RAPID HEALTH IMPACT ASSESSMENT OF HS2 INITIAL PREFERRED ROUTE IN EASTERN DERBYSHIRE

A synthesis of evidence from community profiling, review of the literature and community consultation, with recommendations to HS2 Ltd. for maximising health gains and mitigating negative health consequences in respect of the high-speed rail development proposal HS2 Phase 2 initial preferred route in Eastern Derbyshire

Health and Community Safety Department, Derbyshire County Council

DECEMBER 2013

DERBYSHIRE County Council
Improving life for local people

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Statement of purpose

This report comprises a synthesis of evidence from community profiling, review of the literature and community consultation, with recommendations to HS2 Ltd. for maximising health gains and mitigating negative health consequences of the high-speed rail development HS2 initial preferred route in Eastern Derbyshire.

Intended audience

This report is directed at HS2 Ltd. but will be of interest to all those potentially affected, directly or indirectly, by the proposed HS2 development.

Acknowledgements

The Contributors wish to acknowledge the assistance gratefully received from DCHS Knowledge Services and Public Health Intelligence, Derbyshire County Council. Thank you to members of the community in Bolsover, Chesterfield, Erewash and North East Derbyshire who contributed to the community consultation.

Abbreviations/ acronyms used in this report

BC	borough council
CCG	clinical commissioning group
COPD	chronic obstructive pulmonary disease
DC	district council
DCC	Derbyshire County Council
dB	decibels
EMF	electromagnetic fields
FOI	freedom of information
GDP	gross domestic product
HIA	health impact assessment
HS1	High Speed One, also known as the Channel Tunnel Rail Link
HS2	High Speed Two, which includes two phases
HS2 Phase 1	London to Birmingham
HS2 Phase 2	Birmingham to Manchester and Birmingham to Leeds
HSR	high-speed rail
IMD	Index of Multiple Deprivation
IPR	initial preferred route
kph	kilometres per hour
LSOA	Lower Level Super Output Area
NED	North East Derbyshire
NHS	National Health Service
PHE	Public Health England
PM_{10}	Particulate matter 10 microns or less in diameter
RTA	road traffic accident

Caveats in the interpretation of this report

Restrictions on scope

In pre-defining the scope of this report, our ability to capture health impacts outside of our chosen framework for assessing impact is constrained. We also recognise that other localities within Derbyshire may be impacted (for example, by the second arm of the 'Y' network to Manchester) although it was necessary to limit the geographic scope of this report.

Limitations of evidence

The data reported in the locality profiles are aggregate and may therefore obfuscate local variations in health indicators between demographic groups. There is a general paucity of good quality research evidence in the literature relating specifically to high-speed rail developments. Although a larger body of literature is available relating to rail developments and the general links between transport and health, it was not feasible to review this and it may not have been generalizable to the present proposal. It is not possible to precisely gauge the level or type of concern among the wider community through consultation events. The small number of closed consultations informing this report may introduce bias to the reported community voice and the volume of data collected was significantly less than anticipated; however, it seems likely we reached 'saturation' in capturing shared concerns.

Significant uncertainty is introduced when estimating health impacts almost 20 years into the future, when HS2 Phase 2 would become operational (e.g. demographic shift or changes in disease prevalence). These factors, combined with the early stage of the HS2 proposal and consequent lack of design details, mean that it is difficult to be sure of the potential impacts on health or indeed their amenability to mitigation or enhancement.

Comprehensiveness

We do not presume this report is comprehensive, and urge HS2 Ltd. to consider all potential health impacts suggested by other submissions received in response to the consultation, whether these are in the guise of health impact assessments or not.

Alternatives to the HS2 proposal

It is important to place the findings of this report in the context of other potential transport solutions (including no development), given that the balance of comparative health gains or harms could be relatively favourable or unfavourable.

Monitoring key indicators

The Steering Group acknowledge that identifying key indicators for monitoring health impacts is desirable. However, substantive plans for HS2 and publication of a mitigation strategy in response to initial consultations are prerequisite to identifying suitable indicators.

Recommendations

The Steering Group acknowledge the desirability of making 'SMART' recommendations (specific, measurable, assignable/ attainable, relevant, time-bound) in this report. However, the early design stage of the proposal and the protracted timespan until HS2 might be operational would suggest a level of certainty that is not justified on the basis of the available data.

Document control

Classification:	Public: information that can be made freely available in the public domain & would not cause damage or harm if released
Date:	December 5
Version:	1.0 Final
Enquiries:	julie.hirst@derbyshire.gov.uk

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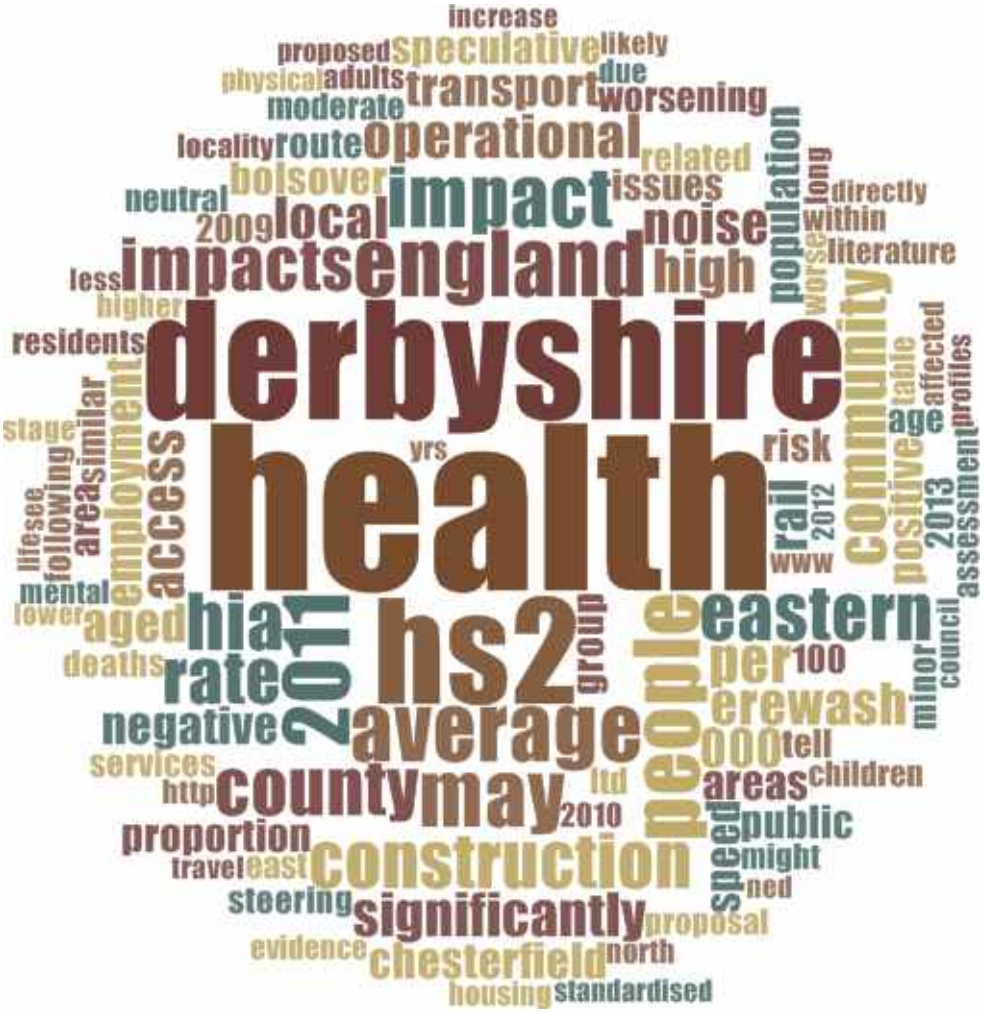

1. Outline of the HS2 proposal

This section outlines the HS2 proposal and its implementation plan within eastern Derbyshire.

1.1 What are the objectives of HS2?

High-speed trains operating at speeds of 200 kilometres per hour (kph) or more[1] have seen international service for over 30 years[2]; in this regard high-speed rail (HSR) represents a mature—but not necessarily uniform—technology. The UK has an existing high-speed rail network, HS1 (High Speed One), which is also known as the Channel Tunnel Rail Link. High Speed 2 (HS2) is a development proposal for a new rail system (tracks, trains and stations) that is being promoted through HS2 Ltd, a company wholly-owned by the Department for Transport. The essence of the proposal is about expanding passenger services capacity and redressing the North-South balance by reducing long-distance journey times. The latter would be achieved through the combination of an entirely new rail network and modern trains, together with a restricted number of stations. This would allow HS2 to travel faster than trains using the 'classic' rail network (at speeds of around 360 kph), although with less opportunity to get on or off.

Creation of a Y-shaped network

The HS2 proposal includes two staged development phases. HS2 Phase 1 would join London to Birmingham, whereas HS2 Phase 2 would have two arms: an eastern one (Birmingham to Leeds) and a western one (Birmingham to Manchester), meaning the new network would be roughly Y-shaped (see Fig. 1.1).

Connectivity with 'classic' rail services

HS2 is intended to supplement the legacy or 'classic' rail network rather than expand it, using a new route and new technologies. The details relating to precisely how HS2 will connect with classic rail services are not clear as of this writing. It should be noted that there are no HS2 stations within Derbyshire County as part of the proposal (see Fig. 1.2).

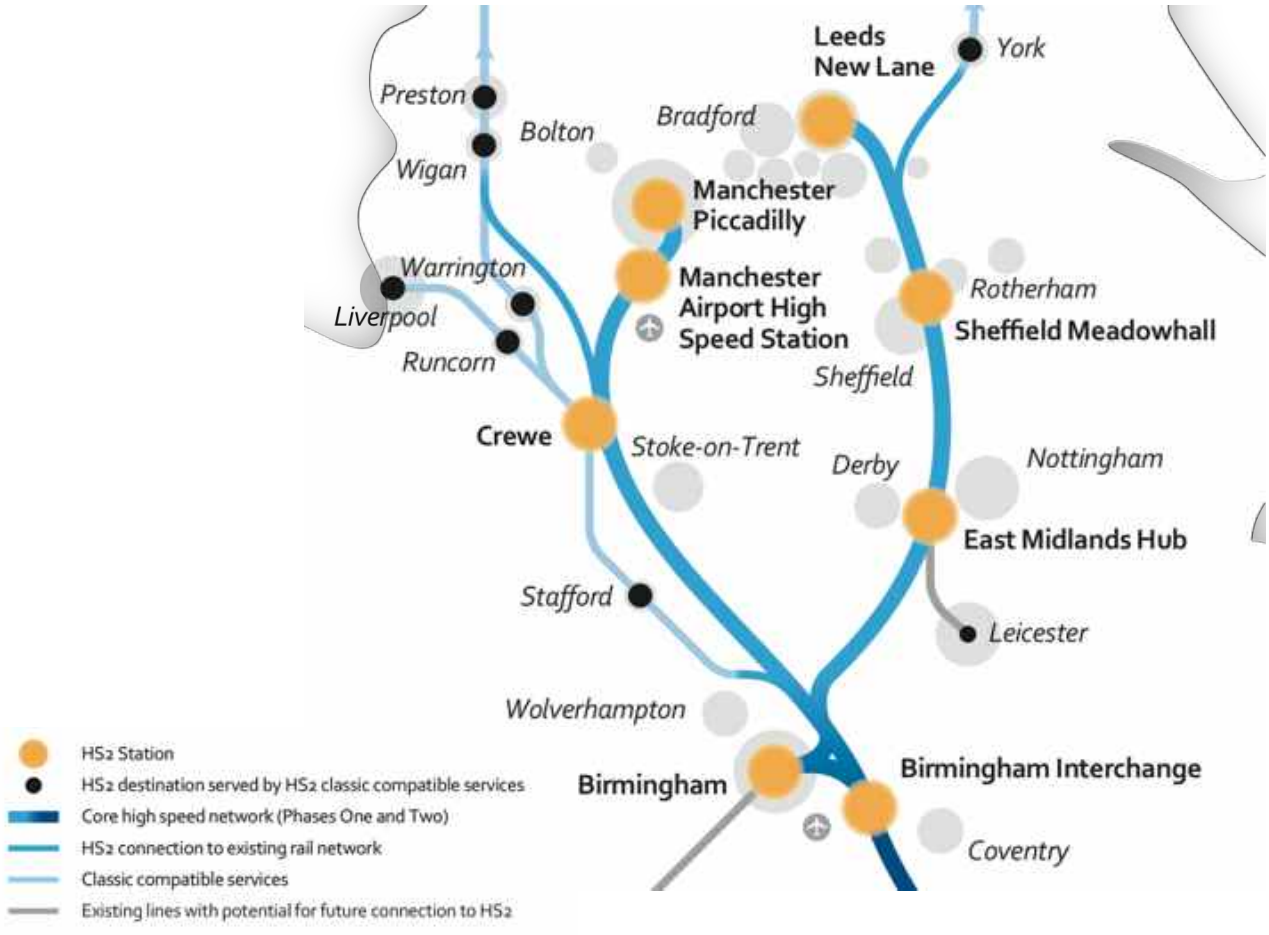

Fig 1.1: Map of proposed HS2 Phase 2 eastern and western arms in the Midlands (© HS2 Ltd.)

Fig. 1.2: Map of proposed HS2 in the East Midlands connectivity with 'classic' rail services (© HS2 Ltd.)

1.2 What is the implementation plan in Eastern Derbyshire?

HS2 Ltd. published an initial preferred route (IPR) for Phase 2 on 28 January 2013. Maps produced by HS2 Ltd. for the public consultation are provided in Appendix 1.

Development stages

There are three broad stages to the proposed development. The first stage is the **consent** (planning) stage. On 17 July 2013 HS2 Ltd. launched a programme of information-giving events and a public consultation that closes in January 2014. The Secretary of State intends to confirm the preferred route by the end of 2014. An exceptional hardship scheme was proposed to deal with property sales blighted by the proposal at this stage. The second stage, **construction**, would commence in the mid-2020s and involve a works corridor about 60 metres wide. A compensation scheme will apply to properties subject to forced sale during this stage. The third, **operational** stage would see Phase 2 of the network come into service around 2032–33.

Overview of the route through Derbyshire

The proposed route through eastern Derbyshire for the most part follows the M1 corridor and passes through the districts/ boroughs of Erewash, North East Derbyshire (twice), Bolsover and Chesterfield. The route turns away from the northern part of Erewash and skirts the Amber Valley as it loops eastward into Nottinghamshire. In the map on the following page (Fig. 1.3) each geographic area (Lower Level Super Output Area) is assigned a calculated Index of Multiple Deprivation score. These scores are then ranked nationally and divided into five equal parts to create bands (each band thus equating to 20% of the total population). The scores each LSOA in Derbyshire are then mapped to the corresponding national band by colour coding. Thus those areas of the County that are darker green are among the most affluent 20% of the population nationally. Conversely, those areas coloured red are among the most disadvantaged 20% of the national population. Figure 1.3 demonstrates a visually striking association between the proposed route and the most disadvantaged parts of the County (see also section 3 of this report for more detailed deprivation mapping).

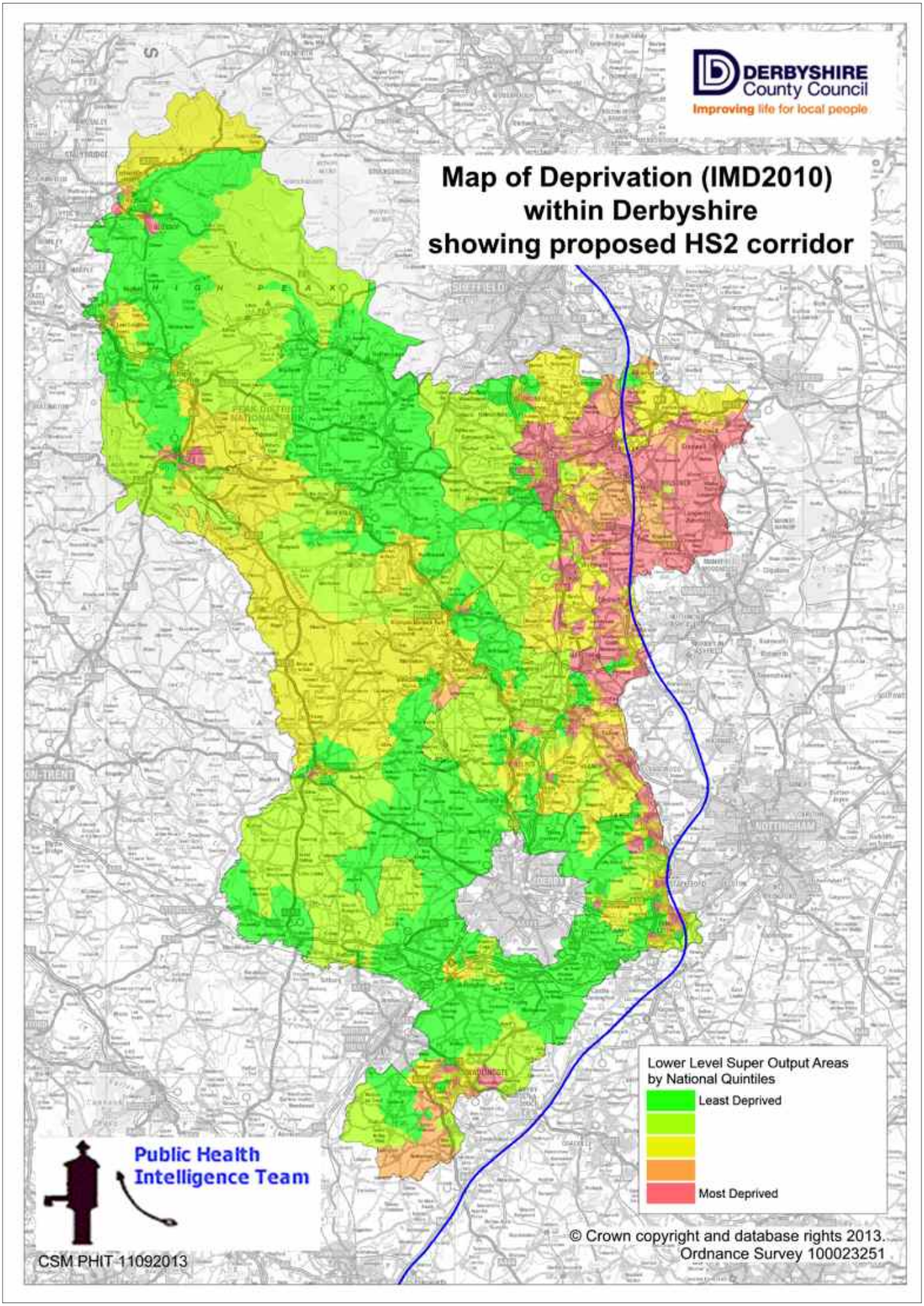

Fig. 1.3: Map of the initial preferred route through Derbyshire showing local area deprivation (see key)

Route through Bolsover DC

The proposed route enters Bolsover east of M1 Junction 28 and exits Bolsover south of Heath near Junction 29 (see Appendix 1).

Route through Chesterfield BC

The proposed route enters Chesterfield east of Duckmanton and exits to the southwest of Renishaw. The closest station for Chesterfield residents would be at Meadowhall (the South Yorkshire hub), on the far side of Sheffield. There is a proposed maintenance depot at Staveley within the borough (see Appendix 1).

Route through Erewash BC

The proposed route enters Erewash south of Long Eaton, continuing to a proposed East Midlands station/ hub at Toton (see Fig. 1.4), a suburb of Nottingham on the Derbyshire border adjacent to Long Eaton. Toton would be the closest station for Derby residents. HS2 would exit Erewash near the M1 south of Trowell (see Appendix 1).

Fig. 1.4: Visualisation of the proposed East Midlands Hub in Toton, adjacent to Long Eaton (© HS2 Ltd.)

Route through North East Derbyshire DC

The proposed route passes through North East Derbyshire (NED) twice. It enters south of Heath near M1 Junction 29 before exiting east of Duckmanton. The route re-enters NED to the southwest of Renishaw and re-exits NED to west of Killamarsh.

[1] Sometimes a cutoff of 250 kph is used; see kph http://www.uic.org/spip.php?article971
[2] ICE (2006). Which way? Options for a UK high-speed railway. Institution of Civil Engineers; London. http://www.ice.org.uk/Information-resources/Document-Library/Which-way--Options-for-a-UK-high-speed-railway

2. Health impact assessment

This section introduces health impact assessment (HIA) and explains our purpose in undertaking a rapid HIA of the HS2 proposal in eastern Derbyshire, as well as the approach we took and some key terms used in this report.

Key term: Health impact
Something that has a positive or negative effect on health or a determinant of health.

2.1 What is health impact assessment (HIA)?

A widely adopted definition of HIA, endorsed by the World Health Organisation (WHO), is as follows:[1]

> *A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.*

HIA might be indicated when the following 'screening' conditions are met:

- The proposal may have a direct impact on health, mental health or well-being i.e. the 'causes' of ill health (see below);
- The proposal may have an impact on social, economic and environmental conditions that indirectly affect health i.e. the wider determinants or the 'causes of the causes' of ill health (see below);
- There is an opportunity to change the proposal i.e. influence decisions;
- There is community concern about the proposal;
- There are resources available to commit to HIA (this determines the type of HIA e.g. rapid, desktop, comprehensive).

The main potential benefits of conducting an HIA are improvements to measurable health outcomes by maximising the positive health impacts and minimising the negative health impacts of a proposal; HIA can also help to reduce health inequalities (see below). Other benefits arising from the HIA process include partnership working

and resource sharing (e.g. between county, district and borough councils), ensuring that the best available evidence supports decision-making and (if 'participatory' in nature) it can provide the opportunity for meaningful community engagement.

A vision for HIA in Derbyshire

HIA was established (if underutilised) in the public health toolkit within the National Health Service (NHS). Derbyshire County Council (DCC) took over responsibility for some public health functions in April 2013. The Director of Public Health introduced a well-received paper to Cabinet promoting routine use of HIA for strategic programmes, aiming for it to become an agreed approach within the authority.

Recognising the causes and determinants of health

HIAs pay close attention to the so-called determinants of health. The causes of a health state are typically manifest at a personal or individual level. They include a person's genetic predisposition, factors affecting physical health (such as the presence of other medical conditions or so-called co-morbidities), lifestyle choices and psychological (mental) health.

The determinants of a health state can be described as the 'causes of the causes' of that condition. They are more usually only visible at the population level and include the broad economic, social, environmental and political factors that ultimately determine the health of whole populations.

Key term: Determinants of health

Broader, population-level influences on health and well-being (as opposed to the causes of ill health, as visible at the individual level).

This distinction is also made in Derbyshire's Health & Well-being Strategy 2012–15:[2]

> *Health and wellbeing are determined by a variety of characteristics. At the individual level age, gender and lifestyle affect health. Being part of family, social and community networks also has a significant impact on people's wellbeing. Other important factors are the wider determinants such as employment, education, housing, access (including transport), income and the environment.*

Tackling inequalities

HIAs also pay particular attention to differences in health status between groups of people within the community. By doing so they can play an important role in preferentially advocating for health improvement among disadvantaged groups. This goal is noted in the Derbyshire Health & Well-being Strategy 2012–15:

> *As outlined by Marmot in "Fair Society, Healthy Lives", tackling inequalities requires that actions are delivered on a universal basis but with a scale and intensity that is matched to the level of need. We will reduce health inequalities by focussing proportionately more effort on individuals and communities in Derbyshire who have poorer health or who have difficulty accessing services. This includes people living in deprived communities, people on low incomes, and vulnerable or disadvantaged groups.*

Key term: Health inequalities

Social differences in health status (e.g. disability-free life expectancy) or in access to the determinants of health (e.g. education). Because many inequalities are also unjust, they are sometimes referred to interchangeably as health inequity.

Vulnerable groups within the local community may be further disadvantaged by an issue, or conversely be more likely to experience a health benefit as a result of an equity-enhancing proposal. HIAs typically consider equality impacts on 'equity groups' and on socio-economic groups. Equity groups are identified on the basis of 'protected characteristics' (as defined by the Equality Act 2010); these include people who may be vulnerable as a result of age; disability; gender reassignment; marriage and civil partnership; race; religion or belief; sex; and sexual orientation. Socio-economic differences are often quantified using a 'deprivation score' (see box). People living in less affluent areas may be regarded as vulnerable because of risks to attaining or maintaining good health.

Key term: Deprivation

Deprivation is a lack of resources of all kinds, not just financial.[3] The English Indices of Deprivation 2010 (IMD) combine measures of employment, income, health and disability, education skills and training, barriers to housing and services, crime and disorder, and living environment—weighted to produce an overall area-based score.

2.2 Why is Derbyshire interested in health impacts of HS2?

When going through the 'screening' criteria given above, HIA would seem to be indicated given the extent to which these impacts may affect people's lives. Furthermore, as a transport initiative, HS2 has obvious potential to alter a key determinant of health. It is also important to acknowledge the policy context in which an HIA is undertaken. The Labour manifesto (*A fair deal for Derbyshire*, 2013) stated:

> *HS2 offers new economic opportunities for the county, but this must not be at the cost of existing services. We will campaign for the proposed station at Toton to link in with the existing rail network to widen the benefits of HS2. The decision about HS2 is outside of the county council's control. We recognise it will have a negative impact on many of our communities and we will fight to minimise these impacts and get the best deal for Derbyshire.*
>
> *We will… Use the HS2 development to encourage inward investment and open up new markets for Derbyshire businesses, whilst mitigating the negative impact of the line on homes, the road and canal networks and on the Markham Vale development.*

To deliver on these intentions Derbyshire County Council convened an HS2 working group to oversee the response to the HS2 Ltd. Phase 2 consultation. The present HIA informs that response.

2.3 What health impacts do HS2 Ltd. anticipate?

In a report by Arup/URS to HS2 Ltd. in July 2013 scoping a proposed HIA relating to Phase 1 (London to Birmingham), the following 'key health pathways' were anticipated;[4] these are presumably equally relevant to Phase 2:

- *Changes in employment opportunities during construction and operation—both positive and negative;*
- *Regeneration opportunities around new stations and interchanges, with anticipated effects on housing and employment opportunities;*
- *Potential housing blight from actual or perceived scheme impacts, leading to changes in property values and a potential increase in vacant properties;*

- *Displacement of occupants from residential and commercial properties with impacts on housing and jobs;*
- *Effects on green space, affecting opportunities for physical activity and contact with nature;*
- *Effects on, or loss of, community facilities;*
- *Effects on the local noise and air quality environment during construction and operation;*
- *Visual effects resulting in changes to the character of the local environment;*
- *Temporary or permanent severance and/or diversion of public transport routes, and active travel routes such as footpaths and cycleways;*
- *Congestion on local roads during construction;*
- *Presence of a large construction workforce (particularly significant in less populated rural areas).*

2.4 What were our HIA aims and objectives?

The aim of the present HIA is to support a joint response to the HS2 Ltd. Phase 2 consultation on behalf of Derbyshire local authorities. This is based on acknowledgement of the initial preferred route and the opportunity to mitigate negative impacts and maximise the benefits/ positive impacts of the proposal. To attain this aim we set the following objectives:

- Establish a steering group and agree terms of reference;
- Prospectively assess potential positive and negative health impacts by triangulating (a) local community profiles, (b) the available research base and (c) capturing the perspective of affected communities;
- In assessing potential positive and negative health impacts, pay particular attention to impacts that may lesser or widen inequalities in health or the determinants of health;
- Make recommendations to HS2 Ltd. that will support decision making to enhance positive health impacts and mitigate negative health impacts;
- Seek assurances from HS2 Ltd. that these recommendations have been considered.

2.5 What was our HIA methodology?

Planning for this HIA was based around the Merseyside guidelines as an established methodology (see bibliography). Emphasis was placed on inequalities, with explicit capture of mental health and well-being issues. A rapid type of HIA was indicated in view of tight timescales. We intended to make use of expertise within the steering group to synthesise data from three broad sources (see Fig 2.1).

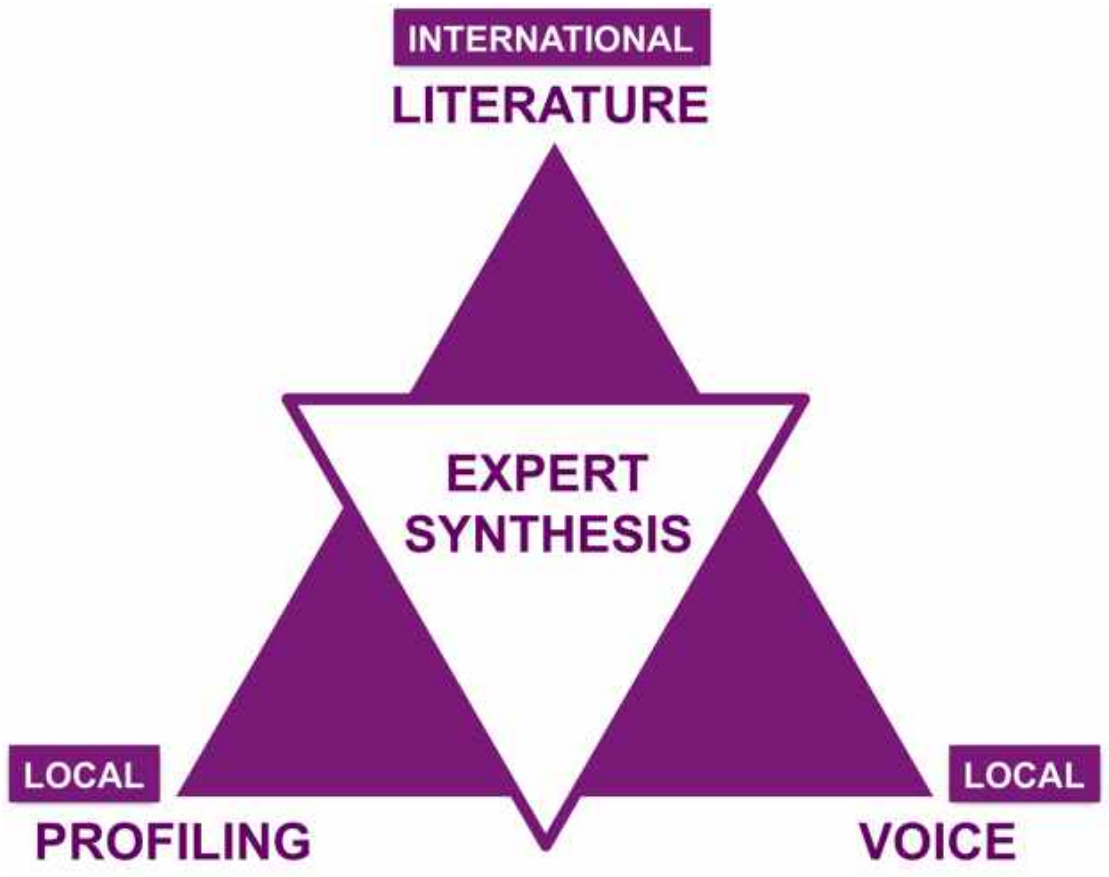

Fig 2.1: Model of methodology for HIA of HS2 in Eastern Derbyshire

Establishment of a steering group

A steering group was formed and held an initial meeting on 12th September 2013. The role of the steering group was agreed to be: set terms of reference for the group; agree the methodology of the HIA; contribute to data collection (online; consultation exercise); agree on the severity and likelihood of potential health impacts; and to make specific proposals to HS2 for maximising health benefits and minimising/ mitigating negative health impacts. Terms of reference were agreed as follows:

- Decide on the scope of the HIA, e.g. what is included and excluded, geographical boundaries;

- Agree the timescale;
- Agree the nature and frequency of steering group meetings: SG1 (12th September); SG2 (online ranking exercise); SG3 (5th December);
- Agree and monitor progress on the project plan;
- Determine the form and content of the project's outputs and how they will be captured and presented;
- Discuss and agree on issues of confidentiality;
- Agree to whom the project is reporting.

