



Heidelberg Materials

TYTHERINGTON QUARRY: 6 MILLION TONNES ADDITIONAL RESERVES

Environmental Statement: Chapter 11 Traffic and
Transport





Heidelberg Materials

TYTHERINGTON QUARRY: 6 MILLION TONNES ADDITIONAL RESERVES

Environmental Statement: Chapter 11 Traffic and Transport

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 62282762

OUR REF. NO. 6MT ES / CHAPTER 11 TRAFFIC AND TRANSPORT

DATE: MAY 2024

WSP

Canon Court West

Abbey Lawn

Shrewsbury

SY2 5DE

Phone: +44 1743 342 000

WSP.com

CONTENTS

11	TRAFFIC AND TRANSPORT	1
11.1	INTRODUCTION	1
11.2	LIMITATIONS AND ASSUMPTIONS	1
11.3	POLICY AND LEGISLATIVE CONTEXT	2
11.4	DATA GATHERING METHODOLOGY	5
11.5	OVERALL BASELINE	5
11.6	CONSULTATION	9
11.7	ENVIRONMENTAL MEASURES INCOPORATED INTO THE PROPOSED SCHEME	11
11.8	SCOPE OF THE ASSESSMENT	11
11.9	ASSESSMENT METHODOLOGY	15
11.10	ASSESSMENT OF EFFECTS	18
11.11	ASSESSMENT OF CUMULATIVE EFFECTS	19
11.12	ASSESSMENT OF IN-COMBINATION CLIMATE IMPACTS	19
11.13	MITIGATION AND ENHANCEMENT MEASURES	20
11.14	CONCLUSIONS OF SIGNIFICANCE EVALUATION	20
11.15	IMPLEMENTATION OF ENVIRONMENTAL MEASURES	20
11.16	REFERENCES	20

TABLES

Table 11-1 - Planning policy relevant to the Traffic and Transport assessment	2
Table 11-2 — Technical guidance relevant to the Traffic and Transport assessment	4
Table 11-3 – Distribution of HGVs and resultant movements	7
Table 11-4 – Baseline Traffic Flow (Count Data)	7
Table 11-5 – Personal Injury Accident Data	8

Table 11-6 - 2024 Baseline AADF	9
Table 11-7 - Summary of issues raised during consultation regarding Traffic and Transport	10
Table 11-8 - Summary of the embedded environmental measures and how they influence the Traffic and Transport assessment	11
Table 11-9 - Fear and intimidation degree of hazard	13
Table 11-10 - Level of Fear and Intimidation	14
Table 11-11 - Classification of Receptor Sensitivity	16
Table 11-12 - Magnitude of Change	17
Table 11-13 - Significance evaluation matrix	18
Table 11-14 – 2024 base traffic with Proposed Scheme Traffic	19
Table 11-15 - In-Combination Climate Change Impacts (ICCI) related to Traffic and Transport	19

11 TRAFFIC AND TRANSPORT

11.1 INTRODUCTION

- 11.1.1 This ES chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Scheme upon Traffic and Transport. This chapter is intended to be read as part of the wider ES with particular reference to **Chapter 3: Description of Proposed Scheme**.

11.2 LIMITATIONS AND ASSUMPTIONS

- 11.2.1 With the Proposed Scheme, there will be no changes to the extant consented vehicle and train movements. Staff and visitors will continue to access and park at the quarry as per existing arrangements and there will be no change to the current operating hours.
- 11.2.2 The Scoping Report (WSP 2023) sought to scope out Traffic and Transport on the basis that the Proposed Scheme does not seek to increase output rates from Tytherington Quarry from that which already exists. The Proposed Scheme seeks to access an extra 3 years' worth of reserves (i.e. 6mt), which will be realised within the approved existing timeframes of 2042.
- 11.2.3 Using the latest Institute of Environmental Management and Assessment (IEMA) guidance, Environmental Assessment of Traffic and Movement (EATM)¹, determination of receptors requiring detailed assessment of likely significant Traffic and Transport effects would be based upon the proportional increase in traffic levels, due to the Proposed Scheme, on roads within the Traffic and Transport study area. As the Proposed Scheme does not seek to increase the peak traffic generation it will be in line with the conditions of the extant planning permissions.
- 11.2.4 Additionally, the Scoping Report identified that recent accident data does not indicate any accident hotspots in the vicinity of the quarry access (Tytherington Road between the quarry access and the A38) between 2017 and 2021 (the latest published data at the time of the scoping chapter production). Based on the guidance within EATM (relating to the likely presence of vulnerable groups, level of footway provision and adjacent land uses) this section of Tytherington Road does not have any associated Traffic and Transport receptors that are highly sensitive to Traffic and Transport effects.
- 11.2.5 The Scoping Report identified that no detailed assessment of Traffic and Transport effects was proposed in the EIA and proposed that Traffic and Transport was scoped out of the EIA.
- 11.2.6 A response to the Scoping Report received from National Highways (NH) noted the following:
"...the M5 J14 currently operates under constraint during network peak hours and is sensitive to additional vehicle movements. Whilst noting that the extent permission NA/IDO/002/A does not appear to restrict vehicle movements, the Highways Agency will expect the application to be

¹ Institute of Environmental Managements and Assessment (2023). Guidelines: Environmental Assessment of Traffic and Movement.

supported by evidence to demonstrate that the proposals will not result in an increase over and above existing vehicle movements.”

