

# HS2

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Dear [REDACTED]

I am writing in response to your letter of 28 March regarding Wellbeing Impact Study of HS2 (WISH2). In that letter you asked for clarification on three matters. Information on the work that has been undertaken to date and when the initial results will be available is provided in the note appended to this letter which has been prepared by the Cambridge Centre for Health Services Research (CCHSR) and RAND Europe.

HS2 Ltd has taken the importance of the WISH2 seriously and worked closely with the National Institute for Health and Care Research (NIHR) to appoint researchers to undertake the study as soon as was practicable. A research team led by the CCHSR with RAND Europe was appointed to undertake the study in June 2021. At the time of its appointment the scope of the study reflected the scope of Phase 2 of HS2 as it was then, to examine to the effects of the promotion and construction of HS2 network to both Manchester and Leeds. The research team then undertook the background research and technical work necessary to enable the collection of data to commence.

In November 2021 the Government published the Integrated Rail Plan for the North and Midlands (IRP). As this altered the scope of Phase 2 of HS2 it affected the WISH2 as it had been commissioned. HS2 Ltd then worked with research team to consider the options for how to proceed with the study. These options were broadly either reducing the geographical extent of the study or altering the research scope of the project so that it investigates the impact of the change to the HS2 Phase 2b route, as well as the impact of the parts of the route that are proceeding as planned.

In January 2022 a recommendation was made to DfT on how to proceed. In July 2022 the Secretary of State's office confirmed that Ministers wish to keep the same geographical scope for the study – i.e. the original Y network to Manchester and Leeds (pre-IRP).

Following this decision the research team undertook the work needed to implement the necessary changes such as altering questionnaires and logic-models. Once this was done the methodology was submitted to the Health Research Authority for approval. The required approval was received in late January 2023.


The research team is now liaising with GP practices in the study area and will commence the surveys shortly. These will be followed by interviews with stakeholders which are expected to commence in late spring 2023.

In addition to the study HS2 Ltd has further put in place improvements to the way it engages with stakeholders. These are described in the HS2 Mental Health and Wellbeing Progress Report (December 2022).


As a general matter of best practice HS2 Ltd has expanded the route-wide health assessment in section 7, volume 3 of the Environmental Statement to include a description of the processes taking place outside the EIA to address mental health and support vulnerable people. This expanded section also explains how mental health effects have been assessed in the ES volume 2 community area reports and provides a summary of mental wellbeing issues raised in Phase 2 consultation feedback.

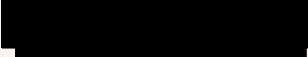
In summary, I believe good progress is being made, though circumstances outside of the research project have required additional time for recalibration of the study parameters. As set out in the attached note from the CCHSR and Rand Europe (paragraph 1.3), the study is well underway a Public Advisory Group and the first public workshop have been convened. Work is underway on preliminary analyses and (allowing for academic peer review) the first findings are expected to be available for publication within 12 months.

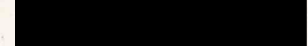
Yours sincerely

  
Hybrid Bill Delivery Director, HS2 Ltd

Cc

 Deputy Director, High Speed Rail (Crewe to Manchester) Bill, DfT

 Senior Research Leader, RAND Europe

 Cambridge Centre for Health Services Research, University of Cambridge

# Wellbeing Impact Study of High-Speed 2

## Overview and summary of work to date

Cambridge Centre for Health Services Research

Principal Investigators: Dr Katherine Morley, Prof Stephen Morris



EUROPE



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## **SECTION 1. SUMMARY**

### **1.1 RESEARCH COMMISSIONING AND RE-SCOPING TIMELINE**

National Institute for Health and Care Research (NIHR) worked closely with High Speed 2 Ltd (HS2 Ltd) to support the commissioning of this research. NIHR's involvement ensures that the study is entirely independent and impartial, reflecting international best practice, while HS2 Ltd's involvement in the design of the project scope ensures it fulfils the original ask of the Select Committee.