Representatives from HS2 Ltd. had been invited onto the steering group to encourage shared ownership of the HIA, however, were advised not to participate after seeking legal advice.

Framework for health impact areas in scope

The steering group agreed upon impact areas in scope, based upon the anticipated impacts of the proposal, with reference to recognised causes and determinants of ill health. The following framework was adopted:

Potential proposal impact areas on causes of ill health (individual level):

- Mental health and well-being: issues around stress, quality of life, control, inclusion, participation, etc.;
- Physical health and injury: issues around personal mobility/ physical disability, personal safety on public transport, risk of injury or accident, etc.;
- Lifestyle and leisure: effects on behaviours (physical activity, healthy food choice, smoking, drinking), access to green space, arts and culture, etc.

Potential proposal impact areas on determinants of ill health (population-level):

- Community—making connections: issues around community activities, social capital, social inclusion, cohesion, resilience, shared local assets, etc.;
- Environment—nice surroundings: issues around pollution (esp. air, water, noise), flood risk, climate change, construction waste, effect on wildlife, aesthetics/landscape severance, etc.;
- Housing—happy homes: issues around affordable/good quality housing, forced sales/relocation, value of capital assets, living conditions, etc.;

- Transport and access—getting about: changes to road use/ local bus services, affordability of rail fares, physical severance, access to health (especially GPs, hospital, pharmacy) and social services plus other key amenities, etc.;
- Nutrition—food and farming: effects on growing/ selling/ buying food and managing crops or livestock, etc. (large parts of Derbyshire are rural);
- Education—lifelong learning: access to educational opportunities from pre-school to university and adult education;
- Employment—personal wealth: access to paid or unpaid employment, personal income, etc.;
- Economy—wider wealth: investment opportunities, effects on footfall, economic growth potential, creating jobs, etc.

These 11 areas are depicted in the bespoke framework diagram below (Fig. 2.2).

Community profiling

This involved using resources suggested by Public Health Intelligence (Derbyshire County Council) to produce locality profiles for each area of impact in scope. We aimed to write brief narrative summaries that included comparison to English/ county norms, commenting on any existing inequities for these health indicators.

Review of the literature

This involved Knowledge Services (Derbyshire Community Health Services) conducting literature searches for each impact area in scope in respect of health impacts of high-speed rail development. We sought evidence on the effectiveness of any proposed interventions to enhance positive health benefits or mitigate negative health impacts and on any issues identified in relation to equity groups or socioeconomic disadvantage.

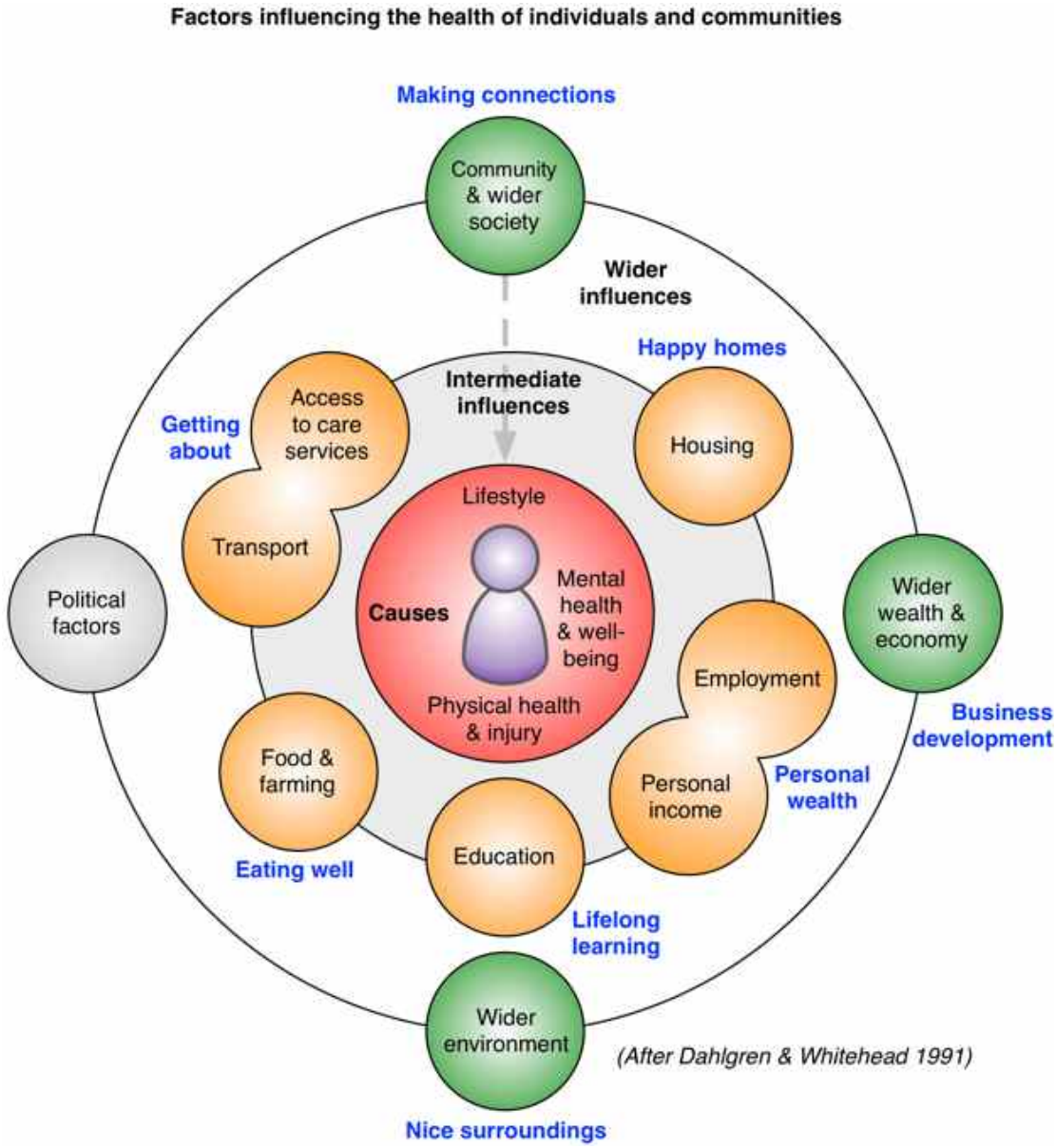

Fig 2.2: A framework for determining the impact areas in scope for the HIA of HS2 in eastern Derbyshire

Community consultation

Locality health improvement teams lead the collection of data using contacts with existing community groups. Some comments denigrating the HS2 proposal were not framed with reference to health issues and could not therefore be summarised.

The Bolsover Healthy Neighbourhoods team conducted three brief survey interviews over two days in community venues in Clowne, South Normanton and Tibshelf. Information boards were set up showing maps outlining the HS2 route, a diagram depicting the wider determinants of health and examples of how 11 of the determinants impact health and wellbeing. Participants were invited to view the map

and information describing the impact areas in scope, then offer one example of how HS2 might affect their health positively and one example of how it might impact their health negatively. The interviewer reflected responses back to participants to ensure accuracy. Of the 23 responses from Clowne all identified a negative and five stated a positive impact. Of the 31 responses from South Normanton all identified a negative and four stated a positive impact. Of the 20 responses from Tibshelf all identified a negative and two stated a positive impact.

For Chesterfield and North East Derbyshire two consultation events were held in Staveley by the Chesterfield and North East Derbyshire Public Health Locality Team, attended by community representatives including from Woodthorpe Village Community Group, Riverdale Park residents and the village of Heath. Attendees were provided with a brief presentation (including the opportunity to ask questions) and written information about the proposal and preferred route. Flip chart sheets were used to capture attendee views on potential health benefits and/or harms relating to the eleven impact areas of interest; facilitators were on hand to address any questions. In total 10 potential positive impacts and 50 potential negative impacts were recorded.

Erewash Borough Council conducted an online survey, open for three weeks during October 2013. This received 135 responses from a pool of 1,500 members of the council's Online Consultation Panel, although as the link was also available to the wider public a response rate cannot be calculated. Comments are incorporated into this report but it would be inappropriate to quantify these data.

Expert synthesis

An Excel template shared online was used to capture the views of experts on the HIA steering group. Originally these would have been formed following review of the data from profiling, literature review and community voice, however the amended timescales meant they had to be captured concurrently. Steering group members were asked to characterise impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental phase of impact (all, planning, construction, operational).

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3. Locality health profiles

This section introduces the localities within Derbyshire that are directly affected by the HS2 Phase 2 proposal. It serves to paint an overall picture of the present health status of local people for those unfamiliar with these areas. Crosscutting issues like equity and the wide-ranging effects of deprivation may otherwise be less apparent when indicators are considered in isolation. Note, however, that these indicators describe the health of populations rather than of individuals; the health of vulnerable persons (e.g. those with mental health problems) will be at greater risk than the 'average' suggests.

3.1 How healthy is Bolsover?

A health profile summary for Bolsover produced by Public Health England in the form of a 'spine chart' is provided in Appendix 2.

Locality summary

The following summary is reproduced from Derbyshire County Council's 2013 area summary profile for the district of Bolsover:[1]

The district of Bolsover is mainly rural but contains the four market towns of Clowne, Bolsover, Shirebrook and South Normanton.

In 2011, the population of Bolsover was 76,029 with a population density of one and a half times the county average. Overall, the district has a similar age profile to the county, but has a slightly higher percentage of population aged 25–44 years and a slightly lower percentage aged 45–64 years.

Bolsover is a deprived area, with significantly higher levels of unemployment, out-of-work benefit claimants, children who are eligible for and claiming free school meals, fuel and child poverty; however, long-term unemployment is not an issue in this district. Levels of educational attainment in the area are low for both adults and children, and school absenteeism is significantly higher than the county average at both primary and secondary levels.

Overall, residents of this district are in poor health, teenage conception rates are high, life expectancy at birth is also worse than the Derbyshire average, with both males and females having the lowest life expectancy amongst the eight districts. This poor health is also reflected by the mortality rates, which are the highest in Derbyshire and also by the high percentage of people whose day-to-day activities are limited due to a health problem or disability. The rate of people providing unpaid care to a neighbour, friend or relative is also considerably high.

Crime and community safety in Bolsover is significantly worse that the county average, with the exception of youth offending, with the rate of first time entrants to the Youth Justice system being significantly lower than the county average.

Priorities for Bolsover[2]

Priorities include reducing children living in poverty; reducing obesity in children and adults; and reducing levels of self-harm through promoting mental wellbeing.

Health and disease profile

Routine statistics relating to health indicators and the wider determinants of health are presented in Table 3.1. In terms of health headlines the good news is that, compared to England as a whole, people living in Bolsover are less likely to die on the roads, be victims of violent crime, or acquire TB or sexually transmitted infections (the latter can be a marker of risk-taking behaviour and poor education). On the other hand the overall health of people in Bolsover would improve if more people could be facilitated to stop smoking and drink less (reducing their higher risk of hospitalisation and of cancer), to get more exercise and eat better (reducing their risk of obesity and diabetes) and find better paid work to encourage better educated young families (a two-way relationship).

Inequalities and socio-economic profile

Differences (gaps) in life expectancy are a common measure of overall inequalities in health outcomes. The average male life expectancy at birth in Derbyshire is 79.0 years (2009-11 data); in Bolsover district it is 77.6 years, significantly worse than the England average of 78.9 years. The average female life expectancy at birth in Derbyshire is 83.0 years (2009-11 data); in Bolsover district it is 82.0 years, significantly worse than the England average of 82.9 years.

Life expectancy gap in Bolsover[2]

Life expectancy is 7.8 years lower for men and 4.5 years lower for women in the most deprived areas of Bolsover than in the least deprived areas.

In Bolsover district 27.3% of people are living in the 20% most deprived areas in England; this is worse than the Derbyshire average of 12.2% and significantly worse than the England average of 20.3%. Figure 3.1 shows the geographic distribution of deprivation in Bolsover district; the HS2 route passes through mainly deprived areas.

3.2 How healthy is Chesterfield?

A health profile summary for Chesterfield produced by Public Health England in the form of a 'spine chart' is provided in Appendix 2.

Locality summary

The following summary is reproduced from Derbyshire County Council's 2013 area summary profile for the borough of Chesterfield:[1]

The borough of Chesterfield is mainly urban, containing the market towns of Staveley and Chesterfield, which is the largest town in Derbyshire. Chesterfield has the third largest number of households of all Derbyshire districts at 46,796.

In 2011, the population in Chesterfield was 103,788 with a population density five times the county average. Overall, the borough has a similar age profile to Derbyshire, although there are slightly more males in the 25–44 age group and a slightly lower percentage of females aged 45–64 years.

Chesterfield is a deprived area, with significantly higher levels of fuel poverty, unemployment, particularly youth unemployment, out-of-work benefit claimants and children who are eligible for and claiming free school meals. Educational attainment is mixed, GSCEs results, obtaining 5 or more including English and Maths at A to C are comparable with the county average whereas, adult attainment levels at degree level or above are low, and the rate of achievement at foundation stage pupils is the lowest in the county. Absenteeism from school at primary level is significantly worse than the county average, but above the county average at secondary school.*

Residents in this borough are in relatively poor health, male life expectancy is the lowest of the Derbyshire's districts, mortality rates are high and Chesterfield has experienced the highest levels of alcohol-attributable hospital admissions in the county. Crime and community safety within Chesterfield whilst not significantly different to the Derbyshire average has the highest rates of anti-social behaviour calls for service and overall crime amongst the eight districts. However, youth offending and road traffic casualties are both above the county average.

Priorities for Chesterfield[2]

Priorities include reducing obesity in adults and children; reducing alcohol admissions; and reducing levels of self-harm through promoting mental wellbeing.

Health and disease profile

In terms of health headlines the good news is that, compared to England as a whole, people living in Chesterfield are less likely to die or be injured on the roads or to acquire TB (the latter could relate to low numbers of immigrants from high-prevalence areas). On the other hand the overall health of Chesterfield residents would improve if more people could be facilitated to stop smoking and drink less (reducing their higher risk of hospitalisation and of cancer, heart disease and stroke), eat better (reducing their risk of obesity and diabetes) and tackle problems around drug misuse, self-harm, violence and long-term unemployment (which may be interrelated). See Table 3.1 for further details.

Inequalities and socio-economic profile

Differences (gaps) in life expectancy are a common measure of overall inequalities in health outcomes. The average male life expectancy at birth in Derbyshire is 79.0 years (2009-11 data); in Chesterfield it is 77.3 years, significantly worse than the England average of 78.9 years. The average female life expectancy at birth in Derbyshire is 83.0 years (2009-11 data); in Chesterfield it is 82.5 years, similar to the England average of 82.9 years.

Life expectancy gap in Chesterfield[2]

Life expectancy is 8.0 years lower for men and 5.2 years lower for women in the most deprived areas of Chesterfield than in the least deprived areas.

In Chesterfield 25.8% of people are living in the 20% most deprived areas in England; this is worse than the Derbyshire average of 12.2% and significantly worse than the England average of 20.3%. Figure 3.2 shows the geographic distribution of deprivation in Chesterfield; the HS2 route passes through mainly deprived areas.

3.3 How healthy is Erewash?

A health profile summary for Erewash produced by Public Health England in the form of a 'spine chart' is provided in Appendix 2.

Locality summary

The following summary is reproduced from Derbyshire County Council's 2013 area summary profile for the borough of Erewash:[1]

The borough of Erewash is mainly urban, containing the market towns of Ilkeston and Long Eaton. There are also a number of scattered settlements across the more rural parts of the borough. Erewash has the second largest number of households within Derbyshire districts at 48,692.

In 2011, the population of Erewash was the second highest in the county at 112,249, with a population density of over three times that of Derbyshire.

Deprivation in the borough is in line with the county average, although, levels of child poverty and children eligible for and claiming free school meals are higher than the county average. There are high levels of people who are economically active in the area but there are a significantly high proportion of these who are claiming out-of-work benefits, are unemployed, or are Not in Education, Employment or Training (NEET), however the job market may be fluid as the rate of long-term unemployment is similar to that of Derbyshire. Educational attainment in Erewash is low for both adults and children, and there are high levels of absenteeism at primary and secondary school levels. The borough has the highest rate of youth offending and violent crime of Derbyshire's districts but the lowest rate of road traffic casualties.

Health and wellbeing for the borough is similar to the county averages, however within Erewash there are a lower percentage of people whose day-to-day activities are limited by a health problem or disability and the proportion that provides unpaid care to a friend or relative is lower than the county average. This may be a reflection

of the slightly younger age profile of the borough, particularly amongst the 16–44 year age group.

Priorities for Erewash[2]

Priorities include increasing breastfeeding, particularly continued breastfeeding at 6-8 weeks; reducing smoking in pregnancy; and reducing obesity.

Health and disease profile

In terms of health headlines the good news is that, compared to England as a whole, people living in Erewash are less likely to engage in drug misuse, acquire TB or sexually transmitted infections or die during infancy. On the other hand the overall health of people in Erewash would improve if more people could be facilitated to refrain from violent crime, get more exercise and eat better (reducing their risk of obesity and diabetes) and find better paid work to encourage better educated young families. See Table 3.1 for further details.

Inequalities and socio-economic profile

Differences (gaps) in life expectancy are a common measure of overall inequalities in health outcomes. The average male life expectancy at birth in Derbyshire is 79.0 years (2009-11 data); in Erewash it is 80.0 years, significantly better than the England average of 78.9 years. The average female life expectancy at birth in Derbyshire is 83.0 years (2009-11 data); in Erewash it is 83.0 years, similar to the England average of 82.9 years.

Life expectancy gap in Erewash[2]

Life expectancy is 6.5 years lower for men in the most deprived areas of Erewash than in the least deprived areas.

In Erewash 16.2% of people are living in the 20% most deprived areas in England; this is worse than the Derbyshire average of 12.2% and significantly better than the England average of 20.3%. Figure 3.3 shows the geographic distribution of deprivation in Erewash; the HS2 route passes through areas of mixed deprivation.

3.4 How healthy is North East Derbyshire?

A health profile summary for NED produced by Public Health England in the form of a 'spine chart' is provided in Appendix 2.

Locality summary

The following summary is reproduced from Derbyshire County Council's 2013 area summary profile for the district of North East Derbyshire:[1]

The district of North East Derbyshire is rural in nature and contains the market towns of Dronfield, Clay Cross, Killamarsh and Eckington. Elsewhere, the district is sparsely populated by scattered villages.

In 2011, the population of the North East Derbyshire was 99,100 and the population density was similar to the county average. The district has an older age profile to the county, particularly in the 65–84 age group, and has a higher percentage of lone pensioner households.

Although North East Derbyshire is a deprived area, with significantly low levels of economically active population and high levels of long-term unemployment, the percentages of children in poverty and those eligible for and claiming free school meals are both lower than the county average. House prices are in line with the county, and there are fewer houses in council tax band D and above.

Crime and violent crime rates recorded in the district are the lowest in the county whereas youth offending rates for first time entrants into the Youth Justice system are higher than the Derbyshire average. Educational attainment is mixed, success at GSCE is significantly better than the county, but there is a significantly higher proportion of adults with no qualifications than the county and the percentage reaching degree level or above is low.

Overall, residents of North East Derbyshire are in fairly good health. There are low rates of mortality and early death, and life expectancy at birth is in line with the county average. However, the district has high rates of people whose day-to-day activities are limited due to health problem or disability.

Priorities for North East Derbyshire[2]

Priorities include reducing smoking in pregnancy; killed and seriously injured casualties on the roads; and self- harm through promoting mental wellbeing.

Health and disease profile

In terms of health headlines the good news is that, compared to England as a whole, people living in NED are less likely to be victims of violent crime, experience long-term unemployment, cope with a teenage pregnancy or drug misuse, acquire TB or sexually transmitted infections, or die a smoking-related death. On the other hand the overall health of people in NED would improve if more people could be facilitated to refrain from self-harm, avoid road injuries and deaths, and to get more exercise and eat better. See Table 3.1 for further details.

Inequalities and socio-economic profile

Differences (gaps) in life expectancy are a common measure of overall inequalities in health outcomes. The average male life expectancy at birth in Derbyshire is 79.0 years (2009-11 data); in NED it is 79.5 years, similar to the England average of 78.9 years. The average female life expectancy at birth in Derbyshire is 83.0 years (2009-11 data); in NED it is 83.1 years, similar to the England average of 82.9 years.

Life expectancy gap in NED[2]

Life expectancy is 7.5 years lower for men and 6.1 years lower for women in the most deprived areas of North East Derbyshire than in the least deprived areas.

In NED 10.2% of people are living in the 20% most deprived areas in England; this is better than the Derbyshire average of 12.2% and significantly better than the England average of 20.3%. Figure 3.3 shows the geographic distribution of deprivation in NED; the HS2 route passes through mainly deprived areas.

Table 3.1: Quilt table comparing localities to County/England average

The data in the following 'quilt table' were compiled from several sources: Derbyshire Observatory Area Summary Profiles 2013[1] PHE 2013 Local Health Profiles[2], PHE Fingertips[3], Derbyshire Observatory 2011 Census Profiles[4], NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012)[5], and Derbyshire Observatory environmental data[6]. These data have been arranged by 'best fit' to impact areas of interest (some may be relevant to multiple impact areas). Note that summary statistics such as these can, however, disguise important variations in health status within a locality.

Health indicator	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Mental health							
Hospital stays for self-harm, directly age-standardised rate per 100,000 people	2011-12	207.9	244.1	279.1	410.9	205.8	243.9
Mortality from suicide and undetermined injury, directly age-standardised rate per 100,000 people	2008-10	7.9	6.0	4.9	7.0	7.7	4.5
Opiate &/or crack cocaine use aged 15-16, estimated crude rate per 1,000 people	2010-11	8.6	7.2	9.3	13.7	6.2	6.0
Prevalence of psychoses, % diagnosed in primary care (QOF register)	2010-11	0.8	0.7	0.8[1]	0.8[2]	0.7[3]	0.8[2]
Prevalence of depression, % diagnosed in primary care (QOF register)	2010-11	11.2	11.8	9.9[1]	11.8[2]	9.2[3]	11.8[2]
Prevalence of dementia, % diagnosed in primary care (QOF register)	2010-11	0.5	0.6	0.6[1]	0.6[2]	0.6[3]	0.6[2]
Physical health and injury							
Incidence of malignant melanoma, aged < 75 yrs, directly age-standardised rate per 100,000 people	2008-10	14.5	15.1	16.2	13.9	13.3	14.8
People diagnosed with diabetes, % on GP registers	2011-12	5.8	6.4	7.3	7.7	6.1	6.5
New cases of tuberculosis, crude rate per 100,000 people	2009-11	15.4	3.8	2.7	4.9	3.9	1.7
Infant deaths, rate per 1,000 live births	2009-11	4.3	3.2	2.3	3.9	2.1	3.2
Early deaths from heart disease & stroke, directly age-standardised rate per 100,000 aged < 75 yrs	2009-11	60.9	62.5	69.8	75.7	62.8	54.6
Early deaths from cancer, directly age-standardised rate per 100,000 people aged < 75 yrs	2009-11	108.1	105.8	121.0	119.6	106.8	101.6
Early deaths from chronic liver disease, directly age-standardised rate per 100,000 people aged < 75 yrs	2007-9	9.7	8.5	8.8	12.1	10.1	5.7
Early deaths from chronic respiratory disease, directly age-standardised rate per 100,000 people aged < 75 yrs	2008-10	11.7	9.8	12.6	12.6	10.3	7.5
Road injuries & deaths, rate per 100,000 people	2009-11	41.9	47.7	32.6	31.6	42.7	58.3
All age, all cause mortality, directly age-standardised rate per 100,000 people*	2008-10	544.0	543.0	639.7	591.6	528.3	522.2
Limited day-to-day activities, % people*	2011	17.6	20.4	24.7	23.1	19.3	22.0
People with 'bad' general health, % people	2011	5.5	6.2	8.6	7.6	5.6	6.9
Dental health (tooth decay in children aged < 5 yrs), mean decayed/ missing/ filled teeth per child	2007-8	1.11	0.83	0.67	0.87	0.82	0.72

Health indicator	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Mortality from infectious diseases, directly age-standardised rate per 100,000 people	2007-9	7.6	7.6	9.3	10.3	6.4	10.1
Estimated prevalence of coronary heart disease, % people all ages	2011	4.7	5.0	5.4	5.8	4.7	5.2
Estimated prevalence of cardiovascular disease, % people all ages	2011	9.5	10.2	10.2	10.7	9.7	10.6
Estimated prevalence of stroke, % people all ages	2011	2.07	2.20	2.29	2.45	2.06	2.30
Estimated prevalence of hypertension (high blood pressure), % people all ages	2011	24.9	26.8	27.1	27.5	26.1	28.9
Estimated prevalence of chronic obstructive pulmonary disease (COPD), % people all ages	2011	2.91	2.78	3.06	3.21	3.64	2.60
Lifestyle							
Smoking in pregnancy, % of mothers where status known	2011-12	13.3	15.6	15.4	15.4	15.4	15.4
Alcohol-specific hospital stays (under 18 yrs), crude rate per 100,000 people	2007-8 to 2009-10 (pooled)	61.8	76.5	93.6	103.6	51.4	74.8
Alcohol-related harm hospital stays, directly age- & sex-standardised rate per 100,000 people	2010-11	1895	1909	2111	2417	1961	1823
Acute sexually transmitted infections, crude rate per 100,000 people	2012	804	553	654	753	595	500
Teenage pregnancy, crude rate of < 18 yrs conceptions per 1,000 females aged 15–17 yrs	2009-11	34.0	29.6	35.2	33.5	30.1	25.7
Adults smoking, % aged 18+ yrs	2011-12	20.0	18.6	25.2	18.3	18.2	19.1
Smoking-related deaths, directly age-standardised rate per 100,000 people aged 35+ yrs	2009-11	201	197	249	233	204	178
Increasing & higher risk drinking, % aged 16+ in resident population	2008-9	22.3	23.2	21.9	22.5	22.7	22.9
Physically active adults, % achieving 150+ mins activity per week	2012	56.0	56.7	50.4	57.1	54.8	56.5
Community							
Violent crime, crude rate per 1,000 persons	2011-12	13.6	10.6	11.7	15.1	14.4	6.1
Antisocial behaviour (call for service), per 1,000 people*	2012	41.0	44.1	47.2	62.3	47.2	39.7
Total crime, per 1,000 people*	2012	67.0	44.4	50.8	57.3	56.3	28.9
Youth offending (first time entrants), per 100,000 people aged 10-17 yrs*	08/11-09/12	595.0	540.0	231.2	396.4	687.6	407.2
Dependency ratio (non-working/ working population)	2011	57.4	57.4	57.1	56.5	56.1	60.8
Lone parent households, %	2011	7.1	6.2	6.8	7.0	7.1	5.3
Children in care, per 10,000 people aged < 18 yrs*	2012	59.0	42.5	56.9	56.8	60.7	32.5
Lone pensioner households, %	2011	12.4	13.0	13.4	13.5	12.5	14.0
Environment							
Resident satisfaction with local area, % 16+ yrs*	2011	—	85.8	76.6	88.3	83.8	86.6
Greenspace, % of total land m^2	2010			86.0	61.0	74.0	63.7
CO_2 emissions, total per capita	2009			5.29	5.50	5.40	5.52
CO_2 emissions from transport, total per capita	2009			1.13	1.18	1.21	1.40

Health indicator	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Unrecycled household waste, kg per household	2010-11			711.4	519.5	527.5	524.9
Fluvial (river) flood risk, % of properties at risk	2011			1.0	3.5	28.7	1.5
Pluvial (rain) food risk, % of properties at risk	2011			4.7	5.2	4.2	2.5
Housing							
Excess winter deaths, ratio	Aug 08-Jul 11	19.1	19.7	18.5	19.3	24.7	16.6
Owner occupied, %	2011	64.1	71.4	67.2	63.5	73.0	71.3
Rented (council or housing association), %	2011	17.7	15.3	18.2	23.1	13.0	20.4
Private or other rented, %	2011	16.8	12.0	13.0	12.4	12.9	7.4
Living rent free, %	2011	1.3	1.3	1.5	1.0	1.2	0.9
Average house price, thousands of pounds*	2012-13	236.3	159.7	108.6	134.6	138.2	160.7
Council tax band D & above, % of dwellings*	2011	33.8	22.7	10.5	12.6	16.6	22.0
Overcrowded households, % of households	2011	8.7	3.7	3.3	4.7	3.7	3.0
Households without central heating, % of households	2011	2.7	2.0	1.0	1.3	3.2	1.1
Detached housing, % of households	2011	22.3	31.8	28.1	23.9	28.3	36.4
Transport and access							
Hip fracture in 65+ yrs, directly age- & sex-standardised rate of acute admissions per 100,000 people aged 65+ yrs	2011-12	457	455	436	449	439	487
Library users, % population*	2011-12	—	15.9	15.4	20.1	14.7	16.7
Travel time to nearest GP, minutes	2011	10.0	10.2	9.6	9.2	9.3	10.0
No car or van, % of households	2011	25.8	20.1	23.4	27.1	22.4	18.7
Nutrition							
Obese children, % aged 10-11 yrs (Year 6)	2011-12	19.2	18.0	20.7	26.5	19.6	18.4
Obese adults, % modelled estimate from HSE data	2006-8	24.2	25.3	27.4	26.5	26.8	25.8
Starting breast feeding, % mothers initiating where status known	2011-12	74.8	71.0	71.6	71.6	71.6	71.6
Eligible & claiming free school meals, % compulsory school age*	2011-12	17.9	14.3	22.2	17.5	16.8	12.0
Health eating adults, % modelled estimate from HSE data	2006-8	28.7	28.1	22.6	25.8	27.9	28.2
Land use for cereals, % of farmed land	2010	28.1	12.6	49.0	33.6	—	23.4
Land use for arable crops excluding cereals, % of farmed land	2010	14.4	5.1	18.2	20.9	—	7.0
Land use as grassland, % of farmed land	2010	49.2	77.7	29.1	35.6	54.7	63.7

