

High Speed Rail (Crewe to Manchester and West Midlands to Leeds)

Working Draft Environmental Statement

Volume 2: Community Area report

MML02: Unstone Green to Sheffield Station

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Department
for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

High Speed Two (HS2) Limited,
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.hs2.org.uk

A report prepared for High Speed Two (HS2) Limited:

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Contents

Preface	ii
Structure of the HS2 Phase 2b working draft Environmental Statement	iii
1 Introduction	1
1.1 Introduction to HS2	1
1.2 Purpose of this Report	3
1.3 Structure of this report	3
2 Overview of the area and description of the Proposed Scheme	5
2.1 Overview of the area	5
2.2 Description of the Proposed Scheme	7
2.3 Construction of the Proposed Scheme	8
2.4 Operation of the Proposed Scheme	11
3 Stakeholder engagement and consultation	12
3.1 Introduction	12
3.2 Key stages of Phase 2b engagement and consultation	12
3.3 Informing the Proposed Scheme	13
3.4 Engagement and consultation with stakeholder groups	13
4 Potential environmental impacts	16
5 References	18

List of figures

Figure 1: Structure of the working draft Environmental Statement	vi
Figure 2: The HS2 Phase 2b route and community areas	2
Figure 3: MMLo2 Unstone Green to Sheffield Station community area context map	6

List of tables

Table 1: Mechanisms and timeline of stakeholder engagement since route announcement	12
Table 2: Potential environmental impacts in the Unstone Green to Sheffield Station area	16

Preface

The working draft Environmental Statement

This report forms part of Volume 2 of the working draft Environmental Statement (ES) for Phase 2b of High Speed Two (HS2). The purpose of the working draft ES is to provide the public and other stakeholders with an opportunity to review and comment on preliminary environmental information for Phase 2b of HS2, which is based on a stage in the ongoing design development and environmental assessment process. Nothing included at this stage is intended to limit the form of the final scheme that will be presented in the hybrid Bill and formal ES in light of further scheme development and the ongoing discussions with stakeholders such as Transport for the North and Midlands Connect. Consultation on the working draft ES is being undertaken to help inform the ongoing design and environmental assessment in advance of producing a statutory formal ES. The formal ES will accompany the deposit of the hybrid Bill for Phase 2b of HS2.

Phase 2b comprises the section of the proposed HS2 rail network, from Crewe to Manchester (and a connection onto the West Coast Main Line (WCML)) (the western leg), and from the West Midlands to Leeds (and a connection onto, and part electrification of, the Midland Main Line (MML) and a connection onto the East Coast Main Line (ECML)) via the East Midlands and South Yorkshire (the eastern leg). Collectively, this is referred to in this working draft ES as the 'Proposed Scheme'. The working draft ES describes the Proposed Scheme and reports its likely significant environmental effects and the measures proposed to mitigate those effects, based on a stage in the ongoing design and environmental assessment.

The hybrid Bill for Phase One of the HS2 network, between London and the West Midlands, was the subject of an ES deposited in November 2013, followed by ESs deposited with Additional Provisions to that Bill in 2014 and 2015. The Phase One hybrid Bill received Royal Assent in February 2017 and pre-construction work on Phase One commenced in July 2017.

The hybrid Bill for Phase 2a of the HS2 network, between the West Midlands and Crewe, was the subject of an ES deposited in July 2017, followed by a subsequent ES deposited with an Additional Provision to that Bill in March 2018. The Phase 2a Bill is expected to receive Royal Assent in 2019.

Consultation on the working draft Environmental Statement

The public has an opportunity to comment on this working draft ES. The period of public consultation is taking place during October 2018 – December 2018; the first day of the consultation period being the date the Secretary of State for Transport formally announces the consultation and the publication of the working draft ES documents on www.gov.uk/hs2.

Structure of the HS2 Phase 2b working draft Environmental Statement

This report forms part of Volume 2 of the working draft ES for Phase 2b of HS2. The working draft ES describes the design of the Proposed Scheme and reports the likely significant environmental effects of the construction and operation of the Proposed Scheme and proposed mitigation and monitoring measures, based on a stage in the ongoing design and environmental assessment process. The report will be updated for the formal ES to reflect further work on the design, assessment and mitigation and monitoring measures between now and when the hybrid Bill is deposited. The structure of the working draft ES is shown in Figure 1.

This working draft ES has been prepared by persons who have sufficient expertise to ensure the completeness and technical quality of the statement.

The working draft ES comprises the following documents:

Non-technical summary

This provides a summary in non-technical language of the following, identified at a stage in the ongoing design and environmental assessment:

- the Proposed Scheme and the reasonable alternatives studied;
- the likely significant beneficial and adverse effects of the Proposed Scheme;
- the means to avoid or reduce likely significant environmental effects; and
- an outline of the monitoring measures to manage the effects of construction and the effectiveness of mitigation post construction, as well as appropriate monitoring during operation.

Glossary of terms and list of abbreviations

This contains terms and abbreviations, including units of measurement, used throughout the working draft ES.

Volume 1: Introduction and methodology

This provides:

- a description of HS2, the environmental impact assessment (EIA) process and the approach to consultation and engagement;
- details of the permanent features of the Proposed Scheme and general construction techniques, based on a stage in the ongoing design;
- a summary of the scope and methodology for the environmental topics;
- an outline of the general approach to mitigation;
- an outline of the approach to monitoring, including measures to manage the effects of construction, the effectiveness of mitigation post construction, as well as the approach to monitoring during the operational phase, based on a stage in the ongoing design; and

High Speed Rail (Crewe to Manchester and West Midlands to Leeds)
Working Draft Environmental Statement Volume 2: MML02

- a summary of the reasonable alternatives studied (including local alternatives studied prior to the Government's announcement of the preferred route in July 2017). Local alternatives studied post July 2017 are reported in the relevant Volume 2: Community area reports.

Volume 2: Community area reports and map books

These cover the following community areas:

- western leg: MA01 Hough to Walley's Green; MA02 Wimboldsley to Lostock Gralam; MA03 Pickmere to Agden and Hulseheath; MA04 Broomedge to Glazebrook; MA05 Risley to Bamfurlong; MA06 Hulseheath to Manchester Airport; MA07 Davenport Green to Ardwick; MA08 Manchester Piccadilly Station; and
- eastern leg: LA01 Lea Marston to Tamworth; LA02 Birchmoor to Austrey; LA03 Appleby Parva to Ashby-de-la-Zouch; LA04 Coleorton to Kegworth; LA05 Ratcliffe-on-Soar to Long Eaton; LA06 Stapleford to Nuthall; LA07 Hucknall to Selston; LA08 Pinxton to Newton and Huthwaite; LA09 Stonebroom to Clay Cross; LA10 Tibshelf to Shuttlewood; LA11 Staveley to Aston; LA12 Ulley to Bramley; LA13 Ravenfield to Clayton; LA14 South Kirkby to Sharlston Common; LA15 Warmfield to Swillington and Woodlesford; LA16 Garforth and Church Fenton; LA17 Stourton to Hunslet; and LA18 Leeds Station.

