



# Gravity

Smart Campus

**Gravity LDO Environmental Statement**

**Volume 1 – Chapter 9:  
Transport and Access**

## 9 Access and Transport

### 9.1 Introduction

- 9.1.1 This Chapter has been prepared by Stantec UK Ltd in accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix 1.6**.
- 9.1.2 This chapter describes the assessment methodology, the baseline conditions, the measures package developed to prevent, reduce, or offset likely significant effects, and the resulting likely effects of the Proposed Development relating to access and transport.
- 9.1.3 The methodology used in this chapter has been developed to fulfil the requirements of the EIA Regulations informed by guidance set out within the following:
- “Guidelines for the Environmental Assessment of Road Traffic” (Guidance Note Number 1) published by the Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment (IEMA)) in 1993;
  - Volume 11 of the Design Manual for Roads and Bridges (DMRB) – Environmental Assessment (Highways England – now known as National Highways (NH)); and
  - Planning Practice Guidance (PPG) documents ‘Environmental Impact Assessment’ and ‘Travel Plans, Transport Assessments and Statements in Decision-Taking’ first published by the Ministry for Housing, Communities and Local Government (MHCLG) in 2014 as a live online resource.
- 9.1.4 This chapter has been prepared in the context of a detailed assessment undertaken and reported on within the Transport Assessment (TA) which is submitted in support of the LDO. While the TA has been used as source material, it predominately identifies the compliance of the Proposed Development with national and local transport policy and establishes that a safe and acceptable access will be provided. The TA quantifies the transport and highways impact of the Proposed Development, but the environmental impact of the road traffic it will generate requires an assessment against different criteria; therefore, the assessment has been undertaken against the criteria set out in the “Guidelines for the Environmental Assessment of Road Traffic” referred to above.
- 9.1.5 The reader is where appropriate referred to the TA and supporting Framework Travel Plan (FTP), standalone documents where further information is available. The FTP sets out the proposed approach to ongoing site transport management measures including monitoring of site multi-modal trip generation, site travel planning and car park management measures.
- 9.1.6 This chapter should also be read in conjunction with **Chapter 3**: Description of the Proposed Development and with respect to relevant parts of other chapters including **Chapter 10**: Noise & Vibration and **Chapter 11**: Air Quality, where common receptors have been considered and where there is an overlap or relationship between the assessment of effects.
- 9.1.7 The appendices submitted with this chapter are:
- Transport Assessment (TA) – **Appendix 9.1**
  - Framework Travel Plan (FTP) – **Appendix 9.2**
  - Supporting Drawings / Figures – **Appendix 9.3**

- Draft Monitor and Manage Plan – **Appendix 9.4**

## 9.2 Policy, Legislation, Guidance and Standards

- 9.2.1 The Development has been considered from a transport perspective in the context of the below key legislation, national and local policy and guidance documents.

### Legislative Context

- 9.2.2 The following legislation is relevant to the assessment of the effects on transport receptors:
- 9.2.3 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended). Part 4 of Schedule 4 states that “*A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health...*” should be included within the environmental statement. Traffic and Transport has the potential to affect population and human health both directly e.g. through traffic collisions and indirectly through encouraging active travel.
- 9.2.4 In addition, EU guidance is still relevant despite exit from the EU and hence this chapter also takes account of the European Commission's Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) EIA for Projects Guidance 2017 (“EU Guidance”).

### Planning Policy Context

- 9.2.5 There are several policy and guidance documents at the national and local level that are relevant to the Proposed Development. In addition to policy referenced in **Chapter 6: Planning Policy Context**, policy directly applicable to this technical specialism are listed below:

### National Planning Policy Framework, 2021

- 9.2.1 The revised National Planning Policy Framework (NPPF) was published in July 2021 and replaced the 2019 edition of the NPPF. The presumption in favour of sustainable development remains the core objective of the NPPF (paragraph 10 states that “*so that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development*”).
- 9.2.2 To promote sustainable transport, paragraph 110 states that “*in assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*
- *appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
  - *safe and sustainable access to the Site can be achieved for all users; and*
  - *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.*”
- 9.2.3 Additionally, paragraph 113 of the NPPF states “*all development that generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.*”

9.2.4 In Section 9 ‘Promoting sustainable transport’, paragraph 104 states that “*transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*

- *the potential impacts of development on transport networks can be addressed;*
- *opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;*
- *opportunities to promote walking, cycling and public transport use are identified and pursued;*
- *the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and*
- *patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places”.*

9.2.5 Paragraph 111 of the NPPF states “*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.*”

***National Planning Practice Guidance, 2014: Travel Plans, Transport Assessments and Statements***

9.2.6 The National Planning Practice Guidance<sup>1</sup> (NPPG) provides the overarching framework within which the transport implications of development should be considered. It provides advice on the preparation of Transport Assessment, Transport Statements and Travel Plans. The key advice is as follows:

*‘Travel Plans, Transport Assessments and Statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements.’ (Paragraph 2).*

9.2.7 The key principles within which Transport Assessments should be undertaken are detailed as follows:

*“Travel Plans, Transport Assessments and Statements should be:*

- *proportionate to the size and scope of the Proposed Development to which they relate and build on existing information wherever possible;*
- *established at the earliest practicable possible stage of a development proposal;*
- *be tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally);*
- *be brought forward through collaborative ongoing working between the local planning authority/ transport authority, transport operators, rail network operators, Highways Agency where there may be implications for the strategic road network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of*

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<sup>1</sup> <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>



*walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities)'.*

- 9.2.8 The guidance emphasises the importance to consult the relevant local authorities at the outset in order to scope the transport assessment work, on the basis of the principles highlighted above.

***National Design Guide, 2021***

- 9.2.9 The National Design Guide document (NDG), which was published in October 2019 and revised in January 2021, sets out the characteristics of well-designed places and good design practice, forming part of the Government's suite of planning practice guidance.
- 9.2.10 The guidance is structured around ten characteristics, which work in tandem to “create [a] *physical Character*”, “*nurture and sustain a sense of Community*”, and “*work to positively address environmental issues affecting Climate*”.
- 9.2.11 The most pertinent characteristics to be borne in mind are:
- Context – whether the Site relates well to its local and wider context;
  - Built Form – whether development is walkable / cyclable and whether public transport is accessible;
  - Movement – whether there is a movement network that makes connections to destinations, places, and communities, for all modes of transport; and
  - Lifespan – includes principles of considering how waste and parking will be managed from the outset.
- 9.2.12 This characteristic of the NDG seeks to ensure that developments are “*accessible and easy to move around*”, and notes that:
- “Patterns of movement for people are integral to well-designed places. They include walking and cycling, access to facilities, employment and servicing, parking and the convenience of public transport. They contribute to making high-quality places for people to enjoy... Their success is measures by how they contribute to the quality and character of the place, not only how well they function”.*
- 9.2.13 A well-designed movement network is defined within the NDG as a clear pattern of streets that:
- *“is safe and accessible for all;*
  - *functions efficiently to get everyone around, takes account of the diverse needs of all its potential users and provides a genuine choice of sustainable transport modes;*
  - *Limits the impacts of car use by prioritising and encouraging walking, cycling and public transport, mitigating impacts and identifying opportunities to improve air quality;*
  - *Promotes activity and social interaction, contributing to health, well-being, accessibility and inclusion; and*
  - *Incorporates green infrastructure, including street trees to soften the impact of car parking, help improve air quality and contribute to biodiversity.”*

- 9.2.14 These principles are further established in Section M1 ‘A connected network of routes for all modes of transport’, M2 ‘Active Travel’, and M3 ‘Well-considered parking, servicing, and utilities infrastructure for all users’.

***Decarbonising Transport, A Better Greener Britain, 2021***

- 9.2.15 The Department for Transport (DfT) published ‘Decarbonising Transport, A Better Greener Britain’ in 2021.
- 9.2.16 This plan follows on from ‘Decarbonising transport: setting the challenge’, published in March 2020, which laid out the scale of additional reductions needed to deliver transport’s contribution to legally binding carbon budgets and delivering net zero by 2050.
- 9.2.17 This plan sets out the government’s commitments and the actions needed to decarbonise the entire transport system in the UK. It includes:
- a pathway to net zero transport in the UK.
  - the wider benefits net zero transport can deliver.
  - the principles that underpin our approach to delivering net zero transport.
- 9.2.18 However, given the rate of technological advancement and uncertainty in the precise mix of future zero emission solutions, and the probability of significant changes in travel behaviour over the years ahead, this plan does not precisely plot each individual step to fully decarbonising transport modes over the next 30 years. It does however set out a series of actions and timings that will decarbonise transport by 2050 and deliver against carbon budgets along the way, whilst also responding to the challenge of the COVID-19 pandemic in the process.
- 9.2.19 The strategic priorities identified for achieving net zero are confirmed as:
1. Accelerating modal shift to public and active transport
  2. Decarbonising road transport
  3. Decarbonising how we get our goods
  4. UK as a hub for green transport technology and innovation
  5. Place based solutions to emissions reduction
  6. Reducing carbon in a global economy

***Bus Back Better, National Bus Strategy for England, 2021***

- 9.2.20 In September 2019, the government set out how it would launch a revolution in bus services, in other words, delivering a better deal for bus users and committing to publishing a National Bus Strategy.
- 9.2.21 In February 2020, the Prime Minister announced that bus services across the country would be transformed with simpler fares, thousands of new buses, improved routes and higher frequencies.
- 9.2.22 The DfT published Bus Back Better, National Bus Strategy for England in 2021.
- 9.2.23 This national strategy sets out the vision and opportunity to deliver better bus services for passengers across England, through ambitious and far-reaching reform of how services are planned and delivered.
- 9.2.24 The vision is defined as ‘to get bus use back to what it was before the pandemic. Then we want to increase patronage and raise buses’ mode share. We can only do these things by ensuring that buses are an attractive alternative to the car for far more people’.

9.2.25 The vision is to be achieved by making buses:

1. More frequent
2. Faster and more reliable
3. Cheaper
4. More comprehensive
5. Easier to understand
6. Easier to use
7. Better to ride in
8. Better integrated with other modes and each other
9. Greener
10. Accessible and inclusive by design
11. Innovative
12. Seen as a safe mode of transport

9.2.26 It is expected that all Local Transport Authorities (LTA) will publish a local Bus Service Improvement Plan (BSIP). These new plans must set out how they will use their Enhanced Partnership or franchising scheme to deliver an ambitious vision for travel by bus, meeting the goals and expectations in this strategy and driven by what passengers and would-be passengers want in their area.

9.2.27 Bus Back Better in Somerset County Council (SCC) are in the process of drafting a BSIP in collaboration with the County's bus and community transport operators, which is intended to incorporate feedback obtained from a public engagement process which has been undertaken. The research findings indicated the following top priorities:

1. Additional and clearer bus service information
2. Additional bus routes and higher frequencies including enhanced weekend timetables
3. Wider network connectivity / strategic enhancement
4. Better integration with rail and other modes of transport
5. Cheaper and simplified fares

9.2.28 The BSIP will be submitted by SCC to the DfT in October 2021 with a view to achieving agreement and completion by April 2022.

#### **Sedgemoor Local Plan 2011 – 2032**

9.2.29 The Sedgemoor Local Plan 2011-2032 sets out how the district will grow and develop into the future. It includes the vision, priorities and policy framework for future development in the district, including addressing the requirements relating to housing, employment, retail and other facilities and infrastructure.

9.2.30 The Local Plan priority stated in paragraph 3.3 is *"To ensure development in Sedgemoor supports the principles of sustainable development and delivers sustainable communities whilst respecting the diversity in function and character of Sedgemoor's towns, villages and countryside."*

9.2.31 Strategic priorities include:

- a. To deliver development that is of high quality, sustainable, distinctive, inclusive, safe and respectful of its context.
- b. To promote safe and sustainable transport options and manage congestion.