Health indicator	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Education							
GCSE achieved (5A*-C inc. Eng & Maths), % at Key Stage 4	2011-12	59.0	57.2	53.3	58.1	51.8	62.4
Pupils with statements of special educational needs, % compulsory school age*	2011-12	1.6	2.0	2.2	2.2	1.5	1.6
Adults with a degree, % aged 16+ yrs*	2011	27.4	23.7	15.8	21.0	20.7	22.2
Adults with no qualifications, % aged 16+ yrs*	2011	22.5	25.7	32.9	27.6	25.9	26.9
Foundation stage pupils achieving 78+, % 4-5 yrs*	2011-12	64.0	68.8	65.3	63.0	69.1	67.2
School absenteeism (primary), % missed sessions at compulsory school age*	2011-12	4.4	4.2	4.6	4.5	4.3	4.1
School absenteeism (secondary), % missed sessions at compulsory school age*	2011-12	5.9	6.0	6.1	5.7	6.3	6.1
Employment							
Children living in poverty (< 16 yrs in families receiving means-tested benefits & low income), %	2010	21.2	17.4	23.2	21.4	19.9	15.8
Out-of-work benefit claimants, % aged 16-64 yrs*	Aug 2012	11.4	10.8	14.2	14.3	11.5	10.8
Unemployment rate (overall), % aged 16-64 yrs*	Mar 2013	3.8	3.1	3.7	4.3	3.9	3.0
Youth unemployment, % aged 16-24 yrs*	Mar 2013	5.6	6.0	7.3	8.9	7.0	5.9
Long term unemployment, crude rate per 1,000 persons aged 16-24 yrs	2012	9.5	7.9	8.6	11.4	10.8	8.3
Fuel poverty, % households*	2010	16.4	19.0	20.6	20.0	17.5	18.6
Unpaid care provision, % people*	2011	10.2	12.1	12.7	12.6	11.2	13.3
Full time work (30+ hours), % people aged 16-74 in employment	2011	71.0	70.3	71.5	68.4	71.6	68.8
Part time work (< 30 hours), % people aged 16-74 in employment	2011	29.0	29.7	28.5	31.6	28.4	31.2
Employment in managers, directors & senior officials role, % people aged 16-74 in employment	2011	10.9	10.9	9.6	9.1	10.0	11.1
Employment in professional role, % people aged 16-74 in employment	2011	17.5	15.1	10.9	14.5	13.6	14.3
Employment in associate professional or technical role, % people aged 16-74 in employment	2011	12.8	11.0	9.6	10.7	11.3	10.9
Employment in administrative or secretarial role, % people aged 16-74 in employment	2011	11.5	10.9	10.3	11.4	11.5	12.3
Employment in skilled trade (manual), % people aged 16-74 in employment	2011	11.4	13.3	13.4	12.0	13.7	13.6
Employment in caring, leisure or other services role, % people aged 16-74 in employment	2011	9.3	9.6	11.0	11.1	8.9	9.7
Employment in sales or customer service role, % people aged 16-74 in employment	2011	8.4	7.9	8.2	9.5	9.0	8.4
Employment in process, plant or machine operative (manual) role, % people aged 16-74 in employment	2011	7.2	9.6	11.4	9.1	9.8	8.9
Employment in elementary (manual) occupation, % people aged 16-74 in employment	2011	11.1	11.7	15.7	12.5	12.0	10.8

Health indicator	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Economy							
Economically active (available to work), % people aged 17-74 yrs*	2011	69.9	69.9	66.9	67.9	71.5	68.0
Not in education, employment or training (NEET), % 16-18 yrs*	2012-13	5.4	5.4	6.0	5.8	6.6	4.7
Position in agriculture, forestry or fishing industry, % people aged 16-74 in employment	2011	0.8	1.0	0.6	0.2	0.3	0.9
Position in mining, quarrying or utilities industry, % people aged 16-74 in employment	2011	1.4	1.9	2.4	1.6	1.8	1.6
Position in manufacturing industry, % people aged 16-74 in employment	2011	8.8	14.9	15.2	11.4	16.3	13.4
Position in construction industry, % people aged 16-74 in employment	2011	7.7	8.5	8.8	7.7	8.7	9.6
Position in wholesale or retail industry, % people aged 16-74 in employment	2011	15.9	16.6	19.4	18.1	17.8	17.3
Position in business services industry, % people aged 16-74 in employment	2011	32.1	25.1	22.6	25.4	25.6	24.5
Position in public services industry, % people aged 16-74 in employment	2011	28.2	27.5	26.7	31.1	25.5	28.2

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made	Impact area category

[1] Hardwick CCG average; [2] North Derbyshire CCG average; [3] Erewash CCG average

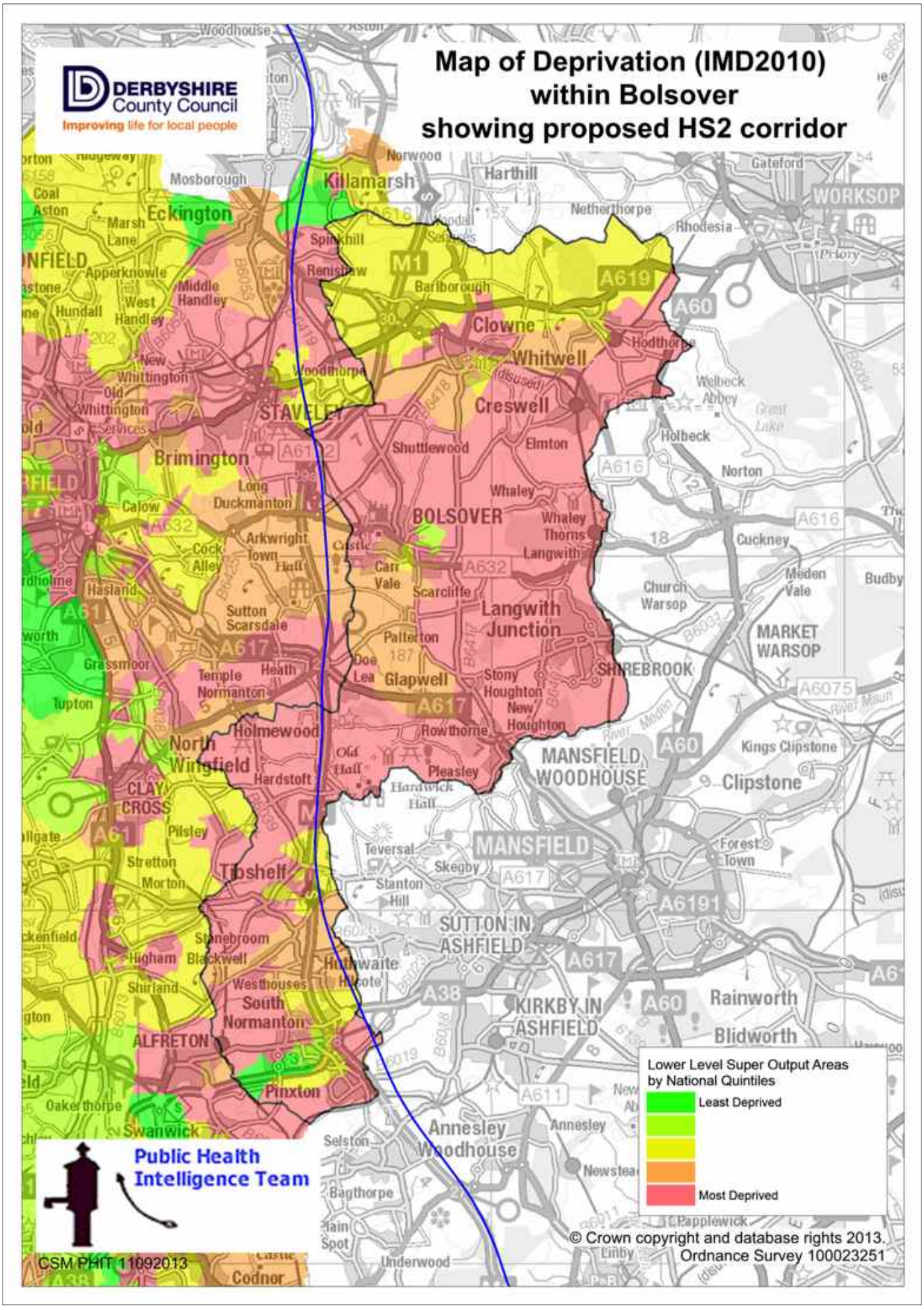

Fig 3.1: Map of the initial preferred route through Bolsover showing local area deprivation (see key)

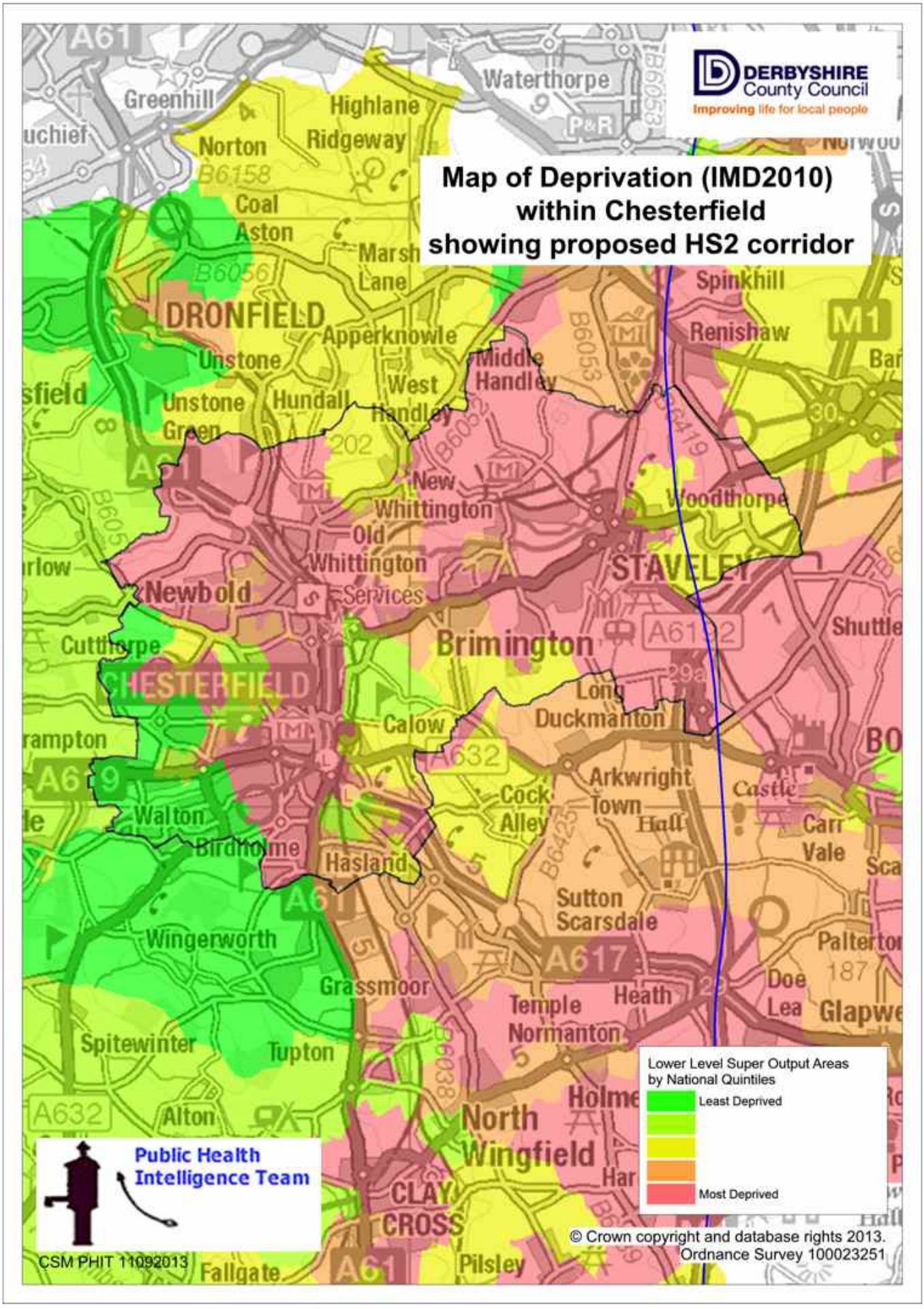

Fig 3.2: Map of the initial preferred route through Chesterfield showing local area deprivation (see key)

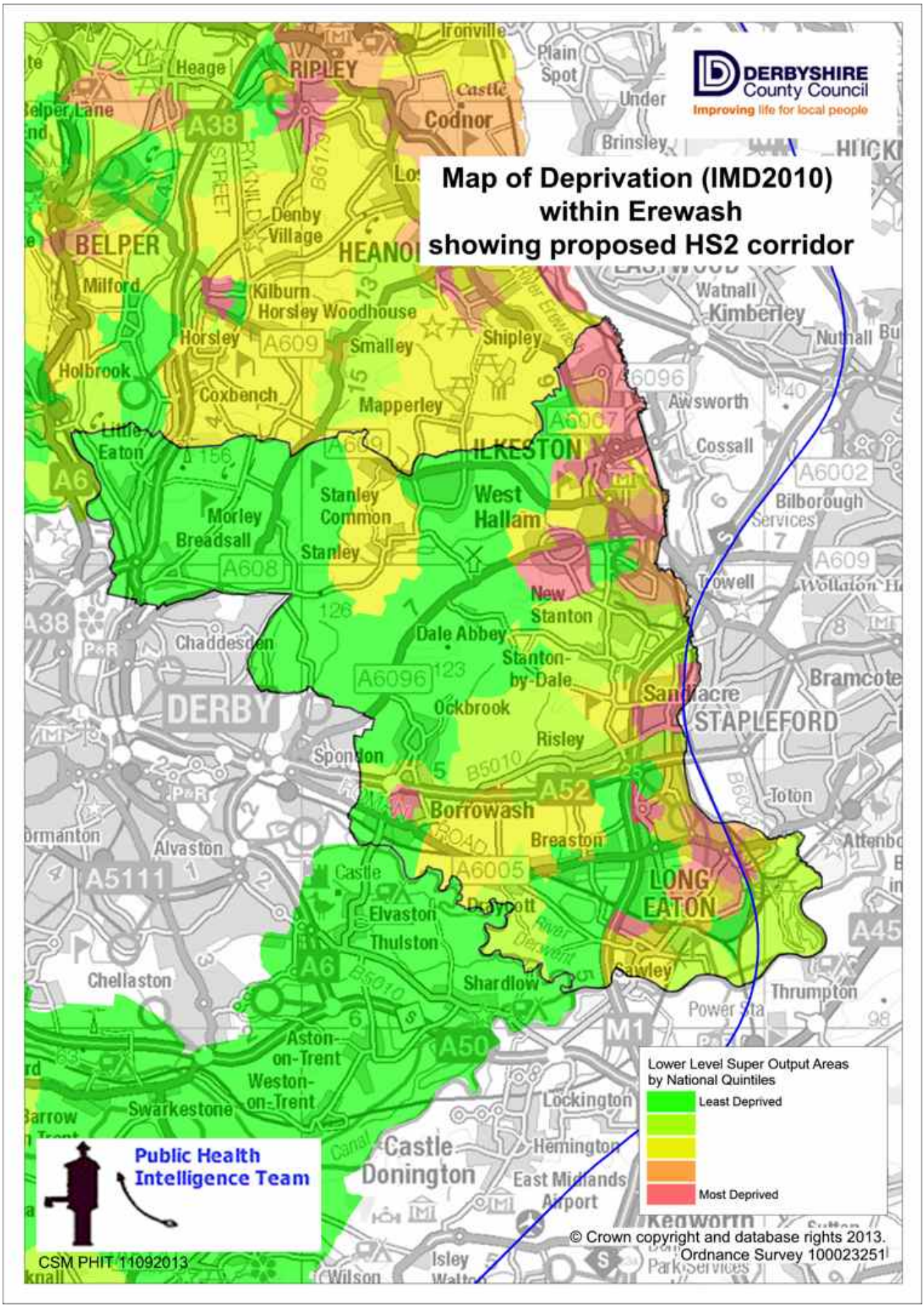

Fig 3.3: Map of the initial preferred route through Erewash showing local area deprivation (see key)

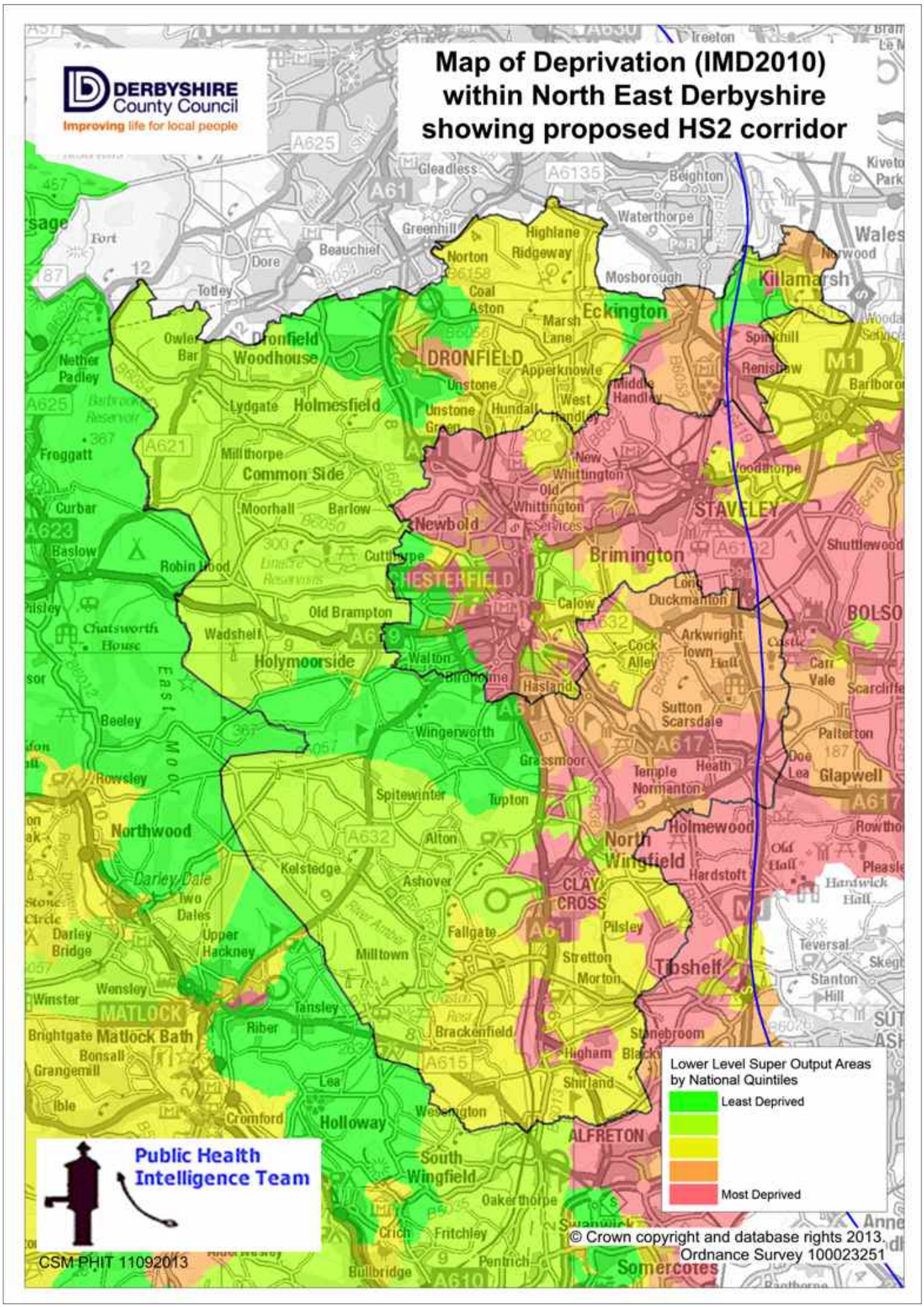

Fig 3.4: Map of the initial preferred route through NED showing local area deprivation (see key)

[1] See http://observatory.derbyshire.gov.uk/IAS/areaprofiles
[2] http://www.apho.org.uk/default.aspx?QN=p_health_profiles
[3] http://fingertips.phe.org.uk/key
[4] http://observatory.derbyshire.gov.uk/IAS/census/censusprofiles.aspx
[5] http://observatory.derbyshire.gov.uk/IAS/healthandwellbeing/healthprofiles/mentalhealthprofiles.aspx
[6] http://observatory.derbyshire.gov.uk/IAS/environment/

4. Mental health and well-being

There are a wide range of factors that potentially impact upon people's mental health and—more broadly—sense of well-being. Mental and physical health and well-being are inextricably linked and are fundamental to an individual's ability to undertake their daily activities. Good mental health is likely to help counteract the negative aspects of a physical health condition and conversely good physical health can have positive impacts upon mental health and well-being. This impact area may include issues around mental illness, stress, quality of life, feeling of control, social inclusion, active participation, etc.

4.1 What did community profiling tell us?

Some information about mental health and well-being as a cause of ill health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 4.1).

Table 4.1: Mental health & well-being indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Hospital stays for self-harm, directly age-standardised rate per 100,000 people	2011-12	207.9	244.1	279.1	410.9	205.8	243.9
Mortality from suicide and undetermined injury, directly age-standardised rate per 100,000 people	2008-10	7.9	6.0	4.9	7.0	7.7	4.5
Opiate &/or crack cocaine use aged 15-16, estimated crude rate per 1,000 people	2010-11	8.6	7.2	9.3	13.7	6.2	6.0
Prevalence of psychoses, % diagnosed in primary care (QOF register)	2010-11	0.8	0.7	0.8[1]	0.8[2]	0.7[3]	0.8[2]
Prevalence of depression, % diagnosed in primary care (QOF register)	2010-11	11.2	11.8	9.9[1]	11.8[2]	9.2[3]	11.8[2]
Prevalence of dementia, % diagnosed in primary care (QOF register)	2010-11	0.5	0.6	0.6[1]	0.6[2]	0.6[3]	0.6[2]

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

[1] Hardwick CCG average; [2] North Derbyshire CCG average; [3] Erewash CCG average
Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Bolsover

The rate of self-harm in Bolsover is significantly higher than the average rate for England. The rate of successful suicide, however, is significantly lower than the England average. Young people are no more likely to use opiates or crack cocaine than young people in the country as a whole. The proportions of people known to GPs who have been diagnosed with significant or common mental illnesses are likely to be broadly similar to the national prevalence proportion, possibly lower for depression (which may suggest under-diagnosis rather than a true low prevalence).

Chesterfield

The rate of self-harm in Chesterfield is significantly higher than the average rate for England. The rate of successful suicide is similar to the England average. Young people are significantly more likely to use opiates or crack cocaine than young people in the country as a whole. The proportions of people known to GPs who have been diagnosed with significant or common mental illnesses are likely to be broadly similar to the national prevalence proportion, possibly higher for depression in line with a significantly higher county rate.

Erewash

The rate of self-harm in Erewash is similar to the average rate for England, as is rate of successful suicide. Young people are less likely to use opiates or crack cocaine than young people in the country as a whole. The proportions of people known to GPs who have been diagnosed with significant or common mental illnesses are likely to be broadly similar to the national prevalence proportion, possibly lower for depression (perhaps reflected by the lower rates of self-harm and suicide).

North East Derbyshire

The rate of self-harm in NED is significantly higher than the average rate for England. The rate of successful suicide, however, is significantly lower than the England average. Young people are less likely to use opiates or crack cocaine than young people in the country as a whole. The proportions of people known to GPs who have been diagnosed with significant or common mental illnesses are likely to be broadly similar to the national prevalence proportion, possibly higher for depression in line with a significantly higher county rate.

4.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon mental health and well-being as a cause of ill health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to mental health and well-being the Phase 2 Sustainability Statement (Appendix E9) notes:

- The stress and anxiety induced by demolition does not depend upon identification of replacement housing;
- Relocation-induced stress and community severance may occur;
- Creation of a sense of isolation, especially among the elderly, may occur in areas where rail systems compound existing infrastructure-related barriers.

A limited scoping review of literature indicates the following:

- Annoyance may be caused by the noise produced during the construction and operation of rail developments;
- Some authors say there might be a link between prolonged exposure to noise and stress-related health conditions, however, other reports concluded that there was no direct association between environmental noise and mental health;
- The noise generated during the construction phase is considered most likely to temporarily impact upon the mental health of sensitive groups such children, the elderly, students and the infirm; deprived communities may also be more vulnerable;
- In the Crossrail HIA mitigation measures were expected to be sufficient to reduce the impact of construction noise for the majority of those living in the proximity to the line;
- The validated SF-36 scale was used in Rome to measure the association between quality of life and environmental noise related to road and rail traffic; the study authors found a statistically significant association between noise exceeding 65 dB and a worse Mental Heath Scale score. Note that this level is lower than the regulatory limit of 73 dB (see section 8 of this report and Appendix 1);

- The loss of land and homes could lead to anxiety and stress although this is based on anecdotal evidence from Phase 1 of HS2;
- It seems likely that for some residents the noise and disruption caused during the construction phase will cause anxiety and stress and for most this will be of limited duration;
- The potential loss of property and land as a consequence of the construction is likely to have a more significant and lasting impact on a smaller number of residents.
- The Crossrail HIA anticipated that the most significant health impact was likely to be the anxiety and stress associated with temporary rehousing;
- An overcrowded train could theoretically induce stress, and there is evidence linking commuting by train (or car) with increased stress, although factors mitigating this include reduced journey time and direct trains; this could imply that relative to longer and interrupted conventional rail travel, HS2 may offset some commuting-related stress;
- On the other hand perception of overcrowding may in turn reflect perception of personal safety and control, which may be less conducive to calm at high speed;
- Evidence for the postulated relationship between taking exercise and better mental health is conflicting, so it is not certain that rail travel linked to 'active transport' such as walking of cycling would benefit mental health;
- Faster modes of transport may contribute to 'time pressure' with negative consequences for mental health.

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4.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on mental health and well-being as a cause of ill health:

Health issues with a positive impact
Improvement in journey time, especially in regard to travelling to London, would reduce stress and fatigue (as normally related to car journey alternatives)
Creation of jobs/ local work might reduce stress related to joblessness
Improved access to the South East might reduce congestion on major roads, reducing stress for drivers
Visiting London might be more convenient and might mean more frequent visits for an enjoyable day out
“Moving on from a Victorian rail system” may induce happiness
People might feel pride in the area/ better self-worth
People might feel better if it brings visitors to the area
Families will be happier if grandparents can enjoy better access to grandchildren (and allow parents time off)

The following table summarises issues identified as having negative impacts on mental health and well-being as a cause of ill health:

Health issues with a negative impact
Negative emotions/ feelings over the protracted length of the construction phase
Reduction in green belt areas/ open spaces may mean fewer opportunities to find peace and relaxation
Fatigue and stress may result from increased journey times by road
Sleep deprivation and/or stress due to noise and/or vibration
Anxiety over the threat of a compulsory purchase order/ sale price/ the advisability of selling early/ not being able to sell at all and feeling 'trapped'
Anxiety over the construction mess
May make walking the dog (partly for health reasons) less enjoyable
Anxiety over the number of trains per hour
Exacerbation of depression
People living in poor areas where community spirit is already low may be further divided and made to feel worthless and unimportant
People may use the line to commit suicide
Lack of information causes worry, particularly for elderly residents who may fear change/ upheaval
Distraught at the thought of not being able to enjoy a peaceful garden in homes close to the line/ depot in Staveley
Residents disturbed by construction activity could be entitled to compensation
Residents disturbed by construction activity may feel the need to take days away/ go on holiday, with cost implications

4.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon mental health and well-being. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Commuting could be become easier thus make it viable for people to live away from bigger cities, which could improve their quality of life	Minor	Speculative	Worsening	All	Operational
Assuming a local workforce is hired for low-skilled labouring, such temporary employment will provide a short-term boost to mental well-being	Moderate	Probable	Enhancing	All	Construction
Inward investment and job creation may follow the initial windfall of increased employment during the construction phase; improved job prospects will be beneficial to the mental health and wellbeing of residents	Major	Speculative	Enhancing	Chesterfield, Erewash	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Noise may cause sleep disturbance &/or annoyance; this may be experienced disproportionately by shift workers, office workers & those in deprived neighbourhoods along the route where effective mitigation will not always be possible; this may be exacerbated if there is construction activity after dark, or night-time operations for example at the Staveley maintenance depot	Major	Definite	Worsening	All	Construction, Operational
Local residents may feel annoyance at the need to keep windows closed during construction (dust and noise) and operations (train noise)	Major	Probable	Worsening	All	Construction, Operational
Relocation, whether forced or voluntary, may cause stress impacting more on low income families and those with disabilities or poor social support	Major	Probable	Worsening	All	Planning, Construction
Reduction in 'biophilia', the bond between people and the living natural environment and/or loss of visual amenity	Minor	Speculative	Neutral	All	Construction, Operational
The concerns of young people may not be adequately understood, noting that many respondents to our consultation were older and stated words to the effect of 'it won't affect me as I'll be dead when it's built'	Minor	Speculative	Worsening	All	Planning
Blight-related uncertainty over what the development may mean for local areas will cause anxiety in local residents; lack of information and understanding around HS2-related issues and their health impacts	Moderate	Definite	Worsening	All	Planning
Should traffic congestion increase then journey times would increase, thus leading to increased stress levels	Moderate	Speculative	Neutral	All	Construction, Operational
Uncertainty over the impact of HS2 on current & future house value, the threat of compulsory purchasing (noting 6 demolitions in Long Eaton & 9 in Renishaw) & whether or not owners will be entitled to compensation (an unknown proportion of 3,300 dwellings within 100m of the eastern route construction boundary are in Derbyshire) will affect the future plans of individuals, causing stress & anxiety	Major	Definite	Worsening	All	Planning

4.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to mental health and well-being as a cause of ill health.

