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working locally and nationally for a beautiful and working countryside

Paul Griffiths

Phase 2b Director

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By Email to: HS2EIASMRPhase2B@arup.com

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Dear Paul Griffiths,

1. I am writing on behalf of the Lancashire and Cheshire Branches of the Campaign to Protect Rural England (herein referred to as CPRE Lancashire and Cheshire) regarding the HS2 Phase 2b: Crewe to Manchester and West Midlands to Leeds consultation on the draft Environmental Impact Assessment (EIA) Scope and Methodology Report (SMR).

2. CPRE has been standing up for the countryside for nearly 90 years. In that time, we have seen some remarkable successes. We have helped win protection as National Parks for some of our most remarkable landscapes, from the Lake District to the South Downs. We have helped to influence and apply planning laws that have, against the odds, preserved the special beauty and character of the English countryside. We hope the comments from both the Lancashire and Cheshire Branches will improve the way in which the EIA is undertaken.

Context for comments

3. In July 2017, the Department for Transport (DfT) announced that the Government had confirmed the preferred route for the remainder of Phase Two of HS2. Phase Two is split into two stages 2a: West Midlands and Crewe and West Midlands to Leeds, and 2b: Crewe to Manchester with connections to the West Coast Main Line at Crewe and Golborne. To obtain the legal powers to build and operate this part of the railway, the Government intends to deposit a hybrid Bill in Parliament in 2019. Construction of HS2 is anticipated in 2023, with railway operations starting in 2033.

4. In preparation, the Government has commissioned consultants to undertake an EIA and prepare an Environmental Statement (ES). At the same time, to inform the development of the Phase 2b scheme, the Government has commissioned consultants to undertake an EQIA and prepare an EQIA report. The EQIA will identify any particular groups with protected characteristics that may be disproportionately affected, and actions that may be necessary to limit such effects if they arise.

5. CPRE Lancashire and Cheshire are writing with comment on the Sections of HS2 Phase 2b that cross the geographies of Lancashire, (including Greater Manchester and Merseyside) and Cheshire. We flag rural issues to ensure the countryside is best protected and enhanced when new development is planned and delivered. Please see Appendix 1: Part A and Appendix 2: Part B for more detailed comments.

6. Previously, we wrote raising concern for the countryside and foreseen harm by the implementation of HS2. The proposals for out-of-town stations in rural Green Belt, is contrary to national and local planning policies. Any new rail infrastructure should link our towns, cities, not sparsely populated countryside, and certainly not land afforded special planning policy protection to stop inappropriate development that leads to countryside encroachment by manmade intrusion into otherwise open countryside. CPRE tenaciously defends land protected by Green Belt planning policy with the aim of keeping land permanently open.

7. The cost of HS2 has doubled in recent times, and continues to rise, due to ongoing financial uncertainties associated with global markets, Brexit and falling value of Sterling. There are still issues of funding commitments for parts of HS2, such as the Crewe Hub. We understand HS2 will not pay for this, and the Local Enterprise Partnership is tasked with seeking funding to secure it.

8. Consequently, we remain dissatisfied with the way the HS2 project and enabling legislation has been erroneously justified, planned, and costed, particularly regarding climate change, emission reduction and associated environmental harm.

Environmental Impact Assessment Scope and Methodology Reports

9. CPRE Lancashire and Cheshire provides the following comments intended to help best protect and enhance the countryside in the future should the Government actually implement HS2 Phase 2b: Crewe to Manchester and West Midlands despite our serious concerns.

10. We believe it is vital that the Government delivers on the Climate Change Act 2008, and its international commitments to reduce Greenhouse Gases under the Paris Agreement, 2015.

11. The European Union (EU) Directive on the assessment of the effects of certain public and private projects on the environment (Directive 2014/52/EU) remains in place until withdrawal of EU is finalised. The Government has announced its intention to convert all EU law into UK law, through the 'Great Repeal Bill', so that the same rules and laws will apply. The Directive has been transposed through the Town and

Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571) (the EIA Regulations 2017).

12. The SMR sets out the methodology proposed for determining the likely environmental impacts and effects; and for assigning values of magnitude and significance to them. It also sets out the approach to the reporting of reasonable alternatives in the ES.