- 11.2.7 The NH response included a list of general aspects to be addressed. The transport consultant for the Applicant has contacted the National Highways officer to request a meeting to discuss the traffic aspects of the Proposed Scheme, however a response was not received.
- 11.2.8 In response to the NH considerations, SGC has identified that Traffic and Transport should be scoped into the EIA.
- 11.2.9 It is noted that SCG as the local highway authority has not made comments on the Scoping Report.

11.3 POLICY AND LEGISLATIVE CONTEXT

- 11.3.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to Traffic and Transport. Further information on policies relevant to the Proposed Scheme is provided in **Chapter 5: Planning policy overview** as well as the accompanying Planning Statement.

LEGISLATIVE FRAMEWORK

- 11.3.2 The following legislation is relevant to the assessment of the effects on potential Traffic and Transport receptors:
 - Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
- 11.3.3 There are no relevant legislative documents that have been directly referred to in the preparation of this chapter.

PLANNING POLICY

- 11.3.4 A summary of the relevant national and local planning policy is given in **Table 11-1**. The Planning Statement will cover the detail of actual policies.

Table 11-1 - Planning policy relevant to the Traffic and Transport assessment

Policy	Policy context
National planning policy:	
National Planning Policy Framework 2023 (NPPF) Section 9. Promoting sustainable transport	National policy issues relating to traffic and transport for all modes of travel, including abnormal loads and conveyance of freight and construction materials.
Local planning policy:	
Gloucestershire County Council Minerals Local Plan for Gloucestershire (adopted March 2020) Policy DM03 Transport Part A Sustainable Transport	Mineral development proposals that minimise the miles travelled by minerals and demonstrate how road-based transport will also be kept to a minimum will be permitted. Wherever possible alternative and more sustainable, modes of non-road transport must be used along with fuel efficient and / or low, ultra-low or zero greenhouse gas emitting haulage vehicles.
Gloucestershire County Council Minerals Local Plan for	Mineral development proposals will only be permitted where public safety is not adversely affected and it can be demonstrated: -

Policy	Policy context
Gloucestershire (adopted March 2020) Policy DM03 Transport Part B Highway Network	• unacceptable impacts on the capacity and function of the strategic and local highway networks will be avoided or satisfactorily mitigated; and • any unavoidable adverse impacts on the capacity and function of the strategic and local highway networks will not be severe.
Gloucestershire County Council Minerals Local Plan for Gloucestershire (adopted March 2020) Policy DM03 Transport Part C Public Rights of Way network and open access land	Mineral development proposals will only be permitted where it can be demonstrated: - ■ public rights of way routes and / or open access land will be retained and their safe use maintained, and unacceptable adverse impacts will be avoided or satisfactorily mitigated; and / or ■ the temporary or permanent diversion of public rights of way routes and / or the temporary restriction or permanent exclusion of access to open access land is justified and that such changes will not affect public safety and cause unacceptable impacts on the integrity and enjoyment of the wider public rights of way network and / or open access land in the locality; and / or ■ the formal closure of public right of way routes represents a very exceptional circumstance where replacement routes are no longer required and that unacceptable impacts on the wider public rights of way network will be avoided. Mineral development proposals affecting National Trails will be permitted only where unacceptable adverse impacts are avoided or satisfactory mitigated.
South Gloucestershire Local Plan Core Strategy 2006 – 2027; Policy CS8 – Improving Accessibility	Priority will be given to providing the users of new development with a range of travel options other than the private car. The following principles will be applied in the consideration of planning applications and formulation of other Local Development Documents: 1. Accessibility. New development proposals which generate significant demand for travel will be more favourably considered the nearer they are located to existing and proposed public transport infrastructure and existing facilities and services. 2. Off-site mitigation. All new development proposals of a sufficient scale will be required to contribute financially or in kind to the schemes set out in Policy CS7 and the Infrastructure Delivery Plan, as appropriate, and other physical off-site local transport improvements as may be necessary to make the scheme acceptable 3. Provision and Promotion of sustainable travel options. All new development proposals of a sufficient scale will be encouraged to reduce greenhouse gas emissions, travel demand and support travel by means other than the private car, particularly to significant destinations such as educational establishments,

Policy	Policy context
	hospitals, rail stations, bus interchanges and employment areas. This will be achieved through: - the provision of, and integration of walking, cycling and public transport infrastructure into the local network - providing mixed use developments in appropriate locations - the active promotion of a Green Travel Plan approved by the Council - the provision of shower and changing facilities for use by staff in commercial and business premises - contributions to bus services, and other initiatives such as commuter and car clubs and community transport projects, as appropriate; and - access to high speed broadband and installation of electrical sockets, storage and sufficient space in dwellings such that allows homeworking - provision of facilities for charging plug-in or other ultra low emission vehicles. The Council will expect early implementation of sustainable travel infrastructure and initiatives in the construction and occupation of major schemes. 4. Parking and vehicular access for new development. Car parking and vehicular site access should be well integrated and situated so it supports the street scene and does not compromise walking, cycling, public transport infrastructure and highway safety. All new development proposals will also be required to provide safe & secure cycle parking facilities in accordance with the Council's standards.