Enhancing positive health impacts

In relation to mental health and well-being, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
MHE1	Avoid overcrowding on HS2 trains, which could mitigate some commuting-related stress, but this should not be achieved via the mechanism of exclusive rail ticket or station parking costs
MHE2	Make a commitment to a local hire policy when recruiting the construction workforce in recognition of the well-being benefits

Mitigating negative health impacts

In relation to mental health and well-being, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
MHM1	Provide detail on proposed strategies for mitigating potential mental health and well-being adverse impacts within Derbyshire as tabulated in 4.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
MHM2	Respond to concerns that the views of young people may not have been adequately canvased, and to repeated indications that existing information provision is not meeting needs of many Derbyshire residents
MHM3	Commission access to expert counselling services for dealing with loss related to demolition, isolation or relocation-induced stress
MHM4	Recognise that noise is likely to have a subjective impact above and beyond model predictions, guideline standards or objective measurements; this recognition needs to be backed by accessible and responsive concern reporting mechanisms
MHM5	Reduce the duration of noise-related annoyance to local residents and businesses by imposing restrictions (with penalties for exceedance) upon the hours of operation of plant machinery and construction activity; consider including at least one noise-free day e.g. Sunday

ID	Recommendation (continued)
MHM6	Outline a communications plan that makes provision for regularly informing local residents and business about progress or problems in a timely manner using technologies with subscription options (e.g. SMS, e-mail, social media) to supplement broadcast information and signage

5. Physical health and injury

Various factors may contribute to the poor health of individuals, including genetics, lifestyle choices, personal psychology and medical factors such as the presence of other conditions—the precise cause of which may be unknown. Such factors work in concert with the wider determinants of health to produce a profile of disease at a population level. Poor physical health adversely affects individuals, families, communities, health and social care services and wider society. This impact area may include issues around personal mobility/ physical disability, causation or exacerbation of medical conditions, personal safety on public transport, risk of injury or accident, etc.

5.1 What did community profiling tell us?

Some information about physical health and injury as a cause of ill health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 5.1).

Bolsover

Indicators of physical health status in Bolsover paint a mixed picture. The district is significantly better than the England average in terms risk of TB and dental health. However it is significantly worse than the England average for proportion of GP patients diagnosed with diabetes, early death from cancer and deaths from all causes. Furthermore, the district has a significantly higher proportion of people whose daily activities are limited. Bolsover has a significantly lower rate of road deaths and serious injuries compared to England.

Chesterfield

Indicators of physical health status in Chesterfield paint a mixed picture. The borough is significantly better than the England average in terms risk of TB and dental health. However it is significantly worse than the England average for proportion of GP patients diagnosed with diabetes, early death from heart disease, stroke and cancer, and for deaths from both any cause and specifically from infectious diseases. Furthermore, the borough has a significantly higher proportion of people whose daily

activities are limited. Chesterfield has a significantly lower rate of road deaths and serious injuries compared to England.

Table 5.1: Physical health & injury indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Incidence of malignant melanoma, aged < 75 yrs, directly age-standardised rate per 100,000 people	2008-10	14.5	15.1	16.2	13.9	13.3	14.8
People diagnosed with diabetes, % on GP registers	2011-12	5.8	6.4	7.3	7.7	6.1	6.5
New cases of tuberculosis, crude rate per 100,000 people	2009-11	15.4	3.8	2.7	4.9	3.9	1.7
Infant deaths, rate per 1,000 live births	2009-11	4.3	3.2	2.3	3.9	2.1	3.2
Early deaths from heart disease & stroke, directly age-standardised rate per 100,000 aged < 75 yrs	2009-11	60.9	62.5	69.8	75.7	62.8	54.6
Early deaths from cancer, directly age-standardised rate per 100,000 people aged < 75 yrs	2009-11	108.1	105.8	121.0	119.6	106.8	101.6
Early deaths from chronic liver disease, directly age-standardised rate per 100,000 people aged < 75 yrs	2007-9	9.7	8.5	8.8	12.1	10.1	5.7
Early deaths from chronic respiratory disease, directly age-standardised rate per 100,000 people aged < 75 yrs	2008-10	11.7	9.8	12.6	12.6	10.3	7.5
Road injuries & deaths, rate per 100,000 people	2009-11	41.9	47.7	32.6	31.6	42.7	58.3
All age, all cause mortality, directly age-standardised rate per 100,000 people*	2008-10	544.0	543.0	639.7	591.6	528.3	522.2
Limited day-to-day activities, % people*	2011	17.6	20.4	24.7	23.1	19.3	22.0
People with 'bad' general health, % people	2011	5.5	6.2	8.6	7.6	5.6	6.9
Dental health (tooth decay in children aged < 5 yrs), mean decayed/ missing/ filled teeth per child	2007-8	1.11	0.83	0.67	0.87	0.82	0.72
Mortality from infectious diseases, directly age-standardised rate per 100,000 people	2007-9	7.6	7.6	9.3	10.3	6.4	10.1
Estimated prevalence of coronary heart disease, % people all ages	2011	4.7	5.0	5.4	5.8	4.7	5.2
Estimated prevalence of cardiovascular disease, % people all ages	2011	9.5	10.2	10.2	10.7	9.7	10.6
Estimated prevalence of stroke, % people all ages	2011	2.07	2.20	2.29	2.45	2.06	2.30
Estimated prevalence of hypertension (high blood pressure), % people all ages	2011	24.9	26.8	27.1	27.5	26.1	28.9
Estimated prevalence of chronic obstructive pulmonary disease (COPD), % people all ages	2011	2.91	2.78	3.06	3.21	3.64	2.60

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Erewash

Indicators of physical health status in Erewash are generally favourable. The borough is significantly better than the England average in terms risk of TB and dental health, with a significantly lower risk of infant deaths and a lower proportion of people whose daily activities are limited. However it is significantly worse than the England average for proportion of GP patients diagnosed with diabetes. Erewash has a similar rate of road deaths and serious injuries compared to England.

North East Derbyshire

Indicators of physical health status in NED paint a mixed picture. The district is significantly better than the England average in terms risk of TB and dental health. People in NED have a significantly lower risk of death from all causes, and specifically from chronic liver and respiratory diseases. However NED is significantly worse than the England average for proportion of GP patients diagnosed with diabetes and for risk of death from infectious diseases. Furthermore, the district has a significantly higher proportion of people whose daily activities are limited. NED has a significantly higher rate of road deaths and serious injuries compared to England.

5.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon physical health and injury as a cause of ill health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to physical health and injury risk the Phase 2 Sustainability Statement (Appendix E9) notes:

- Higher traffic volumes and speeds in deprived areas contribute to an increased risk of road traffic accidents;
- The risk of injury as a pedestrian in a deprived area is increased among families who don't own a car;
- Rail passengers may be at reduced risk of fatalities than road users;
- There may be an increased risk of injury to pedestrians and cyclists in the proximity of stations;

- There will be a risk of accidents associated with construction site traffic, but a very low risk of accidents involving the public on construction sites themselves (access will be restricted);
- Assessment of injury risk to rail users and workers was not deemed feasible at an early design stage.

A limited scoping review of literature indicates the following:

- Commuting by train (or car) may increase blood pressure;
- The risk of death related to train travel is very small—less than 20 per year in the UK and less than the risk of travel by car—although there is scant evidence on effective interventions to reduce death and injury relating to travel by train;
- Given that it is pedestrians and cyclists who contribute to the bulk of car-related deaths and serious injuries, reducing the number of cars that might hit them by improving public transport seems sound—although pedestrians and cyclists are unlikely to be making the same long-distance journeys as HS2 passengers, so could be at higher risk as passengers drive to/ from HS2 stations;
- For passengers at high risk of thromboembolism (blood clots), travel by rail may provide a small safety benefit over air travel;
- There is mounting evidence of an association between cardiovascular disease (including stroke) in elderly people and night-time noise, although a direct connection ('causal pathway') between noise and sleep disturbance to cardiovascular disease and other long-term conditions has not been established;
- The Crossrail HIA suggested that prolonged exposure to dust generated by construction (specifically PM_{10}, particles 10 microns or less in diameter) might exacerbate respiratory problems, particularly among children, the elderly and infirm;
- The Crossrail HIA also speculated that additional road traffic created during construction to move materials, excavated waste and staff would increase the risk of injury to pedestrians and road users, notably children and the elderly; unfortunately there appears to have been no follow-up of these predictions;
- Exposure to noise and particulates is more likely to have consequences for mental health (anxiety and stress) than for physical health;

- Regarding the risks of transmitting airborne infection, studies suggest that the most effective design solutions for removing respiratory droplets produced by coughing also increase the risk of their dispersal throughout the train;
- Modelling has examined the risk of transmission of TB among passengers using a Taiwanese HSR system and found the risk of acquisition was higher in standard cabins than in business cabins, which may suggest a link between overcrowding and infection risk;
- There is an established association between speed of travel and risk of death or injury in relation to road traffic, and although plausible the presence of a similar association for rail-related death and injuries is unproven;
- There is an established association between risk of death or injury from road traffic accidents (RTAs) and living in an area of deprivation; about half of childhood accidents are as a result of RTAs, so particular attention should be directed towards reducing RTAs involving children in deprived areas;
- The main factors influencing risk of occupational injury during construction of the Torino–Novara HSR system in Italy were performing the least skilled jobs and having a short-term employment contract;
- Reliable accident data were collected from a 10,000-strong workforce involved in constructing the Torino-Novara HSR network where during a 3-year period (2003-2005) there were 1,691 injuries, each associated with at least 3 lost work days; this represents a considerable health and social cost;
- During construction of the Torino-Novara HSR the rate of accidents decreased from 152 per 1,000 workers in 2003 to 72 per 1,000 workers in 2005, which may be indicative of the role of inexperience in accident causation;
- During construction of the Bolgna-Florence HSR in Italy the probability of serious injury was higher among carpenters, miners and younger workers.

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5.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on physical health and injury as a cause of ill health:

Health issues with a positive impact
Travel by HS2 might reduce the risk of injury or death due to road traffic accidents
Better access to specialist care in major cities

The following table summarises issues identified as having negative impacts on physical health and injury as a cause of ill health:

Health issues with a negative impact
Increased risk of injury to cyclists due to change in traffic flow
Increased risk of injury at level crossings [NB: The proposal specifies *no* level crossings]
Increased risk of injury to pedestrians/ car passengers due to road users cutting through villages to find alternative routes, traveling at speed
Risk of injury to the public/ children/ animals from unauthorised construction site access
Risk of injury to the public from unauthorised access to the operational track/ station/ maintenance depot
Risk of road traffic accidents on the M1 due to distraction of drivers by the passage of HS2
High-speed trains may be dangerous (increased risk of accidents/ derailment)
Air pollution makes COPD worse

5.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon physical health and injury. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Statistically commuting to work by HS2 should be safer than driving (although this benefit may be received by a small proportion of commuters, the majority of whom will continue to drive due to lack of stations)	Minor	Definite	Worsening	All	Operational
The new development should be fully accessible and possibly make long-distance travel for those with physical disabilities easier	Minor	Speculative	Enhancing	All	Operational
Removal of level crossings may reduce injuries and there is an opportunity to improve safety at a junction in Stainsby, also potentially reducing the risk of injury (in Stainsby and Astwith, Mill Lane and Astwith Lane are to be realigned alongside HS2 route); as not all local road diversions are presently known, there may be further opportunities to improve road safety	Moderate	Speculative	Neutral	Bolsover	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Damage to hearing resulting from long-term exposure to noise in proximity to the station or maintenance depot seems unlikely, but a connection may be alleged; not all those affected by noise will be able to afford to move	Moderate	Speculative	Worsening	Chesterfield, Erewash	Operational
Dust/ particulates may exacerbate respiratory problems (e.g. asthma, COPD), which are more prevalent in the deprived areas through which the route will pass	Moderate	Speculative	Worsening	All	Construction, Operational
In the presence of very clear links between deprivation and poor health at the population level, any adverse health impacts of HS2 are likely to be disproportionate in their effects on Derbyshire's deprived communities	Major	Probable	Worsening	All	Planning, Construction, Operational
Keeping doors and windows closed during construction to mitigate the annoyance of dust and noise may impair indoor air quality and cause heat-related discomfort or respiratory problems, particularly during the summer months	Moderate	Probable	Worsening	All	Construction
Although the risk of derailment/ rail user accidents is small, the high-speed nature of the new network might magnify the scale of an accident should one occur	Major	Speculative	Neutral	All	Operational
Children and others gaining unauthorised site access may be injured	Moderate	Speculative	Worsening	All	Construction
There is an unknown but significant risk of injury to construction workers	Moderate	Definite	Worsening	All	Construction
A migrant construction workforce could place additional demands upon local health services and amenities	Moderate	Probable	Neutral	All	Construction
Closure of two level crossings in Long Eaton may be a particular issue for people with mobility problems and could prevent them accessing medical services	Moderate	Speculative	Worsening	Erewash	Construction, Operational
The Green & Waverley Street roundabouts in Long Eaton have seen 13 slight and one serious personal injury collisions in last three years, with additional collisions recorded on approach roads; increases in traffic due to station access will necessitate highways improvements (particularly the A6005 and Tamworth Road corridors) to increase capacity and prevent an increase in injury collisions	Moderate	Probable	Neutral	Erewash	Construction, Operational

Health issues with a negative impact (continued)	Scale	Likelihood	Equality	Locality	Stage
Realignment of highways, notably the M1 north of Sandiacre and at Junction 29, may be linked to an increase in road traffic accidents causing death or injury	Moderate	Speculative	Neutral	All	Construction
Long Eaton has high numbers of cyclists; central government funding of a scheme to improve their safety may be compromised by the proposal	Minor	Speculative	Neutral	Erewash	Construction, Operational

5.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to physical health and injury as a cause of ill health.

Enhancing positive health impacts

In relation to physical health and injury, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
PHE1	Work with and support health partnerships in Derbyshire to promote HS2 as an 'active travel' compatible solution, as increasing exercise will help prevent and mitigate obesity and diabetes (a significant health issue for eastern Derbyshire)
PHE2	Pay particular attention to design solutions that enhance the safety of all road users (including pedestrians and cyclists), taking the opportunity to reconfigure high-risk crossings/ junctions impacted by the proposed route—most especially in NED where the risk of RTAs is already high and in Long Eaton where station-related traffic flows are likely to increase injury rates

Mitigating negative health impacts

In relation to physical health and injury, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
PHM1	Provide detail on proposed strategies for mitigating potential physical health and injury-related adverse impacts within Derbyshire as tabulated in 5.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
PHM2	Model the effects of changes to rail crossings traffic flows on the risk of death or injury to pedestrians, cyclists and car users and include mitigation of this within projects costs
PHM3	Work with local authorities, emergency services and the Highways Agency to develop a traffic management strategy aimed at minimising disruption to road users and limiting the risk of road traffic accidents or injuries to pedestrians as a result of construction-related traffic
PHM4	Pay particular attention to the impact of disrupted access upon those with physical disabilities, such as wheelchair users, to ensure any particular needs are catered for as part of planning for temporary diversions or permanent route/ footpath changes

PHM5	Publish details on proposed mitigation strategies for dust particles (at 10 microns in diameter or less) expected during construction, together with evidence on the effectiveness of such strategies in preventing (or preventing the exacerbation of) respiratory illness
PHM6	Consult with Derbyshire CCGs and NHS Trusts on ways to manage an expected temporary increase in patient numbers resulting from health-seeking behaviour and injuries among the construction workforce, and an increase in complaints from the general public related to sleep disturbance, anxiety, breathing problems, etc.
PHM7	Ensure provision of adequate safety training and supervision of construction workers, recognising that hiring low-skilled workers for the length of the construction period may provide more opportunities for skill acquisition and reduce the incidence of occupational injury in conflict with the job-related benefits of short-term local hires to construct local segments
PHM8	Ensure construction sites and all companies contracted to service them are registered with the Considerate Constructors Scheme, which will include monitoring against 'Securing everyone's safety' standards

6. Lifestyle and leisure

Lifestyle can have a marked effect on health in later life; some risky behaviours such as smoking and drinking are 'clustered' together, causing worse harm in combination. Behaviours are influenced by factors both internal (e.g. attitude or habit) and external to a person (e.g. the wider 'choice environment' and availability of alternatives). Notably, transport options might determine the amount of physical activity people get, such as 'active travel' by cycling to/ from a rail journey. This impact area may include effects on risk behaviours (including physical activity, smoking, drinking), access to green space, engagement with the arts and culture, leisurely pursuits, etc.

6.1 What did community profiling tell us?

Some information about lifestyle and leisurely pursuits as a cause of ill health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 6.1). Note that healthy food choice and obesity are considered separately in section 11.

Bolsover

The proportion of expectant mothers who smoke during pregnancy in Bolsover is similar to the average proportion for England, as is the proportion of adult smokers (about a quarter). However, smoking-related deaths are significantly worse than the England average; this could be a delayed manifestation of higher smoking prevalence in the generation now entering older age or be partly due to the co-presence of occupational lung disease (reflecting Bolsover's mining heritage). Bolsover is significantly worse than the England average for alcohol-specific and alcohol-related hospital stays, although the proportion of residents engaging in increasing and higher-risk drinking is similar to England overall. Bolsover residents are at significantly less risk of sexually transmitted infection than is typical for England and the risk of teenage pregnancy is similar to the England average. People in Bolsover are significantly less likely to take adequate physical activity than people in England as a whole.

Table 6.1: Lifestyle & leisure indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Smoking in pregnancy, % of mothers where status known	2011-12	13.3	15.6	15.4	15.4	15.4	15.4
Alcohol-specific hospital stays (under 18 yrs), crude rate per 100,000 people	2007-8 to 2009-10 (pooled)	61.8	76.5	93.6	103.6	51.4	74.8
Alcohol-related harm hospital stays, directly age- & sex-standardised rate per 100,000 people	2010-11	1895	1909	2111	2417	1961	1823
Acute sexually transmitted infections, crude rate per 100,000 people	2012	804	553	654	753	595	500
Teenage pregnancy, crude rate of < 18 yrs conceptions per 1,000 females aged 15–17 yrs	2009-11	34.0	29.6	35.2	33.5	30.1	25.7
Adults smoking, % aged 18+ yrs	2011-12	20.0	18.6	25.2	18.3	18.2	19.1
Smoking-related deaths, directly age-standardised rate per 100,000 people aged 35+ yrs	2009-11	201	197	249	233	204	178
Increasing & higher risk drinking, % aged 16+ in resident population	2008-9	22.3	23.2	21.9	22.5	22.7	22.9
Physically active adults, % achieving 150+ mins activity per week	2012	56.0	56.7	50.4	57.1	54.8	56.5

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Chesterfield

The proportion of expectant mothers who smoke during pregnancy in Chesterfield is significantly worse than the average proportion for England, although the proportion of adult smokers (just under a fifth) is similar. However, smoking-related deaths are significantly worse than the England average. Chesterfield is significantly worse than the England average for alcohol-specific and alcohol-related hospital stays, although the proportion of residents engaging in increasing and higher-risk drinking is similar to England overall. Chesterfield residents are at significantly higher risk of sexually transmitted infection than is typical for England and the risk of teenage pregnancy is similar to the England average. People in Chesterfield are about as likely to take adequate physical activity as people in England as a whole.

Erewash

The proportion of expectant mothers who smoke during pregnancy in Erewash is significantly worse than the average proportion for England, although the proportion of adult smokers (just under a fifth) is similar. Smoking-related deaths are

comparable to the England average. Erewash is similar to the England average for alcohol-specific and alcohol-related hospital stays, and for the proportion of residents engaging in increasing and higher-risk drinking. Erewash residents are at significantly less risk of sexually transmitted infection than is typical for England and the risk of teenage pregnancy is similar to the England average. People in Erewash are about as likely to take adequate physical activity as people in England as a whole.

North East Derbyshire

The proportion of expectant mothers who smoke during pregnancy in NED is similar to the average proportion for England, as is the proportion of adult smokers (just under a fifth). Smoking-related deaths are significantly fewer compared to the England average. NED is similar to the England average for alcohol-specific and alcohol-related hospital stays, and for the proportion of residents engaging in increasing and higher-risk drinking. NED residents are at significantly less risk of sexually transmitted infection and of teenage pregnancy than is typical for England. People in NED are about as likely to take adequate physical activity as people in England as a whole.

6.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon lifestyle and leisurely pursuits as a cause of ill health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

- Promoting an active lifestyle is a public health concern as attaining adequate levels of exercise is associated with better health outcomes (although health benefit is maximised in combination with other changes—a diet rich in fruit and vegetables (with less fat, sugar, salt and calories), smoking cessation, modest alcohol intake and weight reduction;
- HSR could encourage physical activity by facilitating access and egress journeys on foot or by cycle (walking are cycling are examples of ‘active transport’) via safe, well-lit paths that potentially link to other public transport access points;

- Use of public transport twice daily could deliver two thirds of the recommended minimum level of physical activity via about 20 minutes of brisk walking;
- The increased risk of cycling for an individual (accidents and exposure to pollution) is outweighed by the health benefits as a train/ cycle combination is statistically safer than commuting by car;
- We do not know whether greater use of cars is associated with uptake of less exercise by individuals—a similar relationship between use of trains and exercise level would be speculative but plausible;
- Investment in active transport to supplement HS2 (or as part of an alternative to it) could encourage walking or cycling with health benefits, but may cost in the vicinity of £2 billion—although such investment would likely go to urban centres outside of Derbyshire;
- The longer-term health benefits of targeted behavioural change interventions demonstrating short-term benefits aimed at increasing uptake of active transport are not known; more general promotion of active transport does not appear to be effective;
- Evidence from a 'rail trail' in Sydney (Australia) indicates that a promotional campaign was limited in reach to existing cyclists living in close proximity to the trail, although the researchers advocate changes to the targeting of the promotion and applaud joint working across the transport and health sectors;
- Secure, affordable and ample bike storage at stations as well as cycle carriages on-board would encourage the sustainability of cycling;
- The attractiveness of active transport may be further enhanced via the government initiative to promote tax-free bicycles for commuters;
- Construction of separate cycle paths would reduce the perceived danger of road travel;
- Being able to achieve a car-free journey and reduce one's environmental footprint may be an important lifestyle consideration for some passengers;
- Construction near to areas where leisure time is spent, such as nature reserves, should ensure adequate sound and visual barriers are placed so that members of the public can continue to enjoy the area for recreation;
- A shorter journey time may facilitate people to choose a rural lifestyle over an urban dwelling;

- A shorter commute time may have a positive impact of the lifestyle of HSR users as it would allow for more time to be spent elsewhere e.g. cooking a healthy meal instead of ready meals;
- There may be a potential for less hotel stays which would negatively affect the hospitality trade, but may allow heavy business users to spend more quality time with family and friends;
- Rail journeys will be smoke-free, reducing the risk of smoking in an enclosed space such as a car for both the smoker and any passengers.

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6.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on lifestyle and leisurely pursuits as a cause of ill health:

Health issues with a positive impact
Visiting London might be more convenient and might make more frequent visits practical for enjoyable days out
Better access to theatres, museums etc. in cities
Greater travel comfort

The following table summarises issues identified as having negative impacts on lifestyle and leisurely pursuits as a cause of ill health:

Health issues with a negative impact
The Chesterfield Canal and trail, providing recreational opportunities, will be impacted in Renishaw (NED) [and elsewhere]
People using the countryside for walks may find it too stressful/ be upset by loss of beauty
Disruption of walking routes temporarily or permanently
Train noise may spook horses, reducing the pleasure of horse riding [and potentially causing injury]
Gardening will be less pleasurable due to noise during construction and/or from passage of trains
Increase in noise may put off visitors to Hardwick Hall (already affected by noise from M1)
Will divide Renishaw Estate (stately home) and local golf course
Without anticipated profits from property sale, planned retirement activities will have to be curtailed

6.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon lifestyle and leisurely pursuits. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Increased connectivity to HS1 passenger services (currently operated by Eurostar) may support rail as a viable alternative to air travel within Europe for leisure purposes	Minor	Speculative	Neutral	All	Operational
Improved access to London for leisure/ arts/ cultural purposes for those able to afford fares	Minor	Speculative	Worsening	All	Operational
Improved access from London to recreational facilities/ leisure opportunities in Derbyshire	Minor	Speculative	Neutral	All	Operational
Rail journeys provide a smoke-free environment, reducing the harms of tobacco use and passive smoking	Moderate	Definite	Enhancing	All	Operational
New development could lead to improved local infrastructure which may improve options for active travel thus increasing physical activity levels	Moderate	Speculative	Neutral	All	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Chesterfield Canal provides recreational opportunities (walking, cycling, fishing, etc.) and will be intersected by the proposed route at several points	Moderate	Definite	Neutral	Chesterfield, NED	Construction, Operational
A new high-speed rail system will not improve local access to the countryside, and is not an alternative to improving local public transport in support of greater leisure opportunities	Moderate	Probable	Worsening	All	Operational
Traffic congestion will increase in certain areas making it more difficult for pedestrians and cyclists to utilise active travel options	Moderate	Probable	Neutral	Erewash	Operational
Access to public footpaths, cycleways, rights of way and areas used for walking could be affected, meaning people may take less exercise	Moderate	Speculative	Worsening	All	Construction, Operational
The changes in ambience of the countryside may discourage people from walking, which benefits both physical and mental health	Minor	Speculative	Worsening	All	Operational
Reduction in footfall for local arts/ culture venues due to customers travelling further afield could lead to loss of local facilities	Minor	Speculative	Worsening	Erewash	Operational
Derbyshire has a number of significant heritage assets that form a tourism cluster, including Bolsover Castle and Sutton Scarsdale Hall; HS2 could have a negative impact on the enjoyment of these places	Minor	Speculative	Neutral	All	Construction, Operational
DCC long-term strategies for greenways and rights of way could be compromised by HS2 (e.g. The Trans-Pennine Trail, Blackwell Trail and Silverhilll Trail); HS2 could have a negative impact on the enjoyment of these routes and/or tourism	Moderate	Speculative	Neutral	All	Construction, Operational

6.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to lifestyle and leisurely pursuits as a cause of ill health.

Enhancing positive health impacts

In relation to lifestyle and leisurely pursuits, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
LLE1	Ensure that HS2 carriages and station access routes include adequate provision for cycles in support of a rail/ cycle alternative to car use (less polluting and encourages beneficial exercise)
LLE2	Examine innovative options for 'nudging' passengers to engage in physical activity e.g. siting pay-and-display car parking adjacent to the station, with a free parking option within longer walking distance linked by a greenery-enhanced foot and cycle path
LLE3	Consider designing in track-side walking/ cycling trails and integrating these at the time of track construction with links to greenways and rights of way that support DCC's access strategy

Mitigating negative health impacts

In relation to lifestyle and leisurely pursuits, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
LLM1	Provide detail on proposed strategies for mitigating lifestyle and leisure-related adverse impacts within Derbyshire as tabulated in 6.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
LLM2	Ensure construction sites and all companies contracted to service them are registered with the Considerate Constructors Scheme, which will include monitoring against 'Enhancing the appearance' standards

7. Community—making connections

'Community' might be summarised as a sense of belonging or togetherness. Healthy connections between people are of recognised importance to well-being; their absence may give rise to a myriad of social problems that adversely affect mental health and self-esteem. This impact area may include issues around community activities and amenities, social capital (mutually beneficial social networks), freedom from isolation, social inclusion (e.g. for minority groups, older people, students, etc.), cohesion (the 'glue' that binds communities together e.g. cultural affiliation) and resilience (being able to call upon local assets when needed for a common good), etc.

7.1 What did community profiling tell us?

Some information about community as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 7.1).

Bolsover

The rate of violent crime in Bolsover is significantly lower than the rate for England, and the rate of youth offending is significantly lower than the county average. However, compared to the county average, antisocial behaviours and the rate for all crime are significantly higher. The likelihood of being a vulnerable community member in Bolsover as a lone parent, lone pensioner or child in care is broadly similar to that in England. The size of the non-working population relative to the size of the working population in the district is similar to the ratio for England (this relates to things like availability of carers).

Chesterfield

The rate of violent crime in Chesterfield is significantly higher than the rate for England; the rates for antisocial behaviours and all crime are significantly higher compared to the county average. The likelihood of being a vulnerable community member in Chesterfield as a lone parent, lone pensioner or child in care is broadly similar to that in England. The size of the non-working population relative to the size of the working population in the borough is similar to the ratio for England.

Table 7.1: Community indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Violent crime, crude rate per 1,000 persons	2011-12	13.6	10.6	11.7	15.1	14.4	6.1
Antisocial behaviour (call for service), per 1,000 people*	2012	41.0	44.1	47.2	62.3	47.2	39.7
Total crime, per 1,000 people*	2012	67.0	44.4	50.8	57.3	56.3	28.9
Youth offending (first time entrants), per 100,000 people aged 10-17 yrs*	08/11-09/12	595.0	540.0	231.2	396.4	687.6	407.2
Dependency ratio (non-working/ working population)	2011	57.4	57.4	57.1	56.5	56.1	60.8
Lone parent households, %	2011	7.1	6.2	6.8	7.0	7.1	5.3
Children in care, per 10,000 people aged < 18 yrs*	2012	59.0	42.5	56.9	56.8	60.7	32.5
Lone pensioner households, %	2011	12.4	13.0	13.4	13.5	12.5	14.0

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Erewash

The rate of violent crime in Erewash is significantly higher than the rate for England, and the rates for antisocial behaviours, youth offending and all crime are significantly higher compared to the county average. The likelihood of being a vulnerable community member in Erewash as a lone parent or lone pensioner is broadly similar to that in England, but the likelihood of being a child in care is significantly higher than the county average. The size of the non-working population relative to the size of the working population in the borough is similar to the ratio for England.

North East Derbyshire

The rate of violent crime in NED is significantly lower than the rate for England. Compared to the county average the rate for antisocial behaviours and the rate for all crime are significantly lower. However, compared to the county average, the rate of youth offending is significantly higher. The likelihood of being a vulnerable community member in NED as a lone parent or lone pensioner is broadly similar to that in England, whereas the likelihood of being a child in care is significantly less. The size of the non-working population relative to the size of the working population in the district may be a bit higher than the ratio for England.

7.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon community as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to community the Phase 2 Sustainability Statement (Appendix E9) notes:

- Relocation induced community severance, which decreases social support/ social capital;
- Rail systems can bolster connectivity between social groups/ networks, but can also create barriers that reduce community interactions or cause isolation of areas;
- About 234 dwellings will be at risk of isolation in connection with the eastern leg, at least some of which are located in West Killamarsh within Derbyshire.