The reports provide the following information for each area, as identified at a stage in the ongoing design and environmental assessment:

- an overview of the area;
- a description of the construction and operation of the Proposed Scheme within the area;
- a summary of the local alternatives considered since the Government's announcement of the preferred route in July 2017;
- a description of the environmental baseline;
- a description of the likely significant beneficial and adverse effects of the Proposed Scheme;
- the proposed means of avoiding, reducing or managing the likely significant adverse effects; and
- where possible, the proposals for monitoring, including measures during and post construction, and during the operational phase.

The maps relevant to each community area are provided in a separate Volume 2: Community area map book. These maps include the location of the key environmental features (Map Series CT-10), key construction features (Map Series CT-05) and operation features (Map Series CT-06) of the Proposed Scheme. There are also specific maps showing proposed viewpoint and photomontage locations (Map Series LV-00, LV-02, LV-03, and LV-04, to be read in conjunction with Section 11, Landscape and visual of the Volume 2: Community area reports), operational sound contour maps (Map Series SV-01, to be read in conjunction with Section 13, Sound, noise and vibration of the Volume 2: Community area reports) and maps showing key surface water and groundwater features (Map Series WR-01 and WR-02, to be read in conjunction with Section 15, Water resources and flood risk of the Volume 2: Community area reports).

In addition to the community areas detailed above, reports are provided for community areas within which electrification of a section of the MML is proposed: MMLo1 Danesmoor to Brierley Bridge and MMLo2 Unstone Green to Sheffield Station. These reports are provided at an earlier stage of the design and environmental assessment process, following the amendment of the route of the Proposed Scheme to include the electrification of a section of the MML between Clay Cross and Sheffield Midland Station. This would enable high speed trains to connect to Chesterfield and Sheffield as part of the Proposed Scheme. They include for each area:

- an overview of the area;
- a description of the proposed works within the area, based on a stage in the ongoing design;
- an outline of potential effects; and
- an overview of stakeholder engagement and consultation to be carried out as part of the EIA process.

Mitigation measures have not been identified at this stage of the design and environmental assessment process in relation to the likely effects arising from construction and operation of the Proposed Scheme for the MMLo1 Danesmoor to Brierley Bridge and MMLo2 Unstone Green to Sheffield Station areas. Any required mitigation measures will be reported in the formal ES. In addition, any required environmental monitoring during operation of the Proposed Scheme will be reported in the formal ES.

Volume 3: Route-wide effects

This describes the effects that are likely to occur at a geographical scale greater than the community areas described in the Volume 2: Community area reports, based on a stage in the ongoing design and environmental assessment.

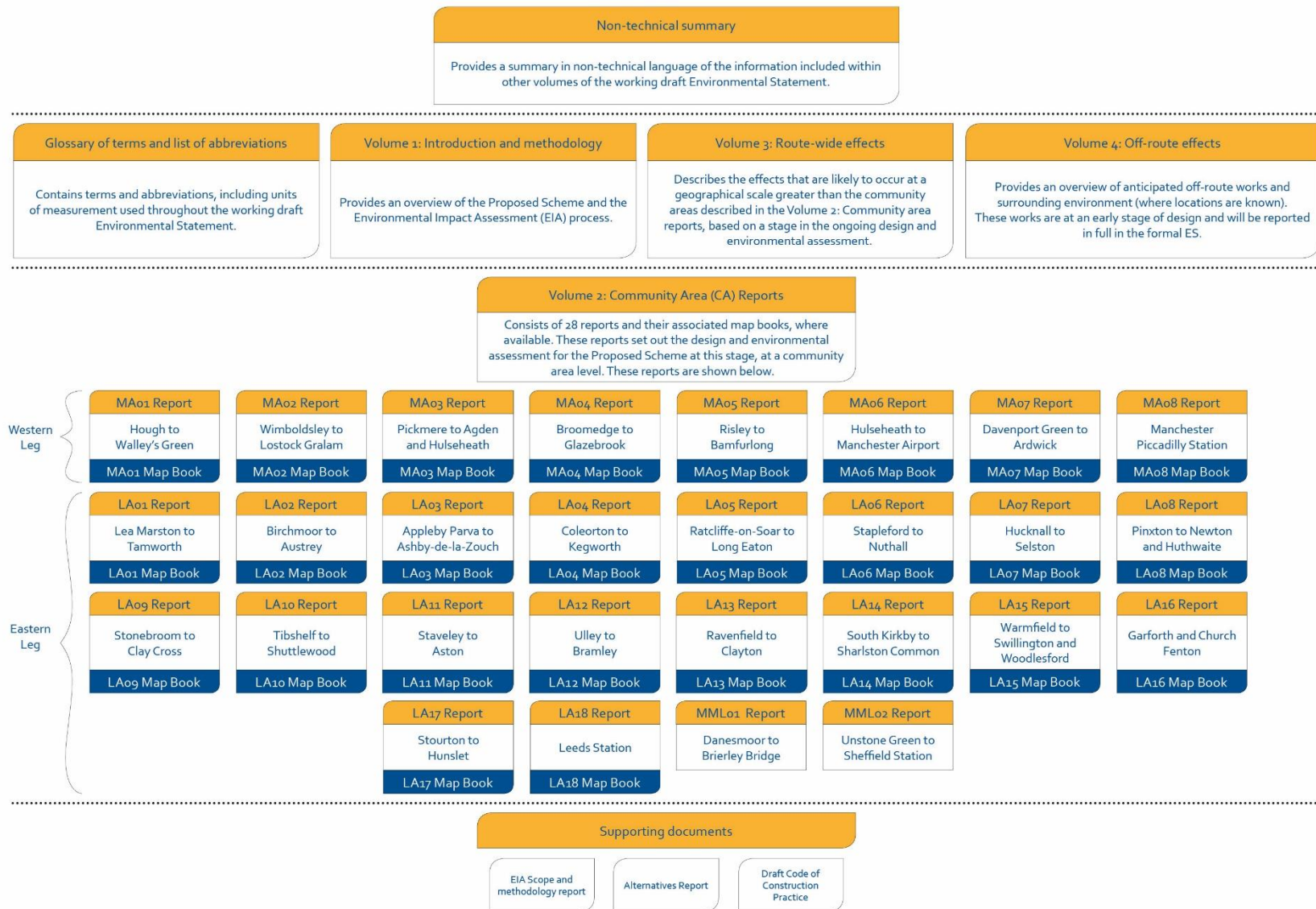
Volume 4: Off-route effects

This provides an overview of anticipated off-route works and surrounding environment (where locations are known). These works are at an early stage of design and will be reported in full in the formal ES.