11.3.5 In addition, this Chapter has been prepared in accordance with the Government's National Planning Practice Guidance (2020).

TECHNICAL GUIDANCE

11.3.6 A summary of the technical guidance for Traffic and Transport is given in **Table 11-2**.

Table 11-2 — Technical guidance relevant to the Traffic and Transport assessment

Technical guidance document	Context
Environmental Assessment of Traffic and Movement (EATM) (IEMA, 2023) ¹ .	Provides the framework for assessment of road traffic on the environment

Technical guidance document	Context
Department for Transport (DfT, 2022) Circular: Strategic Road Network and the Delivery of Sustainable Development ²	Sets out the ways in which National Highways will engage with communities, public bodies and developers to deliver sustainable development to encourage economic growth and protect the environment whilst safeguarding the primary function and purpose of the Strategic Road Network.

11.4 DATA GATHERING METHODOLOGY

STUDY AREA

- 11.4.1 The Site is accessed from Tytherington Road approximately 400m east of its junction with the A38. The A38 is a strategic route on the local road network managed by the local highway authority, SGC. The Site is approximately 5.3km to the southwest of M5 J14, and approximately 7.4km to the northeast of M5 J16. The M5 is part of the Strategic Road Network (SRN) managed by NH.

DESK STUDY

- 11.4.2 The sources of information used for the desk study are listed below.
- Online mapping;
 - CrashMap Pro³ for Personal Injury Accident (PIA) data;
 - Google Traffic for information on traffic conditions on the road network;
 - Google Street View for information on the transport network; and
 - Depart for Transport (DfT) road traffic statistics⁴ - for traffic count data.

SURVEY WORK

- 11.4.3 No additional survey work has been undertaken.

11.5 OVERALL BASELINE

CURRENT BASELINE

- 11.5.1 The current baseline of transport routes used to transport materials to and from Tytherington Quarry comprise: Tytherington Road, the A38, the M5 and the Thornbury Branch Line. These are described as follows:
- Tytherington Road (from which there is vehicular access to the Site) – This is a two-way single lane carriageway which is rural in character and connects the village of Tytherington to the east

² DfT (2022). Strategic Road Network and the Delivery of Sustainable Development (Online). Available at: <https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development> [accessed March 2024]

³ Crashmap Pro (2024) Department for Transport data published by www.crashmap.co.uk

⁴ DfT (2024) Road traffic statistics <https://roadtraffic.dft.gov.uk/#14/51.6390/-2.5026/basemap-countpoints>

and the A38 to the west. The road passes under the M5 to the east of Site. In the vicinity of the Site access, there is a footway on the southern side of the carriageway and verge on the northern side and the road is subject to the National Speed Limit. West of the Site access, Tytherington Road is subject to a 40mph speed limit. All HGV traffic to/from Tytherington Quarry routes via the A38.

- A38 – a strategic route on the local road network which runs parallel to the M5 providing connection to the M5 at Junction 15 (M4) to the south and Junction 14 (Falfield / Wooton under the edge) to the north. The A38 junction with Tytherington Road is a three-arm signal junction and the speed limit is 40mph along this section.
- M5 – part of the SRN which routes between the Midlands and the South West.
- The Thornbury Branch Line – a dedicated freight rail line with sidings within Tytherington Quarry. The route is a 12km branch of the Midland Railway and runs from Yate to Thornbury (Grovesend Overbridge). Its rail link means that Tytherington Quarry is only one of a handful of quarries across England that has the capacity to supply wider UK markets.

11.5.2 The current operations at Tytherington Quarry relating to traffic and transport are summarised as follows⁵:

- Hours of operation in terms of traffic movements:
 - For aggregates – 06.00-15.45 Monday-Friday and 07.00-13.00 Saturday.
 - For asphalt HGVs – no limit.
- An average of 38,600 aggregate loads HGVs per annum leave the Site which equates to 77,200 two-way movements. Based on the hours of operation, there is an average of 270 daily aggregate load HGV movements (assuming 5.5 days of operation per week, 52 weeks per annum) and an average of 27 HGVs over a 10 hour operational period.
- Imported volumes to the asphalt plant comprise approximately 3,000 HGVs per annum which equates to 6,000 two-way movements. Based on the hours of operation, there is an average of 16 daily asphalt load HGV movements (assuming 365 days of operation), and an average 1 over a 24 hour operational period.
- Distribution by road is mainly to the following destinations:
 - Gloucester via the A38;
 - Cheltenham via the A38 or the A38 and the M5; and
 - North Bristol via the A38.
- 670 train movements per annum to either Appleford, West Drayton, or Quainton Road. Rail comprises over 60% of aggregate sales.

11.5.3 In terms of HGV road transport, the distribution of HGVs and resultant movements are presented in **Table 11-3** below, assuming an equal distribution between the north and south.

⁵ Using information provided by Heidelberg Materials (February 2024).

