 11.1: Sensitive Groups, Locations and Areas

People at home	Pedestrians
People in work places	Cyclists
Children	Open spaces
Elderly	Recreational sites
Disabled	Shopping areas
Hospitals	Sites of ecological/nature conservation value
Churches	Sites of visitor/tourist attraction
Schools	Accident hotspots
Historical buildings	

Source: IEA (1993). Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic.

Potentially Significant Effects

11.2.3 The IEMA guidelines also recommend that the following environmental effects (Table 11.2) may be considered to be potentially important when considering traffic from an individual development.

Table 11.2: Traffic Related Environmental Effects

Noise	**Fear and Intimidation**
Vibration	**Accidents and Safety**
Visual Effects	Hazardous Loads
Severance	Air Pollution
Driver Delay	Dust and Dirt
Pedestrian & Cycle Delay	Ecological Effects
Pedestrian & Cycle Amenity	Heritage and Conservation

11.2.4 Of these effects, many are considered in chapters elsewhere within this Environmental Statement due to the specialist skills required (e.g. Air Quality - Chapter 12; Noise - Chapter 13).

11.2.5 The following effects (highlighted in bold in Table 11.2 above) have been included in the scope of the assessment:

- Potential effects on the community associated with severance caused by an increase in traffic levels during construction and occupation of the Proposed Development.
- Potential effects on drivers associated with driver delay caused by additional traffic generated by the Proposed Development.
- Potential effects on pedestrians and cyclists associated with delays caused by changes in traffic volume or speed of traffic.
- Potential effects on pedestrian and cycle amenity caused by the increase in traffic flow, change in traffic composition and pavement width/separation from traffic.
- Potential effects on pedestrians and cyclists associated with fear and intimidation caused by increase in volume of traffic and its HGV composition.
- Potential effects of highway safety caused by the increase in traffic flow as a result of the Proposed Development.

11.2.6 The following effects have been excluded from the scope of the assessment:

- Potential effects of hazardous loads; Hazardous loads are not expected during the construction or post construction phases; therefore this effect has been scoped out.
- Potential effects of additional traffic on the highway network further afield than the highway network in the vicinity of the development. Effects are likely to be negligible as development traffic becomes diluted by other traffic flows and is dispersed through a variety of locations.

Data Gathering Methodology

11.2.7 In order to establish the baseline situation, existing traffic flows on the local highway network have been derived from traffic counts undertaken at junctions in the vicinity of the development during March 2013.

11.2.8 The Coventry City Council Strategic VISUM Transport Model has been used to obtain 2022 future year traffic flows for scenarios both 'with' and 'without' development. These model outputs have been used within the ES to assess the impact of development at various locations on the surrounding highway network. Full details of the scenarios are provided in the TA.

11.2.9 Personal Injury Accident (PIA) data for the study area was also obtained from Coventry City Council (C/O: Mott MacDonald) and has been used to determine if there is a history of accidents in the vicinity of the site.

11.2.10 A detailed site audit has also been undertaken, the purpose of which was to review the local road network in the vicinity of the Site and identify key pedestrian trip attractors, pedestrian and cycle crossing points and other areas of pedestrian activity. Other groups, locations and areas, which may be sensitive to changes in traffic conditions, were also considered. Additionally, the site visit considered road links and junctions that may have queuing and capacity issues or the potential to be an accident hotspot.

Methodology for Prediction of Effects

11.2.11 The estimated traffic generation resulting from the construction and operation phases of the Proposed Development has been compared with baseline traffic flows in order to determine the percentage increase in traffic on each road that has been taken forward for assessment.

11.2.12 In order to define the scale and extent if this assessment, the IEMA guidelines identify the following rules by which to undertake and assess the potentially significant traffic-related environmental effects:

- Rule 1: Include roads where traffic flows are predicted to increase or decrease by more than 30%;
- Rule 2: Include any specifically sensitive areas where traffic flows are predicted to increase or decrease by 10% or more.

Significance Evaluation Methodology

11.2.13 The significance of each effect will be considered against the criteria within the IEMA guidelines, where possible. However, the IEMA guidelines state that:

'…for many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources.'

11.2.14 The IEMA guidelines also state that:

'…the detailed assessment of impacts is… likely to concentrate on the period during which the absolute level of an impact is at its peak, as well as the hour at which the greatest level of change is likely to occur.'

11.2.15 The magnitude of each potentially significant effect has also been considered and an assessment has been made as to whether the Proposed Development would result in minor, moderate or major adverse impacts or whether the effect would be beneficial. The criteria used to determine the significance and magnitude of each of the traffic-related environmental effects is based on the advice given in the IEMA guidelines and is summarised in the paragraphs below.

Severance

11.2.16 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery and is used to describe the factors that separate people from other people and places. For example, severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities.

11.2.17 The effects of severance can be applied to motorists, pedestrians or residents. The IEMA guidelines suggest that changes of traffic flow of 30%, 60% and 90% are regarded as producing 'minor', 'moderate' and 'major' changes in severance respectively. However, there are no predictive formulae which give simple relationships between traffic factors and levels of severance.

11.2.18 The IEMA guidelines state that marginal changes in traffic flow are unlikely to create or remove severance, but that consideration in determining whether severance is likely to be an important issue should be given to factors such as road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the affected route. Consideration should also be given to different groups such as the elderly and young children.

11.2.19 Therefore, in order to assess severance, the current severance caused by traffic and related factors along the roads surrounding the Proposed Development has been estimated. The extent to which additional traffic will exacerbate this problem in accordance with the rules contained within the IEMA guidelines has then been assessed.

Driver Delay

11.2.20 Delays to non-development traffic can occur at several points on the local highway network as a result of the additional traffic that would be generated by a development.

11.2.21 The IEMA guidelines state that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. The theoretical capacity of a road or a particular junction can be determined by assessing the Ratio of Flow Capacity (RFC). When an RFC value of 0.85 or more is experienced, queuing and congestion are likely to occur during busy periods.

Pedestrian & Cycle Delay

11.2.22 Changes in the volume, composition or speed of traffic may affect the ability of people and cyclists to cross roads, and therefore, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend upon the general level of pedestrian and cyclist activity, visibility and general physical conditions of the crossing location.

11.2.23 Given the range of local factors and conditions which can influence pedestrian and cycling delay, the IEMA guidelines do not recommend that thresholds be used as a means to establish the significance of pedestrian and cycling delay, but recommend that reasoned judgements be made instead. However the IEMA guidelines do note that, when existing traffic flows are low, increases in traffic of around 30% can double the delay experienced by pedestrians/cyclists attempting to cross a road.

Pedestrian & Cycle Amenity

11.2.24 Pedestrian and cycling amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.

11.2.25 The IEMA guidelines note that changes in pedestrian and cyclist amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a beneficial effect and the latter an adverse effect.

Fear and Intimidation

11.2.26 The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths, as well as factors such as the speed and size of vehicles.

11.2.27 There are no commonly agreed thresholds by which to determine the significance of the effect. However, the IEMA guidelines note previous work that has been undertaken which puts forward thresholds that define the degree of hazard to pedestrians by average traffic flow, 18 hour/day heavy vehicle flow and average speed over an 18 hour day in miles per hour.

