HS2

Phase 2b (Crewe – Manchester) – Traffic and Transport

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Expert Engineering Witness for the Promoter

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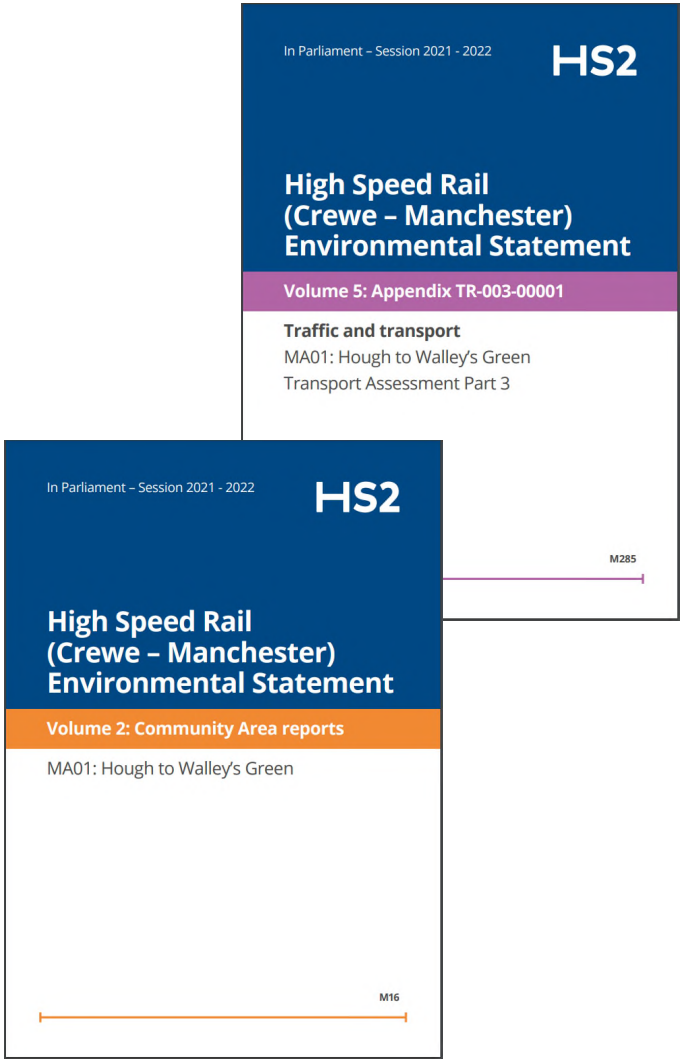
Outline of Presentation

- Introduction
- Traffic and Transport Management During Construction
- Approach to and scope of Traffic and Transport assessment
- Approach to traffic modelling
- Overview of Traffic and transport standard exhibits
- Mitigation of impacts/significant effects (physical and operational measures)
- Engagement with highway authorities

Introduction

- The Transport Assessment (Volume 5) forms part of the Environmental Statement. It identifies traffic and transport impacts during both construction and operation of the Proposed Scheme.
- The Environmental Statement (Volume 2) reports any residual significant effects on traffic and transport.
- The Traffic and Transport information presented in the ES Volume 2 and Volume 5 are informed by traffic data drawn from a combination of strategic and local traffic models that cover the areas that are considered within the ES.
- This traffic data informs assessments on air quality, noise, community, health and equality.



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Traffic and Transport During Construction

Construction traffic effects may arise as a result of:

- Heavy goods vehicles (HGVs) over 3.5 tonnes gross weight, light goods vehicles up to 3.5 tonnes gross weight, and workforce traffic generated by the construction of HS2.

- Diversion of background traffic caused by:
  - Temporary or permanent road closures, diversions or realignments required as part of the HS2 works
  - The presence of HS2 construction traffic

- Impacts on users of Public Rights of Way (PRoW) and roadside footways due to temporary or permanent closures, diversions or realignments required as part of the HS2 works.

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Approach to Traffic and Transport Assessment

HS2 have used a series of strategic traffic models, originally developed by highway and transport authorities, to assess the performance of the road network along the route of the Proposed Scheme. These models represent typical weekday morning and evening network peak hours. The steps in the modelling process are:

Existing Situation

Traffic models representing current road network conditions. These models are based on and validated with observed traffic counts and journey time data.

Future situation without HS2

Development of traffic models representing likely conditions in 2030 if HS2 was not built. These models include allowances for traffic changes associated with planned development and highway infrastructure schemes.