9.2.32 Policy S3 Infrastructure Delivery states that, *"New development will be required to provide and contribute towards the provision of services, facilities and infrastructure at a rate, scale and pace to meet the needs and requirements that are expected to arise from that development. All new development that generates a demand for infrastructure will only be permitted if the*

*reasonable and necessary on and off-site infrastructure required to support and mitigate the impact of the development is provided.”*

- 9.2.33 Policy B16 Transport states that, *“Proposals that provide opportunities for cycling, walking and enhanced public transport both within the town and between key destinations including Taunton and Burnham (A38 corridor), Street and Minehead (A39 corridor) and the town’s surrounding rural areas will be supported”.*
- 9.2.34 Policy D13 Sustainable Transport and Movement states that *“Travel management schemes and development proposals that reduce congestion, encourage an improved and integrated transport network and allow for a wide choice of modes of transport as a means of access to jobs, homes, leisure and recreation, services and facilities will be encouraged and supported. Proposals will:*
- a. Support the travel improvements identified in the Somerset Future Transport Plan (transport policies, implementation plan and modal strategies), Infrastructure and Delivery Study and Sedgemoor Transport Strategy (when published);*
  - b. Be compatible with the existing transport infrastructure or, if not, provision shall be made where necessary for improvements to infrastructure to enable development to proceed;*
  - c. Contribute to reducing adverse environmental issues, including air, light and noise pollution, vibration and surface water run-off, through appropriate mitigation measures, including tree planting along road corridors for shade, amenity and air quality;*
  - d. Enhance road and personal safety;*
  - e. Enhance the facilities for pedestrians, cyclists, those with reduced mobility and other users;*
  - f. Develop innovative and adaptable approaches that deliver higher quality and accessible public transport options;*
  - g. Encourage efficient, safe and sustainable freight transport; and*
  - h. Be resilient to climate change.”*
- 9.2.35 Policy D14 Managing the Transport Impact of Development of the Local Plan states that, *“Development proposals that will have a significant transport impact should:*
- a. Be supported by an appropriate Transport Assessment, Air Quality Assessment, Noise and Vibration Assessment and Ecological Surveys where there are significant implications;*
  - b. Engage at an early stage with relevant bodies such as the Sedgemoor District Council (SDC), Somerset County Council (SCC), National Highways (NH, formerly known as Highways England) and Network Rail (NR) regarding the proposal and scope of supporting information required;*
  - c. Include an appropriate Travel Plan outlining how the development will manage transport impacts and encourage more sustainable modes of travel;*
  - d. Ensure provision is made for inclusive, safe and convenient access for pedestrians, people with disabilities, cyclists and users of public transport that addresses the needs of all;*
  - e. Provide safe access to roads of adequate standard within the route hierarchy;*



- f. Ensure that the expected nature and volume of traffic and parked vehicles generated by the development would not compromise the safety and/or function of the local or strategic road networks in terms of both volume and type of traffic generated;*
- g. Comprehensively address the transport impact of development and appropriately contribute to the delivery of the necessary transport infrastructure;*
- h. Not prejudice existing and new safeguarded transport infrastructure (sites and routes) as shown on the Local Plan Policies Map;*
- i. Enhance and develop rights-of-way as a means of managing transport impacts of development and should not reduce the convenience and safety of existing rights-of-ways, bridle paths and cycle paths, unless suitable alternative routes are provided;*
- j. Ensure car parking and vehicle servicing at levels appropriate to the development and in accordance with the parking standards detailed within the Somerset County Council Parking Strategy; and*
- k. Adequately assess and provide any required improvements to level crossings where development may result in a material increase in pedestrian and/or vehicular use of a level crossing, in consultation with Network Rail”.*

#### **Transport Investment Strategy 2050**

- 9.2.36 The Transport Investment Strategy 2050 (TIS) identifies the key transport schemes required to support economic growth and new housing in Sedgemoor, whilst aligning transport infrastructure with development to achieve long-term, sustainable growth to 2050. The Strategy considers all modes of travel across all areas of Sedgemoor, as well as connections to and from the district. It also considers the opportunities of new and so-called disruptive technologies in transport such as on-demand and shared mobility. The TIS builds on the Sedgemoor Local Plan 2011-2032, identifying additional infrastructure requirements to support development beyond 2032 or even to accelerate development.
- 9.2.37 The vision of the TIS is to support the delivery of a low carbon, clean growth transport network for the future that creates opportunities for all by improving the day-to-day accessibility and connectivity for Sedgemoor’s residents, businesses, and visitors.
- 9.2.38 In specific reference to Gravity, paragraph 2.20 states *“The Enterprise Zone at the former Royal Ordnance Factory is one of a very few locations within Sedgemoor with capacity to accommodate large scale requirements emerging from the Hinkley Point C supply chain and growth related to other industrial sectors. Traffic accessing the Site is expected to increase volumes on the A39, A38 and B3141. The planned innovation campus will be one of the South West’s largest commercial locations when fully built out as Gravity is expected to generate around 4,000 skilled jobs on site. The additional output generated by the Gravity Site will effectively double Sedgemoor’s current economic growth rate over a 25-year period. Gravity has the potential to change the above figures from the Trip End Model and provide a centre for knowledge-intensive jobs for Sedgemoor residents as well as attracting workers from outside the district.”*
- 9.2.39 Within the TIS several interventions and initiatives are set out to improve journeys across Sedgemoor. The interventions relating to Gravity are briefly set out below:
- a. R3 Gravity Rail Link – Providing a direct rail link for passengers and freight towards Highbridge & Burnham station from Gravity.*
  - b. Policy HW3 and Dunball – Increased capacity across the junctions and further signalisation to prevent increases in traffic resulting from forecast growth from interfering with the operation of the Dunball roundabout and the M5 slip roads.*

- c. HW1 Smart Motorway – The District will be seeking full implementation of Smart Motorway infrastructure along the M5 corridor, which increases capacity and has the potential to reduce congestion and delays and improve reliability and resilience.*
- d. PT1 High frequency bus services to Gravity – seen as key to the successful and sustainable integration of the enterprise zone into the local labour market will be a high-quality, high frequency bus service linking Gravity to surrounding settlements.*
- e. WC1, WC2, WC3 Walking and cycling links from Burnham-on-Sea and Bridgwater to Gravity - As the Site approaches first occupation, there is a need for a high quality walking and cycling connection between Gravity and Highbridge and Burnham-on-Sea (WC1).*
- f. SM1 Smart mobility at Gravity - Gravity has the potential to build on local business and infrastructure assets to be a test-bed of innovative developments in the field of mobility, including Connected and Autonomous Vehicles.*
- g. EV1 Electric vehicles – Sedgemoor will support the transition to cleaner fuels in two ways. Firstly, through the provision of publicly available, easy-to-use and widely distributed electric vehicle (EV) charging infrastructure. Secondly, through the planning system, developers will be encouraged to provide fast charging infrastructure for all forms of electric transport in domestic, commercial and public areas throughout Sedgemoor.*

#### **Climate Emergency Strategy and Action Plan 2020-2030**

- 9.2.1 SDC's Climate Emergency Strategy (CES) aims to describe the six key areas of action which will lead Sedgemoor towards becoming carbon neutral by 2030, outline the overarching goals and explaining the scope and background to the Strategy.
- 9.2.2 Specific Travel action within the CES Action Plan include the following:
  - a. Promoting active travel (walking & cycling) options by improving infrastructure and shifting towards a more cycle-friendly culture in Sedgemoor;
  - b. Engaging with local employers and communities to encourage them to adopt travel plans that promote walking, cycling, car sharing and public transport with their staff, and participating in this ourselves;
  - c. Increasing number of Electric Vehicle (EV) charging points throughout Sedgemoor;
  - d. Progressing our own fleet of council vehicles into Electric Vehicles;
  - e. Supporting agile working and encouraging council staff to work from home when possible, reducing the need for travel; and
  - f. Support the improvement of public transport infrastructure, both increasing connectivity and supporting carbon alternative public transport options

#### **Bridgwater Vision**

- 9.2.3 This first iteration of the Bridgwater Vision (2009) describes the Gravity Site as one of the key character areas to deliver the overall vision. It explains that the Gravity Site will be a significant employment area linked to a renewable, low carbon energy source. It continues to describe that the employment area could benefit from on-site rail links, a bespoke travel plan service for workers from Bridgwater town centre and the promotion of cycle tracks and footpaths through the Site providing links to Puriton, Woolavington and Bridgwater, encouraging greater use of non-vehicular transport modes.

- 9.2.4 In 2015, the Bridgwater Vision was refreshed to provide an update on the successes delivered over the intervening 6-year period. Gravity continues to be identified as a priority, and the concept of the Huntspill Energy Park (HEP) development was described, and the Vision anticipated it could be a significant employment development for B1 (business) and B2 (general industrial) energy related uses for the town linked to a renewable low carbon energy source.

### **Puriton Energy Park SPD**

- 9.2.5 SDC adopted the Puriton Energy Park SPD in March 2012. The intent of the SPD was to provide further information to attract market interest and facilitate site disposal. The SPD provides a framework for assessing planning applications for the Site and focused on the main development objectives required to deliver the Energy Park. Importantly, the SPD clearly states that it does not set out what the Site will ultimately look like or who will occupy it, which it states is the role of subsequent planning applications.
- 9.2.6 Since 2012, much has changed in terms of the national policy and political context, with a new Framework, a stronger focus on EZ delivery, Industrial Strategy and Clean Growth. The SPD is therefore somewhat outdated in places, however, does provide some valuable input in terms of design principles.
- 9.2.7 Subsequently, design principles have also been approved under condition discharge relating to the Extant Consent, which take account of the SPD ambitions. These take account of the clean and inclusive growth ambitions for Gravity and the priority afforded to smart mobility as an integral element of the smart campus.

## **9.3 Consultation**

- 9.3.1 The TA, prepared alongside this chapter, has been prepared in accordance with a scope of work that has been discussed extensively and agreed in consultation with SDC, SCC and NH.
- 9.3.2 The TA scoping process commenced in November 2020 and has continued through to the submission of the LDO. The scoping process has involved the preparation of a series of technical notes and reports, and the holding of regular LDO Transport Sub Group meetings (as a subsidiary group of the Gravity Delivery Group).
- 9.3.3 The LDO Transport Sub Group comprised appropriate members representing a range of different stakeholders, including:
- SCC
  - NH
  - SDC
  - Heart of the South West Local Enterprise Partnership
  - Network Rail (NR)
  - Arup representing SDC
  - WSP representing SCC
  - Womble Bond Dickinson LLP
  - This Is Gravity Ltd
  - Stantec UK Ltd

- 9.3.4 As part of the stakeholder consultation informing the preparation of this Chapter, ES Scoping Report responses have been received from a number of these stakeholders including SDC, SCC (including specifically in respect of Public Rights of Way), NH and NR, and information set out within this Chapter and supporting documentation responds to the various issues raised.
- 9.3.5 This chapter compares the likely significant effects of the Proposed Development against a 2032 Baseline scenario which is defined later in this chapter. However, the following consideration has been scoped out of the assessment as per the ES Scoping Report submitted to SDC on 6<sup>th</sup> July 2021, for the reasons outlined.

#### **Assessment of unusual or especially hazardous materials**

- The Proposed Development could include a range of potential land uses / buildings; however they are all anticipated to be built using traditional construction techniques or off-site manufacturing that would not necessitate the transit of any unusual or especially hazardous materials. Therefore, it is considered that assessment in this regard for the construction phase is not needed within the ES to confirm that there would not be a significant impact from the Proposed Development.