A limited scoping review of literature indicates the following:

- There is evidence that new transport initiatives transecting existing communities can lead to community severance, although the precise consequences of this in health terms are uncertain;
- The Crossrail HIA postulated that impact on social networks would be minimal due to the distance between construction sites; however, the disruption caused by the passage of the HS2 route will be continuous and so may cause greater division of communities, both physically and psychologically;
- The presence of a significant construction workforce in local communities may result in local tensions (note the relatively high existing levels of crime and alcohol misuse in most affected Derbyshire localities);
- There will be loss of community amenities although the direct health impacts of this are difficult to predict;
- People may be inhibited to use public transport, or engage in 'active transport' (e.g. walking or cycling) if they fear for their safety or that they will be victims of crime (again, relatively high existing levels of crime locally may be a barrier to use of new public transport options for some residents).

Sources

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7.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on community as a determinant of health:

Health issues with a positive impact
Easier travel to family and friends (in the north or south), especially as capacity is increased fares may get cheaper and roads less congested
A shorter commute may improve the quality of family life, as a partner can expect to be at home for a longer time
Easier for grandparents to travel for child-minding purposes
May help make connections outside of local communities/ reduce inward-looking communities

The following table summarises issues identified as having negative impacts on community as a determinant of health:

Health issues with a negative impact
Turning Long Eaton into a commuter belt could cause community upheaval
Loss of community amenities
It will physically divide communities/cut villages in two/ make it more difficult to walk to friends
Will have a huge effect on community cohesion
Homes in a new housing estate being built near HS2 (Bolsover district) won't sell, inhibiting community growth
A house price rise due to people from London moving north may force local people out of their communities
People living in poor areas where community spirit is already low will be further divided and made to feel worthless and unimportant
Will cause arguments with visitors who don't live near it/ unable to use garden with visitors/ visitors may not want to visit a downgraded home environment again

7.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon community. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
May strengthen inter-regional connections between families/ friends, increasing social capital and reducing isolation (although the added benefit of speed over existing transport options in this regard is unclear)	Minor	Speculative	Neutral	All	Operational
As volume of traffic increases, social networks and community territory decline so reduced car use could be protective; however, with so few stopping points this is unlikely to be realised, as most people will still rely on cars to reach the stations	Moderate	Speculative	Enhancing	Erewash	Operational
Opposition to the HS2 proposal may foster increased participation of local residents in community affairs thus bolstering community cohesion	Moderate	Probable	Enhancing	All	Planning
Communities may feel a sense of increased worth due to investment in their area and feeling more connected to the UK	Minor	Speculative	Enhancing	All	Operational
HS2 could improve social inclusion, but only for the minority able to afford the cost of travel	Minor	Speculative	Worsening	All	Operational
There may be opportunities to facilitate new greenway links between communities utilising the HS2 corridor to bridge connections that have yet to be formally established	Minor	Speculative	Neutral	All	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
May weaken local connections between families/ friends, reducing social capital and increasing isolation	Minor	Speculative	Worsening	All	Operational
Severance of communities via a physical (e.g. closure of level crossings) or perceived barrier (e.g. noise, visual intrusion, etc.)	Moderate	Probable	Worsening	All	Construction, Operational
Disruption of community life due to road closures, demolition of homes, movement of heavy plant and materials, closure of level crossings	Major	Definite	Worsening	Erewash	Construction

7.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to community as a determinant of health.

Enhancing positive health impacts

In relation to community, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
COE1	Compensate communities for the loss of local amenities and support their relocation, replacing 'like-with-better' rather than 'like-for-like' via a process that involves the community in the decision-making
COE2	There may be opportunities to facilitate new greenway links between communities utilising the HS2 corridor to bridge connections that have yet to be formally established

Mitigating negative health impacts

In relation to community, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
COM1	Provide detail on proposed strategies for mitigating potential community-related adverse impacts within Derbyshire as tabulated in 7.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
COM2	Reduce the severance of local communities using design solutions that facilitate access
COM3	Offer relocation and/or compensation to dwellings identified as at risk of community isolation
COM4	Reduce the risk of crime/ address potential fears around safety of public transport and safe active travel (possibly utilising CCTV and other solutions), particularly around Long Eaton/ the East Midland hub where these indicators may be adverse
COM5	Work with the Derbyshire Constabulary and community safety partnerships to look at issues such as increased policing during the construction phase and issues around the availability of alcohol, which may result in violence or other disorder exacerbating existing problems
COM6	Ensure construction sites and all companies contracted to service them are registered with the Considerate Constructors Scheme, which will include monitoring against 'Respecting the community' standards

8. Environment—nice surroundings

There is no doubt that the environment into which we are born, play, learn, find work and grow older within influences our health—even more tangibly at the population level, as measured by tools such as small-area deprivation scores (see sections 2 and 3). The environment is both built (man-made surroundings such as buildings, parks and transport networks) and natural (habitats or landscape largely free from human interference). This impact area may include issues around pollution (including of the air and water, or noise), flood risk, climate change, waste disposal, effects on wildlife or ecological balance, heritage, the aesthetics of landscape severance, etc.

8.1 What did community profiling tell us?

Some information about the environment as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 8.1).

Table 8.1: Environment indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Resident satisfaction with local area, % 16+ yrs*	2011	—	85.8	76.6	88.3	83.8	86.6
Greenspace, % of total land m^2	2010			86.0	61.0	74.0	63.7
CO_2 emissions, total per capita	2009			5.29	5.50	5.40	5.52
CO_2 emissions from transport, total per capita	2009			1.13	1.18	1.21	1.40
Unrecycled household waste, kg per household	2010-11			711.4	519.5	527.5	524.9
Fluvial (river) flood risk, % of properties at risk	2011			1.0	3.5	28.7	1.5
Pluvial (rain) food risk, % of properties at risk	2011			4.7	5.2	4.2	2.5

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Bolsover

Compared to the county average, Bolsover residents are significantly less satisfied with the area in which they live. Of the localities impacted by HS2, Bolsover district contains the largest proportion of greenspace land and local residents are producing the largest volume unrecycled waste per household. Properties in Bolsover district are the least likely to be at risk of river flooding.

Chesterfield

Chesterfield residents are as likely to be satisfied with the area in which they live as residents of Derbyshire as a whole. Of the localities impacted by HS2, the borough contains the smallest proportion of greenspace land and local residents are producing the smallest volume unrecycled waste per household. Properties in Chesterfield are the most likely to be at risk of flooding from rainwater.

Erewash

Erewash residents are as likely to be satisfied with the area in which they live as residents of Derbyshire as a whole. Properties in Erewash are the most likely to be at risk of river flooding.

North East Derbyshire

NED residents are as likely to be satisfied with the area in which they live as residents of Derbyshire as a whole. The district contains only marginally more greenspace land than Chesterfield. Properties in NED have a relatively low risk of flooding from either river or rainwater sources.

8.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon the environment as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to environmental issues the Phase 2 Sustainability Statement (Appendix E9) notes:

- Light pollution can cause discomfort or annoyance;

- Noise pollution can cause hearing loss, annoyance, anxiety or stress, sleep disturbance and can imped daytime performance;
- There will be residual noise in certain areas (see Appendix 1 of this report);
- Vibration disturbance can be a source of annoyance;
- No vibration-related impacts are anticipated, assuming mitigation is effective;
- Air pollution may result from particulates (long-term exposure is linked to cardiovascular disease), dust (causing annoyance, eye irritation or breathing problems) and from nitrogen dioxide (NO_2) emissions at construction sites;
- The main impact of the scheme on air quality is expected to be dust related to station construction, although this will be mitigated via dust suppression measures, which given the early design stage haven't been fully assessed;
- Changes to landscape character can create stress, especially in deprived communities already less satisfied with their environment;
- The location of high visibility construction sites is not known at this time, therefore there has been no assessment of visual impact;
- Mitigation of the visual impact of the operational route is feasible using design solutions.

A limited scoping review of literature indicates the following in respect of noise and vibration:

- Noise and vibration from the Shinkansen HSR were more likely to be reported by people with existing health conditions in a Japanese survey; the study authors concluded that noise should not exceed 70 dB and vibration velocity should not exceed 0.30 mm/s in residential areas;
- Maps produced by HS2 Ltd. (see Appendix 1) indicate that areas with noise levels above 68 dB could require mitigation; areas likely to experience high noise levels (exceeding 73 dB) are also identified adjacent to Long Eaton (Erewash) in connection with the East Midland Hub;
- Maps produced by HS2 Ltd. (see Appendix 1) indicate residual noise is predicted to affect residents of Poolsbrook, Netherthorpe, Woodthorpe and Mastin Moor (Chesterfield) and of Renishaw and Killamarsh (NED);
- A literature review conducted for Health Scotland found no studies relating train noise to health impacts and suggested this is unlikely to cause longer-term hearing loss;

- HSR produces less noise at equivalent speeds than that produced by classic rail systems, dispenses with horn noises (at high speed it provides no meaningful warning) and noise control measures are said to be effective;
- Analysis of the environmental impact of Zuider Zee HSR in the Netherlands indicated a propensity to significantly under-estimate the effects of noise nuisance using official methods.

A limited scoping review of literature indicates the following in respect of air quality:

- High-speed rail is advocated to produce less air pollution per passenger mile than conventional mass-transport systems, utilising a single source of pollution that is easier to control than multiple sources; this is a reference to electricity generation used to power the system, given that directly emitted pollutants from wheel bearings, freight, and/or entrained dust are considered insignificant;
- Most domestic transport-related CO_2 emissions result from short car journeys, and the configuration of HS2 will not necessarily mitigate these—potentially increasing them by requiring car travel to/ from stations for the majority of passengers not living proximal to them, or within reach via public transport in a rural county like Derbyshire;
- Academics suggest that for HSR to offset its related CO_2 emissions there must be, in addition to high passenger numbers, a large modal shift from air travel and construction of tunnels for the HSR system must be avoided;
- Estimates produced for California's HSR indicate that tunnelling and aerial structures would be responsible for 60% of such emissions, despite accounting for only 15% of the length of the route;
- Importantly, production of materials used in the construction of HSR also results in CO_2 emissions;
- Construction-related emissions for California's HSR were estimated to be recuperated between 2–20 years after the commencement of train operations, depending upon how well the service was used;
- Air pollution—especially from 'small particles' (PM_{10})—is linked to heart and lung problems, both immediate in vulnerable groups and longer term in the wider population; it is unlikely, however, that there will be a *measurable* impact on population health;

- The redevelopment of Kings Cross Station was associated with increases in particulates that were attributed to local construction activities, suggesting that dust suppression methods were not wholly effective even though no health impacts were directly discerned;
- It is likely that the biggest contribution to harmful emissions will come from traffic involved in construction, although again the likelihood of a measureable impact is small;
- About a fifth of CO_2 emissions arise from transport, and while construction of HS2 may temporarily exacerbate the problem, the operation of less polluting public transport may help mitigate the considerable projected health impacts of global climate change;
- Comparisons of greenhouse gas emissions should include direct emissions resulting from vehicle operations, as well as indirect effects resulting from vehicle, infrastructure and fuel components;
- Predictions of long-term environmental impacts need to take account of developments in alternative transport arenas, such as computer-driven and/or fuel-efficient road vehicles, more efficient air travel, etc.;
- HSR can create more SO_2 emissions as a result of electricity generation than alternative transport modalities, causing acidification of the environment and potential health consequences;
- It has been suggested that HS2 has the potential to cause an overall increase in British CO_2 emissions, by means of changing the balance of flights at Heathrow to a greater proportion of longer-haul flights (assuming HSR negates the need for some shorter flights);
- An analysis of the Europabanan HSR proposal in Sweden indicates that the majority (60%) of a reduction in CO_2 would result from a shift in freight from the road to rail, noting that 'high-speed rail investments may not be justified for the passenger markets alone'.

A limited scoping review of literature indicates the following in respect of additional environmental impacts:

- Environmental impact assessments are highly sensitive to several key assumptions;
- Experience in Italy during the consent stage of the Lyon-Turin HSR system was that opposition to the scheme on environmental grounds was influenced

by the characteristics of perceived hazards and communication of these by the sponsor; personal views concerning the risks were typically formed early and were resistant to subsequent modulation, highlighting the need for early and appropriately tailored information;

- Watercourse crossings may pose a flood risk, notably where viaduct lengths are reduced; flood risk assessments have been prepared by HS2 Ltd. as part of their Environmental Statement;
- Effects from HSR noise on domestic stock and wildlife are plausible but have not been quantified;
- Evidence suggests that, particularly in rural areas, transport corridors can disrupt wildlife migration and genetic inter-mixing;
- Rail corridors can minimise wildlife impacts partly as a result of their innate characteristics (e.g. narrowness) and amenability to mitigation through design solutions (e.g. culverts, underpasses, etc.);
- Exposure to electromagnetic fields (EMF) can harm health or cause interference with health-supporting technologies, such as cardiac pacemakers;
- Modelling carried out for HS2 Ltd. indicates most EMF emissions will result from 'traction power' and that these will be variable, be confined to within 50 metres of the track centre, be subject to mitigation and will comply with relevant guidelines.

Sources

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8.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on the environment as a determinant of health:

Health issues with a positive impact
Improved access to the South East might reduce congestion on major roads (cars and lorries), reducing pollution/ improving air quality
HS2 itself may give rise to less pollution than the cars whose journey it replaces

The following table summarises issues identified as having negative impacts on the environment as a determinant of health:

Health issues with a negative impact
The Chesterfield Canal and trail, providing recreational opportunities, will be impacted in Renishaw (NED) [and elsewhere]
Noise pollution due to construction
Noise pollution due to increased commuter traffic (to/ from stations)
Noise pollution due to passage of trains/ ineffective noise protection/ compounding existing noise from M1 traffic
Air pollution due to traffic congestion/ disruption
Dirt/ dust pollution (especially during construction)
Vibration disturbance
Light pollution at the Toton hub
Visual eyesore along route during construction
Air pollution due to increased commuter traffic (to/from stations); may worsen breathing problems and asthma (cumulative around Long Eaton, together with pollution from airport, power station, M1 and existing rail network)
Air quality might be affected by trains/ CO_2 emissions
Reduction in/ ruin of green belt areas and open spaces/ fields
Alteration to the urban environment of Long Eaton town centre
Disruption to/ blight on the countryside and disappearance of wildlife
Destruction of/ replacement of nature reserves with concrete may damage health
Creation of flood plains
Damage to the local ecological balance

8.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon the environment. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Ease of rail travel could lead to less car journeys thus improving pollution levels; it could also mean more viable option for transport of goods thus leading to less pollution due to HGVs (i.e. 'road-to-rail' freight)	Moderate	Speculative	Neutral	Erewash	Operational
The existing significant impacts of the M1 upon Hardwick (in a locality with reduced resident satisfaction) could be ameliorated by HS2 design solutions that enhance the positive health impacts of both corridors, such as reduced motorway noise annoyance, reduced visual intrusion/ landscape blight and facilitation of wildlife and recreational access	Moderate	Speculative	Neutral	Bolsover	Construction, Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Noise nuisance due to construction activity, particularly as a result of building an infrastructure maintenance depot at Staveley	Major	Definite	Worsening	Chesterfield	Construction
Noise nuisance due to operation of an infrastructure maintenance depot at Staveley, with associated road traffic (potentially affecting approx. 2,000 homes)	Major	Definite	Worsening	Chesterfield	Operational
Noise nuisance due to construction activity, particularly as a result of building a station on the outskirts of Long Eaton	Major	Definite	Worsening	Erewash	Construction
Noise nuisance due to operation of the hub on the outskirts of Long Eaton	Major	Definite	Worsening	Erewash	Operational
Noise nuisance due to frequent passage of high-speed trains, particularly where greenways are crossed by the route, reducing health-supporting tranquillity	Major	Probable	Worsening	All	Operational
Vibration nuisance due to frequent passage of high-speed trains	Minor	Speculative	Worsening	All	Operational
Light pollution related to the infrastructure maintenance depot at Staveley and East Midland hub bordering Long Eaton	Minor	Speculative	Worsening	Chesterfield, Erewash	Construction, Operational
Light pollution related to train operations	Minor	Speculative	Worsening	All	Operational
Raising of dust/ particulates due to construction activity	Moderate	Probable	Worsening	All	Construction
Raising of dust/ particulates due to frequent passage of high-speed trains	Minor	Speculative	Worsening	All	Operational
Increase in air pollution/ CO_2 emissions related to construction traffic	Moderate	Probable	Neutral	All	Construction
Increase in air pollution/ CO_2 emissions related to station access	Moderate	Probable	Neutral	Erewash	Operational
There are significant residual concerns regarding the accuracy of predicting lifetime carbon footprint for the total HSR system	Major	Probable	Neutral	All	Construction, Operational
Landscape blight/ visual severance of green space and intrusion into heritage scenery causing loss of amenity, including (but not limited to) listed buildings; monuments; river courses; wetlands; ponds; fishponds; conservation areas; nature reserves; wildlife sites; sites of special scientific interest; woodlands; parks; trails; canals and farmland	Major	Definite	Worsening	All	Construction, Operational

Health issues with a negative impact (continued)	Scale	Likelihood	Equality	Locality	Stage
Particular concerns regarding the degradation of the built environment are Hardwick Hall, Sutton Scarsdale Hall, Bolsover Castle, Chesterfield Canal, Heath Old Church and the Trans Pennine Trail	Minor	Speculative	Neutral	Chesterfield, Bolsover, NED	Construction, Operational
Low-lying properties and habitats may be more susceptible to river flood risk, particularly in the Trent Valley, where massive embankments and viaducts are proposed, but elsewhere there are more complex works proposed where the River Doe Lea meets the River Rother and the balance between viaducts and embankments could vary following consultations	Major	Speculative	Neutral	Erewash	Construction, Operational
Some open space alongside the route may require temporary buildings for storage of construction materials and workshops; the extent of land take in support of this outside of the 60m construction corridor is unclear.	Minor	Speculative	Neutral	All	Construction
Detrimental effect on known wildlife habitats, including protected species (e.g. water voles, great crested newt) causing a reduction in 'biophilia'	Minor	Speculative	Neutral	All	Construction, Operational
Detrimental effect on habitat connectivity, reducing biodiversity through transection of continuous linear routes such as waterways, greenways and rights of way that are bounded as they are by grassland, hedgerow and woodland margins providing valuable green corridors for wildlife	Minor	Speculative	Neutral	All	Construction, Operational
Noise, dust and loss of amenity associated with the alterations to the high level freight line which is to be changed from two lines to four and used for both freight and passenger services once HS2 is operational	Moderate	Probable	Worsening	Erewash	Construction

8.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to the environment as a determinant of health.

Enhancing positive health impacts

In relation to the environment, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
ENE1	Utilise mitigation solutions intended to minimise the impact of HS2 to improve upon the existing impacts of the M1 upon Hardwick, aiming to improve resident satisfaction with the local area
ENE2	Demonstrate how HS2 will enhance the Trent Valley Vision being developed and promoted by the Lowland Derbyshire and Nottinghamshire Local Nature Partnership

Mitigating negative health impacts

In relation to the environment, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
ENM1	Provide detail on proposed strategies for mitigating potential environment-related adverse impacts within Derbyshire as tabulated in 8.4 (particularly for noise and particulates), with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
ENM2	Provide clarification of the estimated noise impact of the station at Toton and depot at Staveley, as distinct from noise due to proximity to the line itself
ENM3	Confirm whether properties (both residential and business) in proximity to construction sites or the operational track will be eligible for installation of compensatory noise insulation
ENM4	Reduce the visual and ecological severance of landscape using aesthetic design solutions
ENM5	Confirm whether the fuel type generating electrical power for HS2 has been factored into the environmental impact assessment and detail the sensitivity of estimates to passenger numbers; shift of passengers and freight from air or road to rail (allowing for efficiency gains in those alternatives); the length of tunnelling involved; and indirect emissions from stations and infrastructure, as well additional road traffic to/ from HS2 stations

ID	Recommendation (continued)
ENM6	Ensure construction sites and all companies contracted to service them are registered with the Considerate Constructors Scheme, which will include monitoring against 'Protecting the environment' standards

9. Housing—happy homes

Our homes are where we bring up families, escape from the pressures of work, or seek respite from the weather and security. For those living in unsuitable or poorly heated housing, they can be a source of chest infections, circulatory problems, joint pains and other cold-related diseases—including excess winter deaths. Many accidents and lapses in hygiene also occur at home. This impact area may include issues around access to affordable good quality housing, the imposition of forced property sales and relocation, the value of capital assets, general living conditions, etc.

9.1 What did community profiling tell us?

Some information about housing as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 9.1). Note that fuel poverty is considered in section 13 of this report.

Bolsover

The average house price in Bolsover is significantly lower than the county average. The proportion of properties in council tax bands D to H is significantly lower than the county average (i.e. there is a relative paucity of higher-value housing).

Chesterfield

The average house price in Chesterfield is significantly lower than the county average. The proportion of properties in council tax bands D to H is significantly lower than the county average.

Erewash

The average house price in Erewash is significantly lower than the county average. The proportion of properties in council tax bands D to H is significantly lower than the county average.

North East Derbyshire

The average house price in NED is similar to the county average. The proportion of properties in council tax bands D to H is significantly lower than the county average.

Table 9.1: Housing indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Excess winter deaths, ratio	Aug 08-Jul 11	19.1	19.7	18.5	19.3	24.7	16.6
Owner occupied, %	2011	64.1	71.4	67.2	63.5	73.0	71.3
Rented (council or housing association), %	2011	17.7	15.3	18.2	23.1	13.0	20.4
Private or other rented, %	2011	16.8	12.0	13.0	12.4	12.9	7.4
Living rent free, %	2011	1.3	1.3	1.5	1.0	1.2	0.9
Average house price, thousands of pounds*	2012-13	236.3	159.7	108.6	134.6	138.2	160.7
Council tax band D & above, % of dwellings*	2011	33.8	22.7	10.5	12.6	16.6	22.0
Overcrowded households, % of households	2011	8.7	3.7	3.3	4.7	3.7	3.0
Households without central heating, % of households	2011	2.7	2.0	1.0	1.3	3.2	1.1
Detached housing, % of households	2011	22.3	31.8	28.1	23.9	28.3	36.4

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

9.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon housing as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to housing the Phase 2 Sustainability Statement (Appendix E9) notes:

- The stress and anxiety induced by demolition does not depend upon identification of replacement housing;
- Relocation induces stress and community severance;
- An improvement in housing is linked to decrease in illness, with general well-being benefits and with gentrification (wealthier communities, resulting in less affordable housing due to a rise in property value);
- New infrastructure can reduce perceptions of amenity value and thus lower the value of local properties;

- About 139 dwellings will be demolished in connection with the eastern leg, an unknown proportion of which may be within Derbyshire;
- About 3,500 dwellings could be built in connection with the eastern leg, an unknown proportion of which may be within Derbyshire.

A limited scoping review of literature indicates the following:

- For families forced relocation as a result of land take could conceivably be disruptive to their community ties and to current employment;
- The Crossrail HIA identified the risk posed by land take to the availability of housing, noting that deprived areas would be at greater risk and that a migrant construction workforce could place additional demands on housing;
- A review of evidence from eight countries with HSR systems supports the view that increasing accessibility is linked with higher house prices and noise or congestion is linked with a lowering of house prices;
- Taiwanese experience indicates access to HSR has 'at most a minor effect' on house prices, thought to be 'a reflection of expensive fares in combination with the inaccessible location of the HSR station'; however, the same authors also report a substantial impact on downtown Taiwanese house prices with a station-centred price gradient (affluent Taiwanese tend to live downtown rather than in the suburbs);
- Although maglev HSR may be 4-8 dB quieter than conventional HSR (like HS2), Chinese home owners have been shown to be more bothered by noise than persons in rented accommodation;
- Housing market research by CBRE relating to the announcement of HS2 Phase 1 found a measurable fall in house prices and lower sales in areas adjacent to the proposed route, while prices and sales volume increased in more distant areas; these effects were more marked in rural areas.

Sources

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9.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on housing as a determinant of health:

Health issues with a positive impact
Improved access to South East England/ commuting time from London might increase the value of properties owned in the East Midlands

The following table summarises issues identified as having negative impacts on housing/ happy homes as a determinant of health:

Health issues with a negative impact
People will have to be relocated (possibly to more expensive areas) and give up their beloved homes
A house price rise in areas close to the station may make it difficult for families to afford bigger homes (or may stretch themselves financial in anticipation of an increase)
A house price rise due to people from London moving north may force local people out of their communities
Devaluation of homes adjacent to the line/ difficult to sell property for a good price e.g. in Heath
Compulsory purchase order offer may be low
Uncertainty over help available to relocate/ if help available who will provide it
Homes in a new housing estate being built near HS2 (Bolsover district) won't sell, causing financial loss
Homes within eyeshot or earshot may reduce in value, but all may not qualify for compensation

9.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon housing. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
A fall in average house prices due to the 'blight' effect may increase the affordability of housing for those on lower incomes, enabling access to the 'housing ladder'	Moderate	Speculative	Neutral	All	Planning, Construction, Operational
The ease of commuting may lead to the development of commuter belts which would increase the profile of an area and improve the local economy	Moderate	Speculative	Neutral	All	Operational
Longer term increase in value of homes if economic regeneration around station and depot is realised	Moderate	Speculative	Worsening	Chesterfield, Erewash	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Loss of homes/ allocated residential development capacity due to land take, particularly as a result of an infrastructure maintenance depot at Staveley e.g. Riverdale Park Homes Site (Lowgates), and in Killamarsh (NED)	Major	Definite	Worsening	Chesterfield, NED	Construction
Average house prices may fall due to the 'blight' effect of the proposed route, with the potential for negative equity and/or difficulty selling	Major	Probable	Worsening	All	Planning
Developers may be nervous about investing in new housing developments along the proposed route; there may be a reduction in the number or breadth of new affordable housing schemes	Minor	Speculative	Neutral	All	Planning
Those close to the route are less likely to be able to afford to move house; about 3,300 dwellings are within 100m of the route construction boundaries of the eastern leg, some of which may be in Derbyshire	Moderate	Probable	Worsening	All	Planning, Construction
HS2 will reduce the amenity for a substantial number of residents who live near the station/ route due to noise, light pollution and loss of visual amenity	Major	Definite	Worsening	Erewash	Construction
Reduction of travel times may stimulate commuting which could put pressure on house prices to the detriment of local people, many of whom are on a low income	Moderate	Probable	Worsening	Erewash	Operational
HS2 proposals show that a number of residential properties would be demolished in Derbyshire, notably in Long Eaton (six) and Renishaw (nine dwellings)	Major	Definite	Worsening	Erewash, NED	Construction
The desire to attract aspirational housing to Bolsover district may be impaired, aiming to increase property values given the existing supply of affordable housing	Minor	Speculative	Worsening	Bolsover	Planning, Construction

9.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to housing as a determinant of health.

Enhancing positive health impacts

In relation to housing, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
HOE1	Work with local housing departments and developers to examine the feasibility of linking the provision of suitable accommodation for the construction workforce to longer-term affordable housing projects
HOE2	Provide relocated families with housing that is better than what they are losing (rather than like-for-like), recognising the relationship between housing quality and health and that this cannot fully compensate for community severance

Mitigating negative health impacts

In relation to housing, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
HOM1	Provide detail on proposed strategies for mitigating potential housing-related adverse impacts within Derbyshire as tabulated in 9.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
HOM2	Work with local authority housing departments to upgrade social housing exposed to higher noise levels with appropriate noise insulation
HOM3	Ensure that residents who are not owner-occupiers (and therefore not covered by the compensation scheme) are also treated fairly, recognising the particular difficulties those in park homes may face in seeking alternative accommodation if relocation is required or desired

10. Transport & access—getting about

Good transport links are enabling. It is well established, for example, that access to health-promoting services is inequitably distributed in favour of those with access to a car (yet most of the harms arising from their use, such as injury and pollution, are disproportionately experienced by more deprived members of society). Transport can enable access to health and social services and employment opportunities, reduce isolation and if 'active' deliver exercise—all of which can be especially problematic for those with disabilities. This impact area may include changes to road use/ local public transport services, affordability of rail fares, physical severance, access to services (e.g. GP, hospital, or pharmacy, social care) and key amenities, etc.

10.1 What did community profiling tell us?

Some information about transport and access as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 10.1).

Table 10.1: Transport & access indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Hip fracture in 65+ yrs, directly age- & sex-standardised rate of acute admissions per 100,000 people aged 65+ yrs	2011-12	457	455	436	449	439	487
Library users, % population*	2011-12	—	15.9	15.4	20.1	14.7	16.7
Travel time to nearest GP, minutes	2011	10.0	10.2	9.6	9.2	9.3	10.0
No car or van, % of households	2011	25.8	20.1	23.4	27.1	22.4	18.7

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Bolsover

The rate of admissions for hip fracture is similar to the national rate[1]. Significantly fewer Bolsover residents access a library compared to the county average. 23.4% of households do not have access to a car or van; this figure is higher than the Derbyshire figure of 20.1%, but lower than the England figure of 25.6%. Bolsover experiences worse than average access to services as measured by the IMD 2010.[2] Figure 10.1 illustrates that 56% of all Lower Super Output Areas in Bolsover are in the most two deprived quintiles for access to services. Bolsover has a similar average distance to access GP practices as Derbyshire, although the rural nature of some of the district is reflected in some wards having more than double distance to travel to access a GP surgery than the Derbyshire average. Bolsover has a slightly higher proportion of households that do not have access to a car or van than Derbyshire, but this proportion is lower than the England figure. A low proportion of residents utilise public transport to get to work (see Table 10.2).