Table 11-3 – Distribution of HGVs and resultant movements

Route	Distribution	Daily traffic flow (HGVs)	Hourly traffic flow (HGVs)
Tytherington Road	100%	286 HGVs	28
A38 (Northbound)	50%	143	14
• A38 (NB)	- 25%	- 72	- 7
• M5 (J14)	- 25%	- 72	- 7
A38 (Southbound)	50%	143	14

11.5.4 This shows that the existing average hourly flows distributed on the road network are low.

Baseline Traffic Data

- 11.5.5 The assessment of likely significant effects requires a comparison to be made between the likely environmental conditions in the presence of the Proposed Scheme and baseline situation.
- 11.5.6 Baseline traffic flow data has been established using publicly available traffic counts published by the DfT⁴. These counts detail the Annual Average Daily Traffic (AADT) (24-hour), and the proportion of HGVs and other types of vehicles, at locations on each road within the Traffic and Transport study area. It is noted that the existing quarry traffic is included within this baseline traffic flow.
- 11.5.7 A summary of relevant baseline data is presented in **Table 11-4**; for each traffic count point the data from the most recent manual/automatic traffic count has been presented. Where the most recent manual/automatic count occurred during a year where data would be effected by the UK Covid-19 pandemic and associated travel restrictions, the most recent manual/automatic count pre the Covid pandemic has also been provided.

Table 11-4 – Baseline Traffic Flow (Count Data)

Count ID, (Location)	Year of count	Total Vehicles	HGVs
26402 – A38 approximately 3.5km from Site access to south	2021	19,077	645
	2017	21,387	551
46406 – A38 approximately 1.5km from the Site access to the north	2016	6,768	212

Source: Department for Transport

Personal Injury Accident Data

- 11.5.8 Records of personal injury accidents (PIAs) have been obtained from the CrashMap database (<https://www.crashmap.co.uk>) which uses information collected from the Police. This data is approved by the National Statistics Authority and reported on by the Department for Transport (DfT) each year.

- 11.5.9 Records have been obtained over a five-year period between 2018 and 2022, the most recent verified five year period of published data.
- 11.5.10 The impact of casualties differs according to the severity of the injuries sustained. Three groups are usually differentiated as follows:
- Fatal: any death that occurs within 30 days from causes arising out of an accident;
 - Serious: casualties who require hospital treatment and have lasting injuries, but who do not die within 30 days of an accident; and
 - Slight: where casualties have injuries that do not require hospital treatment, or, if they do, the effects of the injuries quickly subside.
- 11.5.11 The accident data for road is summarised in **Table 11-5**.

Table 11-5 – Personal Injury Accident Data

Direction/Junction /Link	Approximate Road Section Length (km)	Slight	Serious	Fatal	Total	Average Accident Rate Per Annum	Accidents with Vulnerable Road User Casualties	Average No. Accidents per km
Tytherington Road (between Stowell Hill Road and the A38)	1.26	1	1	0	2	0.4	1 x cyclist (slight) 1 x cyclist (serious)	1.6
A38 (between Old Gloucester Road [near Alveston] and Tytherington Road)	1.82	1	1	1	3	0.6	-	1.6
A38 (between Tytherington Road and Old Gloucester Road [near Thornbury])	1.75	1	0	0	1	0.2	-	0.6
A38/Old Gloucester Road [near Thornbury] junction	n/a	0	2	0	2	0.4	2 x pedestrian (serious)	n/a

- 11.5.12 In total within the accident study area eight accidents were recorded between 2018 and 2022, including one fatal and four serious accidents. Four accidents involved vulnerable road user casualties (50% of all accidents) with three resulting in serious injuries. The fatality involved an HGV hitting a lamppost head on.
- 11.5.13 An average annual accident rate of one is considered significant for further assessment for a road section or junction or hotspot.
- 11.5.14 **Table 11-5** shows that none of the road sections or the Tytherington Road and Old Gloucester Road [near Thornbury] have an average annual accident rate greater than one. The presence of a fatality

and the relatively high proportion of vulnerable road user casualties would require further detailed assessment should the links/junctions (receptors) they are present on require detailed assessment of Traffic and Transport effects (as outlined in **Section 11.9**).

PREDICTED FUTURE BASELINE

- 11.5.15 The proposal is to vary planning conditions from extant permissions to allow an amendment to the extraction limits and approved working scheme at Tytherington Quarry. Permitted extraction techniques and output rates would remain unchanged as would the traffic movements and access arrangements.

Traffic Data

- 11.5.16 Background traffic growth will occur on the local road network irrespective of the Proposed Scheme. As there will be no change to current peak levels of traffic generated by the quarry, any increase in background traffic flows would mean that the Proposed Scheme traffic would constitute a lower proportion of total traffic.
- 11.5.17 To generate the baseline 2024 AADF TEMPro Version 8.1 'Core' Scenario has been used to derive growth factors. For robustness the 2017 count has been used for the A38 south of the Site to remove any potential impact of the Covid-19 Pandemic reduction in traffic due to UK travel restrictions. The derived growth rates for total vehicles are as follows based on the Average Day in the geographic area South Gloucestershire:
- 2017 – 2024: 1.0450
 - 2016 – 2024: 1.0517
- 11.5.18 The total vehicle growth factors were applied to the respective traffic count to produce the 2024 baseline traffic AADF summarised in **Table 11-6**. The proportion of HGVs was assumed to be the same as in the base traffic count data and was applied proportionally to the total vehicle AADF.