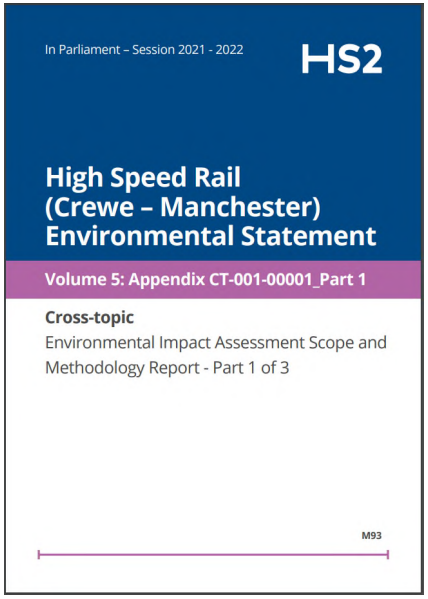
HS2-related traffic forecasts

Calculation of peak traffic volumes that are forecast to be generated by HS2 during construction and operation periods.

Future situation with HS2

Development of models representing likely conditions in a future assessment years during construction and operation of HS2, based on the future situation without HS2 models and adding HS2-related traffic and HS2 road network changes (e.g. road closures and diversions). These models identify any resultant diversion of traffic in response to the Proposed Scheme.

Scope of Assessment



- The assessment considers a range of traffic and transport effects, including:
  - Public transport delay and station disruption
  - Traffic-related severance
  - Traffic congestion and delays
  - Vulnerable road user severance, delay, amenity and ambience
  - Accidents and safety
  - Parking and loading

- The assessment focuses on the effects during the weekday morning (08:00 – 09:00) and weekday evening (17:00 –18:00) network peak hours for roads, junctions and traffic flows – although consideration is also given to effects that may occur outside of these time periods.

- In consultation with relevant highway authorities, including National Highways, a combination of strategic traffic models and local junction models have been used to assess changes to traffic-related severance, and traffic congestion and delays.

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Reasonable Worst-case Assessment

- The assessment is based on a number of precautionary assumptions which results in a reasonable worst-case:
  - The assessment is based upon the peak levels of construction traffic on each section of road. For most of the construction period, the actual number of construction trips will be lower than the peak month.
  - In rural and suburban areas, nearly all of the workforce is assumed to travel to/from the construction compounds by private car/van; however, more of those workers may well use public transport (where available), works buses or other modes of transport, while others will stay in on-site accommodation at the construction compounds.
  - 50% of the workforce is assumed to arrive between 08:00 – 09:00 and depart between 17:00 – 18:00, overlapping with construction traffic and local traffic peaks; in practice, the majority of the workforce is likely to arrive/depart outside these network peak hours.

Overview of Traffic and Transport Standard Exhibits

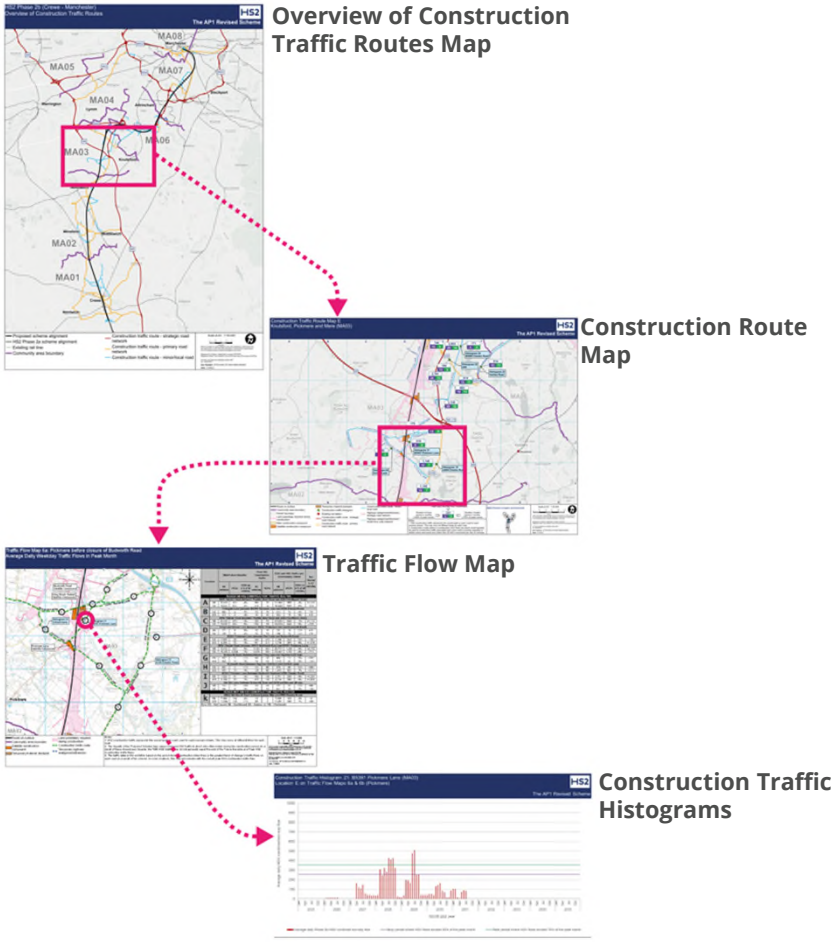
The Standard Exhibits provide detailed information for the section of the scheme in the following areas:

- MA01: Hough to Walley's Green
- MA02: Wimboldsley to Lostock Gralam
- MA03: Pickmere to Agden and Hulseheath
- Off-Route Works: Annandale

Traffic and Transport Standard Exhibits

The standard Traffic and Transport exhibits comprise:

- **Overview of Construction Traffic Routes Map** – provides an overview of all roads that will be used by HS2 construction traffic.
- **Construction route maps** – show the peak daily two-way construction HGV traffic flows and duration of use of those construction traffic routes.
- **Traffic flow maps** – present both background and HS2 traffic flows at key locations on the road network during construction of the Proposed Scheme on a typical weekday in the peak month in each location.
- **Construction traffic histograms** – illustrate the average weekday volume of construction traffic using a particular stretch of road during each month in the construction period.



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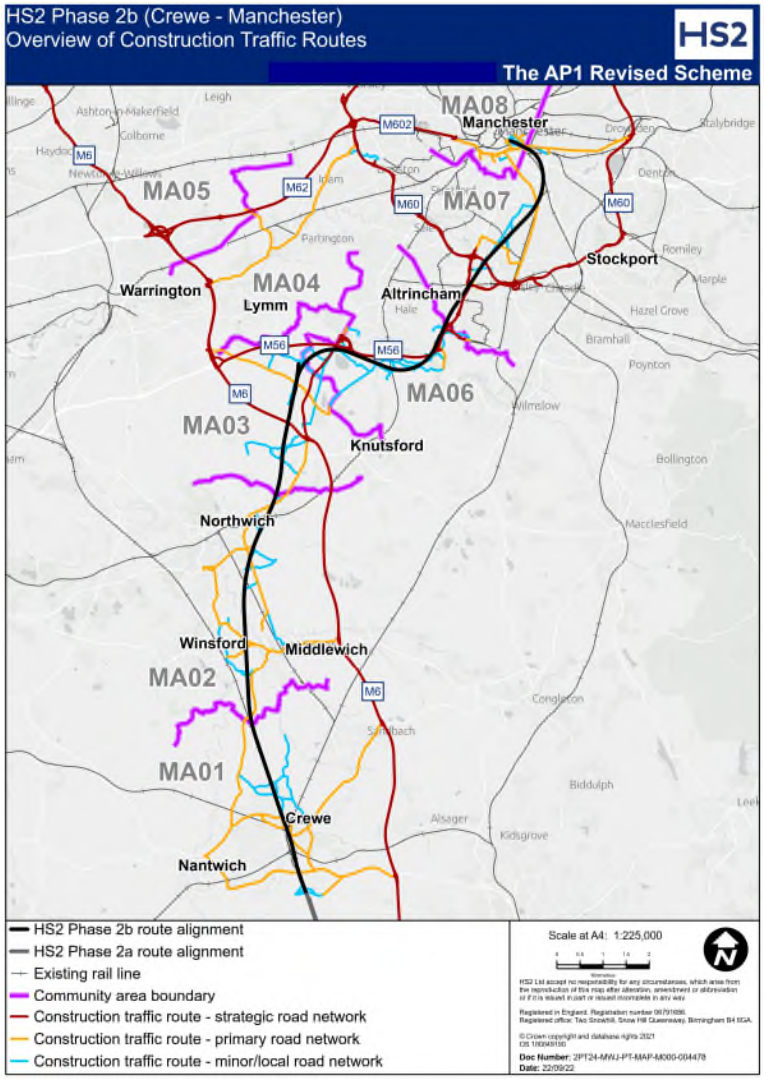
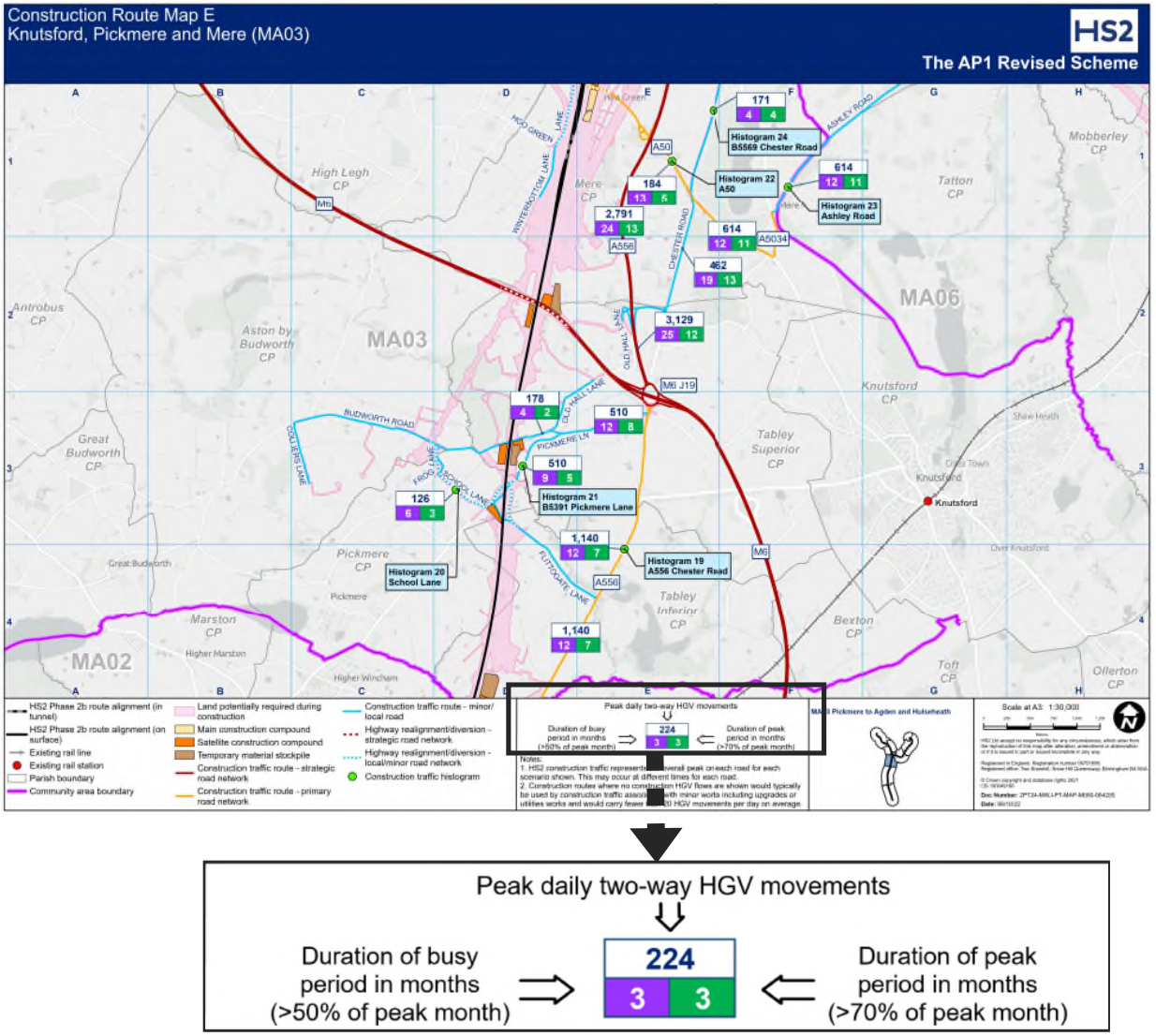
Overview of Construction Traffic Routes