Supporting documents

- EIA Scope and Methodology Report: this outlines the scope and methodology adopted for the EIA. HS2 Ltd consulted on a draft of the EIA Scope and Methodology Report (SMR) between July and September 2017. This updated version takes into consideration comments received, where appropriate, in addition to changes required as a result of updates to legislation or industry best practice guidance.
- Alternatives report: this describes the evolution of the Proposed Scheme and the reasonable alternatives considered at this stage of the design, at the strategic, route-wide, route corridor and local levels.
- Draft Code of Construction Practice (CoCP): this sets out measures and standards to provide effective planning, management and control of potential impacts on individuals, communities and the environment during construction.

Figure 1: Structure of the working draft Environmental Statement

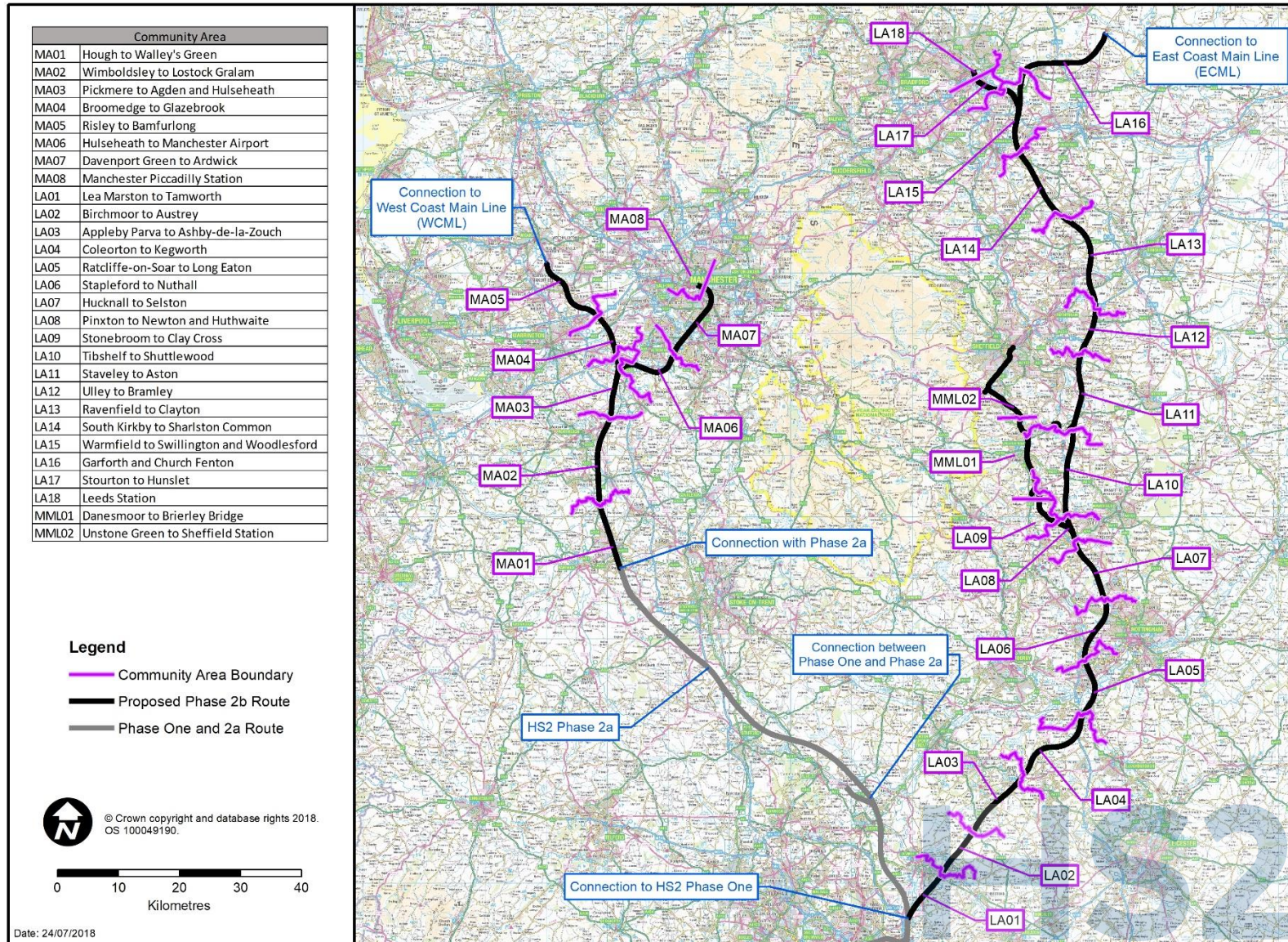


1 Introduction

1.1 Introduction to HS2

- 1.1.1 High Speed Two (HS2) is a new high speed railway proposed by the Government to connect major cities in Britain. Stations in London, Birmingham, Leeds, Manchester, East Midlands and South Yorkshire will be served by high speed trains running at speeds of up to 360 kilometres per hour (kph) (225 miles per hour (mph)).
- 1.1.2 HS2 will be built in phases. Phase One comprises the first section of the HS2 network of approximately 230km (143 miles) between London and the West Midlands that will commence operations in 2026. It was the subject of an Environmental Statement (ES) deposited with the High Speed Rail (London - West Midlands) Bill in November 2013. Subsequent ESs were deposited with Additional Provisions to that Bill in 2014 and 2015. The High Speed Rail (London - West Midlands) Bill received Royal Assent in February 2017 and pre-construction work on Phase One commenced in 2017.
- 1.1.3 Phase Two of HS2 will extend the route from Phase One in the West Midlands to the north-west to Manchester (approximately 80km (50 miles)) with connections to the West Coast Main Line (WCML) at Crewe and Golborne, and to the north-east to Leeds with a connection to the Erewash Valley Line and Midland Main Line (MML) south-east of Chesterfield and the East Coast Main Line (ECML) approaching York (approximately 198 km (123 miles)), completing what is known as the 'Y network'.
- 1.1.4 Phase Two of HS2 is being taken forward in two stages, referred to as Phase 2a and Phase 2b. Phase 2a of HS2 includes the section of the route between the West Midlands and Crewe. The High Speed Rail (West Midlands – Crewe) Bill, together with an ES, was prepared for the Phase 2a proposals and deposited in Parliament in July 2017. A subsequent ES was deposited with Additional Provisions to that Bill in March 2018.
- 1.1.5 Phase 2b (the Proposed Scheme), the subject of this working draft ES, comprises the route from Crewe to Manchester (and connections into the WCML) (referred to as the 'western leg'), and from the West Midlands to Leeds (and connections into the Midland Main Line (MML and the ECML)) via the East Midlands and South Yorkshire (referred to as 'the eastern leg'). The connection to and electrification of an approximately 30km (19 miles) section of the existing MML would enable high speed trains to connect to Chesterfield and Sheffield. Construction of the Proposed Scheme would commence in 2023, with operation planned to start in 2033.
- 1.1.6 For environmental assessment and community engagement purposes, the Proposed Scheme has been divided into 28 community areas (CA). These are shown in Figure 2. This CA report relates to the Unstone Green to Sheffield Station area (MMLo2), which forms part of the section of electrification of the MML.

Figure 2: The HS2 Phase 2b route and community areas



1.2 Purpose of this Report

- 1.2.1 In July 2018, the Secretary of State asked HS2 Ltd to include the electrification of the MML from Clay Cross to Sheffield within the HS2 Phase 2b hybrid Bill.