### **9.4 Methodology**

- 9.4.1 This section provides an overview of the study area and the methodology for baseline data collection, as well as the assessment methodology used in this chapter to determine the significance of environmental effects of the Proposed Development on sensitive receptors in the study area. The adopted methodology has been determined through reference to guidance and best practice, including the IEMA 'Guidelines for the Environmental Assessment of Road Traffic' (Guidance Note No. 1) document and Volume 11 of the DMRB and informed by the pre-application Transport Sub Group meetings, as referred above.

#### **Study Area**

- 9.4.2 The IEMA "Guidelines for the Environmental Assessment of Road Traffic" suggest that the study area for the EIA from a traffic and transport perspective should consider highway links which fall within two rules, as stated below.
- Rule 1: Include in the EIA highway links where 18-hour Annual Average Weekday Traffic (AAWT) flows will increase by more than 30% (or the number of Heavy Goods Vehicles (HGV) will increase by more than 30%).
  - Rule 2: Include in the EIA any other specifically sensitive area where 18-hour AAWT flows will increase by 10% or more.
- 9.4.3 This guidance is based upon knowledge and experience of traffic and transport related environmental effects. The 30% threshold of Rule 1 is based upon research and experience, with less than a 30% increase in traffic flow generally resulting in imperceptible changes in the environmental effects of traffic and transport. At a simple level, the guidance considers that projected changes in total traffic flow of less than 10% creates no discernible environmental effects, hence the threshold of Rule 2.
- 9.4.4 For the purposes of the assessment undertaken in this chapter, a 'specifically sensitive area' is a highway link with receptors that have a 'high' sensitivity to be considered against the threshold defined in Rule 2. Other highway links with receptors of negligible, low, or medium sensitivity will be considered against the threshold defined in Rule 1.
- 9.4.5 The study area adopted for the assessment, comprising of numerous highway links, focusses on locations that are logically most likely to be impacted by the development proposals. The

study area therefore comprises of Woolavington Road, Woolavington Hill, B3141 Causeway, the Gravity Link Road, A39 Puriton Hill, M5 Motorway, and the A38 Bristol Road.

- 9.4.6 The complete list of links considered are as specified in **Table 9-1** and are shown also in **Figure 1** included in **Appendix 9.3**:

Link Reference	Description
Link 1	Link Road – Between Gravity Site and Entrance Roundabout
Link 2	Link Road – Between Entrance Roundabout and Hillside
Link 3	Link Road – Between Hillside and A39
Link 4	Woolavington Road – Between Entrance Roundabout and Proposed Residential (Secondary) Access
Link 5	Woolavington Road – Between Proposed Residential (Secondary) Access and Woolavington Primary School
Link 6	Woolavington Road – Between Woolavington Primary School and B3141 / Woolavington Hill Crossroads
Link 7	B3141 Causeway
Link 8	B3141 Woolavington Hill
Link 9	Woolavington Road – West of Entrance Roundabout (Puriton)
Link 10	A39 – East of Puriton Hill Roundabout
Link 11	A39 – Between Puriton Hill Roundabout and M5 Junction 23
Link 12	M5 Motorway – Mainline North of Junction 23
Link 13	M5 Motorway – Mainline South of Junction 23
Link 14	A38 – Between Junction 23 and Dunball Roundabout
Link 15	A38 – North of Dunball Roundabout
Link 16	A38 – South of Dunball Roundabout

Table 9-1 EIA Assessment Traffic Flow Links

### Assessment of Significance

- 9.4.7 Should the Proposed Development result in increases in traffic flow above those identified in Rules 1 and 2, an assessment of the significance of transport effects will be determined based on the magnitude of impact, receptor sensitivity and professional judgement. This is shown in **Table 9-2** below.



Magnitude of Impact	Sensitivity of Receptor		
	High	Medium	Low
<b>Large</b>	Substantial	Major	Moderate
<b>Moderate</b>	Major	Moderate	Minor
<b>Small</b>	Moderate	Minor	Minor
<b>Negligible</b>	Negligible	Negligible	Negligible

Table 9-2 Significance Matrix

9.4.8 During the operational phase, potential impacts are expected to arise for various criteria which are set out below in **Table 9-3** and will be assessed if proven to be necessary

Impact	Operational Phase
Severance	✓
Driver Delay	✓
Pedestrian Delay	✓
Pedestrian Amenity	✓
Fear and Intimidation	✓
Accidents and Safety	✓

Table 9-3 Potential effects from operational phase to be assessed

### Baseline Data Collection

9.4.9 Numerous data sources have been used by Stantec to collect transport data that has been used at various stages of both the TA work and the assessment undertaken in this chapter of the ES. A summary of these data sources and what has been provided is set out below.

- Personal Injury Accident (PIA) data for the most recent five-year period obtained from SCC
- Desk based review of pedestrian, cycle and public right of way networks, along with receptors, in the vicinity of the Site
- Desk based review of public transport options in the vicinity of the Site
- 2018 junction turning counts for M5 Junction 23, A38 Dunball Roundabout and A39 Puriton Hill / Hall Road junction provided by NH
- 2011 junction turning counts (A39 / Puriton Hill only) used within the approved assessments for the 2017 Planning Consent
- Extensive Automatic Traffic Counter data (2018)

- Traffic data supporting the Puriton and Woolavington approved Village Enhancement Scheme (VES) and 2017 Planning Consent documentation
- NH's Webtris traffic database
- Trip End Model Presentation Program (TEMPro) for deriving traffic growth factors for 2011-18 and 2018-32 periods for 'motorway', 'principle' and 'minor' road types
- Committed development Transport Assessments for trip generation, distribution and base count data
- SDC Adopted Local Plan 2011-2032 housing and jobs growth trajectories

## Receptors

9.4.10 The categories of receptor sensitivity have been defined from the principles set out in the IEMA Guidelines and have been used to outline in broad terms, the sensitivity of receptors to traffic for the categories of effect assessed in this chapter. The receptor sensitivity definitions that have been used are set out in **Table 9-4**.

High Sensitivity	Medium Sensitivity	Low Sensitivity
<ul style="list-style-type: none"> <li>■ schools, colleges and other educational institutions (nurseries have been assumed to be included in this category)</li> <li>■ retirement / care homes for the elderly or infirm</li> <li>■ roads used by pedestrians with no footways</li> <li>■ road safety black-spots</li> </ul>	<ul style="list-style-type: none"> <li>■ hospitals, surgeries and clinics</li> <li>■ parks and recreation areas</li> <li>■ shopping areas</li> <li>■ roads used by pedestrians with narrow footways</li> </ul>	<ul style="list-style-type: none"> <li>■ open space</li> <li>■ tourist / visitor attractions</li> <li>■ historical buildings</li> <li>■ churches</li> <li>■ other roads with active frontages and dwellings</li> </ul>

Table 9-4 Receptor Sensitivity

9.4.11 The main receptors of note identified within the study area above includes:

- Woolavington Village Primary School, Woolavington Road ('high' sensitivity)
- Woolavington Branch Surgery, Woolavington Road ('medium' sensitivity)

9.4.12 These medium and high sensitivity receptors are located on Link 5.

## Assessment Scenarios

9.4.13 The two following baseline scenarios are presented in this chapter:

- *Current State of the Environment* – A description of the current state of the environment, which in this case is at the stage of part implementation of the Extant Consent (i.e., the Gravity Link Road, ecological enhancements and Site remediation completed).
- *2032 Baseline* - An outline of what is likely to happen to the environment incorporating the 2017 Planning Consent, including the Gravity Link Road and the VES, but excluding the safeguarded energy land uses, and the current approach to transport forecasting and changes in travel trends. The 2032 Baseline also incorporates projected growth in background traffic levels on the strategic and local road networks due to demographic and planned development growth forecasts, specific vehicle trip generation for committed

development sites which have been granted planning permission but not implemented or included in TEMPro (identified later), Hinkley Point C operational phase traffic, and committed highway schemes<sup>2</sup>. Transport trends such as the publication of the national bus strategy and other decarbonisation of transport policies are also considered.

- 9.4.14 The 2032 future year has been identified as it is the end of the current Local Plan period and a date by which it is reasonable to assume that the development approved by the LDO will have been delivered.

#### *Gravity Transport Assessment Methodology*

- 9.4.15 The Proposed Development has been assessed against the 2032 baseline scenario.
- 9.4.16 The TA provides further detail in respect of the trip generation assessment methodology with a summary of the assessment approach outlined here.
- 9.4.17 A bespoke scenario testing spreadsheet based multi-modal travel generation, distribution and assignment tool – summarised as a scenario testing and assignment tool – has been developed to enable multiple scenarios for Gravity to be evaluated at a high level in order to help define the most effective mitigate at source measures. A single ‘core scenario’ (Proposed Development) test reflecting the desirable outcome scenario (as is the objective with a Scenario Testing approach) has been used within this assessment to produce assigned traffic flows across the network for impact assessments. The key characteristics of this tool are as below (and set out in more detail in the TA):
- Main input variables are land use mix and scale, and employee density by land use (reflecting the description of development and associated Parameter Plans).
  - Peak hour and daily person trip generations are produced for each land use.
  - SDC Transport Model zoning system is used for trip distribution refined to reflect Gravity internal land uses.
  - A gravity function based model is used to assign the trips to and from all model zones and the Site. The gravity function is based on Census data and sensitivity tested with National Travel Survey data.
  - Journey time skims by mode are generated and applied to a logit model to output zone to zone mode share values. For walking and cycling, only zones within practicable walking and cycling distance were used. For public transport, only zones (or part zones) within a reasonable walk of public transport services were included.
  - Output matrices by mode are used to assign vehicle trips to the highway network.
  - A wide range of adjustable variables have been considered to enable the impact of multiple future scenarios to be tested and also to test the sensitivity of outputs to changes in individual variables. The main variables included:
    - Different propensities to cycle from current levels of cycling, using the Propensity to Cycle for England and Wales .

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<sup>2</sup> A38 Dunball roundabout was identified for improvement as part of the 2017 Planning Consent . An improvement scheme is identified in the 2017 Planning Consent Section 106 but it has not been delivered to date. However, SDC has identified the capacity of this junction as a constraint to development growth in Bridgwater and has committed to forward fund the delivery of the improvement scheme to unlock development. The approved scheme for Dunball is undergoing final technical review.

