

Canal & River Trust response to the Consultation on the route from the West Midlands to Manchester, Leeds and beyond.



Canal &
River Trust

Keeping people, nature & history connected

Response to the Consultation on the route from the West Midlands to Manchester, Leeds and beyond

Please find below the response of the Canal & River Trust. The Trust is the guardian of 2,000 miles of historic waterways across England and Wales. We are among the largest charities in the UK, maintaining the nation's third largest collection of listed structures, as well as museums, archives, navigations and hundreds of important wildlife sites.

The Trust has a range of charitable objects:

- to preserve, protect, operate and manage Inland Waterways for public benefit:
 - for navigation;
 - for walking on towpaths; and
 - for recreation or other leisure-time pursuits of the public in the interest of their health and social welfare;
- to protect and conserve for public benefit sites, objects and buildings of archaeological, architectural, engineering or historic interest on, in the vicinity of, or otherwise associated with Inland Waterways;
- to further for the public benefit the conservation protection and improvement of the natural environment and landscape of Inland Waterways;
- to promote, facilitate, undertake and assist in, for public benefit, the restoration and improvement of Inland Waterways;
- to promote and facilitate for public benefit awareness, learning and education about Inland Waterways, their history, development, use, operation and cultural heritage by all appropriate means including the provision of museums;
- to promote sustainable development in the vicinity of any Inland Waterway for the benefit of the public, in particular by:
 - the improvement of the conditions of life in socially and economically disadvantaged communities in such vicinity; and
 - the promotion of sustainable means of achieving economic growth and regeneration and the prudent use of natural resources; and

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- to further any purpose which is exclusively charitable under the law of England and Wales connected with Inland Waterways;

provided that in each case where the Trust undertakes work in relation to property which it does not own or hold in trust, any private benefit to the owner of the property is merely incidental.

We believe that our canals and rivers are a national treasure and a local haven for people and wildlife. It is our job to care for this wonderful legacy – holding it in trust for the nation in perpetuity and giving people a greater role in the running of their local waterways. **The key objective for the Trust in responding to the consultation is to protect our assets and interests and to ensure that as the proposal develops the impacts of the scheme on our inland waterways network or affecting third party restoration projects are appropriately mitigated.**

Our response sets out in detail the areas of concern for the Trust however we would like to highlight the following key comments below:

Critical Interfaces

The Ashby Canal at Measham.

The scheme does not recognise the proposed restoration of the Ashby Canal. In its current form the proposal would prejudice the completion of this well advanced canal restoration project.

The Erewash Canal north of Sandiacre

The proposal currently includes a substantial embankment. The embankment encroaches into the canal and this would affect navigation. It also appears to encroach onto the lock by-wash channel which is critical to the operation of the canal. In addition the canal has an open landscape character in this area and the embankment would result in long views of Sandiacre and the church being eradicated.

The Chesterfield Canal at Staveley, Mastin Moor, Renishaw and Killamarsh

The scheme prejudices the completion of this well advanced canal restoration project.

The Sheffield and Tinsley Canal at Meadowhall.

The proposed station will in association with existing transport infrastructure in the area, create a 130m stretch of the canal which would be covered. This leads to concerns that the proposed HS2 works will exacerbate existing anti-social behaviour in this area further discouraging the use of the canal between Rotherham and central Sheffield.

The Dearne and Dove Canal at Worsborough and Stairfoot.

The scheme would prejudice a canal restoration proposal.

The Aire and Calder Navigation at Woodlesford.

The proposal, as presented, would have a devastating impact on this section of waterway in an area which is popular with a variety of recreational users. It would prevent navigation by some craft on this commercial waterway and could potentially prevent navigation if the lock structures cannot be maintained due

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to the presence of the HS2 line. It would also lead to the loss of the Trust's dredging tip which would result in significant extra costs for the disposal of dredged material.

The Aire and Calder Navigation in Leeds City Centre.

The pedestrian link from Leeds New Lane station to the existing railway station would have a major impact on the users of the waterway corridor, its associated heritage and the townscape. In addition supporting structures for the link may be required in the River Aire and these could adversely affect navigation.

Critical Issues

Noise

The waterways function as quiet corridors for people and wildlife. The impact of noise on the waterway corridors needs to be fully appreciated and appropriately mitigated by HS2 Ltd.

In addition to the impact on the wider waterway corridor it is important that the variety of moorings, which are operated by a diverse range of businesses/organisations including the Trust, is fully understood by HS2 Ltd. The Trust would therefore like to facilitate a meeting with HS2 Ltd to explain this waterway specific issue.

Bridges/viaducts

The Trust has major concerns regarding the impact of HS2 Phase Two on the landscape of the canal network. The Trust considers that the design and construction of the HS2 bridge and viaduct structures should showcase the best in contemporary 21st Century architecture and engineering, creating structures that contribute positively to the multiple layers of transport history that are evident along the canal corridor. The Trust will work with HS2 Ltd to agree design solutions for all bridges and viaducts crossing the waterway network. The Trust has developed specific HS2 crossing principles to assist in the generation of appropriate structures for the waterway which will be provided to HS2 Ltd shortly.

Landscape

The Trust considers that the early implementation of soft landscaping measures are required to reconcile any new crossing structures into the waterway corridor, and the wider landscape, and mitigate the visual impact of any new structures, prior to the completion of the HS2 route. The specification of landscape planting should be carefully developed to respond to and support the local landscape character, and to promote local biodiversity.

The Trust hopes that the following comments are helpful and looks forward to further dialogue with HS2 Ltd to ensure that the developing proposal addresses the impacts on and opportunities for the canal network and third party restoration projects.

Please direct any queries to Peter Walker, Engineering Manager (South), Canal & River Trust, First Floor North, Station House, 500 Elder Gate, Milton Keynes, MK9 1BB. Telephone: 07733 124609, email: peter.walker@canalrivertrust.org.uk

For your information the response is accompanied by the following appendices:

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Appendix 1 The Trust's response to Manchester City Council's recent consultation on The HS2 Manchester Piccadilly Strategic Regeneration Framework.

Appendix 2 Barnsley, Dearne and Dove Canals Trust – HS2 Mitigation Options

Before proceeding to address the questions in the consultation document we set out below a series of issues which are applicable route wide.

Routewide Issues

Issue	Comments
Impact on our assets	<p data-bbox="539 488 1648 544"><u>Permanent Works on Trust Property</u> No permanent works are to be located on Trust property (other than over sailing our property).</p> <p data-bbox="539 579 2042 759"><u>Advance Maintenance Mitigation Works</u> The waterway wall and towpath within the footprint of the HS2 structure needs to be repaired to ensure that no major maintenance will be required for the foreseeable future. Typically this will comprise waterway wall repair/reconstruction and towpath surfacing. It will extend for a distance either side of the HS2 structure, the distance to be specified by the Trust. This is required to ensure that Trust does not inherit a maintenance liability due to the HS2 structure. Dredging also needs to be included in this category. Mitigation works should have the same design life as HS2 structures.</p> <p data-bbox="539 794 1756 850"><u>Ownership</u> All crossing points to have clear signage confirming ownership, who to call to report defects, graffiti etc.</p> <p data-bbox="539 885 1823 941"><u>Trust Bridge Numbers</u> All bridges will need to have Trust Bridge numbers - a simple bridge plaque on both elevations is acceptable.</p> <p data-bbox="539 976 2011 1064"><u>Trust Ownership Boundary</u> HS2 drawings should to show Trust land ownership boundary. We have issued our GIS information on our land ownership to HS2.</p> <p data-bbox="539 1099 2042 1187"><u>Trust Code of Practice</u> During the construction and operation phases of HS2 any work adjacent to the canals needs to be managed in accordance with the current Trusts Code of Practice.</p> <p data-bbox="539 1222 1424 1278"><u>Maintenance and Inspection</u> We need to agree how HS2 structures are to be inspected and maintained.</p> <p data-bbox="539 1313 1301 1369"><u>Water Levels and Headroom</u> We need to know to what level the headroom was referenced to.</p>

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	<p><u>Drainage</u> All crossings over Trust property need to be designed to ensure that water does not drip onto the canal or towpath.</p> <p><u>Air draft</u> All crossings over non-commercial waterways are to provide a minimum air draft of 3.00m and a minimum towpath clearance of 2.75m except on the Sheffield and Tinsley Canal where a minimum air draft of 3.5m and a minimum towpath clearance of 2.75m should be provided. On commercial Waterways (Aire and Calder Navigation including the Wakefield Branch) all crossings should provide a minimum air draft of 5.5m and a minimum towpath clearance of 2.75m.</p> <p><u>Access for the Trust to maintain our navigation</u> The Trust will require uninterrupted access to its assets to ensure that inspection and maintenance activities are not adversely affected. This is applicable during the construction and operational phases of HS2.</p> <p><u>Asset Resilience</u> The Trusts network in places is over 250 years old and is subject to very occasional breaches/failures which under certain circumstances could adversely affect HS2. The Trust will expect HS2 to inspect/assess its network in the vicinity of any crossing point to ensure that the construction work does not affect stability/resilience of the Trusts network. In addition HS2 will need to ensure that the risk of a breach/failure affecting HS2 during its operational phase is mitigated to an acceptable level. The Trust will expect any mitigation work to be funded by HS2, with the Trust being indemnified against any potential claim against it by HS2 or the future operators of the railway.</p>
Waterway Operation and Customer Use/Access	<p><u>Keeping the waterways open during the construction phase</u> HS2 to maintain navigation and towpath access at all times throughout construction and operation; no limitations on headroom / width etc. beyond those already in force from existing structures. Some of the Trusts towpaths are public rights of way. HS2 should consider opportunities for improvements to public access to our waterways that could arise from construction and operational accesses.</p> <p><u>Graffiti/Vandalism</u> New structures are at significant risk from graffiti and should be designed accordingly - e.g. anti graffiti measures, maintenance regimes etc. This is a major challenge for the Trust. We need to agree with HS2 what is to be done with regard to offensive/non offensive graffiti on their structures.</p> <p><u>Bird Proofing</u> - Crossings to be "bird proofed" over the full width of canal and towpath to prevent infestation with feral pigeons. This does not preclude positive roost/nest features for songbirds or bats.</p> <p><u>Recreational Users</u> The waterway corridors are used by a variety of recreational users and the impact on these users should be considered.</p>

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	<p><u>Boating.</u> Use of the waterway corridors for boating supports a number of businesses, including those providing moorings (either on or off the mainline of the waterway), boat building and repair together with boat sales, holiday and day hire and those engaged in passenger carrying. Appropriate mitigation should be employed to address issues resulting from HS2 which would affect these uses and businesses which are an important part of waterways.</p> <p>Moorings are used in a number of ways. Long –term moorings (i.e. the parking space for the boat) may be used for leisure purposes or could be someone’s primary residence i.e. a residential mooring. Even use for leisure purposes can mean that boaters spend a significant period of time at the mooring location. There are also designated visitor mooring areas i.e. an area used by boaters for mooring whilst on a cruise. In addition to these moorings the relevant waterway legislation permits casual mooring for up to 14 days at a time by any licensed boat along any length of towpath. The exceptions to this are where the towpath is designated for use by long term permit holders, the moorings are visitor moorings where the duration of stay has a specific time limit or the towpath is designated as a ‘no mooring’ stretch. Casual and visitor mooring can be undertaken by any boat regardless of how it is being used, whether it is a boater on holiday or someone for whom their boat is their primary residence. The impact of HS2 on all forms of mooring needs to be considered and addressed. Please also see our comments under noise.</p> <p><u>Fishing</u> Car parking and access for those using the waterways for fishing is important and should be safeguarded or improved. Introduction of HS2 structures within the waterway corridor is likely to increase the area of water where fishing will need to be restricted. Opportunities to underground existing overhead line crossings of the waterways may however allow some existing restricted areas to be used for fishing.</p>
Utilities	<p><u>Services on or under the Trust’s land</u> The Trust’s land includes a significant amount of utility company apparatus. This will in some instances require relocation at the cost of HS2. It includes gas, water, electricity and telecoms apparatus and private pipelines including nationally significant oil pipelines. In addition, the canal provides drainage to a large number of properties and developments. Upon detailed assessment, some of this apparatus may require relocation during the construction of HS2.</p> <p><u>Pipe Bridges</u> Pipe Bridges will need to be appropriately relocated.</p> <p><u>Overhead Lines</u> Overhead lines will need to be appropriately relocated and undergrounded wherever possible.</p>

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Heritage	<p>The Trusts historic network of waterways should be considered of high heritage value throughout. The heritage value should not be limited to the individual assets which are designated. At the strategic level, Conservation Areas, Listed Buildings and other heritage designations should lead to the early identification of those assets which are of greatest importance however, the historic interest of the waterways comprise many other non-designated structures of high heritage interest.</p> <p>It is the Trust's policy to treat all heritage assets with the same level of care and protection as those legally designated. HS2 will have a significant impact on the setting of a number of waterways and specific assets (both through visual impact and noise disturbance) and this should be acknowledged and appropriately mitigated.</p>
Biodiversity:	<p><u>Protected Species</u> We expect to see generic mitigation / improvements for key waterway corridor species that will be affected such as bats, water voles & otters.</p> <p><u>Invasive Species</u> Any Code of Construction Practice needs to include requirements for pre-construction surveys and standard control measures for the most likely invasive species.</p> <p><u>Vegetation Management</u> The scale of vegetation management is likely to be extensive. This means that creation of compensation areas in advance to address construction and operational impacts will be important. The timing of clearance work will be essential (for instance to avoid impacts on nesting birds). The Trust would be concerned if compensation and landscaping were to be confined to the construction footprint, which will make advance mitigation almost impossible.</p> <p><u>Habitat Loss</u> Any habitat compensation within the water on the non-towpath side of the waterway should consider appropriate habitats for fish.</p>
Environmental Enhancement	<p><u>Routewide Consideration of Enhancements</u> At a corridor scale, HS2 will create opportunities for new wildlife connections. The Trust can provide opportunities for compensatory habitat and connections to offset any unavoidable losses from construction (as we are doing for Crossrail).</p> <p><u>Creation of an "isolated fringe" where land take is offset from the Canal</u> The Trust would be prepared to take on the ownership / management of an offside fringe where it is cut off by HS2 landscaping (e.g. Wormleighton in Phase 1). We would also be interested in discussions on the future management and use of the landscaping areas adjoining our waterways where there may be opportunities for recreational use or positive management by the Trust.</p>