- 1.2.2 As a consequence, the proposed design and assessment of the electrification of the MML, in the Unstone Green to Sheffield Station area, are in the early stages of development. Acknowledging that information is limited at this stage, this report sets out the preliminary information and the key features of the electrification of the MML in Unstone Green to Sheffield Station area (referred to in this report as the Proposed Scheme). It provides an outline description of the design of the Proposed Scheme, and potential impacts on the environment, within the Unstone Green to Sheffield Station area.
- 1.2.3 Consultation on the working draft ES is being carried out to assist early engagement with those potentially affected by the Proposed Scheme and to help inform the design and assessment of the Proposed Scheme. Although Parliamentary Standing Orders do not require a working draft ES, the preparation of the working draft ES, and consulting on it in advance of the formal ES, provides consultees with the opportunity to comment on the Proposed Scheme earlier in the process.
- 1.2.4 As this is a working draft ES, where information is not available at this time and on the basis of the early stage of development of the Proposed Scheme in this area, professional judgement and reasonable worst-case assumptions have been used to provide an indication of the likely impacts to inform the consultation.
- 1.2.5 The likely significant environmental effects of the Proposed Scheme will be described in the formal ES to be deposited in accordance with the requirements of Parliamentary Standing Order 27A (SO27A)^{1,2}. It is possible that the impacts described in the formal ES may differ from those presented in this report, due to the provisional nature of the environmental and design information that is currently available and as a result of consultation on the Proposed Scheme.

1.3 Structure of this report

- 1.3.1 This report comprises the following sections:
- Section 1: an introduction to HS2 and the purpose and structure of this report;
 - Section 2: overview of the community area, a broad description of the Proposed Scheme within the community area;
 - Section 3: consultation and stakeholder engagement; and
 - Section 4: potential environmental impacts.

¹ Standing Order 27A of the Standing Orders of the House of Commons relating to private business (environmental assessment), House of Commons.

² House of Lords, 2005, Standing Orders of the House of Lords - Private Business, The Stationery Office.

High Speed Rail (Crewe to Manchester and West Midlands to Leeds)
Working Draft Environmental Statement Volume 2: MMLo2

- 1.3.2 Environmental effects will be assessed in accordance with the methodology set out in Volume 1: Introduction and methodology and the EIA Scope and Methodology Report (SMR³) and will be reported in the formal ES.

³ Supporting document: HS2 Phase 2b Environmental Impact Assessment Scope and Methodology Report

2 Overview of the area and description of the Proposed Scheme

2.1 Overview of the area

General

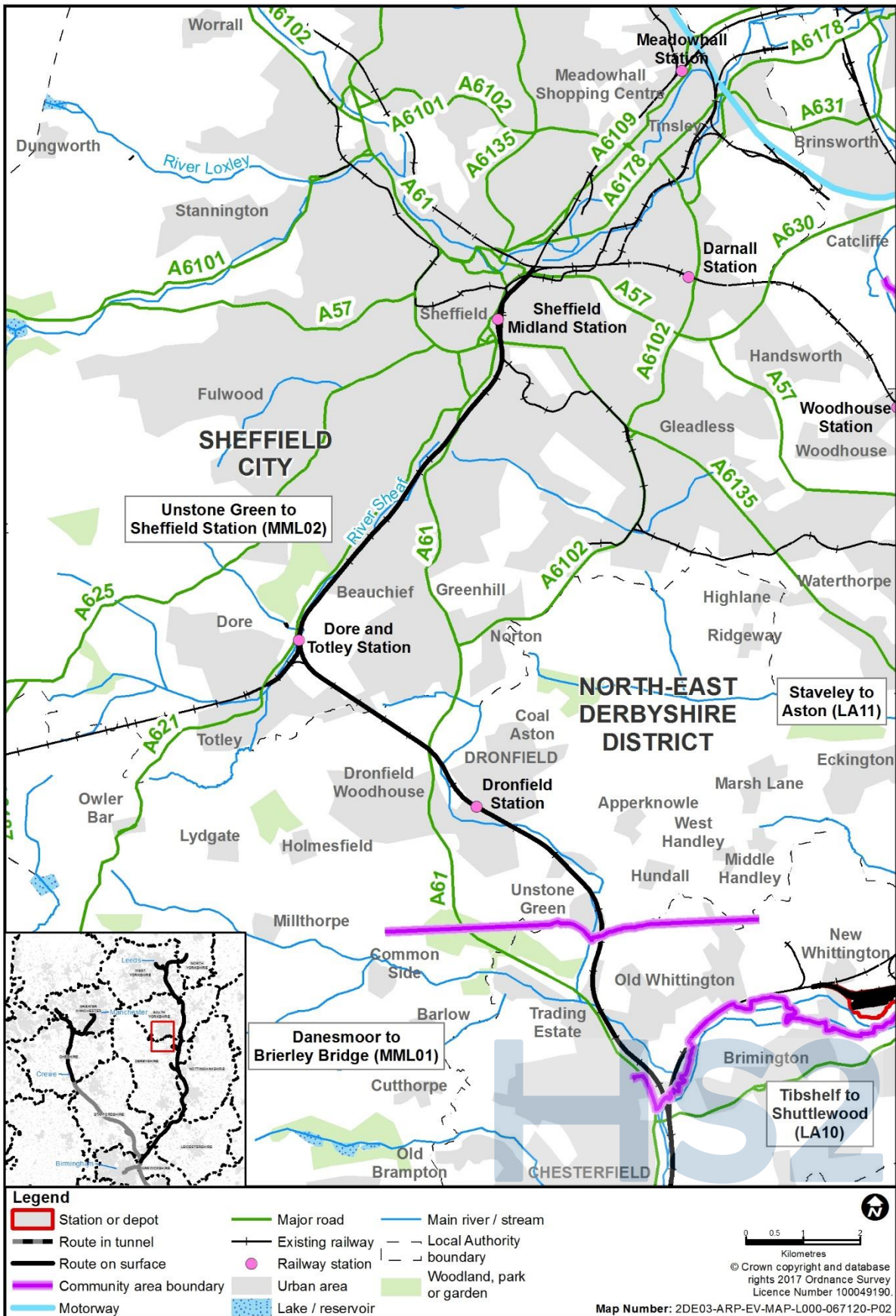
- 2.1.1 The Proposed Scheme in the Unstone Green to Sheffield Station area (MMLo2) would comprise an approximately 14.6km section of electrification of the existing Midland Main Line (MML) between the northern boundary of the Danesmoor to Brierley Bridge area (MMLo1), at the northern boundary of Chesterfield, and Sheffield Station.
- 2.1.2 The route of the Proposed Scheme would pass through the parishes of Unstone and Dronfield, within the local authority area of North East Derbyshire District Council, with the remainder of this section within the jurisdiction of Sheffield City Council.
- 2.1.3 The boundary between Unstone Parish and Chesterfield forms the southern boundary of this section, with Sheffield Station forming the northern boundary. Indicative boundaries of the Unstone Green to Sheffield Station area are shown in Figure 2 above and Figure 3 below.
- 2.1.4 As shown in Figure 3, the Danesmoor to Brierley Bridge area (MMLo1) lies to the south, the electrification of the MML would continue to Sheffield Station.