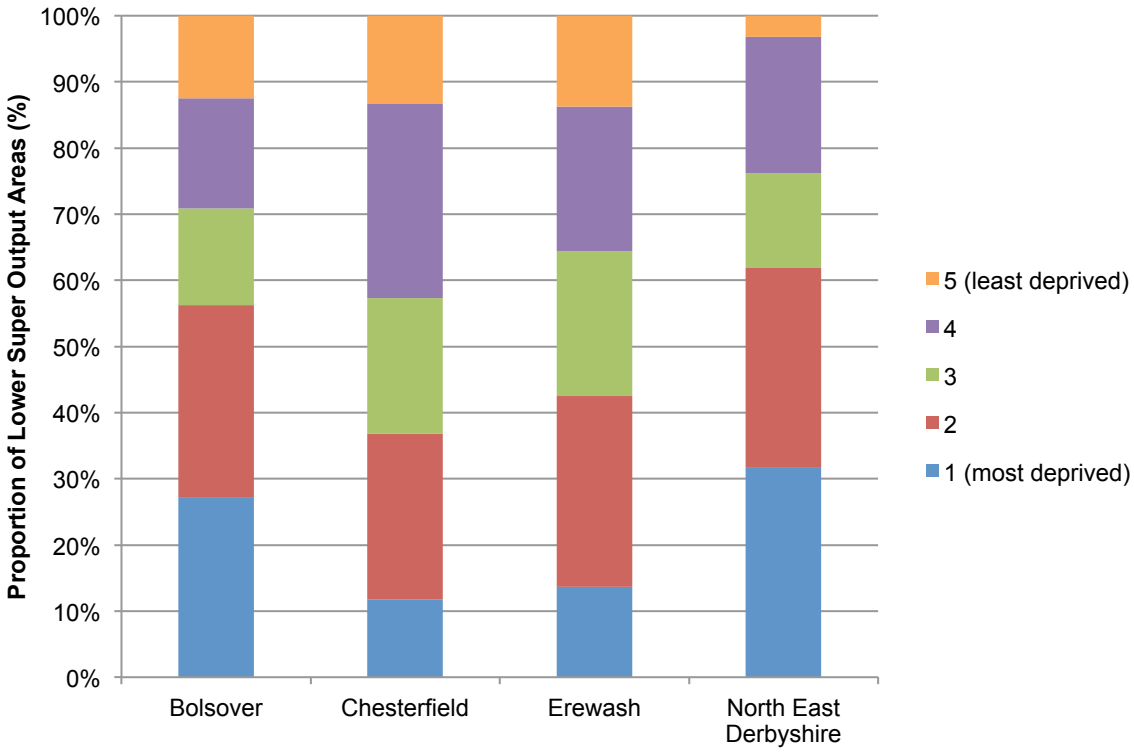

Fig 10.1: Proportion of LSOAs in each deprivation quintile for the Geographical barriers sub-domain of the Barriers to Housing and Services domain of IMD 2010, by district. Source: Dept for Communities and Local Government

[1] The resulting immobility reduces access to amenities and increases dependency upon others
[2] The Barriers to Housing and Services domain of the Index of Multiple Deprivation (IMD) 2010 includes a sub-domain on the physical proximity of GP surgery, supermarket/ convenience store, primary school and Post Office.

Chesterfield

The rate of admissions for hip fracture in Chesterfield residents is similar to the national rate. Significantly more Chesterfield residents access a library compared to the county average. 27.1% of households do not have access to a car or van; this figure is higher than the Derbyshire figure of 20.1% and the England figure of 25.6%. Chesterfield has similar levels of access to services as England as measured by the Index of Multiple Deprivation 2010. Figure 10.1 illustrates that 37% of all Lower Super Output Areas in Chesterfield are in the most two deprived quintiles for access to services. Chesterfield has a slightly lower average distance to access GP practices as Derbyshire. Chesterfield has a higher proportion of households that do not have access to a car or van than both Derbyshire and England. Chesterfield residents are a little more likely to get to work via active travel than they are to take public transport (see Table 10.2).

Table 10.2: Method of travel to work (aged 16–74 yrs)	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Public transport, %	17.4	7.1	5.9	10.0	9.0	7.9
Car, taxi or motorbike, %	68.1	81.0	84.1	77.3	71.9	84.4
Active travel, %	14.5	11.9	10.0	12.7	13.6	7.6

Source: Census 2011 (via http://www.nomisweb.co.uk/census/2011/qs701ew)

Erewash

The rate of admissions for hip fracture in Erewash residents is similar to the national rate. Significantly fewer Erewash residents access a library compared to the county average. 22.4% of households do not have access to a car or van; this figure is higher than the Derbyshire figure of 20.1%, but lower than the England figure of 25.6%. Erewash has similar levels of access to services as England as measured by the Index of Multiple Deprivation 2010. Figure 10.1 illustrates that 43% of all Lower Super Output Areas in Erewash are in the most two deprived quintiles for access to services. Erewash has a similar average distance to access GP practices as Derbyshire, although the rural nature of some of the district is reflected in some wards having more than double distance to travel to access a GP surgery than the Derbyshire average. Erewash has a slightly higher proportion of households that do not have access to a car or van than Derbyshire, but this proportion is lower than the

England figure. Erewash residents are the most likely among the four localities to get to work using active transport (see Table 10.2).

North East Derbyshire

The rate of admissions for hip fracture in NED residents is similar to the national rate. Significantly more NED residents access a library compared to the county average. 18.7% of households do not have access to a car or van; this figure is lower than the Derbyshire figure of 20.1%, and the England figure of 25.6%. NED experiences worse than average access to services as measured by the Index of Multiple Deprivation 2010. Figure 10.1 illustrates that 62% all Lower Super Output Areas in NED are in the most two deprived quintiles for access to services. NED has a similar average distance to access GP practices as Derbyshire, although the rural nature of some of the district is reflected in some wards having more than double distance to travel to access a GP surgery than the Derbyshire average. NED has a lower proportion of households that do not have access to a car or van than both Derbyshire and England. NED residents are the most likely among the four localities to get to work using a car, taxi or motorbike (see Table 10.2).

10.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon transport and access as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to transport and access the Phase 2 Sustainability Statement (Appendix E9) notes:

- Access to community facilities promotes well-being, social inclusion and can increase social capital;
- Removal of access to community facilities to likely to have a disproportionate adverse impact on deprived communities;
- Reduced or delayed access to health care may result in adverse health outcomes;
- Improved access to public transport has a variety of health benefits, more so in areas where existing links are poor;

- Access to greenspace may encourage use for regular physical activity, which can ameliorate several important public health concerns;
- Three community facilities may be demolished in connection with the eastern leg, although it is unknown whether any might be within Derbyshire;
- The station at Toton will allow access to national rail services in several cities, but Chesterfield is not one of those listed (passengers would need to take a connecting train to Derby or Nottingham, and then onward to Toton).

A limited scoping review of literature indicates the following:

- Cost is one of the most important barriers to use of public transport and the cost of travel by train is perceived to be high;
- HSR fares may be set to recover construction costs from passengers, although doing so could limit access to the service and thereby reduce any potential health benefits of the investment;
- Trains are perceived as unreliable in adverse weather, although are acknowledged as a fast and environmentally friendly means of travel;
- The size of the shift from car use to train in the presence of a new rail station may be as little as 5%;
- An increase in traffic volume to/ from the station could contribute to community severance;
- There is European evidence that HSR diverts passengers from classic rail networks, making the latter less economically viable;
- There are important limitations to existing methods for modelling the accessibility impacts of HSR developments (these tend to give emphasis to land use and transportation, with less attention to human components (e.g. personal travel budget);
- The proposal may disrupt existing active transport infrastructure (e.g. footpaths or cycleways);
- The Crossrail HIA identified a risk to the availability of health services and access to health-promoting amenities;
- The Crossrail HIA predicted that the transport requirement of the workforce will add to congestion on local roads; the additional traffic generated to transport workers may increase the risk of road traffic accidents;
- Based on modelling, geographic improvements in access to London may be relatively confined, with many cities close to HS2 not seeing improvements to

journey time (possibly more likely in a largely rural county like Derbyshire where access to HS2 and classic rail stations is limited);

- Provision of appropriate disabled access to HS2 carriages and stations, according to minimum legal requirements, must be assumed.

Sources

- Temple-ERM (2013). High Speed Rail: Consultation on the route from the West Midlands to Manchester, Leeds and beyond: Sustainability Statement: Appendix E9 – Health Analysis. http://assets.hs2.org.uk/sites/default/files/consultation_library/pdf/P2C12i%20Appendix%20E9%20Health%20Analysis%20220713.pdf
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10.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on transport and access as a determinant of health:

Health issues with a positive impact
(Minor) improvements in journey time/ improvements in journey time to London or Europe (via air or rail), might reduce stress and/or fatigue
Improved access to the South East might reduce congestion on the major road network, reducing pollution and stress for drivers
Easier to get to places you would not normally visit/ improved nationwide connections
Will improve the travelling/ commuting experience between London and Nottingham/ Derby/ major cities
Easy access to the M1 could open up access to the stations in Sheffield or Toton

The following table summarises issues identified as having negative impacts on transport and access as a determinant of health:

Health issues with a negative impact
Extra traffic/ exacerbation of reduced traffic flow around Long Eaton/ Toton especially at peak times
Additional heavy goods traffic during construction, which could damage roads and/ or make parking on narrow local streets difficult
Severance/ restriction of movement in Long Eaton due to closure of level crossings
Minimal improvement on current London services not offset by massive upheaval during construction
Infrastructure in Long Eaton/ Toton may not support projected passenger throughput
Disruption of local public transport around Long Eaton Green hub
Disruption of M1 traffic flow during construction, increasing journey times for road commuters e.g. at Heath where both the M1 and several slip roads will be affected
Curtailment of cheaper rail services from the existing Long Eaton station to London/ elsewhere
Extra travel time to an HS2 station may negate the shortened travel time on HS2 itself e.g. slow buses, slow connecting trams/ rail connections, traffic congestion, etc.
Most local people won't benefit from increased connectivity as there are no local stops
Commuting will be easier only for those who already have good jobs in London
Disinvestment in existing rail network, making it harder to get about if results in fewer local rail services
Cost of getting to/ from stations to take an HS2 journey could be prohibitive (e.g. by taxi)
More difficult for mobile workers (e.g. community care workers) to get about during construction stage
May be more difficult to access local villages and/or the countryside e.g. loss of footpaths into Heath
Threats to public rights of way
Access to shops may be disrupted e.g. when constructing bridges
Lack of a station serving the Chesterfield/ Bolsover areas limits the access benefits for local residents

10.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon transport and access. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Carriage of cycles could reduce car use	Minor	Speculative	Neutral	Erewash	Operational
Classic rail services may experience an increase in capacity, reducing crowding and thus increasing the attractiveness of public transport for access to services	Moderate	Probable	Neutral	All	Operational
Access to specialist health care in distant locations (e.g. cancer treatment centres) may be facilitated, augmenting the NHS 'choice' agenda	Minor	Speculative	Enhancing	Erewash	Operational
New development could lead to improved local infrastructure which could improve the option for active travel	Moderate	Speculative	Neutral	Erewash	Operational
Traffic flow issues could be resolved and safety could be improved by redesign of known trouble spots impacted by the route e.g. removing the level crossings at Main Street and Station Road (Long Eaton), and the junction in Stainsby	Moderate	Probable	Neutral	Erewash, Bolsover	Operational
There may be an increased capacity for freight services in line with the 'road-to-rail' agenda, reducing pollution and congestion-related stress for motorists, although carriage of freight may conflict with carriage of more passengers	Minor	Speculative	Enhancing	Erewash	Operational
HS2 may create a case for extension of Nottingham's NET tram line into Long Eaton, improving access to employment opportunities, healthcare facilities and leisure amenities for southern Erewash residents	Minor	Speculative	Enhancing	Erewash	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Shift of passengers to a high-speed service could adversely impact classic rail services, resulting in less access to services by those on low incomes	Moderate	Speculative	Worsening	All	Operational
Integration of classic rail services with HS2 could involve operating a reduced service or diverting trains to Toton, increasing journey times e.g. going south from Chesterfield and Derby	Moderate	Speculative	Neutral	All	Operational
Temporary highways access during construction could increase road congestion and cause disruption to car journeys (e.g. M1 realignment north of Toton, M1 Junction 29)	Moderate	Definite	Neutral	All	Construction
Expansion of highways access to the station at Toton and maintenance depot at Staveley could increase road congestion and cause disruption to car journeys and adversely affect the punctuality of local bus services	Moderate	Probable	Neutral	Erewash, Chesterfield	Construction, Operational
Due to the long distance nature of the proposal, HS2 is unlikely to facilitate access to existing local health and social care services or other key amenities	Major	Definite	Neutral	All	Operational
Traffic congestion will increase in certain areas (including approach roads) making it more difficult for pedestrians and cyclists to utilise active travel options	Moderate	Speculative	Neutral	Erewash	Operational
Closure of level crossings in Long Eaton might cause access problems for all residents, particularly those with mobility issues; however, an over- or underpass alternative should fully mitigate this concern	Moderate	Speculative	Neutral	Erewash	Construction, Operational
Providing public transport to service the HS2 station may reduce footfall on other local services leading to them becoming uneconomic and ultimately being withdrawn; such services may be vital to deprived community members	Moderate	Speculative	Worsening	Erewash	Operational

Health issues with a negative impact (continued)	Scale	Likelihood	Equality	Locality	Stage
Demand for on-street parking in Long Eaton for pedestrian access to the Toton hub will likely increase; this is already limited due to a preponderance of terraced housing so residents will need protected parking to avoid stress, annoyance and possible conflict with shoppers, town centre workers and HS2 passengers	Minor	Speculative	Worsening	Erewash	Operational
Greenways (trails) provide an important network of safe off-road routes for local people and visitors, linking communities to each other and to opportunities for employment, education, commerce and recreation; HS2 will transect this network	Minor	Speculative	Neutral	All	Construction, Operational
Access for emergency services (e.g. 'blue light' ambulances) may be reduced by diversions, construction traffic, increased congestion, etc.	Moderate	Speculative	Neutral	All	Construction, Operational
The proposed closure of two level crossings in Long Eaton may be a particular issue for people with mobility problems and could prevent them accessing medical services	Moderate	Speculative	Worsening	Erewash	Construction, Operational
Other transport modes (e.g. ferries and airlines) may respond to increased competition (as they did for HS1) by incentivising passengers away from HS2	Minor	Probable	Neutral	All	Operational
People living in city centres generally experience greater deprivation than those in the outer suburbs; by eschewing city centre stations in large towns adjacent to Derbyshire (Sheffield, Derby, Nottingham) HS2 increases inequity, providing greater services to those who already have more	Moderate	Probable	Worsening	All	Operational

10.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to transport and access as a determinant of health.

Enhancing positive health impacts

In relation to transport and access, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
TAE1	HS2 carriages and fit-for-purpose station facilities should include adequate provision for cycles, in support of a rail/ cycle alternative to car use (less polluting and encourages exercise)
TAE2	Provision for sustainable travel to the hub needs to be built into planning so people can access jobs and other services at or via the hub
TAE3	Ensure that a Disability and Access Champion is involved at all key decisions points
TAE4	Make access to relocated community facilities more equitable

Mitigating negative health impacts

In relation to transport and access, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
TAM1	Provide detail on proposed strategies for mitigating potential transport and access-related adverse impacts within Derbyshire as tabulated in 10.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
TAM2	Avoid utilising important local roads for construction traffic, which will worsen existing congestion and thereby exacerbate commuter stress
TAM3	Model current access and the potential effects of severance in Long Eaton related to the proposed closure of two level crossings, noting this is a particular local concern

11. Nutrition—good food and farming

Recent pressures on the farming industry have had wide reaching social and environmental consequences with declining outputs; falling incomes; decreasing milk, cattle, sheep and cereal prices; an ageing population of farmers and decline in workforce numbers with fewer new entrants. Against this background there are established links between farming and both physical and mental illness—in particular asthma, musculoskeletal disorders, depression and suicide. Furthermore, in more rural locations access to healthy and competitively priced food can be more difficult due to transport issues and proximity to food outlets. This impact area may include effects on growing, selling and buying food (including dietary choices), management of crops and livestock, etc.

11.1 What did community profiling tell us?

Some information about nutrition as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 11.1).

Bolsover

Infants in Bolsover are significantly less likely to start life as breast-fed, compared to the England average. At school the proportion of children who are obese based on measurement is similar to the national average and significantly more children are in receipt of free school meals due to low family income (such meals are subject to nutritional standards). The proportions of healthy eating adults and of obese adults are probably significantly worse than is typical for England, although these are modelled estimates only. Bolsover is a relatively rural district (see Table 11.2); of the available farmed land, the main usage is for growing and producing cereals. The percentage of people working within agriculture, forestry and fishing is less than both Derbyshire as a whole and England; males dominate these industries (see Table 11.2).

Table 11.1: Nutrition and land use indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Obese children, % aged 10-11 yrs (Year 6)	2011-12	19.2	18.0	20.7	26.5	19.6	18.4
Obese adults, % modelled estimate from HSE data	2006-8	24.2	25.3	27.4	26.5	26.8	25.8
Starting breast feeding, % mothers initiating where status known	2011-12	74.8	71.0	71.6	71.6	71.6	71.6
Eligible & claiming free school meals, % compulsory school age*	2011-12	17.9	14.3	22.2	17.5	16.8	12.0
Health eating adults, % modelled estimate from HSE data	2006-8	28.7	28.1	22.6	25.8	27.9	28.2
Land use for cereals, % of farmed land	2010	28.1	12.6	49.0	33.6	—	23.4
Land use for arable crops excluding cereals, % of farmed land	2010	14.4	5.1	18.2	20.9	—	7.0
Land use as grassland, % of farmed land	2010	49.2	77.7	29.1	35.6	54.7	63.7

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Chesterfield

Infants in Chesterfield are significantly less likely to start life as breast-fed, compared to the England average. At school the proportion of children who are obese based on measurement is significantly higher than the national average and significantly more children are in receipt of free school meals due to low family income. The proportion of healthy eating adults is similar to the England proportion, although the proportion of obese adults is probably significantly worse than is typical for England (modelled estimates only). Chesterfield is the least rural district in Derbyshire (see Table 11.2); of the available farmed land the main usage is for grassland, with growing and producing cereals a close second. The percentage of people working within agriculture, forestry and fishing is less than both Derbyshire as a whole and England; males dominate these industries (see Table 11.2).

Erewash

Infants in Erewash are significantly less likely to start life as breast-fed, compared to the England average. At school the proportion of children who are obese based on measurement is similar to the national average and significantly more children are in receipt of free school meals due to low family income. The proportion of healthy

eating adults is similar to the England proportion, although the proportion of obese adults is probably significantly worse than is typical for England (modelled estimates only). Erewash is not a particularly rural district (see Table 11.2); of the available farmed land the main usage is for grassland. The percentage of people working within agriculture, forestry and fishing is less than both Derbyshire as a whole and England; males dominate these industries (see Table 11.2).

North East Derbyshire

Infants in NED are significantly less likely to start life as breast-fed, compared to the England average. At school the proportion of children who are obese based on measurement is similar to the national average and significantly fewer children are in receipt of free school meals due to low family income. The proportions of healthy eating adults and of obese adults are probably similar to the England proportions (modelled estimates only). NED is the second most rural district in Derbyshire (see Table 11.2); of the available farmed land the main usage is for grassland followed by cereal growing and production. The percentage of people working within agriculture, forestry and fishing is less than Derbyshire as a whole but higher than for England; males dominate these industries (see Table 11.2).

Table 11.2: Rural living and employment in agriculture	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Persons working in agriculture, forestry or fishing industry, % people aged 16-74 in employment	0.8	1.0	0.6	0.2	0.3	0.9
Rural, % including large market town population	18.9	48.3	47.1	1.9	10.0	73.9
Males working in agriculture, forestry or fishing industry, %	—	—	75	75	74	78
Females working in agriculture, forestry or fishing industry, %	—	—	25	25	26	22

Source: Census 2011 (via http://www.nomisweb.co.uk/census/2011/qs701ew)

11.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon nutrition as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

A limited scoping review of literature indicates the following:

- People living in more rural areas are more likely to experience ‘distance decay’, which may mean reduced uptake of health services, late presentation with illness and reduced access to healthy food outlets;
- A recent Derbyshire food and health needs assessment found that in the most rural areas, 34% live outside an acceptable distance from a healthy food outlet; in the areas having the least rurality, this figure is only 1%;
- In rural areas, it appears that a lack of food outlets in local areas and the lack of an adequate public transport network are the main causes of poor access;
- HSR developments cause permanent or temporary land loss and severance with fragmentation of landholdings, all of which will have financial impacts;
- HSR developments cause changes to the way fields drain and to groundwater flow and stream patterns; this may impact cropping patterns and management regimes;
- The generation of dust during the construction phase could impact nursery and horticultural businesses;
- Microclimatic changes are possible, which may affect the quality and versatility of the land;
- There could be impacts on the UK food production and on access to healthy and competitively priced food outlets;
- Mitigation measures might include ensuring growth in the rural economy by integrating rural areas with urban areas; promoting efficient land use patterns; minimising impacts on productive farmland and maintaining access to healthy and competitively priced food outlets;
- Failure of mitigation could result in further deterioration in the health of farmers and their employees, who may lose their jobs, have difficulty finding equitable employment, or who may need to relocate thereby foregoing social support structures;
- Severance may result in difficulties accessing healthy and competitively priced food outlets, leading to increased travel costs and possibly a reduction in physical activity if produce is no longer within walking distance.

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11.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. No issues were identified as having positive impacts on nutrition as a determinant of health. The following table summarises issues identified as having negative impacts on nutrition as a determinant of health:

Health issues with a negative impact
Loss/ severance of farmland/ crop-growing potential; separation of fields from their farmsteads
Lambing season may be adversely affected due to noise/ disruption during construction

11.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon nutrition. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Assuming HS2 were to carry some freight, the selling and buying of farm-fresh produce could become easier with improved connectivity to markets in other cities	Minor	Speculative	Neutral	Erewash	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Loss of farm land/ severance of farms due to land take, with reduction in the viability of farming and agriculture, adversely affecting the livelihoods of farmers and farm workers in Derbyshire	Major	Probable	Worsening	All	Construction, Operational
Severance of access to supermarkets could force people in deprived communities to buy foods locally at greater cost, reducing healthy eating	Moderate	Speculative	Worsening	All	Construction
The most deprived areas in the localities affected by the proposed route have clusters of food banks nearby; this may mean that HS2 could prevent or reduce access to these food banks for the people with the greatest need of them	Moderate	Speculative	Worsening	All	Construction, Operational

11.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to nutrition as a determinant of health.

Enhancing positive health impacts

In relation to nutrition, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
NUE1	Commit to ensuring that healthy eating options are available to HS2 passengers both on-board trains and in stations

Mitigating negative health impacts

In relation to nutrition, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
NUM1	Provide detail on proposed strategies for mitigating potential nutritional and farming-related adverse impacts within Derbyshire as tabulated in 11.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
NUM2	Prioritise design solutions that afford access where access to supermarkets may be inhibited, in recognition that obesity is a major health issue locally and that healthy food choice is part of the solution
NUM3	Reduce the severance of farmland using design solutions that facilitate access

12. Education—lifelong learning

Educational attainment is linked to fewer risk-taking behaviours, better lifestyle choices and child health, a longer life expectancy, more effective use of health information and health services, social cohesion and greater uptake of preventative healthcare interventions (such as vaccinations or cancer screening). Education has a complex interaction with other determinants of health, most notably employment and the wider economy. This impact area may include access to educational opportunities from pre-school to university and adult education, etc.

12.1 What did community profiling tell us?

Some information about education as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 12.1).

Table 12.1: Education indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
GCSE achieved (5A*-C inc. Eng & Maths), % at Key Stage 4	2011-12	59.0	57.2	53.3	58.1	51.8	62.4
Pupils with statements of special educational needs, % compulsory school age*	2011-12	1.6	2.0	2.2	2.2	1.5	1.6
Adults with a degree, % aged 16+ yrs*	2011	27.4	23.7	15.8	21.0	20.7	22.2
Adults with no qualifications, % aged 16+ yrs*	2011	22.5	25.7	32.9	27.6	25.9	26.9
Foundation stage pupils achieving 78+, % 4-5 yrs*	2011-12	64.0	68.8	65.3	63.0	69.1	67.2
School absenteeism (primary), % missed sessions at compulsory school age*	2011-12	4.4	4.2	4.6	4.5	4.3	4.1
School absenteeism (secondary), % missed sessions at compulsory school age*	2011-12	5.9	6.0	6.1	5.7	6.3	6.1

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Bolsover

While the proportion of school children with special educational needs in Bolsover reflects the county average, the district is significantly worse than the county average for absenteeism at primary and secondary schools, educational attainment at Foundation stage and for having adult residents with no degree or qualifications. Compared to the England average a significantly smaller proportion of students achieve high GCSE grades.

Chesterfield

The proportion of school children with special educational needs in Chesterfield reflects the county average. The borough is significantly worse than the county average for absenteeism at primary schools, but significantly better than the county average for absenteeism at secondary schools. Educational attainment at Foundation stage and proportions of adult residents with no degree or qualifications are significantly worse than the county average. Compared to the England average a similar proportion of students achieve high GCSE grades.

Erewash

While the proportion of school children with special educational needs in Erewash in significantly less the county average, the borough is significantly worse than the county average for absenteeism at primary and secondary schools, although on par for educational attainment at Foundation stage. Erewash compares to the county average for having adult residents with no qualifications, but is significantly worse than the county average for adults with no degree. Compared to the England average a significantly smaller proportion of students achieve high GCSE grades.

North East Derbyshire

While the proportion of school children with special educational needs in NED in significantly less the county average, the district is significantly better than the county average for absenteeism at primary schools, with a similar proportion of absenteeism at secondary schools. NED reflects the county level of educational attainment at Foundation stage but is significantly worse than the county average for adults with no degree or qualifications. Compared to the England average a significantly greater proportion of students achieve high GCSE grades.

12.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact education as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to education the Phase 2 Sustainability Statement (Appendix E9) notes:

- Education influences other determinants of health;
- Increasing education can help reduce health inequalities;
- There will be improved access to higher education facilities in London, Birmingham, Manchester, Nottingham, Sheffield and Leeds.

A limited scoping review of literature indicates the following:

- The Crossrail HIA postulated temporary disruption of academic facilities due to land take or noise, noting that this should be amenable to mitigation and is unlikely to result in lasting health effects;
- Individual sensitivity to noise and quality of sleep seemed important to the level of annoyance experienced by Japanese elementary school children learning and living beside the Shinkansen HSR;
- Listening disturbance increased in school children adjacent to the Shinkansen HSR as the maximum train speed and number of passengers increased; this may have educational (and wider) implications for the staged speed increase proposed for HS2;
- Evidence demonstrates impaired learning ability in children chronically exposed to aircraft noise, particularly in the areas of reading acquisition, attention and problem-solving (this may not generalise to rail noise);
- A study carried out on rats with a similar hearing range to that of humans found that HSR noise did create dysfunction in the areas of the brain related to learning and memory, suggesting a potential harmful impact on education in children attending schools close to a HSR development;
- The Crossrail HIA theorised that barriers to education would be reduced and the selection of educational institutions would be wider, however, this was a localised rail development and may not apply to a long distance route;

- A study looking at intentions of college students to use the HSR development in Taiwan found that it may not be the mode of transport of choice for students, who would often rather use slower but cheaper options;
- In Australia HSR is advocated as having the potential to increase medical student access to training opportunities in larger teaching hospitals; if manifest this could contribute to better educated/ more experienced medical graduates for students (and junior doctors) in the East Midlands.

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12.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on education as a determinant of health:

Health issues with a positive impact
New skills/ apprenticeship opportunities

The following table summarises issues identified as having negative impacts on education as a determinant of health:

Health issues with a negative impact
The village school in Renishaw (NED) is in close proximity to the proposed route
Only university students who live by a station travelling to a university by another station, and who have money to spare will benefit

12.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon education. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Construction may present training opportunities/ apprenticeships, leading to on-going employment	Major	Probable	Enhancing	All	Construction
Access to universities or adult learning opportunities along the route could improved, but only from places with station access points	Moderate	Speculative	Worsening	Erewash	Operational
The capacity of regional trains may be improved because of inter-city travellers using the high-speed option, which could make local rail travel a more viable option for students	Minor	Speculative	Neutral	All	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Due to the paucity of stations it is unlikely HS2 will facilitate access for local people to local educational institutions; only residents on Long Eaton will be in proximity to an HS2 station for direct access	Moderate	Speculative	Neutral	Erewash	Operational
Access for local people to distant educational institutions may be prohibitive due to the cost of commuting	Moderate	Probable	Worsening	Erewash	Operational
The reduction in connectivity of local communities could impact upon the ability of residents to learn from and support each other in lifelong learning	Minor	Speculative	Worsening	All	Construction, Operational
Shorter journey times could improve access to universities and similar institutions but high travel costs will prove a barrier to most students	Minor	Speculative	Worsening	All	Operational
Although there is low educational attainment locally it is unlikely that many school age pupils would have improved accessibility to education from a HSR link due to the local nature of schools and paucity of HSR access points	Moderate	Speculative	Worsening	All	Operational
Access to schools may be impaired as a result of the track being laid through school catchment areas or even school sites, requiring closure or relocation	Minor	Speculative	Neutral	All	Construction, Operational

12.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to education as a determinant of health.

Enhancing positive health impacts

In relation to education, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
EDE1	Work with local contractors, academic partners and other stakeholders where feasible to facilitate apprenticeships or similar schemes that maximise the value of the training opportunities for local people, ideally leading to recognised qualifications
EDE2	Work with awarding organisations at an early stage to develop and promote new qualifications aimed at up-skilling local people, who will be competitively placed to apply for employment in high-speed rail technology roles

Mitigating negative health impacts

In relation to education, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
EDM1	Provide detail on proposed strategies for mitigating education-related adverse impacts within Derbyshire as tabulated in 12.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
EDM2	Improve the accessibility of high-speed travel for students via ticket concessions
EDM3	Ensure that suppression of noise during construction and train operations is given additional consideration where educational premises are likely to be affected

13. Employment—personal wealth

Most people are reliant on employment to provide household income, which in turn influences such things as housing quality, educational opportunities and consumption of healthy foods. Other workers forgo paid jobs to provide unpaid services such as care giving, although some unpaid work may bring non-financial rewards. Poor health, such as disability or mental illness, can be a barrier to employment—which in turn further impedes health improvement. Those out-of-work are more likely to report illness such as depression, stress, alcohol misuse and high blood pressure. This impact area may include access to paid or unpaid employment, personal income, receipt of unemployment or other social benefits, ability to afford necessities (e.g. winter fuel), etc.

13.1 What did community profiling tell us?

Some information about employment as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 13.1).

Bolsover

A higher proportion of children live in impoverished families in Bolsover compared to the England average; the rate of long-term unemployment is similar to the England average. Compared to the county average, more Bolsover households experience fuel poverty (inability to afford adequate heating). The district has higher proportions of people providing unpaid care, out-of-work benefit claimants, jobless young people and a worse rate of unemployment overall compared to the county average. Of those employed 40.5% are engaged in manual occupations (skilled trade; process, plant or machine operatives; elementary occupations).

Chesterfield

A similar proportion of children live in impoverished families in Chesterfield compared to the England average; the rate of long-term unemployment is significantly worse than the England average. Compared to the county average, more Chesterfield households experience fuel poverty. The borough has higher proportions of people providing unpaid care, out-of-work benefit claimants, jobless young people and a

worse rate of unemployment overall compared to the county average. Of those employed 33.6% are engaged in manual occupations.

