Canal &
River Trust

Response to the Route Refinement Consultation 2016

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. 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.

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

- 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.

Our response sets out in detail the areas of concern for the Trust. However, we would like to highlight the following key issues which are of critical importance:

Critical Interfaces

Western Leg

The Middlewich Branch of the Shropshire Union Canal (Crewe Rolling Stock Depot and associated infrastructure)

The proposal, as presented, would prevent navigation. Assuming that it is not the intention to sever navigation the proposal which includes a four track crossing of the canal, would have a severe adverse impact on this section of waterway in an area which is very popular with a variety of recreational users.

The Trent & Mersey Canal in the Whatcroft area

The proposal, as presented, would prevent navigation. Assuming that it is not the intention to sever navigation the multiple crossings of this tranquil canal environment and large embankments running close to the canal, will have a severe adverse impact on this very popular recreational waterway.

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Eastern Leg

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 potential diversion of the Erewash Canal to facilitate a viaduct crossing is concerning.

The Chesterfield Canal at Staveley

The height of the rail access/egress to the Staveley Infrastructure Maintenance Depot could prejudice the Chesterfield Canal restoration project.

The Chesterfield Canal at Norwood

The scheme prejudices the completion of this well advance canal restoration project. It does not recognise the potential loss of part of the heritage asset which is the Trust owned Norwood Tunnel.

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 waterway network and for third party canal restoration projects.

Please direct any queries to Peter Walker, National Infrastructure Services Manager, 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:

Appendix 1 Map of Middlewich Branch Locks

Appendix 2 Cruising Rings – Four Counties and Cheshire

Appendix 3 Map of Trent & Mersey Canal Lock and Bridge 181

Appendix 4 Extract from Trent & Mersey Canal Conservation Area Appraisal Vale Royal Borough Council 2000

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Routewide comments

Before proceeding to address the questions in the consultation document we set out below our comments on issues which apply routewide.

In our response to the 2013 consultation we set out a series of issues which were applicable routewide. Since that time the Trust has agreed with HS2 Ltd the parameters of and process by which, the mitigation of impact on our waterways will be achieved for Phase 1 of the HS2 project via our side agreement signed in July 2016. We consider that accommodating these requirements will be the starting point for further discussion on Phase 2b. Note should be made that the navigational dimensions for waterways principally available for the carriage of freight will need to be taken into account on Phase 2b.

We also wish to highlight that as well as recreational users, 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 could directly or indirectly affect these uses and businesses. The British Marine Federation (now known as British Marine) document, Economic Benefits of UK Boating Tourism (2014) with a forward by the then Minister for Tourism Helen Grant MP sets out the sectors economic importance. Please see http://britishmarine.co.uk/Resources/Publications/2014/January/Economic-Benefits-of-UK-Boating-Tourism-2014

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.

Consultation Questions

Question1. Do you support the proposal to locate the western leg Rolling Stock depot (RSD) on the site north of Crewe? Please indicate whether or not you support the proposals together with your reasons.

Answer: We do not support the proposals. Our reasons are set out below.

Reasons

(1) Visual Impact on users of the Shropshire Union Canal.

a. Multiple track crossings of the Shropshire Union Canal.

The crossing is shown to be on an embankment across the line of the 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.

This proposed crossing will have a **severe adverse impact** on the canal corridor. As a consequence of the depot siting there are four rail lines crossing the canal. The four-line proposal results in a crossing covering over 100m of canal and towpath, with an oppressive soffit height over the canal (c.5m over NWL). This is in stark contrast to the current open rural landscape. This will create an unacceptable and uncomfortable tunnel like environment which is likely to discourage use of the canal environment and could be a magnet for anti-social behaviour. To the south of the canal the landscape is open pastureland with wire fence lines, increasing the sense of openness. The significant scale of this interface in an open rural landscape will exacerbate the scale of the impact of the crossing on the waterway. Furthermore, the HS2 lines are at two different levels, which could result in a noticeably stepped soffit to any structure or structures. This would be unacceptable to the Trust on visual grounds.

We ask if the financial implications of providing a bespoke tunnel arrangement for the canal has been taken into account when assessing the location of the rolling stock depot?

b. Location of the RSD and its relationship with the Shropshire Union Canal.

To the south of Wimboldsley Grange, the canal is at the closest point to the depot and this is where the impact of the depot is likely to be most severe. The scale of the visual impact of the depot on the canal can only be properly assessed when more information is available on the scale of any built form (sheds etc.) and the likely operation activity.

c. The grade separated rail junction north of the Shropshire Union canal.