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<p>Water Quality and Resource</p>	<p><u>Pollution Control during construction and from operational drainage</u> This needs to be controlled to ensure that pollution of our waterways does not occur. We will also require specific protective measures. We would expect oil and silt traps as a standard, along with other measures such as filtering reed beds and/or pollution control valves. Please also see comments under contamination.</p> <p><u>Impacts on Water Flows in our canals</u> There should be no interruption of supply during construction or operation. Any interruption of supply would need to be reviewed to protect wildlife, customers and abstractors.</p> <p><u>Surface water discharges (SWDs)</u> Where SWDs come into the canal directly or via balancing ponds, these need to be assessed by the Trust to determine whether they would be acceptable. The process for this consent is contained in our current Code of Practice for Works affecting the Canal & River Trust. We will not use EA "Greenfield Attenuation" levels but make our own assessment of the impact of new or increased discharges to our system. In addition the Trust would need to be satisfied that the capacity and effect on any Trust structure affected by a SWD not connected to the canal, was properly assessed. Compensatory measures may be required.</p>
<p>Waste, Hazardous Materials Use and Storage</p>	<p><u>Control of Hazardous Substances and Waste</u> Any Code of Construction Practice should address this matter.</p>
<p>Contaminated Land</p>	<p><u>Previous Trust Experience</u> Our greatest concern is about mobilising or pumping of contaminated water into surface watercourses/the canals. Our experience elsewhere (Olympics / Crossrail) identifies the need for any Code of Construction Practice to require contractors to carry out adequate testing on all groundwater or surface water at risk of contamination before pumping it or allowing it off their site. We would strongly urge any Code of Construction Practice to state that no water from excavations, surface or ground water may be discharged without analysis demonstrating it is not contaminated. Where groundwater is contaminated, any proposed remediation prior to discharge should be agreed with the Trust.</p>
<p>Nuisance</p>	<p><u>Noise</u></p> <p>The Trust is very concerned about noise disruption in quiet rural areas blighting sections of the waterway. As a minimum, all parts of the waterway network should be protected as "Quiet" areas in any Code of Construction Practice. Noise protection on viaducts is not as effective as earth structures at reducing the noise contours, so there is a disproportionate impact on waterways at crossing points. Noise protection should be provided to reduce the impact on the waterway corridors (please also see our comments below on casual mooring) not only during the construction phase but also in the operational phase.</p> <p>Noise disruption will be frequent and continues for large parts of the day which will be intolerable for mooring sites. The Trust will require the waterways to be treated as residential areas but allowing for the lower sound insulation provided by the shell of a boat compared to a house. Mitigation for boats off Trust waterspace should be discussed with the operators/owners of the mooring sites.</p>

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	<p>Moorings are used in a number of ways. Long –term moorings (i.e. the parking space for the boat) may be used for leisure purposes or could be someone’s primary residence i.e. a residential mooring. Even use for leisure purposes can mean that boaters spend a significant period of time at the mooring location. There are also designated visitor mooring areas i.e. an area used by boaters for mooring whilst on a cruise. In addition to these moorings the relevant waterway legislation permits casual mooring for up to 14 days at a time by any licensed boat along any length of towpath. The exceptions to this are where the towpath is designated for use by long term permit holders, the moorings are visitor moorings where the duration of stay has a specific time limit or the towpath is designated as a ‘no mooring’ stretch. Casual and visitor mooring can be undertaken by any boat regardless of how it is being used, whether it is a boater on holiday or someone for whom their boat is their primary residence. The impact of HS2 on all forms of mooring needs to be considered and addressed.</p> <p><u>Lighting</u> It is likely that there will be little lighting associated with the development. Lighting will however be required at some canal crossings, especially where significant "underpasses" are being created either by HS2 alone or in combination with existing structures. In these circumstances there will need to be sensitive lighting design to provide safety and improve the public space while not affecting wildlife which may be deterred by bright lights or adversely affecting customers.</p> <p><u>Vibration</u> There is potential for the effects of vibration to impact on our network and customers. The Trust is particularly concerned about the adverse effects of vibration on its c 250 year old network.</p> <p><u>Odour/Smoke/Dust</u> Construction and operational impacts should be addressed in any Code of Construction Practice.</p>
Landscape	<p>Bridges over waterways have a strong impact on the character of a waterway corridor, forming landmarks and often defining waterway character lengths. It is therefore critical that any new major bridging structure makes a positive contribution to the waterway corridor, and also the wider associated waterway landscape. The pace of travel along waterways either by boat or on foot is slow and, as a consequence, the approach to structures is also slow and carefully observed, possibly more so than in other transport corridors. As a result, any proposed structures set within the landscape, and the quality of any proposed structure when seen from below, is subject to significant scrutiny, and all elements and faces of the structure’s design and finish subsequently need to be of an appropriately high quality.</p> <p>In addition the bridge holes created by the proposed HS2 bridges (the space below the span) need to be positive spaces rather than difficult, dead spaces which, experience has shown, can become vandal havens, attracting graffiti and anti-social behaviour, and deterring the positive public use of the historic waterway network. These impacts upon the public amenity of the canal network also create a management and maintenance liability for the Trust.</p> <p>The Trust considers that the design and construction of the HS2 bridge structures should showcase the best in contemporary 21st Century architecture and engineering, creating structures that contribute positively to the multiple layers of transport history</p>

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	<p>that are evident along the canal corridor. However, we would expect that each crossing will be subject to careful individual assessment and consideration to establish the subtlety of the design response to the individual crossing points. The Trust believes that creative, elegant use of the elevations, piers, soffits, decks, towing paths and other surfacing, lighting etc. can create crossings appropriate for their setting. Care will also need to be taken to ensure the proportions of the structures are considered in the context of the waterway corridor, therefore consideration needs to be given to the aesthetics derived from the relationship of span, deck depth, pier size, etc.</p> <p>We also anticipate that art can be successfully employed to help provide interest, and to tell the story of the waterways and would expect a “percent for art” contribution to be adopted by HS2. The Trust have produced a Design Principles Document (which will be provided to HS2 Ltd) to establish appropriate design approaches to HS2 Canal crossings. The Design Principles have been established within the design language of HS2, and to reflect the character of each waterway area and the story of each canal, and to meet our expectations for high quality structures and spaces.</p> <p>With regard to the visual impact of the crossing points, the Trust strongly believes that further soft landscaping measures should also be employed to reconcile the new crossing structures into the waterway corridor, and the wider landscape, and mitigate the visual impact of any new structures. The implementation of structure planting carefully designed and positioned to provide an oblique, framing buffer to the bridge crossings, could be employed to further exploit the linear nature of views within the waterway corridor. This could be a useful device in narrowing the visual field and therefore reducing the impact of adjacent or approaching railway infrastructure. This structural planting could also assist in blending the new crossings into the existing landscape, by responding to local field patterns and local hedge and woodland species mixes. Site by site assessments, and subsequent proposals, are once again required to ensure local appropriateness, with early planting works undertaken to establish a robust landscape structure, ideally to help screen construction and certainly to form a screen upon completion of HS2 major works.</p>
<p>Socio-Economics and Restoration</p>	<p><u>Impact of HS2 development on waterway socio-economic context.</u></p> <p>The inland waterways of England and Wales provide many benefits; social (including health), economic and environmental. The provision of socio-economic benefits varies from waterway to waterway, ranging from minor to highly significant. It is the Trust’s aim to ensure that the wider uses for and dividends from the waterways are understood so that their potential to add value and help deliver objectives at the national, regional and local level is realised.</p> <p>In particular, the promotion of public health and wellbeing is becoming an ever more important aspect of policy across local and national government. It is acknowledged that fostering a physically and mentally healthy population leads to higher levels of both labour force participation and productivity, whilst also reducing health service and social security costs. Whilst there are many aspects of health promotion, the availability of high quality green/blue spaces such as those provided by waterway corridors has assumed increasing importance in recent years. They can act as an easily accessible multi-functional health asset encouraging people to take more exercise, feel more confident about their community and provide a peaceful environment that can offer a real alternative to undertaking journeys by car or bus.</p>

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	<p>The Trust therefore considers that inland waterways make a valuable contribution to socioeconomic outcomes including measurable benefits to people's quality of life. They provide recreation, transport and land drainage. They act as a focus for the regeneration of waterside areas. They provide an important environmental, landscape and heritage resource. Such quality of life benefits can be expressed and analysed in terms of ecosystems services delivered. Unlike the expenditure by visitors and the resultant employment generated, these ecosystems services represent real increases in people's welfare, rather than a spatial redistribution of benefits.</p> <p>The generation of a wide range of socio-economic benefits - and latent benefits in the restoration of canals – has been demonstrated by research conducted on the existing network and previously completed restorations.</p> <p>Any work to be done in relation to the socioeconomic impact of HS2 should consider the existing navigable waterway network and also prospective canal restoration projects that are impacted by the project. By doing this, we believe that any such work would more adequately assess any impact on existing benefits and those to be provided by restored canal lengths that are impacted by HS2.</p>
Reservoirs	<p>On the Leeds line, impact on the Erewash Valley from a breach at Moorgreen Reservoir should be considered.</p> <p>On the Manchester line, breach flows from Belvide, Gailey (Upper and Lower) or Calf Heath Reservoirs would pass down the Penk and Sow to the Trent but do not cross the line for 37 km.</p>

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Consultation Questions

Question (i) Do you agree or disagree with the Government's proposed route between the West Midlands and Manchester as described in Chapter 7? This includes the proposed route alignment, the location of tunnels, ventilation shafts, cuttings, viaducts and depots as well as how the high speed line will connect to the West Coast Main Line.			Issues/comments	Without prejudice potential suggested mitigation/opportunities
Routewide Response			No objections in principle but changes will be required to mitigate the effects on the Trust's waterways.	Please see comments below.
Area Specific Responses				
Location	HS2 ref	HS2 Chainage Approx.		
Trent and Mersey Canal	HSM03 Fradley to Swynnerton Route section HSM03 plan and profile sheet 1 of 7	Where in proximity to the canal corridor	(1) Visual impact on users of the canal corridor. It is identified in the Sustainability Statement E1 - Landscape, Townscape and Visual that the alignment would be visible from the marina on the Trent and Mersey Canal at Rileyhill i.e. Kings Bromley Marina.	(1) Assess impact on users of the canal corridor and mitigate accordingly. Please refer to our Design Principles Document which will be provided to HS2 Ltd.
			(2) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(2) Please refer to our routewide comments on noise.
			(3) Impact on moorings. There are a number of moorings in the area between Fradley Junction and Kings Bromley Marina, including Trust operated moorings. It is identified in the Sustainability Statement Appendix E1 - Landscape, Townscape and Visual that the alignment would be visible from the marina on the Trent and Mersey Canal at Rileyhill, i.e. Kings Bromley Marina.	(3) Please refer to our routewide comments on noise.

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			<p>There are Trust visitor moorings in the area of Shadehouse Lock.</p> <p>Please refer to our routewide comments on Boating and Noise</p>	
Trent and Mersey Canal, Great Haywood	HSM03 Fradley to Swynnerton Route section HSM03 plan and profile sheet 3 of 7	17+380	<p>(1) Impact on Heritage - impact on the Trent and Mersey Canal Conservation Area. This is also identified as a major impact in the Sustainability Statement Appendix E2 – Built Heritage and referenced in the Sustainability Statement Volume 1.</p>	<p>(1a) Extending the viaduct to the existing railway reduces the visual impact and allows for mitigating planting. Wider landscape mitigation should be used to frame views and reduce visual impact from the canal corridor. Please refer to our Design Principles Document which will be provided to HS2 Ltd; and</p> <p>(1b) Mitigation taking the form of compensation by way of sensitive repair and restoration works to heritage structures in the canal corridor.</p>
			<p>(2) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.</p>	<p>(2) Please refer to our routewide comments on noise.</p>
			<p>(3) Visual Impact on users of the canal corridor.</p>	<p>(3) Extending the viaduct to the existing railway reduces the visual impact and allows for mitigating planting. Wider landscape mitigation should be used to frame views and reduce visual impact from the canal corridor. Please refer to our Design Principles Document which will be provided to HS2 Ltd.</p>
			<p>(4) Impact on moorings. There are a number of moorings in the area between Haywood Junction and Bridge 78 on the Trent and Mersey Canal. The visual and noise impact on</p>	<p>(4a) Please refer to our routewide comments on Noise.</p> <p>(4b) For the impact on Great Haywood marina,</p>

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			<p>Great Haywood marina is identified in the Sustainability Statement Volume 1 and Appendix E1 - Landscape, Townscape and Visual). There may also be loss of capacity at the marina due to the proposed embankment adjacent to the existing railway. The existing HS2 mapping is inconsistent as the marina is not shown on the Residential Airborne Noise Appraisal without and with additional mitigation map drawing references WL - 02-01N and WL-02-02-N.</p> <p>There are also Trust visitor moorings in the vicinity of Haywood Junction. This is a popular area for casual towpath mooring. Please refer to our routewide comments on Boating and Noise</p>	mitigation should be discussed with the owner and operator of the site.
			(5) Impact on Biodiversity. There are otter records around Haywood Junction and bat records along the canal.	(5) For information.
Middlewich Branch – Shropshire Union Canal West of Middlewich	HSM10 Hough to Winterbottom Route section HSM10 plan and profile sheet 3 of 6	16+450 and any chainage where wider views of the line from the canal can be obtained.	(1) Impact on Assets. The line is shown to be on an embankment across the line of Shropshire Union Canal (Middlewich Branch). Navigation and towpath access need to be maintained and the provision of an embankment as illustrated would prevent this. This is not acceptable to the Trust.	(1) Avoid the use of an embankment over the canal. Any canal crossing should accord with our routewide comments on Air Draft and Permanent Works on Trust Property.
			(2) Visual Impact on users of the Shropshire Union Canal. This is identified in the Sustainability Statement Volume 1 and Appendix E1 - Landscape, Townscape and Visual. There is however inconsistency with the Plan and Profile sheet as Appendix E1 refers to a viaduct crossing of the canal. At the crossing point the embankment will appear as an incongruous feature in the landscape, especially on the non-towpath side of the canal where there is no hedgerow along the canal corridor.	(2) The embankment shown on the drawings will have to be replaced to allow for navigation and towpath access. Replace the embankment with an open landscape bridge solution over the waterway corridor. The visual impact could possibly be reduced by block planting to frame views out of the canal corridor. Please refer to our Design Principles Document which will be provided to HS2 Ltd.
			(3) Impact on Biodiversity. Appropriate surveys for badgers should be undertaken in this area.	(3) For information.

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			(4) Impact on Heritage - impact on the setting of the Grade II listed Hughes Bridge. This is identified in the Sustainability Statement Appendix E2 - Built Heritage where the impact is stated as being negligible. We consider that this should be reviewed.	(4) The impact on setting of the listed bridge could possibly be reduced by block planting to frame views out of the canal corridor. Please refer to our Design Principles Document which will be provided to HS2 Ltd.
			(5) Impact on moorings. There are moorings along the offside of the canal. There are Trust visitor moorings in this area between canal bridges 26 and 24. Please refer to our routewide comments on Boating and Noise.	(5a) Please refer to our routewide comments on noise. (5b) Mitigation should be discussed with the operator of the moorings.
			(6) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(6) Please refer to our routewide comments on noise.
Trent and Mersey Canal Bostock	HSM10 Hough to Winterbottom Route section HSM10 plan and profile sheet 4 of 6	19+450 and any chainage where wider views of the line from the canal can be obtained.	(1) Impact on Assets. The Route HSM10 Plan and Profile Sheet 4 of 6 show the crossing of the Trent and Mersey Canal on a viaduct and part embankment. Navigation and towpath access (including the Cheshire Ring Canal Walk) must be maintained. The embankment would block the canal and the headroom for navigation/towpath access related to the viaduct is questionable at this crossing. This is not acceptable to the Trust. The canal is on an embankment on the side of the valley at this location and the Trust is concerned that construction works in the vicinity could potentially de-stabilise this embankment.	(1) Any canal crossing should accord with our routewide comments on Air Draft, Permanent Works on Trust Property and Asset Resilience.
			(2) Impact on moorings. There are Trust moorings at Croxton Lane (in the vicinity of GR: 369444-367100). There are Trust owned visitor moorings in the vicinity of the crossing on the non-towpath side of the canal. The location of the visitor moorings (Bramble Cut) has been adopted by a Boat Club. This is a popular location for casual mooring. In addition there are marinas under construction at GR: 368300-371120 and 368240-371700. Please refer to our routewide comments on Boating and Noise.	(2) Please refer to our routewide comments on noise.

