

10 TRANSPORT AND ACCESS

10.1 INTRODUCTION

- 10.1.1 This chapter of the ES has been prepared by ADC Infrastructure Ltd and assesses the likely environmental impacts that would be created by the changing transport conditions introduced by the Proposed Development.
- 10.1.2 The Proposed Development will increase traffic movements and change travel patterns on the local transport network. This includes both the volume of traffic (the number of arrival and departure trips) and the traffic composition (percentage of HGVs) during the construction and operational phases. In addition, the proposed alterations to the highway infrastructure, required to accommodate the additional development trips, will alter the conditions for existing road users. Therefore, the effect of these changes on pedestrians, cyclists, equestrians, and other road users requires assessment within this chapter.
- 10.1.3 The chapter describes the relevant policy documents; the assessment methodology including relevant guidance; the baseline conditions at the assessment site and surroundings; the likely significant environmental effects with regards to the impact of construction traffic in the construction phase, as well as the impacts of the development on non-motorised users (pedestrians, cyclists, and equestrians), and on vehicle travellers, in the operational phase; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed.
- 10.1.4 A Transport Assessment (TA) and two Framework Travel Plans (FTP) have been prepared by ADC Infrastructure Ltd to support the planning application, and these are included in **Appendix 10.1** and **Appendix 10.2** respectively.
- 10.1.5 It was agreed at a meeting with Shropshire Council (SC) and Telford and Wrekin Council (TWC) on 11 January 2019 that the Telford Strategic Transport Model (TSTM) should be used to assess the impacts of the proposed development. The TSTM network coverage has been expanded to include Ironbridge, the development site and parts of Shropshire local to the site. The base model development is complete and the validation and calibration has been agreed with SC, TWC and HE. The forecast modelling is underway but will not be complete in advance of the planning application. Once complete, outputs from the TSTM will be used to identify the impacts of the proposed development and agree a study area with SC, TWC and HE for further detailed assessment. This analysis, plus the results of the detailed junction assessments and any resulting mitigation proposals will be reported in a Technical Note for consideration alongside the TA.
- 10.1.6 Notwithstanding the above, to assess the likely scale and location of impacts ahead of the TSTM results, and an initial assessment has been undertaken in the TA using observed traffic data and a traditional methodology.
- 10.1.7 Therefore, this ES Chapter has been prepared using the available traffic dataset presented in the TA. However, when the TSTM dataset is available the assessments reported in this ES Chapter will be updated. The background and development traffic flows close to the site, including the A4169 Much Wenlock Road, Buildwas Road and the A4169 Buildwas Bank, can be considered with confidence as the number of routing options are limited for development and

background traffic. Therefore, since it is not expected that the TSTM traffic data local to the site will be materially different from the datasets used in initial assessment, the conclusions of the ES Chapter will not materially change. However, the assessment and conclusions will be reviewed accordingly, and any additional mitigation will be detailed.

- 10.1.8 The TA identifies the existing traffic flows on the highway network surrounding the Application Site in the morning and evening highway network peak hour periods, without the Proposed Development in place. It calculates the forecast traffic flows in the future 2036 assessment year, without the Proposed Development in place. The TA then examines the traffic generation of the Proposed Development, the distribution and assignment of the development traffic, and the effect of the additional development traffic on the operation and safety of the surrounding highway network in the future 2036 assessment year.
- 10.1.9 The TA and FTP also examine the accessibility of the Application Site by walking, cycling and public transport, and identify the likely modal split of person trips associated with the Proposed Development.
- 10.1.10 Finally, the TA addresses the impact of the Proposed Development vehicular and person trips on the surrounding transport infrastructure, and identifies improvements which, in combination with the FTP, would accommodate and mitigate the increased travel demand. As a result, the Proposed Development would include the following transport measures and improvements:
- appropriate on-site parking for bicycles, motorcycles, cars (including car sharers and disabled users), and HGVs at the employment zone
 - appropriate footways, footpaths and cycleways throughout the Proposed Development to facilitate internal journeys
 - pedestrian and cycle connections to the existing off-site networks, including connections to the Severn Way long-distance route, routes to Buildwas, routes to Ironbridge and routes to Much Wenlock
 - a public transport strategy that would deliver a bespoke service, operating between the development and the centre of Telford on a half hourly frequency between Monday and Saturday, from 7am to 7pm. There would be several routing options for the proposed bus service, including an option to route via Lightmoor and Lawley, or a more direct route through Ironbridge.
 - the proposed bus service through Ironbridge would also provide a park and ride service from the heart of the development into Ironbridge with ample parking provision on site which would help to alleviate existing parking pressures within Ironbridge, particularly during the height of the tourist season.
 - the existing railway line is shown central to the masterplan to promote the opportunity for a heritage railway to be established. There is also the potential for a future passenger service.
 - Travel Plan measures with targets to reduce single occupancy car travel, by promoting walking, cycling, bus travel and car sharing
 - a new signal-controlled junction on the A4169 Much Wenlock Road, including pedestrian crossing infrastructure, that would establish the northern access to the Proposed Development
 - a new three-arm roundabout on the A4169 Much Wenlock Road, including pedestrian crossing infrastructure, that would establish the southern access to the Proposed Development
 - conversion of the existing site access junction onto Buildwas Road to a bespoke access for pedestrians, cyclists and buses

- renovating the 'A station' bridge which would be retained as a pedestrian only access
- off-site highway improvements, including:
- at the A4169 Buildwas Bank/Much Wenlock Road T-junction, it is proposed to provide traffic signal control, including pedestrian crossing infrastructure
- subject to the results of the TSTM, the A4169/Castlefields Way roundabout would require mitigation at this junction. Whilst a specific mitigation strategy has not yet been developed, the partial signalisation of the junction would be an appropriate solution.
- the A4169 Smithfield Road approach to the junction with A458 Victoria Road would experience delay in the '2036 background' scenario, which would worsen due to the additional of 48 two-way development trips in a peak hour. Whilst this is not a significant increase in traffic, the junction is constrained and therefore sensitive to changes in traffic volume. Therefore, subject to the results of the TSTM, mitigation proportionate in scale to the amount of additional traffic added by the development should be provided. A scheme which improved functionality through better road markings, clearer sightlines and improved pedestrian infrastructure could be appropriate.

10.1.11 The TA demonstrates that, subject to the results of the TSTM, the existing and proposed highway infrastructure could satisfactorily accommodate the pedestrian, cyclist, public transport and vehicular movements associated with the Proposed Development. Much of the information gathered for the TA is used within this ES assessment.

10.1.12 SC, TWC, and Highways England (HE) were consulted as part of the TA process. As part of this consultation process the strategic modelling methodology and assessment process, the TSTM Local Model Validation, the highway network peak hour vehicle trip generation of the Proposed Development and the assessment year were agreed.

10.2 ASSESSMENT APPROACH

Methodology

10.2.1 The assessment of the transport impacts of the proposed development has been undertaken in accordance with the agreed TA methodology.

10.2.2 The assessment work within this ES Chapter has been conducted based upon the following:

- Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment
- DMRB, Volume 5, Provision for Non-Motorised Users
- *Guidelines for the Environmental Assessment of Road Traffic, Institute of Environmental Assessment (IEA), 1993.*

Assessment of Significance

10.2.3 The significance, or importance, of an environmental effect is relative to the sensitivity or quantity of a particular type of receptor. Therefore, receptors in this assessment are set out in accordance with their importance. The receptors for this ES range from high to low, and are categorised as International, National, Regional, County, Borough, or Local. **Table 10.1** below categorises the highway

network in the vicinity of the Application Site to define the traffic and transport receptors in the area. As shown in **Table 10.1**, there are more Local traffic and transport receptors than any other type of receptor in the vicinity.