To the north of the canal the proposed HS2 alignment includes a HS2 overbridge "over" the HS2 mainline, c.15-20m above the local canal level. This is a significant section of HS2 rail infrastructure, however, the high point of the overbridge is c.1km north of the canal, with some existing mature hedgerow trees which may create a visual buffer between the canal and the HS2 overbridge. Our concern is the potential cumulative impact this would have when combined with the canal crossing and the RSD.

The Sustainability Statement including Post Consultation Update Volume 1: Main report of the Appraisal of Sustainability recognises the increased visual impact for recreational users of the Shropshire Union Canal. Appendix C1 Landscape of the Sustainability Statement identifies "locally major visual impacts would affect recreational users of the Shropshire union Canal, Trent and Mersey Canal and Heyrose Golf Course". It also states "for the RSD, visual impacts would depend on the height of the RSD structures, with tall structures likely to further impact users of the Shropshire Union Canal and residents at Wimboldsey". Major Adverse impact is the conclusion.

(2) Impact on recreational users of the Shropshire Union Canal.

The Middlewich Branch of the Shropshire Union Canal is an extremely popular part of the Canal & River Trust network. This is demonstrated below:

a. Annually the Trust produce a lockage report which measures lock usage for selected locks across our 2000 mile network (see https://canalrivertrust.org.uk/media/original/31240-annual-lockage-report-2016.pdf). Lockage can be defined simply as lock usage through the filling and emptying of a lock chamber, which in turn allows the movement of water and passage of boats. It is important to distinguish lockage from boat movements, which are the actual number of boats which travel through a lock. Boat movements are separated from lockage to acknowledge that averages can be skewed by the boat:lockage ratio (in the case of a typical broad lock, the ratio can be between one and four boats per lockful of water used). Two locks on the Middlewich Branch are monitored for the lockage report Lock 4, Cholmondeston Lock to the west of the proposed HS2 crossing point and Lock 1 Wardle Lock to the east of the proposed HS2 crossing point. Please see Appendix 1 for a map showing the location of the locks. The Trust ranks lock usage from the most frequently used – number 1 to the least frequently used, number 175. During 2016 Lock 4, Cholmondeston Lock was ranked number 3 and Lock 1, Wardle Lock was ranked number 6. In 2015 they were ranked numbers 4 and 5 respectively. This demonstrates that lock usage on the Middlewich Branch is amongst the very highest on our network.

b. During 2016 the Trust estimates that the number of boat movements at Lock 4, Cholmondeston Lock were 11173 and at Lock 1 Wardle Lock, 10213. These figures show the importance of this location on the waterway network.

c. The issue of congestion on the waterways is subjective. Proposals for new marinas and the resulting boat movements on our network, can raise concern for our customers. Following an extensive period of research and consultation with the trade, a British Marine/Canal & River Trust agreed process is now applied to all applications made to the Trust for new marinas affecting popular boating areas. It was agreed that for marina applications within 30km travelling distances (by boat) from points central to the three popular boating areas (as outlined below), the Trust would provide applicants with estimates of boat movement increase (at the key locks within the relevant area) for any new applications. The three popular boating areas are:

   Area 1 – Hurleston/Llangollen Area – centred on Grindley Brook Lock
   Area 2 – Fradley Area – centred on Woodend Lock
   Area 3 – Braunston/Napton Area – centred on Braunston Lock

   The Middlewich Branch of the Shropshire Union canal falls within Area 1. This again reinforces the popularity of the area for boating activity.

d. The canal forms part of the Four Counties Cruising Ring (see Appendix 2). Such rings allow boaters to experience as much of the canal network as possible without re-tracing their route. Cruising rings are therefore very popular, particularly with holiday hire boaters.

e. The Middlewich Branch of the Shropshire Union canal provides navigational access to the Pontcysyllte Aqueduct and canal world heritage site on the Llangollen canal.

f. There are 2 marinas on the Middlewich branch alone and one at the junction with the Shropshire Union Canal.

g. The canal towpath in this location forms part of National Cycle Route 5 and is part of the Weaver Way.

h. The canal has been adopted by a community group. The Shropshire Union Middlewich Branch Adoption Group have adopted 5 miles of canal and undertake weekly and monthly volunteer tasks along the branch including hedge laying, planned preventative maintenance on our locks and structures, installation and maintenance of canal furniture and reactive works such as co-ordination with customers during a significant pollution incident on the canal. This indicates how much the canal is valued by the local community.