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			(3) Impact on Heritage - impact on the Trent and Mersey Canal Conservation Area. This is also identified as a major impact in the Sustainability Statement Appendix E2 – Built Heritage and referenced in the Sustainability Statement Volume 1. There is an unlisted heritage asset Hell’s Kitchen Bridge in the vicinity of the crossing.	(3a) The impact on the setting of the Conservation Area could probably be reduced by increasing the towpath hedgeline and some screen/block planting; and (3b) Mitigation taking the form of compensation by way of sensitive repair and restoration works to heritage structures in the canal corridor.
			(5) Impact on Biodiversity. The skewed crossing can impact on canal habitat.	(5) Assess and mitigate appropriately.
			(6) Visual impact on users of the Trent and Mersey Canal. This is identified in the Sustainability Statement Volume 1 and Appendix E1 - Landscape, Townscape and Visual.	(6) Visual impact could probably be reduced by increasing the towpath hedgeline and some screen/block planting. The impact could be reduced if the viaduct structure is attractive. Please refer to our Design Principles Document which will be provided to HS2 Ltd. The crossing area will require a bespoke solution informed by the design principles document given the unusual nature of the landform at either side of the canal i.e. the canal forms part of a wooded embankment.
			(7) Impact on Assets and Water Quality. There is a nearby deep salt - cavern landfill. Impact on the cavern could create subsidence or new pathways which could affect the inland waterways.	(7) Avoid impact on the deep-salt cavern landfill which would create subsidence or new pathways which could adversely impact the inland waterways.
			(8) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(8) Please refer to our routewide comments on noise.
			(9) Impact on Land. There appears to be a minor encroachment on to Trust property north of the crossing point.	(9) Avoid Trust land. Please refer to our routewide comments on Permanent Works on Trust Property.
Rochdale and Ashton Canals Piccadilly	HSM26 Ardwick to Manchester Piccadilly Route	1+471	(1) The HS2 development is a catalyst for wider development around the canal corridor. Please see our response to Manchester City Council's recent consultation on The HS2 Manchester Piccadilly Strategic Regeneration Framework (Appendix 1).	(1) Please see our response to Manchester City Council's recent consultation on The HS2 Manchester Piccadilly Strategic Regeneration Framework (Appendix 1)

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	section HSM26 plan and profile sheet 1 of 1			
Leeds and Liverpool Canal Leigh Branch Line and infrastructure depot between the canal and Golborne	HSM22 Lowton to Bamfurlong Route section Plan and Profile Sheet 1 of 2 and Plan and Profile Sheet 2 of 2 plus RSMD Golborne Plan and Profile sheet 1 of 2 and Plan and Profile sheet 2 of 2.	1+400 to 5+512.7	(1) Visual Impact on users of the Leigh Branch of the Leeds & Liverpool Canal. This is also identified in the Sustainability Statement Volume 1 and Appendix E1 - Landscape, Townscape and Visual.	(1) The scheme should seek to reduce the visual impact, through structural landscape planting avoiding the adjacent SSSI and also complementary to the SSSI. Abram Flashes SSSI partly lies between the canal and the line/the Golborne RSD. The Sustainability Statement Appendix 4 - Biodiversity acknowledges potential impact on this SSSI with potential mitigation including "sensitive planting to buffer the SSSI". It goes on to recognise that "this should also seek to address the major impacts on visual amenity identified for users of the Leeds Liverpool Canal". This is a potential candidate for advanced mitigation works. The wooded strip abutting the towpath will require supplementary planting and an ongoing management strategy to ensure the longevity of the vegetation as a visual buffer between the canal and the depot.
		and		
		0+800 to 4+331		
			(2) Impact on Assets. The indicative location of the access road to the Golborne maintenance depot is shown to be off the A573. The impact of construction and operational traffic on the Trust owned Plank Lane Lift Bridge, which carries Plank Lane over the Leigh Branch of the Leeds & Liverpool Canal (GR: 363107 - 399684) should be assessed.	(2) Mitigation should seek to appropriately address any impact identified.
			(3) Impact on Assets. This area has been subject to mining subsidence and the embankment supporting the Leigh Branch of the Leeds and Liverpool canal have been raised over the years to accommodate this leading to an over deep canal. The Trust is concerned that construction of HS2 and the maintenance depot could have an adverse effect on these embankments.	(3) Please see our routewide comments on Asset Resilience and Vibration.

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			(4) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(4) Please refer to our routewide comments on noise.
			(5) Impact on moorings. A third party has constructed waterspace to form a marina GR: 363159 – 399681. It may not be apparent that this is intended to be a marina. Please refer to our routewide comments on Boating and Noise	(5) For information.

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Question (ii) Do you agree or disagree with the Government’s proposals for:

a. A Manchester station at Manchester Piccadilly as described in Chapter 7 (sections 7.8.1 – 7.8.7)?

Response: The HS2 development is a catalyst for wider development around the canal corridor. Please see our response to Manchester City Council’s recent consultation on The HS2 Manchester Piccadilly Strategic Regeneration Framework (Appendix 1). The HS2 Manchester Piccadilly Strategic Regeneration Framework has the potential to unlock the city centre canal network and transform it into a high quality leisure and sustainable transport asset. The Trust therefore has no objections to the station.

b. An additional station near Manchester Airport as described in Chapter 7 (sections 7.6.1 – 7.6.6)?

Response: The Trust has no objection to the location currently shown.

Question (iii) Do you think that there should be any additional stations on the western leg between the West Midlands and Manchester?

Response: The Trust would only have a view on this matter if the stations’ location could have an adverse effect on the Trust’s waterways or those proposed for restoration.

Question (iv) Do you agree or disagree with the Government’s proposed route between West Midlands and Leeds as described in Chapter 8? This includes the proposed route alignment, the location of tunnels, ventilation shafts, cuttings, viaducts and depots as well as how the high speed line will connect to the East Coast Main Line.	Issues/comments	Without prejudice potential suggested mitigation/opportunities
Routewide Response	The Trust disagrees with the route as proposed. In the Woodlesford area the impact on the waterway network is possibly the greatest adverse impact seen throughout both HS2 phase 1 and phase 2. The route as currently detailed would also prejudice two extremely well advanced canal restoration projects, along with the potential to restore two other canals in the future. Furthermore the waterway network is significantly adversely affected in other locations such as the Erewash Canal at Sandiacre, the Sheffield and Tinsley Canal at Meadowhall and the Aire and Calder Navigation in central Leeds.	Revise the alignment/associated structures to address the issues highlighted at the specific interfaces identified below.

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Area Specific Responses				
Location	HS2 ref	HS2 Chainage Approx.		
Birmingham and Fazeley Canal	HSL01 Marston to Birchmoor Route section HSL01 plan and profile sheet 1 of 2	Where in proximity to the canal corridor	(1) There are moorings on the Birmingham and Fazeley Canal between lock 2 and lock 11, including Trust moorings. The canal runs on the north western side of the M42. There are also Trust visitor moorings. Please refer to our routewide comments on Boating and Noise	(1) Please refer to our routewide comments on noise.
			(2) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(2) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.
Coventry Canal Polesworth	HSL06 Birchmoor to Tonge Route section HSL06 plan and profile sheet 1 of 5	2+500	(1) Visual Impact on users of the Coventry Canal. This is identified in the Sustainability Statement Appendix E1 - Landscape, Townscape and Visual.	(1) To reduce the visual impact of the crossing it should be designed in accordance with our design principles. Please refer to our Design Principles Document which will be provided to HS2 Ltd.
			(2) Impact on Heritage – impact on an undesignated heritage asset, a Mile post, 250m from Bridge 55 (the M42 crossing) of the Coventry Canal which appears to be affected.	(2) To reduce the impact on this milepost the scheme should be designed to accommodate it at this location.
			(3) Impact on moorings. There are a number of moorings in the vicinity of the crossing. The Trust does not own the lay-by waterspace/moorings directly affected by the crossing. It appears that there will be impact on access to the lay-by moorings. Please refer to our routewide comments on Boating and Noise.	(3) Please refer to our routewide comments on noise. (3a) For the lay-by moorings mitigation should be discussed with the owner and operator of the site.
			(4) Impact on Biodiversity. There are a lot of mature, possibly veteran trees nearby and likely bat roosts.	(4) Assess and mitigate appropriately.
			(5) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(5) Please refer to our routewide comments on noise.

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Ashby Canal (Restoration Project) Measham	HSL06 Birchmoor to Tonge Route section HSL06 plan and profile sheet 3 of 5	13+550	<p>(1) Impact on a canal restoration project. At chainage 13+600 (approx) the proposed route passes over the proposed line of the Ashby Canal. The canal is proposed for restoration at this point as part of the wider Ashby Canal restoration scheme. Part of the wider scheme benefits from a Transport and Works Act Order (2005) for the restoration of the section of the canal to Measham. In addition there is also a section of canal in existence at Moira which is north of the crossing point. That section of the canal is associated with the Conkers Discovery Centre and the National Forest.</p> <p>The restoration of the canal is subject to a saved policy in the North West Leicestershire Local Plan (adopted 2002) which seeks to prevent development which would prejudice the re-opening of Ashby Canal. HS2 and its associated structures currently prejudice the restoration scheme as HS2 crosses the canal alignment on an embankment. This is not acceptable to the Trust.</p>	<p>(1) Avoid the use of an embankment. The crossing of the line of the restoration scheme should be designed to the satisfaction of Leicestershire County Council/North West Leicestershire District to maintain the required canal level and headroom under HS2 in accordance with the Canal & River Trusts requirements for a broad canal.</p>
			<p>(2) Potential impact on a Restoration Project. It is proposed that the A42 will be re-aligned to facilitate the proposed HS2 route. A restored Ashby Canal needs to pass beneath the A42. The re-aligning of the A42, as part of the HS2 project, offers the opportunity for this to be achieved as part of the HS2 project.</p>	<p>(2) Provide the infrastructure to allow for a restored Ashby Canal and towpath to pass beneath the A42.</p>
			<p>(3) Impact of Noise on the wider proposed waterway corridor. Although this is not a Trust Waterway at the affected location please refer to our routewide comments on noise.</p>	<p>(3) Please refer to our routewide comments on noise in relation to this proposed waterway corridor.</p>
River Soar Navigation Ratcliffe	HSL09 Tonge to Long Eaton Route section HSL09 plan and profile	9+250	<p>(1) Significant visual impact on users of the River Soar navigation. An impact is identified in the Sustainability Statement Appendix E1 - Landscape, Townscape and Visual.</p>	<p>(1) To reduce the visual impact of the crossing it should be designed in accordance with our design principles. Please refer to our Design Principles Document which will be provided to HS2 Ltd.</p>

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	sheet 2 of 3		(2) Impact on Heritage – impact on undesignated heritage assets in the form of towpath bridges in the vicinity of the crossing.	(2) Avoid placing the viaduct piers in a manner that would adversely affect the towpath bridges.
			(3) Impact on moorings. The moorings in the vicinity of the site are not owned or managed by the Trust having the benefit of riparian mooring rights. Please refer to our routewide comments on Boating and Noise.	(3) Mitigation should be discussed with the operators of these moorings
			(4) Impact on a marina proposal. A planning appeal is awaiting determination for a 553 berth leisure marina at Redhill Marina with a site area in excess of 20 hectares. This major development has not been recognised in the Sustainability Statement.	(4) If the planning appeal is allowed HS2 to work with the affected developer to determine how potential impacts might best be managed and how potential opportunities could be realised and maximised as set out in the Sustainability Statement.
			(5) Impact of noise on the wider waterway corridor. Please refer to our routewide comments on noise.	(5) Please refer to our routewide comments on noise
			(6) Impact on Biodiversity. The river is a County Wildlife site at this location. There are recent records of otter.	(6) For information.
Cranfleet Cut Upper Trent Navigation	HSL09 Tonge to Long Eaton Route section HSL09 plan and profile sheet 2 of 3	11+500	(1) This crossing crosses the Cranfleet Cut of the Upper Trent Navigation not the Trent and Mersey Canal as specified in HS2 documentation.	N/A
			(2) Impact on Heritage - impact on the setting of Cranfleet Bridge and Cranfleet Lock. Both are Grade II Listed Structures. These are identified in the Sustainability Statement Appendix E2 - Built Heritage. Full assessment of the impact on these listed structures is required.	(2) It may be that damage to the settings of these structures is unavoidable. Mitigation could possibly take the form of compensation by way of sensitive repair and restoration works to the structures.
			(3) Visual impact on users of the Cranfleet Cut. This is identified in the Sustainability Statement Volume 1 and Appendix E1 - Landscape, Townscape and Visual.	(3) Reduce the impact on the canal corridor by block planting to frame views. Species should be selected that are appropriate to the floodplain environment and to enhance the biodiversity. Please refer to our Design Principles Document which will be provided to HS2 Ltd.

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			(4) Impact on moorings. There are Trust moorings in the vicinity of the crossing. There are also moorings operated by another party subject to an agreement with the Trust. There are Trust operated visitor moorings in the area. Please refer to our routewide comment on Boating and Noise.	(4) Please refer to our routewide comments on noise.
			(5) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(5) Please refer to our routewide comments on noise
Erewash Canal Toton Station and Southern crossing of the Erewash Canal north of Sandiacre and part of the route running parallel with the canal	HSL12 Long Eaton to Trowell Route section HSL12 plan and profile sheet 1 of 2 and Route section HSL12 plan and profile sheet 1 of 2	0+500 to 4+140	(1) Impact on Assets. Heading north the line goes onto an embankment after chainage 3771.9 (approx). This embankment is in close proximity to the by-wash channel for Pastures Lock which is integral to the functioning of the Canal. The presence of the embankment may cause run-off issues that could affect the canal and would probably limit access for maintenance.	(1a) Avoid the use of an embankment in this location. A viaduct is preferable; and (1b) Avoid adversely affecting access for maintenance of the canal infrastructure. Please see our routewide comments on Access for the Trust to maintain our navigation.
			(2) Visual Impact on users of the Erewash Canal and Impact on Landscape character. This is also identified in the Sustainability Statement Volume 1 and Appendix E1 - Landscape, Townscape and Visual. The vistas from the canal corridor including the lock area where additional time is spent whilst navigating are particularly impacted by the presence of the embankment adversely impacting on the open landscape character of the canal at this location. The embankment eradicates long views of Sandiacre, including the church, from the canal corridor. Existing vegetation at the boundary between the station operational area and the canal should be maintained.	(2a) Avoid the use of an embankment in this location. A viaduct is preferable. A viaduct would preserve the existing wet meadow habitat which is an important landscape character type locally. Given the highly skewed alignment of the HS2 crossing over the canal it is likely that a bespoke design solution for the crossing will be required to minimise the depth of the bridge deck and to ensure supporting structures sit comfortably in the canal corridor; and (2a) Supplementary planting and an ongoing management strategy for the vegetation between the canal and the station operational area is required to ensure the longevity of the vegetation as a visual buffer.
			(3) Impact on Heritage - impact on the setting of Red Brick Bridge a Grade II Listed Structure. This is also identified in the Sustainability Statement Appendix E2 - Built Heritage. Full assessment of the impact on this listed structure is required. The bridge would be surrounded by railways	(3) It may be that damage to the setting of these structures is unavoidable. A viaduct is preferable. Mitigation could possibly take the form of compensation by way of sensitive repair and restoration works to the structures.