13. It is understood that a further consultation on the working draft will occur before the final Environmental Statement accompanies the deposit of the hybrid Bill in Parliament.

14. In Appendix 2: Part B I request specific consultation and engagement concerning the landscape and visual topic of the Environment Statement, particularly with important stages such as the establishment of the baseline, as our members should be able to positively contribute with appropriate technical knowledge to the process.

15. We looked forward to meeting with the HS2 Phase 2b Team in due course.

16. Please contact me if you would like further information.

Yours sincerely,

Jackie Copley MRTPI MA BA(Hons) PgCert

Planning Manager

Appendix 1: Part A – general methodology and scope of assessment

17. CPRE Lancashire and Cheshire understand that the EIA SMR provides an outline description of the **Proposed Scheme** and sets out the proposed scope of the environmental effects to be considered during the EIA. How the magnitude and significance of each environmental topic is apportioned will be significant. We of course welcome that an independent Appraisal of Sustainability (AoS) has been undertaken focused on:

    - reducing greenhouse gas emissions and combating climate change;
    - protecting natural and cultural resources and providing environmental enhancement;
    - creating sustainable communities; and
    - enabling sustainable consumption and production.

18. We also acknowledge that underpinning the AoS priorities are 18 sustainability topics, covering important matters such as noise and vibration, flood risk, greenhouse gases and resource use and that the AoS helped inform the final route.

19. CPRE Lancashire and Cheshire regards the EIA SMR as limited by the fact that inadequate consideration has been given to alternative options to the HS2 Phase 2b north to south route. Below we set out our case for why the HS2 Proposed Scheme is not appropriate from the point of view of a sustainable transport system.

Towards a sustainable transport system

20. CPRE has a remit to seek change for the better to help our rural places thrive and survive in the future, rather than seeing it be needlessly destroyed by ill-considered 'white elephant' infrastructure. We urge the Government and Transport for the North to perform much better with regards to enabling a sustainable transport system in the future.

Modal Shift

21. CPRE advocates that new development, particularly all transport infrastructure due to its strategic importance, is in line with the Climate Change Act 2008 and that it supports the Government to fulfil its international commitments to reduce Greenhouse Gases under the Paris Agreement, 2015.

22. Naturally we support the principle of a modal shift to rail, to promote a more sustainable transport infrastructure at the national level, and address acute problems such as climate change and poor air quality affecting so many of us, but whether high speed rail delivers on climate change targets is a moot point.

End of the Road? Challenging the road-building consensus

23. CPRE published the *End of the road? Challenging the road-building consensus*, March 2017, which revealed that road-building is failing to provide the congestion relief and the economic boost promised, while devastating the environment. The report is based on a study commissioned by CPRE and carried out by consultants Transport for Quality of Life (TfQL), which examined 86 official studies of completed road schemes.

24. The report directly challenges Government claims that 'the economic gains from road investment are beyond doubt'; that road-building will lead to 'mile a minute' journeys; and that the impact on the environment will be limited 'as far as possible'. The report shows how road building over the past two decades has repeatedly failed

to live up to similar aims. The Government is wrongly focusing too much public money on road-building, which promotes an increase in car usage, in complete opposition meeting its obligations. We urge the Government to focus investment on a fully co-ordinated transport system.

Alternative options for West to East connectivity

25. The purported benefits of HS2 Phase 2b when compared to other alternative options do not infer HS2 Phase 2b as the better option. There has yet to be proper analysis of the 'opportunity cost' of building the north to south route, against west to east routes. Rational, up to date, analysis of whether economic benefit will be delivered equally to the north is needed. We must not assume HS2 will support a sustainable transport system, we need to evidence it. Many more questions must be posed, such as will HS2 Phase 2b maximise rail capacity? Will the north be adversely impacted, by losing out on alternative inter-city connections? Will the high speed rail be affordable to all user groups? We urge for robust evidence to be undertaken to inform the commitment of such large public investment.

26. In the North of England investment in existing rail has been incredibly poor, especially when compared to other areas, and/or per head of population investment, particularly to the south east and London, that has had two phase of Crossrail implemented to greatly add to capacity.

27. Travel times between Liverpool and Hull are too long, particularly between Manchester and Leeds, and run over capacity at peak times. Local rail is served by antiquated rolling stock (including dirty diesel). Passengers are burdened with frequent delays, queuing trains resulting in a most unreliable service and unpleasant journeys, which is simply not meeting the expectations of a properly run train service fit for 2017.