Settlement, land use and topography

- 2.1.5 From the end of the Danesmoor to Brierley Bridge area (MMLo1), the Unstone Green to Sheffield Station area (MMLo2) travels north primarily through rural areas, past the villages of Unstone Green and Unstone (partly along a Grade II listed viaduct) to Dronfield, which is more urban in character. Here the MML runs past both residential and industrial areas through Dronfield Station; note that HS2 trains will not stop at this station.
- 2.1.6 From Dronfield Station, through northern Dronfield, the MML passes both residential and retail areas until passing under the A61 and entering the more rural area south of Sheffield where it heads to the north-west and enters the 1.8km long Bradway tunnel under the Dore and Totley Golf Course and parts of Lower Bradway and Bradway. It exits the tunnel at Twentywell Road in Bradway before reaching Dore and Totley Junction; from here, the MML heads north-east past Dore and Totley Station, between Totley Wood Site of Special Scientific Interest and Beauchief Golf Course and Ecclesall Wood Local Nature Reserve, into the urban area of Sheffield. Note that HS2 trains will not stop at Dore and Totley Station.
- 2.1.7 To the northern edge of Dronfield, much of the existing railway runs along the valley of the River Drone and crosses the river in several locations. In Sheffield it follows the valley of the River Sheaf, again, with a number of crossings of the river.
- 2.1.8 In the urban area of Sheffield, the MML runs through a mix of residential, industrial and retail areas with parks and sports grounds and a number of road crossings. However, in the south of Sheffield, the MML is bounded by woodland to the east, with a Scheduled Monument at Abbeydale Works on Abbeydale Road South to the west.

High Speed Rail (Crewe to Manchester and West Midlands to Leeds) Working Draft Environmental Statement Volume 2: MML02

Figure 3: MML02 Unstone Green to Sheffield Station community area context map



Key transport infrastructure

- 2.1.9 The main road from Chesterfield to Sheffield is the A61 which the MML travels under to the north west of Dronfield and passes over in Sheffield. The MML also passes under the A6135 Granville Road just south of Sheffield Station. The A621 Abbeydale Road runs parallel to the MML to the north-west for much of the route within Sheffield. Numerous local roads also cross the MML, particularly within the urban area of Sheffield.

2.2 Description of the Proposed Scheme

- 2.2.1 The following section describes the main features of the Proposed Scheme in the Unstone Green to Sheffield Station area. Further general information on typical permanent features is provided in Volume 1, Section 5.
- 2.2.2 The proposed electrification of a section of the MML, in the Unstone Green to Sheffield Station area, is required to enable HS2 trains to serve Chesterfield and Sheffield Stations. The Proposed Scheme is in the early stages of development and, as such, this report provides a preliminary outline description of the works only and a broad overview of the existing area.

Overview

- 2.2.3 The route of the Proposed Scheme through the Unstone Green to Sheffield Station area would be approximately 14.6km in length (with a further 1km overrun⁴ length at Dore junction).
- 2.2.4 At this stage of design development, it is expected that the Proposed Scheme in the Unstone Green to Sheffield Station area would include the key features described in the sections below.

Electrification of sections of the existing railway lines

- 2.2.5 Electrification of the sections of the MML would require installation of operational power supply infrastructure, which would enable power to be transmitted to the trains through an overhead line system.
- 2.2.6 Overhead line equipment would likely comprise steel masts and cantilever supports, portal frames, where appropriate, and contact wires to transmit power to the trains. The overhead line masts and frames would typically be 8m in height and spaced at approximately 55 to 60m intervals along the track.
- 2.2.7 The power supply required to operate the Proposed Scheme would come from the national grid and is currently expected to include a power supply at Chesterfield Station in the Danesmoor to Brierley Bridge area (MMLo1) and a switching station at Dore junction. The power supply would connect to the Proposed Scheme via a series of auto-transformer feeder stations and/or auto-transformer stations. Connections to the auto-transformer feeder stations and/or auto-transformer stations would require

⁴ Defined as the distance allowed beyond a normal stopping point in case a train fails to stop in the correct position (the distance is dependent upon speed and braking capacity of the train).

new transmission lines; these could be buried or overhead lines, or a combination of both. Further studies to consider the route and design of these transmission lines and the location of auto-transformer feeder stations and/or auto-transformer stations are ongoing and will be reported in the formal ES.