Table 11-6 - 2024 Baseline AADF

Location (data count point ID)	Total Vehicles	HGVs
A38 approximately 3.5km from Site access to south (26402)	22,349	576
A38 approximately 1.5km from the Site access to the north (46406)	7,118	223

11.6 CONSULTATION

- 11.6.1 The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Section 2.4 of Chapter 2: Approach to Environment Impact Assessment**.

SCOPING

- 11.6.2 A Scoping Opinion was issued by SGC on 18 January 2024. A summary of the relevant response received in the Scoping Opinion in relation to Traffic and Transport and confirmation of how these have been addressed within the assessment to date is presented in **Table 11-7**.

Table 11-7 - Summary of issues raised during consultation regarding Traffic and Transport

Issue raised	Consultee	Response and how considered in this chapter	Section Ref
Sensitivity of J14 M5 and need for transport assessment if proposals impact the junction	National Highways	Scoping response provided by SCG. The chapter states the proposal will not result in increased traffic generation or an extension in time to the extant permission and therefore there will be no change to the existing traffic conditions as a result of the Proposed Scheme.	Section 11.10 and Paragraph 11.2.1

11.7 ENVIRONMENTAL MEASURES INCOPORATED INTO THE PROPOSED SCHEME

- 11.7.1 A range of environmental measures have been embedded into the Proposed Scheme as outlined in **Chapter 3 (Section 3.5)**. **Table 11-8** outlines how these embedded measures will influence the Traffic and Transport assessment.

Table 11-8 - Summary of the embedded environmental measures and how they influence the Traffic and Transport assessment

Receptor	Change and effects	Embedded measure and influence on assessment
Users of the local road network	No change to existing	Wheel washing of HGVs if needed, for road safety reasons.
Users and occupants of local road network	No change to existing	Appropriate routeing of HGVs – via A38 and not through Tytherington.

11.8 SCOPE OF THE ASSESSMENT

- 11.8.1 This chapter considers the potential effects of changes in road traffic movements on receptors, i.e. the users of this road network (pedestrians, cyclists, equestrians, and drivers) and those living close to it.
- 11.8.2 As detailed in **Chapter 3**, the proposal is to vary planning conditions from extant permissions to allow an amendment to the extraction limits and approved working scheme at Tytherington Quarry. Permitted extraction techniques and output rates would remain unchanged as would the traffic movements and access arrangements. As the Proposed Scheme does not seek to increase the peak traffic generation it will be in line with the conditions of the extant principal planning permission NA/IDO/002/A.

SPATIAL SCOPE

- 11.8.3 The spatial scope of the assessment of Traffic and Transport covers the area of the Proposed Scheme contained within the red line boundary, together with the Zones of Influence (Zols) that have formed the basis of the study area described in **Section 11.4** A study area is based on the roads used to transport aggregate and asphalt to and from the quarry which in this case comprises Tytherington Road and the A38, and the M5. For the assessment, the study area comprises the A38 for which there is traffic flow data available.

TEMPORAL SCOPE

- 11.8.4 The temporal scope of the assessment of Traffic and Transport is consistent with the period over which the Proposed Scheme would be carried out and therefore covers the period the quarry would be in operation if granted permission to extract the additional 6mt of mineral reserves albeit within the consented timescales to 2042 for Tytherington Quarry. For the assessment, the current year, 2024, has been assumed.

POTENTIAL RECEPTORS

11.8.5 Transport receptors are the users or beneficiaries of the highways network assets and facilities such as pedestrians, cyclists, equestrians, and drivers who travel within the vicinity of the Proposed Scheme. EATM identifies the following key user groups: Non-Motorised Users (NMU), Public Right of Way (PRoW) users, motorists/freight vehicles, public transport and emergency services. It further identifies sensitive locations/users that following groups that may be affected:

- *'People at home;*
- *People at work;*
- *Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors);*
- *Locations with concentrations of vulnerable users (e.g., hospitals, places of worship, schools);*
- *Retail areas;*
- *Recreational areas;*
- *Tourist attractions ;*
- *Collision clusters and routes with road safety concerns ; and*
- *Junctions and highway links at (or over) capacity'.*

11.8.6 EATM details that the identified sensitive receptors should be assigned to the nearest highway link for assessment, with each highway link then assigned a sensitivity value.

POTENTIALLY SIGNIFICANT EFFECTS

Effects scoped-in to the assessment

11.8.7 The likely significant Traffic and Transport effects on receptors, due to additional road traffic on local routes generated by the Proposed Scheme, that have been taken forward for assessment in the ES are outlined below.

Severance

11.8.8 The separation of people from places and other people/places or impeding pedestrian access to essential facilities, resulting from changes to any physical infrastructure barriers, road width, traffic flow, traffic composition, traffic speed, crossing facilities and likely crossing movements.

Driver delay:

11.8.9 Traffic delays to non-development traffic. Delay might be found more commonly at site entrances, where parked cars may share road space, at key intersections along a route and at side roads where the ability to find gaps in traffic may be reduced.