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			damaging its setting and character. Pastures Lock is also a non-designated Heritage Asset. The presence of the embankment would damage its setting and character.	
			(4) Impact on moorings. There are moorings on the Erewash Canal mainly end of garden moorings (long-term moorings at the end of a residential curtilage) and moorings on a private canal arm formerly the Derby and Sandiacre Canal. There are Trust Visitor moorings in the vicinity.	(4) Please refer to our routewide comments on noise.
			(5) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise	(5) Please refer to our routewide comments on noise
			(6) Impact on Assets. The construction boundary for the station appears to include the Erewash Canal. This is unacceptable as the Erewash Canal is an operational asset that needs to remain open at all times.	(6) Relocate the construction boundary to avoid the canal.
			(7) Impact on Biodiversity. The canal is a County Wildlife Site for the aquatic and marginal vegetation, which is good on the west bank of the canal in this section. There are records of water vole in this area. Impact on the ecology will need to be assessed for both the construction phase and the effects of long term shading.	(7) Assess and mitigate appropriately.
Erewash Canal Northern crossing of the Erewash Canal north of Sandiacre and part of the route running parallel with the canal	HLS13 Trowell to Killamarsh Route section HSL13 plan and profile sheet 1 of 7	0+000 to 0+300	(1) Impact on Assets. For a short distance from chainage 0+000 the line is on an embankment. This embankment appears to encroach onto the by-wash channel for Pastures Lock which is integral to the functioning of the Canal. It also encroaches into the Erewash Canal affecting navigation. This is not acceptable to the Trust. The presence of the embankment may cause run-off issues that could affect the canal and would probably limit access for maintenance. .	(1a) Avoid the use of an embankment in this location. Any works should be designed in accordance with our routewide comments on Permanent Works on Trust Property. A viaduct is preferable; and (1b) Avoid adversely affecting access for maintenance of the canal infrastructure. Please see our routewide comments on Access for the Trust to maintain our navigation.
			(2) Visual Impact on users of the Erewash Canal and Impact on Landscape character. This is also identified in the Sustainability Statement Volume 1 and Appendix E1 - Landscape, Townscape and Visual. The vistas from the	(2) Avoid the use of an embankment in this location. A viaduct is preferable. A viaduct would preserve the existing wet meadow habitat which is an important landscape character type

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			canal corridor including the lock area where additional time is spent whilst navigating are particularly impacted by the presence of the embankment adversely impacting on the open landscape character of the canal at this location. The embankment eradicates long views of Sandiacre, including the church, from the canal corridor.	locally. Given the highly skewed alignment of the HS2 crossing over the canal it is likely that a bespoke design solution for the crossing will be required to minimise the depth of the bridge deck and to ensure supporting structures sit comfortably in the canal corridor.
			(3) Impact on Heritage – impact on the setting and character of Pastures Lock, a non-designated Heritage Asset. The presence of the embankment would damage its setting and character.	(3) It may be that damage to the setting of this structure is unavoidable. Mitigation could possibly take the form of compensation by way of sensitive repair and restoration works to the structure.
			(4) Potential impact on Assets. As a result of HS2 it is proposed that the M1 will need to be re-aligned. The M1 crosses the Erewash Canal at GR:363107 - 399684 and this crossing is shown to be affected by the indicative re-alignment. Navigation and towpath access will need to be maintained with the opportunity to ensure that best practice is employed on any new crossing. Please refer to our routewide comments on Impact on our Assets.	(4) Re-instate the M1 crossing of the Erewash canal with navigation and towpath access maintained in accordance with our routewide comments on Impacts on our Assets. There is the opportunity to employ best practice in terms of waterway crossings. Please refer to our Design Principles Document which will be provided to HS2 Ltd.
			(5) Impact of noise on the wider canal corridor. Please refer to our routewide comments on noise.	(5) Please refer to our routewide comments on noise
			(6) Impact on Biodiversity. The canal is a County Wildlife Site for the aquatic and marginal vegetation, which is good on the west bank of the canal in this section. There are records of water vole in this area. Impact on the ecology will need to be assessed for both the construction phase and the effects of long term shading.	(6) Assess and mitigate appropriately.
Nottingham Canal (former canal) Trowell	HLS 13 Trowell to Killamarsh Route section HSL13 plan and profile sheet 1 of 7	2+150	(1) Impact on a former canal. The HS2 line passes over the disused Nottingham Canal on an embankment. This would prevent any future restoration of the canal. There are public rights of way on both sides of the canal at the crossing location. The Sustainability Statement Appendix E7 - Access at 5.1.8 states that “HS2 Ltd would aim to avoid stopping up existing rights of way where possible,	(1) Avoid the use of an embankment and replace it with a viaduct which enables a navigable channel and towpath of acceptable dimensions to be achieved as well as accommodating the public rights of way on either side of the canal; or (2) Accommodate a canal line of navigable

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			and to maintain access across the railway through the on-going design. This would involve working with local people, local authorities and relevant organisations to determine the best way of achieving this where feasible. A detailed appraisal of all access crossing will be undertaken as part of the EIA". With provision for public rights of way on both sides of the canal there is the opportunity to avoid impact on the channel and towpath of the Nottingham Canal by incorporating a navigable crossing into the design which accommodates the public rights of way thereby safeguarding the canal for any future restoration.	dimensions within the proposed re-alignment of the A609.
Chesterfield Canal, (restoration project) Staveley Maintenance Depot	Staveley Infrastructure Maintenance Depot Staveley IMD plan and profile sheet 1 of 2 & Staveley IMD plan and profile sheet 2 of 2	Please see the details in the issues box.	<p>(1) Impact on a canal restoration project. The Chesterfield Canal runs for 46 miles from the River Trent at West Stockwith Nottinghamshire to the middle of Chesterfield, linking Nottinghamshire, South Yorkshire and Derbyshire. The canal is not currently navigable from end to end although the entire route can be walked on the towpath known as The Cuckoo Way.</p> <p>There are only 8 miles of the canal left to restore by the Chesterfield Canal Partnership. Although the restoration of the canal is recognised in the Sustainability Statement Volume 1 this contains inaccuracies and the recognition is not consistent. Please refer to our response to question (vii).</p> <p>This restoration project, like other canal restoration projects, has not proceeded sequentially. It is significant that the 8 miles of canal that remain to be restored will link other restoration work which has already been undertaken. The restoration of the canal has been a long term project and since 1989, 12 miles of the canal have been restored along with 36 locks and 11 bridges; 2 new marinas have been built. In 2012 Staveley Town Basin was put into water. It is worth noting that Staveley Town Basin does not feature on the OS base plans used by HS2 for this consultation.</p>	(1) The issues highlighted need to be avoided, or compensated for by the provision of an alternative alignment for the Chesterfield Canal, so the restoration of the canal is not prejudiced and potentially is moved forward as a result of HS2. The Trust and the Chesterfield Canal Trust propose to submit a technical report to HS2 in early summer 2014 outlining potential mitigation options. Any mitigation option to allow the Chesterfield Canal restoration project and HS2 to co-exist must also appropriately mitigate archaeological matters relating to the original route of the Chesterfield Canal, as well visual and noise impacts from HS2 in relation to any canal corridor.

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		<p>Detailed plans already exist for every bridge, lock and aqueduct on the stretch of canal which remains to be restored. It is important to understand that canal restoration projects are not simply about providing a canal for boats to navigate along. The Chesterfield Canal project proposal document Next Navigation West: Restoration of the Chesterfield Canal from Staveley to Killamarsh sets out the social, economic, ecological, environmental, historical and archaeological context of the canal and assesses the impact of restoration. It should be noted that the Chesterfield Borough Local Plan; Core Strategy (adopted 2013) describes the Chesterfield Waterside Development, at the terminus of the canal, “as a major site fundamental to the regeneration of Chesterfield town and the Chesterfield Canal”.</p> <p>The restoration of the canal to navigation features in the Spatial Vision for the Chesterfield Borough Local Plan; Core Strategy and is a strategic objective. The canal corridor is also identified as a green infrastructure asset which is a key element of the Boroughs identity. The green infrastructure and biodiversity policy of the Local Plan; Core Strategy aims to protect and enhance the green infrastructure network. It advises that “development proposals will be expected to demonstrate that they will not adversely affect, or result in the loss of, features of recognised importance”. The plan therefore seeks to protect the route of the canal corridor.</p> <p>The provision of the IMD at Staveley as set out in the consultation will prejudice the restoration of the Chesterfield Canal as proposed. This is not acceptable to the Trust.</p> <p>The Southern Connection Spur will cross the Puddle Bank (the original line of the canal comprising an embankment constructed of puddle clay) on a heavy skew between HS2 chainage 1+200 and 1+400. The HS2 Rail Level (RL) varies between 54.9 and 55.2. The Canal Top Water Level</p>	
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			<p>(CTWL) will be 55.8. Due to the incompatibility of these levels the railway and canal could not co-exist.</p> <p>The Northern Connection Spur will cross the Puddle Bank on a slight skew at HS2 chainage 0+400. The HS2 RL will be 54.5. The CTWL will be 55.8. Due to the incompatibility of these levels the railway and canal could not co-exist.</p> <p>The Northern Connection Spur will cross the Puddle Bank on a heavy skew between HS2 chainage 0+800 and 1+000. The HS2 RL varies between 55.1 and 55.4. The CTWL will be 55.8. Due to the incompatibility of levels the railway and the canal could not co-exist.</p> <p>Both the Northern and Southern Connections Spurs appear to run parallel where they cross the B6053 (Eckington Road). The Northern Connection Spur RL is 57.3 with the Southern Spur RL at 57.3. The road level is approx. 57.3. Although not crossing the canal (which has a CTWL of 54.3 at this point) the HS2 RL will be 3m above the CTWL and it is not clear what type of structure will be constructed here to carry HS2 and whether this will have an effect on the canal.</p> <p>The water supply for the Chesterfield Canal restoration between Staveley and Killamarsh comes from the canal at Staveley Basin having come down-line from the River Rother at Chesterfield. The scheme needs to be designed to safeguard the water supply which if severed would prevent onward restoration</p>	
<p>Chesterfield Canal (Restoration Project) HS2 Mainline Crossing Mastin Moor</p>	<p>HLS 13 Trowell to Killamarsh Route section HSL13 plan and profile sheet 7 of 7</p>	<p>40+500</p>	<p>(1) Impact on a canal restoration project. The Chesterfield Canal runs for 46 miles from the River Trent at West Stockwith Nottinghamshire to the middle of Chesterfield, linking Nottinghamshire, South Yorkshire and Derbyshire. The canal is not currently navigable from end to end although the entire route can be walked on the towpath known as The Cuckoo Way. There are only 8 miles of the</p>	<p>(1) The issues highlighted need to be avoided, or compensated for by the provision of an alternative alignment for the Chesterfield Canal, so the restoration of the canal is not prejudiced and potentially is moved forward as a result of HS2. The Trust and the Chesterfield Canal Trust propose to submit a technical report to</p>

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		<p>canal left to restore by the Chesterfield Canal Partnership. Although the restoration of the canal is recognised in the Sustainability Statement Volume 1 this contains inaccuracies and the recognition is not consistent. Please refer to our response to question (vii).</p> <p>This restoration project, like other canal restoration projects, has not proceeded sequentially. It is significant that the 8 miles of canal that remain to be restored will link other restoration work which has already been undertaken. The restoration of the canal has been a long term project and since 1989, 12 miles of the canal have been restored along with 36 locks and 11 bridges; 2 new marinas have been built. In 2012 Staveley Town Basin was put into water. It is worth noting that Staveley Town Basin does not feature on the OS base plans used by HS2 for this consultation.</p> <p>Detailed plans already exist for every bridge, lock and aqueduct on the stretch which remains to be restored. It is important to understand that canal restoration projects are not simply about providing a canal for boats to navigate along. The Chesterfield Canal project proposal document Next Navigation West: Restoration of the Chesterfield Canal from Staveley to Killamarsh sets out the social, economic, ecological, environmental, historical and archaeological context of the canal and assesses the impact of restoration. It should be noted that the Chesterfield Borough Local Plan; Core Strategy (adopted 2013) describes the Chesterfield Waterside Development, at the terminus of the canal, “as a major site fundamental to the regeneration of Chesterfield town and the Chesterfield Canal”.</p> <p>The restoration of the canal to navigation features in the Spatial Vision for the Chesterfield Borough Local Plan; Core Strategy and is a strategic objective. The canal corridor is also identified as a green infrastructure asset which is a key element of the Boroughs identity. The green</p>	<p>HS2 in early summer 2014 outlining potential mitigation options. Any mitigation option to allow the Chesterfield Canal restoration project and HS2 to co-exist must also appropriately mitigate archaeological matters relating to the original route of the Chesterfield Canal, as well visual and noise impacts from HS2 in relation to any canal corridor.</p>
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			<p>infrastructure and biodiversity policy of the Local Plan; Core Strategy aims to protect and enhance the green infrastructure network. It advises that “development proposals will be expected to demonstrate that they will not adversely affect, or result in the loss of, features of recognised importance”. The plan therefore seeks to protect the route of the canal corridor.</p> <p>The HS2 mainline will cross the canal Puddle Bank (the original line of the canal comprising an embankment of puddle clay) at approx. HS2 chainage 40+500. The HS2 Rail Level will be 54.4 and the Canal Top water Level will be 55.8. This will prevent completion of the restoration of the Chesterfield Canal as proposed. This is not acceptable to the Trust.</p>	
<p>Chesterfield Canal (Restoration Project) Renishaw</p>	<p>HLS 13 Trowell to Killamarsh Route section HSL13 plan and profile sheet 7 of 7</p>	<p>41+900 to 42+800</p>	<p>(1) Impact on a canal restoration project. The Chesterfield Canal runs for 46 miles from the River Trent at West Stockwith Nottinghamshire to the middle of Chesterfield, linking Nottinghamshire, South Yorkshire and Derbyshire. The canal is not currently navigable from end to end although the entire route can be walked on the towpath known as The Cuckoo Way. There are only 8 miles of the canal left to restore by the Chesterfield Canal Partnership. Although the restoration of the canal is recognised in the Sustainability Statement Volume 1 this contains inaccuracies and the recognition is not consistent. Please refer to our response to question (vii). It does however consider that the canal may require re-aligning in some places and that HS2 Ltd is in discussion with the Chesterfield Canal Trust to identify solutions to these crossings.</p> <p>This restoration project, like other canal restoration projects, has not proceeded sequentially. It is significant that the 8 miles of canal that remain to be restored will link other restoration work which has already been undertaken. The restoration of the canal has been a long term project and since 1989, 12 miles of the canal have been restored</p>	<p>(1) The issues highlighted need to be avoided, or compensated for by the provision of an alternative alignment for the Chesterfield Canal, so the restoration of the canal is not prejudiced and potentially is moved forward as a result of HS2. The Trust and the Chesterfield Canal Trust propose to submit a technical report to HS2 in early summer 2014 outlining potential mitigation options. Any mitigation option to allow the Chesterfield Canal restoration project and HS2 to co-exist must also appropriately mitigate archaeological matters relating to the original route of the Chesterfield Canal, as well visual and noise impacts from HS2 in relation to any canal corridor.</p>