11.2.28 The IEMA guidelines also note that special consideration should be given to areas where there are likely to be particular problems, such as high speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.

Accidents and Safety

11.2.29 Where a proposed development is expected to produce a change in the character of the traffic on the local road network, as a result of increased HGV movements for example, the IEMA guidelines state the implications of local circumstances or factors which may elevate or lessen risks of accidents, such as junction conflicts, would require assessment in order to determine the potential significance of accident risk.

Mitigation, Enhancement & Residual Effects

11.2.30 The traffic and transport related mitigation measures incorporated into the development proposals are detailed in Section 9.5. The residual impact of the development in terms of significance against each element outlined above has also been assessed.

Policy Framework

National Planning Policy Framework (NPPF)

11.2.31 The NPPF document sets out national planning policies for England. It supersedes and replaces almost all previous national Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) notes, including PPG13 – Transport.

11.2.32 National policy in relation to transport is set out within Chapter 4, Paragraphs 29 to 41.

11.2.33 Paragraph 32 of the NPPF notes that all developments that generate significant amounts of movement should be accompanied by a Transport Statement or Transport Assessment and that plans and 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.
- Improvements can be undertaken within the transport network that are cost effective and 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."

11.2.34 Similarly, paragraph 34 notes (inter alia) "*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*".

11.2.35 Paragraph 35 discusses the design of development noting that, where practical, developments should inter alia:

- "*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.*
- *Incorporate facilities for charging plug-in and other ultra-low emission vehicles.*
- *Consider the needs of people with disabilities by all modes of transport.*"

11.2.36 Paragraph 36 states:-

"*A key tool to facilitate this will be a Travel Plan. All developments which generate significant amounts of movement should be required to provide a Travel Plan.*"

11.2.37 Paragraph 39 of the NPPF discusses what should be taken into account by local authorities when setting their parking standards. Therefore, with the replacement of PPG13, there are now no national parking standards and as such, it is considered that local council parking policy should be used to source the most up-to-date and appropriate standards for development.

West Midlands Local Transport Plan 3 (2011-2026)

11.2.38 The third West Midlands Local Transport Plan (WMLTP) covers the period 2011 to 2026. It seeks to identify the transport needs of the entire conurbation, including Coventry and presents an Implementation Plan that sets out a programme for delivery of the identified measures over the first five years (2011-2016).

11.2.39 The central vision of the WMLTP strategy is:

"*To make the West Midlands Metropolitan Area more prosperous, healthier and safer, offering a high quality and attractive environment where people will choose to live, work and visit, and where businesses thrive and attract inward investment.*"

11.2.40 The WMLTP presents a strategy based on the principle of achieving a "low carbon" economy and transport system. It focuses on improvements to the transport network that will deliver economic benefits, and thus on improving the efficient and safe movement of people and freight. In addition, it seeks to provide an integrated public transport system and to promote "smarter choices" in order to bring about a reduction in carbon emissions.

11.2.41 The WMLTP strategy's key aspects include:

- *Cost effective transport investment that provide economic growth and jobs;*
- *The timely implementation of committed major schemes;*
- *Improving link to/from Birmingham International Airport and maximising benefits to be derived from the High Speed 2 (HS2) project;*
- *Limiting road building to specific locations where required to attract inward investment;*
- *Increasing public transport capacity to facilitate growth;*
- *Making the most efficient use of the highway network;*
- *A focus on "smarter choices" to encourage fewer or shorter journeys and the transfer of trips to sustainable modes.*

11.2.42 The Keresley site will be developed in line with WMLTP3 where possible, to make best use of existing networks and infrastructure. There is a good opportunity in the area to extend local networks to fully integrate with the site including extended bus routes, tying up with existing cycle networks and providing permeability in the layout of the internal road network for the benefit of pedestrians. The Travel Plan for the site will also create sustainable journeys from the outset, and introduce ways for people to make smarter journey choices.

Warwickshire Local Transport Plan 3 (2011-2026)

11.2.43 The third Local Transport Plan (LTP) for Warwickshire covers the period 2011 to 2026. It has several objectives, which are generally in accordance with national and regional transport policy. These include tackling climate change, supporting economic growth, improving equality of opportunity and enhancing health, safety, security and quality of life. The LTP aims to achieve these objectives by improving the reliability of transport, reducing car dependency and locating development in accessible locations.

11.2.44 A key priority is to integrate transport, land use and social aspects within communities in order to minimise the need to travel by private car. The most sustainable locations for development are considered to be those where local amenities, public transport services and employments opportunities lie within walking distance and where local walking and cycling infrastructure and links are in place or can be readily provided.

11.2.45 The area strategy includes proposals for a "step change" in public transport provision, centred on rail-based enhancements as part of the "NUCKLE" (Nuneaton-Coventry-Kenilworth-Leamington) initiative. NUCKLE envisages enhanced services and new stations on the existing north-south rail corridor, which would be expected to reduce the demand for car-based travel on the A45/A46 around Coventry.

2009 Coventry Core Strategy Development Plan Document

11.2.46 CCC submitted the Coventry Core Strategy DPD for examination in June 2009, this document identified land at Keresley as a location for the delivery of over 3,000 dwellings. The subsequent examination of the document found the Core Strategy to be sound and in doing so identified Keresley as a preferred location for new development, if and when there was an overriding need for land that could no longer be met within the present confines of the city.

11.2.47 Following a change of political control from Conservative to Labour in 2010, the 2009 Core Strategy was withdrawn.

Coventry's 2012 Core Strategy Proposed Submission (July 2012)

11.2.48 Coventry's 2012 Draft Core Strategy was submitted in July 2012; however this version of the Core Strategy no longer identified Keresley as an area for development. The Core Strategy has since been withdrawn from the examination process by the Council's Cabinet following advice from the Planning Inspectorate.

Scoping Criteria

11.2.49 The potentially significant effects that will be considered as part of this section of the ES are detailed in Table 11.2 above. As detailed in paragraph 9.2.12 the scope of this assessment has been determined using the IEMA guidelines which indicate that roads should be included where traffic flows are predicted to increase by more than 30% unless the road in question is located within a specifically sensitive area in which case the road should be included if traffic flows increase by 10% or more.

11.2.50 Consultation regarding the scope of assessment for both the TA and ES was undertaken with officers from Coventry City Council with regards to agreeing the key parameters for the assessment, such as the estimated volume and distribution of vehicle trips from the Proposed Development, and also the extent of the network for which an assessment would be required.

11.3 Baseline Conditions

Site Description and Context

11.3.1 The site is located approximately 1km south of Keresley Village and is approximately 4.8km to the north of Coventry City Centre. The site is bound by Greenfield land to the north, Bennetts Road South to the east, Sandpits Lane to the south, and Tamworth Road to the west.

Surrounding Highway Network

11.3.2 Tamworth Road operates in a north-south alignment along the western boundary of the site and provides a connection between Coventry and Fillongley. Tamworth Road is a two-way single carriageway road with a narrow pedestrian footway on the eastern edge. Tamworth Road is subject to a 40mph speed limit north of Long Lane, this reduces to a 30mph limit to the south of Long Lane towards Coventry City Centre. Traffic observations on Tamworth Road adjacent the site has established that southbound queues form during the AM peak hour as a result of right turners into Long Lane.