- The railway alignment of the Proposed Scheme.
- The main road network.
- Proposed construction traffic routes on the:
  - Strategic road network
  - Primary road network
  - Minor/local road network



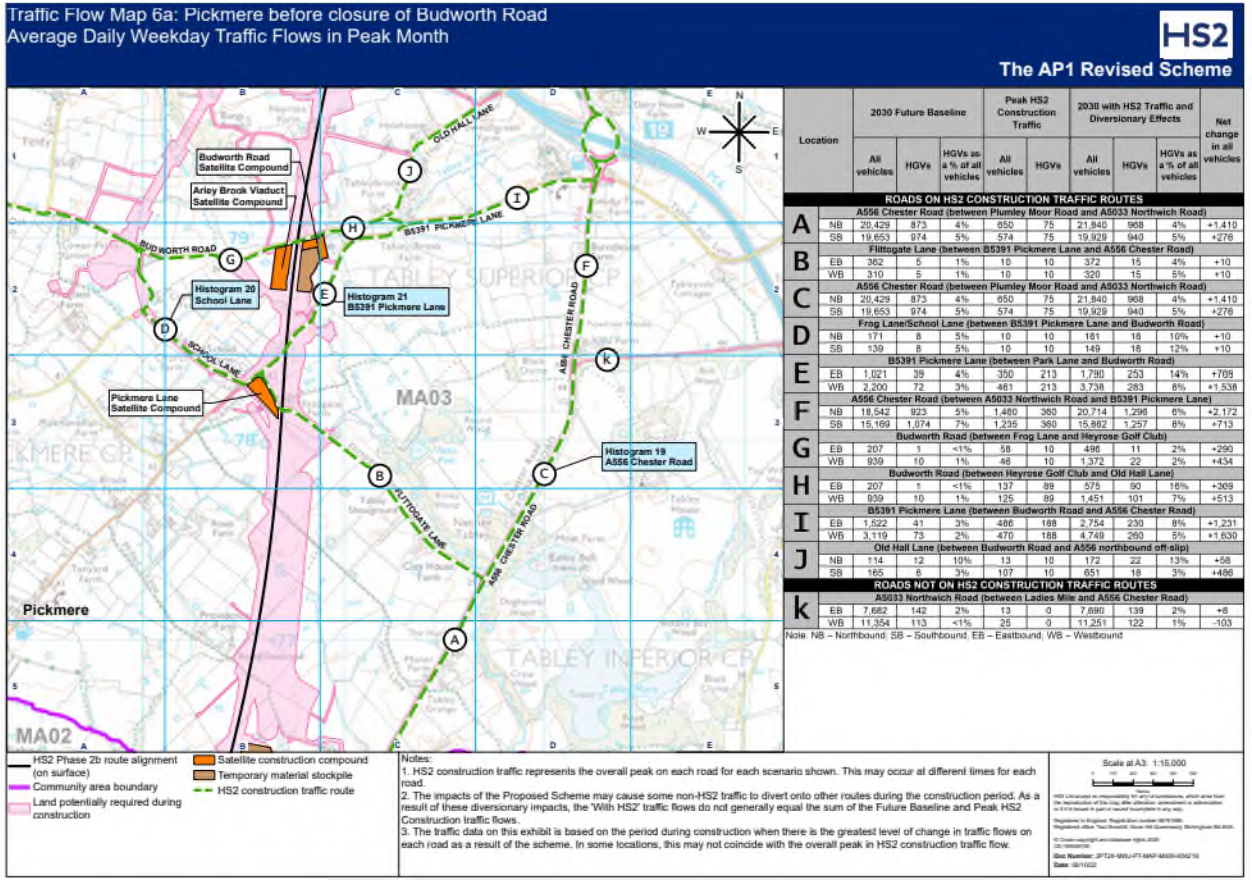
Construction Traffic Routes

- All construction routes by road type (strategic/primary/local).
- Daily two-way HS2 HGV flows (both directions added together) in the peak month during the construction period.
- Peak Period – The number of months during which HS2 HGV flows are greater than 70% of the peak month flow.
- Busy Period – The number of months during which HS2 HGV flows are greater than 50% of the peak month flow.



Traffic Flow Maps

- Construction traffic routes shown as green dashed lines.
- Average weekday traffic flows by direction at locations on the road network for:
  - Future baseline without HS2
  - HS2 construction traffic
  - Combined traffic with HS2, including changes to traffic flows due to diversionary effects
- Locations on HS2 construction routes are marked with capital letters, while other locations are marked with lowercase letters.