However, the geographical scope of the research was aligned to the route of HS2 Phase 2 at the point when the research was commissioned in June 2021, prior to changes to the Phase 2b route. When changes to the eastern leg of the Phase 2b route were announced in November 2021 this affected the scope of the research that was originally agreed by NIHR, HS2 Ltd, and the research team.

The research team were unable to proceed with data collection until a decision was made about whether the part of the HS2 Phase 2b route no longer proceeding as planned should still be within the scope of the study, and if so, how the research approach should be adapted to accommodate this.

In July 2022, the Department for Transport ministers decided that the geographical scope of the research should not be affected by changes to the HS2 route. This necessitated changes to the research methods and materials to accommodate the participants' different experiences of HS2. It also affected the timing of data collection activities, which must be preceded by review and approval of all research protocols and tools from the Health Research Authority and a local Research Ethics Committee. Approval was received in January 2023.

### **1.2 RESEARCH UNDERTAKEN TO DATE**

The research team have proceeded with as much research as possible given the changes in the scope of the research. The following activities have been undertaken during this time (more detail is provided in subsequent sections):

- Public involvement in the research (Section 3.1)
- Development of a theoretical framework for the research (Section 3.2)
- Development of data collection tools for quantitative and qualitative research (Section 3.3)
- Publication of analysis plans for quantitative and qualitative research (Section 3.4)
- Analysis of GP practice level administrative data (Section 3.5)

### **1.3 TIMELINE FOR PLANNED OUTPUTS**

Participant recruitment and data collection will take place over Spring and Summer 2023. We will analyse these data starting in Autumn 2023. We expect to complete the integrated analysis of all the data collected from participants and from administrative data sources by the end of the first quarter of 2024. We will be happy to share our findings with the Committee at this point. We will also be happy to share any significant interim findings with the Committee as they become available.

**SECTION 2. RESEARCH STUDY OVERVIEW**

**2.1 THE RESEARCH TEAM**

The Wellbeing Impact Study of HS2 (WISH2) is led by The Cambridge Centre for Health Services Research (CCHSR), a collaboration between researchers at the University of Cambridge and at RAND Europe ([www.cchsr.phpc.cam.ac.uk](http://www.cchsr.phpc.cam.ac.uk)).

**RAND Europe** is an impartial, not-for-profit policy research organisation whose mission is to improve policy and decision making through independent, objective and evidence-based research and analysis.

**The University of Cambridge** is one of the world’s oldest and most successful universities. It is a renowned centre for research, education, and scholarship that makes a significant contribution to society. University staff who are members of the CCHSR are based in the **Department of Public Health & Primary Care and the Cambridge Research Methods Hub**.

**2.2 STUDY DESIGN**

The aim of the Wellbeing Impact Study of HS2 is to explore whether individuals and communities exposed to HS2 experience positive or negative mental health and wellbeing impacts. It will address the following research questions:

1. What are the positive and negative mental health and wellbeing impacts of HS2?
2. Do these impacts change over time and what explains them?
3. Are impacts felt differently across groups within a community?
4. What are the health economic implications of these impacts?

As parts of the HS2 Phase 2 route are no longer proceeding as planned, this research will also examine the impact of making changes to major transport infrastructure in the planning phase.

The Wellbeing Impact Study of High-Speed 2 includes six work packages; two of these involve the recruitment and collection of data from members of the public as summarised below.

<b>Work package 1</b>	Develop a framework for evaluating the mental health and wellbeing impacts of HS2, including consideration of possible impacts of changing the Phase 2 route.
<b>Work package 2</b>	Conduct a longitudinal survey of mental health and wellbeing, social inclusion, and health behaviours of people living near HS2 Phase 2 and similar people who do <i>not</i> live near the HS2 route.
<b>Work package 3</b>	Conduct focus groups and interviews with individuals from communities near the HS2 route including residents, healthcare providers, and other community stakeholders.
<b>Work package 4</b>	Analyse administrative data on mental health from GP practices located near HS2 and matched control practices to explore long-term trends (including before study commencement).
<b>Work package 5</b>	Conduct a health economic analysis of the mental health and wellbeing effects of HS2 using work package 2 data and informed by results from work package 3.
<b>Work package 6</b>	Integrate findings to determine the scale, drivers, and distribution of HS2 mental health and wellbeing impacts and share these with stakeholders for feedback.