Non-motorised user delay

11.8.10 The impact on the ability of people to cross roads resulting from changes in: traffic volume, composition and speed; the level of pedestrian activity; visibility and the general physical conditions of the Proposed Scheme.

Non-motorised user amenity

11.8.11 The effect on the relative pleasantness of a pedestrian journey resulting from changes in traffic flow and composition and separation from traffic (including pavement width).

Fear and intimidation:

11.8.12 Fear and intimidation experienced by receptor groups. EATM outlines that:

‘The extent of fear and intimidation is dependent on:

- *The total volume of traffic;*
- *The heavy vehicle composition;*
- *The speed these vehicles are passing; and*
- *The proximity of traffic to people – and/or the feeling of the inherent lack of protection created by factors such as a narrow pavement median, a narrow path or a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles.’*

11.8.13 EATM, also, notes that special consideration should be given to areas where there are likely to be:

- high-speed sections of road;
- locations of turning points and accesses;
- narrow pavement median, narrow footway and/or constraints such as fences;
- area frequented with road users unfamiliar with the location such as tourist spots; and
- areas frequented vulnerable groups.

11.8.14 There are no commonly agreed thresholds by which to determine fear and intimidation from known traffic and physical conditions. EATM sets out thresholds for assessment of fear and intimidation which firstly instructs that assessment should be defined by the degree of hazards to pedestrians by average traffic flow over an 18-hour heavy vehicle flow and average speed over an 18-hour day in miles per hour. **Table 11-9** provides EATM’s example of a degree of hazard scoring system that can be adapted to reflect local conditions.

Table 11-9 - Fear and intimidation degree of hazard

Average traffic flow 18-hour day - all vehicles/hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speed (c)	Degree of Hazard score
+1800	+3000	->40	30
1200-1800	2000-3000	30-40	20
600-1200	1000-2000	20-30	10
<600	<1000	<20	0

Source: EATM Table 3.1

11.8.15 Secondly the total score from all three degree of hazard elements is combined to provide a ‘level’ of fear and intimidation which can be used to identify significant changes to the level of perceived fear and intimidation. **Table 11-10** provides EATM’s example.

Table 11-10 - Level of Fear and Intimidation

Level of Fear and Intimidation	Total hazard score (a)+(b)+(c)
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

Source: EATM Table 3.2

Road user and pedestrian safety:

- 11.8.16 Any impact on the risk of accidents occurring. This is informed by a review of existing collision patterns and trends based upon the existing personal injury collision records (particularly to identify collision clusters) and the forecast increase in traffic and informed by any road safety concerns.
- 11.8.17 The EATM guidance suggest that, in addition to collision analysis, that the 'Safe System' approach should be adopted. The approach is broadly as follows:
- *'Identify the study area using historic crash data.*
 - *Undertake evidence-led, objective modelling techniques to establish a baseline road safety level for the roads within the study area on which the impact thresholds are exceeded in relation to either non-motorised users or motorised user traffic. This analysis can be carried out using tools such as the iRAP Star Ratings protocols or similar tools produced by individual highways authorities.*
 - *Assess the effects of additional development traffic for all users (including vulnerable groups), across the whole width of the highway corridor. This model should also assess the effect of any changes to the baseline road network, such as the provision of access junctions.'*

Hazardous/large loads:

- 11.8.18 The impact of transportation of hazardous or abnormal loads relating to the nature of the load and number of trips.

Other

- 11.8.19 The IEMA Guidance also refers to additional linked assessments: air quality, visual effects, noise, vibration, biodiversity, cultural heritage and climate. The submitted ES contains assessment of these aspects in **Chapters 6 (Landscape and Visual), 8 (Vibration), 10 (Biodiversity), 11 (Noise), 13 (Climate Change resilience and 14 (Climate Change GHG)**. IT should be noted that Air Quality and Historic Environment effects have been scoped out of this EIA.

Effects scoped-out of the assessment

- 11.8.20 The following potential effects have been scoped out of further assessment because the potential effects are not considered to be significant.

- Hazardous loads – No hazardous loads are anticipated given the nature of the Proposed Scheme and are therefore not considered further within this chapter.

11.9 ASSESSMENT METHODOLOGY

- 11.9.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 4**, and specifically in **Sections 4.5 to 4.7**. However, whilst this has informed the approach that has been used in this Traffic and Transport assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this Traffic and Transport assessment.

METHODOLOGY FOR PREDICTION OF EFFECTS

General approach

- 11.9.2 EATM provides two rules that are used to establish whether an environmental assessment of traffic effects should be carried out on receptors:
- **‘Rule 1:** *Include highway links where traffic flows will increase by more than 30% (or where the number of heavy goods vehicles will increase by more than 30%)*
 - **Rule 2:** *Include highway links of high sensitivity where traffic flows have increased by 10% or more.’*
- 11.9.3 It should be noted that, according to EATM, predicted traffic flow increases below 10% are generally not considered to be significant as daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flows below this level are, therefore, assumed not to result in significant environmental effects and will not be assessed. Consideration will, also, be given to the duration of the impact within the assessment.