Table 10.1: Traffic and transport receptors

Receptor	Importance	Area
International	High	None
National	High	
Regional	Medium	
County	Medium	
Borough	Low	A5223, A4169 Buildwas Bank, A4169 Much Wenlock Road,
Local	Low	Buildwas Road, Wharfage, Dale End

10.2.4 The predicted impact assessment on the local to international receptor scale can be neutral (negligible), positive, or negative. Positive impacts are beneficial/advantageous to a receptor, whilst negative impacts are detrimental/adverse.

10.2.5 The impacts range from low to high and are rated as negligible, minor, moderate, or major. The definition of the scale of impact is summarised in **Table 10.2** below.

Table 10.2: Definition of scale of impact

Scale of impact	Definition
Negligible	An effect that is considered not to be significant or to have no influence. This is applicable where there is a neutral impact which is neither positive nor negative.
Minor	An effect that may be a local issue but is unlikely to be of importance in the overall decision-making process.
Moderate	An effect that will be important at local level and potentially upwards.
Major	An effect that will be important at borough, county, or regional level.

10.2.6 The significance of any impact within this assessment is calculated by combining the importance of the receptor (Table 9.1) with the scale of impact (Table 9.2), through a matrix table, as shown in **Table 10.3** below.

Table 10.3: Impact significance matrix

Sensitivity and type of receptor	Scale of impact			
	Major	Moderate	Minor	Negligible
High: International and National	Major	Major	Moderate	Minor
Medium: Regional and County	Major	Moderate	Minor	Negligible
Low: Borough and Local	Moderate	Minor	Minor	Negligible

10.2.7 In addition to the impact significance, this assessment also takes into account whether the environmental impacts are short, medium, or long term and, whether they are permanent or temporary.

- 10.2.8 To assess the environmental impact of the Proposed Development and its traffic, it is necessary within the following sections: to determine the existing and opening year traffic levels and characteristics; to determine the time periods and year for assessment; and to identify the geographical boundaries of assessment (i.e. the study area). Once this information is established, the predicted impacts are assessed, along with measures to mitigate any adverse effect.

Legislative and Policy Framework

- 10.2.9 Chapter 3 of this ES details the relevant Planning Policy. In addition, this transportation chapter takes into account the following national and local policy:
- National Planning Policy Framework (NPPF or "The Framework") (July 2018)
 - Department of Transport Circular 02/2013, The Strategic Road Network and the Delivery of Sustainable Development
 - Shropshire Core Strategy (2011-26)
 - Shropshire Local Plan (2011-36)
 - Telford and Wrekin Local Transport Plan (2011-26)
 - Telford and Wrekin Local Plan (2011-31).

National Policy

National Planning Policy Framework

- 10.2.10 The NPPF states that there is a "presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking".

- 10.2.11 Under the heading Considering development proposals, paras 108 and 109 state:
- "In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*
- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
 - b) safe and suitable access to the site can be achieved for all users; and*
 - c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.*

Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."

- 10.2.12 It goes on to say (para 110):

"Within this context, applications for development should:

- a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*

- d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.*

10.2.13 The Proposed Development has been designed in accordance with the NPPF, and the TA and FTP demonstrate that the above objectives would be achieved.

Department for Transport Circular 02/2013

10.2.14 Highways England (HE) is responsible for operating, maintaining and improving the Strategic Road Network (SRN) in England on behalf of the Secretary of State for Transport. Circular 02/2013 sets out the way in which HE will engage with communities and the development industry to deliver sustainable development and, thus, economic growth whilst safeguarding the primary function and purpose of the SRN.

10.2.15 The Circular records the same priorities and principles for SRN as the NPPF does on a general basis. For example, in relation to plan-making the pattern and location of development should encourage the minimisation of trip generation and the use of sustainable modes of transport, whilst not compromising the fulfilment of the Primary Purpose of the SRN.

10.2.16 At paragraph 9 the Circular states:

"Development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section (link or junction) of the strategic road network, or they do not increase demand for use of a section that is already operating at over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed. However, development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe".

10.2.17 With respect to decision-making the Circular advises (para 21) that:

"Where development proposals are consistent with an adopted Local Plan, the Highways Agency (HA) does not anticipate the need for engagement in a full assessment process at the planning application stage. In such circumstances consideration will normally be limited to the agreement of the details of the transport solution, including any necessary mitigation measures, and to ensuring that the transport impacts are included in the overall environmental assessment provided to the local planning authority, rather than the principle of the development itself"

10.2.18 In assessing development impact, the Circular further advises that:

"The overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period of up to ten years after the date of registration of a planning application or the end of the relevant Local Plan period whichever is the greater; HE expects promoters of development to put forward initiatives that manage down the traffic impact of proposals to support the promotion of sustainable transport and the development of accessible sites – which is particularly necessary where the potential impact is on sections of the strategic road network that could experience capacity problems in the short or medium term, and;

Where the overall forecast demand at the time of opening of the development can be accommodated by the existing infrastructure, further capacity will not be appropriate."

Local Policy

Shropshire Core Strategy (2011- 2026)

10.2.19 The Core Strategy was adopted on 24th February 2011. It sets out the Council's overall spatial vision and strategy for Shropshire and the policies for achieving them, guiding the location, design, form and use of land and buildings across the county to 2026.

10.2.20 The Core Strategy explains the Shrewsbury Integrated Transport Strategy, which is a combination of sustainable transport measures including Park and Ride facilities, quality bus routes and enhanced walking and cycling facilities provision.

10.2.21 Policy CS7 (Communication and Transport) of the Core Strategy also generally relates to transport and states:

"A sustainable pattern of development requires the maintenance and improvement of integrated, accessible, attractive, safe and reliable communication and transport infrastructure and services. These need to provide a range of opportunities for communication and transport which meet social, economic and environmental objectives by improving accessibility, managing the need to travel, offering options for different travel needs and reducing the impacts of transport."

Shropshire Local Transport Plan (2011 – 2026)

10.2.22 The Local Transport Plan (LTP) for Shropshire sets out how Shropshire Council and its partners intend to maintain, manage and improve a sustainable and cost-effective transport provision in the County over the period 2011-2026.

10.2.23 The key challenges of the LTP are to:

- Improve connectivity and access, especially by sustainable modes of transport;
- Support growth and ensure that new housing/employment areas encourage sustainable travel behaviour;
- Minimise the impact on transport on the local environment and reduce transport related carbon emissions;
- Maintain the condition of the highway network;
- Enable older, younger, disabled and other socially excluded people to more easily access services and facilities;
- *Encourage more active modes of travel such as walking and cycling and improve road safety.*

Telford and Wrekin Local Transport Plan (2011 – 2026)

10.2.24 Telford & Wrekin Council's third Local Transport Plan sets out the long-term strategy for transport in support of the Community Strategy. Telford & Wrekin has developed over the last forty years.

10.2.25 The LTP outlines that transport plays a key role in ensuring the borough continues to achieve economic viability and develops a community where people want to live, work and play.

10.2.26 The demand for transport is ever increasing as it enables individuals to access jobs, education, healthcare, shops, leisure etc.

10.2.27 However, there is increasing importance being placed on minimising the impact of everything we do on the local environment. As such, sustainable growth is promoted.

10.2.28 The LTP's 6 goals are to:

- Support economic growth;
- Reduce carbon emissions;
- Maintain the highway network;
- Promote equality of opportunity;
- Contribute to better safety, security and health; and
- Improve *quality of life and the environment*.

10.2.29 It is highlighted in the transport plan that Telford currently experiences unsustainable travel behaviour.

10.2.30 The challenge for Telford is to use growth to re-shape and create an urban form and density that is more conducive to cycling and walking. Better use of the existing infrastructure should be promoted while acknowledging that the car will remain essential for many journeys.