The study is intended to last 10 years to encompass planning, early construction, main construction, and potentially early operation of HS2 Phase 2. The data collection and analysis activities will be repeated three times, aligned to stages of HS2 development.



### 3.2 STUDY FRAMEWORK

We developed a programme theory to articulate how the intervention we are studying (the HS2 Phase 2 development) and its components may lead to a range of outcomes and impacts related to mental health and wellbeing. This provides a theoretical and analytical framework to guide the research.

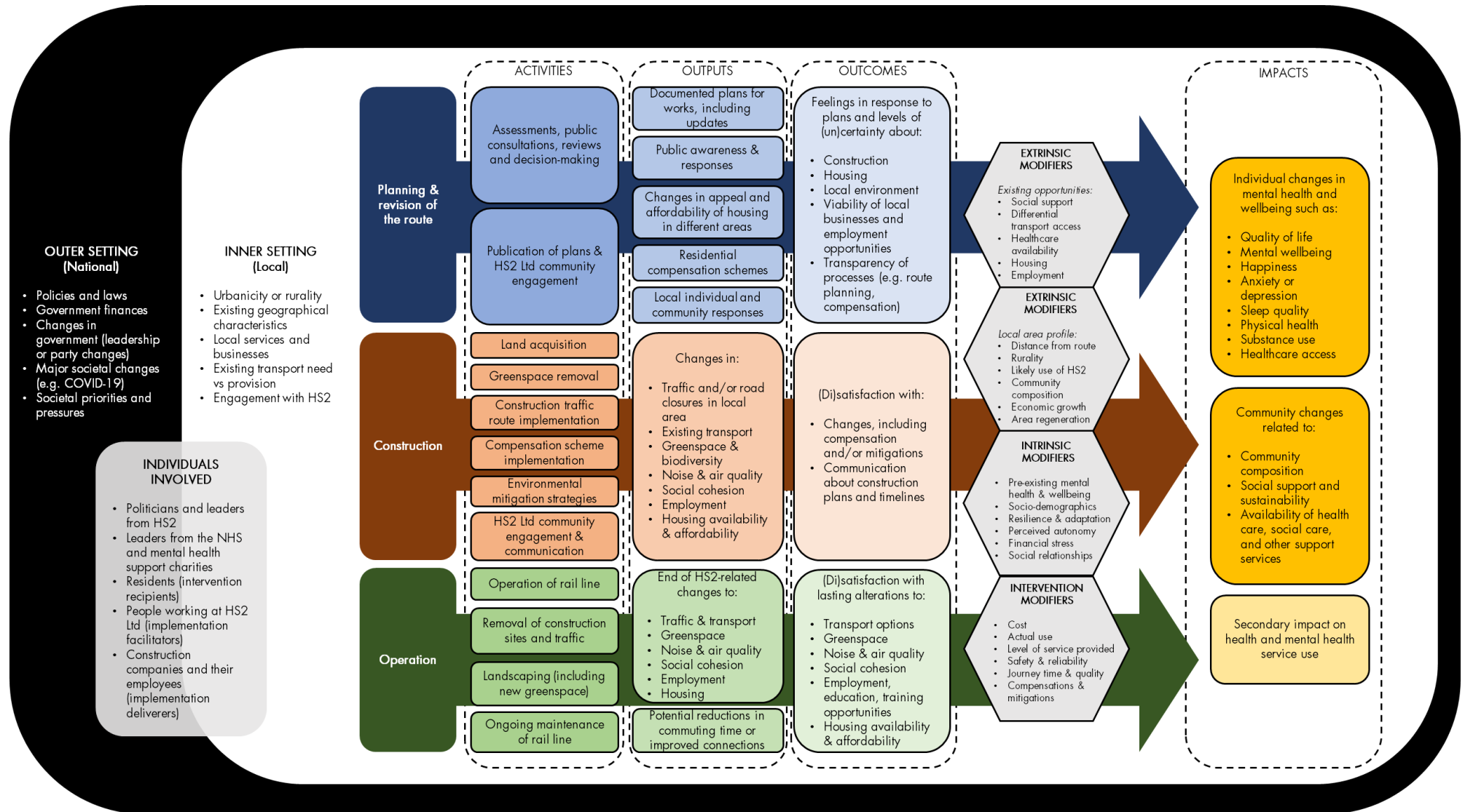
Its development was based on in-depth review of the literature and the public workshop described earlier, with input from the WISH2 PAG. It incorporates key elements of transport infrastructure models and frameworks proposed by other researchers<sup>1,2</sup>, and draws on the implementation science Consolidated Framework for Implementation Research<sup>3-5</sup>. It is operationalised as a logic model in Figure 2 (next page), mapping out activities, outputs, outcomes and impacts for the three stages of the HS2 Phase 2 development, as well as modifiers and contextual factors.