11.3.3 Bennetts Road South to the east of the site also operates in a north-south alignment, the road becomes Keresley Green Road further south, which in turn then intersects with Tamworth Road, The Scotchill and Keresley Road in the form of a roundabout/gyratory junction. Bennetts Road South provides connections with Coventry to the south and Bedworth to the north-east.

11.3.4 Bennetts Road South is a two-way single carriageway with a narrow pedestrian footway on the western side, a second footpath on the eastern side begins just north of Penny Park Road. It is subject to a 30mph speed limit along its entirety. Traffic observations have shown that queues form at the signalised junction with Sandpits Lane as a result of right turners during the AM and PM peaks.

11.3.5 Immediately to the south of the site Sandpits Lane runs east to west and connects with Bennetts Road South to the east in the form of a signalised T-junction, and Tamworth Road to the west in the form of a simple priority junction. Sandpits Lane is subject to a 30mph speed limit, has a narrow footway on the northern side of the road and provides access to the Cardinal Newman School and Community College.

11.3.6 Long Lane connects with Tamworth Road in the form of a simple priority junction adjacent the western edge of the site. Long Lane is approximately 6.5m wide and is subject to a 40mph speed limit. It provides a primary link via Coundon Wedge Drive to the A4114 Pickford Way, which in turn connects to the A45 towards Birmingham. Traffic observations have revealed that queues form at the priority junction with Tamworth Road as a result of right turners during both peak periods.

11.3.7 Penny Park Lane joins with Bennetts Road South in the form of a simple priority junction approximately 300m north of Sandpits Lane. Penny Park Lane provides an east-west link from Bennetts Road South through Holbrooks and connects with Parkville Highway to provide a route to the A444 and Ricoh Arena.

11.3.8 The A444 is located approximately 3km east of the site and provides connections with the M6 (J3) and Nuneaton to the north and Coventry City Centre to the south. The A444 is a wide dual carriageway with a 50mph speed limit. The M6 provides a strategic link with the M1 to the southeast and Birmingham and Stafford to the northwest.

Sustainable Transport Provision

Bus Services

11.3.9 The site is served by the 16 and 16A which operate along Bennetts Road South and combine to provide 6 buses per hour in the inter-peak to Coventry, Keresley, Stoke Aldermore, Binley and Walsgrave University Hospital. The 735 also serves the site with a limited service which operates along Tamworth Road and Sandpits Lane, immediately at the western and southern edges of the site.

11.3.10 The nearest bus stops are located on Tamworth Road north of Long Lane and on Bennetts Road South north of Penny Park Lane. All stops provide timetabling information and are located within 700m of the centre of site.

11.3.11 Interchange with other bus routes is possible in Coventry City Centre which provides access to all major trip destinations in the city, and to points outside the city, such as Birmingham City Centre, Birmingham Airport, Solihull and major towns in Warwickshire.

Rail Services

11.3.12 Coventry Railway Station is located approximately 5km from the development site to the south of Coventry City Centre. Although not within an attractive walking distance from the site, the station can be accessed via other sustainable modes such as cycling and frequent bus routes mentioned above.

Pedestrian & Cycle Facilities

11.3.13 A footway with street lighting is provided on the western side of Bennetts Road South which provides a link to the village of Keresley and Prologis Park to the north. A second footway on the eastern side of Bennetts Road South begins just north of Penny Park Lane which, together with the western footpath, provides links to the surrounding residential and employment areas within the Bablake and Holbrook wards and towards Coventry City Centre to the south.

11.3.14 Footways with street lighting are also present along the eastern side of Tamworth Road and the northern side of Sandpits Lane which provide connections to residential areas and educational facilities to the south and east.

11.3.15 A signalised pedestrian crossing is located at the junction with Sandpits Lane and Bennetts Road South which provides links north-south across Sandpits Lane and east-west across Bennetts Road South.

11.3.16 The site is crossed by several Public Right of Ways (PRoWs). Footpaths M311, M313 and M315 provide links through the site from Tamworth Road to Bennetts Road South.

11.3.17 On carriageway signed cycle routes are located along Coundon Wedge Drive approximately 1.5km southwest of the site which provides high quality links into Coventry City Centre.

11.3.18 Off carriageway signed cycle routes are located approximately 1.5km north of the site along Central Boulevard at Prologis Park which link to the Ricoh Arena and Arena Park to the east.

11.3.19 There are also numerous advisory cycle routes within the vicinity of the site which provide suitable lightly trafficked routes around Keresley and Coventry.

11.3.20 Full details including plans and diagrams of existing sustainable transport measures are included within the TA.

Baseline Survey Information

Existing Traffic Flows

11.3.21 The main areas considered in terms of traffic flows are Counden Wedge Drive leading up to Long Lane, Tamworth Road, Bennetts Road and Radford Road corridors leading from the site into Coventry, Sandpits Lane, Penny Park Lane and The Scotchill corridors which provide and east-west movement from the site towards the A444 and M6.

11.3.22 To establish current levels of traffic, surveys were undertaken during March 2013. Classified turning counts were collected by PCC Traffic Information Consultancy on Wednesday 6th March 2013 for the following junctions:

- Long Lane/Brownshill Green Road/Coundon Wedge Road/Wall Hill Road
- B4098 Tamworth Road/Long Lane
- B4098 Tamworth Road/Sandpits Lane
- B4098 Tamworth Road/Waste lane
- B4098 Tamworth Road/Keresley Green Road/The Scotchill/B4098 Keresley Road
- Bennetts Road South/Sandpits Lane
- Bennetts Road South/Penny Park lane
- B4098 Keresley Road/Wallace Road/Norman Place Road
- B4098 Keresley Road/Sadler Road/Radford Road/Brownshill Green Road
- B4098 Radford Road/Beake Avenue/Engleton Road

11.3.23 Additional classified turning counts and queue length surveys were also collected by PCC on Wednesday 10th July 2013 for the following junctions:

- Bennetts Road/Exhall Road
- Parkville Highway/Parkgate Road/Beake Avenue/ Penny Park Lane
- Beake Avenue/Burnaby Road
- Coundon Wedge Drive/Holyhead Rd/Allesley Rd/Pickford Way/Birmingham Rd

11.3.24 The full details of the traffic counts undertaken in the vicinity of the site are provided in the TA. As detailed previously, traffic data for the future assessment horizon of 2022 has been obtained using the Coventry Highway VISUM Transport Model.

11.3.25 The AM and PM peak hour traffic flows for the base year of 2013 and future forecast year of 2022 (from the Coventry Model) are summarised in Table 11.3. The location of the Links can also be seen from Figure 11.1.