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			<p>along with 36 locks and 11 bridges; 2 new marinas have been built. In 2012 Staveley Town Basin was put into water. It is worth noting that Staveley Town Basin does not feature on the OS base plans used by HS2 for this consultation.</p> <p>Detailed plans already exist for every bridge, lock and aqueduct on the stretch which remains to be restored. It is important to understand that canal restoration projects are not simply about providing a canal for boats to navigate along. The Chesterfield Canal project proposal document Next Navigation West: Restoration of the Chesterfield Canal from Staveley to Killamarsh sets out the social, economic, ecological, environmental, historical and archaeological context of the canal and assesses the impact of restoration. It should be noted that the Chesterfield Borough Local Plan; Core Strategy (adopted 2013) describes the Chesterfield Waterside Development, at the terminus of the canal, "as a major site fundamental to the regeneration of Chesterfield town and the Chesterfield Canal".</p> <p>A saved policy of the North East Derbyshire Local Plan, adopted 2005, seeks to safeguard the original route of Chesterfield Canal from development likely to prejudice its future restoration and its existing function of providing a quality Urban Green Space and leisure route.</p> <p>The HS2 line lies directly over the Chesterfield Canal between chainage 41+900 and 42+500 (approx.) and then in close proximity to the canal to chainage 42+800. The canal water level is 55.8m. Proposed rail level is 56.1 to 59.5m OD. Clearly there is a conflict of level as proposed track level clears the canal water level by 300mm at closest level difference. The proposed line of HS2 lies over and at a lower level than the existing canal. HS2 would consequently remove both the Canal and the adjacent Trans Pennine Trail. This clearly prejudices the restoration and the quality of the remaining canal corridor. This is not</p>	
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			acceptable to the Trust.	
Chesterfield Canal (Former Line – Brindley Loops) Between Renishaw and Killamarsh	Route HSL13 Plan and Profile Sheet 7 of 7 and Route HSL14 Plan and Profile Sheet 1 of 2	43+500 to 44+400 and 0+000 to 0+150	<p>(1) Impact on Heritage – impact on a non-designated site of archaeological interest. At the north end of the HS2 viaduct over the floodplain of the River Rother and Spinkhill Lane the line cuts the original 1777 route of the Chesterfield Canal (known as the Brindley Loops here) and then comes close to significant archaeological features such as the unique stone faced canal embankment over the Park Brook and the very early tramway/canal interchange wharf for the Sepcup Railway. It is not intended to restore the Brindley Loops for navigation as part of the Chesterfield Canal restoration. The Brindley Loops canal line is currently used as a permissive interpretive path.</p> <p>The historical importance of the original route and its structures warrants detailed archaeological investigation. This site contains the only Georgian tramway/canal interchange wharf left in the country; the Sepcup railway to Eckington and the Chapel Wheel Dam. We note the Sustainability Statement Appendix E3 – Archaeology 2.3.5 acknowledges that “the proposed route and the immediate area contain currently unrecognised assets of archaeological interest that by definition cannot be factored into the appraisal at this stage”. Paragraph 4.1.1 also states that “much work remains to be done with regard to identifying, characterising and assessing the impact on non-designated assets, whether of national importance or not, and designing and implementing appropriate mitigation to ensure that impacts are avoided or reduced wherever possible”. We therefore draw the presence of these features to the attention of HS2.</p> <p>There is no clearance (or structures shown) which would enable retention of the existing walking route. The Trust requests that pedestrian access to the Brindley Loops is incorporated into the design of HS2 in this area.</p>	<p>(1a) Avoid the use of the area during construction by not designating the area for temporary site compounds, material storage areas etc; and</p> <p>(1b) Design a scheme which permits pedestrian access to the Brindley Loops post construction.</p> <p>(1c) If the Brindley Loops are affected detailed archaeological recording will be required.</p>

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<p>Chesterfield Canal (Restoration Project) Killamarsh</p>	<p>HLS 14 Killamarsh to Tinsley Route section HSL14 plan and profile sheet 1 of 2</p>	<p>0+150 to 1+250</p>	<p>(1) Impact on a canal restoration scheme. The Chesterfield Canal runs for 46 miles from the River Trent at West Stockwith Nottinghamshire to the middle of Chesterfield, linking Nottinghamshire, South Yorkshire and Derbyshire. The canal is not currently navigable from end to end although the entire route can be walked on the towpath known as The Cuckoo Way. There are only 8 miles of the canal left to restore by the Chesterfield Canal Partnership.</p> <p>Although the restoration of the canal is recognised in the Sustainability Statement Volume 1 this contains inaccuracies and the recognition is not consistent. Please refer to our response to question (vii). It does however consider that the canal may require re-aligning in some places and that HS2 Ltd is in discussion with the Chesterfield Canal Trust to identify solutions to these crossings.</p> <p>This restoration project, like other canal restoration projects, has not proceeded sequentially. It is significant that the 8 miles of canal that remain to be restored will link other restoration work which has already been undertaken. The restoration of the canal has been a long term project and since 1989, 12 miles of the canal have been restored along with 36 locks and 11 bridges; 2 new marinas have been built. In 2012 Staveley Town Basin was put into water. It is worth noting that Staveley Town Basin does not feature on the OS base plans used by HS2 for this consultation.</p> <p>Detailed plans already exist for every bridge, lock and aqueduct on the stretch which remains to be restored. It is important to understand that canal restoration projects are not simply about providing a canal for boats to navigate along. The Chesterfield Canal project proposal document Next Navigation West: Restoration of the Chesterfield Canal from Staveley to Killamarsh sets out the social,</p>	<p>(1) The issues highlighted need to be avoided, or compensated for by the provision of an alternative alignment for the Chesterfield Canal, so the restoration of the canal is not prejudiced and potentially is moved forward as a result of HS2. The Trust and the Chesterfield Canal Trust propose to submit a technical report to HS2 in early summer 2014 outlining potential mitigation options. Any mitigation option to allow the Chesterfield Canal restoration project and HS2 to co-exist must also appropriately mitigate archaeological matters relating to the original route of the Chesterfield Canal, as well visual and noise impacts from HS2 in relation to any canal corridor.</p>
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			<p>economic, ecological, environmental, historical and archaeological context of the canal and assesses the impact of restoration.</p> <p>A saved policy of the North East Derbyshire Local Plan, adopted 2005, seeks to safeguard the original route of Chesterfield Canal from development likely to prejudice its future restoration and its existing function of providing a quality Urban Green Space and leisure route.</p> <p>The HS2 line crosses the canal at the junction between the original (1777) canal route and the railway diversion (1890) route at Old Boiley Bridge. It then runs north over the line of the Chesterfield Canal and adjacent Trans Pennine Trail for a distance of c.1100m. The Chesterfield Canal pound level here is 55.8m OD. HS2 declines from 52.7m to 48.3m OD. The proposed line of HS2 lies over and at a lower level than the existing canal. HS2 would consequently remove both the Canal and the adjacent Trans Pennine Trail, which would prejudice restoration.</p>	
Sheffield and Tinsley Canal Meadowhall	HSL 15 Tinsley to Blackburn Route section HSL15 plan and profile sheet 1 of 1	0+550	<p>(1) Visual Impact on users of the Sheffield and Tinsley Canal. Whilst the line passes over the Sheffield and Tinsley Canal at considerable height and width, the canal beneath takes a sharp deviation resulting in the crossing covering approximately 100m of waterspace. The canal in this area also flows beneath the A6178 adding a further 30m to the area of waterspace that will be affected and giving a total distance of 130m of covered waterspace. The Sustainability Statement Appendix E1 Landscape, Townscape and Visual identifies some direct impact on canal-side tree cover, in relation to impact on Landscape Character.</p> <p>The presence of graffiti highlights existing anti-social behaviour issues in this area. Introducing a significant covered area without natural surveillance is likely to encourage such behaviour. There is also a small area of towpath/waterspace just north of the A6178 which would</p>	<p>(1a) Reduce the width of the crossing so that the area of canal corridor affected is reduced and move the line closer to the M1 so it crosses a straighter section of canal. It is unclear why the width of the operational boundary of the station has to be so great on approach given that the platforms are not in this area; or (1b) Reduce the impact by moving the line closer to the M1; or (1c) Reduce the width of the crossing so that the area of canal corridor affected is reduced. For (1a, b and c) please refer to our Design Principles Document which will be provided to HS2 Ltd; and in all cases reduce the impact of the line on the canal by ensuring that the treatment of the canal corridor is of a high quality and incorporates security measures to</p>

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		<p>not be covered. Such an awkward relationship is likely to further degrade the quality of this area. The impact on the canal environment is likely to be significant.</p> <p>In addition exacerbating anti-social behaviour problems could further reduce boat movements along the whole of the Sheffield and Tinsley Canal and Sheffield and South Yorkshire Navigations. As the canal terminates at Sheffield there is limited reason to travel the whole canal and any additional negative perceptions may further dissuade potential canal users from using the whole length.</p>	<p>promote the positive use of the canal corridor, thereby reducing long term management issues as a result of anti-social behaviour.</p>
		<p>(2) Impact on Assets and Canal Water Supply. The viaduct passes directly over Tinsley Pumps where the Trust has an abstraction culvert below ground. This provides an essential water supply source to maintain the canal in operation and must not be affected by HS2. Vehicular access to the pumphouse is also required at all times and must be maintained even during construction work.</p>	<p>(2) Avoid any works which impact on the Trust's pumps, their associated pipelines and culverts; and (2a) Avoid any works which restrict vehicular access to the pumps, at any time. Please see our routewide comments on Access for the Trust to maintain our navigation.</p>
		<p>(3) Impact on Heritage – impact on the remains of a 19th century pump house; an undesignated heritage asset. The proposed line will pass directly over the depot, part of which is the remains of a 19th century pump house.</p>	<p>(3) Avoid loss or damage to the pumphouse. As part of the overall consideration of the treatment of the canal area beneath the viaduct, mitigation could possibly take the form of compensation by way of sensitive repair and restoration works to the structure.</p>
		<p>(4) Impact on Assets. The construction boundary for the station appears to include the Sheffield and Tinsley Canal. This is unacceptable as the Sheffield and Tinsley Canal is an operational asset that needs to remain open at all times.</p>	<p>(4) Relocate the construction boundary to avoid the canal.</p>
		<p>(5) Impact on Assets. The air draft requirements on the Sheffield and Tinsley Canal are not standard. Please see our routewide comments on Air Draft.</p>	<p>(5) For information</p>
		<p>(6) Impact on Assets. There is potential that the piers supporting the viaduct may need to be constructed on Trust property. This is not acceptable to the Trust.</p>	<p>(6) Please refer to our routewide comments on Permanent Works on Trust Property.</p>

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			(7) Impact on Biodiversity. The introduction of such a large covered area in addition to existing crossings in the area will result in a significant area of barren land.	(7) To be confirmed.
Dearne and Dove Canal Restoration Proposal. Swaith and Stairfoot	HSL 16 Blackburn to Cold Hiendley Route section HSL16 plan and profile sheet 2 of 4	11+200 to 12+750	<p>(1) Impact on a canal restoration proposal. The Barnsley, Dearne and Doves Canals Trust (BD&DCT) are seeking restoration of the Barnsley, Dearne and Dove Canals. Further information can be found in the BD&DCT document, Barnsley, Dearne and Dove Canals – HS2 Mitigation Options, please refer to Appendix 2. In 2006 the Barnsley, Dearne and Dove Canals Feasibility of Restoration Study, which included the Elsecar and Worsborough Branches, was produced by Atkins in response to a commission from the Barnsley Dearne and Dove Canals Trust, on behalf of the Barnsley Canals Consortium. It is understood that the Barnsley Canal route is relatively intact and re-useable. The Dearne and Dove Canal route however has been obliterated by major roads and other development, and the feasibility study recommends a new route which parallels the old route for a significant proportion of its length.</p> <p>The HS2 line affects the intended route of a new mainline for the Dearne and Dove Canal and the intended line of the Worsborough Branch (also sometimes referred to as Arm in canal terminology) of the Dearne and Dove Canal which, in part, also requires a diversion from its original line. A public footpath tracks part of the affected route of the Worsborough Branch and the Trans Pennine Trail also runs along the intended Dearne and Dove Canal mainline.</p> <p>At Chainage 11+200 approx. the HS2 line is on an embankment which crosses the intended line of the Worsborough Branch of the Dearne and Dove Canal. An embankment at this location would prejudice any future canal restoration and water supply route.</p>	<p>(1) The issues highlighted need to be avoided, or be compensated for by the provision of an alternative alignment for the intended route of the Dearne and Dove Canal mainline and its Worsborough Branch, so the future restoration of the canal and water supply potential is not prejudiced. Potential mitigation options to avoid the issues highlighted have been suggested by the BD&DCT and are set out in their mitigation document which is attached as Appendix 2. Any mitigation option to allow the intended line of the Dearne and Dove Canal including its Worsborough Branch and HS2 to co-exist must also appropriately mitigate archaeological matters relating to the original route of the Worsborough Branch, as well visual and noise impacts from HS2 in relation to the any future canal corridor.</p> <p>Please note that the alignment of HS2 which is shown on page 9 the BD&DCT mitigation document does not appear to entirely reflect the HS2 alignment of the consultation document. Nevertheless this would not affect the principle of the mitigation suggestions which are presented.</p>