Location		2030 Future Baseline			Peak HS2 Construction Traffic		2030 with HS2 Traffic and Diversionary Effects			Net change in all vehicles
		All vehicles	HGVs	HGVs as a % of all vehicles	All vehicles	HGVs	All vehicles	HGVs	HGVs as a % of all vehicles	
ROADS ON HS2 CONSTRUCTION TRAFFIC ROUTES										
A	A556 Chester Road (between Plumley Moor Road and A5033 Northwich Road)									
	NB	20,429	873	4%	650	75	21,840	968	4%	+1,410
	SB	19,653	974	5%	574	75	19,929	940	5%	+276
B	Flittogate Lane (between B5391 Pickmere Lane and A556 Chester Road)									
	EB	362	5	1%	10	10	372	15	4%	+10
	WB	310	5	1%	10	10	320	15	5%	+10
C	A556 Chester Road (between Plumley Moor Road and A5033 Northwich Road)									
	NB	20,429	873	4%	650	75	21,840	968	4%	+1,410
	SB	19,653	974	5%	574	75	19,929	940	5%	+276
D	Frog Lane/School Lane (between B5391 Pickmere Lane and Budworth Road)									
	NB	171	8	5%	10	10	181	18	10%	+10
	SB	139	8	5%	10	10	149	18	12%	+10
E	B5391 Pickmere Lane (between Park Lane and Budworth Road)									
	EB	1,021	39	4%	350	213	1,730	253	14%	+709
	WB	2,200	72	3%	461	213	3,738	283	8%	+1,538
F	A556 Chester Road (between A5033 Northwich Road and B5391 Pickmere Lane)									
	NB	18,542	923	5%	1,480	360	20,714	1,298	6%	+2,172
	SB	15,169	1,074	7%	1,235	360	15,882	1,257	8%	+713
G	Budworth Road (between Frog Lane and Heyrose Golf Club)									
	EB	207	1	<1%	58	10	496	11	2%	+290
	WB	939	10	1%	46	10	1,372	22	2%	+434
H	Budworth Road (between Heyrose Golf Club and Old Hall Lane)									
	EB	207	1	<1%	137	88	575	90	16%	+309
	WB	939	10	1%	125	89	1,451	101	7%	+513
I	B5391 Pickmere Lane (between Budworth Road and A556 Chester Road)									
	EB	1,522	41	3%	486	188	2,754	230	8%	+1,231
	WB	3,119	73	2%	470	188	4,749	260	5%	+1,630
J	Old Hall Lane (between Budworth Road and A556 northbound off-slip)									
	NB	114	12	10%	13	10	172	22	13%	+58
	SB	165	6	3%	107	10	651	18	3%	+486
ROADS NOT ON HS2 CONSTRUCTION TRAFFIC ROUTES										
k	A5033 Northwich Road (between Ladies Mile and A556 Chester Road)									
	EB	7,682	142	2%	13	0	7,690	139	2%	+8
	WB	11,354	113	<1%	25	0	11,251	122	1%	-103

Note: NB – Northbound; SB – Southbound; EB – Eastbound; WB – Westbound

Traffic Flow Maps Explained

Traffic Flow Maps present the assessed traffic flow information for key locations, as follows:

Location on map
Road name
Direction

Average weekday traffic flows and % HGV in the Future Baseline

HS2 construction traffic

Average weekday traffic flows and % HGV incl. HS2 construction traffic and diversionary effects

Change in total traffic flows due to HS2 construction traffic and activities

Location		2030 Future Baseline			Peak HS2 Construction Traffic		2030 with HS2 Traffic and Diversionary Effects			Net change in all vehicles
		All vehicles	HGVs	HGVs as a % of all vehicles	All vehicles	HGVs	All vehicles	HGVs	HGVs as a % of all vehicles	
ROADS ON HS2 CONSTRUCTION TRAFFIC ROUTES										
A	**A556 Chester Road (between Plumley Moor Road and A5033 Northwich Road)**									
	NB	20,429	873	4%	650	75	21,840	968	4%	+1,410
	SB	19,653	974	5%	574	75	19,929	940	5%	+276
ROADS NOT ON HS2 CONSTRUCTION TRAFFIC ROUTES										
k	**A5033 Northwich Road (between Ladies Mile and A556 Chester Road)**									
	EB	7,682	142	2%	13	0	7,690	139	2%	+8
	WB	11,354	113	<1%	25	0	11,251	122	1%	-103

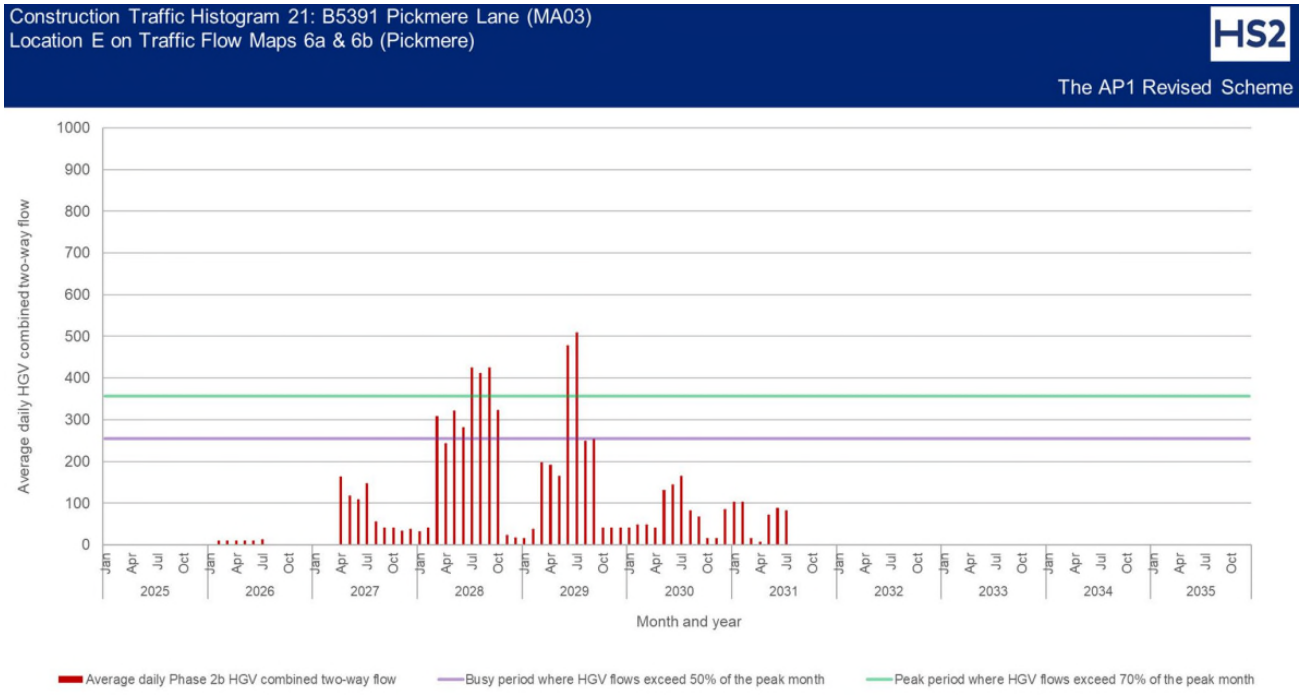
Locations on HS2 construction HGV routes (marked with capital letters)