Table 11.3: Baseline Peak Hour Traffic Flows

	Highway Link	2013 Survey Base				2022 Do Minimum (Coventry Highway VISUM Model)			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Total	HGV	Total	HGV	Total	HGV	Total	HGV
1	Wall Hill Road	582	12	461	9	640	13	884	18
2	Coundon Wedge Road	1676	17	1660	17	1558	16	1628	16
3	Brownshill Green Road	1221	12	976	10	1183	12	1322	13
4	Long Lane	1067	21	1043	21	1093	22	1224	24
5	Tamworth Road (North of Long Ln)	994	20	923	18	1142	23	1192	24
6	Tamworth Road (North of Sandpits Ln)	1209	24	1237	25	1548	31	1570	31
7	Tamworth Road (South of Sandpits Ln)	876	18	780	16	762	15	753	15
8	Tamworth Road (North of Waste Ln)	880	18	791	16	761	15	753	15
9	Waste Lane	561	6	505	5	743	7	940	9
10	Tamworth Road (South of Waste Ln)	1293	26	1160	23	1504	30	1693	34
11	Tamworth Road (North of	1272	25	1152	23	1304	26	1449	29

	Highway Link	2013 Survey Base				2022 Do Minimum (Coventry Highway VISUM Model)			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Total	HGV	Total	HGV	Total	HGV	Total	HGV
	R'bout)								
12	Keresley Road (South of R'bout)	1581	32	1459	29	1460	29	1368	27
13	Keresley Road (North of Wallace Rd)	1550	31	1396	28	1459	29	1367	27
14	Norman Place Road	816	24	701	21	632	19	578	17
15	Wallace Road	513	15	481	14	558	17	409	12
16	Keresley Road (South of Wallace Rd)	1059	21	988	20	1385	28	1198	24
17	Keresley Road (North of Sadler Rd)	1059	21	976	20	1385	28	1198	24
18	Brownshill Green Road	558	6	495	5	645	6	528	5
19	Sadler Road/Radford Rd (SB)	900	18	632	13	709	14	597	12
20	Radford Road NB Only	425	9	755	15	463	9	741	15
21	Radford Road (North of Beake Ave)	1092	22	1132	23	1172	23	1338	27
22	Engleton Road	1098	11	1049	10	1110	11	1107	11
23	Radford Road (South of Engleton Rd)	1044	21	1306	26	1259	25	1440	29
24	Beake Avenue	1042	10	1143	11	1219	12	1205	12
25	The Scotchill	958	19	860	17	890	18	933	19
26	Keresley Green Road (North of R'bout)	827	17	755	15	876	18	580	12
27	Bennetts Road S (South of Sandpits Ln)	749	22	626	19	790	24	671	20
28	Bennetts Road S (North of Sandpits Ln)	815	16	944	19	1000	20	1158	23
29	Bennetts Road S (South of Penny Pk Ln)	789	24	918	28	999	30	1160	35
30	Penny Park Lane	498	10	515	10	462	9	522	10
31	Bennetts Road S (North of Penny Pk Ln)	413	12	461	14	545	16	638	19
32	Sandpits Lane (West of Bennetts Rd S)	666	7	610	6	810	8	817	8
33	Sandpits Lane (East of Tamworth Rd)	632	6	601	6	788	8	817	8
34	Tamworth Road (North of Site Access)	994	20	923	18	1142	23	1192	24
35	Development Site Through Road	-	-	-	-	-	-	-	-
36	Bennetts Road S (North of Site Access)	413	12	461	14	545	16	638	19

11.3.26 The impact of the occupied development is assessed against the AM and PM peak hour traffic flows as it during these periods that the majority of traffic will be generated by the development. Traffic associated with the construction phase of the development is, however, likely to be spread across a longer period throughout the day and therefore the impact of this traffic has been assessed against average 12 hour weekday traffic flows. The 2013 surveys only provide outputs for the AM and PM peak hours therefore conversion factors derived from local traffic counts have been applied to the data in Table 11.3 to provide baseline traffic flows over a 12 hour period. The resultant flows are detailed in Table 11.4.

Table 11.4: Baseline 12 Hour Traffic Flows

	Highway Link	2013 Survey Base		2022 Do Minimum (Coventry Highway VISUM Model)	
		12 Hour		12 Hour	
		Total	HGV	Total	HGV
1	Wall Hill Road	4746	95	6934	139
2	Coundon Wedge Road	15179	152	14496	145
3	Brownshill Green Road	9996	100	11398	114
4	Long Lane	9601	192	10542	211

	Highway Link	2013 Survey Base		2022 Do Minimum (Coventry Highway VISUM Model)	
		12 Hour		12 Hour	
		Total	HGV	Total	HGV
5	Tamworth Road (North of Long Ln)	8722	174	10620	212
6	Tamworth Road (North of Sandpits Ln)	11129	223	14187	284
7	Tamworth Road (South of Sandpits Ln)	7535	151	6893	138
8	Tamworth Road (North of Waste Ln)	7603	152	6889	138
9	Waste Lane	4850	49	7658	77
10	Tamworth Road (South of Waste Ln)	11161	223	14546	291
11	Tamworth Road (North of R'bout)	11029	221	12526	251
12	Keresley Road (South of R'bout)	13832	277	12867	257
13	Keresley Road (North of Wallace Rd)	13404	268	12858	257
14	Norman Place Road	6902	207	5506	165
15	Wallace Road	4523	136	4400	132
16	Keresley Road (South of Wallace Rd)	9314	186	11753	235
17	Keresley Road (North of Sadler Rd)	9259	185	11753	235
18	Brownshill Green Road	4791	48	5337	53
19	Sadler Road/Radford Rd (SB)	6971	139	5942	119
20	Radford Road NB Only	5369	107	5478	110
21	Radford Road (North of Beake Ave)	10119	202	11421	228
22	Engleton Road	9769	98	10087	101
23	Radford Road (South of Engleton Rd)	10693	214	12280	246
24	Beake Avenue	9942	99	11029	110
25	The Scotchill	8272	165	8295	166
26	Keresley Green Road (North of R'bout)	7198	144	6625	132
27	Bennetts Road S (South of Sandpits Ln)	6256	188	6648	199
28	Bennetts Road S (North of Sandpits Ln)	8003	160	9819	196
29	Bennetts Road S (South of Penny Pk Ln)	7767	233	9823	295
30	Penny Park Lane	4609	92	4477	90
31	Bennetts Road S (North of Penny Pk Ln)	3977	119	5383	161
32	Sandpits Lane (West of Bennetts Rd S)	5806	58	7403	74
33	Sandpits Lane (East of Tamworth Rd)	5610	56	7303	73
34	Tamworth Road (North of Site Access)	8722	174	10620	212
35	Development Site Through Road	-	-	-	-
36	Bennetts Road S (North of Site Access)	3977	119	5383	161

Highway Safety

11.3.27 Collisions data for the roads surrounding the development has been obtained from CCC (C/O: Mott MacDonald) for the highway network surrounding the site over a five year period between 2008 and 2013. This information has been summarised for the whole area in Table 11.5 with a more detailed analysis of individual sections of the highway network included within the TA.

Table 11.5: Summary of PIAs Recorded on Surrounding Highway Network

Year	Accident Severity			Involving Sensitive Users		
	Slight	Serious	Fatal	Pedestrian	Cycle	Motorcycle
2008	4	2	0	0	0	0
2009	11	1	2	1	2	2
2010	11	4	0	2	0	3
2011	21	1	0	8	1	4
2012	5	2	0	2	0	2
2013	4	0	0	1	0	1
Total (5yr)	**56**	**10**	**2**	**14**	**3**	**12**

11.3.28 As detailed in Table 11.5 a total of 68 collisions were recorded within the vicinity of the site, of which, 10 resulted in serious injury and two resulted in fatality.

11.3.29 The review of the collisions recorded within the TA has revealed that there are a number of incident clusters where collisions have occurred at specific junctions across the network. The majority of collisions that have occurred over the past five years are predominantly the result of driver error, such as; exiting a junction into the path of oncoming traffic or failing to judge the deceleration of vehicles in front.