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			<p>Between Chainage 11+400 and 11+650 approx. the HS2 line is on an embankment which would remove the intended line of the Worborough Branch of the Dearne and Dove Canal thus prejudicing any future canal restoration and water supply route.</p> <p>Between Chainage 12+200 and 12+650 approx. the HS2 line is in a cutting which would remove and be in very close proximity to the intended line of the Worborough Branch of the Dearne and Dove Canal thus prejudicing any future canal restoration and water supply route.</p> <p>At Chainage 12+750 approx. the HS2 is in a cutting which passes through the intended route of the mainline of Dearne and Dove Canal thus prejudicing any future canal restoration.</p> <p>Such impacts are not acceptable to the Trust.</p>	
Coal Canal Arm of the Barnsley Canal (former canal) Cold Hiendley	HSL 16 Blackburn to Cold Hiendley Route section HSL16 plan and profile sheet 4 of 4	22+600	<p>(1) Impact on a restoration proposal. The Barnsley, Dearne and Doves Canals Trust (BD&DCT) are seeking restoration of the Barnsley, Dearne and Dove Canals. Further information can be found in the BD&DCT document, Barnsley, Dearne and Dove Canals – HS2 Mitigation Options, please refer to Appendix 2. In 2006 the Barnsley, Dearne and Dove Canals Feasibility of Restoration Study – including the Elsecar and Worsborough Branches of the Dearne and Dove Canal was produced by Atkins in response to a commission from the Barnsley Dearne and Dove Canals Trust, on behalf of the Barnsley Canals Consortium. The Barnsley Canal route is relatively intact and re-useable. The Dearne and Dove Canal route however has been obliterated by major roads and other development, and the feasibility study recommends a new route which parallels the old route for a significant proportion of its length.</p>	<p>(1) The issue needs to be avoided. Potential mitigation options to avoid the issue highlighted have been suggested by the BD&DCT and these are set out in their mitigation document please refer to Appendix 2. This includes a potential opportunity to provide a launch ramp and area of hard standing suitable for trail-boat launching.</p>

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			<p>The Wakefield Core Strategy, adopted 2009, in relation to Transport Networks advises that “Disused railway lines and waterways across the district, including the former Barnsley Canal, will be protected from other forms of development to safeguard their potential to be reinstated to their former use for commercial or leisure purposes or to extend the cycling or footpath networks”. The Wakefield Site Specific Policies Local Plan, adopted 2012, advises that “land occupied by and adjacent to the former Barnsley Canal will be protected from other forms of development, in order to safeguard its potential to be reinstated to its former use for commercial or leisure purposes, or to extend the cycling or footpath networks”. This covers the mainline of the Barnsley Canal but does not encompass the Coal Canal Arm.</p> <p>The HS2 embankment north of the viaduct crossing of Cold Hiendley Reservoir at Chainage 22+600 approx. would block access to the end of the Coal Canal Arm of the Barnsley Canal and the site of the Cold Hiendley Pump Station. This would prevent the BD&DCT from launching craft arriving at the site on trailers onto the canal arm following its restoration. Trailer borne boats are necessary as the Barnsley Canal is not currently connected to the rest of the inland waterway network. This is not acceptable to the Trust.</p>	
Aire and Calder Navigation (Wakefield Branch) Altofts	HSL17 Cold Hiendley to Church Fenton Route section HSL17 plan and profile sheet 2 of 5	9+050	<p>(1) Visual impact on users of the Aire and Calder Navigation (Wakefield Branch). Impact on canalside recreational areas is identified in the Sustainability Statement – Appendix E1 Landscape, Townscape and Visual but this does not appear to recognise the recreational value of the whole linear waterway corridor which passes beneath the viaduct. The length and height of the viaduct will be a negative element in the valley corridor.</p> <p>(2) Impact on moorings. There are a number of Trust long term and visitor mooring sites in the area. There is also a marina at Stanley Ferry on Trust land leased and operated</p>	<p>(1) Reduce the impact on the canal corridor by block planting to frame views. Species to be selected appropriate to the floodplain environment and to enhance the biodiversity. Please refer to our Design Principles Document which will be provided to HS2 Ltd.</p> <p>(2) Please refer to our routewide comments on noise.</p>

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			by third parties. Please refer to our routewide comments on Boating and Noise.	
			(3) Impact of noise on the wider waterway corridor. Please refer to our routewide comments on noise.	(3) Please refer to our routewide comments on noise.
Aire and Calder Navigation ECML link Woodlesford	HSL17 Cold Hiendley to Church Fenton Route section HSL17 plan and profile sheet 2 of 5	13+500	(1) Impact on Assets. Given the length of the skew crossing of the Aire and Calder Navigation it may be necessary to locate piers within the navigation which is unacceptable to the Trust. Please refer to our routewide comments on Permanent Works on Trust Property	(1) Avoid a crossing which conflicts with our routewide comments on Permanent Works on Trust Property.
			(2) Visual Impact on users of the navigation and Landscape Impacts. These matters are identified in the Sustainability Statement Volume 1 and/or Appendix E1 – Landscape, Townscape and Visual. A crossing of such magnitude and height (22.8m above the navigation) will have a huge adverse impact on the waterway corridor.	(2) Please refer to our Design Principles Document which will be provided to HS2 Ltd but also see (3) below in relation to cumulative impact.
			(3) Cumulative Visual and Landscape Impact with the Leeds Spur crossings. This matter is identified in the Sustainability Statement Volume 1 and Appendix E1 – Landscape, Townscape and Visual. The combined crossings will have a huge adverse impact on the waterway corridor.	(3) Avoid the cumulative impact. If the cumulative impact is unavoidable a bespoke solution will be required.
			(4) Impact of noise on the wider waterway corridor. Please refer to our routewide comments on noise.	(4) Please refer to our routewide comments on noise.
			(5) Impact on Heritage – impact on two undesignated potential heritage assets which are within 150m of the crossing - Fleet Lock and Lemonroyd Dyke Footbridge.	(5) The structures will need to be assessed for Heritage Value and mitigated accordingly.
			(6) Impact on moorings. The presence of Lemonroyd Marina is acknowledged in the Sustainability Statement Appendix E1 - Landscape, Townscape and Visual. There are leisure and residential moorings at Lemonroyd marina. The marina is managed by British Waterways Marinas	(6) Mitigation should be discussed with the operators of the marina and the Trust.

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			Limited a wholly owned subsidiary of the Canal & River Trust	
			(7) Cumulative impact on biodiversity of the ECML connection with the Leeds Spur crossings and line. The line and crossings will affect the use of the canal as a linear corridor for wildlife and it will impact on light levels both up and downstream. Marginal vegetation will not be able to establish in the water under these features and loss of light would affect the ground flora which would impact upon other wildlife such as otters which are known to use the Aire corridor. Woodlesford is a prime location for bird watching sited between the two regionally important nature reserves, St Aiden's and Fairburn Ings.	(7) Avoid the cumulative impact.
Aire and Calder Navigation Leeds Spur Woodlesford	HSL21 Cold Hiendley to Woodlesford Route section HSL21 plan and profile sheet 2 of 2	13+600 to 17+323	<p>(1) Impact on Assets. Given the length of the skew crossing of the Aire and Calder Navigation between chainage 13+500 and 13+800 it may be necessary to locate piers within the navigation which is unacceptable to the Trust. From Chainage 14+400 approx. to 16+700 approx. our property is directly impacted by the proposal which is unacceptable. At chainage 14+500 approx. the line appears to over sail the navigation. Between chainage 14+600 approx. and 14+700 approx. the line appears to impact the navigation lock structure. The lock structure needs to remain operational, which includes maintenance, such as the replacement of lock gates, along with continued operation of the by wash channel and its associated underground culverts.</p> <p>Any interference with operation is not acceptable to the Trust. We note that the Sustainability Statement Volume 1 and Appendix E5 - Water highlights that a diversion of the River Aire is likely to be required in this area. Any diversion work needs to ensure that the structural stability of the Aire and Calder Navigation is maintained.</p>	<p>(1 to 12) Avoid the Aire and Calder Navigation corridor for the route of HS2.</p> <p>(1 to 12) <u>If</u> the Aire and Calder Navigation corridor and the Trusts land is to be used it will be necessary to avoid the creation of HS2 structures which: prevent operation of the waterway structures (including allowing for maintenance activity); prevent navigation for some craft; could adversely affect the structural stability of the navigation; and which prevent the use of the towpath as a continuous waterside route.</p> <p>The structures should be designed to reduce visual impact. This will require a bespoke solution in this area.</p> <p>Noise should be abated throughout this recreational area.</p> <p>The impact on undesignated heritage assets could take the form of compensation by way of sensitive repair and restoration works to these</p>

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			<p>Between chainage 14+700 approx. and 15+500 approx. the line directly over sails the towpath which is not acceptable to the Trust. The towpath must remain a through route.</p> <p>Between chainage 15+500 and 15+600 there is a skew crossing of the navigation. The Aire and Calder Navigation is a commercial waterway requiring navigational headroom of 5.5m. The crossing of the navigation in this area does not meet this requirement and would prevent navigation by some craft which is unacceptable to the Trust. Given the length of the skew crossing it may be necessary to locate piers within the navigation which is unacceptable to the Trust.</p> <p>Between chainage 15+800 approx. and 16+000 the structures for the HS2 line appear to prevent vehicular access to Fishponds Lock, this is not acceptable to the Trust. At chainage 16+500 the HS2 line appears to over sail the navigation. Please refer to our routewide comments on Permanent Works on Trust Property, Air Draft and Access for the Trust to maintain our navigation.</p>	<p>structures.</p> <p>Impact on moorings should be assessed and mitigated including potential compensation for the loss of moorings at Woodlesford by way of replacement provision elsewhere.</p> <p>If fishing is to be lost compensatory mitigation could include the undergrounding of electricity cables on other sections of the network.</p> <p>Compensation for the loss of the dredging tip will be required possibly by way of the provision of an equivalent waterway side facility elsewhere.</p> <p>Mitigation for biodiversity would need to be reviewed.</p> <p>The Trust proposes to submit a technical report to HS2 Ltd in early summer 2014 outlining potential mitigation options.</p>
			<p>(2) Visual impact on users of the Aire and Calder Navigation and impact on Landscape character. These impacts are identified in the Sustainability Statement Volume 1 and Appendix E1 – Landscape, Townscape and Visual. The sustained major impact by virtue of the route running parallel and across the waterway on any user of the corridor, over such a significant distance, is not acceptable to the Trust.</p> <p>The canal corridor is very straight between Swillington Bridge and Fleet Bridge which are key views into the canal corridor. These would be adversely affected The impact is exacerbated by the proximity of the viaduct to Woodlesford Lock, a point of focus in the waterway corridor. The routing of the line on top of the towpath will create dead space, which will be unusable and could attract anti-social behaviour.</p>	

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			<p>(3) Cumulative Visual and Landscape Impact with the East Coast Mainline connection route. This matter is identified in the Sustainability Statement Vol1 and Appendix E1 – Landscape, Townscape and Visual. The combined crossings will have a huge adverse impact on the waterway corridor which is not acceptable to the Trust and a sustained impact over a significant area. The canal corridor is very straight between Swillington Bridge and Fleet Bridge which are key views into the canal corridor. These would be adversely affected.</p> <p>(4) Impact of noise on the wider waterway corridor. Please refer to our routewide comments on noise.</p> <p>(5) Impact on Heritage. The Sustainability Statement Volume 1 and Appendix E2 – Built Heritage advise that Swillington Bridge over the Aire and Calder Navigation is a Grade II listed structure which may require demolition. Paragraph 3.2.49 of Appendix E2 seeks to clarify the section of bridge affected. The Trust considers that it is the bridge over the River Aire (which is still in close proximity) which is a listed structure not the bridge over the Aire and Calder Navigation.</p> <p>There are a number of undesignated heritage assets that will be affected: Swillington Bridge, Woodlesford Lock (largely original at one end but more than doubled in length using sheet piling), Woodlesford Lock Footbridge and culvert, Fishpond Lock (largely original at one end but more than doubled in length using sheet piling) and it 'crenelated weir'.</p> <p>(6) Impact on Moorings. The presence of Lemonroyd Marina is identified in the Sustainability Statement</p>	
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			<p>Appendix E1 - Landscape, Townscape and Visual. There are leisure and residential moorings at Lemonroyd marina. The marina is managed by British Waterways Marinas Limited a wholly owned subsidiary of the Canal & River Trust. In the Woodlesford Lock area there are moorings and visitor moorings directly managed by the Trust. There is significant potential for the mooring provision to be so adversely affected that it would, in effect, be lost.</p>	
			<p>(7) Recreational Users. This section is well used by a variety of recreational users including those fishing. The presence of the line running parallel to the navigation may lead to the loss of fishing in this section. The area also attracts wide use from bird watchers.</p>	
			<p>(8) Impact on Waste Disposal – impact on Woodlesford Dredging Tip. In the vicinity of chainage 15+100 is an active dredging tip. The Sustainability Statement Appendix E10 – Waste does not acknowledge this. The Waste Management Licence number is 65162. The provision of the line over this facility would lead to its loss which is not acceptable to the Trust.</p>	
			<p>(9) Pipelines cross the navigation. Navigation will need to be maintained if the pipelines are diverted.</p>	
			<p>(10) Impact on Biodiversity. The line and crossings will affect the use of the canal as a linear corridor for wildlife and it will impact on light levels both up and downstream. Marginal vegetation will not be able to establish in the water under these features and loss of light would affect the ground flora which would impact upon other wildlife such as otters which are known to use the Aire corridor. Woodlesford is a prime location for bird watching sited between the two regionally important nature reserves, St Aiden’s and Fairburn Ings. There are areas of wet woodland adjacent to the canal. It would be difficult to develop a planting scheme that could use plant species</p>	

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			that could tolerate light levels where HS2 over sails the towpath.	
			(11) Cumulative Biodiversity impact with the East Coast Mainline Connection Crossing. The line and crossings will affect the use of the canal for wildlife as a linear corridor and it will impact on light levels both up and downstream. Marginal vegetation will not be able to establish in the water under these features and loss of light would affect the ground flora which would impact upon other wildlife such as otters that are known to use the Aire corridor. Woodlesford is a prime location for bird watching sited between the two regionally important nature reserves, St Aiden's and Fairburn Ings.	
			(12) Overall cumulative impact. A number of the individual issues highlighted above lead to unacceptable impacts for the Trust. These impacts are magnified when considered cumulatively and are not acceptable to the Trust. We conclude that the proposal, as presented, would have a devastating impact on this section of waterway for recreational users in general, would prevent navigation by some craft on this commercial waterway and could potentially prevent navigation if the lock structures cannot be maintained due to the presence of the HS2 line. Loss of the dredging tip would also incur significant extra costs for the disposal of dredged material.	
Aire and Calder Navigation West of the M1 Stourton	HSL 22 and HSL31 Woodlesford to Hunslet and Hunslet to Leeds New Lane Station Route section HSL22 and	0+000 to 0+500	(1) Impact on Assets. Between chainage 0+000 and 0+500 it is proposed to re-align the existing railway. The impact on the navigation is unclear but should be assessed. Please refer to our routewide comments relating to impacts on our assets.	(1)This depends on the nature of the work in this area.
			(2) Visual impact on users of the waterway corridor. Between chainage 0+000 and 0+500 it is proposed to re-	(2).This depends on the nature of the work in this area. If the existing vegetation can be

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	HSL31 plan and profile sheet 2 of 2 (Leeds HS2 Station and connections)		align the existing railway. The impact on users of the waterway corridor is unclear but should be assessed with a view to retaining and maintaining the existing tree cover to provide a visual screen.	retained between the waterway and the rail line supplementary planting and an ongoing management strategy is required to ensure the longevity of the vegetation as a visual buffer.
			(3) Impact of noise on the wider waterway corridor. Please refer to our routewide comments on noise.	(3) Please refer to our routewide comments on noise.
			(4) There is a pipeline crossing the navigation.	(4) Navigation will need to be maintained if the pipeline is diverted. Please refer to our routewide comments on Air Draft.
Aire and Calder Navigation Pedestrian Connection from Leeds New Lane Station Victoria Bridge Leeds	HSL 22 and HSL31 Woodlesford to Hunslet and Hunslet to Leeds New Lane Station Route section HSL22 and HSL31 plan and profile sheet 2 of 2 (Leeds HS2 Station and connections)	No chainage available	(1) Impact on Assets. The proposed pedestrian footway link between the proposed Leeds New Lane Station and the existing mainline station crosses the Aire and Calder Navigation. The Trust is part landowner and part Navigation Authority only in this area. No levels information is provided for the pedestrian link although the Sustainability Statement Appendix E1 – Landscape, Townscape and Visual advises that the link will be 7-14m above ground level and 7m wide. Navigation clearance both vertical and horizontal will need to be maintained. It is unclear if the pedestrian walkway can be adequately supported from landside piers, or if it will require piers to be placed within the River Aire. Piers in the navigable channel would impact on navigation, on an already challenging section of moving water and are not acceptable to the Trust. Please refer to our routewide comments on Permanent Works on Trust Property and Air Draft.	(1) Avoid a crossing which requires structures in the navigable channel or which adversely affect air draft.
			(2) Visual Impact on users of the waterway corridor and Townscape Impacts. These matters are identified in the Sustainability Statement Volume 1 and/or the Sustainability Statement Appendix E1 – Landscape, Townscape and Visual. The pedestrian link will have a major visual and townscape impact.	(2a) Avoid the use of a raised walkway to connect Leeds New Lane with the existing mainline station; or (2b) Reduce the visual impact with the use of a lightweight elegant structure over the water. A high quality modern intervention is required, demonstrating an exemplar modern approach.