The logic model in Figure 2 attempts to articulate, from a theoretical perspective, how HS2 may impact mental health and wellbeing. Once data from wave 1 of the research are collected and analysed, we will use this empirical information to update the logic model. We anticipate that as the HS2 development progresses, we will need to develop a separate logic model for the sections of the route that are no longer proceeding as planned due to divergence in relevant activities, outputs, outcomes and impacts. Below we briefly explain the current model:

- **Outer setting:** This describes wider context within which HS2 Phase 2 is being implemented, including political, economic and environmental situations and challenges. These include major society events such as COVID-19.
- **Inner setting:** This relates to the local area or neighbourhood. It covers high-level descriptions of a region including geographical characteristics, services, and the local economy, and communications between HS2 Ltd and individuals and communities.
- **Individual domain:** This defines and describes the people involved in decision-making and implementation of HS2 Phase 2, as well as the deliverers and recipients of it.
- **Process:** This covers the activities, outputs and outcomes required to deliver the HS2 Phase 2 development. The process of implementing HS2 spans three stages - planning or changes to plans, construction, and operation – each of which may affect mental health and wellbeing via different mechanisms. This central section of the diagram can be read from top-to-bottom (moving through the stages of the development) and left-to-right (moving through activities, outputs and outcomes for each development stage).
- **Modifiers:** *Intrinsic and extrinsic modifiers* influence the extent to which outcomes lead to impacts. These may relate to an individual's demographic or psychological characteristics and traits (intrinsic modifiers) or the profile of the local area an individual lives in (extrinsic). *Intervention modifiers* relate to the ways in which HS2 is implemented as this may affect the extent to which HS2 activities impact mental health and wellbeing.
- **Impacts:** This domain encompasses potential impacts related to mental health and wellbeing at the individual and at the community level. The constructs included are distinct but overlapping and inter-related. There is an anticipated secondary impact of lowered mental health or wellbeing on health and mental health service utilisation.

Domains interact with each other, particularly the inner and outer settings. The model does not specify the route of activities through to impacts but this will be developed through the research.

Figure 2 Logic model for HS2 Phase 2 development



### 3.3 DEVELOPMENT OF DATA COLLECTION TOOLS

#### 3.3.1 *Data collection tools*

The study framework described above informed the development of the survey and the focus group and interview guides. Where possible, we drew on existing validated tools for different topics, but questions relating to the impact of HS2 were developed by the research team in collaboration with the WISH2 PAG. These questions were altered and expanded once it was decided that the part of the route not proceeding as originally planned was within the scope of the research. The tools cover the following topics:

- Awareness of HS2, perspectives on individual and community impact, resilience and capacity to adapt to change.
- Mental and physical health, wellbeing, and healthcare use.
- Community networks, social inclusion and financial wellbeing.
- Sociodemographic factors including transport use, employment, housing situation, caring responsibilities, ethnicity, age, and gender.

We also developed invitations and information sheets for potential participants for all data collection activities with input from our PAG.

#### 3.3.2 *Ethical approval*

Prior to collecting any data, the research team needed to apply for approval from the Health Research Authority (HRA). This involved submitting a detailed research protocol, including all study data collection tools, for review by the HRA and a local Research Ethics Committee. Consequently, it could not be undertaken until the scope of the research was finalised.