28. We believe the Government could do much more to enable a proper transport 'network' by providing cross-country links to help the city-regions link, and thereby better thrive in the future. As it stands, our entire national transport system links London to all major towns, akin to a wheel's hub and spokes, but it is terribly deficient in inter-city connectivity.

29. Furthermore, London's port, albeit at a more advanced stage, transports as much as 40% of cargo in and out by rail, compared to only 2% from Liverpool. Peel the developer of Liverpool2 is advertising rail services to customers, however we believe the capacity of the rail network will stifle any meaningful rail servicing in the future.

30. To better support the Northern Powerhouse properly planned multimodal investment is a priority, such as the servicing of the new port infrastructure being developed at Liverpool2. Due account should be taken of movement of freight via the Liverpool/ Manchester Ship Canal and coastal shipping, both of which should be maximised. HS3 options ought to be prioitised to carry as much of the rest as possible and of course cater for future increased passenger requirements, and thereby significantly reduce emissions.

31. The amount distribution floorspace in the North West should be estimated in the context of a formal plan for the region, and the conventional rail and road system designed accordingly. At the moment, extremely large sheds are being speculatively developed, including in protected Green Belt land, we are witnessing nothing short of a developer free for all. Road based haulage is set to soar with all the emissions and other adverse harm. The Government must assert some control over the situation as the cumulative harm is great.

32. Conventional rail (as opposed to high-speed) is a fundamental part of such as system, with good connectivity and frequency of service, linking to other public services such as bus networks, ports and airports. Walking and cycling between neighbourhoods and to rail and bus stations is vital.

33. We understand that some of these issues are beyond the remit of HS2 and presumably, at present the only bodies who can achieve such an integrated plan are the Government and Transport for the North, neither who at present, as we understand it, are thinking in such terms. We recommend that they properly consider the potential of the existing rail if modernised as the basis towards a more sustainable, transport system.

Appendix 2: Part B – environmental topics

34. For each environmental topic, there is a description of the spatial and temporal scope with consideration is given to effects that would arise during construction and operation of the Proposed Scheme including temporary, permanent, direct, indirect and cumulative effects.

35. CPRE Lancashire and Cheshire requests provision of mapping of known substantial planned and under construction development projects to aid understanding of the cumulative effects both in a spatial and temporal sense for the purpose of the EIA and Environment Statement to be submitted to Parliament with the hybrid Bill.

Agriculture, forestry and soils

36. We believe that farming and food security is of vital importance, and therefore we must value our precious fertile soil. It is worth reminding ourselves that each centimetre of soil takes thousands of years to form, so we must not only value it, but crucially protect it for future generations.

37. Therefore, we are pleased to note that the approach to assess agricultural impacts in the EIA is derived from the revised EIA Directive 2014 and national planning policy. We remind HS2 Ltd that National Planning Policy Framework (NPPF para. 112) states planning authorities should wherever possible save our 'Best and Most Versatile soils' – the best for producing crops. Consequently, policies for development in the countryside give a measure of protection to the best and most versatile agricultural land (defined as Grades 1, 2 and 3a in the Agricultural Land Classification (ALC) system).

38. The specification for ALC and soil surveys is set out in Technical note Agricultural Land Classification and Soils Surveys and should be used to inform the way that soil data is collected for the baseline information. Thorough assessment of the pre-construction ALC grade is necessary to ensure rigorous restoration of agricultural land. Best practice for handling and storing topsoils and subsoils soils in order to protect their main functions during construction should be applied.

39. HS2 has a huge societal responsibility bestowed upon it to protect our valuable soil from harm in the construction and operational stages of the project.

Air quality

40. The SMR sets out that air quality includes the environmental topic area of local air quality and air pollution. The methodologies to identify the potential for impacts and effects upon sensitive human and ecological receptors are outlined and the assessment will focus on air pollutants that are likely to arise from the construction and operation of the Proposed Scheme, including pollutants that are oxides of nitrogen (NOx), nitrogen dioxide (NO2), particulate matter (PM10, PM2.5) and dust.