Sensitive Locations

11.3.30 Based on the information presented above and the for the purposes of this assessment it has been considered that the following links are particularly sensitive to increased traffic flows:

- *Links 5 to 11 & 34 – Tamworth Road / Waste Lane*
- *Links 26 to 31 & 36 – Keresley Green Road / Bennetts Road / Penny Park Lane*
- *Links 32 & 33 – Sandpits Lane*

11.3.31 These links are considered to be sensitive primarily as they route through villages where there is likely to be higher levels of pedestrian activity and there are also residential properties and schools fronting onto the carriageways. Locations further south of Keresley towards Coventry are also expected to experience higher volumes of pedestrian activity, however these are considered to be less sensitive to increases in traffic as the facilities for pedestrians are of a higher standard.

11.4 Key Impacts & Likely Significant Effects

Construction Traffic Impact

11.4.1 It is anticipated that the construction activities will be undertaken over a period of between five and eight years and will be divided into subsequent phases of development. Due to the complexity and length of the construction programme it is not possible to accurately predict volumes of traffic that will be generated over the course of a normal working day.

11.4.2 The increase in the levels of traffic that would be required to trigger an assessment of the potentially significant environmental effects associated with traffic and transport, in accordance with the IEMA guidelines, have been calculated by increasing 2013 base traffic flows detailed in Table 11.4 by 30% (10% on the roads identified as sensitive in section 9.2.50) The resultant traffic increases that would be required to trigger a detailed assessment of the impact of construction traffic are therefore detailed in Table 11.6.

Table 11.6: Increase in Construction Traffic Volumes Required to Exceed Thresholds for Assessment

	Highway Link	2013 Construction Base		2013 Construction Base + 30%		Increase in Traffic	
		12 Hour		12 Hour		12 Hour	
		Total	HGV	Total	HGV	Total	HGV
1	Wall Hill Road	4746	95	6169	123	1424	28
2	Coundon Wedge Road	15179	152	19732	197	4554	46
3	Brownshill Green Road	9996	100	12995	130	2999	30
4	Long Lane	9601	192	12481	250	2880	58
5*	Tamworth Road (North of Long Ln)	8722	174	9595	192	872	17
6*	Tamworth Road (North of Sandpits Ln)	11129	223	12242	245	1113	22
7*	Tamworth Road (South of Sandpits Ln)	7535	151	8288	166	753	15
8*	Tamworth Road (North of Waste Ln)	7603	152	8363	167	760	15
9*	Waste Lane	4850	49	5335	53	485	5
10*	Tamworth Road (South of Waste Ln)	11161	223	12277	246	1116	22
11*	Tamworth Road (North of R'bout)	11029	221	12132	243	1103	22
12	Keresley Road (South of R'bout)	13832	277	17982	360	4150	83
13	Keresley Road (North of Wallace Rd)	13404	268	17426	349	4021	80
14	Norman Place Road	6902	207	8973	269	2071	62
15	Wallace Road	4523	136	5880	176	1357	41
16	Keresley Road (South of Wallace Rd)	9314	186	12108	242	2794	56
17	Keresley Road (North of Sadler Rd)	9259	185	12037	241	2778	56
18	Brownshill Green Road	4791	48	6228	62	1437	14
19	Sadler Road/Radford Rd (SB)	6971	139	9062	181	2091	42
20	Radford Road NB Only	5369	107	6980	140	1611	32
21	Radford Road (North of Beake Ave)	10119	202	13155	263	3036	61
22	Engleton Road	9769	98	12700	127	2931	29
23	Radford Road (South of Engleton Rd)	10693	214	13900	278	3208	64
24	Beake Avenue	9942	99	12924	129	2983	30
25	The Scotchill	8272	165	10753	215	2482	50
26*	Keresley Green Road (North of R'bout)	7198	144	7918	158	720	14
27*	Bennetts Road S (South of Sandpits Ln)	6256	188	6882	206	626	19
28*	Bennetts Road S (North of Sandpits Ln)	8003	160	8804	176	800	16
29*	Bennetts Road S (South of Penny Pk Ln)	7767	233	8544	256	777	23
30*	Penny Park Lane	4609	92	5070	101	461	9
31*	Bennetts Road S (North of Penny Pk Ln)	3977	119	4374	131	398	12
32*	Sandpits Lane (West of Bennetts Rd S)	5806	58	6386	64	581	6
33*	Sandpits Lane (East of Tamworth Rd)	5610	56	6171	62	561	6
34*	Tamworth Road (North of Site Access)	8722	174	9595	192	872	17
35	Development Site Through Road	-	-	-	-	-	-
36*	Bennetts Road S (North of Site Access)	3977	119	4374	131	398	12

** Sensitive Links (increased by 10%)*

11.4.3 The information contained within Table 11.6 indicates that, due to the relatively high volumes of baseline traffic on the highway network surrounding the site, a large increase in development related traffic would be required during the construction phase to exceed the IEMA thresholds for a detailed assessment.

11.4.4 In the immediate vicinity of the development an increase in excess of 700 two-way vehicle movements per day will be required to exceed the IEMA thresholds on Tamworth Road, 350 vehicles on Bennetts Road South and 500 vehicles on Sandpits Lane. Increases in traffic of this magnitude are considered to be highly unlikely during the construction phase.

11.4.5 In terms of HGV movements there is considered to be appropriate routing options for construction traffic to access the proposed development with minimal impact and disruption, namely along the A45 to the southwest of the site.

11.4.6 For construction traffic routing along the A45 it is likely that the majority will access the site via the B4076 Coundon Wedge Drive / Long Lane. Coundon Wedge Drive and Long Lane would need to see a rise in over 46 and 58 two-way HGV movements per day before the IEMA threshold is exceeded.

11.4.7 Based on the information above it is considered that the additional traffic generated during the construction period is unlikely to result in a significant increase in total traffic on any links in the vicinity of the development.

11.4.8 Any adverse effect during the construction period would be mitigated through the implementation of a Construction Traffic Management Plan which is discussed in greater detail in Section 9.5.

Operational Traffic Impact

11.4.9 Full details of the predicted traffic generations, the assumptions made regarding the uptake of sustainable forms of transport and the proposed improvements to sustainable transport that will be implemented as part of the development are contained within the TA and Travel Plan that have been prepared for the proposed development. For the purposes of this assessment, a worst case scenario has been examined. This assumes that the improvements to sustainable modes of transport and the implementation of the Travel Plan will have a minimal impact on the travel patterns of the residents of the development.

11.4.10 Table 11.7 compares the predicted traffic generation for the proposed development with the 2022 AM an PM peak hour base flows to identify any potential sections of road where increases in traffic may exceed the thresholds set out in the IEMA guidelines, therefore requiring a detailed assessment.

11.4.11 It should be noted that the traffic flow impact within Table 11-7 has been assessed with the distributor link road through the development site in place. However no other offsite highway mitigation measures have been included.