Telford and Wrekin Local Plan (2011-31)

10.2.31 Chapter 8 deals with 'Connections'. **Policy C 1 'Promoting alternatives to the car'** requires major development in urban areas and, on a case by case basis, in rural areas to:

- i. *Adopt an Area Wide Travel Planning approach for major traffic generating destinations, for example Telford Town Centre, and prepare site-based travel plans in support of this;*
- ii. *Fund enhancement of local and strategic walking and cycling routes;*
- iii. *Fund enhancements to existing public transport services or provide new services and demonstrate their financial viability;*
- iv. *Demonstrate that they have made all reasonable efforts to secure public transport services which will be conveniently routed for new residents and visitors without detrimentally affecting existing users;*
- v. *Site boarding and alighting points for public transport services in safe, well lit locations that are accessible for less able-bodied users and provide safe, convenient and appropriately lit routes to and from residential and non-residential developments.*

10.2.32 The policy confirms that, where a development is served by one of the borough's rail and bus stations, development will be expected to contribute towards enhanced vehicle and cycle parking, bus facilities as well as improved information, enhanced waiting facilities and better access arrangements for walkers, cyclists and public transport users.

10.2.33 Policy C 2 'Safeguarding rail and transport corridors' requires development to:

- i. *Safeguard land required for the implementation of priority transport projects, as identified in the Infrastructure Delivery Plan, in order to assist in their future implementation; and*
- ii. *Ensure that current and former rail lines will be protected for future use as transport corridors (as displayed on the Policies Map). Where lines are not commercially viable, for either freight or passenger rail services, use for*

walking and cycling routes will be supported. Development adjacent to existing rail lines will not prejudice the use of the line for either heritage or commercial use.

10.2.34 **Policy C 3 'Impact of development on Highways'** requires all development to mitigate site specific highway issues and for major developments to:

- i. Ensure that the relevant cumulative impact of new developments on local and strategic road networks are mitigated in a co-ordinated and plan led manner;*
- ii. Assess the cumulative impact of new developments by using the Telford Strategic Transport Model (TSTM) or other means as long as these can demonstrate that they are significantly robust. Use of the TSTM can be accessed through the Council's Highways Service;*
- iii. Provide a Transport Assessment, where relevant, as part of any planning application; and*
- iv. Mitigate the impact of their developments on the borough's local and strategic road networks including any individual commuted sums specified by the local highway authority*

10.2.35 **Policy C 4 'Design of Roads and Streets'** requires all development to demonstrate that a proposal:

- i. Accords with government guidance, such as Manual for Streets and other relevant standards including the Design Manual for Roads and Bridges in the design of developments;*
- ii. Takes into consideration the needs of pedestrians and cyclists, buses and bus users as well as freight, deliveries and refuse collection vehicles in the design and access of the development;*
- iii. Is safe, convenient, well designed with accessible and appropriately lit walking, cycling and public transport routes that provide opportunities for safe sustainable travel within a development as well as links to surrounding community facilities;*
- iv. Contains development blocks (avoiding cul-de-sacs) of a size that encourages permeability for walking and cycling and traffic calming measures such as shared surfaces; and*
- v. Is designed to an adoptable standard where it is intended that the internal roads, streets, footways, cycleways and energy efficient lighting are to be adopted by the Council.*

Discussion

10.2.36 The above sections outline the policy context against which the Proposed Development, the TA and this ES chapter should be considered. The main points of relevance are:

10.2.37 The application and the proposed development are consistent with national planning policy. It is supported by a TA and FTPs for the residential and employment aspects of the development, which promote the use of sustainable modes of travel, and propose measures to mitigate the impact of the development trips, in order to ensure that the cumulative impacts are not severe. The TA concludes that, subject to the results of the TSTM, the requirements of NPPF can be satisfied.

10.2.38 The application will directly support and is consistent with the Shropshire Core Strategy and Telford and Wrekin Local Plan.

The application and the proposed development are consistent with local policy, as the application site is and can be made accessible by all modes of transport, including sustainable travel modes (walking, cycling and bus), and further measures will be provided to facilitate sustainable modes. This includes new footways, cycleways and pedestrian crossings. The proposals also safeguard the existing rail line within the development, promoting the opportunity for a heritage railway to be established. There is also the potential for a future passenger service.

10.3 BASELINE CONDITIONS

Site Description and Context

- 10.3.1 Details of the Application Site and the Proposed Development are given in Chapter 2 of this ES, including a description of the type, quantum and phasing of the development. The existing, committed and proposed pedestrian, cycle, public transport and highway infrastructure is described in detail at Sections 2, 3 and 9 of the TA.

Existing Pedestrian and Cycle Infrastructure

- 10.3.2 The TA concludes that there are existing opportunities for pedestrian and cycle travel to and from the site, with a number of facilities within walking and cycling distance and appropriate infrastructure provided along the desire lines. There are limited opportunities for bus travel, representative of the rural location.
- 10.3.3 Whilst the TA concludes that there are pedestrian and cycle connections between the proposed development and Ironbridge and Buildwas, the current connections between these settlements are poor. There are no footways connecting the settlements, with only the Severn Way footpath available, which is in poor condition as it runs along the bank of the River Severn. Further, there are no formal pedestrian crossing points on the B4380, A4169 Much Wenlock Road or Buildwas Road.

Baseline Survey Information

- 10.3.4 For this assessment, it is necessary to identify the existing traffic flows on the highway network surrounding the Application Site, i.e. the baseline conditions without the Proposed Development. As discussed, the results of the TSTM forecast modelling are not yet available. Therefore, a traditional highway impact assessment has been undertaken based on observed traffic flows. Diagrams 1 and 2 of the TA presented the results of the 2019 morning and evening peak hour traffic surveys. The observed survey data was growthed to the 2036 assessment year using the methodology set out in Section 8 of the TA. The '2036 background' traffic flows for the morning and evening peak hours are shown on Diagrams 14 and 15 in the TA.

Future year baseline traffic flows

- 10.3.5 In accordance with IEA guidelines, "the environmental assessment should be undertaken at the year of opening of the development or the first full year of its operation. For a phased development, it may be necessary to consider the first year of each phase".

- 10.3.6 It is anticipated that construction will begin in 2021. The scale of the project means that it will take many years to complete. The traffic modelling work used an assessment year of 2036. This chapter of the ES therefore adopts a 2036 assessment scenario.
- 10.3.7 As discussed in the TA and earlier in this Chapter, the impacts of the proposed development will be assessed using the TSTM. The forecast modelling is not yet complete and therefore the TA considers an interim assessment based upon observed survey data, the agreed traffic generation and a distribution based upon the travel to work statistics of the 2011 census. The calculation of the assessment traffic flows is discussed in section 8 of the TA.
- 10.3.8 The highway network peak hours represent the time periods when traffic flows are at their greatest and available capacity of the highway network is at its lowest. Hence these peak hours are assessed in the TA. However, given the potential 24-hour commercial nature of the Proposed Development, the greatest environment impact may not be during the highway network peak hours, as traffic flows will be spread throughout the day. This ES therefore also examines the likely environmental effects based on Annual Average Daily Traffic (AADT) flows.
- 10.3.9 The 2036 AM and PM peak hour, and 24-hour AADT background traffic flows are shown in **Table 10.4** below.