41. Air quality changes are anticipated during the construction stage due to construction activities, associated traffic movements and highway interventions. During HS2 operation, change in air quality would arise from changes to road layouts, and also traffic flows.

42. CPRE Lancashire and Cheshire recognises the importance of clean air for good human health and that of our natural environment and all that rely on it. We agree that the EIA method will take into account the following legislation, and any subsequent changes to this legislation:

- Part 4 of the Environment Act 1995;
- The Air Quality (England) (Amendment) Regulations 2002 and the Air Quality Standards Regulations 2010 and the Air Quality Standards (Amendment) Regulations 2016;
- Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe; and
- National Planning Policy Framework (NPPF) 2012 and National Planning Practice Guidance (NPPG) 2014.

43. In planning for future development, HS2 has a responsibility to ensure air quality pollutants do not exceed limits (for NOx, NO2, PM10 and PM2.5) set out in the above mentioned legislation or in the guidance listed in the draft EIA SMR (paragraph 7.6.2).

Climate change

44. CPRE Lancashire and Cheshire believe that the Government achieving its climate change commitments under the global climate agreement - the Paris Agreement, 2015, is a most important aim. This is because we acknowledge the scientific based evidence concerning the catastrophic negative impact on the environment, both overseas and domestically, should it fail.

45. In Appendix 1 we made the case for a more sustainable transport system than that of the Proposed Scheme. In this regard the EIA SMR scope will always be too limited. HS2 Phase 2b will not compare favourably with alternative options for the climate change topics:
    - the greenhouse gas (GHG) assessment;
    - the in-combination climate change impacts assessment; and
    - the climate change resilience assessment.

46. Below CPRE Lancashire and Cheshire set out the key points concerning the above three topics.

Greenhouse gas assessment

47. The emissions reported are to be considered in the form of the 'carbon footprint', which is the total GHG emissions associated with a particular scheme, policy or development.

48. GHG emissions are converted into tonnes of carbon dioxide equivalent (tCO2e) which standardises the global warming potential of the main GHG into one index based on the global warming potential of carbon dioxide (CO2). Hereafter the term carbon is used to refer to the combined GHG emissions.

49. Greenhouse gas (GHGs1 are: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3)).

50. The UK's evolving carbon agenda will inform how the EIA for HS2 Phase 2b is undertaken. The Climate Change Act 2008 committed the UK to its first statutory carbon-reduction target to reduce carbon emissions by at least 80% from 1990 levels by 2050.

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1 According to the National Atmospheric Emissions Inventory, Overview of greenhouse gases. Available online at: http://naei.defra.gov.uk/overview/ghg-overview

51. To ensure that regular progress is made towards the target the Climate Change Act established a system of carbon budgets. The first five carbon budgets, leading to 2032, have been set in law. Meeting the fourth (2023-27) and fifth (2028-2032) carbon budgets will require that carbon emissions are reduced by 50% (by 2025) and 57% (by 2030) respectively relative to 1990 levels. It is expected that the Government will publish a plan for meeting the legislated carbon budgets in the second half of 2017.

52. Central to the Paris Agreement is the aim of strengthening the global response to climate change by limiting the global temperature increase this century to below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. To achieve this aim, the Paris Agreement additionally sets a target for net zero global carbon emissions in the second half of this century. The Paris Agreement was ratified and entered into force in November 2016. In line with the Paris Agreement, the Government has indicated it intends at some point to set a UK target for reducing domestic emissions to net zero.

53. The Government's Construction Industry Strategy presents the UK's low carbon construction aspirations. It includes the aspiration to decrease construction GHG emissions by 50% by 2025 based on 1990 levels, as reported in the Green Construction Board's Low Carbon Routemap for the Built Environment.

54. The GHG assessment will quantify and report – in the form of a 'carbon footprint' – the reasonable worst case scenario carbon emissions associated with the construction and operation of the Proposed Scheme. The carbon footprint will be reported in tonnes of carbon dioxide equivalent (tCO2e). The Proposed Scheme's carbon footprint will be compared to UK national and transport sector GHG emissions in order to provide context for the scale of the carbon footprint.

55. Key aspects for this topic include earthworks, land use, demolition, construction, operation, rolling stock, maintenance, energy supply and modal shift. Emissions will be related to construction stage and operational transport. With regards to transport emissions, change will be assessed using the Planet Framework Model (also referred to as PFM or PLANET) a planning network transport forecast model to ascertain changes in passengers on conventional rail, modal shift from domestic air trips and transfer from road.