Table 11.7: Increase in Traffic Volumes Resulting from Proposed Development

	Highway Link	AM Peak Hour			PM Peak Hour		
		2022 Base	2022 + Dev (DS)	% Change	2022 Base	2022 + Dev (DS)	% Change
1	Wall Hill Road	640	644	1%	884	917	4%
2	Coundon Wedge Road	1558	1714	10%	1628	1810	11%
3	Brownshill Green Road	1183	1138	-4%	1322	1304	-1%
4	Long Lane	1093	1340	23%	1224	1503	23%
5*	Tamworth Road (North of Long Ln)	1142	1645	44%	1192	1743	46%
6*	Tamworth Road (North of Sandpits Ln)	1548	1435	-7%	1570	1445	-8%
7*	Tamworth Road (South of Sandpits Ln)	762	836	10%	753	828	10%
8*	Tamworth Road (North of Waste Ln)	761	835	10%	753	828	10%
9*	Waste Lane	743	706	-5%	940	918	-2%
10*	Tamworth Road (South of Waste Ln)	1504	1541	3%	1693	1746	3%
11*	Tamworth Road (North of R'bout)	1304	1341	3%	1449	1507	4%
12	Keresley Road (South of R'bout)	1460	1560	7%	1368	1422	4%
13	Keresley Road (North of Wallace Rd)	1459	1560	7%	1367	1421	4%
14	Norman Place Road	632	655	4%	578	619	7%
15	Wallace Road	558	577	3%	409	496	21%
16	Keresley Road (South of Wallace Rd)	1385	1482	7%	1198	1298	8%
17	Keresley Road (North of Sadler Rd)	1385	1482	7%	1198	1299	8%
18	Brownshill Green Road	645	680	5%	528	470	-11%
19	Sadler Road/Radford Rd (SB)	709	740	4%	597	645	8%
20	Radford Road NB Only	463	486	5%	741	806	9%

	Highway Link	AM Peak Hour			PM Peak Hour		
		2022 Base	2022 + Dev (DS)	% Change	2022 Base	2022 + Dev (DS)	% Change
21	Radford Road (North of Beake Ave)	1172	1225	5%	1338	1452	9%
22	Engleton Road	1110	1126	1%	1107	1139	3%
23	Radford Road (South of Engleton Rd)	1259	1303	4%	1440	1508	5%
24	Beake Avenue	1219	1224	0%	1205	1197	-1%
25	The Scotchill	890	892	0%	933	859	-8%
26*	Keresley Green Road (North of R'bout)	876	959	10%	580	656	13%
27*	Bennetts Road S (South of Sandpits Ln)	790	885	12%	671	800	19%
28*	Bennetts Road S (North of Sandpits Ln)	1000	929	-7%	1158	1102	-5%
29*	Bennetts Road S (South of Penny Pk Ln)	999	929	-7%	1160	1081	-7%
30*	Penny Park Lane	462	482	4%	522	553	6%
31*	Bennetts Road S (North of Penny Pk Ln)	545	817	50%	638	984	54%
32*	Sandpits Lane (West of Bennetts Rd S)	810	624	-23%	817	624	-24%
33*	Sandpits Lane (East of Tamworth Rd)	788	602	-24%	817	617	-25%
34*	Tamworth Road (North of Site Access)	1142	1139	0%	1192	1194	0%
35	Development Site Through Road	-	517	-	-	377	-
36*	Bennetts Road S (North of Site Access)	545	535	-2%	638	646	1%

** Sensitive Links (increased by 10%)*

11.4.12 The information contained within Table 11.7 indicates that the only locations where there is predicted to be significant increases in traffic as a result of the proposed development that will exceed the IEMA thresholds (i.e. 10% increase on sensitive links and 30% elsewhere) are along the following links:

- Link 5 – Tamworth Road (Immediately North of Long Lane)
- Link 26 – Keresley Green Road (North of Roundabout)
- Link 27 – Bennetts Road South (Immediately South of Long Lane)
- Link 31 – Bennetts Road South (Immediately North of Penny Park Lane)

11.4.13 As well as the links above which will experience an increase in traffic levels, there are also links that will experience a significant beneficial reduction (<-20%) in traffic flows which include:

- Link 32 – Sandpits Lane (West of Bennetts Road S)
- Link 33 – Sandpits Lane (East of Tamworth Road)

11.4.14 Consequently, a detailed assessment of the effects along the above links is undertaken in the following sections.

Assessment of Significant Effects

11.4.15 The assessment of potential effects and their significance is defined below.

Severance

11.4.16 In accordance with the IEMA guidelines, receptors are likely to experience changes in severance when traffic flows change by 30% or more with changes in traffic flows of 60% and 90% producing 'moderate' and 'major' changes in severance. As detailed in Table 11.7, traffic changes in excess of this threshold are only expected on Links 5 and 31.

11.4.17 Traffic flows on Links 5 and 31 experience increases in traffic which are likely to result in **minor to moderate** adverse change in severance. Both links are aligned either side of the development site and there is currently little development or local amenities along the carriageway and therefore pedestrian demand is low. Given the existing limited amount of pedestrian activity along these links it is anticipated that the increase in traffic as a result of the development will have a **minor adverse** impact on severance in this location.

11.4.18 Link 5 will benefit from pedestrian/cycle crossing facilities located at the newly proposed roundabout junction with Long Lane.

11.4.19 As detailed in Table 11.7 sensitive links 26 and 27 are expected to experience increases in traffic (>10%), however given the limited magnitude of the increases the development is likely to have a **negligible** impact on severance in these locations.

11.4.20 Links 32 and 33 will experience a significant reduction in traffic flows which will result in a **positive** impact on severance. As a result of a proportion of traffic re-assigning through the development's link road, traffic will be relieved from Sandpits Lane. These links have moderate levels of pedestrian activity due to Cardinal Newman School and the traffic reductions may improve safety and will help reduce severance.

Driver Delay

11.4.21 Delays to non-development traffic can occur on the network due to the additional traffic generated by the development. The IEMA guidelines note that these additional delays are only likely to be significant when traffic on the network surrounding the development is already at, or close to capacity.

11.4.22 The TA has identified that additional congestion as a result of the changing traffic patterns resulting from the completed development will occur at the junctions between Tamworth Road and Long Lane and Bennetts Road South and Penny Park Lane (Links 5 and 31). The particular impact has been identified as traffic travelling along Long Lane (from the A45) across to the A444/M6 via Penny Park Lane in a west-east direction.

11.4.23 The TA has demonstrated that the Tamworth Road, Long Lane junction (Link 5) is approaching capacity during the existing base scenario; this is only exacerbated with the addition of development traffic. Mitigation for this junction is detailed further in Section 9.5.

11.4.24 The Penny Park Lane junction when development traffic is introduced in the 2022 scenario experiences an increase in congestion and delay. Mitigation is also proposed for this location which will improve the operation and help reduce driver delay, detailed in Section 9.5.

11.4.25 The introduction of the distributor round through the development site offers an alternative route for drivers and in turn reduces traffic on Sandpits Lane. The development site will have a **slightly adverse** impact on driver delay on some links; however, on other links there will actually be a **reduction in traffic** given the potential for drivers to reroute. This will have a **beneficial impact** on congestion and driver delay along links 32 and 33 which see a significant reduction of traffic ranging between 23% and 25% during the peak hours.