- Different levels (frequency) of public transport from existing services to dedicated minibus services for employees providing two-way travel between the Site and home.
  - Different levels of car sharing.
  - Different levels of home working.
  - Different levels of internalisation of trips between residential and employment and other internal land uses.
  - A range of costs applied to the gravity model to encourage modal shift to the public transport services proposed. These costs could be realised by Gravity in the form of subsidised public transport to encourage take up, or could be a direct cost to the employees, for example, in the form of daily parking charges or a combination of approaches.
  - Different working patterns including shift working.
- 9.4.18 The scenario testing and assignment tool was developed in consultation with the NH, SDC and SCC and comments were sought and addressed on development versions of the tool and incorporated during its development. The tool was agreed to be a robust tool for assessing the development.
- 9.4.19 The tool was calibrated against the extant 2017 Planning Consent land uses (excluding the safeguarded land) to support the results in terms of overall weekday peak hour trip generation and modal share such that they were comparable and realistic.
- 9.4.20 The trips generated by the Proposed Development were assigned to the highway network based on the quickest available route. This applies to walk, cycle, public transport and employee car trips.
- 9.4.21 Traffic was assigned to the wider network across the model area using a GIS assignment approach. This was undertaken based on an 'all or nothing' assignment of the quickest route from each individual zone to the Site for the employment uses and vice versa for the residential uses. Navtec Navman journey time route data, (from the SDC Sedgemoor Transport Model), were used to provide realistic journey times within the 'all or nothing' assignment.
- 9.4.22 Three scenarios were developed for testing as follows:
- HEP Scenario – the 2017 Planning Consent
  - Core Gravity Scenario – the planned sustainable transport strategy and mode share strategy built around a 3-shift working pattern in an advanced manufacturing facility (informed by the operation of similar UK sites).
  - Business as Usual / Fail Scenario- the proposed scheme using the HEP -based (2017 Planning Consent and more car-dependent mode share assumptions.
- 9.4.23 Whilst the TA includes additional analysis on these three alternative development scenarios, the assessment in this Chapter is based on the 'Core Gravity' scenario with the associated Proposed Development trip generation calculated for direct comparison with the 2032 baseline.
- 9.4.24 Since the LDO is a market facing flexible consent in terms of actual land uses implemented, Gravity has been assessed for a most likely outcome 'Core Gravity' scenario which reflects the land uses and operations as below:

- Gravity will provide up to 1,000,000 sqm of Advanced Manufacturing floorspace creating 6,098 jobs, 65,000 sqm of supporting employment uses and 35,000 sqm of supporting ancillary uses, creating another 1,402 jobs combined.
- The Site will operate on a 24/7 basis for 365 days per annum. A three-shift system for the advanced manufacturing will operate between 06:00-14:00, 14:00-22:00 and 22:00-06:00. The supporting ancillary uses are expected to operate around a similar basis to the three-shift advanced manufacturing activity on site.
- 90% of advanced manufacturing type jobs are assumed to work the three-shift system, with the remaining 10% assumed to work 09:00-17:00 hours.
- The advanced manufacturing is assumed, based on a first principles assessment which is set out in the TA, to generate circa 445,000 units output per annum, and HGV movements have been estimated on this basis.
- 750 residential units with an assumed split of 10% 1 bed, 20% 2 bed, 50% 3 bed and 20% 4 bed.
- Allowances have been made for trip internalisation on the basis that the Smart Campus will encourage cross visitation (supply chain) between land uses and therefore the Site will achieve a level of self-containment which in turn will minimise external trip making. These details are set out in the TA.

9.4.25 Scenario testing identified that a mode share of 65% car driver could be achieved in the 'Core Gravity' scenario by a range of different potential future transport outcomes. The scenario assumptions around a supporting transport strategy and transport mitigation measures are summarised below:

- a package of incentives to encourage cycling and enhanced infrastructure including the A38 corridor scheme and A39 route to Bridgwater Station.
- incentives for employees / residents to use public transport / and or cost on the employee for parking on site.
- Enhanced main A38 corridor bus services and bespoke, dedicated, Demand Response Transit (DRT) minibus / e-bus services for employees geared to align with shift patterns, funded by the Locality Investment Plan and overseen or commissioned by the transport authority or occupier.
- Incentivised car share system.
- Associated trip internalisation factors.
- Comprehensive package of transport planning measures and monitoring (as set out in more detail in the FTP) to achieve the core target modal share of 65% car driver.

9.4.26 Daily HGV generation for Gravity has been estimated using a first principles approach based on the likely manufacturing output of the development.

9.4.27 For the purposes of the EIA, it has been assumed (as a worst case in terms of traffic impact) that the potential passenger and / or freight rail facility may not be delivered. It is however expected that this facility will be in place and could lead to reductions in staff and freight traffic movements although such reductions are not accounted for in this assessment. The DCMS 5G project is considering the application of 5G technology to logistics movements and may have a role in freight management through implementation relating to the efficient operation of the highway network and the tracking of goods.



- 9.4.28 It should be noted that the construction impacts associated with the rail proposals have been included to represent a worst case construction impact assessment.

### Limitations

- 9.4.29 The road safety review undertaken covers the most recent 5 year period available, but in doing so, includes the period between March-December 2020 when the Government imposed a Covid-19 lockdown period and 'normal' travel patterns were disrupted.
- 9.4.30 Due to the limitations on movement implemented by the Government in response to the Covid-19 pandemic, it has not been possible to collect a full set of representative travel data at this time (i.e. between March 2020 and Spring 2021). Pre-COVID travel data originating from several data sources related to different years has been used to create a 2018 baseline scenario for the purposes of this assessment from which a 2032 future year baseline scenario has been derived.
- 9.4.31 SDC commissioned the development of an area wide transport model in August 2019. It was originally planned to use this SDC transport model for both the baseline and future year forecasts to assess the Gravity development impacts. This has not, however, been possible as it became evident that the model would not be available within the required timescales due to the data collection limitations described above. The model remains in development and unavailable for use. The same situation arose when considering the potential use of other traffic only models owned by NH and SCC, hence it has not been possible to use an area wide multi-modal transport model for the assessment.
- 9.4.32 Stantec has therefore used the 2018 baseline datasets as the basis for 2032 future year baseline forecasts based on the application of growth factors developed from the National Trip End Model and TEMPro dataset combined with specific site generation forecasts.
- 9.4.33 The assessment undertaken assumes that the provision of the Gravity Link Road will lead to some redistribution of local traffic flows in and around the village of Puriton. The redistribution assessment has been based on traffic using the most logical route post opening of the Gravity Link Road scheme.
- 9.4.34 The methodology used to inform this ES chapter provides a robust assessment of the likely effects of the Proposed Development on the environment surrounding the Site and is based on the approach set out in the ES Scoping Report and the November 2020 Transport Assessment Scoping Report.

## 9.5 Baseline Conditions

- 9.5.1 This section identifies the baseline conditions of the study area from a traffic and transport perspective, for both the 'Current State of the Environment' and '2032 Baseline' scenarios.

### Current State of the Environment

- 9.5.2 The Site benefits from an established access onto Woolavington Road in the form of Y-shaped twin priority junctions where the Eastern and Western Approach Roads link to form a single point of entry to the 37 Club and main site. A secondary vehicular access connects the Site with the B3139 to the east.
- 9.5.3 Several transport related elements of the Extant Consent in relation to access have been implemented as follows:
- New main site access roundabout on Woolavington Road.

- Gravity Link Road access directly from the Site access roundabout onto the A39 Puriton Hill to the south and the associated new roundabout / improvements to the A39 junctions with Hillside and Hall Road.
  - A new 'green bridge', connecting Puriton with the land to the south along a Public Right of Way (PROW).
- 9.5.4 Construction of the proposals listed above is ongoing and scheduled to be completed and opened in October 2021.
- 9.5.5 Whilst the principle function of the Gravity Link Road is to provide a strategic access to the Site, it will also provide additional local benefits including:
- The provision of access, highway and safety improvements at the existing junctions of Hall Road, Old Puriton Hill and Hillside.
  - Restriction of HGV traffic through Puriton and Woolavington villages.
  - Reduced through traffic movement in Puriton.
  - Facilitate public realm and complementary traffic management measures in Puriton and Woolavington villages, and Woolavington Road.
  - Improved connectivity, accessibility and general safety for pedestrians and cyclists and public transport users.
- 9.5.6 In addition, an improvement of Junction 23 of the M5 has been completed and enhanced beyond what was required for the 2017 Planning Consent.

#### **Local Facilities**

- 9.5.7 Within the vicinity of the villages of Puriton and Woolavington, there is Court Farm Butchers in Puriton, located on Riverton Road, which also provides grocery needs, and Co-op Food on Woolavington Hill, with shops providing day to day convenience goods for local residents. A post office is also located on Middle Street within the centre of Puriton. The nearest supermarkets to the villages are in Bridgwater, with Budgens situated adjacent to Bristol Road or Sainsburys accessed from The Clink.
- 9.5.8 The Woolavington Branch Surgery is located in Woolavington off Woolavington Road to the east of the current site access. Bridgwater Hospital is located on the north eastern edge of Bridgwater and has an Accident and Emergency centre. The nearest dental facility is 'myDentist' located on Symons Way, Bridgwater.
- 9.5.9 There are primary schools located in both Puriton and Woolavington. Puriton Primary School is accessed via Rowlands Rise, which contains wide footways on both sides of the carriageway. Woolavington Village Primary School is located on the southern side of Higher Road, has limited car parking facilities and is only served by footways to the east. The closest secondary schools are Chilton Trinity and Bridgwater College Academy, both of which are located within Bridgwater.
- 9.5.10 The National Cycle Network Route extends to the east of Woolavington and north of the Site to Highbridge and is accessible via Cossington Lane. Furthermore, Puriton Sports Centre and the 37 Sports and Social Club can be accessed via Batch Road and Woolavington Road respectively.

### *Walking and Cycling*

- 9.5.11 The Site lies within open countryside between the villages of Puriton and Woolavington. The semi-rural location is reflected in the current accessibility of the Site to local facilities and services within reasonable walk distance. Bridgwater provides the nearest settlement for access to higher order facilities and services.
- 9.5.12 The footway network reflects the rural character of both villages of Puriton and Woolavington. Footway provision sometimes lacks consistency with narrow or no footway in places, with one formal crossing point in each village. However, the Village Enhancement Schemes to be delivered as part of the 2017 Planning Consent (discussed below) will help to address some of these local connectivity issues within and between the two villages.
- 9.5.13 There are no formal cycle paths in the immediate vicinity of Puriton and Woolavington, however National Cycle Network Route (NCNR) 3 runs under A39 Bath Road adjacent to Woolavington Hill and later connects to NCNR 33, which runs to the east of Woolavington and beyond into Highbridge.
- 9.5.14 There is currently an absence of formal footways or cycleways adjacent to Woolavington Road, therefore access by these modes between the Site and the local villages of Puriton and Woolavington where there are some local facilities available could be improved. The proposed Village Enhancement Scheme addresses these local connectivity issues within and between the two villages.
- 9.5.15 There is a single public right of way (PROW) that crosses the Proposed Development: the Gravity Link Road crosses the alignment of public footpath BW 28/2 and this has been considered and appropriately incorporated into the associated Gravity Link Road designs with the provision of a new green bridge to retain this existing connection.
- 9.5.16 Additional PROWs that run adjacent to the Site and remain unaffected by the Proposed Development include public footpaths BW 37/2 and BW 28/4; public bridleway BW 28/1; and restricted byway 28/1/1.

### *Puriton*

- 9.5.17 Pedestrian footways are provided on at least one side of the carriageway for the length of Hall Road, which also includes a pedestrian crossing adjacent to the Village Hall bus stop prior to forming Riverton Road. Level and adequately surfaced footways then continue on at least one side of the carriageway through Puriton, with dropped kerbs and tactile paving at crossing points such as Rowlands Rise and the Butchers Shop.
- 9.5.18 Puriton Primary School is accessed via Rowlands Rise, which has wide and well surfaced footways on both sides. Between the Butchers Shop and Hillside the footway on the eastern side of the carriageway is narrow and there is no footway on its western side.
- 9.5.19 Hillside is served by footways on at least one side of the carriageway until Cypress Drive. However, during a short section of the AM peak it experiences high levels of on street parking linked to the Primary school drop off.
- 9.5.20 Woolavington Road, east of Hillside, is served by wide footways on at least one side of the carriageway with dropped kerbs and tactile paving at informal crossing points. The footways end to the east of Puriton Park.

### *Woolavington*

- 9.5.21 There is currently only one formal pedestrian crossing point on Woolavington Hill B3141 prior to the junction with Higher Road and Vicarage Road. However, there are several informal dropped kerb pedestrian crossing points, but these do not have tactile paving.

- 9.5.22 To the west of Lynham Close, there are no footways on either side of the road along Woolavington Road. To the east, there is a footway on the northern side of the carriageway until Chertsey Close, where a crossing with tactile paving is provided to the footway on the southern side of Higher Road, which continues to the junction with Woolavington Hill, except for a section in front of Woolavington Village Primary School. A crossing with tactile paving is provided by 'The Green' bus stops.
- 9.5.23 Along Woolavington Hill, south of the junction with Higher Road, there are footways provided on both sides of the carriageway. The footways continue until the southern junction with Old Mill Road where a footway is only provided on the eastern side of the carriageway, until the footway comes to an end at Cossington Lane.
- 9.5.24 Along the B3141, north of the junction with Higher Road footways are provided on at least one side of the carriageway for the majority of the route, except for a short section south of the junction with Church Street. The footways provided are narrow in parts along Lockswell with limited crossing points.