Table 10.4: Two-way peak hour and AADT development traffic flows

	2036 Morning peak hour			2036 Evening peak hour			2036 AADT		
	total	HGV	% HGV	total	HGV	% HGV	total	HGV	% HGV
Much Wenlock Rd/Buildwas Rd									
Much Wenlock Road (north)	1,019	51	5.0%	880	32	3.6%	8,726	433	5.0%
Buildwas Road	264	9	3.4%	234	9	3.8%	2,293	94	4.1%
Much Wenlock Road (south)	949	42	4.4%	792	27	3.4%	7,189	389	5.4%
Buildwas Bank/Much Wenlock Rd									
Buildwas Bank	1,097	33	3.0%	977	31	3.2%	8,977	334	3.7%
Much Wenlock Road	869	41	4.7%	686	32	4.7%	7,531	381	5.1%
Buildwas Road	495	16	3.2%	468	7	1.5%	4,239	135	3.2%
Jiggers Bank Roundabout									
A5223	1,514	31	2.0%	1,397	8	0.6%	14,309	188	1.3%
A4169 east	1,166	35	3.0%	1,130	10	0.9%	10,554	234	2.2%
Jiggers Bank Roundabout	469	8	1.7%	403	2	0.5%	4,232	53	1.2%
A4169 Buildwas Bank	1,145	34	3.0%	982	8	0.8%	8,977	220	2.4%
A5223/Wellington Rd/Bridge Rd									
A5223 Wellington Road	1,441	25	1.7%	1,460	12	0.8%	14,355	438	3.1%
Simpsons Walk	18	0	0.0%	17	0	0.0%	167	0	0.0%
Bridge Road	403	3	0.7%	470	1	0.2%	4,011	21	0.5%
A5223	1,548	26	1.7%	1,505	11	0.7%	14,022	193	1.4%
A4169/Cherry Tree Hill									
A4169 west	1,270	30	2.4%	1,232	12	1.0%	11,500	220	1.9%
A4169 east	1,400	32	2.3%	1,354	12	0.9%	12,654	230	1.8%
Cherry Tree Hill	148	2	1.4%	128	0	0.0%	1,270	0	0.0%
A4169/Castlefields Way									
A4169 west	1,499	19	1.3%	1,500	5	0.3%	13,771	230	1.7%
Majestic Way	228	7	3.1%	182	0	0.0%	1,891	37	1.9%
Castlefields Way north	750	69	9.2%	912	15	1.6%	7,630	126	1.6%
A4169 east	2,382	50	2.1%	2,194	5	0.2%	21,020	439	2.1%
Castlefields Way south	2,059	11	0.5%	1,898	11	0.6%	18,179	287	1.6%
Dale End Mini roundabout									
Warfage west	348	6	1.7%	273	4	1.5%	3,011	53	1.7%
Dale End	476	8	1.7%	416	2	0.5%	4,100	53	1.3%
Warfage east	608	12	2.0%	597	4	0.7%	5,541	83	1.5%
High St/Madeley Rd/Waterloo St									
High Street	549	14	2.6%	477	2	0.4%	4,721	83	1.8%
Church Hill	40	0	0.0%	23	0	0.0%	293	0	0.0%
Madeley Road	400	18	4.5%	356	3	0.8%	3,478	110	3.2%
Waterloo Street	499	18	3.6%	490	5	1.0%	6,452	178	2.8%
A4169 Smithfield Rd/Victoria Rd									
A4169 Smithfield Road	725	38	5.2%	637	7	1.1%	6,256	234	3.7%
High Street	103	2	1.9%	103	0	0.0%	950	10	1.1%
Bridgnorth Road	1,115	44	3.9%	1,165	23	2.0%	10,471	350	3.3%
Bourton Road	326	8	2.5%	304	2	0.7%	2,894	53	1.8%
Victoria Road	1,107	48	4.3%	1,169	28	2.4%	11,659	397	3.4%

10.4 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS**Identification of Effects**

10.4.1 To determine the environmental effects of the change in traffic flows, a study area must be defined. In accordance with IEA guidelines there are two broad rules of thumb that should be used as a screening process to limit the scale and extent of the assessment. These are as follows:

"Rule one include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)

Rule Two include any other specifically sensitive areas where traffic flows have increased by more than 10% or more".

10.4.2 The site access junctions will be onto the A4169 Much Wenlock Road. The TA identifies that the majority of development traffic (both light vehicles and HGVs) will route via the A4169 Much Wenlock Road, the A4169 Buildwas Bank and A5223. These routes are regional roads of a good standard. Therefore, the majority of development traffic would not route through sensitive areas. The 30% threshold given in Rule One is applied to these routes within this assessment.

10.4.3 However, the Ironbridge Gorge is designated a World Heritage Site and therefore it is appropriate that Rule Two should be applied to routes within Ironbridge.

10.4.4 There is no suggestion that a 30% increase in traffic will necessarily correspond with a detrimental impact on the operation or safety of a road or junction or have any moderate to substantial adverse environmental impacts. This is because the capacity of the road or junction is directly related to the geometry and layout, and the existing traffic flows. Nevertheless, the 30% increase is used as useful point of reference to define the study area for more detailed assessment.

10.4.5 The initial study area considered in the TA is discussed and defined in section 9 of the TA. The junctions considered are shown below:

- *A4169 Much Wenlock Road/Buildwas Road T-junction*
- *A4169 Buildwas Bank/ Much Wenlock Road/Buildwas Road T-junction*
- *Jiggers Bank Roundabout*
- *A5223/Wellington Road/Bridge Road roundabout*
- *A5223/Lawley Drive/Dawley Road roundabout*
- *A4169/Cherry Tree Hill T-junction*
- *A4169/Castlefields Way/Majestic Drive roundabout*
- *Wharfage/Dale End mini roundabout*
- *High Street/Madeley Road/Church Hill/Waterloo Street junction*
- *A4169/Victoria Road/High Street/Bridgnorth Road/B378 junction.*

10.4.6 Section 4 of the TA presents the forecast modal split and associated peak hour and daily person and vehicular trip generation for the Proposed Development. The trip rates were agreed with SC, TWC and HE.

10.4.7 The calculated peak hour and daily traffic flows were then distributed and assigned to the highway network using the distribution patterns from the TA. The peak hour and daily Proposed Development traffic flows on each of the links are shown in **Table 10.5**.

- 10.4.8 The '20363 with development' traffic flows were calculated by adding **Tables 10.4** and **10.5**. The resultant traffic flows are shown in **Table 10.6**.
- 10.4.9 The percentage change in total vehicle traffic flows on each of the links as a result of the Proposed Development, in both the morning and evening peak hours and AADT, was calculated and are shown in **Table 10.7**.

Table 10.5: Two-way peak hour and AADT development traffic flows

	2036 Morning peak hour			2036 Evening peak hour			2036 AADT		
	total	HGV	% HGV	total	HGV	% HGV	total	HGV	% HGV
Much Wenlock Rd/Buildwas Rd									
Much Wenlock Road (north)	770	14	1.8%	758	13	1.7%	7,647	131	1.7%
Buildwas Road	92	3	3.3%	89	3	3.4%	905	29	3.2%
Much Wenlock Road (south)	862	17	2.0%	847	16	1.9%	8,552	160	1.9%
Buildwas Bank/Much Wenlock Rd									
Buildwas Bank	639	12	1.9%	648	11	1.7%	6,437	113	1.8%
Much Wenlock Road	770	14	1.8%	758	12	1.6%	7,647	131	1.7%
Buildwas Road	131	2	1.5%	110	1	0.9%	1,210	18	1.5%
Jiggers Bank Roundabout									
A5223	328	6	1.8%	332	6	1.8%	3,322	58	1.7%
A4169 east	306	6	2.0%	311	6	1.9%	3,093	54	1.7%
Jiggers Bank Roundabout	0	0	0.0%	0	0	0.0%	16	0	0.0%
A4169 Buildwas Bank	634	12	1.9%	643	12	1.9%	6,431	112	1.7%
A5223/Wellington Rd/Bridge Rd									
A5223 Wellington Road	323	6	1.9%	329	6	1.8%	3,257	56	1.7%
Simpsons Walk	0	0	0.0%	0	0	0.0%	0	0	0.0%
Bridge Road	6	0	0.0%	6	0	0.0%	56	0	0.0%
A5223	329	6	1.8%	335	6	1.8%	3,313	59	1.8%
A4169/Cherry Tree Hill									
A4169 west	306	6	2.0%	311	6	1.9%	3,077	54	1.8%
A4169 east	306	6	2.0%	311	6	1.9%	3,077	54	1.8%
Cherry Tree Hill	0	0	0.0%	0	0	0.0%	0	0	0.0%
A4169/Castlefields Way									
A4169 west	303	5	1.7%	309	4	1.3%	3,080	55	1.8%
Majestic Way	0	0	0.0%	0	0	0.0%	0	0	0.0%
Castlefields Way north	9	0	0.0%	9	0	0.0%	104	7	6.7%
A4169 east	283	5	1.8%	290	4	1.4%	2,855	42	1.5%
Castlefields Way south	11	0	0.0%	10	0	0.0%	121	6	5.0%
Dale End Mini roundabout									
Warfage west	85	3	3.5%	82	3	3.7%	842	31	3.7%
Dale End	34	1	2.9%	32	1	3.1%	333	11	3.3%
Warfage east	51	2	3.9%	50	2	4.0%	509	20	3.9%
High St/Madeley Rd/Waterloo St									
High Street	17	1	5.9%	17	1	5.9%	176	9	5.1%
Church Hill	0	0	0.0%	0	0	0.0%	0	0	0.0%
Madeley Road	17	1	5.9%	17	1	5.9%	176	9	5.1%
Waterloo Street	0	0	0.0%	0	0	0.0%	0	0	0.0%
A4169 Smithfield Rd/Victoria Rd									
A4169 Smithfield Road	51	2	3.9%	48	1	2.1%	501	18	3.6%
High Street	0	0	0.0%	0	0	0.0%	0	0	0.0%
Bridgnorth Road	42	2	4.8%	38	1	2.6%	405	15	3.7%
Bourton Road	9	0	0.0%	9	0	0.0%	96	3	3.1%
Victoria Road	0	0	0.0%	0	0	0.0%	0	0	0.0%