Table 13.1: Employment indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Children living in poverty (< 16 yrs in families receiving means-tested benefits & low income), %	2010	21.2	17.4	23.2	21.4	19.9	15.8
Out-of-work benefit claimants, % aged 16-64 yrs*	Aug 2012	11.4	10.8	14.2	14.3	11.5	10.8
Unemployment rate (overall), % aged 16-64 yrs*	Mar 2013	3.8	3.1	3.7	4.3	3.9	3.0
Youth unemployment, % aged 16-24 yrs*	Mar 2013	5.6	6.0	7.3	8.9	7.0	5.9
Long term unemployment, crude rate per 1,000 persons aged 16-24 yrs	2012	9.5	7.9	8.6	11.4	10.8	8.3
Fuel poverty, % households*	2010	16.4	19.0	20.6	20.0	17.5	18.6
Unpaid care provision, % people*	2011	10.2	12.1	12.7	12.6	11.2	13.3
Full time work (30+ hours), % people aged 16-74 in employment	2011	71.0	70.3	71.5	68.4	71.6	68.8
Part time work (< 30 hours), % people aged 16-74 in employment	2011	29.0	29.7	28.5	31.6	28.4	31.2
Employment in managers, directors & senior officials role, % people aged 16-74 in employment	2011	10.9	10.9	9.6	9.1	10.0	11.1
Employment in professional role, % people aged 16-74 in employment	2011	17.5	15.1	10.9	14.5	13.6	14.3
Employment in associate professional or technical role, % people aged 16-74 in employment	2011	12.8	11.0	9.6	10.7	11.3	10.9
Employment in administrative or secretarial role, % people aged 16-74 in employment	2011	11.5	10.9	10.3	11.4	11.5	12.3
Employment in skilled trade (manual), % people aged 16-74 in employment	2011	11.4	13.3	13.4	12.0	13.7	13.6
Employment in caring, leisure or other services role, % people aged 16-74 in employment	2011	9.3	9.6	11.0	11.1	8.9	9.7
Employment in sales or customer service role, % people aged 16-74 in employment	2011	8.4	7.9	8.2	9.5	9.0	8.4
Employment in process, plant or machine operative (manual) role, % people aged 16-74 in employment	2011	7.2	9.6	11.4	9.1	9.8	8.9
Employment in elementary (manual) occupation, % people aged 16-74 in employment	2011	11.1	11.7	15.7	12.5	12.0	10.8

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Erewash

A significantly smaller proportion of children live in impoverished families in Erewash compared to the England average; the rate of long-term unemployment is significantly worse than the England average. Compared to the county average,

significantly fewer Erewash households experience fuel poverty and the borough has a lower proportion of people providing unpaid care. Compared to the county average Erewash has significantly more out-of-work benefit claimants, jobless young people and a worse rate of unemployment overall. Of those employed 35.5% are engaged in manual occupations.

North East Derbyshire

A significantly smaller proportion of children live in impoverished families in NED compared to the England average; the rate of long-term unemployment is significantly lower than the England average. Compared to the county average, households in NED experience a similar frequency of fuel poverty, although the district has a significantly higher proportion of people providing unpaid care. Compared to the county average NED has a similar level of out-of-work benefit claimants, jobless young people and rate of unemployment overall. Of those employed 33.3% are engaged in manual occupations.

13.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon employment as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to employment and personal income the Phase 2 Sustainability Statement (Appendix E9) notes:

- Employment is a key determinant of health, influencing other determinants;
- A variety of adverse health outcomes are associated with unemployment;
- Security of employment has an important bearing on mental health and this is linked to type of occupation with manual or 'routine' roles being less secure;
- Employment-related benefits will accrue mostly to those currently unemployed or in short-term employment in deprived areas;
- Construction-related employment is unlikely to result in long-term health benefits;
- About 10,000 temporary jobs might be created in connection with construction of the entire scheme, an unknown proportion of which may go to Derbyshire residents;

- About 1,400 permanent jobs might be created in connection with the operational stage of the entire scheme, an unknown proportion of which may go to Derbyshire residents;
- About 1,600 additional jobs might be created in connection with regeneration linked to the station at Toton, an unknown proportion of which may go to Derbyshire residents.

A limited scoping review of literature indicates the following:

- Poverty linked to unemployment limits freedom of movement (and therefore access to social amenities that promote health);
- Unemployment results in social exclusion;
- Change of employment can result in accessibility impacts or lifestyle changes;
- Employer subsidies (i.e. travel expenses) can encourage car use;
- Active transport (cycling or walking) is a means of gaining access to employment for those without access to a car; the addition of a rail link potentially extends the geographic area of suitable workplaces;
- Community severance can increase the effective distance to employment opportunities;
- Women tend to emphasise travel time over distance to work; a shorter commute may mean more equitable access in career choice for women;
- The Crossrail HIA noted that a specialist labour requirement could result in a non-local/ migrant workforce; this could deprive local people of much-needed jobs.

Sources

- Temple-ERM (2013). High Speed Rail: Consultation on the route from the West Midlands to Manchester, Leeds and beyond: Sustainability Statement: Appendix E9 – Health Analysis. http://assets.hs2.org.uk/sites/default/files/consultation_library/pdf/P2C12i%20Appendix%20E9%20Health%20Analysis%20220713.pdf
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13.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on employment as a determinant of health:

Health issues with a positive impact
Improved access to South East England might increase the value of homes owned in the East Midlands, thus increasing personal income from capital investment
Creation of (temporary) local jobs during construction might allow a healthy income for local people
Better paying jobs (in London) will be within commutable distance/ time
Easier for grandparents to travel for child-minding purposes (i.e. unpaid work)

The following table summarises issues identified as having negative impacts on employment as a determinant of health:

Health issues with a negative impact
Renishaw (NED) stands to lose the village's largest employer, resulting in the loss of 60-70 jobs
Uncertain if HS2 rail fares would be affordable (mentioned a number of times)
Won't create professional/ skilled jobs; new jobs will be manual roles with low pay
Jobs may migrate from local areas to areas near HS2 stations

13.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon employment. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
The construction and operation of an East Midlands Hub at Toton is expected to create local jobs	Major	Probable	Enhancing	Erewash	Construction, Operational
The construction and operation of an infrastructure maintenance depot at Staveley is expected to create local jobs, some of which may be permanent	Major	Probable	Enhancing	Chesterfield	Construction, Operational
Increased income via employment increases self-worth & increases access to the determinants of health (although this may be short term)	Moderate	Probable	Enhancing	All	Construction
Families as a whole benefit from increased income from a single employment, as will local communities in which some of that income will likely be spent	Moderate	Probable	Enhancing	All	Construction, Operational
May temporarily reduce unemployment among young men (a problem in three of the four localities), who are economically disadvantaged	Moderate	Probable	Enhancing	All	Construction
Reduced travel times will allow residents to compete for employment outside the immediate area, however, the high cost of HS2 travel will restrict this option to those on reasonable incomes and will not benefit the majority of residents	Minor	Probable	Neural	Erewash	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Constructions jobs are likely to be available to more men than women seeking employment	Moderate	Probable	Worsening	All	Construction
There are no guarantees that jobs will go to locals; a significant proportion of both the temporary and permanent workforces could be imported	Major	Speculative	Neutral	All	Construction
Construction jobs will be temporary, with evidence that job insecurity is linked to worse mental health	Moderate	Probable	Worsening	All	Construction
There is a lack of evidence to support long-term health benefit from construction-related jobs	Moderate	Speculative	Neutral		
Jobs further afield such as those in the city are more likely to be available to the highly qualified	Minor	Speculative	Worsening	All	Operational
Reduced travel times will allow persons from outside the immediate area to compete for employment without having to consider relocation, however, the high cost of travel will reduce this impact	Minor	Probable	Neutral	All	Operational
There could be job losses and/or suppression of growth in job opportunities e.g. at Markham Vale, in the Staveley Works Area, in connection with loss of manufacturing premises in Long Eaton and within the tourism and farming industries	Moderate	Speculative	Worsening	All	Operational

13.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to employment as a determinant of health.

Enhancing positive health impacts

In relation to employment, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
EME1	In recognition of high overall unemployment locally, commit to employing a significant proportion of local workers during the construction and operational stages of the proposed development (balancing this with a potential increase in occupational injuries)
EME2	In recognition of high rates of local youth unemployment, commit to employing inexperienced workers during the construction and operational stages in combination with educational initiatives leading to qualifications that increase the prospect of long-term employment (balancing this with a potential increase in occupational injuries)
EME3	Work with business leaders along the route to consider schemes that subsidise the cost of using HS2 (possibly in combination with active travel) in preference to reimbursement of personal mileage supporting car journeys; this could increase HS2 passenger numbers by improving access and encourage less polluting travel with the benefits of some exercise

Mitigating negative health impacts

In relation to employment, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
EMM1	Provide detail on proposed strategies for mitigating potential employment-related adverse impacts within Derbyshire as tabulated in 13.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
EMM2	Support persons losing their jobs as a result of compulsory relocation or demolition of business premises to find alternative employment, perhaps with preferential treatment in relation to jobs created as part of the HS2 scheme if they have suitable skills or wish to be re-trained
EMM3	Ensure construction sites and all companies contracted to service them are registered with the Considerate Constructors Scheme, which will include monitoring against 'Caring for the workforce' standards

14. Economy—wider wealth

Recent appraisals of austerity measures and welfare reforms have highlighted the many potential health effects of economic downturn. Such effects could include decline in population mental health; increases in diseases associated with poverty such as heart disease, obesity and excess winter deaths; reduced access to health and well-being services; and disturbance of community through changes to the affordability of housing. Furthermore, a deteriorating economic situation is likely to exacerbate health inequalities, causing disproportionate harm to young people and single-parent families, those with long-term conditions, the elderly and other vulnerable groups. It follows that economic upturn may have mitigating effects. This impact area may include investment opportunities, effects on footfall, economic growth potential, creation of new jobs, etc.

14.1 What did community profiling tell us?

Some information about the economy as a determinant of health locally is available from routinely collected statistics and health-related surveys. This section summarises what we know using selected indicators in the localities affected by the HS2 proposal (see Table 14.1). Section 3 of this report details areas of deprivation, meaning these communities are more vulnerable to economic downturn.

Bolsover

Compared to the county average Bolsover has a significantly lower proportion of residents who are economically active, although the proportion of young people in in education, training or employment is similar to the county average. The public services industry employees the largest proportion of people in the district.

Chesterfield

Compared to the county average Chesterfield has a significantly lower proportion of residents who are economically active, although the proportion of young people in in education, training or employment is similar to the county average. The public services industry employees the largest proportion of people in the borough.

Table 14.1: Economy indicators	Period	England	Derbyshire County	Bolsover	Chesterfield	Erewash	North East Derbyshire
Economically active (available to work), % people aged 17-74 yrs*	2011	69.9	69.9	66.9	67.9	71.5	68.0
Not in education, employment or training (NEET), % 16-18 yrs*	2012-13	5.4	5.4	6.0	5.8	6.6	4.7
Position in agriculture, forestry or fishing industry, % people aged 16-74 in employment	2011	0.8	1.0	0.6	0.2	0.3	0.9
Position in mining, quarrying or utilities industry, % people aged 16-74 in employment	2011	1.4	1.9	2.4	1.6	1.8	1.6
Position in manufacturing industry, % people aged 16-74 in employment	2011	8.8	14.9	15.2	11.4	16.3	13.4
Position in construction industry, % people aged 16-74 in employment	2011	7.7	8.5	8.8	7.7	8.7	9.6
Position in wholesale or retail industry, % people aged 16-74 in employment	2011	15.9	16.6	19.4	18.1	17.8	17.3
Position in business services industry, % people aged 16-74 in employment	2011	32.1	25.1	22.6	25.4	25.6	24.5
Position in public services industry, % people aged 16-74 in employment	2011	28.2	27.5	26.7	31.1	25.5	28.2

Quilt key:

Worse than England or County* average	Similar to England or County* average	Better than England or County* average	No statistical comparison made

Sources: Derbyshire Observatory Area Summary Profiles 2013; PHE 2013 Local Health Profiles; PHE Fingertips, Derbyshire Observatory 2011 Census Profiles, NHS Derby City and NHS Derbyshire County Mental Health CCG/Locality Profiles (2012) and Derbyshire Observatory environmental data.

Erewash

Compared to the county average Erewash has a significantly higher proportion of residents who are economically active, although the proportion of young people in in education, training or employment is significantly worse than the county average. The business services and public services industries employee approximately equal proportions of people in the borough.

North East Derbyshire

Compared to the county average NED has a significantly lower proportion of residents who are economically active, although the proportion of young people in in education, training or employment is similar to the county average. The public services industry employees the largest proportion of people in the district.

14.2 What did the literature tell us?

We searched for evidence from the literature describing how high-speed rail developments have or might impact upon the economy as a determinant of health. This section summarises what we found and considers whether such impacts might help to close or further widen gaps in health status (if reported).

In relation to the economy the Phase 2 Sustainability Statement (Appendix E9) notes that about 128 commercial or retail properties and nine industrial properties will be demolished in connection with the eastern leg, an unknown proportion of which may be within Derbyshire.

KPMG reported to HS2 Ltd. on projected regional economic impacts in September 2013 and these data were made available via a freedom of information (FOI) request. Projected annual economic output resulting from investment in HS2, forecast for 2037 (undiscounted 2013 prices), was estimated as follows:

- A gain in the range of £21.54 to £44.14 million for Derbyshire High Peak (growth of 1.5–3.0% of zone gross domestic product [GDP]);
- A gain in the range of £96.53 to £179.23 million for Derbyshire North East (growth of 1.7–3.2% of zone GDP);
- A gain in the range of £80.30 to £180.60 million for Derbyshire West (growth of 1.9–4.3% of zone GDP);
- A gain in the range of £65.34 to £175.43 million for Erewash (growth of 3.0–8.1% of zone GDP);
- A gain in the range of £97.55 to £186.46 million for Derby City (growth of 1.4–2.6% of zone GDP).

Note that KPMG's analysis is based on data supplied by HS2 Ltd., who commissioned the report, and that the wide estimates indicate high sensitivity within the model to estimated variables (purchase costs and transport costs).

A limited scoping review of literature indicates the following:

- In relation to HS1 'the wider economic benefits of high speed rail are difficult to detect, as they are swamped by external factors, but are likely to be larger in more central locations such as St Pancras than more peripheral locations';

- Evaluated after 5 years of operation, HS1 had involved 'some costly mistakes' (£4.8 billion debt serviced by the taxpayer) due to passenger demand failing to meet forecasts made within deficit cost-benefit analyses;
- Chinese experience with bullet train connections between 'megacities' and adjacent second and third-tier cities may be indicative of broader sustainability considerations if the megacity were analogous to London or Birmingham, then peripheral cities could stand to benefit as viable alternatives for business relocation, although would pay the price of rising real estate while the social and environmental costs of growth in the megacities themselves is mitigated; these impacts are potentially of greater relevance to Derbyshire's urban neighbours, such as Sheffield and Nottingham;
- It has been argued that there is strong evidence HS2 may exacerbate rather than reduce regional inequalities in the UK;
- There are legitimate concerns over the accuracy of estimates of passenger numbers ('ridership'), costs, the way benefits are valued and other forecasts that effect the economic viability of HSR proposals;
- High-speed transport may be a necessary but insufficient stimulus for economic growth on its own;
- Predicted technological and managerial improvements in other modes of transportation, such as automated/ computer-driven cars, increases in air travel efficiency, etc. have the potential to alter the cost-benefit case for HSR.

Sources

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14.3 What did the community tell us?

We held a limited number of consultations to help us understand the concerns of some groups within the local community who may be affected by the HS2 proposal. We asked participants to tell us how their health might be affected in a good (positive) or unfavourable (negative) way. The following table summarises issues identified as having positive impacts on the economy as a determinant of health:

Health issues with a positive impact
May attract business growth, especially in places like Ilkeston
More business may move from the south to the north (in the longer-term)
Economic regeneration of the area/ more employment is good for the local economy (more locals spending locally)
It may introduce travellers/ visitors and improve tourism to the East Midlands
Reduced travel time to/from London will mean business appointments can be longer
Shops and businesses may be busier during the construction phase

The following table summarises issues identified as having negative impacts on the economy as a determinant of health:

Health issues with a negative impact
The high cost of the proposal
The financial risk of overspending
Reduced money to spend elsewhere (e.g. community projects, local transport, health services)
Business people as the main beneficiaries are in the minority
More wealth for people who already have wealth
Increase in noise may put off visitors to Hardwick Hall (already affected by noise from M1)
Homes in a new housing estate being built near HS2 (Bolsover district) won't sell, causing financial loss
Loss of businesses/ impact on Markham Vale/ industrial estates in South Normanton due to land take (with reduced job and business development opportunities)

14.4 What was our assessment of overall impact?

The Steering Group looked across the evidence contributed by community profiling, literature searching and the community voice, integrating this with their own specialist knowledge to form a balanced view on the positive and negative impacts of the proposal upon the economy. This section characterises impacts in terms of their scale (major, moderate, minor), likelihood (definite, probable, speculative), effect on social equality (enhancing, worsening, neutral), locality affected and developmental stage of impact (all, planning, construction, operational).

Health issues with a positive impact	Scale	Likelihood	Equality	Locality	Stage
Increased connectivity to HS1 passenger services (currently operated by Eurostar) may support rail as a viable alternative to air travel within Europe for business purposes, potentially bolstering economic links	Minor	Speculative	Worsening	All	Operational
Regional centres with stations/ high-speed rail hubs may experience increases in economic activity as more attractive locations to conduct business (e.g. lower costs compared to London)	Moderate	Probable	Neutral	Erewash	Operational
If economic forecasts are correct, HS2 would increase economic output within Derbyshire and a healthy economy may become manifest as health improvement	Moderate	Speculative	Enhancing	All	Operational
Temporary construction workers may provide a short-term boost to local economies along the proposed route	Minor	Speculative	Neutral	All	Construction
The ease of commuting may lead to the development of commuter belts which would increase the profile of an area and improve the local economy	Moderate	Speculative	Worsening	All	Operational
Increased capacity on the classic network could be used for running freight/ freight might be carried on HS2 itself, with benefits to local businesses	Minor	Speculative	Neutral	Erewash	Operational
It is possible that economic growth related to HS2 in neighbouring areas will have knock-on benefits to the economy in Derbyshire (assuming there is a supportive wider transport infrastructure) such as Nottingham (e.g. development connected to NET), Derby (e.g. manufacture of rolling stock), Ilkeston (e.g. Stanton Regeneration Site), East Midlands Airport (e.g. Strategic Rail Freight Interchange proposal)	Minor	Speculative	Neutral	Erewash	Operational

Health issues with a negative impact	Scale	Likelihood	Equality	Locality	Stage
Investment in HS2 Phase 2 means there is less money to invest in other sectors of the economy, such as health (i.e. there is an 'opportunity cost' as scare resources can only be spent once)	Major	Definite	Worsening	All	Planning, Construction, Operational
Relocation of businesses to regional centres with stations/ high-speed rail hubs may increase capital costs	Minor	Speculative	Worsening	Erewash	Operational
Urban conurbations that are not regional centres and rural areas may experience a loss of investment due to centralisation of business activity around new high-speed transport hubs	Moderate	Speculative	Worsening	Chesterfield, Bolsover, NED	Operational
Loss of business premises/ business development capacity/ blight due to land take e.g. Staveley Works Area, Markham Vale, Long Eaton	Minor	Probable	Worsening	Chesterfield, Erewash	Construction, Operational
Chesterfield Canal provides some economic benefits (e.g. Chesterfield Wharf and Waterside) and will be intersected by the proposed route at several points	Minor	Speculative	Neutral	Chesterfield, NED	Operational
Businesses in proximity to the route may be adversely impacted by noise, leading to worker stress	Minor	Speculative	Neutral	All	Construction, Operational
Passengers on HS2 may be more likely to take money to London to spend, rather than bring money from the capital to spend locally	Minor	Speculative	Neutral	All	Operational
Loss of value on housing may lead to less disposable income, worsening the local economy	Minor	Speculative	Worsening	All	Planning, Construction
Disruption of transport due to movement of heavy plant/ materials and road closures could be detrimental to local business (e.g. access to shops)	Major	Definite	Neutral	Erewash	Construction
Proposed rail freight sidings Markham Vale and Erin Landfill are rendered non-viable by current HS2 proposals, reducing economic development	Minor	Speculative	Neutral	Chesterfield	Construction, Operational
HS2 crosses a number of economically important minerals sites in Derbyshire; extraction may be sacrificed, reducing economic development	Minor	Speculative	Neutral	All	Construction, Operational

14.5 What are our recommendations to HS2 Ltd?

The Steering Group acknowledge that the HS2 initial preferred route through eastern Derbyshire will have both positive and negative impacts in relation to the economy as a determinant of health.

Enhancing positive health impacts

In relation to the economy, the Steering Group offer the following recommendations to HS2 Ltd. with a view to enhancing the positive health impacts for eastern Derbyshire:

ID	Recommendation
ECE1	Work closely with planners in Long Eaton to ensure that preparation for the HS2 station in Toton is integrated with local planning policies

Mitigating negative health impacts

In relation to the economy, the Steering Group offer the following recommendations to HS2 Ltd. with a view to mitigating the negative health impacts for eastern Derbyshire:

ID	Recommendation
ECM1	Provide detail on proposed strategies for mitigating potential economy-related adverse impacts within Derbyshire as tabulated in 14.4, with reference to the evidence base for intervention effectiveness and proposals for monitoring and evaluation during the construction and operational stages as appropriate
ECM2	Businesses subject to land take or relocation should be financially assisted to locate new premises that are an improvement on the premises they are vacating and should be adequately compensated for the disruption caused to the conduct of their business

Appendix 1: Initial preferred route

Noise Impact Key

The map gives an indication of the properties that would experience noise once the proposed HS2 services are operating, based on our noise modelling, and assuming mitigation in place

Noticeable Noise Increase

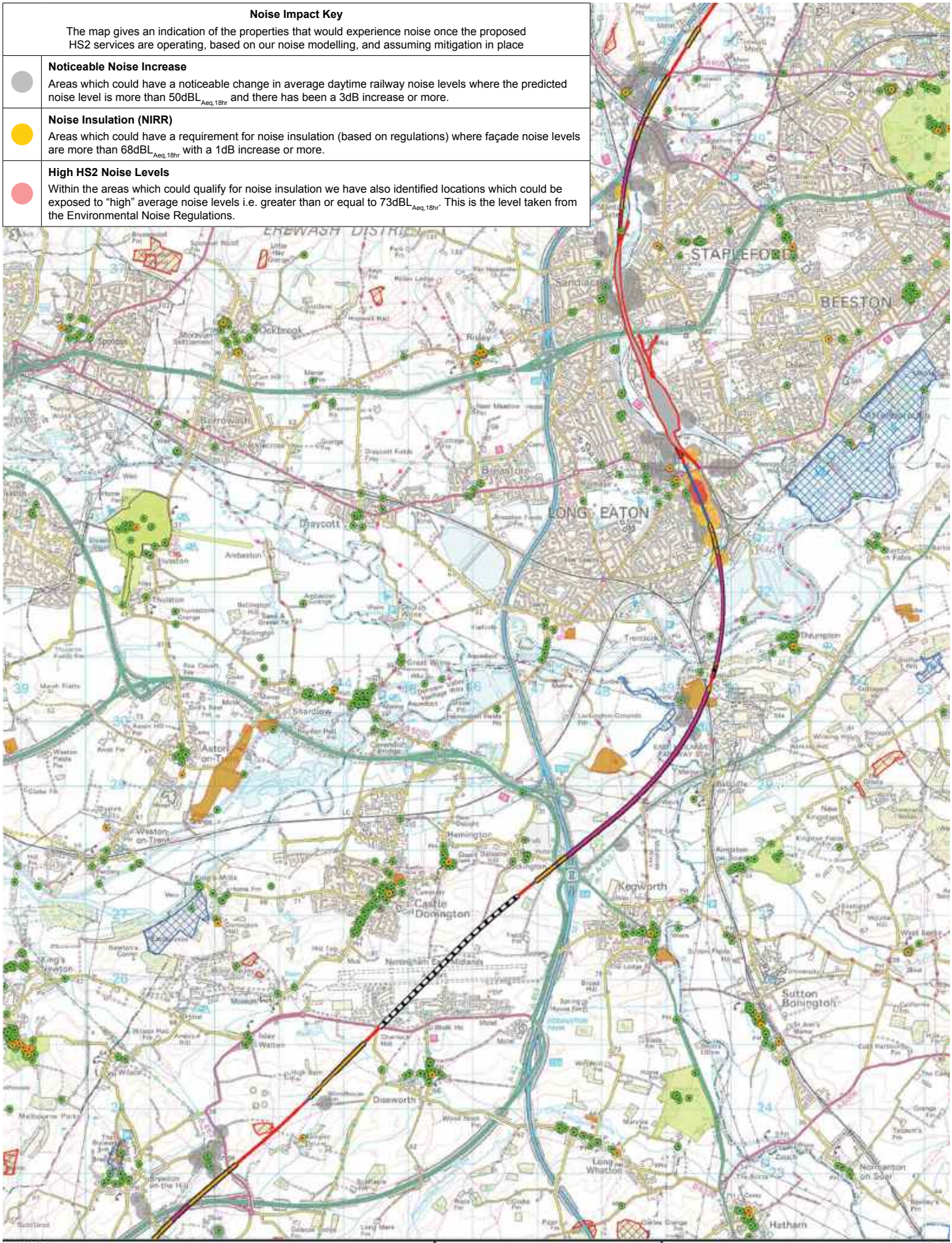
Areas which could have a noticeable change in average daytime railway noise levels where the predicted noise level is more than 50dB$L_{Aeq,18hr}$ and there has been a 3dB increase or more.

Noise Insulation (NIRR)

Areas which could have a requirement for noise insulation (based on regulations) where façade noise levels are more than 68dB$L_{Aeq,18hr}$ with a 1dB increase or more.

High HS2 Noise Levels

Within the areas which could qualify for noise insulation we have also identified locations which could be exposed to "high" average noise levels i.e. greater than or equal to 73dB$L_{Aeq,18hr}$. This is the level taken from the Environmental Noise Regulations.