#### *Village Enhancement Scheme (VES) Overview*

- 9.5.25 The Section 106 Agreement for the 2017 Planning Consent includes the requirement to deliver a VES within and between the villages of Puriton and Woolavington as additional works to construction of the Gravity Link Road.
- 9.5.26 Following a public consultation event held in March 2020, a VES scheme has been developed and has achieved planning consent under planning reference 42/20/00022. Technical approval submissions are to be made prior to scheme delivery. The 2017 Planning Consent Section 106 states that the VES shall be completed within 12 months after completion of the Gravity Link Road or within 6 months of commencement of the VES if earlier (unless agreed otherwise).
- 9.5.27 A high-level overview of the VES proposals for Puriton and Woolavington has been set out below, and further details are set out in the TA.
- 9.5.28 The VES will provide safe and sustainable connections between the villages of Puriton and Woolavington. The VES includes traffic calming measures and a new off-road shared foot / cycleway path between the two villages whilst connecting to the Site and the 37 Club.
- 9.5.29 The VES aims to provide a safe and attractive route for walking, cycling and micro-mobility modes of transport, reduce traffic speeds via traffic calming measures, and improve highway safety within the villages of Puriton and Woolavington. The measures will also encourage drivers to use the Gravity Link Road as the preferred route into the Site for vehicular traffic and encourage pass-by traffic to use this new link as an alternative to routing through Puriton.

#### *Public Transport*

- 9.5.30 The data below relates to pre-Covid 19 travel restriction measures. Some bus services have reduced frequency during the pandemic, but it is expected that these will return to 2019 service levels in due course.
- 9.5.31 Bus stops through the centre of both villages are serviced by the 75 bus service from Wells to Bridgwater 7 times a day from 07:45 to 18:27. The 66 and X75 buses operate a singular daily service in each direction from Axbridge to Bridgwater College and Wells to Bridgwater College respectively, as shown in **Table 9-5**.
- 9.5.32 Recent on-site observations also identified that private school buses operated in the morning and afternoon peaks, servicing secondary schools outside of both Puriton and Woolavington.
- 9.5.33 Outside of the immediate vicinity of the Site, additional bus services are accessible from the A38 bus stops at Downend Road and Admirals Table, located approximately 2.5km and 2.8km

respectively from the Site. From these stops, buses 21, 21A and 62 are available. Service 21 and 21A operate between Taunton and Highbridge and are accessible every hour. Service 62 is a school service between Bridgwater College and Weston-super-Mare, which operates one service a day in each direction.

Bus	Service	Frequency
66	Axbridge – Bridgwater College	1 school service a day in each direction
75	Wells – Bridgwater (loop)	7 services per day
X75	Wells – Bridgwater College	1 school service a day in each direction

Table 9-5 Local Bus Services

- 9.5.34 A wider range of bus services are available from Bridgwater Bus Station, which is accessed off Watsons Lane in central Bridgwater. **Table 9-6** shows the services available from the Bridgwater Bus Station.

Operator	Service	Frequency
Megabus UK / National Express	Bridgwater – Bristol	44 services a day
Megabus UK / National Express	Bridgwater – Plymouth	27 services a day
Megabus UK / National Express	Bridgwater – Heathrow	16 services a day
National Express	Bridgwater – Birmingham	10 services a day
Megabus UK / National Express	Bridgwater – Barnstaple	8 services a day
National Express	Bridgwater – Taunton	6 services a day

Table 9-6 Bridgwater Bus Station Departures

- 9.5.35 The Sedgemoor area is also covered by the SLINKY demand responsive service, operated by Mendip Community Transport under contract to SCC. This service operates between 09.00 and 18.00 on Monday to Friday and carries any passenger with a transport need, be it through disability or no access to conventional public transport. The service is operated with one wheelchair accessible minibus.
- 9.5.36 The closest railway station to the Site is Bridgwater Station, located on the Taunton to Bristol mainline. The station itself is located in Bridgwater town centre on Wellington Road, approximately 7km from the Site. The station has recently been refurbished under the SDC Celebration Mile scheme and consists of a ticket office, car park for 36 cars operated by APCOA, cycle parking for 20 bikes, a taxi rank, collection points for pre-purchased tickets, toilets, CCTV and step free access to platform 1. The station provides hourly services to



Taunton and Bristol Temple Meads, with 2 services per hour between 0600-0800 and 1900-2100.

### **Highway Network**

- 9.5.37 The Site and both Puriton and Woolavington villages can be accessed via the A39 with Puriton on the eastern side of the M5 and Woolavington further to the east, with Woolavington Road connecting the two villages.
- 9.5.38 The A39 provides strategic connectivity to the M5 corridor providing access to Bristol within 45 minutes and other economic centres of Taunton and Exeter within approximately 15 minutes and 50 minutes respectively. M5 Junction 23 also provides easy access to the A38, which is part of the SCC Major Road Network, via the Dunball Roundabout. Junction 23 has been modified and upgraded to signal control through the mitigation agreed for the Hinkley C project to create additional capacity.
- 9.5.39 The village of Puriton is currently accessed from the A39 via Hall Road, Hillside (and previously Puriton Hill prior to construction of the Gravity Link Road). However, the Gravity Link Road will provide for a new roundabout access from the A39 joining with Puriton Hill, with Hillside forming a new junction onto the access road and stopped up at the former A39 junction. Hall Road will be limited to left turn in movements only from the A39. Hall Road leads on to Riverton Road, and then forms Woolavington Road at the junction with Middle Street and Rye. Woolavington Road aligns to the south forming a junction with Hillside and continues east to Woolavington approximately 2km from the centre of Puriton.
- 9.5.40 Woolavington Road provides the westerly access to Woolavington before forming Higher Road, which passes Woolavington Village Primary School. The centre point of the village is the crossroads between Higher Road / B3141 Causeway / Vicarage Road and Woolavington Hill. Causeway provides connections to East Huntspill and then Highbridge to the north.
- 9.5.41 Woolavington Hill provides the access to Woolavington from the south. Woolavington Hill forms junctions with Old Mill Road connecting to the residential area to the south west of the village. Woolavington Hill also connects to Cossington Lane, providing access to the small village of Cossington to the east and also continues south to the A39 Bath Road leading towards Street.
- 9.5.42 There are two existing traffic calming build outs on Woolavington Road; one located between the junctions with Old Mill Road, the other to the north of the junction with Combe Lane. The Gravity Link Road will connect the A39 directly to the Site via a new roundabout on Woolavington Road.

### **Personal Injury Collision Analysis**

- 9.5.43 Personal Injury Collision (PIC) data was obtained from SCC for a period of 5 years (01/01/2016-31/12/2020) for the local road network in the vicinity of the Site including Puriton and Woolavington, the main routes in / out of Bridgwater and the M5 Junction 23 roundabout circulatory. The Bridgwater element of the study area includes the A39 Puriton Hill, A39 Bath Road and A38 Bristol Road as well as the local road network providing access to various services and amenities in the town centre.
- 9.5.44 Data provided by the 'Crashmap' website has also been considered in relation to the Junction 23 slip roads. An overview of the findings is set out below for both the local and strategic road networks, and more detailed analysis is provided in the TA supporting the LDO.

### **Local Road Network**

- 9.5.45 A total of 208 collisions were identified within the study area, of which 187 resulted in slight injury, 20 in serious injury and 1 fatality. A breakdown of collisions by location is summarised in **Table 9-7** below.

	Puriton and Woolavington	Batch Road and Highbridge	Bridgwater Key Links	Total
Slight	16	18	153	187
Serious	2	1	17	20
Fatal	0	1	0	1
Total	18	20	170	208
Cumulative Total	208			

Table 9-7 Personal Injury Collision (PIC) Data Summary (Local Road Network)

- 9.5.46 Within Puriton and Woolavington, 18 collisions were recorded over the 5-year period. Of these collisions, two were classified as serious and the remaining 16 reported slight casualties. The majority of collisions involved motor vehicles; however one involved a pedestrian and two involved a cyclist, all of which were classified as slight. Overall, the data suggested that the collisions are likely to have been caused by driver error.
- 9.5.47 Within the Bridgwater study area, a total of 170 collisions were recorded between 1<sup>st</sup> January 2016 to 31<sup>st</sup> December 2020. Of these collisions, 17 were classified as serious and 153 were classified as slight. There were no fatalities over the five-year period. Of all 170 total collisions, 32 involved cyclists and 30 pedestrian casualties were recorded.
- 9.5.48 The analysis identified some collision cluster sites at the junctions linking Puriton to the A39 Puriton Hill, in addition to the existing A38 Dunball and Cross Rifles Roundabouts. Whilst most collisions are likely to have been caused by driver error, it is notable that the cluster sites identified are already planned for improvement in the future. The Gravity Link Road scheme includes improvements to the A39 junctions for accessing Puriton. The VES proposals will deliver localised highway safety improvements in Puriton and Woolavington. The A38 Dunball Roundabout has funding allocated for an upgrade as previously explained, and the Cross Rifles roundabout on the northern side of Bridgwater is also being considered for improvement by SDC and SCC.

### Strategic Road Network

- 9.5.49 Comparable data for the same time period as assessed for the Local Road Network demonstrates one collision cluster site which is located at the southbound off slip. The Crashmap data indicates that a total of 5 'slight' collision have occurred on the southbound off slip, all close to the entry to the Junction 23 roundabout circulatory.
- 9.5.50 All but 1 of the 5 'slight' collisions recorded appear to have occurred prior to the recent Junction 23 improvement scheme being completed. This suggests that the improvements made at the junction have served to improve road safety.

### 2018 Baseline Flows

- 9.5.51 2018 flows have been used to inform a baseline review of the Current State of the Environment due to the limitations collecting more recent data because of restrictions on movement implemented by the Government in response to the Covid-19 pandemic, as explained under assessment limitations.
- 9.5.52 **Table 9-8** shows the two-way 18-hour AAWT traffic flows for 'all vehicles' and HGVs for the 2018 baseline scenario.

9.5.53 Due to the imminent opening of the Gravity Link Road and to enable comparison with future scenarios, the 2018 baseline traffic data has been reviewed and localised reassignment of Woolavington Road traffic to use the Gravity Link Road (as opposed to routing toward the A39 via Puriton) has been derived.

Link Ref	Link Description	2018 Baseline Total Vehicles (Two Way)	2018 Baseline HGVs (Two Way)	2018 HGV Percentage Composition
Link 1	Link Road – Between Gravity Site and Entrance Roundabout	35	2	6%
Link 2	Gravity Link Road – Between Entrance Roundabout and Hillside	553	0	0%
Link 3	Gravity Link Road – Between Hillside and A39	1,805	14	1%
Link 4	Woolavington Road – Between Entrance Roundabout and Proposed Residential (Secondary) Access	2,501	111	4%
Link 5	Woolavington Road – Between Proposed Residential (Secondary) Access and Woolavington Primary School	2,800	100	4%
Link 6	Woolavington Road – Between Woolavington Primary School and B3141 / Woolavington Hill Crossroads	2,800	100	4%
Link 7	B3141 Causeway	3,648	102	3%
Link 8	B3141 Woolavington Hill	7,403	186	3%
Link 9	Woolavington Road – West of Entrance Roundabout (Puriton)	2,354	115	5%
Link 10	A39 – East of Puriton Hill Roundabout	14,348	676	5%
Link 11	A39 – Between Puriton Hill Roundabout and M5 Junction 23	16,008	1,157	7%
Link 12	M5 Motorway – Mainline North of Junction 23	82,849	9,316	11%
Link 13	M5 Motorway – Mainline South of Junction 23	72,103	7,519	10%
Link 14	A38 – Between Junction 23 and Dunball Roundabout	21,960	2,045	9%
Link 15	A38 – North of Dunball Roundabout	9,720	571	6%
Link 16	A38 – South of Dunball Roundabout	25,479	2,338	9%

Table 9-8 2018 Baseline 18-Hour AAWT Traffic Flows

## 2032 Baseline

- 9.5.54 A 2032 baseline scenario of forecast traffic flows has been created by applying generalised growth to the 2018 base traffic flows and taking account of a number of specific development proposals as considered in turn below. This approach ensures that future traffic growth associated with the committed developments are factored into the 2032 baseline, and therefore the assessment of likely significant cumulative effects with these developments is inherent to the assessment and is not reported separately.