Table 10.6: 2036 Two-way peak hour and AADT with development traffic flows

	2036 Morning peak hour			2036 Evening peak hour			2036 AADT		
	total	HGV	% HGV	total	HGV	% HGV	total	HGV	% HGV
Much Wenlock Rd/Buildwas Rd									
Much Wenlock Road (north)	1,789	65	3.6%	1,638	45	2.7%	16,373	564	3.4%
Buildwas Road	356	12	3.4%	323	12	3.7%	3,198	123	3.8%
Much Wenlock Road (south)	1,811	59	3.3%	1,639	43	2.6%	15,741	549	3.5%
Buildwas Bank/Much Wenlock Rd									
Buildwas Bank	1,736	45	2.6%	1,625	42	2.6%	15,414	447	2.9%
Much Wenlock Road	1,639	55	3.4%	1,444	44	3.0%	15,178	512	3.4%
Buildwas Road	626	18	2.9%	578	8	1.4%	5,449	153	2.8%
Jiggers Bank Roundabout									
A5223	328	6	1.8%	1,729	14	0.8%	17,631	246	1.4%
A4169 east	306	6	2.0%	1,441	16	1.1%	13,647	288	2.1%
Jiggers Bank Roundabout	0	0	0.0%	403	2	0.0%	4,248	53	1.2%
A4169 Buildwas Bank	634	12	1.9%	1,625	20	1.2%	15,408	332	2.2%
A5223/Wellington Rd/Bridge Rd									
A5223 Wellington Road	1,764	31	1.8%	1,789	18	1.0%	17,612	494	2.8%
Simpsons Walk	18	0	0.0%	17	0	0.0%	167	0	0.0%
Bridge Road	409	3	0.7%	476	1	0.2%	4,067	21	0.5%
A5223	1,877	32	1.7%	1,840	17	0.9%	17,335	252	1.5%
A4169/Cherry Tree Hill									
A4169 west	1,576	36	2.3%	1,543	18	1.2%	14,577	274	1.9%
A4169 east	1,706	38	2.2%	1,665	18	1.1%	15,731	284	1.8%
Cherry Tree Hill	148	2	0.0%	128	0	0.0%	1,270	0	0.0%
A4169/Castlefields Way									
A4169 west	1,802	24	1.3%	1,809	9	0.5%	16,851	285	1.7%
Majestic Way	228	7	0.0%	182	0	0.0%	1,891	37	0.0%
Castlefields Way north	759	69	9.1%	921	15	1.6%	7,734	133	1.7%
A4169 east	2,665	55	2.1%	2,484	9	0.4%	23,875	481	2.0%
Castlefields Way south	2,070	11	0.5%	1,908	11	0.6%	18,300	293	1.6%
Dale End Mini roundabout									
Warfage west	433	9	2.1%	355	7	2.0%	3,853	84	2.2%
Dale End	510	9	1.8%	448	3	0.7%	4,433	64	1.4%
Warfage east	659	14	2.1%	647	6	0.9%	6,050	103	1.7%
High St/Madeley Rd/Waterloo St									
High Street	566	15	2.7%	494	3	0.6%	4,897	92	1.9%
Church Hill	40	0	0.0%	23	0	0.0%	293	0	0.0%
Madeley Road	417	19	4.6%	373	4	1.1%	3,654	119	3.3%
Waterloo Street	499	18	0.0%	490	5	0.0%	6,452	178	0.0%
A4169 Smithfield Rd/Victoria Rd									
A4169 Smithfield Road	776	40	5.2%	685	8	1.2%	6,757	252	3.7%
High Street	103	2	0.0%	103	0	0.0%	950	10	0.0%
Bridgnorth Road	1,157	46	4.0%	1,203	24	2.0%	10,876	365	3.4%
Bourton Road	335	8	2.4%	313	2	0.6%	2,990	56	1.9%
Victoria Road	1,107	48	0.0%	1,169	28	0.0%	11,659	397	0.0%

Table 10.7: Percentage change in total vehicle two-way traffic flows as a result of the Proposed Development

	2036 Morning peak hour			2036 Evening peak hour			2036 AADT		
	background	development	% increase	background	development	% increase	background	development	% increase
Much Wenlock Rd/Buildwas Rd									
Much Wenlock Road (north)	1,019	770	75.6%	880	758	86.1%	8,726	7,647	87.6%
Buildwas Road	264	92	34.8%	234	89	38.0%	2,293	905	39.5%
Much Wenlock Road (south)	949	862	90.8%	792	847	106.9%	7,189	8,552	119.0%
Buildwas Bank/Much Wenlock Rd									
Buildwas Bank	1,097	639	58.2%	977	648	66.3%	8,977	6,437	71.7%
Much Wenlock Road	869	770	88.6%	686	758	110.5%	7,531	7,647	101.5%
Buildwas Road	495	131	26.5%	468	110	23.5%	4,239	1,210	28.5%
Jiggers Bank Roundabout									
A5223	1,514	328	21.7%	1,397	332	23.8%	14,309	3,322	23.2%
A4169 east	1,166	306	26.2%	1,130	311	27.5%	10,554	3,093	29.3%
Jiggers Bank Roundabout	469	0	0.0%	403	0	0.0%	4,232	16	0.4%
A4169 Buildwas Bank	1,145	634	55.4%	982	643	65.5%	8,977	6,431	71.6%
A5223/Wellington Rd/Bridge Rd									
A5223 Wellington Road	1,441	323	22.4%	1,460	329	22.5%	14,355	3,257	22.7%
Simpsons Walk	18	0	0.0%	17	0	0.0%	167	0	0.0%
Bridge Road	403	6	1.5%	470	6	1.3%	4,011	56	1.4%
A5223	1,548	329	21.3%	1,505	335	22.3%	14,022	3,313	23.6%
A4169/Cherry Tree Hill									
A4169 west	1,270	306	24.1%	1,232	311	25.2%	11,500	3,077	26.8%
A4169 east	1,400	306	21.9%	1,354	311	23.0%	12,654	3,077	24.3%
Cherry Tree Hill	148	0	0.0%	128	0	0.0%	1,270	0	0.0%
A4169/Castlefields Way									
A4169 west	1,499	303	20.2%	1,500	309	20.6%	13,771	3,080	22.4%
Majestic Way	228	0	0.0%	182	0	0.0%	1,891	0	0.0%
Castlefields Way north	750	9	1.2%	912	9	1.0%	7,630	104	1.4%
A4169 east	2,382	283	11.9%	2,194	290	13.2%	21,020	2,855	13.6%
Castlefields Way south	2,059	11	0.5%	1,898	10	0.5%	18,179	121	0.7%
Dale End Mini roundabout									
Warfage west	348	85	24.4%	273	82	30.0%	3,011	842	28.0%
Dale End	476	34	7.1%	416	32	7.7%	4,100	333	8.1%
Warfage east	608	51	8.4%	597	50	8.4%	5,541	509	9.2%
High St/Madeley Rd/Waterloo St									
High Street	549	17	3.1%	477	17	3.6%	4,721	176	3.7%
Church Hill	40	0	0.0%	23	0	0.0%	293	0	0.0%
Madeley Road	400	17	4.3%	356	17	4.8%	3,478	176	5.1%
Waterloo Street	499	0	0.0%	490	0	0.0%	6,452	0	0.0%
A4169 Smithfield Rd/Victoria Rd									
A4169 Smithfield Road	725	51	7.0%	637	48	7.5%	6,256	501	8.0%
High Street	103	0	0.0%	103	0	0.0%	950	0	0.0%
Bridgnorth Road	1,115	42	3.8%	1,165	38	3.3%	10,471	405	3.9%
Bourton Road	326	9	2.8%	304	9	3.0%	2,894	96	3.3%
Victoria Road	1,107	0	0.0%	1,169	0	0.0%	11,659	0	0.0%