- 2.2.8 Electrification of the existing railways would also require works to accommodate any additional track or widening requirements at stations or tunnels, or where modifications need to be made to existing railway infrastructure, such as bridges and other crossing structures, by raising existing structures or lowering existing track levels, as appropriate.
- 2.2.9 Modifications to the existing signalling, third party utilities and drainage features may be required. New signalling and telecommunications systems are also likely to be required. Based on the current level of design development it is expected that the works would be largely undertaken within the existing rail corridor. However, there could be a number of locations along the route of the Proposed Scheme where the electrification works would extend beyond the existing rail corridor
- 2.2.10 To accommodate the Proposed Scheme in the Unstone Green to Sheffield Station area, modifications may be required to existing public roads, public rights of way (PRoW) and access routes.

Modifications to Sheffield Station

- 2.2.11 In order to accommodate HS2 services at Sheffield Station, works would be required to the existing station. These works are subject to ongoing design development and discussion with Network Rail. Works to the existing station will be reported in the formal ES.
- 2.2.12 Additional minor works within the existing Sheffield Station are likely to include provision of new signage and information systems.

2.3 Construction of the Proposed Scheme

- 2.3.1 This section sets out the key construction activities that are envisaged in the Unstone Green to Sheffield Station area.
- 2.3.2 Following the completion of construction works, land used only for construction purposes would be restored as agreed with the owner of the land and the relevant planning authority.
- 2.3.3 During the construction phase, it is currently expected that public roads and PRoW routes would remain open for public use wherever reasonably practicable. Where such routes would require diversion, the alternative road or PRoW crossing of the Proposed Scheme would be determined and, where necessary, constructed prior to any closure of existing roads or PRoW wherever reasonably practicable. In some cases, a temporary alternative alignment may be required.
- 2.3.4 Volume 1, Section 5 and Section 6 provide details of the permanent features of the Proposed Scheme and typical construction techniques.

Code of Construction Practice

- 2.3.5 All contractors will be required to comply with a Code of Construction Practice (CoCP). In addition, Local Environmental Management Plans (LEMPs) will be produced for each local authority area. The CoCP and LEMPs will be the means of controlling the construction works associated with the Proposed Scheme, and set out monitoring requirements, with the objective of ensuring that the effects of the works on people and the natural environment are reduced as far as reasonably practicable. The CoCP will contain generic control measures and standards to be implemented throughout the construction process. The LEMPs will set out how the project will adapt and deliver the required environmental and community protection measures within each area through the implementation of specific measures required to control dust and other emissions from activities in the area.
- 2.3.6 In addition, HS2 Ltd has produced a Community Engagement Framework⁵ which sets out how HS2 Ltd and its contractors, as well as their sub-contractors, would undertake community engagement during the construction of the HS2 project. The framework is being implemented on Phase One of HS2 and is applicable to all phases of HS2.
- 2.3.7 The objectives of the framework include:
- to set out how HS2 Ltd and its contractors would undertake community engagement during the construction of the project;
 - to provide clarity and reassurance to HS2 Ltd's stakeholders about how community engagement activity would be managed; and
 - to help HS2 Ltd be a good neighbour to local communities, including by providing accurate and timely information about construction works and offering opportunities to influence them, where appropriate.
- 2.3.8 A draft CoCP has been prepared and is published alongside this document, in Supporting document: Draft Code of Construction Practice. It will remain a draft document through the Parliamentary process and the CoCP will be finalised by Royal Assent. The CoCP sets out measures to be implemented by the appointed construction contractor.

Overview of the construction process

- 2.3.9 Construction works would typically comprise the following general stages:
- advance works including: site investigations further to those already undertaken; preliminary mitigation works; and preliminary enabling works;
 - railway and electrification installation works including: establishment of construction compounds; infrastructure installation; connections to utilities; changes to the existing rail network (such as additional tracks, bridge lifting,

⁵ HS2 Ltd (2017), Community Engagement Framework. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/625971/hs2_community_engagement_framework.pdf

track lowering); and removal of construction compounds;

- site finalisation works; and
- systems testing and commissioning.

2.3.10 General information about the construction process is set out in more detail in Volume 1, Section 6, and the draft CoCP including:

- the approach to environmental management during construction and the role of the CoCP (Section 2);
- working hours (Section 5);
- management of construction traffic (Section 14); and
- handling of construction materials (Section 15).

Advance works

2.3.11 General information about advance works can be found in Volume 1, Section 6. Advance works would be required before the main construction works commence and typically include:

- detailed site investigations and surveys for proposed construction compounds;
- detailed environmental surveys;
- advance mitigation works, where appropriate;
- advance site access works;
- site establishment with temporary fence construction; along with soil stripping and vegetation removal; and
- utility diversions and new utility connections for facilities associated with the Proposed Scheme.

Engineering works

2.3.12 Engineering works in the Unstone Green to Sheffield Station area would require works to install, test and commission railway systems, including track, overhead line equipment, communications and signalling equipment and power supply.

2.3.13 Works to track and railway systems in open areas would include the installation of track form, rails, infill material, minor drainage works, and installation of electrification, signalling and communication equipment.

2.3.14 In the Unstone Green to Sheffield Station area, much of the construction could take place on or immediately adjacent to the existing operational railway. Where works potentially affect existing Network Rail assets, disruption to travelling passengers and freight movements would be reduced as far as reasonably practicable, through measures such as:

- programming the construction works to coincide with the possessions that are required and planned by Network Rail for the general maintenance of the MML;
- planning the required construction works so that they can be undertaken in short overnight stages so that passenger services are not disrupted; and
- programming longer closures at the weekend and on bank holidays to reduce, as far as reasonably practicable, the number of passengers affected.

2.3.15 Construction works would be divided into sections, each of which would be managed from compounds. The compounds would act as the main interface between the construction work sites and the public highway, as well as performing other functions which may include:

- space for the storage of bulk materials;
- space for the receipt, storage and loading and unloading of excavated material;
- an area for the fabrication of temporary works equipment and finished goods;
- fuel storage;
- plant and equipment storage including plant maintenance facilities; and
- office space for management staff, limited car parking for staff and site operatives, and welfare facilities.

Construction compounds

2.3.16 Compounds would either be main compounds or satellite compounds. Satellite compounds are generally smaller than main compounds. The locations and number of compounds required to undertake the works in the Unstone Green to Sheffield Station area have yet to be defined; these will be considered as part of the ongoing design development and will be reported in the formal ES.