Receptor Sensitivity

- 11.9.4 As set out in EATM, the impact of development traffic is dependent upon a wide range of factors which include the volume of traffic, traffic speeds and traffic composition (such as percentage of HGVs of total traffic). Additionally, EATM states that the perception of changes in traffic varies according to factors such as:
- *‘Existing traffic levels*
 - *The location of traffic movements*
 - *The time of day*
 - *Temporal and seasonal variation of traffic*
 - *Design and layout of the road and pavement*
 - *Crossing points*
 - *Landscape/townscape character, designated status, land use activities adjacent to the route*
 - *Ambient conditions of adjacent land-uses’*
- 11.9.5 Each highway link included in the assessment will be assigned a sensitivity in accordance with EATM and informed by professional judgement based on factors including the proximity of sensitive receptors to the highway link and the highway environment.
- 11.9.6 **Table 11-11** summarises the rationale used to determine the sensitivity of receptors.

Table 11-11 - Classification of Receptor Sensitivity

Sensitivity	Rationale/Description
High	Highway links with sensitive receptors alongside them such as schools, colleges, playgrounds, accident cluster areas, retirement homes. Urban/residential roads without footways that are used by high volumes pedestrians and cyclists where footway provision is poor.
Medium	Highway links with congested junctions/highway links and/or medium sensitivity land uses adjacent to them such as places of worship, doctors' surgeries, hospitals, retail with highway frontage, tourist attractions, community centres, parks and recreation facilities. Roads with narrow footways or unsegregated cycleways.
Low	Highway links with adjacent land-uses such as public open space, nature conservation areas, listed buildings and residential areas with adequate footway provision and limited pedestrian/cycle users.
Negligible	Highway links with receptors sufficiently distant from affected roads and junctions and no/very limited numbers of pedestrians/cyclists.

- 11.9.7 Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.
- 11.9.8 Sensitivity judged as 'High' or 'Medium' results in Rule 2 (sensitive areas where traffic flows are predicted to increase by 10% or more) being considered for that link. Sensitivity judged as 'Low' or 'Negligible' results in Rule 1 being considered for that link where traffic flows are predicted to increase by more than 30% or where the number of HGVs is predicted to increase by more than 30%.

Magnitude of Change

- 11.9.9 The magnitude of impact will be determined in accordance with the advice provided in EATM and based on professional judgement.
- 11.9.10 **Table 11-12** sets out the impact (high, medium, low or negligible, of potential significant effects of transport set out in **Paragraphs 11.8.8 to 11.8.18**, on receptors.

Table 11-12 - Magnitude of Change

Transport effect	Magnitude of change			
	High	Medium	Low	Negligible
Severance	Change in total traffic/HGV flows			
	over 91%.	61-90%.	31-60%.	less than 30%.
	Context to be considered including population and facilities impacts. EATM states caution should be applied with applying these thresholds to highway links with low baseline flows. EATM outlines that when assessing severance, the assessor should consider any physical infrastructure barriers, road width, traffic flow, traffic composition, traffic speed, crossing facilities and likely crossing movements (e.g. defining facilities to which access may be impaired and the potential total users and user groups) along with considering the impact on vulnerable groups			
Driver delay	High increase in queuing at junctions and/or congestion on road links.	Medium increase in queuing at junctions and/or congestion on road links.	Low increase in queuing at junctions and/or congestion on road links.	Low/no increase in queuing at junctions and/or congestion on road links.
	EATM states that 'delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.' The capacity of a road or a particular junction can be determined by establishing the ratio of flow to capacity (RFC).			
Non-Motorised users amenity	A halving or doubling of traffic flow (or HGV flow) can be used as a broad threshold when considered in the local context and applied with caution. Assignment based on a variety of factors including general level of pedestrian activity, visibility, and physical conditions such as traffic flow, traffic composition, crossing points and pavement width/separation from traffic. EATM, also, advises consideration of factors included in the Transport for London's Healthy Streets Indicators.			
Non-motorised user delay	Generally, increases in traffic may lead to greater delay, though is dependent on the level of non-motorised users' activity in the area. Assessed based on pedestrian delay experienced when crossing highways links considering a range of factors including crossing type, pedestrian flows, traffic levels, visibility and general highway condition.			
Fear and Intimidation	Assigned based on the levels scoring systems provided in EATM (which is dependent on 18hr average traffic flow; 18hr average HGV traffic flow and vehicle speed) extreme 71+; great (41-70); moderate (21-40) and small (0-20).			
	Two step change in level score of fear and intimidation.	One step change in level score of fear and intimidation and >400 average 18hr vehicle increase or >500 HGV 18hr vehicle increase.	One step change in level score of fear and intimidation and <400 average 18hr vehicle increase or <500 HGV 18hr vehicle increase.	No change to step in level score of fear and intimidation.
Road safety	Assignment informed by a review of existing collision patterns and trends based upon the existing personal injury accident records and the forecast increase in traffic that may change the risk of serious and fatal injuries.			