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				Due regard should be shown for the importance of the canal junction between the Aire and Calder Navigation and the Leeds and Liverpool Canal, and a design proposal undertaken to protect views, landscape, waterway character and to enhance the place.
			(3) Impact on Heritage. - impacts on the Leeds Canal Wharf Conservation Area and listed buildings in the vicinity. These matters are identified in the Sustainability Statement Volume 1 and the Sustainability Statement Appendix E2 - Built Heritage. The pedestrian walkway will disrupt the visual link between the heritage structures associated with the canal and Victoria Bridge. In addition the junction between the Aire and Calder Navigation and the Leeds and Liverpool Canal, at River Lock is a regionally significant waterway place and must not be adversely affected by the formation of the Pedestrian Walkway.	(3a) Avoid the use of a raised walkway to connect Leeds New Lane with the existing mainline station; or (3b) Reduce the visual impact with the use of a lightweight elegant structure over the water. A high quality modern intervention is required, demonstrating an exemplar modern approach. Due regard should be shown for the importance of the canal junction between the Aire and Calder Navigation and the Leeds and Liverpool Canal, and a design proposal undertaken to protect views, landscape, waterway character and to enhance the place.
			(4) Impacts on units at Waterman's Place. The proposed vertical and horizontal alignment of the pedestrian walkway will potentially adversely affect views out of the retail/leisure units of Waterman's Place at Leeds Canal Basin.	(4) The vertical and horizontal alignment of the pedestrian walkway should be designed to avoid any adverse impact on the retail/leisure units at Leeds Canal Basin.
			(5) Impact on Assets. The construction boundary for the station appears to include the Aire and Calder Navigation. This is unacceptable as the Aire and Calder Navigation is an operational asset that needs to remain open at all times.	(5) Relocate the construction boundary to avoid the canal.
Rother Link Future	HSL 14 Killamarsh to	1+900, 4+200,	(1) Impact on future navigable link. HS2 crosses the River Rother at three locations and oversails in one location –	(1) Design a scheme to facilitate a future navigable link. In order to permit navigation a

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<p>Navigable Waterway Link</p>	<p>Tinsley Route section Plan and Profile Sheet 1 of 2 and 2 of 2</p>	<p>4+400 and 7+300</p>	<p>near Beignton and Orgreave. There is a proposal by the Chesterfield Canal Trust to join the Chesterfield Canal with the existing inland waterway network in Rotherham by making the River Rother navigable. This would create a cruising circuit of about 100 miles that would encourage greater use of both waterways. The Rother Valley Link has also been presented as a “big idea” at a workshop and a public meeting of the Canal & River Trusts North East Waterway Partnership. There is a possibility that where HS2 crosses the River Rother, the headroom provided will be insufficient to permit navigation which would prejudice a future navigable link.</p>	<p>minimum headroom of 3.5m above water level will be required. This is based on a 3m air draft plus an allowance for navigation with the River running at above weir level. In addition it will be necessary to provide sufficient lateral clearance to permit footpaths along both banks of the navigation.</p>
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Question (v) Do you agree or disagree with the Government’s proposals for:

a. A Leeds station at Leeds New Lane as described in Chapter 8 (sections 8.8.1 – 8.8.5)?

Response: The proposed HS2 station has no immediate physical impact upon the waterway. The proposed pedestrian link between the HS2 Terminus and the Main Line Station is proposed via raised walkway over the River Aire. There is a risk that this will have an adverse impact upon the junction between the Leeds and Liverpool Canal and the Aire and Calder Navigation, at River Lock and this should be avoided. The Trust however disagrees with a station at Leeds New Lane as this dictates an approach route via Woodlesford which is considered by the Trust as being one of the greatest adverse impacts upon the waterway network of HS2 phase 1 and phase 2.

b. A South Yorkshire station to be located at Sheffield Meadowhall as described in Chapter 8 (sections 8.5.1 – 8.5.8)?

Response: The provision of a station at Sheffield Meadowhall appears to exacerbate the impact on the Sheffield and Tinsley Canal due to the additional track width required to accommodate a station approach/exit. The cumulative impact of this and the existing road crossing of the canal by the A6178 results in 130m of waterspace being over sailed by transport crossings. This is not desirable however a station at Sheffield Victoria would also impact on the Sheffield Tinsley Canal, would remove a boatyard and would only marginally reduce the impact at Meadowhall. The Trust therefore is neutral on this matter.

c. An East Midlands station to be located at Toton as described in Chapter 8 (sections 8.3.1 – 8.3.6)?

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Response: The provision of a station at Toton dictates a route which involves a significant number of major crossings of the inland waterways and two of the 3 approach routes potentially prejudice an advanced canal restoration scheme. The Water Orton to Derby Midland and Breadsall to Tibshelf route with a Derby Midland Station would appear to have fewer crossings of inland waterways however the implications for the restoration of the Cromford Canal, the Butterley Tunnel of the Cromford Canal and Butterley reservoir (owned by the Trust) all in the Ripley area are unclear. A station in Derby may be a preferable depending on the extent of impact on the inland waterways and associated structures in the Ripley area.

Question (vi) Do you think that there should be any additional stations on the eastern leg between the West Midlands and Leeds?

Response: The Trust would only have a view on this matter if the stations' location could have an adverse effect on the Trust's waterways or those proposed for restoration.

Question (vii) Please let us know your comments on the Appraisal of Sustainability (as reported in the Sustainability Statement) of the Government's proposed Phase Two route, including the alternatives to the proposed route as described in Chapter 9.			
Document	Reference		Comment
	Page(s)	Paragraph	
Sustainability Statement Volume 1: main report of the Appraisal of Sustainability	26	2.6.1	Construction details have not been determined in any detail as yet. Consideration should be given to the movement of construction materials and waste by water.
	37	Figure 3.6	Western Leg options presented to Government in March 2012. General comment. Definitive comment on the alternatives without detailed plans of the precise route alignment and levels is difficult in the context of the linear inland waterway corridors whether they be operational or disused with potential for restoration in the future. (1) Lichfield to Newcastle-under-Lyme northern route option with variant appears to include additional crossings or sections of the route running parallel with the Trent and Mersey Canal. This may increase the impact on the inland waterways and is likely to be less preferable for the Trust.

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			<p>(2) The Golborne to Preston Route would include a number of additional crossings of the inland waterways, which would increase the impact on the inland waterways and therefore is likely to be less preferable for the Trust.</p> <p>(3) Manchester Stations. Salford Central Middlewood would remove the restored Middlewood Locks section of the Bolton and Bury canal. Removing a canal restoration scheme would not be acceptable to the Trust. Salford Central combined station appears to retain the canal but the scale of impact on this is not known and is likely to be less acceptable than a station at Piccadilly where there are opportunities to unlock the waterway corridor.</p>
38	Figure 3.7		<p>Eastern Leg options presented to Government in March 2012. General comment. Definitive comment on the alternatives without detailed plans of the precise route alignment and levels is difficult in the context of the linear inland waterway corridors whether they be operational or disused with potential for restoration in the future.</p> <p>(1) Water Orton to Derby Midland, Breadsall to Tibshelf and Derby Midland Station. The route would appear to have fewer crossings of inland waterways however the implications for the restoration of the Cromford Canal, the Butterley Tunnel of the Cromford Canal and Butterley reservoir (owned by the Trust) all in the Ripley area are unclear. This may be a preferable route depending on the extent of impact on the inland waterways and associated structures in the Ripley area.</p> <p>(2) Water Orton to Toton via south of Measham. The commentary does not appear to acknowledge that this route must cross and allow for the proposed restoration of the Ashby Canal.</p> <p>(3) Water Orton to Toton avoiding River Mease SAC The impact on the Ashby Canal Conservation Area and SSSI is acknowledged. The implications for the Coventry Canal area unclear.</p> <p>(2) and (3) If the Ashby Canal is accommodated there appears to be no significant advantage/disadvantage in either route, except they would avoid a housing site whose development would advance the restoration of the canal.</p> <p>(4) Sandiacre to Tibshelf. The potential proximity to the line of the Erewash Canal is of concern. The water feed from Moorgreen Reservoir may be affected. There also</p>

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		<p>appears to be implications for any future restoration of the Cromford Canal and Nottingham Canal. This route is likely to be disagreeable to the Trust.</p> <p>(5) Sheffield Loop and Sheffield Victoria Station. The inclusion of a loop route to serve Sheffield would still maintain a crossing of the Sheffield and Tinsley Canal at Meadowhall, albeit that this could potentially be narrower, reducing its impact on the canal, given that it would not need to accommodate a station approach. A loop is also likely to increase the width of the current railway crossing of the Sheffield and Tinsley Canal near Victoria Quays and an additional crossing may be introduced to accommodate a Supertram line extension. Car parking is shown on Trust owned land currently leased to a boatyard business. Loss of such a facility is highly likely to be disagreeable to the Trust. With the orientation of the station we are concerned that Victoria Quays and the Sheffield and Tinsley Canal could become further isolated and any proposals for a station at Sheffield Victoria need to recognise the importance of proper city planning to ensure connectivity and activity generation around any station and promote integration with the canal.</p> <p>(6) Leeds via Lofthouse and Leeds North Station. The Trust disagrees with this route and station option which presents very significant impacts on the waterway corridors affected. There would be an additional crossing of the Aire and Calder Navigation (Wakefield Branch) in the vicinity of Birkwood Lock which is a listed structure. There would be cumulative visual impact with the crossing serving the ECML connection route. There are also moorings in this location. A station at Leeds North would result in the construction of a significant 150m tunnel over the Leeds and Liverpool Canal on the approach to Leeds Canal Basin, abutting an existing 50m rail crossing, forming a combined 200m long tunnel. The existing rail network adjacent suggests that the deck level here will be relatively low possibly c.3m over towing path. This would form a low canal tunnel, and extenuate the sense of enclosure within the tunnel.</p> <p>This impact is within a City Centre and will therefore adversely affect a high number of waterway users. The sinuous horizontal alignment of the canal below the tunnel will result in a tunnel with no clear line of sight from portal to portal. This is could deter users of the towing path, as it generates an increased perception of risk and the unknown.</p> <p>As the Trust has experienced at the “undercroft” in Piccadilly, Manchester, and identified in Curzon Street, Birmingham; “hidden” canal side areas in close proximity to</p>
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			<p>stations have the potential for significant antisocial behaviour that can adversely affect the perception and wider use of the waterway and towing path within a City.</p> <p>There is little opportunity here to generate a positive development environment or activity generating features around the proposed crossing due to the proximity of the River Aire and the existing rail infrastructure. It is to be hoped that the development of Tower Works, Holbeck, to the south east of the existing rail crossing will provide some passive surveillance, but this is on the offside of the canal. Whilst this route would avoid the impacts at Woodlesford the Trust also disagree with this option.</p> <p>(8) Leeds Sovereign Street. The Trust disagrees with this option as it is served by the Woodlesford approach route and the significant impact this has on the waterway corridor of the Aire and Calder Navigation. A full station will be formed over the River Aire/Aire and Calder Navigation in the centre of Leeds. The station is therefore likely to form a significant tunnel over the Navigation and Riverside pedestrian routes, potentially adversely affecting waterway users. If poorly developed then the HS2 Station could form an additional barrier between the City and New Dock (Clarence Dock), preventing the sustainable use and growth of New Dock, a key waterway destination in Leeds.</p> <p>The formation of the Station would impact upon views along the river corridor. The construction of such a significant structure over the river is likely to require supporting structures, such as piers in the River that could adversely affect the navigable channel. As the station will need to connect into the surrounding street network etc. it is likely that the station would be relatively low in the landscape and therefore low over the river. Although the relevant navigable clearances would need to be maintained, this low tunnel is unlikely be a positive waterway space, or waterside walkway. The detailed design of the surrounding City development will need to positively connect with the riverside spaces below the Station.</p> <p>(9) Cold Hiendley to Church Fenton via Castleford. This route also appears to have potentially significant impact on the Aire and Calder Navigation and River Calder corridor.</p>
	42 and 85	4.3 and 6.2	Planning and Development. This exercise does not appear to have identified the current planning application for a 553 berth marina on the River Soar between Ratcliffe

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			and Redhill Locks (Route HSL09 Plan and Profile Sheet 2 of 3). The proposal is currently subject to a planning appeal.
	46	4.7	Please refer to our routewide comments on noise and vibration.
	51	4.9.4	In relation to undertaking a full Health Impact Assessment, the waterways can act as an easily accessible multi-functional health asset. The existing navigable waterway network and also prospective canal restoration projects that are impacted by the project should be considered. Please refer to our routewide comments on Socio-Economics and Restoration.
	52	4.11.3	In terms of sensitivity to landscape and visual impacts there are many recreational users of the waterway corridors including walkers, cyclists, those exercising, boaters, those fishing, birdwatchers etc. Recreational boating does not necessarily entail navigating and long periods of time can be spent by boaters at the long-term mooring location of the boat or up to 14 days elsewhere. Those fishing can also spend substantial periods of time in one waterside location.
	55	4.12.9	The historic interest of the waterways comprises many non-designated structures of high heritage interest. It is the Trust's policy to treat all heritage assets with the same level of care and protection as those legally designated. The Trust would be happy to assist HS2 in relation to understanding the non-designated Heritage Assets on our waterways. Non-designated assets in the immediate vicinity of the line have been identified in our area specific comments to questions (i) and (iv).
	62 and 111	4.17.2 and 6.13.4	In relation to waste disposal it is not only the loss of key municipal services but the loss of disposal facilities for dredgings related to waterway maintenance that needs to be considered. The presence of the Trusts active dredging tip at Woodlesford does not appear to have been recognised. The Waste Management Licence number is 65162.
	96	6.9.6	The waterway in this location is the Cranfleet Cut of the Upper Trent Navigation rather than the Trent and Mersey Canal.
	107	6.12.5	The statement on the progress of the Chesterfield Canal restoration is incorrect. Please refer to the Chesterfield Canal Trust.
Sustainability Statement Appendix E1 – Landscape, Townscape and	1	2.1.5	In undertaking further work in relation to the landscape, townscape and visual appraisal in respect of the potential impacts that should influence the horizontal and vertical