Approval was received in January 2023. Following approval, we have been working with five NIHR Clinical Research Networks to identify and recruit GP practices who will support the team with inviting registered patients to participate in the research project.

### 3.4 PUBLICATION OF ANALYSIS PLANS

As part of the research team's commitment to reproducible and transparent research, analysis protocols for the wave 1 survey and interviews and focus groups have been published on the Open Science Framework, along with an analysis protocol for the first administrative data analysis:

- First administrative data analysis: <https://osf.io/2qkgu/>
- Wave 1 survey: <https://osf.io/wjpfj>
- Wave 1 interviews and focus groups: <https://osf.io/7f38p/>

### 3.5 ANALYSIS OF GP PRACTICE LEVEL ADMINISTRATIVE DATA

We are using GP-level administrative data to explore the impact of HS2 Phase 2 route on mental health of people living along the route. Mental health is indexed via four related measures:

- 1) Prevalence of self-reported long term mental health problems
- 2) Incidence of new depression diagnoses in people age 18+
- 3) Prevalence of depression in people age 18+
- 4) Rate of antidepressant medication prescribing.

We are currently using these routinely-collected data to look at trends in mental health problems prior to the commencement of the research.

## SECTION 4. WORK OVER THE NEXT 12 MONTHS

### 4.1 ANTICIPATED ACTIVITIES

#### 4.1.1 Data collection

Data collection for the survey component of WISH2 is expected to run from April 2023 to July 2023. As participants are being invited via a mail-out, this needs to be completed before the summer holidays to minimise the risk that people will not respond due to being away from their place of residence. Recruitment targets are shown in Table 1.

Table 1 Number of GP practices and participants to be recruited by route segment and exposure status

Route segment		GP practices	Participants per practice (minimum)	Total participants
Phase 2a	Exposed	12	100	1200
	Unexposed	12	100	1200
Phase 2b West	Exposed	6	100	600
	Unexposed	6	100	600
Phase 2b East	Exposed	6	100	600
	Unexposed	6	100	600
Phase 2b amended route	Exposed	6	100	600
	Unexposed	6	100	600
<b>Grand total</b>		<b>60</b>		<b>6000</b>

Data collection for focus groups and interviews will take place over two periods, before and after the summer holidays. As residents will be recruited from survey participants, this data collection will take place in Autumn 2023. Recruitment of other stakeholders, including clinical staff, is not linked to survey participation so can take place in parallel with the survey, with data collection finishing in July 2023. Targets are shown in Table 2.

Table 2 Overview of qualitative data collection (per wave)

Route section	Residents		Stakeholders (including clinical staff)	
	Data collection	Number	Data collection	Number
Phase 2A	Focus groups	6	Interviews	42
Phase 2B West Phase 2B East	Interviews	9-12		
Phase 2B amended route	Focus groups	2	Interviews	11
	Interviews	3-4		
<b>Grand total</b>		<b>8; 12-16</b>		<b>53</b>

#### 4.1.2 Data analysis

We will analyse the data from the survey, focus groups, and interviews starting in Autumn 2023. We expect to complete the analysis of the individual data sources by the end of 2023. We will also conduct a second analysis of the GP practice level administrative data, aligned to the initial

years of the research study. By the end of the first quarter of 2024 we will have conducted a cross-synthesis of the findings to provide an integrated interpretation of the data from wave 1 of the study. We will be happy to share our findings with the Committee at this point.

#### 4.2 ANTICIPATED PUBLICATIONS

We expect to submit multiple academic manuscripts for publication over the next 12 months (publication cannot be guaranteed during this time period due to academic journal peer review and publication processes that are beyond the control of the research team). The anticipated manuscripts include:

- A description of the research protocol for the study.
- A summary of findings from the first GP practice administrative data analyses (up to 2020).
- A description of all the findings from wave 1 of the study.

When these articles are published, we will develop plain English summaries of them with the WISH2 PAG. These will be published on the study website along with copies of the articles. We will be happy to provide the Committee with copies of the articles and plain English summaries as soon as they are available.

## SECTION 5. REFERENCES

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