56. CPRE Lancashire and Cheshire recommends assessment of any discernible overseas modal shift. It would be useful to capture any emission savings from travel to Europe. As passengers have to alight in London to pursue onward journeys, it would be interesting to record if people from north of London use the high speed service for intercontinental travel.

57. In addition, we recommend that the EIA fully assesses induced car trips from placing stations in open countryside. CPRE Lancashire and Cheshire is most critical of proposals to generate unnecessary journeys by not focusing stations in existing centres of population, rather imposing a need to travel to connect to high speed train services. The EIA SMR should not just seek to record benefits, but also negatives, to give a true picture of environmental impacts.

58. The carbon benefits associated with the released capacity on the conventional network for freight transport will also be assessed.

In-combination climate change impacts assessment

59. The in-combination climate change impacts assessment will assess the combined effects of the impacts of the Proposed Scheme and potential climate change impacts

on the receiving environment. In the absence of international legislation or policy framework the SMR relies on a number of guidance reports that provide relevant background.

60. CPRE Lancashire and Cheshire acknowledges reference to the EIA Directive 2011/92/EU that places a requirement upon projects anticipated to have significant effects on the surrounding environment and communities to make a formal assessment of these effects. In addition EC guidance on Integrating Climate Change and Biodiversity (currently under review, due to be completed by mid-2018) into EIAs carried out under the amended EIA Directive 2014, includes climate change and biodiversity related guidance for screening and scoping, analysing evolving baseline trends, identifying alternative and baseline measures, monitoring and adaptive management.

61. We agree it is important for the EIA to assess climate change impacts on topics, such as agriculture, ecology, health, landscape and water and for it to suggest potential mitigation measures.

62. The Climate Change Act 2008 requires the UK Government to undertake a national Climate Change Risk Assessment (CCRA) every five years. The first National Adaptation Programme (NAP) was published after the CCRA 2012, detailing the Government's long term strategy to address the main climate change risks and opportunities for the UK.

63. The second CCRA was published in 2017 and provides assessments of climate change risks for different sectors of society, including infrastructure, people and the built environment, natural environment and natural assets, business and industry as well as international dimensions and cross-cutting issues. The most urgent climate change risks were identified. It is against this background that CPRE Lancashire and Cheshire believe it is so important that the EIA for HS2 Phase 2b appraises fully the in-combination climate change impacts.

Climate change resilience assessment

64. The most recent climate legislation, policy, best practice guidance, publicly available research and previous climate change impact and risk assessments for high speed rail and major infrastructure projects will inform the EIA method. CPRE Lancashire and Cheshire acknowledge that the approach and findings of the HS2 Phase 2a ES are a relevant starting point for the Proposed Scheme climate change resilience assessment.

65. The climate change resilience assessment will be considered at a route-wide level. An environmental baseline will be established and a review of relevant engineering and design information for all assets, an assessment of the potential climate hazards associated with the Proposed Scheme will be undertaken.

66. Thereafter the climate change risk and resilience assessment will be progressed, based on the likelihood of a hazard having an impact on the Proposed Scheme and the consequence of the impact. The definitions of these terms can be summarised as follows:
    - a hazard is an effect of a changing climate, which has the potential to do harm to the infrastructure and assets associated with the Proposed Scheme;
    - an impact can be any damage to the infrastructure or assets or an interference with their ability to operate - an impact can be direct, for example flooding of the infrastructure or assets, or indirect, for example heat exhaustion of workers;
    - consequence is considered to be a degree of disruption to services; and

- risk is the combination of likelihood of a hazard having an impact on infrastructure assets, taking into account mitigation measures, and the potential consequence resulting from this impact.

67. The following climate hazards will be considered in this risk assessment:
    - high and low temperatures;
    - diurnal temperature range;
    - high precipitation;
    - soil moisture deficit;
    - drought;
    - humidity;
    - ice and snow/cold;
    - insolation (solar irradiation);
    - river, surface water and groundwater flooding;
    - storms/lightning strikes; and
    - wind.