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Visual			alignment of the proposed scheme, please refer to Design Principles Document which will be provided to HS2 Ltd in relation to waterway corridor matters.
	12	Crewe to Pickmere	Route Description. There is inconsistency with the HSM10 plan and profile sheet 3 of 6 in terms of the nature of the crossing of the Shropshire Union Canal.
	25	Lockington to Long Eaton	The visual impact on users of the River Soar navigation is considered to be significant. The Trent and Mersey Canal is an incorrect reference in this location. The waterway is the Cranfleet Cut of the Upper Trent Navigation.
	29	Staveley to Killamarsh	The route lies over the top of the Cuckoo Way, in part, in this area. .
	30	Sheffield Meadowhall Station	Recreational users of the Sheffield and Tinsley Canal are not recognised.
	33	Cold Hiendley to Methley Lanes	Whilst the impact on canalside recreational areas is identified there does not appear to be recognition of the recreational sensitivity of the whole linear waterway corridor which passes beneath the viaduct.
	34	Methley Lanes to Garforth	The crossing of the Aire and Calder navigation is considered to have a major impact on users of the waterway corridor.
	37	Staveley Depot	The visual impact of the spur connections on users of the Cuckoo Way, which will be impacted, does not appear to have been considered.
Sustainability Statement Appendix E2 – Built Heritage	3,11 and 18	2.6.6, 3.2.12 and 3.2.49	It is recognised that there could be a possibility of additional anomalies in the documentation produced by HS2. We consider that there is an anomaly in relation to the bridge on the Aire and Calder Navigation, referenced at 3.2.12 as Swillington Bridge, Grade II over the Aire and Calder Navigation. Paragraph 3.2.49 of Appendix E2 seeks to clarify the section of bridge affected. The Trust considers that it is the bridge over the River Aire (which is still in close proximity) which is a listed structure not the bridge over the Aire and Calder Navigation.
	4	3.1.3	Reference to the crossing lying between two canal basins is not understood.
	8	3.1.40	The negligible impact on Hughes Bridge should be reviewed.
Sustainability Statement Appendix E3 – Archaeology	3 and 9	2.3.5and 4.1.1	Paragraph 2.3.5 acknowledges that “the proposed route and the immediate area contain currently unrecognised assets of archaeological interest that by definition

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			cannot be factored into the appraisal at this stage”. Paragraph 4.1.1 also states that “much work remains to be done with regard to identifying, characterising and assessing the impact on non-designated assets, whether of national importance or not, and designing and implementing appropriate mitigation to ensure that impacts are avoided or reduced wherever possible”. In light of this we draw attention to the Puddle Bank of the Chesterfield Canal (Staveley Infrastructure Maintenance Depot Staveley IMD plan and profile sheet 1 of 2 & Staveley IMD plan and profile sheet 2 of 2) along with the Brindley Loops of the Chesterfield Canal and Sepcup Interchange (Route HSL13 Plan and Profile Sheet 7 of 7). Further details can be found in our response to question (iv). In addition historic lines of canals are also potentially archaeologically important such as the Ashby Canal, Nottingham Canal, Chesterfield Canal and the Worsborough Branch of the Dearne and Dove Canal.
Sustainability Statement Appendix E4 – Biodiversity	2	2.4.2	Paragraph 2.4.2 advises that “At the EIA stage a package of mitigation and enhancement measures will be considered (in consultation with Natural England (NE) and other wildlife organisations) to address the impact on habitats and species”. The Trust would be willing to assist HS2 in relation to the impact on our waterways.
	4	2.7.1	Paragraph 2.7.1 advises that “All river crossings, which may require limited vegetation clearance around viaduct piers, but no impact on the channel was assessed as negligible adverse impact due to the limited effect of shading on marginal vegetation”. We would like to draw attention to the impacts of the skew crossings which, at Woodlesford, are significant in distance. The impact of these regardless of whether or not there is to be any in channel works should be reviewed.
	8	3.5.3	Paragraph 3.5.3 advises that “A number of watercourses are crossed along the proposed route. Impacts are generally negligible, due to the proposed route crossing on viaduct, with permanent habitat loss limited to localised areas around the viaduct piers and shading. However, if alternative engineering options, such as diversions or culverting are required then impacts could be minor adverse on water-bodies with a moderate-high ecological quality/potential”. We would like to draw attention to the impacts of the skew crossings which, at Woodlesford, are significant in distance. The impact of these should be reviewed. The length of the crossings and the proximity of the line at Woodlesford make impact on biodiversity a strategic issue.
	12	4.5.3	Paragraph 4.5.3 advises that “there is potential for moderate adverse impact on five rivers comprising the River Rother (HSL16), River Doe Lea (HSL 14,16), River

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			Erewash (HSL12, HSL13), River Aire (HSL17, HSL 21) and the River Calder (HSL17, HSL21) due to cumulative impact of multiple crossing points and the potential for in-channel works including diversions.” It is not clear if this includes the Aire and Calder Navigation.
Sustainability Statement Appendix 5 - Water	8	Table 3.3	The structural integrity of the Aire and Calder Navigation will need to be maintained in relation to any diversions of the River Aire.
	14	Table 3.5	Any works should be assessed for their implications on any future feed to a restored Dearne and Dove Canal and its associated Canal Arms. Any identified issues should be appropriately mitigated to ensure that future restoration is not prejudiced.
			General Comment. In relation to the Dearne and Dove Canal any works should be assessed for their implications on any existing water feed along the Worsborough Arm and future feed to a restored Dearne and Dove Canal and its associated Canal Arms. Any identified issues should be appropriately mitigated to ensure that future restoration is not prejudiced. Further information can be obtained in the Barnsley, Dearne and Dove Canals Trust Mitigation Document attached as Appendix 2.
			General Comment. The water supply for the Chesterfield Canal restoration between Staveley and Killamarsh comes from the canal at Staveley Basin having come down-line from the River Rother at Chesterfield. The scheme needs to be designed to safeguard the water supply which if severed would prevent onward restoration.
Sustainability Statement Appendix E6 – Noise and Vibration			General Comment. Please see our routewide comment on Noise and Vibration.
Sustainability Statement Appendix E8 – Access	8	Figure 4.2	Whilst the towpath of the Ashton Canal is recognised the towpath of the Rochdale Canal is not. The HS2 development is a catalyst for wider development around the canal corridor. Please see our response to Manchester City Council’s recent consultation on The HS2 Manchester Piccadilly Strategic Regeneration Framework (Appendix 1). The HS2 Manchester Piccadilly Strategic Regeneration Framework has the potential to unlock the city centre canal network and transform it into a high quality leisure and sustainable transport asset. Opportunities should be taken to permanently address issues of anti-social behaviour associated with the Piccadilly undercroft on the Rochdale Canal.
	13	Figure 4.5	Not all waterside routes are shown. There is also concern that the provision of a pedestrian walkway link over the River Aire could potentially divert pedestrians away

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			from the Leeds Canal Basin Area or make Leeds Canal Basin something of a backwater. The proposals need to recognise the importance of proper city planning to ensure connectivity and activity generation around the proposed HS2 works.
	15	5.1.8	Designing the scheme to preserve access associated with existing rights of way presents opportunities to also preserve disused canal lines for future canal restorations, such as the Nottingham Canal and the Worsborough Arm of the Dearne and Dove Canal. These opportunities should be taken. Waterway Sector bodies such as the Trust, Inland Waterway Association and individual Canal Trusts should be seen as relevant organisations in relation to rights of way associated with the existing and disused waterway network and these bodies should be involved in determining the best way to preserve access.
Sustainability Statement Appendix E9 – Health Analysis			General comment. Please refer to our routewide comments on Socio-Economics
Sustainability Statement Appendix 10 - Waste			This document does not acknowledge the presence of the Trusts dredging tip at Woodlesford in the vicinity of chainage 15+100 HSL21 Cold Hiendley to Woodlesford Route section HSL21 plan and profile sheet 2 of 2. The Waste Management Licence number is 65162.
Sustainability Statement Volume 2 - Maps		WL-02-01N and WL-02-02-N.	Great Haywood marina is not shown on the Residential Airborne Noise Appraisal without and with additional mitigation map drawing references WL-02-01N and WL-02-02-N.
		EI-24-04	There is inconsistency between the Environmental Features Map EI-24-04 and other maps of this area within Volume 2 in terms of the levels of the spurs connecting the Staveley IMD to the mainline. Staveley Town Basin is not shown on any maps for this area.
			General Comment. Key Environmental Features Maps. The legend does not specify that flooding from reservoir inundation has been mapped.
			General Comment. The routes of all former canals and any restoration schemes should be highlighted on the Key Environmental Features Maps.

Question (viii) Please let us know your comments on how the capacity that would be freed up on the existing rail network by the introduction of the proposed Phase Two route could be used as described in Chapter 10?

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The Trust does not have a view on this matter.

Question (ix) Please let us know your comments on the introduction of other utilities along the proposed Phase Two line of route as described in Chapter 11?

The Trust has concerns about implications to it from this possibility. However further details about specific utilities and routes would be required for us to be able to respond constructively.

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Appendix 1

The Trust's response to Manchester City Council's recent consultation on The HS2 Manchester Piccadilly Strategic Regeneration Framework.

From: Alison Truman

Sent: 22 November 2013 17:07

To: 'k.rawlinson@manchester.gov.uk'

Cc: h.sayers@manchester.gov.uk

Subject: RE: FW: HS2 Consultation - Manchester Piccadilly

Kirsty

The Canal & River Trust's comments are below. Apologies again for the delay in providing this response and thank you for allowing additional time to submit our comments.

The HS2 Manchester Piccadilly Strategic Regeneration Framework has the potential to unlock the city centre canal network and transform it into a high quality leisure and sustainable transport asset. In order to achieve this, the Trust would advise that the requirements, values and opportunities of the canal corridor should be recognised and addressed throughout the development proposals for Piccadilly Central, as set out in greater detail below.

1. The Canal & River Trust would request that greater consideration is given throughout the Framework to the role of the Rochdale and Ashton Canals in enhancing the environment of the Piccadilly area and the pedestrian and cycle movement network throughout the city. The plan has the potential to open up the currently underutilised resource which the canals offer and add value to the canal side development sites that will be created. In addition, the strategic importance of these sections of canal must be recognised. They are a key pinch-point of the waterway network, providing a gateway to the Pennine Ring and the intersection of the Pennine and Cheshire Rings. Given the very substantial public investment in the canals in recent years, this is an opportunity to secure and realise the benefits of that investment with works which can only be an asset to the Piccadilly of the future.
2. The arrival of HS2 into Manchester is recognised as the catalyst for a 'once-in-a-century' opportunity to transform and regenerate the eastern side of the city. It should be recognised that this will also be a once-in-a-century opportunity to resolve the long-standing problems and issues

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associated with the canal undercroft and Dale Street. Failure to resolve these problems would allow the continuation of an on-going impediment to the success of the area and the waterway network in the city. It is noted that the canal undercroft is included within the boundary of the framework area but that no development proposals are outlined that would directly impact on the undercroft. The Trust requests that the local authority explores the opportunities and possibilities in terms of opening-up the undercroft as part of the strategic regeneration of the Piccadilly area, which could potentially transform the character of the waterway and allow it to make a greater contribution to the amenity of the city centre.

3. From the arrangement of the station master plan there appears to be a missed opportunity to link the new entrance plaza on London Road to the canal network. The canal could help to establish a strong sense of place for the plaza and station and a traffic free pedestrian link out into the city. As an example case study we would refer to the work undertaken adjacent to St Martins College at Kings Cross in London, where the canal has been successfully unlocked.
4. A traffic-free pedestrian and cycle connection into the station from Ancoats and the city along the canal is a huge opportunity, but existing physical and perceptual blockages need to be addressed. The city council should refer to the recent study of the city centre canal corridor prepared by BDP ("Blue Route One"), which details the potential of the towpath to create attractive, well-used routes. Significant improvements are due to be made to the towpath of the Ashton Canal in East Manchester to improve use for walkers and cyclists, using the recently secured Cycle City Ambition Grant funding. This will increase the use of the towpath for commuter walking and cycling, and would be complemented by the creation of a destination and interchange in the city of a suitable quality. This point of interface between the canal network and the station/city could potentially be around the Piccadilly Canal Basin, linked to the proposed new entrance plaza on London Road. The pedestrian and cycle flow along the Rochdale Canal towpath from the east, and the connection between the Ashton and Rochdale Canals also needs to be addressed.
5. The masterplan must ensure that the location of tall buildings doesn't adversely affect the human experience and quality of the canal corridor, through overshadowing, wind tunnelling etc. As the finer grain of the proposals is looked at, canal-side design and land use considerations will be important and past mistakes should be avoided such as:
 - Development turning its back on the canal, resulting in poor quality pedestrian and boater experiences. Developers/future occupiers should be encouraged to orientate buildings so that they have doors and windows facing the canal with the "front door" on the canal-facing elevation of the building.
 - Failure to provide attractive and inviting public realm alongside the canals. Hard and soft open spaces, towpath surfacing and lighting and provision of robust but attractive street furniture is essential to bring people and life to the canal side environment.
 - Although we recognise that the generic zoning of areas for commercial and residential development allows for the inclusion of degrees of mixed use development, it is critical for the sustainable life of the canal corridor for there to be life and neighbourhood presence across the day and the week, and therefore we would seek to avoid dormitory communities or purely commercial office developments which will generate cold periods of activity in the week.
6. Pg 19 active edges. As stated above, we need to ensure active edges along key canal frontages, genuinely active in key spaces, and supplemented by "eyes on the water", windows and doors to the canal side to make the waterway a proper part of the neighbourhood.

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7. Pg 37 – This is Ducie Street Basin on the Ashton Canal (not Rochdale Canal) - this is a very underused space on the canal network, with plenty of opportunity to utilise this to add a sense of place to the station and wider area. Also to seek to improve the pedestrian connection between the Ashton and Rochdale Canals.

The Canal & River Trust is working with Birmingham City Council to ensure that the canal is properly integrated into the development around HS2 and we would welcome the opportunity to work with the HS2 design team to exploit the potential of the canal in the context of a regenerated Piccadilly Central.

Please do not hesitate to contact me for any further information or clarification.

Regards,
Alison Truman

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Appendix 2

Barnsley, Dearne and Dove Canals Trust – HS2 Mitigation Options

Please see the separate attachment.

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