Appendix C9 of the Sustainability Statement at 3.10.1 acknowledges that “changes in townscape and landscape character and views can become a focus for concern and anxiety. The built environment can impact in public health and the way that people utilise their environment including decreased physical activity. If visual environments deteriorate, so too can the physical and mental health of the people that live in them”. The proposal will create an oppressive and discouraging element into a very heavily used canal corridor.

We note that Appendix B: Process and Alternatives Figure B1-3 – sets out the “Increasing range of sustainability information at each sift”. Whilst this includes national cycle routes it does not include canals, yet we note that country parks are included. As it is unclear if the importance of this asset has been adequately considered we would like confirmation of the status of the canals in respect of the sift analysis.

Please also see our routewide comments relating to boating businesses.
(3) Impact on Heritage. Hughes Bridge is a Grade II listed structure. This is identified within Appendix C2 Cultural Heritage of the Sustainability Statement where it is stated that there is no setting impact. Given the proposed change to the character and appearance of the canal corridor as a result of the multiple rail crossing, we consider that "no impact" is incorrect and should be reassessed.
(4) Impact on Assets. The crossing is shown to be on an embankment across the line of the 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.
(5) Impact on Moorings. There are Trust visitor moorings in this area between canal bridges 26 and 24. These will be lost by the creation of the tunnel to provide access to the RSD. There are moorings at Park Farm on the non-towpath side of the canal. The operation of these in the context of the proposed RSD and associated infrastructure should be discussed with the mooring operator.
(6) Impact on Biodiversity. The canal is a non-statutory wildlife site. The width of the canal crossing would create shading of a substantial area, impeding vegetation growth, particularly affecting (and breaking) the towpath hedgerow.
(7) Impact of noise on the wider canal corridor. The impact of noise from the RSD will need to be assessed and mitigated. In relation to the canal crossing point please refer to our routewide comments.
Note: We would like to make it clear that despite two formal requests from the Trust since December 2016, HS2 has been unable to provide us with detailed information regarding the selection process for the RSD site. Although responses were received, these were lacking in details of a testable methodology for site selection, and thus we have not been given the opportunity to offer a critique of the selection criteria for the site. This is disappointing.

Canal & River Trust Response to HS2 Phase 2b Crewe to Manchester West Midlands to Leeds Route Refinement Consultation 2016

Without prejudice potential suggested mitigation/opportunities

(1) Our preference is for the RSD and associated infrastructure to be moved to a location which does not affect a waterway. **If** the RSD must be sited in the vicinity of one of our waterways, then of the two options presented to date the Golborne site has the least worst impact on our network.

(2) The embankment shown on the drawings will have to be replaced with a structure to allow for navigation and towpath access. Please refer to our routewide comments. Our preference is for the approaches to the RSD to be redesigned to allow the crossing size to revert back to that proposed in 2013 (a twin track crossing). This includes there being no grade separated rail junction having a significant adverse affect on the waterway corridor. Alternatively, the vertical alignment of the railway could be reduced to take it under the canal. **If** a four track crossing is to be created this is a significant interface, in stark contrast to the open rural landscape, it would therefore require a special design treatment to minimise the likely impacts. Possibly a special abutment treatment will be required, consideration of the benefit of light wells between the tracks, consideration of consistent soffit height on multiple structures etc. Great care is required to ensure that the significant negative impact on the human experience and the setting of Hughes Bridge is minimised. The landscape to the south of the canal is open, this would typical require an extended viaduct to maintain the openness of the landscape. However, further work will be required to assess the value of a low, wide viaduct, in retaining the openness of the landscape; compared to an embankment and associated planting.

(3) **If** the RSD is to be located on the site north of Crewe, we suggest woodland planting between the proposed depot and the West Coast mainline would supplement the visual buffer to the canal that the West Coast Mainline creates. A belt of woodland planting along the west of the existing mainline together with a railside acoustic screen would have the benefit of mitigating the visual and noise impacts of the HS2 depot and the existing mainline. There should be targeted advanced planting to screen views of the RSD from the canal. Buildings and lighting should be designed to minimise the impact on the surrounding area.

(4) **If** the RSD and associated infrastructure is to be located in this area some supplementary planting of woodland clusters in field corners etc. is required to buffer the medium/long views of the raised crossing/overbridge from the canal.

(5) Hedgerow improvements (planting, laying, gap filling) in the sections before and after the HS2 crossing.

(6) We expect the principles of noise mitigation agreed with the Trust on Phase 1 of HS2 to be adopted in terms of crossing points. Mitigation in relation to the RSD operation is also required (please see point (2) above).

(7) The Trust requires equivalent reinstatement for the loss of the stretch of visitor moorings.