### General Traffic Growth

- 9.5.55 As traffic levels could increase by 2032, the 2018 base traffic flows do not provide a robust baseline for the assessment of the Proposed Development. Therefore, the future baseline has accounted for traffic growth using TEMPro which has been based upon demographic changes and planned development forecasts in the Sedgemoor area.
- 9.5.56 Traffic growth factors for the weekday AM and PM peak hours have been derived for Sedgemoor using TEMPro. To avoid any double counting of traffic within the assessment, the default planning assumptions were adjusted to remove housing associated with four committed development sites explicitly assessed using respective TA vehicle trip generations. It was also necessary to ensure that the planning assumptions reflected the housing and jobs growth targets / trajectories set out in the SDC Adopted Local Plan. Jobs associated with the 2017 Planning Consent were not included in the Local Plan targets so no adjustment in this regard was required. All growth factors were however adjusted with the National Traffic Model database as is standard practice.
- 9.5.57 The 2018-2032 TEMPro growth factors used in the assessment for each road type are set out in **Table 9-9**.

Time Period / Road Type	Motorway	Principal	Minor
AM Peak	1.281	1.184	1.183
PM Peak	1.277	1.181	1.179

Table 9-9 2018-2032 TEMPro Growth Factors

### Extant Consent including the Gravity Link Road and VES

- 9.5.58 The vehicle trip generation assessment for the 2017 Planning Consent, as approved under application reference 42/13/00010, included the safeguarded land element<sup>3</sup> even though it did not form part of the application at the time.
- 9.5.59 This led to a robust assessment of potential trip generation, but since there is no certainty in the delivery of outcomes relating to land without consent (safeguarded for energy, leisure and rail restoration), the 2017 Planning Consent vehicle trip generation has been adjusted by removing the safeguarded land for inclusion within the 2032 Baseline within this assessment (see **Table 9-10**).

<sup>3</sup> Safeguarded land: 38.74 ha of energy generation uses, 11.22 ha of leisure / community uses and the rail head

	Trips In	Trips Out	Total Trips
Total Vehicles AM Peak	922	445	1,367
Total Vehicles PM Peak	350	836	1,186
Total Vehicles 18hr	5,460	5,495	10,955
Total Vehicles 24hr	5,602	5,596	11,198
Total HGVs AM Peak	62	80	142
Total HGVs PM Peak	39	30	69
Total HGVs 18hr	434	472	906
Total HGVs 24hr	445	481	926

Table 9-10 Adjusted Extant Consent Vehicle Trip Generation

9.5.60 The light vehicle trips generated by the 2017 Planning Consent have been distributed and assigned to the highway network based on demographic and travel time data using a spreadsheet based tool developed specifically for assessing the Proposed Development, which has been described previously, and is explained in more detail within the TA.

9.5.61 The HGV trips generated by the 2017 Planning Consent have been distributed and assigned in accordance with the following details which remain as agreed for the TA supporting the 2017 Planning Consent :

- 50% M5 North via Junction 23 towards Bristol
- 40% M5 South via Junction 23 including:
  - 10% to Junction 24 at Bridgwater
  - 10% to Junction 25 at Taunton
  - 20% towards Exeter
- 5% towards Hinkley Point via the A38 Bristol Road
- 5% towards Glastonbury via the A39



9.5.62 There is potential for some existing local road traffic around Puriton to be reassigned across the network with the Gravity Link Road delivered. In the absence of a strategic traffic model, the following approach has been adopted to account for this:

- Traffic into Hall Road: all left turn in traffic still uses Hall Road, but right turn in traffic adjusted to route via the A39 Gravity Link Road Roundabout and Puriton Hill.
- Traffic out of Hall Road: adjusted to all route via Puriton Hill and the A39 Gravity Link Road Roundabout.
- Traffic using the existing Puriton Hill: adjusted to all route via the new Puriton Hill and the A39 Gravity Link Road Roundabout.
- Traffic using Hillside: still route via Hillside but adjusted to join the Gravity Link Road to access A39.
- Traffic using the existing site access: adjusted to route via the new site access roundabout on Woolavington Road.

#### *Specific Committed Development Sites*

9.5.63 Four specific local committed development sites have been incorporated into the 2032 baseline. The Sites are:

- Land off Woolavington Road, Puriton – application reference 42/20/00014 – for up to 120 dwellings
- Land to the South of Sedgemoor Way, Woolavington – application reference 54/19/00008 – for up to 175 dwellings
- Land off Cossington Lane, Woolavington – application reference 54/19/00009 – for up to 145 dwellings
- Land off Woolavington Road, Woolavington – application reference 54/19/00010 – for up to 95 dwellings

9.5.64 The trip generation, distribution, and assignment for each of the committed development sites identified have been based on the details set out in the respective planning application TA's.

#### *Hinkley Point C*

9.5.65 The EDF website confirms that the final investment decision and the start of construction at Hinkley Point C took place in the second half of 2016<sup>4</sup>. Press statements from EDFE confirm that Hinkley Point C is anticipated to be completed around June 2026<sup>5</sup>, with the former position being 2025 in line with the energy white paper.

9.5.66 It is therefore necessary for the 2032 future baseline traffic flows to include movements generated by Hinkley Point C during the operational phase, but also to exclude all movements related to the construction phase which are inherently included within the 2018 baseline traffic flows used within this assessment.

<sup>4</sup> <https://www.edfenergy.com/energy/nuclear-new-build-projects/hinkley-point-c/about>

<sup>5</sup> <https://www.bbc.co.uk/news/uk-england-somerset-57227918#:~:text=Hinkley%20C%20is%20due%20to,%C2%A322bn%20and%20%C2%A323bn.&text=The%20new%20roles%20will%20bring,%C2%A322bn%20and%20%C2%A323bn.>

- 9.5.67 Hinkley Point C construction traffic at the time of the 2018 baseline traffic data was estimated through use of the data provided by NNB Generation Company (HPC) Ltd in regular monitoring reports including their quarterly report (April to June 2018) which provides data on freight, park and ride use and passenger numbers associated with the construction phase. Combining this with Stantec's knowledge of bus service routing, the Hinkley Point C construction traffic has been removed from 2018 traffic counts in the study area (prior to the application of generalised growth factors to create the 2032 future baseline as outlined above).
- 9.5.68 The likely weekday peak hour operational traffic impact associated with Hinkley Point C was assessed within the 2017 Planning Consent TA and the source data used at that time was supplied by SCC. For the purposes of this assessment, the same operational traffic movements assessed previously have been incorporated into the 2032 baseline for this assessment (see **Table 9-11**).

	M5 Mainline Motorway Links	A39 Road Links	A38 Road Links	Various Minor Road Links
Peak hour to 18-hour Factor	6.66 (M5 North) / 6.44 (M5 South)	5.17	4.92	Various factors ranging between 5.3 – 5.9

Table 9-11 Weekday Peak Hour to 18-hour AAWT Traffic Flow Factors

#### *Daily and 18 Hour 2032 Baseline Traffic Flow Generation*

- 9.5.69 In summary, 2032 Baseline weekday peak hour traffic flows have been derived by taking account of:
- 2018 base with general background traffic growth due to forecast changes to demographics and local development
  - Traffic reassignment arising due to the Gravity Link Road and associated local highway improvements
  - Vehicle trip generation associated with the 2017 Planning Consent
  - Committed development trip generations for 4 no local sites added
  - Hinkley Point C construction traffic (as included within 2018 base data) removed
  - Hinkley Point C peak operational traffic added
- 9.5.70 The resulting 2032 baseline weekday peak hour traffic flows have been assessed against traffic flow data sourced from available ATC surveys and Webtris traffic data. This enabled factors to be calculated to estimate 18-hour AAWT traffic flows from the peak hour traffic flows for each different road type within the study area. **Table 9-12** provides a summary of the different road type factors derived.

	M5 Mainline Motorway Links	A39 Road Links	A38 Road Links	Various Minor Road Links
Peak hour to 18-hour Factor	6.66 (M5 North) / 6.44 (M5 South)	5.17	4.92	Various factors ranging between 5.3 – 5.9

Table 9-12 Weekday Peak Hour to 18-hour AAWT Traffic Flow Factors

9.5.71 **Table 9-13** shows the resulting 18-hour AAWT two-way flows presented as ‘all traffic’ and HGVs on links within the study area.

Link Ref	Link Description	2032 Baseline Total Vehicles (Two Way)	2032 Baseline HGVs (Two Way)	2032 Baseline HGV Percentage Composition
Link 1	Link Road – Between Gravity Site and Entrance Roundabout	10,855	908	8.4%
Link 2	Link Road – Between Entrance Roundabout and Hillside	8,832	906	10.3%
Link 3	Link Road – Between Hillside and A39	10,313	923	8.9%
Link 4	Woolavington Road – Between Entrance Roundabout and Proposed Residential (Secondary) Access	4,937	131	2.6%
Link 5	Woolavington Road – Between Proposed Residential (Secondary) Access and Woolavington Primary School	5,290	119	2.2%
Link 6	Woolavington Road – Between Woolavington Primary School and B3141 / Woolavington Hill Crossroads	5,290	119	2.2%
Link 7	B3141 Causeway	5,147	120	2.3%
Link 8	B3141 Woolavington Hill	9,887	220	2.2%
Link 9	Woolavington Road – West of Entrance Roundabout (Puriton)	3,432	136	4.0%
Link 10	A39 – East of Puriton Hill Roundabout	17,504	845	4.8%
Link 11	A39 – Between Puriton Hill Roundabout and M5 Junction 23	26,567	2,230	8.4%
Link 12	M5 Motorway – Mainline North of Junction 23	110,668	12,373	11.2%
Link 13	M5 Motorway – Mainline South of Junction 23	95,164	9,983	10.5%
Link 14	A38 – Between Junction 23 and Dunball Roundabout	28,622	2,465	8.6%
Link 15	A38 – North of Dunball Roundabout	11,640	676	5.8%
Link 16	A38 – South of Dunball Roundabout	32,218	2,811	8.7%

Table 9-13 18-hour AAWT 2032 Baseline Two-way Traffic Flows

## 9.6 Embedded Mitigation

### Construction Phase

9.6.1 The construction traffic effects will be managed through a Framework Demolition and Construction and Environmental Management Plan (FDCEMP), including appropriate plans for the management of construction traffic, submitted with this ES and provided at **Appendix 4.1**.

- 9.6.2 The completion of the delivery of the Gravity Link Road and associated highway works and the VES scheme will help by providing a new direct link into the Proposed Development from the A39 Puriton Hill and M5 Junction 23 bypassing local villages.