11.4.26 No capacity issues are predicted on the remaining links identified as sensitive in the previous section.

Pedestrian & Cycle Delay

11.4.27 In accordance with IEMA guidelines, pedestrian and cycle delay is likely to occur when traffic affects the ability of people to cross roads. As detailed previously, links 5 and 31 where development traffic is likely to significantly change, current levels experience low pedestrian volumes as they are predominantly rural in nature. The only locations where the level of pedestrian activity will be sufficient for a significant change in pedestrian delay to be likely are Links 26 and 27 along Bennetts Road south to Keresley Green Road.

11.4.28 The IEMA guidelines indicate that increases in traffic of around 30% can double the delay experienced by pedestrians and cyclists attempting to cross the road. Links 26 and 27 (sensitive locations) are predicted to experience traffic increases between 10% and 19% during the peak hours. Increases of this magnitude will adversely affect pedestrian and cycle delay. The increase in traffic will not lead to a doubling of delay however, given that the pedestrian demand along this link may already be high due to the proximity of the school and local amenities, the magnitude of the change will be **moderate**.

Pedestrian & Cycle Amenity

11.4.29 The IEMA guidelines note that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled. There are no locations where such a significant change is likely to occur within the vicinity of the site. Therefore the effect on Pedestrian & Cycle Amenity as a result of the development is considered to be **negligible**.

Fear and Intimidation

11.4.30 As detailed previously, levels of fear and intimidation experienced by pedestrians are dependent on the volume of traffic, its HGV composition and factors such as the speed, size and proximity of vehicles.

11.4.31 Of the four links identified for detailed assessment, two (5 and 31) have lower levels of pedestrian activity therefore the impact of the changing traffic flows on fear and intimidation in these locations is likely to **not be significant**.

11.4.32 The higher levels of pedestrian flow are expected to occur along Links 26 and 27 along Bennetts Road South and Keresley Green Road. Despite the increase in traffic along these links it is considered that the magnitude of the change in fear and intimidation will be **minor** as a result of the existing pedestrian facilities and the fact that the composition of the traffic will not change.

11.4.33 A change in composition of traffic is one of the principle causes of increased fear and intimidation. A change in the volume of HGV traffic is unlikely to occur as a result of the development, therefore the impact on fear and intimidation is expected to be **negligible**.

Accidents and Safety

11.4.34 The proposed development is not predicted to generate significant volumes of HGV traffic therefore it is unlikely to produce a change in the character of the traffic on the local road network. The increase in total traffic flows as a result of the proposed development may however result in minor adverse effects on accidents and safety.

11.4.35 The review of PIA data undertaken as part of the TA identified that a total of 68 accidents were recorded on the highway network in the vicinity of the site. The majority of these accidents did however occur on links where significant increases of traffic as a result of the development are not predicted. Clusters of accidents were recorded at the junction of Tamworth Road and Long Lane (Link 5) which was identified as link where a significant increase in traffic is likely to occur. Given the causation factors of these accidents, which were primarily the result of driver error, it is considered that the additional traffic generated by the development will **not have a significant adverse impact** on highway safety at this location.

11.4.36 Other sensitive links where several accidents were recorded include links 26 and 27 where a total of 10 accidents were recorded. It is possible that the increase in traffic volumes as a result of the development will result in an adverse impact on accidents and safety. Given that the causation factors of these accidents which were primarily related to driver error or aggressive driving it is likely that the additional traffic generated by the development will have a **negligible impact** on accidents or safety in this location.

11.5 Mitigation, Enhancement and Residual Effects

Mitigation and Enhancement

11.5.1 A summary of the traffic and transport related environmental measures incorporated into the development proposals to control, avoid, reduce or compensate for potentially significant traffic-related environmental effects occurring for the construction period are provided in Table 11.8 and for the operational period are provided in Table 11.9.

Table 11.8 Rationale for Incorporation of Environmental Measures during the Construction Process

Mitigation Measure	Effect to be Addressed	Rational
Wheel Wash & Road Sweeping	• Accidents and Safety	Washing facilities will prevent vehicles leaving mud on the local road network which could impact upon highway safety.
Implementation of a Construction Traffic Management Plan	• Severance • Driver Delay • Pedestrian Delay • Pedestrian Amenity • Fear and Intimidation • Accidents and Safety	The Construction Traffic Management Plan will define the hours during which deliveries can be made to and from the site and also the routes that vehicles will take. This will ensure that vehicle movements are spread throughout the day avoiding the peak hours on the highway network reducing the impact on driver delay. Deliveries can also be timed to avoid the peak times for pedestrian movement (i.e. school start and finish times) so as to limit the impact of the additional HGV movements on severance, pedestrian delay and amenity and fear and intimidation.

Table 11.9 Rationale for Incorporation of Environmental Measures during the Operational Period

Mitigation Measure	Effect to be Addressed	Rational

Mitigation Measure	Effect to be Addressed	Rational
Provision of site access Junctions on Tamworth Road and Bennetts Road South	• Accidents and Safety • Driver Delay • Pedestrian Amenity • Fear and Intimidation	The provision of appropriately designed access points will allow vehicles to enter and exit the site safely and will also mitigate some of the additional delay experienced by existing users of the road. The introduction of new junction features into the highway will also help to reduce vehicle speeds along sensitive links which will assist in mitigating any impact on pedestrian amenity and fear and intimidation.
Introduction of a new roundabout junction at Long Lane/Tamworth Road	• Driver Delay • Accidents and Safety • Severance • Pedestrian Delay • Pedestrian Amenity • Fear and intimidation	The provision of a new roundabout will help improve the already existing operational capacity and delay problems at this junction, as well as mitigating the impact of the development traffic.
Modification of Penny Park Lane / Bennetts Road South Junction to include a 2 PCU length flare on the minor arm	• Driver Delay • Accidents and Safety • Severance • Pedestrian Delay • Pedestrian Amenity • Fear and intimidation	The increase in flare length at this junction will help improve the operational capacity and delay at this junction, as well as help mitigate the impact of the development traffic.
Construction of a development distributor link road which will connect from Tamworth Road to Bennetts Road South	• Driver Delay • Accidents and Safety • Severance • Pedestrian Delay • Pedestrian Amenity Fear and intimidation	The development of a link road through the site will have beneficial impact on surrounding junctions in terms of delay and capacity. The link road will result in some traffic re-assigning from Sandpits Lane which will help alleviate pressure on the junctions with Tamworth Road and Bennetts Road South.
Provision of crossing facilities at proposed roundabout and across Sandpits Lane	• Accidents and Safety • Severance • Pedestrian Delay • Pedestrian Amenity • Fear and intimidation	Pedestrian and cycling crossing facilities will be provided at the proposed roundabout at Long Lane, across Sandpits Lane and on other roads throughout the development. The installation of the crossings will primarily benefit residents of the development by mitigating the impact on pedestrian safety and would also reduce the level of fear and intimidation experienced.
Provision of pedestrian and cycle connections/crossings throughout the development	• Pedestrian Amenity • Pedestrian Delay • Severance • Fear and Intimidation	Direct pedestrian and cycle links and crossings will be provided throughout the site to provide safe, high quality and convenient and legible links between the residential areas and the local centre and employment developments which will assist in mitigating the impact on pedestrian amenity and delay as well reducing severance and the level of fear and intimidation
Provision of improved public transport services	• Driver Delay • Accidents and Safety • Severance • Pedestrian Delay • Pedestrian Amenity • Fear and intimidation	The development will re-route existing bus services through the site which will provide frequent routes to local employment and leisure facilities and Coventry City Centre The purpose of this is to encourage fewer residents to drive into the City Centre which would therefore reduce the volume of traffic generated by the development.