68. The UKCP09 climate change projections explain the degree to which the frequency and intensity of these potential hazards may change as a result of climate change. For example uncertainty exists on the direction of change in storms and high winds. The route-wide and site-specific flood risk assessments cover all relevant sources of potential flooding hazards (river, surface water and groundwater flooding).

Community

69. CPRE has lobbied for transparency and community involvement in planning of national and local level infrastructure. We are pleased to observe that further engagement with relevant organisations and communities will be carried out as part of the assessment.

70. What is most important is for stakeholders, especially those directly impacted who have engaged to understand how their comments have been listened to and how the Proposed Scheme has been amended, or not, in response. Local people have immense local knowledge to positively contribute to the EIA process.

71. Many communities continue to feel that HS2 is being imposed unnecessarily.
    - national government departments and statutory organisations;
    - local government including local authorities, combined authorities and parish councils on the line of route of the Proposed Scheme; and
    - non-governmental organisations including relevant voluntary and community sector organisations and other special interest groups.

72. It is good that the local community and stakeholders will also be able to respond to consultation as part of a coordinated EIA approach.

Ecology

73. CPRE recognises that ecology is a key attribute of the countryside that must be protected and enhanced, and we consider the topic areas of habitats, species and sites recognised or designated for nature conservation and biodiversity to be important components of the EIA. We note that the baseline conditions for the ES will be established through a combination of desk study, field survey and consultation.

74. Understanding the location of designated sites and woodland, protected, priority or otherwise notable species and habitats, Biodiversity Action Plans is crucial to the robustness of the surveys.

75. HS2 Ltd need to acknowledge that local people tend to have extensive knowledge to input to the specialist surveys.

76. CPRE Lancashire and Cheshire consider it essential that the protected and very rare habitat of the low lying peat mosslands of Carrington Moss and Chat Moss are fully considered when the EIA is progressed.

77. CPRE has championed the importance of hedgerows for many years, and continue to highlight the Hedgerow Regulations, 1997, which provide legal protection and give planning authorities, landowners and developers a statutory undertaking to protect significant hedgerows, so naturally we are very pleased to see hedgerow surveys will be undertaken.

Landscape and visual

78. CPRE Lancashire and Cheshire have a particular interest in the rural landscape and the visual impacts of HS2. HS2 will cut through beloved and diverse rural and agricultural landscapes of Cheshire and Lancashire.

79. We are pleased to note that the EIA SMR accepts the European Landscape Convention (ELC) – Council of Europe 2000 definition of landscape as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors', and that it is not just special or designated landscapes, but also 'ordinary' landscapes that are being assessed for their value.

80. The method presented in Parts A and B takes account of the range of likely significant environmental effects on the landscape and visual receptors arising from the construction, existence and operation of the Proposed Scheme. It is good that the methodology will be consistent with the approach set out in the Guidelines for Landscape and Visual Assessment, 3rd Edition ('GLVIA3') and that the Design Manual for Roads and Bridges (DMRB) Volume 11 will be appropriately referred to when progressing the EIA.

81. *Figure 11- Assessment process for the landscape and visual assessment* clearly illustrates way forward with the key principle being for the landscape and visual baseline to be first identified and understood prior to the assessments of sensitivity and magnitude which will determine the significance as being adverse (major, moderate, minor), negligible, or beneficial (major, moderate, minor).

82. We note that the surveys will be carried out, in both winter and summer, by chartered landscape architects and that the work will be verified. We also note that the survey work will be undertaken in a methodical order supported by photographic records to illustrate the landscape character and viewpoints.

The Landscape Baseline

83. CPRE observes that the landscape baseline will include an overview of the elements that form the baseline within the study area, using text and plans to describe a wide variety of elements.

84. Many landscape elements are covered by river catchment approaches, built and natural spaces, as wells as statutory and non-statutory designations relevant to the

landscape and visual assessment. There are many habitats that are key to the diverse and distinct landscapes.

85. Our cultural heritage is rich and our 'place identity' is informed by the development patterns, heritage building styles, rural landscape features and skyline characteristics, building materials and landmark features.

86. Public access to the landscape via footpaths, including Public Rights of Way, National Trails and other routes to include roads, ways (rail, cycle, bridle, historic green, drovers and water).

87. CPRE in campaigning often refers to Natural England's National Character Areas and Profiles and other relevant local landscape character assessments and other information where they exist.