### Operational Phase

- 9.6.3 The Proposed Development will create a low carbon smart campus generating between 4,000 and 7,500 new skilled jobs, providing both a strategic economic stimulus to drive economic renewal, shaping and connecting to a green supply chain across the UK. Home to international business, start-ups and SMEs, Gravity will be a home for Clean Growth and green industries, creating the space to innovate and create green solutions from energy solutions to smart mobility. Uses and job numbers will follow business occupier, therefore the plan, monitor and manage approach is going to be key in active management and mitigation planning.
- 9.6.4 The transport proposals put forward in support of development at Gravity aim at delivering a framework for access and movement that is deliverable and effective based on current technologies, but so that they are also resilient to changing travel patterns and systems. This inherent mitigation approach (effectively a mitigate at source approach) has been carried through to the forecasting approach.
- 9.6.5 The Transport Movement Strategic and Transport Movement Micromobility Parameter Plans in **Appendices 3.1b & c** are described in **Chapter 3** and illustrate the principal proposals to be delivered to support access and movement into and around the Proposed Development within the Site. As shown on the Parameter Plans, proposals allow for a degree of flexibility to enable detailed elements to respond to operator(s) requirements.
- 9.6.6 This includes potential secondary access locations as illustrated on the Transport Movement Strategic Parameter Plan, with up to four secondary access locations proposed from Woolavington Road to provide potential access to development plots incorporating new points of access to the south-west and south-east of the Site and re-use of the existing site Eastern and Western approach access junctions.
- 9.6.7 The general approach to access and movement focuses on the following themes.

### Reducing the Need to Travel

- Flexible or remote working practices and technological solutions including video conferencing and online collaboration will be available to employees where possible. Flexible working arrangements allow for the opportunity to travel a little earlier or later than normal to fit in with bus or train times or to avoid the busiest time on the road, saving both time and fuel.
- Job creation will create a legacy opportunity for labour transition from Hinkley Point C to avoid longer distance travel to find alternative work, for example at Sizewell.
- The campus will operate on a 24/7 basis, 365 days per annum.
- Up to 750 residential units are to be delivered that are intended to primarily serve as housing for employees at the Site.
- The campus will include work hubs which will help to further reduce the overall need to travel off the Site for some trip purposes.

### Reducing Travel Distances

- The creation of 7,500 new skilled jobs at Gravity should reduce the need for the local residents of Bridgwater and its surrounding areas to travel to larger settlements such as the cities of Bristol and Exeter for access to better skilled work opportunities.

#### *Improving Access and Choice for Pedestrian Movement*

- All streets are to have a minimum of a dedicated footway and safe pedestrian routes throughout the development to promote pedestrian movement.
- Pedestrian connections from Puriton and Woolavington are to be designed for inclusivity and permeability.
- Mobility on site will be impacted positively by adoption of the design principles around waste and resource management. This is because reducing waste will reduce service movements and through a co-ordinated management process throughout the development efficiencies will also be realised, reducing any conflict between servicing requirements and non-motorised user requirements.

#### *Improving Access and Choice for Cycle Movement*

- Provision of off-site cycle route improvements as part of the Gravity Link Road and the VES will facilitate and encourage trips to the Site by bike (also included in the baseline scenario).
- All streets to incorporate high quality cycling provision (segregated where possible) to facilitate and encourage trips by bike.
- Provision of accessible, safe, secure and sheltered cycle parking facilities at key destinations throughout the Site.
- Provision of cycle equipment storage, maintenance, changing and shower areas across the Site in appropriate areas.

#### *Introducing New and Innovative Micromobility Measures*

- Implementing micromobility solutions such as escooters for people and goods through the Site will reduce the need to use private cars and HGV / LGV movement.
- Mobility hubs will provide facilities including e-scooter/bike charging, parcel stores, e-car clubs, sheltered waiting areas, live travel data etc
- Provisions for the use of scooters and e-bikes will be built into the scheme from an early stage.

#### *Improving Local Bus / Public Transport Connectivity*

- External bus routes will be able to enter the Site via the new access road or existing connections on Woolavington Road.
- It is anticipated that as the Site develops, provision for new or higher frequency services including zero emission (and potentially autonomous) Demand Responsive Transport (DRT)<sup>6</sup> vehicles will be made as part of the mobility package.
- Streets have been developed as a flexible grid to allow for scalable mass mobility solutions within the Site.

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<sup>6</sup> DRT is a form of shared private or quasi-public transport for groups travelling where vehicles alter their routes each journey based on particular transport demand without using a fixed route or timetabled journeys. These vehicles typically pick-up and drop-off passengers in locations according to passengers needs and can include taxis, buses or other vehicles.

- In the early phases, an electric / alternative fuel bus loop will distribute people around the Site in an expedient manner.

#### *Reconnecting the historic rail link*

- Proposals to re-open the disused rail line connecting to the main Exeter-Bristol line could facilitate both passenger and rail freight services. These could potentially significantly reduce HGV movements to/from the Site as well as reduce trips by car, but such reductions have been excluded from the assessment on the basis as delivery remains subject to the confirmed requirements of the end site occupier.
- Should the rail proposals come forward and noting concerns raised by NR in their consultation response in relation to the existing local level crossing, it is proposed that improvements to the existing level crossing will be incorporated to upgrade the existing crossing despite minimal development impacts.
- It is also recognised that the rail proposals could require the replacement of the existing M5 rail bridge. Should this be required it would be subject to agreeing associated M5 traffic management measures and approvals.

#### *Parking Management Principles*

- Opportunities will be sought to develop consolidated parking hubs to make efficient use of land and integrate EV charging.
- On-plot parking is to be minimised and where utilised must be sensitively built into the development and must not be prominent from the street.
- The proposed Car Club on site will reduce the need to own a car and provide an option for car hire if essential for business trips, while EV charging points will be integrated into parking areas and / or bespoke commercial facilities.
- Designing in EV charging and smart infrastructure into design codes will ensure effective and seamless implementation

#### *Site Wide Management*

- A comprehensive approach to travel and mobility management will be implemented as part of the FTP at the development including modal share targets, measures to encourage travel by sustainable modes of transport, and a robust monitoring and review programme.
- A series of measures linked to site occupation and level/type of trips made will be introduced at certain phases including measures such as shift working patterns

#### *Mobility as a Service (Maas)*

- 9.6.8 MaaS is the term used to describe the integration of transport services into a single mobility service accessible on demand, which has the potential to accelerate a transition away from personally owned vehicles. An illustration of how a Gravity MaaS package could look is shown below.





- 9.6.9 The aim of these services is to provide an integrated end-to-end solution utilising a single platform for booking, payment and journey management. Services are designed to reduce dependence on private cars leading to greener journeys of the future by utilising the most efficient transport mode through a streamlined user experience.
- 9.6.10 The range of transport measures proposed will not all be available from day one of the development opening. There are many issues that will impact on the timing of measures becoming available including but not limited to things such as the availability of technology, demand for trips and distribution of staff, cost of equipment and operations, and the fact that different groups in society will respond to and take up new technology at differing rates. As such the route map to a mixed mobility future at the development will be both revolutionary and evolutionary.
- 9.6.11 It is therefore important that the Proposed Development is delivered in such a way that delivers sufficient flexibility and resilience so that it can adapt to the future of travel when such opportunities present themselves.

#### *Monitor and Manage Plan*

- 9.6.12 Fundamental to the success and effectiveness of the integrated mitigation measures is the requirement to set overall trip / movement targets by mode and to monitor against the effectiveness of the measures to ensure that the Proposed Development is on track to deliver against the identified targets. This will be achieved through the preparation and implementation of a monitor and manage plan.
- 9.6.13 A draft plan has been prepared (**Appendix 9.4**) as part of the governance arrangements for the delivery of the Gravity Enterprise Zone (EZ) through the LDO regime. The plan includes the monitor and manage approach which will be employed at Gravity to provide a strategic oversight of the implementation and delivery of the EZ and achieve desired outcomes and long lasting transformational benefits in the wider locality.
- 9.6.14 An overarching EZ Board will be formed, along with two sub groups, one of which will be a Transport and Infrastructure Management Group (TIMG).
- 9.6.15 The TIMG will be established to lead and co-ordinate transport and infrastructure related matters in respect of Gravity mobilisation and implementation. In particular, this will cover infrastructure delivery, and the monitoring and management of the transport effects of the

project. This will be achieved through oversight of the FTP, individual travel plans, and related construction traffic management plans.

- 9.6.16 Infrastructure may include for example, transport infrastructure including road, rail, public transport, walking and cycling, as well as EV charging, utilities e.g. grid strengthening; and digital as outlined within the Locality Investment Plan prepared as part of the governance and infrastructure delivery arrangements for the delivery of the Gravity EZ through the LDO regime.

- 9.6.17 The funding and delivery of mitigation and wider infrastructure investment measures will be multifaceted and may come from various sources and over various timescales. This may be via Government funds, NH direct activity, local authority led bids for Community Renewal and Levelling Up Funds and the Town Deal, which may have direct and indirect effects on the Gravity project.

- 9.6.18 Arrangements for implementation of the measures referred will be found variously in the design guide, the LDO itself and any s106 agreement connected to the LDO.

- 9.6.19 The Transport authority will be an integral member of the TIMG and will be responsible for commissioning and implementing schemes and mitigation measures to improve outcomes and reduce impacts, funded via the locality investment plan and retained business rates from the enterprise zone. The challenge will be for the local authority to commission and deliver schemes in a timely way to manage and reduce impacts.

- 9.6.20 As local government review proceeds and a new unitary is established in 2023 it is essential to build a team to ensure continuity and to maintain momentum in delivery. There will be no separation between the planning enforcement authority, previously a district function, and the highway authority, so a one team approach will ensure a seamless approach to monitoring and management and mitigation delivery.

- 9.6.21 This broad package of transport mitigation remains subject to further consultation with key stakeholders including SDC, SCC and NH officers. They may also include additional mitigation by way of appropriately scaled financial contributions including potentially through business rate retention toward delivery of off-site transport improvements including pedestrian and cycle improvements from the Site toward Bridgwater along the A38/A39 corridors and highway safety and/or capacity improvements where necessary.

- 9.6.22 The transport mitigation package is secured through the Compliance Form.

## **9.7 Assessment of Likely Effects**

### **Construction Phase**

- 9.7.1 The construction of the Proposed Development would generate traffic that would affect the local road network primarily through HGV movements bringing materials in/out of the Site and construction workforce journeys to/from work on site.
- 9.7.2 The implementation of the LDO will be market-led and therefore a construction programme is not available at this time. It is however anticipated that construction will be complete by 2032 and therefore there is the potential for construction effects to be long-term but not permanent.
- 9.7.3 An appraisal of the likely trip generation has been undertaken based upon the scale of development proposed and assumed delivery programme, and it is estimated that peak construction activity would be in 2024. The appraisal has been based on a 5 day working week.
- 9.7.4 To represent a worst-case assessment, additional HGV movements associated with constructing the rail improvements have been included whilst the assessment has also not

taken into account potential opportunities to reduce HGV movements with subsequent freight transfer from road based HGV to rail movements.

- 9.7.5 It is estimated that the peak construction period could generate approximately 425 HGV two-way movements per day (18-hour period); a comparable estimate to the 2017 Planning Consent is approximately 349 HGV two-way movements per day (18-hour period).
- 9.7.6 These HGV movements are expected to be distributed onto the local road network with 90% of the HGV movements via the M5 junction 23 (70% north / 20% south), 5% onto the A39 and 5% onto the A38 toward Bridgwater.
- 9.7.7 It is also estimated that there would be up to 1,714 two-way trips from construction works generated per day (18-hour period); a comparable estimate to the 2017 Planning Consent is approximately 1,125 two-way movements per day (18-hour period).
- 9.7.8 This has assumed that approximately 85% of these workers would drive to work (single occupancy) with the balance car sharing or using alternative modes of transport. These trips have been distributed onto the local road network consistent with assumptions for operational employees for the HEP trip forecasting.
- 9.7.9 These predicted construction traffic flows are lower than the fully operational development flows considered further within the following section of this chapter.
- 9.7.10 The construction effects will be limited in time to the construction period and the majority of HGV movements limited to the Gravity Link Road, the A39 Puriton Hill, M5 Junction 23 and mainline; all links with no sensitive receptors present.
- 9.7.11 As confirmed earlier in this Chapter, the construction effects will also be managed through embedded mitigation proposals and specifically the Framework DCEMP submitted with this ES and provided at **Appendix 4.1**.