Mitigation Measure	Effect to be Addressed	Rational
Implementation of a Travel Plan	• Driver Delay • Pedestrian Delay • Pedestrian Amenity • Fear and Intimidation	The Travel Plan which has also been prepared for the proposed development sets out a package of measures aimed at promoting sustainable transport. This includes measures to encourage an increase in the journeys undertaken on foot and by bicycle, such as, the promotion of safe walking and cycling routes and the offer of cycle training for staff. Measures such as these are likely to not only reduce the volume of traffic generated by the proposed development, but also boost the confidence of pedestrians and cyclists resulting in a minor beneficial effect as these road users are less likely to be intimidated by small increases in traffic volumes.

Residual Effects

11.5.2 Taking into account the effect of the mitigation measures detailed within Tables 11.8 and 11.9 above the residual impact of the development traffic on the potential effects is detailed below.

Severance

11.5.3 The overall impact of development traffic on severance will be adverse although as some areas would likely experience a beneficial impact due to reduced traffic levels the overall significance of the impact was considered to be **minor**.

11.5.4 The mitigation measures detailed above, including the introduction of the Long Lane roundabout junction and the provision of pedestrian/cycle crossing facilities will help to mitigate the impact of the development especially around links 5 and 31 where the impact is most severe. This mitigation will result in the effect of the development becoming **negligible** in terms of severance.

11.5.5 The implementation of the development distributor road will also help reduce traffic on Links 32 and 33 through Sandpits Lanes and create less of a severance between the development and Cardinal Newman School resulting in a positive .

Driver Delay

11.5.6 The mitigation works associated with the proposed development will address existing capacity problems at the Tamworth Road junction with Long Lane which will result in a **beneficial impact** for existing road users.

11.5.7 Congestion and delay will be **improved** as part of the mitigation scheme at Penny Park Lane / Bennetts Road South junction. Also the development distributor road will reduce traffic on Sandpits Lane and in turn reduce congestion and delay at the junctions with Tamworth Road and Bennetts Road South, resulting in a **negligible** impact.

11.5.8 Further to the above the Travel Plan and improvements to sustainable travel options will also help mitigate some of the impact of the development by reducing the volume of vehicular traffic generated by the scheme. Taking these factors into account it is considered that the residual significant of the Driver Delay effect will be **minor**.

Pedestrian & Cycle Delay

11.5.9 As part of the development it is proposed to introduce pedestrian and cyclist crossing facilities at the proposed roundabout at Tamworth Road/Long Lane and routes and crossings throughout the site which will help mitigate delay experienced by pedestrians and cyclists routing to and from the development.

11.5.10 The development link road is predicted to lead to a change in traffic patterns, reducing traffic on Sandpits Lane (links 32 and 33) leading to a **beneficial impact** at some locations and junctions.

11.5.11 Taking these factors into account it is considered that the residual significance of the Pedestrian & Cycle Delay effect will be **minor**.

Pedestrian & Cycle Amenity

11.5.12 It is predicted that as a result of the proposed development, several areas in the vicinity of the site will experience an **improvement** in pedestrian and cycling amenity due to reduced traffic flows or the provision for pedestrians that will be included as part of the scheme.

11.5.13 The existing provision of walking and cycling infrastructure coupled with the proposed mitigation from Table 11.9 will mean that the residual significance of pedestrian and cycle amenity effect will be **negligible**.

Fear and Intimidation

11.5.14 A number of the locations where potential increases in fear and intimidation were expected experienced very low pedestrian flows, therefore the increases in traffic associated with the proposed development are **unlikely to have a significant impact**.

11.5.15 As detailed previously, potential significant changes in the composition of traffic during the construction period will be controlled through the adoption of a construction traffic management plan. It is therefore considered that the impact of HGV traffic during the construction period will **not be significant**.

11.5.16 The Travel Plan which has also been prepared for the Proposed Development sets out a package of measures aimed at promoting sustainable transport. This includes measures to encourage an increase in the journeys undertaken on foot and by bicycle, such as, the promotion of walking any cycling 'buddy' schemes. Measures such as these are likely to, not only reduce the volume of traffic generated by the proposed development, but also boost the confidence of pedestrians and cyclists resulting in a minor beneficial effect as these road users are less likely to be intimidated by small increases in traffic volumes.

11.5.17 Taking into account the limited increases in traffic in areas of high pedestrian demand and the controlling of HGV movements during the construction phase it is considered that the residual significance of fear and intimidation will be **negligible**.

Accidents and Safety

11.5.18 Minor adverse effects relating to Accidents and Safety were predicted along a few of the sensitive links in the vicinity of the development. However as detailed previously, a number of mitigation measures are planned which will improve safety for pedestrians, cyclists and other road users during both the construction and operation phase of the development. These include the introduction of site access points on Tamworth Road and Bennetts Road South and the conversion of Long Lane/Tamworth Road junction into a roundabout. It is therefore considered that the residual significance of the highway safety effect will be **negligible**.

11.6 Summary

Introduction

11.6.1 This chapter has been prepared to assess the potentially significant environmental effects that could arise from the change in traffic flows during the construction and operation phase of the development on Land at South Keresley. The assessment has been undertaken in accordance with the IEMA guidelines, the details of which were discussed in Section 9.2.

Baseline Conditions

11.6.2 A full audit of the highway network surrounding the development has been undertaken as part of the assessment, the purpose of which was to identify land uses and locations that should be considered sensitive in accordance with the IEMA guidelines. As a result of this audit a number of links were identified as sensitive as all had residential properties that front the carriageway and are all likely to be used by pedestrians and cyclists.

11.6.3 Traffic count data for both the AM and PM peak hours and a 12 hour period has been obtained to form a base level against which the impact of the development was assessed. The highway safety record of the roads surrounding the Site has also been assessed to identify any problems that are likely to be exacerbated by the additional traffic generated by the Proposed Development.

Likely Significant Effects

11.6.4 The assessment of the impact of construction traffic concluded that the minimal increase in traffic during the construction phase would only result in an increase in HGV traffic routing from the A45/A4114 up Coundon Wedge Drive/Long Lane towards the site.

11.6.5 The assessment of operational traffic impacts did however identify some links where significant increases in traffic are predicted as a result of the development. A detailed assessment of the potential traffic related environmental effects and their significance has been undertaken in section 9.4 which identified several areas for potential mitigation measures.

Mitigation and Enhancement

11.6.6 A number of mitigation measures have been identified to address any potentially significant traffic related effects resulting from the additional vehicle movements generated by the development.

11.6.7 These mitigation measures include improvements to pedestrian and cycle facilities within the development and at Tamworth Road/Long Lane junction, the provision of re-routed and improved bus services and the implementation of a construction traffic management plan to ensure the impact of additional HGVs during this period are not significant.

Conclusions

11.6.8 The results of this assessment have indicated that the potential environmental effects resulting from the increase in traffic generated by the proposed development are predicted to be minor or not significant, providing that the mitigation measures which are deemed integral to the proposals are implemented as part of the development.