Locations **not** on HS2 construction HGV routes potentially affected by traffic diversion (marked with lowercase letters)

- Construction traffic flows are based on the average weekday (24hr) during the peak month on each section of road (which may vary between locations depending upon the construction programme).
- 'HGV as a % of all vehicles' indicates what proportion of total traffic consists of HGVs.
- 'Net change in all vehicles' is the absolute change in total traffic flows between the Future Baseline (i.e. without HS2) and the 'With Scheme' (i.e. with HS2) scenarios, including any associated background traffic diversionary effects.

Construction Traffic Histograms

- Forecast average daily two-way HS2 construction HGV traffic flows (both directions added together) for a specific location in each month through the construction period.
- **Peak period** – The number of months during which HS2 construction HGV flows are **greater than 70%** of the peak month (i.e. bars that extend above the **green line**).
- **Busy period** – The number of months during which HS2 HGV flows are **greater than 50%** of the peak month (i.e. bars that extend above the **purple line**).



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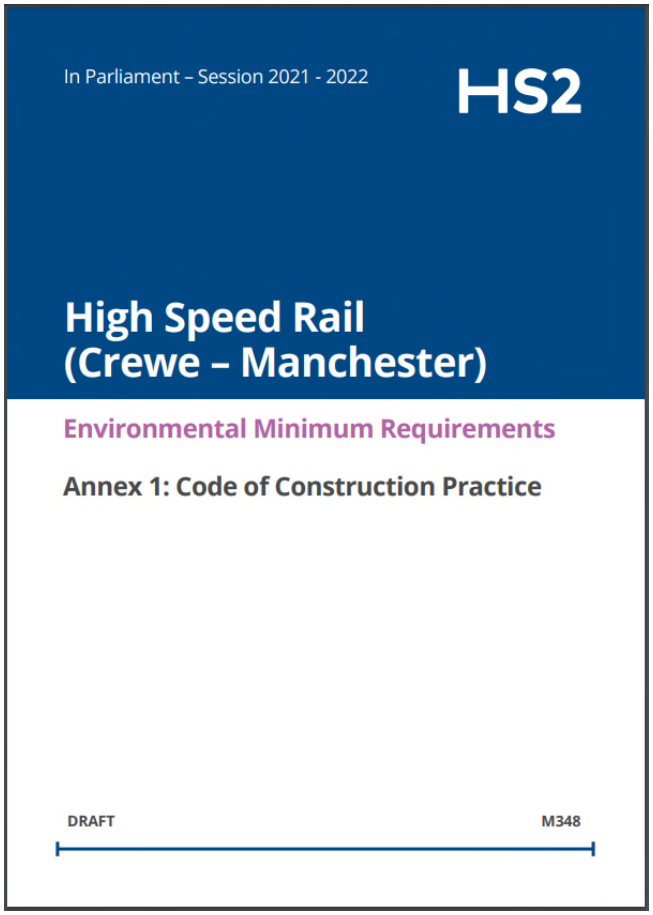
Mitigation of Traffic Impacts During Construction – Physical Measures

- Use of the HS2 railway trace as a haul road where reasonably practicable.
- Use of borrow pits to reduce the need to import material by road and to reduce the export of surplus excavated material by road.
- Use of transfer nodes to stockpile bulk construction materials to manage the timing of import and export of these materials to external suppliers by road.
- Use of excavated material in the environmental design of the railway to help to reduce the pressure on the local road network by avoiding the need to export that material by road.
- Use of rail as an alternative to transporting material by road; and to reduce the distance over which imported and exported construction material is carried on the road network (e.g. Ashley Railhead and Ardwick Sidings).
- Provision of overnight workforce accommodation at the majority of the main construction compounds in MA01-03.
- Specific temporary highway improvements to facilitate construction traffic access (e.g. construction slip roads from A556 to Chapel Lane and other direct accesses to the Strategic Road Network).
- Roads kept open, where reasonably practicable, including the provision of off-line diversions.