### Operational Phase

- 9.7.1 **Table 9-14** below provides a summary of the assessment of operational effects by Gravity through a comparison against the 2032 Baseline scenario.

Link Ref	Link Description	2032 Baseline – Total Vehicles (Two Way)	2032 with Gravity – Total Vehicles (Two Way)	% Change	2032 Baseline – HGVs (Two Way)	2032 with Gravity – HGVs (Two Way)	% Change
Link 1	Link Road – Between Gravity Site and Entrance Roundabout	10,855	11,524	6.2%	908	673	8.4%
Link 2	Link Road – Between Entrance Roundabout and Hillside	8,832	9,919	12.3%	906	671	9.9%
Link 3	Link Road – Between Hillside and A39	10,313	11,401	10.5%	923	688	8.9%
Link 4	Woolavington Road – Between Entrance Roundabout and Proposed Residential (Secondary) Access	4,937	4,786	-3.1%	131	131	2.6%
Link 5	Woolavington Road – Between Proposed Residential (Secondary) Access and Woolavington Primary School	5,290	5,139	-2.8%	119	119	2.2%
Link 6	Woolavington Road – Between Woolavington Primary School and B3141 / Woolavington Hill Crossroads	5,290	5,139	-2.8%	119	119	2.2%
Link 7	B3141 Causeway	5,147	4,767	-7.4%	120	120	2.3%
Link 8	B3141 Woolavington Hill	9,887	10,117	2.3%	220	220	2.2%
Link 9	Woolavington Road – West of Entrance Roundabout (Puriton)	3,432	3,164	-7.8%	136	136	4.0%
Link 10	A39 – East of Puriton Hill Roundabout	17,504	17,485	-0.1%	845	833	4.8%
Link 11	A39 – Between Puriton Hill Roundabout and M5 Junction 23	26,567	27,674	4.2%	2,230	2,006	8.4%
Link 12	M5 Motorway – Mainline North of Junction 23	110,668	111,462	0.7%	12,373	12,390	11.2%
Link 13	M5 Motorway – Mainline South of Junction 23	95,164	95,313	0.2%	9,983	9,754	10.5%
Link 14	A38 – Between Junction 23 and Dunball Roundabout	28,622	28,785	0.6%	2,465	2,453	8.6%
Link 15	A38 – North of Dunball Roundabout	11,640	11,666	0.2%	676	676	5.8%
Link 16	A38 – South of Dunball Roundabout	32,218	32,355	0.4%	2,811	2,800	8.7%

Table 9-14 Assessment of Operation Effects - 18 Hour AAWT Flows

- 9.7.2 As set out in Section 9.4 of this chapter, ‘medium’ and ‘high’ sensitivity receptors are located on Link 5, accordingly with reference to paras 9.4.2 to 9.4.4 the IEMA “Guidelines for the Environmental Assessment of Road Traffic” Rule 2 applies with further assessment required only if 18-hour AAWT flow will increase as a result of the Proposed Development by 10% or more.
- 9.7.3 As confirmed above, the impacts are considerably less than 10% and accordingly the environmental effects of the development are not likely to be significant and are not subject to further assessment.
- 9.7.4 All remaining links within the Study Area are considered to be classed as ‘medium’ or ‘low’ in terms of receptor sensitivity, accordingly, Rule 1 applies with further assessment required only if 18-hour AAWT flows will increase by more than 30% (or the number of HGVs will increase by more than 30%).
- 9.7.5 Based on the results set out above, it is evident that none of the remaining links are forecast to change, either in total flow or HGV percentage terms, by 30% (rule 1). On this basis, the operational effects of the Proposed Development are not likely to be significant, and no further environmental assessment has been undertaken.

## **9.8 Further Mitigation**

- 9.8.1 No further mitigation is expected to be required over and above the embedded mitigation described within this Chapter.

## **9.9 Residual Effects**

- 9.9.1 The residual effects will be the same as the assessed effects on the basis that no further mitigation is required over and above the embedded mitigation described within this Chapter.

## **9.10 Monitoring**

- 9.10.1 The operational transport effects of the proposals will continue to be actively monitored and managed through the implementation of a site wide FTP and Monitor and Manage Plan and in accordance with the wider approach described within the Embedded Mitigation section earlier in this Chapter.

## **9.11 Non-Technical Summary**

- 9.11.1 The methodology used in this chapter has been developed to fulfil the requirements of the EIA Regulations informed by guidance set out within the following:
- “Guidelines for the Environmental Assessment of Road Traffic” (Guidance Note Number 1) published by the Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment (IEMA)) in 1993;
  - Volume 11 of the Design Manual for Roads and Bridges (DMRB) – Environmental Assessment (Highways England – now known as National Highways (NH)); and
  - Planning Practice Guidance (PPG) documents ‘Environmental Impact Assessment’ and ‘Travel Plans, Transport Assessments and Statements in Decision-Taking’ first published by the Ministry for Housing, Communities and Local Government (MHCLG) in 2014 as a live online resource.
- 9.11.2 This chapter has been prepared in the context of a detailed assessment undertaken and reported on within the TA which is submitted in support of the LDO. While the TA has been used as source material, it predominately identifies the compliance of the Proposed Development with national and local transport policy and establishes that a safe and

acceptable access will be provided. The TA quantifies the transport and highways impact of the Proposed Development, but the environmental impact of the road traffic it will generate requires an assessment against different criteria; therefore, the assessment has been undertaken against the criteria set out in the “Guidelines for the Environmental Assessment of Road Traffic” referred to above.

- 9.11.3 The TA, prepared alongside this chapter, has been prepared in accordance with a scope of work that has been discussed extensively and agreed in consultation with SDC, SCC and NH. The TA scoping process commenced in November 2020 and has continued through to the submission of the LDO. The scoping process has involved the preparation of a series of technical notes and reports, and the holding of regular LDO Transport Sub Group meetings (as a subsidiary group of the Gravity Delivery Group).
- 9.11.4 A review of further national and local policy documents relevant to transport has confirmed a requirement for the Proposed Development to be supported by a TA and FTP and for it to be supported by a transport strategy which seeks to: minimise the need to travel; prioritise access by walking, cycling, micro mobility and public transport; provide safe and suitable access for all users; and manage residual traffic impacts.
- 9.11.5 The assessment undertaken in this chapter considers the likely effects the Proposed Development would have on the environment within proximity of the Site at peak construction phase assumed in 2024, and in 2032 when the development approved by the LDO is likely to have been delivered. In doing so, the effects have been compared against a baseline scenario including part implementation of the extant 2017 Planning Consent (i.e., the Gravity Link Road, ecological enhancements and Site remediation completed).
- 9.11.6 The assessment considers that environmental effects relating to traffic and transport are likely where 18-hour AAWT flows are predicted to increase by more than 30% (or the number of HGVs will increase by more than 30% - Rule 1), or other specifically sensitive areas where traffic flows will increase by more than 10% as a result of the Proposed Development (Rule 2).
- 9.11.7 The main receptors of note identified within the adopted study area (on Link 5) included:
- Woolavington Village Primary School, Woolavington Road ('high' sensitivity)
  - Woolavington Branch Surgery, Woolavington Road ('medium' sensitivity)
- 9.11.8 A bespoke scenario testing spreadsheet based multi-modal travel generation, distribution and assignment tool was developed to enable multiple scenarios for Gravity to be evaluated at a high level in order to help define the most effective mitigate at source measures. A single Core Gravity Scenario' test reflecting the desirable outcome scenario (as is the objective with a Scenario Testing approach) has been used within this assessment to produce assigned traffic flows across the network for impact assessments.
- 9.11.9 The Core Gravity Scenario includes the planned sustainable transport strategy and mode share strategy built around a 3-shift working pattern in an advanced manufacturing facility (informed by the operation of similar UK sites). Since the LDO is a market facing flexible consent in terms of actual land uses implemented, the scenario reflects the land uses and operations as below:
- Gravity will provide up to 1,000,000 sqm of Advanced Manufacturing floorspace creating 6,098 jobs, 65,000 sqm of supporting employment uses and 35,000 sqm of supporting ancillary uses, creating another 1,402 jobs combined.
  - The Site will operate on a 24/7 basis for 365 days per annum. A three-shift system for the advanced manufacturing will operate between 06:00-14:00, 14:00-22:00 and 22:00-06:00. The supporting ancillary uses are expected to operate around a similar basis to the three-shift advanced manufacturing activity on site.



- 90% of advanced manufacturing type jobs are assumed to work the three-shift system, with the remaining 10% assumed to work 09:00-17:00 hours.
- The advanced manufacturing is assumed, based on a first principles assessment which is set out in the TA, to generate circa 445,000 units output per annum, and HGV movements have been estimated on this basis.
- 750 residential units with an assumed split of 10% 1 bed, 20% 2 bed, 50% 3 bed and 20% 4 bed.
- Allowances have been made for trip internalisation on the basis that the Smart Campus will encourage cross visitation (supply chain) between land uses and therefore the Site will achieve a level of self-containment which in turn will minimise external trip making.

9.11.10 Scenario testing identified that a mode share of 65% car driver could be achieved in the 'Core Gravity' scenario by a range of different potential future transport outcomes. The scenario assumptions around a supporting transport strategy and transport mitigation measures are summarised below and include:

- a package of incentives to encourage cycling and enhanced infrastructure including the A38 corridor scheme and A39 route to Bridgwater Station.
- incentives for employees / residents to use public transport / and or cost on the employee for parking on site.
- Enhanced main A38 corridor bus services and bespoke, dedicated, Demand Response Transit (DRT) minibus / e-bus services for employees geared to align with shift patterns, funded by the Locality Investment Plan and overseen or commissioned by the transport authority or occupier.
- Incentivised car share system.
- Associated trip internalisation factors.
- Comprehensive package of transport planning measures and monitoring (as set out in more detail in the FTP) to achieve the core target modal share of 65% car driver.

9.11.11 It is predicted that peak construction traffic flows will be lower than the fully operational development flows. The construction effects will be limited in time to the construction period and the majority of HGV movements limited to the Gravity Link Road, the A39 Puriton Hill, M5 Junction 23 and mainline; all links with no sensitive receptors present. The construction effects will also be managed through embedded mitigation proposals and specifically the Framework DCEMP submitted with this ES at [Appendix 4.1](#).

9.11.12 In terms of the operational phase of Gravity, it is predicted that after taking into consideration embedded mitigation for the scheme, the operational effects of the Proposed Development are not likely to be significant, and therefore no further environmental assessment has been undertaken in accordance with the IEMA 'Guidelines for the Environmental Assessment of Road Traffic' (Guidance Note No. 1) document and Volume 11 of the DMRB.

9.11.13 No further mitigation is expected to be required over and above the embedded mitigation described within this Chapter. Therefore, the residual effects will be the same as the assessed effects on the basis that no further mitigation is required over and above the embedded mitigation.

9.11.14 The operational transport effects of the proposals will continue to be actively monitored and managed through the implementation of a site wide FTP and Monitor and Manage Plan and in accordance with the wider approach described within the Embedded Mitigation section earlier in this Chapter.

## 9.12 Referencing

9.12.1 A list of references to material used in this chapter is provided below.

- IEMA, 1993, Guidelines for the Environmental Assessment of Road Traffic (Guidance Note Number 1). Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment (IEMA)).
- Highways England, Volume 11 of the Design Manual for Roads and Bridges (DMRB) – Environmental Assessment (Highways England).
- MHCLG, 2014, Planning Practice Guidance (PPG) 'Environmental Impact Assessment' and 'Travel Plans, Transport Assessments and Statements in Decision-Taking'. Ministry for Housing, Communities and Local Government.
- MHCLG, 2021, National Planning Policy Framework (NPPF). Ministry for Housing, Communities and Local Government.

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