10.4.10 As shown in **Table 10.7**, the A4169 Much Wenlock Road to the north of the development site access junctions; Buildwas Road east of the junction with the A4169 Much Wenlock Road and the A4169 Buildwas Bank would be subject to a greater than 30% increase in peak hour and AADT two-way traffic flows.

10.4.11 Further, **Table 12.7** shows that the Wharfage, west of Dale End in Ironbridge, would be subject to a greater than 10% increase in peak hour and AADT two-way traffic flows. As the Wharfage is classified as a sensitive link it is also included within the study area.

Study area

10.4.12 The study area for this assessment therefore comprises:

- *A4169 Much Wenlock Road;*
- *Buildwas Road;*
- *Wharfage;*
- *A4169 Buildwas Bank.*

10.4.13 Beyond the study area, the environmental conditions would not be materially changed.

Prediction of Effect Magnitude and significance

10.4.14 The potential environmental effects associated with the transport implications of the development fall under three general headings:

- a) disruption due to construction
- b) impacts on pedestrians, cyclists, equestrians and the community (termed pedestrians and others) with regards to:
 - journey length and local travel patterns;
 - amenity; and
 - severance.
- c) impacts on vehicle travellers:
 - view from the road; and
 - driver stress.

Disruption due to construction

10.4.15 The need for the external transfer of bulk materials associated with the construction of the project will be largely avoided since the undulating nature of the site is such that the materials generated by plateauing can be reused within it in areas that need to be filled. Further, there is a significant amount of pulverised fuel ash (PFA) remaining on site and whilst the majority of this material could be exported off site by rail as part of the remediation, some of this material could be used to help achieve the required development plot plateaus. This means that construction traffic associated with preparing the site for development will not be significant and its effect will be negligible.

10.4.16 The majority of the construction traffic will involve vehicles associated with the construction of the buildings and houses. Whilst some degree of material importation will be associated with the construction of the internal roads, this is likely to be minor in nature when compared with that of the main built development. For this reason, it is possible that construction traffic will be intermittent over a period of time (depending on whether building construction is underway or not) with only a negligible effect being experienced outside of these periods.

10.4.17 For the buildings and houses themselves, the following assumptions have been made:

- *A 15-year construction period at a maximum rate of 100 houses per year;*
- *The employment zone could be constructed in 2 years, depending on commercial demand;*
- *A 10-hour, five day working week would be followed, giving 254 working days per year.*

10.4.18 Chapter 5 of the ES states that over the anticipated build programme of 15 years, 80 construction jobs on-site could be supported per annum.

10.4.19 For the construction of the residential dwellings, employment, school and local centre buildings, it is commonly assumed that it takes two HGVs for each 10sqm of typical new build construction. The average area of each house is estimated to be 100sqm.

10.4.20 Assuming a constant construction rate for the residential dwellings, the most intensive period for construction traffic could occur should the school (assumed built form of 1,000sqm), local centre (2,200sqm) and employment zone (16,000sqm over 2 years) be constructed in the same year.

10.4.21 Based on the assumptions above, the annual HGV construction traffic would be:

- *100 dwellings would generate 2,000 HGVs per year;*
- *the school would generate 200 HGVs per year;*
- *the Local Centre would generate 440 HGVs per year;*
- *the employment zone would generate 3,200 HGVs per year;*
- *The total number of HGVs in the peak construction year would therefore be 5,840 HGVs.*

10.4.22 This would equate to circa. 23 HGV arrivals, or 46 two-way HGV movements per day. There would also be up to 160 two-way light vehicle movements associated with the forecast 80 employees on site. Therefore, there could be approximately 5 two-way HGV movements per hour and, assuming that all of the employees arrive in the morning peak hour and depart in the evening peak hour, there could be 80 light movements in a worst-case peak hour during a weekday. Delivery vehicles will be routed via the A5223 and A4169 to avoid detrimental effects on the Ironbridge Gorge and local residential areas.

10.4.23 Compared to the traffic volumes generated once the development is complete, shown in section 4 of the TA to be up to 914 vehicles in a peak hour, the peak construction traffic would be inconsequential.

10.4.24 Overall, the construction phase of the development would have a **long term, temporary adverse** impact of **minor significance** within the study area.

Impacts on pedestrians, cyclists, equestrians and the community

10.4.25 The number of off-site pedestrians, cyclist and public transport user trips that would be generated by the Proposed Development was determined in Section 4 of the TA. It was concluded that 4.9% of the total trips generated by the Proposed Development would be pedestrians, 1.4% of the total trips would be cyclists, and 4.7% would be public transport users. **Table 10.9** shows the maximum two-way person trips that could be generated by the Proposed Development on the local transport network.

Table 10.9: two-way person trips

	peak hour trips
Pedestrians (4.9%)	54
Cyclists (1.4%)	15
Public transport users (4.7%)	53

Journey length and local travel patterns

- 10.4.26 Journey length includes both the distance travelled, and time taken, for pedestrians and others. The time taken is a combination of moving time, whether walking or riding, and time spent waiting, for example to cross a road.
- 10.4.27 With regards to the study area, there is existing footway provision for pedestrians on the A4169 Much Wenlock Road between the proposed northern site access junction and the junction with the A4169 Buildwas Bank. However, the majority of existing pedestrian trips on the A4169 Much Wenlock Road are likely to be made as part of a leisure activity, as there is currently poor connectivity between Buildwas and neighbouring settlements, including Ironbridge. There are no formal pedestrian crossings on the A4169 Much Wenlock Road. Further, there are no formal off-road cycle facilities and cyclists must therefore use the carriageway.
- 10.4.28 However, the proposed northern site access junction will provide enhanced footway/cycleway provision and a Toucan crossing. Residents of Buildwas will therefore be within walking distance of the amenities provided by the proposed development, with good pedestrian connections and crossing facilities. Internal pedestrian and cycle routes within the Proposed Development will also facilitate trips between Buildwas and Ironbridge.
- 10.4.29 The additional traffic on the A4169 Much Wenlock Road as a result of the proposed development will therefore be offset by the improvements in pedestrian infrastructure and there would be no material impact on pedestrian or cycle journey times. Further, additional pedestrian and cycle trips may occur due to the proposed infrastructure on the A4169 Much Wenlock Road and internally throughout the development. There might be some disruption to the existing footways on the A4169 Much Wenlock Road during construction of the northern site access junction, but provision will be made to ensure a continuous link.
- 10.4.30 On Buildwas Road there are no footways to the west of the existing site access junction. However, between the site and Ironbridge, there is a footway from the existing site access junction into the centre of the town, where the road becomes the Wharfage. There are zebra crossings on the Wharfage at the mini-roundabout with Dale End. As part of the development proposals, the existing access junction with Buildwas Road will be amended such that it will only provide pedestrian, cycle and bus access. Further, the internal network of off-road footways and cycleways will connect to the existing footpath which runs along the southern bank of the River Severn, providing a direct off-road route into Ironbridge.
- 10.4.31 Therefore, journey length and travel patterns will be unchanged on Buildwas Road and Wharfage.
- 10.4.32 There are no footways on the A4169 Buildwas Bank and therefore there would be no pedestrian journeys. Whilst cycle journeys on this route are possible, there is a relatively severe gradient and traffic surveys show that cycle flows are very low.
- 10.4.33 There are various public rights of way local to the development site. The Severn Way which runs along the northern bank of the River Severn opposite the power station. As it passes the development site east of the 'A station' bridge, the path

is in poor condition and suffering from subsidence. The Development Proposals would introduce a new east to west pedestrian/cycle route to the south of the river, connecting to the Severn Way at various points, including the 'A station' bridge which would be retained as a pedestrian only access, providing a link between the site and the Severn Way along the northern bank of the river.