Mitigation of Traffic Impacts During Construction – Operational Measures

- Main construction routes submitted to planning authority for approval under the Bill.
- Prioritising use of routes with direct access to the strategic road network to minimise use of local roads.
- Construction management and transport measures contained within the Code of Construction Practice.
- Traffic Management Plans (including measures to protect cyclists, pedestrians and other vulnerable road users).



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Traffic Management Specific Measures

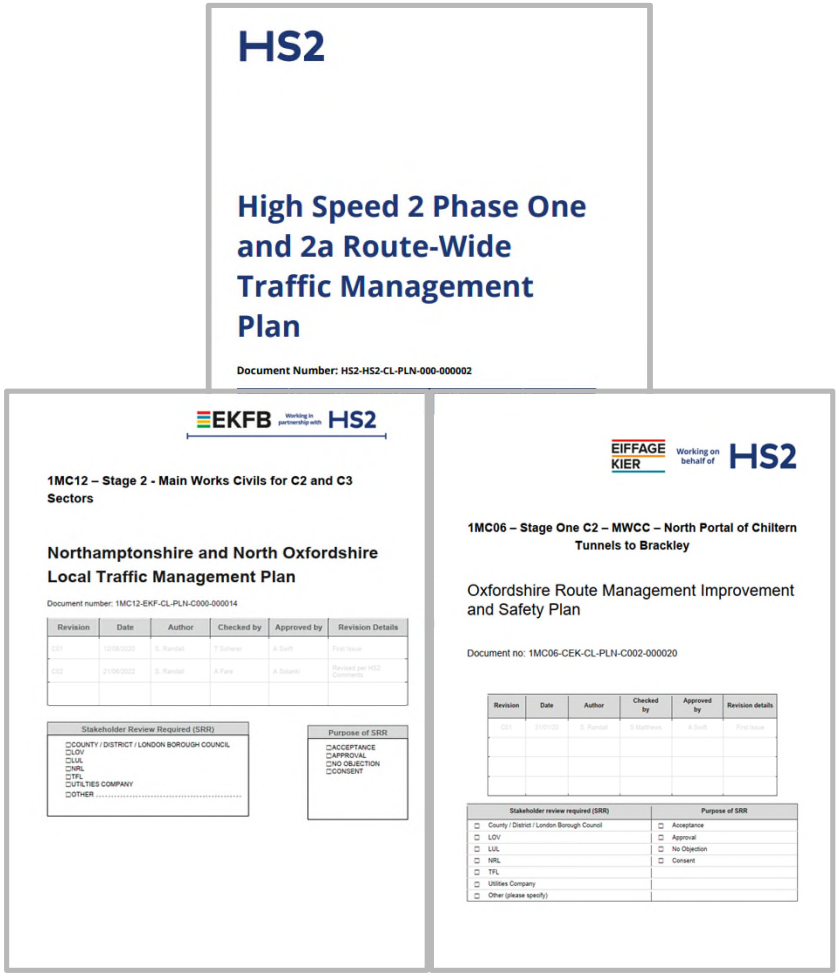
A framework of potential construction management and transport measures set out in the Code of Construction Practice. Specific measures could include:

- Phasing of works
- Timing of operations
- Road traffic management, layouts and signage
- Parking controls
- Identification of roads that may be used as construction routes by large goods vehicles, including any restrictions to the use of these routes
- Monitoring of vehicles arriving and leaving construction compounds
- Monitoring for deviation from authorised routes
- Measures for highway reinstatement
- Emergency access protocols
- Proposals for transport of construction workforce and measures to ensure safe access to and from site
- Arrangements for liaison with the relevant highway authorities and emergency services
- Workforce travel plans

Engagement with Highway Authorities

- HS2 continues to engage with the highway authorities, including National Highways, about the impacts of the Proposed Scheme on their networks and the approach to mitigating these impacts.

- Impacts on local traffic during construction will be managed in accordance with Route-wide Traffic Management Plans (RTMPs), Local Traffic Management Plans (LTMPs) and Route Management Improvement and Safety Plans (ROMIS), which will be developed with the relevant highway authority and other key stakeholders.



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