Construction programme

2.3.17 Construction works in the Unstone Green to Sheffield Station area will be carried out during the same period as the works to construct the full Proposed HS2 Scheme, expected to be between 2023 and 2033. A construction programme illustrating indicative periods for each of the core construction activities will be provided in the formal ES.

2.4 Operation of the Proposed Scheme

2.4.1 It is currently anticipated that there would be up to four trains per hour each way passing through the Unstone Green to Sheffield Station area.

2.4.2 Full details of the construction and operation of the Proposed Scheme in the Unstone Green to Sheffield Station area will be reported in the formal ES.

3 Stakeholder engagement and consultation

3.1 Introduction

- 3.1.1 HS2 Ltd's approach to stakeholder engagement and consultation on the Proposed Scheme is set out in Volume 1, Section 3.
- 3.1.2 Since the initial preferred route announcement in November 2016, HS2 Ltd has carried out a programme of informal stakeholder engagement and formal consultation with a broad range of stakeholders. This process remains ongoing and engagement will be undertaken with stakeholders in the Unstone Green to Sheffield Station Bridge area on the proposed electrification of a section of the MML and the Erewash Valley Line. It is also intended to gather any information from consultation activities undertaken by Network Rail as part of the original MML electrification scheme.
- 3.1.3 Feedback from this engagement and the consultation on the working draft ES and emerging scheme design, will be considered as part of the ongoing design and assessment of the Proposed Scheme, ultimately presented in the formal ES. There will be further consultation undertaken on the formal ES by Parliament following deposit of the hybrid Bill.

3.2 Key stages of Phase 2b engagement and consultation

- 3.2.1 The process of engagement remains ongoing. A summary of engagement undertaken or underway since the initial preferred route announcement in November 2016, is provided in Table 1.

Table 1: Mechanisms and timeline of stakeholder engagement since route announcement

Engagement and consultation activity and mechanisms	Date
Phase 2b initial preferred route announcement	15 November 2016
Phase 2b route refinement and property consultations	15 November 2016 – 9 March 2017
Phase 2b information events to support the route refinement and property consultations	January -February 2017
Confirmation of Phase 2b route announcement	17 July 2017
Start date of engagement with local communities and stakeholders on the confirmed Phase 2b route	July 2017
Consultation on the draft EIA and Equality Impact Assessment (EQIA) Scope and Methodology Report (SMR) to inform the EIA and EQIA and the proposed relocation of the Eastern Leg Rolling Stock Depot	17 July 2017 – 29 September 2017
Phase 2b information events to support SMR and Eastern Leg Rolling Stock Depot consultations	September 2017
Phase 2b information events to provide update on design development	June-July 2018
Phase 2b consultation on the working draft ES and working draft EQIA	October – December 2018

Draft EIA SMR consultation

- 3.2.2 The draft EIA Scope and Methodology Report (SMR) was formally consulted on between July and September 2017 and was issued to statutory bodies, non-government organisations and local authorities. It was also available on the Government's website, allowing comment by local interest groups and the public. One hundred and seven responses to the draft SMR were received, as a result of which changes were made to the SMR. These are set out in the SMR Consultation Summary Report published alongside this working draft ES, and will be used to inform the assessment methodologies applied for the formal ES.

Consultation on the working draft ES and ongoing engagement

- 3.2.3 As set out in Volume 1, the working draft ES is being formally consulted upon. The consultation is taking place during October 2018 to December 2018. A parallel consultation on the working draft EQIA is also being undertaken during this period. As part of the process of consultation, stakeholders are invited to comment on the Proposed Scheme and the working draft ES and EQIA reports, which inform it.
- 3.2.4 These consultations and wider feedback from ongoing stakeholder engagement will be considered as part of the ongoing design of the Proposed Scheme and the assessment and identification of mitigation opportunities for the Unstone Green to Sheffield Station area. A consultation summary report will be published with the formal ES explaining how the responses have been taken into consideration.

3.3 Informing the Proposed Scheme

- 3.3.1 The main purpose of stakeholder engagement and consultation at this early stage is to inform the Proposed Scheme. Volume 1 details the engagement and consultation undertaken prior to the initial preferred route announcement in November 2016. However, at that time the HS2 design assumed that the electrification of MML would be undertaken by others, and so this did not form part of the consultation exercise.
- 3.3.2 Engagement will be undertaken on the proposed electrification of the MML within the Unstone Green to Sheffield Station area and feedback will be considered as part of the ongoing design of the Proposed Scheme and will be reported in the formal ES.

3.4 Engagement and consultation with stakeholder groups

Communities

- 3.4.1 Community stakeholders in the Unstone Green to Sheffield Station area include: a range of local interest groups; local facility and service providers; places of worship; schools and educational establishments; cultural organisations; and leisure and sports stakeholders.
- 3.4.2 Engagement will be undertaken with these stakeholders to give affected communities the opportunity to raise issues and opportunities in relation to the Proposed Scheme. Community stakeholders will be provided with information on the development of the Proposed Scheme, as a basis from which to identify potential impacts and opportunities for mitigation within the local area, reflecting local conditions and issues.

- 3.4.3 Engagement will be undertaken with schools and educational establishments, in particular with those in proximity to the Proposed Scheme and those with specialist interests or catering to the needs of vulnerable people within the community. This will inform the assessment of community and health in the formal ES, whilst also informing the separate EQIA being undertaken in parallel to the EIA.

Local authorities and parish councils

- 3.4.4 Direct engagement will be offered to and undertaken with county, borough, district and parish councils within the Unstone Green to Sheffield Station area. The purpose of this engagement will be to collate local baseline information and knowledge to inform the design and assessment, identify and understand local issues and concerns, provide access to wider stakeholders and communities, and provide a mechanism for ongoing dialogue and discussion on the assessment and design development.
- 3.4.5 Engagement will focus on the technical areas which inform the assessment, including, landscape and visual, sound, noise and vibration and traffic and transport, amongst others topics.
- 3.4.6 Councils will be engaged as part of the design development of the Proposed Scheme with ongoing dialogue on key topics such as highways, public rights of way (PRoW) and the draft Code of Construction Practice.

Expert, technical and specialist groups

- 3.4.7 Engagement will be undertaken with expert, technical and specialist groups to provide appropriate specialist input, as and where appropriate.
- 3.4.8 A key purpose of this engagement will be to obtain detailed specialist baseline information to inform the formal ES and the design development of the Proposed Scheme.
- 3.4.9 Further information about topic-specific engagement will be provided in the formal ES, where relevant.