10.4.34 The site is also crossed by three further existing public rights of way including route 0409/16/5, a bridleway, which follows the existing caravan park and quarry access road, and routes 0409/14/1 and 0409/13/1 which are public footpaths crossing the agricultural land west of the power station. The existing bridleway would be retained and enhanced so that it becomes part of the north to south green corridor through the site, with connections to the east to west routes through the site and the local centre at the heart of the development. Routes 0409/14/1 and 0409/13/1 would be diverted around the residential development on this part of the site, though there would be no significant increase in journey length and the connection with the Severn way to the west of the A4169 Much Wenlock Road would be enhanced through pedestrian crossing facilities and improved footway/cycleway provision at the southern site access.

10.4.35 With reference to **Table 10.3**, the Proposed Development would have a **long term, permanent beneficial** impact of **negligible significance** on pedestrian and cycle journey length and local travel patterns for the A4169 Much Wenlock Road. For Buildwas Road and Wharfage, the Proposed Development would have a **long term, permanent beneficial** impact of **minor significance** on pedestrian and cycle journey length and local travel patterns.

10.4.36 Therefore, overall, it is concluded that the Proposed Development would have a **permanent beneficial** impact of **minor significance** on pedestrian and cycle journey length and local travel patterns.

Amenity

10.4.37 Amenity is defined in the DMRB as the relative pleasantness of a journey for pedestrians and others. This is mainly influenced by the volume and composition of traffic on an adjacent link. Other key contributory factors are the standard and width of footways/cycleways, the street furniture provided, planting and landscaping.

10.4.38 IEA guidance describes changes of up to 30% as slight, up to 60% as moderate and up to 90% as substantial. Therefore, it is necessary to assess the impact as summarised in **Table 10.10** below.

Table 10.10: Impact on amenity as a result of % change in flows

Road	Morning Peak	Evening Peak	AADT
A4169 Much Wenlock Road (north of Buildwas Road)	75.6% Substantial	86.1% Substantial	87.6% Substantial
A4169 Much Wenlock Road (south of Buildwas Road)	90.8% Substantial	106.9% Substantial	119.0% Substantial
Buildwas Road	34.8% Moderate	38.0% Moderate	39.5% Moderate
Wharfage (west)	24.4% Slight	30.0% Slight	28.0% Slight
A4169 Buildwas Bank	58.2% Moderate	66.3% Moderate	71.7% Moderate

- 10.4.39 The A4169 Buildwas Bank does not have footway provision and is therefore not used by pedestrians. Further, whilst cyclists can use the carriageway, the A4169 Buildwas Bank has a large gradient and the survey traffic data shows that very few cyclists use this route. Therefore, the amenity of this link would not materially change. With reference to **Table 10.3**, it is therefore concluded that the Proposed Development would have a **long term, permanent adverse** impact of **negligible significance** on the amenity of the A4169 Buildwas Bank.
- 10.4.40 As described above, there are existing footways on the A4169 Much Wenlock Road to accommodate pedestrian trips. Cycle trips are accommodated on the carriageway. The Proposed Development would enhance the footway/cycleway provision on the A4169 Much Wenlock Road and provide toucan crossing facilities.
- 10.4.41 **Table 10.10** shows that there would be a substantial increase in the number of vehicles on the A4169 Much Wenlock Road between the northern site access junction and the A4169 Buildwas Bank/Much Wenlock Road junction. Based on the matrix in **Table 10.3**, a substantial increase on a Borough receptor of Local importance results in a moderate impact.
- 10.4.42 On Buildwas Road, **Table 10.10** shows that there would be a moderate increase in the number of vehicles. Based on the matrix in **Table 10.3**, a moderate increase on a Borough receptor of Local importance results in a minor impact. Further, **Table 10.10** shows that on the Wharfage there would be a slight increase in the number of vehicles. Based on the matrix in **Table 10.3**, a slight increase on a Borough receptor of Local importance results in a minor impact.
- 10.4.43 On balance, it is concluded that across the study area the Proposed Development would have a **long term, permanent adverse** impact of **minor significance** on the amenity for pedestrians and cyclists.

Severance

- 10.4.44 Severance is defined as the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows. As noted in the IEA guidelines: *"factors which need to be given attention in 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 the affected route"*.
- 10.4.45 The IEA guidelines go on to state that: "an assessment of severance should aim to estimate the current severance caused by traffic and related factors, and the extent to which additional traffic will exacerbate this problem".
- 10.4.46 Severance can be described as slight, moderate or severe. In accordance with the DMRB, an AADT flow of below 8,000 vehicles is described as slight, whilst a flow of between 8,000 and 16,000 is described as moderate severance. The threshold between moderate and severe severance is an AADT flow of 16,000 vehicles or more.
- 10.4.47 A comparison of the 2023 background AADT flows (from **Table 10.4**), and the 2023 with development AADT flows (from **Table 10.6**) is summarised in **Table 10.11** below.

Table 10.11: Severance

Road	2036 background (Table 10.4) AADT (total vehicles)	2036 with development (Table 10.6) AADT (total vehicles)
A4169 Much Wenlock Road (north of Buildwas Road)	8,726 Moderate	16,373 Severe
A4169 Much Wenlock Road (south of Buildwas Road)	7,189 Slight	15,741 Moderate
Buildwas Road	2,293 Slight	3,198 Slight
Wharfage (west)	3,011 Slight	3,853 Slight
A4169 Buildwas Bank	8,977 Moderate	15,414 Moderate

- 10.4.48 **Table 10.11** demonstrates that based on the traffic flow thresholds, there would not be a material change to the existing severance on Buildwas Road, the Wharfage or the A4169 Buildwas Bank. However, the internal network of off-road footways and cycleways will connect to the existing footpath which runs along the southern bank of the River Severn, providing a direct off-road route into Ironbridge and therefore there would be an improvement to the severance between the site and Ironbridge.
- 10.4.49 **Table 10.11** demonstrates that based on the traffic flow thresholds on the A4169 Much Wenlock Road, the severance would change from moderate to severe north of the junction with Buildwas Road, and from slight to moderate south of the junction with Buildwas Road.
- 10.4.50 However, as discussed above, it is important to note that the majority of existing pedestrian trips on the A4169 Much Wenlock Road are likely to be made as part of a leisure activity, as there is currently poor connectivity between Buildwas and neighbouring settlements. The Proposed Development would enhance footway/cycleway provision on the A4169 Much Wenlock Road and the proposed northern site access junction will provide a Toucan crossing. Residents of Buildwas will therefore be within walking distance of the amenities provided by the proposed development, with good pedestrian connections and crossing facilities. Internal pedestrian and cycle routes within the Proposed Development will also pedestrian and cycle trips between Buildwas and Ironbridge.
- 10.4.51 Community severance is also defined as: *“the demolition of a community facility or loss of land used by members of the public”*. Away from existing footpaths and bridleways (which would be maintained, enhanced or diverted), the Application Site is privately owned and is therefore not currently used by members of the public. The Proposed Development would open the site up for access by visitors to the Ironbridge Gorge and the local community.
- 10.4.52 Overall, given the additional infrastructure linking Buildwas to the Proposed Development amenities and also linking the site to Ironbridge, it is concluded that the Proposed Development would have a **long term, permanent beneficial** impact of **minor significance** on severance for all receptors within the study area.