88. As previously stated our members may be able to support this element such as the determination of the value of each of the viewpoints where published information is not available. We can also help inform the discussion on landscape value with reference to the following seven criteria:
    - geological, topographical and hydrological (physiographic) interest;
    - cultural pattern and historic landscape interest;
    - natural landscape interest;
    - recreational value;
    - perception of the landscape;
    - landscape condition; and
    - scenic and special qualities.

89. We understand that an overall level of value for each landscape character area will be determined by comparing the judgements made for each category described above and by bringing out the elements contributing most strongly to value, through use of independent professional judgement.

The Visual Baseline

90. CPRE Lancashire and Cheshire members can also input into the selection of viewpoints and support the drafting of a View Management Framework to support the survey recording.

91. CPRE would like to request consultation and engagement for this section of the Environment Statement, particularly with important stages such as the establishment of the baseline, as our members should be able to positively contribute with appropriate technical knowledge to the process.

92. We note the main features for landscape and visual assessment during construction are construction sites, compounds, storage areas, earthworks and other associated works such as diversion of infrastructure and utilities.

93. In addition, we note the main features for landscape and visual assessment during operation are the track and track-bed, viaducts and bridges, planting, noise barriers and screens among other associated developments.

Determining landscape character sensitivity

94. Landscape character sensitivity is derived from judgements about the susceptibility of landscape character to the type of change arising from the Proposed Scheme. We

note that the susceptibility of the landscape will be assessed against the following six criteria, which are related to but separate from the value criteria set out above:

- Landform and prominent landmarks;
- cultural and landscape pattern;
- landscape scale;
- scenic and special qualities;
- perceptual aspects and tranquillity; and
- visual character sensitivities.

95. For each criterion the susceptibility will be assessed on a five point scale from low to high using professional judgement and an overall level of susceptibility for each landscape character area will be assessed by comparing the judgements made for each category described above and drawing out the elements most important to character in each case. CPRE endorses the approach recommended by the Landscape Institute for the assessment of the significance of an effect requires the application of impartial professional judgement including experience of other major infrastructure schemes to weigh the findings of the sensitivity of the landscape character area and the magnitude of change.

96. Determining viewer sensitivity is important, and we agree that the most susceptible are residents at home, people engaged in outdoor recreation whose interests are focused on the landscape, heritage visitors, and communities where views contributing to landscape setting are enjoyed by residents. CPRE Lancashire and Cheshire will consider the professional judgement applied to visual effects of HS2 and to the determination of the magnitude and the significance of effects.

Major Accidents and Disasters

Data Gathering: Hazard and Risk Identification, Assessment and Mitigation

97. HS2 Ltd is strongly advised to take into account advice given on development in areas underlain by soluble rocks.

Settlement and Ground Movement Vibrations: Hazard and Risk Identification, Assessment and Mitigation

98. Recommendation for HS2 Ltd to take into account in design of the HS2 Route 2b corridor and built structures the safety impact of siting a high speed rail line that generates ground vibration waves.

99. It is recommended that HS2 Ltd carry out risk assessments; design appropriate safety precautions to avoid and minimise loading and vibration in areas known and potential weak ground and ground subsidence on the HS2 Route 2b corridor.

100. A thorough assessment should be carried out on the impact of ground vibrations in areas known to be actively subsiding, of loosely-compacted, water-saturated broken ground with cavities directly above beds of soluble rock salt.

101. It is recommended that HS2 Ltd carry out risk assessments; design appropriate safety precautions for built structure protection methods above and below ground for embankments and viaducts in areas of known and potential weak ground and ground subsidence, salt mining and brining on the HS2 Route 2b corridor and the construction corridor.

102. Recommendation for HS2 Ltd to take into account precautions and mitigation methodology during construction to avoid loading and vibrations from machinery in areas of existing and potential ground subsidence, sinkholes and flashes to avoid reactivation or initiation of ground movement.

103. HS2 Ltd is strongly advised to take into account a hazard mitigation strategy for sinkhole and ground subsidence on the HS2 Route 2b corridor, including the rapid occurrence of ground collapse and formation of depressions.