Legend

Eastern leg proposed alignment
- At Grade
- Cut & Cover Tunnel
- Cutting
- Embankment
- Tunnel
- Viaduct
- Depot or Station Operational Boundary

Key environmental features
- Listed Building Grade I
- Listed Building Grade II*
- Listed Building Grade II
- National Trust Ownership
- Registered Park and Garden
- Scheduled Monument
- Ancient Woodland
- Country Park
- Ramsar Site
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

High Speed Two Phase Two
Eastern Leg

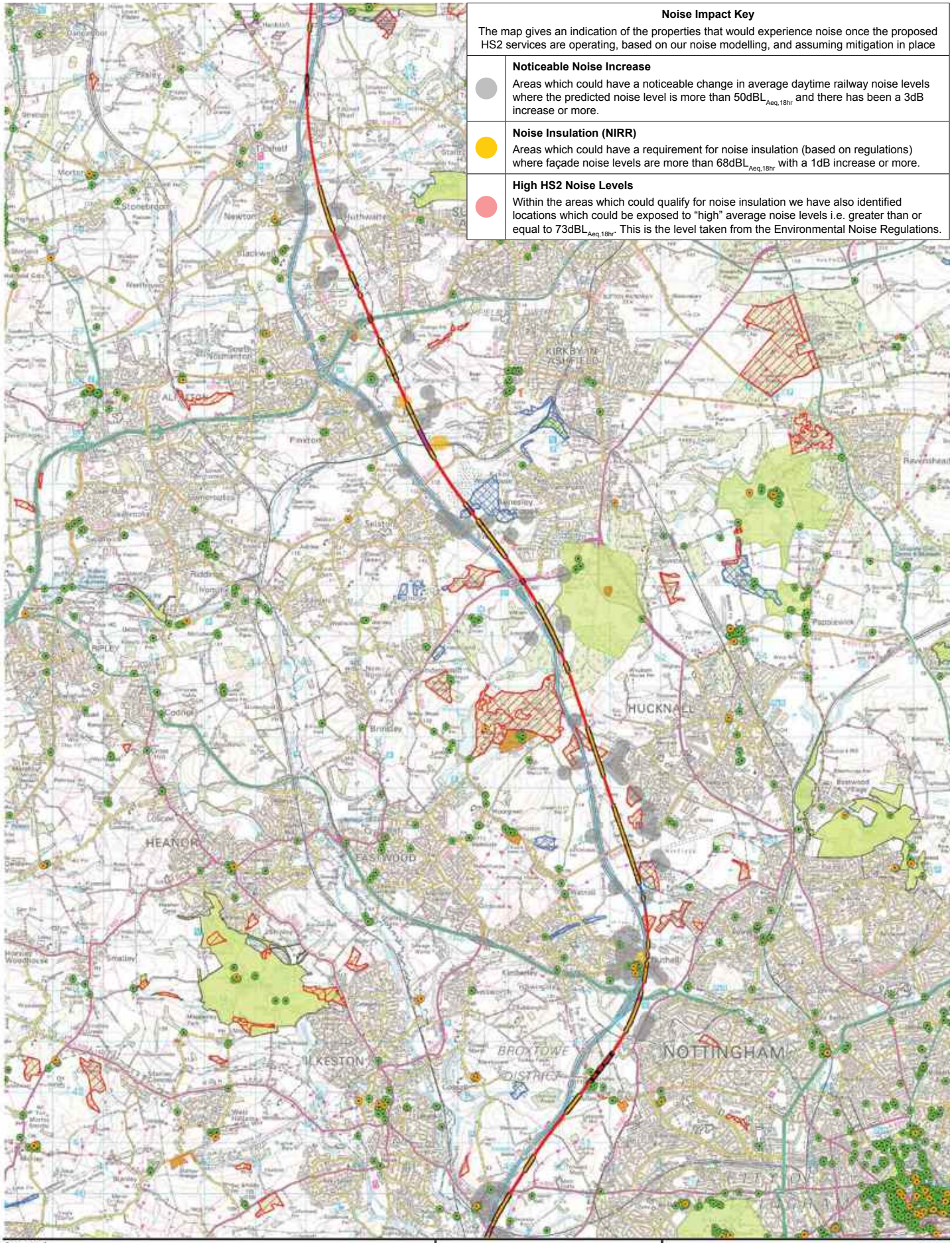
Proposed Route 2013
Key Environmental Features

Tonge to Trowell

Scale at A3: 1:55,000

0 0.5 1 1.5 2
Kilometres

Map Number: LMH-HS2-CN-MAP-100-000047 **Date:** 10/07/13



Noise Impact Key

The map gives an indication of the properties that would experience noise once the proposed HS2 services are operating, based on our noise modelling, and assuming mitigation in place

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Legend

Eastern leg proposed alignment
- At Grade
- Cut & Cover Tunnel
- Cutting
- Embankment
- Tunnel
- Viaduct
- Depot or Station Operational Boundary

Key environmental features
- Listed Building Grade I
- Listed Building Grade II*
- Listed Building Grade II
- National Trust Ownership
- Registered Park and Garden
- Scheduled Monument
- Ancient Woodland
- Country Park
- Ramsar Site
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

High Speed Two Phase Two
Eastern Leg

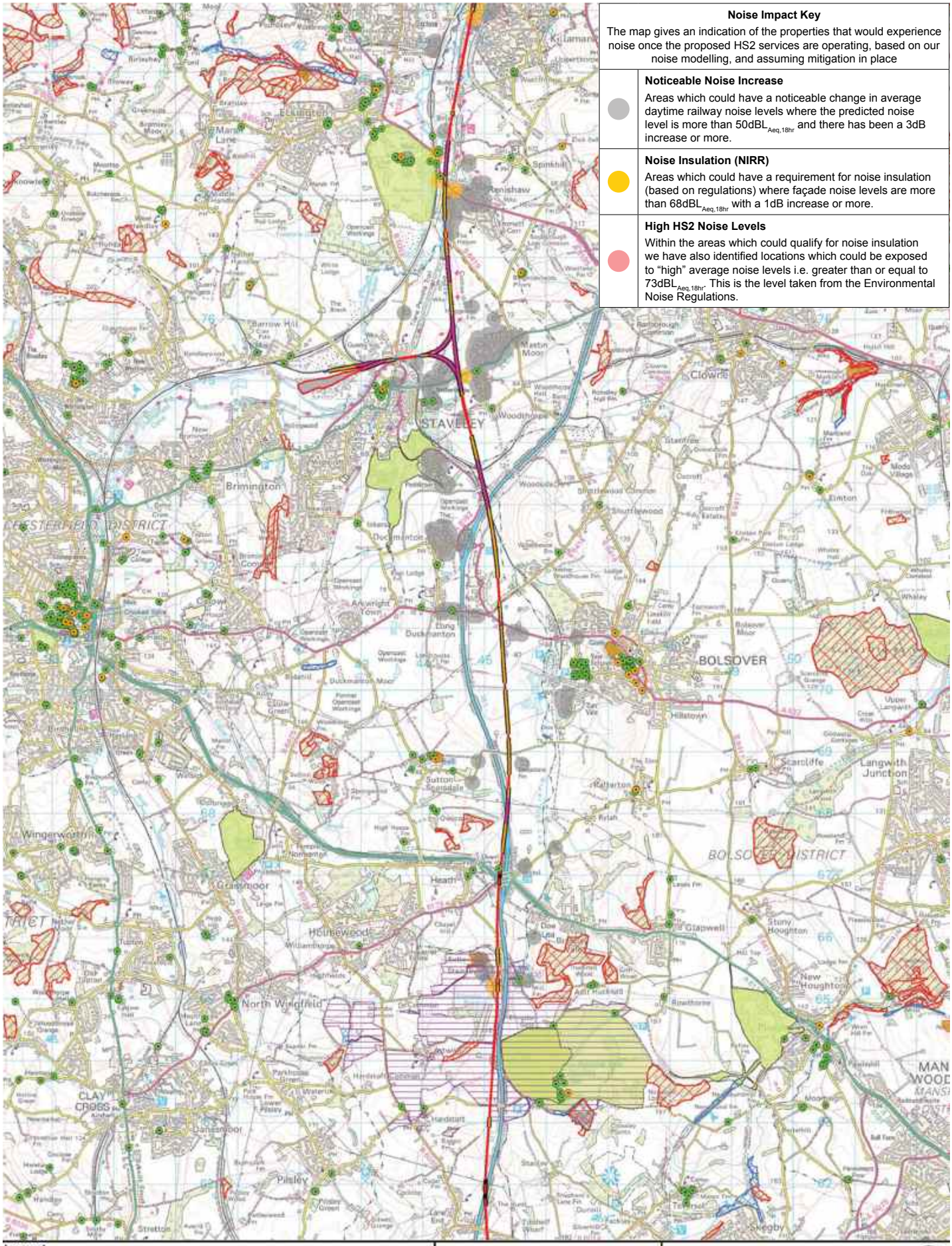
Proposed Route 2013
Key Environmental Features

Trowell to Tibshelf

Scale at A3: 1:70,000

0 0.75 1.5 2.25 3
Kilometres

Map Number: LMH-HS2-CN-MAP-100-000048 **Date:** 10/07/13



Noise Impact Key

The map gives an indication of the properties that would experience noise once the proposed HS2 services are operating, based on our noise modelling, and assuming mitigation in place

Noticeable Noise Increase

Areas which could have a noticeable change in average daytime railway noise levels where the predicted noise level is more than 50dB$L_{Aeq,18hr}$ and there has been a 3dB increase or more.

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Areas which could have a requirement for noise insulation (based on regulations) where façade noise levels are more than 68dB$L_{Aeq,18hr}$ with a 1dB increase or more.

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Legend

Eastern leg proposed alignment
- At Grade
- Cut & Cover Tunnel
- Cutting
- Embankment
- Tunnel
- Viaduct
- Depot or Station Operational Boundary

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- Listed Building Grade II*
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- National Trust Ownership
- Registered Park and Garden
- Scheduled Monument
- Ancient Woodland
- Country Park
- Ramsar Site
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

High Speed Two Phase Two
Eastern Leg

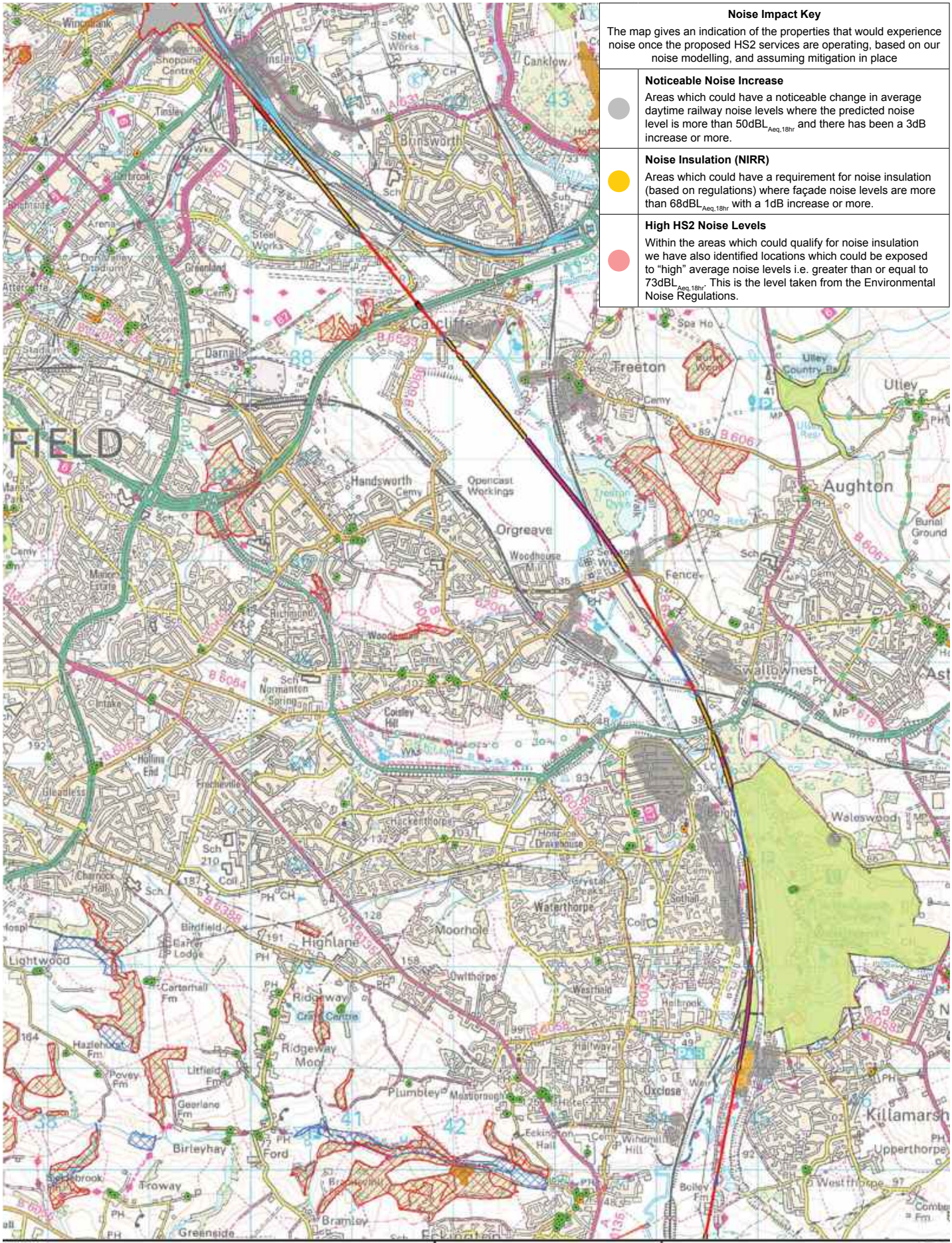
Proposed Route 2013
Key Environmental Features

Tibshelf to Killamarsh

Scale at A3: 1:57,500

0 0.5 1 1.5 2
Kilometres

Map Number: LMH-HS2-CN-MAP-100-000049 **Date:** 10/07/13


Noise Impact Key
The map gives an indication of the properties that would experience noise once the proposed HS2 services are operating, based on our noise modelling, and assuming mitigation in place
Noticeable Noise Increase
Areas which could have a noticeable change in average daytime railway noise levels where the predicted noise level is more than 50dBLAeq,18hr and there has been a 3dB increase or more.
Noise Insulation (NIRR)
Areas which could have a requirement for noise insulation (based on regulations) where façade noise levels are more than 68dBLAeq,18hr with a 1dB increase or more.
High HS2 Noise Levels
Within the areas which could qualify for noise insulation we have also identified locations which could be exposed to "high" average noise levels i.e. greater than or equal to 73dBLAeq,18hr. This is the level taken from the Environmental Noise Regulations.
Legend
Eastern leg proposed alignment
At Grade
Cut & Cover Tunnel
Cutting
Embankment
Tunnel
Viaduct
Depot or Station Operational Boundary
Key environmental features
Listed Building Grade I
Listed Building Grade II*
Listed Building Grade II
National Trust Ownership
Registered Park and Garden
Scheduled Monument
Ancient Woodland
Country Park
Ramsar Site
Site of Special Scientific Interest (SSSI)
Special Area of Conservation (SAC)
Special Protection Area (SPA)
High Speed 2 Phase Two
Eastern Leg
Proposed Route 2013
Key Environmental Features
Killamarsh to Tinsley
hs2
Scale at A3: 1:35,000
0 0.25 0.5 0.75 1
Kilometres
Map Number: LMH-HS2-CN-MAP-100-000050
Date: 10/07/13

Appendix 2: Health profiles 2013

Health summary for Bolsover

E07000033

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average

Domain		Indicator	Local No. Per Year	Local Value	Eng Avg	Eng Worst	England Range	Eng Best
Our communities	1	Deprivation	20779	27.3	20.3	83.7		0.0
	2	Proportion of children in poverty	3205	23.2	21.1	45.9		6.2
	3	Statutory homelessness	54	1.7	2.3	9.7		0.0
	4	GCSE achieved (5A*-C inc. Eng & Maths)	465	53.3	59.0	31.9		81.0
	5	Violent crime	871	11.7	13.6	32.7		4.2
	6	Long term unemployment	418	8.6	9.5	31.3		1.2
Children's and young people's health	7	Smoking in pregnancy ‡	128	15.4	13.3	30.0		2.9
	8	Starting breast feeding ‡	594	71.6	74.8	41.8		96.0
	9	Obese Children (Year 6) ‡	148	20.7	19.2	28.5		10.3
	10	Alcohol-specific hospital stays (under 18)	15	93.6	61.8	154.9		12.5
	11	Teenage pregnancy (under 18) ‡	50	35.2	34.0	58.5		11.7
Adults' health and lifestyle	12	Adults smoking	n/a	25.2	20.0	29.4		8.2
	13	Increasing and higher risk drinking	n/a	21.9	22.3	25.1		15.7
	14	Healthy eating adults	n/a	22.6	28.7	19.3		47.8
	15	Physically active adults	n/a	50.4	56.0	43.8		68.5
	16	Obese adults ‡	n/a	27.4	24.2	30.7		13.9
Disease and poor health	17	Incidence of malignant melanoma	13	16.2	14.5	28.8		3.2
	18	Hospital stays for self-harm	200	279.1	207.9	542.4		51.2
	19	Hospital stays for alcohol related harm ‡	1953	2111	1895	3276		910
	20	Drug misuse	458	9.3	8.6	26.3		0.8
	21	People diagnosed with diabetes	5278	7.3	5.8	8.4		3.4
	22	New cases of tuberculosis	2	2.7	15.4	137.0		0.0
	23	Acute sexually transmitted infections	497	654	804	3210		162
	24	Hip fracture in 65s and over	77	436	457	621		327
Life expectancy and causes of death	25	Excess winter deaths ‡	47	18.5	19.1	35.3		-0.4
	26	Life expectancy – male	n/a	77.6	78.9	73.8		83.0
	27	Life expectancy – female	n/a	82.0	82.9	79.3		86.4
	28	Infant deaths	2	2.3	4.3	8.0		1.1
	29	Smoking related deaths	147	249	201	356		122
	30	Early deaths: heart disease and stroke	64	69.8	60.9	113.3		29.2
	31	Early deaths: cancer	110	121.0	108.1	153.2		77.7
	32	Road injuries and deaths	25	32.6	41.9	125.1		13.1

‡ For comparison with PHOF Indicators, please go to the following link: **www.healthprofiles.info/PHOF**

Indicator Notes

1 % people in this area living in 20% most deprived areas in England, 2010 2 % children (under 16) in families receiving means-tested benefits & low income, 2010 3 Crude rate per 1,000 households, 2011/12 4 % at Key Stage 4, 2011/12 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2011/12 6 Crude rate per 1,000 population aged16-64, 2012 7 % mothers smoking in pregnancy where status is known, 2011/12 8 % mothers initiating breast feeding where status is known, 2011/12 9 % school children in Year 6 (age 10-11), 2011/12 10 Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2007/08 to 2009/10 (pooled) 11 Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2009-2011 12 % adults aged 18 and over, 2011/12 13 % aged 16+ in the resident population, 2008-2009 14 % adults, modelled estimate using Health Survey for England 2006-2008 15 % adults achieving at least 150 mins physical activity per week, 2012 16 % adults, modelled estimate using Health Survey for England 2006-2008 17 Directly age standardised rate per 100,000 population, aged under 75, 2008-2010 18 Directly age sex standardised rate per 100,000 population, 2011/12 19 Directly age sex standardised rate per 100,000 population, 2010/11 20 Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2010/11 21 % people on GP registers with a recorded diagnosis of diabetes 2011/12 22 Crude rate per 100,000 population, 2009-2011 23 Crude rate per 100,000 population, 2012 (chlamydia screening coverage may influence rate) 24 Directly age and sex standardised rate for emergency admissions, per 100,000 population aged 65 and over, 2011/12 25 Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 1.08.08-31.07.11 26 At birth, 2009-2011 27 At birth, 2009-2011 28 Rate per 1,000 live births, 2009-2011 29 Directly age standardised rate per 100,000 population aged 35 and over, 2009-2011 30 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 31 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 32 Rate per 100,000 population, 2009-2011

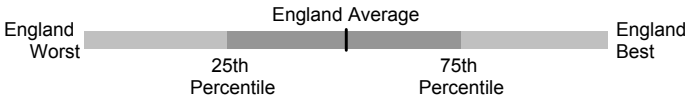
More information is available at **www.healthprofiles.info** Please send any enquiries to **healthprofiles@phe.gov.uk**

Health summary for Chesterfield

E07000034

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Domain		Indicator	Local No. Per Year	Local Value	Eng Avg	Eng Worst	England Range	Eng Best
Our communities	1	Deprivation	26773	25.8	20.3	83.7		0.0
	2	Proportion of children in poverty	3850	21.4	21.1	45.9		6.2
	3	Statutory homelessness	95	2.1	2.3	9.7		0.0
	4	GCSE achieved (5A*-C inc. Eng & Maths)	785	58.1	59.0	31.9		81.0
	5	Violent crime	1529	15.1	13.6	32.7		4.2
	6	Long term unemployment	753	11.4	9.5	31.3		1.2
Children's and young people's health	7	Smoking in pregnancy ‡	176	15.4	13.3	30.0		2.9
	8	Starting breast feeding ‡	817	71.6	74.8	41.8		96.0
	9	Obese Children (Year 6) ‡	167	19.5	19.2	28.5		10.3
	10	Alcohol-specific hospital stays (under 18)	21	103.6	61.8	154.9		12.5
	11	Teenage pregnancy (under 18) ‡	67	33.5	34.0	58.5		11.7
Adults' health and lifestyle	12	Adults smoking	n/a	18.3	20.0	29.4		8.2
	13	Increasing and higher risk drinking	n/a	22.5	22.3	25.1		15.7
	14	Healthy eating adults	n/a	25.8	28.7	19.3		47.8
	15	Physically active adults	n/a	57.1	56.0	43.8		68.5
	16	Obese adults ‡	n/a	26.5	24.2	30.7		13.9
Disease and poor health	17	Incidence of malignant melanoma	15	13.9	14.5	28.8		3.2
	18	Hospital stays for self-harm	392	410.9	207.9	542.4		51.2
	19	Hospital stays for alcohol related harm ‡	3025	2417	1895	3276		910
	20	Drug misuse	928	13.7	8.6	26.3		0.8
	21	People diagnosed with diabetes	6641	7.7	5.8	8.4		3.4
	22	New cases of tuberculosis	5	4.9	15.4	137.0		0.0
	23	Acute sexually transmitted infections	782	753	804	3210		162
	24	Hip fracture in 65s and over	121	449	457	621		327
Life expectancy and causes of death	25	Excess winter deaths ‡	67	19.3	19.1	35.3		-0.4
	26	Life expectancy – male	n/a	77.3	78.9	73.8		83.0
	27	Life expectancy – female	n/a	82.5	82.9	79.3		86.4
	28	Infant deaths	5	3.9	4.3	8.0		1.1
	29	Smoking related deaths	198	233	201	356		122
	30	Early deaths: heart disease and stroke	94	75.7	60.9	113.3		29.2
	31	Early deaths: cancer	149	119.6	108.1	153.2		77.7
	32	Road injuries and deaths	33	31.6	41.9	125.1		13.1

‡ For comparison with PHOF Indicators, please go to the following link: **www.healthprofiles.info/PHOF**

Indicator Notes

1 % people in this area living in 20% most deprived areas in England, 2010 2 % children (under 16) in families receiving means-tested benefits & low income, 2010 3 Crude rate per 1,000 households, 2011/12 4 % at Key Stage 4, 2011/12 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2011/12 6 Crude rate per 1,000 population aged16-64, 2012 7 % mothers smoking in pregnancy where status is known, 2011/12 8 % mothers initiating breast feeding where status is known, 2011/12 9 % school children in Year 6 (age 10-11), 2011/12 10 Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2007/08 to 2009/10 (pooled) 11 Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2009-2011 12 % adults aged 18 and over, 2011/12 13 % aged 16+ in the resident population, 2008-2009 14 % adults, modelled estimate using Health Survey for England 2006-2008 15 % adults achieving at least 150 mins physical activity per week, 2012 16 % adults, modelled estimate using Health Survey for England 2006-2008 17 Directly age standardised rate per 100,000 population, aged under 75, 2008-2010 18 Directly age sex standardised rate per 100,000 population, 2011/12 19 Directly age sex standardised rate per 100,000 population, 2010/11 20 Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2010/11 21 % people on GP registers with a recorded diagnosis of diabetes 2011/12 22 Crude rate per 100,000 population, 2009-2011 23 Crude rate per 100,000 population, 2012 (chlamydia screening coverage may influence rate) 24 Directly age and sex standardised rate for emergency admissions, per 100,000 population aged 65 and over, 2011/12 25 Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 1.08.08-31.07.11 26 At birth, 2009-2011 27 At birth, 2009-2011 28 Rate per 1,000 live births, 2009-2011 29 Directly age standardised rate per 100,000 population aged 35 and over, 2009-2011 30 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 31 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 32 Rate per 100,000 population, 2009-2011

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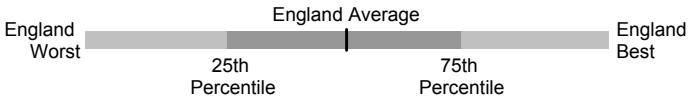
Health summary for Erewash

E07000036

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Domain		Indicator	Local No. Per Year	Local Value	Eng Avg	Eng Worst	England Range	Eng Best
Our communities	1	Deprivation	18219	16.2	20.3	83.7		0.0
	2	Proportion of children in poverty	3915	19.9	21.1	45.9		6.2
	3	Statutory homelessness	36	0.8	2.3	9.7		0.0
	4	GCSE achieved (5A*-C inc. Eng & Maths)	619	51.8	59.0	31.9		81.0
	5	Violent crime	1605	14.4	13.6	32.7		4.2
	6	Long term unemployment	775	10.8	9.5	31.3		1.2
Children's and young people's health	7	Smoking in pregnancy ‡	186	15.4	13.3	30.0		2.9
	8	Starting breast feeding ‡	859	71.6	74.8	41.8		96.0
	9	Obese Children (Year 6) ‡	202	19.6	19.2	28.5		10.3
	10	Alcohol-specific hospital stays (under 18)	12	51.4	61.8	154.9		12.5
	11	Teenage pregnancy (under 18) ‡	67	30.1	34.0	58.5		11.7
Adults' health and lifestyle	12	Adults smoking	n/a	18.2	20.0	29.4		8.2
	13	Increasing and higher risk drinking	n/a	22.7	22.3	25.1		15.7
	14	Healthy eating adults	n/a	27.9	28.7	19.3		47.8
	15	Physically active adults	n/a	54.8	56.0	43.8		68.5
	16	Obese adults ‡	n/a	26.8	24.2	30.7		13.9
Disease and poor health	17	Incidence of malignant melanoma	15	13.3	14.5	28.8		3.2
	18	Hospital stays for self-harm	217	205.8	207.9	542.4		51.2
	19	Hospital stays for alcohol related harm ‡	2727	1961	1895	3276		910
	20	Drug misuse	458	6.2	8.6	26.3		0.8
	21	People diagnosed with diabetes	5607	6.1	5.8	8.4		3.4
	22	New cases of tuberculosis	4	3.9	15.4	137.0		0.0
	23	Acute sexually transmitted infections	668	595	804	3210		162
	24	Hip fracture in 65s and over	114	439	457	621		327
Life expectancy and causes of death	25	Excess winter deaths ‡	78	24.7	19.1	35.3		-0.4
	26	Life expectancy – male	n/a	80.0	78.9	73.8		83.0
	27	Life expectancy – female	n/a	83.0	82.9	79.3		86.4
	28	Infant deaths	3	2.1	4.3	8.0		1.1
	29	Smoking related deaths	183	204	201	356		122
	30	Early deaths: heart disease and stroke	83	62.8	60.9	113.3		29.2
	31	Early deaths: cancer	141	106.8	108.1	153.2		77.7
	32	Road injuries and deaths	48	42.7	41.9	125.1		13.1

‡ For comparison with PHOF Indicators, please go to the following link: **www.healthprofiles.info/PHOF**

Indicator Notes

1 % people in this area living in 20% most deprived areas in England, 2010 2 % children (under 16) in families receiving means-tested benefits & low income, 2010 3 Crude rate per 1,000 households, 2011/12 4 % at Key Stage 4, 2011/12 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2011/12 6 Crude rate per 1,000 population aged16-64, 2012 7 % mothers smoking in pregnancy where status is known, 2011/12 8 % mothers initiating breast feeding where status is known, 2011/12 9 % school children in Year 6 (age 10-11), 2011/12 10 Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2007/08 to 2009/10 (pooled) 11 Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2009-2011 12 % adults aged 18 and over, 2011/12 13 % aged 16+ in the resident population, 2008-2009 14 % adults, modelled estimate using Health Survey for England 2006-2008 15 % adults achieving at least 150 mins physical activity per week, 2012 16 % adults, modelled estimate using Health Survey for England 2006-2008 17 Directly age standardised rate per 100,000 population, aged under 75, 2008-2010 18 Directly age sex standardised rate per 100,000 population, 2011/12 19 Directly age sex standardised rate per 100,000 population, 2010/11 20 Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2010/11 21 % people on GP registers with a recorded diagnosis of diabetes 2011/12 22 Crude rate per 100,000 population, 2009-2011 23 Crude rate per 100,000 population, 2012 (chlamydia screening coverage may influence rate) 24 Directly age and sex standardised rate for emergency admissions, per 100,000 population aged 65 and over, 2011/12 25 Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 1.08.08-31.07.11 26 At birth, 2009-2011 27 At birth, 2009-2011 28 Rate per 1,000 live births, 2009-2011 29 Directly age standardised rate per 100,000 population aged 35 and over, 2009-2011 30 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 31 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 32 Rate per 100,000 population, 2009-2011

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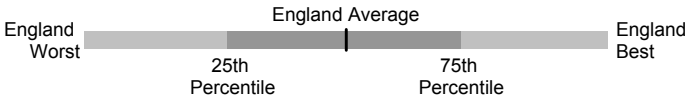
Health summary for North East Derbyshire

E07000038

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

- Significantly worse than England average
- Not significantly different from England average
- Significantly better than England average



Domain		Indicator	Local No. Per Year	Local Value	Eng Avg	Eng Worst	England Range	Eng Best
Our communities	1	Deprivation	10070	10.2	20.3	83.7		0.0
	2	Proportion of children in poverty	2545	15.8	21.1	45.9		6.2
	3	Statutory homelessness	25	0.6	2.3	9.7		0.0
	4	GCSE achieved (5A*-C inc. Eng & Maths)	522	62.4	59.0	31.9		81.0
	5	Violent crime	601	6.1	13.6	32.7		4.2
	6	Long term unemployment	512	8.3	9.5	31.3		1.2
Children's and young people's health	7	Smoking in pregnancy ‡	140	15.4	13.3	30.0		2.9
	8	Starting breast feeding ‡	648	71.6	74.8	41.8		96.0
	9	Obese Children (Year 6) ‡	178	18.4	19.2	28.5		10.3
	10	Alcohol-specific hospital stays (under 18)	14	74.8	61.8	154.9		12.5
	11	Teenage pregnancy (under 18) ‡	46	25.7	34.0	58.5		11.7
Adults' health and lifestyle	12	Adults smoking	n/a	19.1	20.0	29.4		8.2
	13	Increasing and higher risk drinking	n/a	22.9	22.3	25.1		15.7
	14	Healthy eating adults	n/a	28.2	28.7	19.3		47.8
	15	Physically active adults	n/a	56.5	56.0	43.8		68.5
	16	Obese adults ‡	n/a	25.8	24.2	30.7		13.9
Disease and poor health	17	Incidence of malignant melanoma	16	14.8	14.5	28.8		3.2
	18	Hospital stays for self-harm	213	243.9	207.9	542.4		51.2
	19	Hospital stays for alcohol related harm ‡	2423	1823	1895	3276		910
	20	Drug misuse	375	6.0	8.6	26.3		0.8
	21	People diagnosed with diabetes	4062	6.5	5.8	8.4		3.4
	22	New cases of tuberculosis	2	1.7	15.4	137.0		0.0
	23	Acute sexually transmitted infections	500	505	804	3210		162
	24	Hip fracture in 65s and over	127	487	457	621		327
Life expectancy and causes of death	25	Excess winter deaths ‡	54	16.6	19.1	35.3		-0.4
	26	Life expectancy – male	n/a	79.5	78.9	73.8		83.0
	27	Life expectancy – female	n/a	83.1	82.9	79.3		86.4
	28	Infant deaths	3	3.2	4.3	8.0		1.1
	29	Smoking related deaths	163	178	201	356		122
	30	Early deaths: heart disease and stroke	75	54.6	60.9	113.3		29.2
	31	Early deaths: cancer	138	101.6	108.1	153.2		77.7
	32	Road injuries and deaths	58	58.3	41.9	125.1		13.1

‡ For comparison with PHOF Indicators, please go to the following link: **www.healthprofiles.info/PHOF**

Indicator Notes

1 % people in this area living in 20% most deprived areas in England, 2010 2 % children (under 16) in families receiving means-tested benefits & low income, 2010 3 Crude rate per 1,000 households, 2011/12 4 % at Key Stage 4, 2011/12 5 Recorded violence against the person crimes, crude rate per 1,000 population, 2011/12 6 Crude rate per 1,000 population aged16-64, 2012 7 % mothers smoking in pregnancy where status is known, 2011/12 8 % mothers initiating breast feeding where status is known, 2011/12 9 % school children in Year 6 (age 10-11), 2011/12 10 Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2007/08 to 2009/10 (pooled) 11 Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2009-2011 12 % adults aged 18 and over, 2011/12 13 % aged 16+ in the resident population, 2008-2009 14 % adults, modelled estimate using Health Survey for England 2006-2008 15 % adults achieving at least 150 mins physical activity per week, 2012 16 % adults, modelled estimate using Health Survey for England 2006-2008 17 Directly age standardised rate per 100,000 population, aged under 75, 2008-2010 18 Directly age sex standardised rate per 100,000 population, 2011/12 19 Directly age sex standardised rate per 100,000 population, 2010/11 20 Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2010/11 21 % people on GP registers with a recorded diagnosis of diabetes 2011/12 22 Crude rate per 100,000 population, 2009-2011 23 Crude rate per 100,000 population, 2012 (chlamydia screening coverage may influence rate) 24 Directly age and sex standardised rate for emergency admissions, per 100,000 population aged 65 and over, 2011/12 25 Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 1.08.08-31.07.11 26 At birth, 2009-2011 27 At birth, 2009-2011 28 Rate per 1,000 live births, 2009-2011 29 Directly age standardised rate per 100,000 population aged 35 and over, 2009-2011 30 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 31 Directly age standardised rate per 100,000 population aged under 75, 2009-2011 32 Rate per 100,000 population, 2009-2011

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