Utilities

- 3.4.10 Engagement will be undertaken with utility companies and statutory stakeholders to establish what infrastructure exists in the Unstone Green to Sheffield Station area and how it may need to be modified as part of the Proposed Scheme. Engagement with Network Rail is underway regarding the scope of the works and any impacts on the existing railway network in this area.

Directly affected individuals, and major asset owners and businesses

- 3.4.11 Engagement will be undertaken with individuals in the Unstone Green to Sheffield Station area whose land or property would be directly affected by the Proposed Scheme whether permanently or temporarily. The purpose of this engagement will be to obtain baseline information and provide them with the opportunity to raise issues and discuss mitigation in relation to the Proposed Scheme. For example, the location of environmental mitigation will seek to reduce the loss of agricultural land and the location of accommodation overbridges across the route will be considered to better reflect the needs of farmers.

High Speed Rail (Crewe to Manchester and West Midlands to Leeds)

Working Draft Environmental Statement Volume 2: MMLo2

- 3.4.12 Key representatives for the farmers and grower's industry, in particular the National Farmers Union and Country Land and Business Association, will be engaged.
- 3.4.13 Engagement will also be undertaken with major asset owners and businesses in the Unstone Green to Sheffield Station area.

4 Potential environmental impacts

- 4.1.1 The Proposed Scheme in the Unstone Green to Sheffield Station area is at an early stage of development. However, initial identification of potential environmental impacts has been undertaken based on the nature of the proposed works and the current understanding of the baseline environment.
- 4.1.2 Table 2 outlines the potential impacts identified at this early stage in the development of the design and assessment of the Proposed Scheme in the Unstone Green to Sheffield Station area. The description of potential impacts presented has assumed that no mitigation measures are applied. As the design and assessment of the Proposed Scheme progresses a range of measures will be applied (including design changes and the application of the provisions contained within the draft Code of Construction Practice (CoCP)⁶) to mitigate potential impacts.

Table 2: Potential environmental impacts in the Unstone Green to Sheffield Station area

Environmental topic	Potential construction impacts (both temporary and permanent)	Potential operational impacts
Agriculture, forestry and soils	<p>Small areas of agricultural land could potentially be affected where construction works extend outside the Network Rail boundary.</p> <p>Small areas of agricultural land could potentially be permanently acquired where elements of the Proposed Scheme extend outside the Network Rail boundary.</p>	It is expected that there would be no effects on agriculture, forestry and soils during operation.
Air quality	<p>In the absence of application of the measures set out in the draft CoCP construction, dust could potentially impact on nearby sensitive receptors, such as residential properties.</p> <p>Traffic diversions could potentially result in temporary air quality impacts on the wider road network.</p>	It is currently anticipated that there would be no air quality effects during operation.
Community	Potential impacts to communities and commercial interests would require further assessment.	Potential impacts to communities and commercial interests would require further assessment.
Ecology and biodiversity	<p>There would be potential for disturbance to, or loss of, existing habitats.</p> <p>There would be potentially permanent loss of habitats.</p>	It is expected that there would be the potential for impacts on protected species, such as bats and birds, during operation.
Health	Potential impacts to human health would require further assessment.	Potential impacts to human health would require further assessment.
Historic environment	<p>Historic assets associated with the MML could be directly impacted upon (e.g. alterations to bridges) during construction.</p> <p>The setting of heritage assets could be impacted upon by new infrastructure.</p>	The setting of historic assets could potentially be impacted upon by the operation of train services.

⁶ Supporting document: Draft Code of Construction Practice

High Speed Rail (Crewe to Manchester and West Midlands to Leeds)
Working Draft Environmental Statement Volume 2: MMLo2

	Excavations, particularly outside the Network Rail boundary, could directly impact upon buried assets.	
Land quality	<p>There would be potential for excavations to disturb areas of historical contamination. The area could also be affected by mining and industrial legacy.</p> <p>In the absence of application of the measures set out in the draft CoCP there could be potential for impacts from spillages to result in contamination.</p>	Accidental leaks or discharges are possible from trains and during maintenance.
Landscape and visual	Construction activities would be visible and may impact upon the character of the existing landscape and views from receptor locations	New structures, alterations to existing structures and the operation of train services could result in landscape and visual impacts.
Socio-economics	<p>If commercial or retail premises are directly affected during construction, there may be impacts to existing employment.</p> <p>Employment opportunities would be created during construction.</p>	Serving Chesterfield and Sheffield by HS2 services would result in beneficial economic impacts.
Sounds, noise and vibration	<p>In the absence of application of measures set out in the draft CoCP, construction noise could result in disturbance at sensitive receptors close to the construction works.</p> <p>Traffic diversions could potentially result in temporary noise impacts on sensitive receptors close to these routes.</p>	In the absence of mitigation, noise levels could increase due to the addition of HS2 trains during operation.
Traffic and Transport	<p>Impacts on the public road network would be expected during works on road bridges.</p> <p>Heavy goods vehicles would be required to deliver materials to construction compounds which could impact on the public road network.</p>	Apart from the beneficial transport effects from provision of HS2 services to Chesterfield and Sheffield stations, at this stage no other traffic and transport impacts are expected.
Water resources and flood risk	<p>The route of the Proposed Scheme follows river valleys, which could result in works impacting upon flood risk areas.</p> <p>Water flow could be impacted upon in those locations where existing culverts are altered.</p> <p>In the absence of application of the measures set out in the draft CoCP, spillages and run off during construction could impact upon water quality.</p>	Accidental leaks or discharges are possible from trains and during maintenance.

4.1.3 The formal scoping of the environmental assessment of the Proposed Scheme will be further developed as the design progresses and baseline environmental data are gathered. The formal ES will provide greater detail on the current environmental baseline and on the assessment and mitigation of environmental effects associated with the Proposed Scheme.

4.1.4 Where significant adverse environmental effects are identified, environmental features to mitigate any likely significant effects will be considered. Any mitigation measures included in the design of the Proposed Scheme will be described in the formal ES.

5 References

House of Lords, 2005, Standing Orders of the House of Lords - Private Business, The Stationery Office.

HS2 Ltd (2017), Community Engagement Framework. Available online at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/625971/hs2_community_engagement_framework.pdf

Standing Order 27A of the Standing Orders of the House of Commons relating to private business (environmental assessment), House of Commons.

HS2

www.hs2.org.uk

High Speed Two (HS2) Limited

Two Snowhill,

Snow Hill Queensway,

Birmingham B4 6GA

Freephone: 08081 434 434

Minicom: 08081 456 472

Email: HS2enquiries@hs2.org.uk