104. It is recommended that HS2 Ltd adopt a comprehensive rationale and methodology to compile an inventory of sinkholes, ground subsidence and weak ground

105. It is recommended that HS2 Ltd establish the safe operating distance from sinkholes, subsidence depressions and flashes to the centre of the high speed rail line, toe of embankments, and viaduct supports.

106. Recommendation for HS2 Ltd to determine the maximum settlement tolerable for a train running at 400kph.

107. Recommendation for HS2 Ltd to determine the acceptable limit on rail deflection.

108. HS2 Ltd is strongly advised to take into account the specification of track base to be used and determine the impact and amount of vibration and noise that different specifications of track bases would generate with rail traffic travelling at 400kph.

109. Recommendation for HS2 Ltd to assess methodology, design criteria, acceptable limits for the safety of high speed rail traffic travelling a speed at 400kph in areas where there is running sand with risk of liquefaction.

110. HS2 Ltd should assess the effect on risk if rail traffic speed reductions are implemented for the HS2 Phase 2b route over areas of wet rockhead, salt subcrop, sinkholes, flashes, ground subsidence.

Subcrop of Halite at Wet Rockhead: Hazard and Risk Identification, Assessment and Mitigation

111. Recommendation for HS2 Ltd to take into account the British Geological Survey criteria for classification of hazards in areas with soluble rock ground conditions in the siting and design of HS2 Route 2b corridor and built structures.

Surface and subsurface hydrology: Hazard and Risk Identification, Assessment and Mitigation

112. HS2 Ltd should investigate drainage designs that would be effective in avoiding, not inducing and not increasing water and grout flow into the salt karst and wet rockhead.

113. HS2 Ltd should prevent and mitigate the reactivation of pre-existing sinkholes, ground subsidence e.g. by hydrogeological changes, by loading, by vibrations during construction and for the 120 year design lifetime operation of the high speed rail line.

114. HS2 Ltd is strongly advised to take into account in the design of the route corridor and built structures changes in the hydraulic regime, above and below ground level, over the 120 year operation life of the HS2 Route 2b.

Protection Methods for Built Structures: Hazard and Risk Identification, Assessment and Mitigation

115. Recommendation for HS2 Ltd to assess structural protection methods appropriate in the design of the built structures for the HS2 Phase 2b route corridor on embankments and viaducts adjacent and through areas with:
    - Ethylene storage salt cavities
    - Chemical waste slurry lagoons
    - Brine salt cavities of Holford Brine Field
    - Dense network of brining and gas pipework carrying high pressure water, brine, air and gas which includes large diameter cast iron pipework
    - Active ground subsidence of c.1000 mm pa
    - Active sinkholes, flashes and subsidence hollows
    - Billinge Green Flashes settlement trough

116. Working salt mine with underground hazardous waste and dry secure document storage in places within 100m of the ground surface

117. It is recommended that HS2 Ltd establish how the design of the built structures of the HS2 Route 2b corridor can cope with rapid occurrence of ground collapse and formation of depressions during construction and operation of the high speed rail route.

HAZARD MONITORING

118. Recommendation for HS2 Ltd to establish what ground monitoring systems are going to be installed pre-construction, during construction and post construction, the aim of monitoring and where and over what time period will monitoring take place.

Socio-economics

119. CPRE Lancashire and Cheshire champion thriving rural communities in the future. We want the following to be protected and enhanced:

    - existing businesses and organisations;
    - local economies, including employment;
    - planned growth and development; and
    - wider concentrations of economic activity.

120. The baseline assessment should focus on rural economic sectors, such as agriculture, forestry and soils, and consider the impacts from HS2 from sound, noise and vibration, landscape and visual, air quality and traffic and transport to understand fully the implications for employment.

Sound, noise and vibration

121. An essential rural characteristic is tranquillity. People need to find quiet and peaceful natural places for enjoyment and recreation and leisure due to the evidenced health and well-being benefits. Residents, workers and visitors of the countryside love the peace and quiet and do not want it to be needlessly sacrificed. On the whole our biodiversity relies on tranquil natural spaces. HS2 will destroy

significant and substantial tracks of quiet countryside forever. CPRE recommends that wherever possible tranquillity should be protected and enhanced.

Traffic and transport

122. See earlier comments under the sub-heading “Towards a sustainable transport system”.

123. The EIA must assess all the additional car journeys caused by illogically placing stations in remote Green Belt designated countryside.