SIGNIFICANCE EVALUATION METHODOLOGY

11.9.11 The significance level attributed to each effect has been assessed based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the Proposed Scheme, as well as a number of other factors that are outlined in more detail in **Chapter 5: Approach to EIA**. The sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible, and the magnitude of change is assessed on a scale of large, medium, small, negligible and no change, as set out in **Chapter 5: Approach to EIA**.

Effect Significance

11.9.12 The classification significance of a likely Traffic and Transport effect is derived by considering the sensitivity of the receptor (**Table 11-11**) and the magnitude of change (**Table 11-12**) as defined in **Table 11-13**. The shading indicates those significance ratings that are deemed to be 'significant' effects.

Table 11-13 - Significance evaluation matrix

		Magnitude of change			
Receptor sensitivity		High	Medium	Low	Negligible
	High	Major (Significant)	Major (Significant)	Moderate (Significant)	Negligible (Not significant)
	Medium	Major (Significant)	Moderate (Significant)	Minor (Not significant)	Negligible (Not significant)
	Low	Moderate (Significant)	Minor (Not significant)	Minor (Not significant)	Negligible (Not significant)
	Negligible	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)

11.9.13 Major and Moderate effects are considered to be significant in EIA terms, whilst Minor and Negligible effects are considered not significant.

11.10 ASSESSMENT OF EFFECTS

11.10.1 **Table 11-14** shows that there will be no change to baseline traffic as a result of the Proposed Scheme.

Table 11-14 – 2024 base traffic with Proposed Scheme Traffic

Highway link	EATM screening rule	Base Traffic		Base Traffic + Proposed Scheme		% change	
		Total	HGVs	Total	HGVs	Total	HGVs
A38 South of Tytherington Road	Rule 2	22,349	576	22,349	576	0	0
A38 North of Tytherington Road	Rule 1	7,118	223	7,118	223	0	0

11.10.2 There is no change to the AADF due to the Proposed Scheme as the peak traffic movements associated with the Site are not anticipated to change as a result of the Proposed Scheme.

11.10.3 There are no links that trigger an assessment of environmental Traffic and Transport effects.

11.11 ASSESSMENT OF CUMULATIVE EFFECTS

11.11.1 As identified within **Section 11.5**, it is noted that the existing quarry traffic is included within recent AADF baseline traffic flow. Therefore, as the peak number of vehicle movements is not anticipated to change with the Proposed Scheme any cumulative developments would already include assessment of the quarry traffic within their assessment. Additionally, the Proposed Scheme does not increase the peak number of vehicles associated with the Site from the peak number currently associated with existing operations.

11.12 ASSESSMENT OF IN-COMBINATION CLIMATE IMPACTS

11.12.1 The In-combination Climate Change Impacts (ICCI) assessment considers the extent to which climate change exacerbates or ameliorates the potential effects identified for Traffic and Transport.

11.12.2 The ICCI assessment presented has been informed by the future baseline presented within **Chapter 13: Climate Resilience**. The ICCI uses the topic specific assessment methodologies and professional judgement to assess likelihood and magnitude of the impacts, with the combined consideration of future climate trends and impacts.

Table 11-15 - In-Combination Climate Change Impacts (ICCI) related to Traffic and Transport

EIA topic	Climate Hazard	Potential impacts of Climate Change	Mitigation
Chapter 11: Traffic and Transport	- extreme temperature events; and - high winds.	Temperature events could impact on transport links (via deformation of roads and rail links) and high winds may result in greater transfer of dust/debris onto the local road network.	As set out in Table 11-8 wheel washing is an embedded mitigation measure to minimise dust transference onto the local road network.

EIA topic	Climate Hazard	Potential impacts of Climate Change	Mitigation
		The climate hazards are unlikely to have significant impact on the assessment of the Traffic and Transport effects set out within Section 0 . Additional transfer of dust may have an impact on road user amenity and road safety but there is embedded mitigation relating to these effects.	Mitigation relating to transport links and extreme temperatures are covered within Chapter 13 Climate Change – Climate Resilience .

11.13 MITIGATION AND ENHANCEMENT MEASURES

11.13.1 There is no change in traffic as a result of the Proposed Scheme, therefore there is no requirement for mitigation or enhancement measures above and beyond what is already in place for existing operations.

11.14 CONCLUSIONS OF SIGNIFICANCE EVALUATION

11.14.1 There is no change in traffic therefore there are no environmental effects to assess significance.

11.15 IMPLEMENTATION OF ENVIRONMENTAL MEASURES

11.15.1 There is no change in traffic therefore there are no environmental measures above and beyond what is already in place for existing operations.

11.16 REFERENCES

- Crashmap Pro (2024). Department for Transport data published by www.crashmap.co.uk (Online). Available at: www.crashmap.co.uk [accessed March 2024]
- DfT (2024). Road traffic statistics (Online). Available at: <https://roadtraffic.dft.gov.uk/#14/51.6390/-2.5026/basemap-countpoints> [accessed March 2024]
- DfT (2022). Strategic Road Network and the Delivery of Sustainable Development (Online). Available at: <https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development> [accessed March 2024].
- Institute of Environmental Managements and Assessment (2023). Guidelines: Environmental Assessment of Traffic and Movement.



Canon Court West
Abbey Lawn
Shrewsbury
SY2 5DE

wsp.com

PUBLIC