Impacts on vehicle travellers**View from the road**

- 10.4.53 View from the road is defined as the extent to which travellers, including drivers, are exposed to the different types of scenery through which a route passes.
- 10.4.54 The development site is not easily visible from the A4169 Buildwas Bank or the Wharfage and therefore the view from these roads would remain largely unchanged.
- 10.4.55 The development site is bounded by Buildwas Road to the north and the A4169 Much Wenlock Road to the west, with much of the site obscured by tree's and further vegetation, which would be retained. However, the power station cooling towers were previously visible from various points along these two roads. The demolition of the power station is underway, and the cooling towers were demolished on 6 December 2019. The remainder of the power station will be demolished in due course and therefore, the view from these roads will be changed.
- 10.4.56 The built form of the proposed development will be largely screened by the vegetation lining Buildwas Road and the A4169 Much Wenlock Road. Therefore, the view from these roads would remain largely unchanged. Where the site is visible, from the site access junctions on the A4169 Much Wenlock Road for example, there would be points of interest visible on site and the Proposed Development would come with a comprehensive landscaping scheme where well managed trees and vegetation will be introduced.
- 10.4.57 It is concluded that the Proposed Development would have a **long term, permanent** impact of **negligible significance** on the view from roads within the study area.

Driver stress

- 10.4.58 Driver stress is defined as the adverse mental and physiological effects experienced by a driver traversing through a road network. Factors influencing the level of stress include: road layout and geometry; surface riding characteristics; junction frequency; and the speed and flow per lane. There are three main components of driver stress: frustration; fear of potential accidents; and uncertainty of the route being followed. Driver stress is categorised as low, moderate, or high in DMRB Volume 11 Section 3 Part 9.
- 10.4.59 Frustration is caused by a driver's inability to drive at a speed consistent with his or her own wishes in relation to the general standard of the road. The introduction of two new site access junctions on the A4169 Much Wenlock Road will cause a delay where there currently isn't one. However, the junctions have been designed with plenty of spare capacity so the delay will be minimised. The proposed mitigation at the A4169 Buildwas Bank/Much Wenlock Road junction will introduce traffic signals, causing a delay to ahead traffic on the main road. However, the junction assessment included within the TA demonstrates that the junction has sufficient spare capacity so the delay will be minimised.
- 10.4.60 The Proposed Development would result in an increase in the number of vehicles on the links within the study area. However, the TA concludes that within the study area, and following the implementation of mitigation at the A4169 Buildwas Bank/Much Wenlock Road junction, traffic would be free flowing and therefore, driver stress would be unchanged.

- 10.4.61 With regard to driver fear, this is typically caused by traffic travelling at speeds in excess of those that a driver feels comfortable with, and by the presence of large number of HGVs. Vehicle speeds within the study area are limited by the speed limits imposed, the nature of the highway network (with traffic signals and junctions), and the volume of traffic. Section 2 of the TA shows that 85th percentile vehicle speeds are below the speed limits on the study area roads.
- 10.4.62 Further, as part of the access strategy it is proposed that the speed limit on the A4169 Much Wenlock Road be reduced from 50mph to 40mph. The change in speed limit would cover the section of Much Wenlock Road from just south of the proposed site access roundabout, to the A4169 Buildwas Bank/Much Wenlock Road junction to the north. With the change in the characteristics of Much Wenlock Road along the site frontage, and the proposed change of the speed limit, vehicle speeds in the vicinity of the site would fall, improving the highway conditions for all users.
- 10.4.63 The presence of traffic signals at the northern site access junction and at the mitigated A4169 Buildwas Road/Much Wenlock Road junction would help to reduce vehicle speeds and could therefore reduce driver fear.
- 10.4.64 Locally to the proposed development, there are significant employment centres, including East Midlands Airport, East Midlands Gateway and the employment district north of Castle Donington. Further, due to the junctions between the M1, A50 and A42 in this region, HGVs account for a relatively high proportion of the traffic within the study area in the 2023 background scenario, as shown in **Table 10.4**. This would be increased by the Proposed Development, particularly on the B6540 Tamworth Road as shown in **Table 10.6**. However, given the already high proportions of HGVs on the highway network local to the site, the increased HGVs as a result of the Proposed Development are unlikely to materially increase driver fear. HGVs account for a low proportion of the development traffic. Further, the former power station would have generated HGV movements associated with its operation.
- 10.4.65 Overall, as a result of the Proposed Development, the level of stress experienced by drivers would be low, with a slight increase in driver frustration and a slight benefit in driver fear.
- 10.4.66 The Proposed Development would have a **long term, permanent impact** of **minor** significance on driver stress.

10.5 CUMULATIVE EFFECTS

- 10.5.1 Section 8 of the TA details how the assessment traffic flows have been derived, including the allowances for committed development and traffic growth to the 2036 assessment year.
- 10.5.2 The TSTM forecast modelling will include all known committed and Local Plan allocated sites up to the assessment year.

10.6 MITIGATION MEASURES

- 10.6.1 The environmental impacts of the Proposed Development are confined to the site access junctions only. The TA addresses the impact of the Proposed Development vehicular and person trips on the surrounding transport infrastructure, and identifies improvements which, in combination with the FTP, would accommodate and mitigate the increased travel demand. These improvements are summarised at paragraph 10.1.10 above.

10.7 RESIDUAL EFFECTS

- 10.7.1 With these measures in place, the Proposed Development would have a permanent minor beneficial impact on pedestrians, cyclists, equestrians and the community in the operational phase with regards to journey length and travel patterns, and on severance on the receptors within the study area.
- 10.7.2 The Proposed Development would have a permanent minor adverse impact on pedestrians, cyclists, equestrians and the community in the operational phase with regards to amenity on the receptors within the study area.
- 10.7.3 The Proposed Development would also have permanent negligible impact on vehicle travellers in terms of view from the road.
- 10.7.4 The Proposed Development would also have permanent minor adverse impact on vehicle travellers in terms of driver stress.
- 10.7.5 Therefore, no further mitigation measures are required other than the introduction of a construction management plan containing a vehicle routing strategy.

10.8 SUMMARY

- 10.8.1 The environmental effects of the changing transport conditions as a result of the Proposed Development have been examined and are summarised in **Table 10.12**. Appropriate mitigation has been included and the Proposed Development will not have any significant effects on the receptors within the study area. The residual adverse environmental effects would be limited to those of minor or negligible significance.
- 10.8.2 The assessments and conclusions of this Chapter will be reviewed following the availability of the TSTM forecast results.

Table 10.12: Summary of Effects, Mitigation and Residual Effects.

Potential Effect	Nature of Effect (Permanent /Temporary)	Significance	Geographic Scale of Impact	Mitigation / Enhancement Measures	Residual Effects
Construction					
Construction Traffic	Temporary	Minor adverse	Local and Borough	Introduction of a construction management plan, containing a vehicle routing strategy, and management measures to limit vehicle movements in the peak hours and limit impacts including wheel washing.	Negligible
Operation					
Impacts on pedestrians, cyclists, and the community - Journey length and travel time	Permanent	Minor beneficial	Local and Borough	None required	Minor beneficial
Impacts on pedestrians, cyclists, and the community - Amenity	Permanent	Minor adverse	Local and Borough	None required	Minor adverse
Impacts on pedestrians, cyclists, and the community - Severance	Permanent	Minor beneficial	Local and Borough	None required	Minor beneficial
Impacts on vehicle travellers – View from the Road	Permanent	Negligible	Local and Borough	None required	Negligible
Impacts on vehicle travellers – Driver Stress	Permanent	Minor adverse	Local and Borough	None required	Minor adverse
Cumulative Effects					
No additional effects					