Canal & River Trust Response to HS2 Phase 2b Crewe to Manchester West Midlands to Leeds Route Refinement Consultation 2016

Question 2 Do you support the proposal to change the alignment and raise the route through the Cheshire salt plains? Please indicate whether or not you support the proposal together with your reasons.

Answer: We do not support the proposal. The introduction of 3 crossings of the Trent and Mersey Canal within a 3.2km section of the canal, along with the parallel running of the HS2 line with the canal, will have a severe adverse impact on this linear recreational and heritage asset.

Our reasons are set out below.

Reasons:

(1) Visual Impact of individual crossings and the HS2 line running parallel to the canal

In terms of visual impact on the canal we consider there to be 4 elements:

a. Trent & Mersey River Dane floodplain viaduct (southerly crossing, chainage 19+700)

This proposed crossing will have a **severe adverse impact** on the canal corridor. This is a highly skewed crossing extenuating the issues of the crossing to the canal. To the north the line of HS2 will spring off a wooded embankment c 10m above the canal. This will potentially create a difficult space on the non-towpath side. There will be a significant backspan which will be devoid of vegetation and a scar on the existing attractive mature deciduous wooded embankment. To the south the proposed line of HS2 extends out over the flood plain on a viaduct, over c15m above the flood plain which could be a striking structure. In order to construct this crossing it is likely that a number of mature trees will be removed, further adversely impacting the character of the waterway corridor. This includes both those trees on the line of HS2 and those that will require removal in creating the stand-off between the woodland and the railway.

b. Trent & Mersey Puddinglake Brook Viaduct (central crossing, chainage 21+150)

This proposed crossing will have a **severe adverse impact** on the canal corridor. To the north the adjacent farm land is higher than the towpath with a reasonably well established and maintained hedgerow to the rear of the towpath; as a result, the proposed line of HS2 is reasonably discreet to the north from the canal. To the south the line crosses an area of low scrubland and Whatcroft Lane. This is a reasonably contained landscape and the crossing will be on viaduct c5m+ over the canal; the bend in the canal also limits long views of the crossing. There is concern over the landscape quality of the space below the viaduct to the south of the canal and how this will be treated.

c. Trent & Mersey Flash (north crossing, chainage 21+750)

The crossing is shown to be on an embankment across the line of the Trent & Mersey Canal. 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.

This proposed interface has a **severe adverse impact** upon the canal corridor. This crossing is at a very picturesque section of canal with a wide section of water created by the canal and by the flash. There is also a local nature reserve between the canal and the existing rail line, creating a special waterway place. The proposed HS2 crossing will be c12m+ above the canal and therefore a significant structure. The crossing will be highly visible over the canal and to the east. To the west the line of HS2 will be absorbed into the landscape beyond the line of the existing railway. The quality and setting of this crossing increases the impact of the proposed HS2 crossing.

We ask if the financial implications of providing a bespoke bridge crossing of the canal has been taken into account when assessing this route alignment?

d. Area around Billinge Green (parallel running of the line to the canal, chainage 21+900 to 23+000)

In the area around Billinge Green the line of HS2 will be visible in the middle distance on the horizon as it passes the site of Higgins Lane Farm, causing a potential adverse impact upon the canal corridor. The canal here has a small wides/flash creating an attractive section of canal.

Our concerns are reflected in the Sustainability Statement including Post Consultation Update Volume 1: Main report of the Appraisal of Sustainability which recognises the increased visual impact for recreational users of the Trent and Mersey Canal. Appendix C1 Landscape of the Sustainability Statement identifies "locally major visual impacts would affect recreational users of the Shropshire union Canal, Trent and Mersey Canal and Heyrose Golf Course". Major adverse impact is concluded. This should be compared with the 2013 Sustainability Statement Volume 1 and Appendix E1 – Landscape, Townscape and Visual which states "minor or locally **moderate** visual impacts would affect recreational users of the Shropshire Union Canal, the Trent and Mersey Canal and the North Cheshire Way walking route".

(2) Cumulative Visual Impact

Although the three crossings cannot be seen together they will create a combined landscape impact upon the linear narrative of the canal corridor that is likely to impact upon the landscape quality and amenity of the Trent & Mersey Canal here.

Our concerns are reflected in the Sustainability Statement including Post Consultation Update Volume 1: Main report of the Appraisal of Sustainability which recognises the increased visual impact for recreational users of the Trent and Mersey Canal. Appendix C1 Landscape of the Sustainability Statement identifies "locally major visual impacts would affect recreational users of the Shropshire union Canal, Trent and Mersey Canal and Heyrose Golf Course". Major adverse impact is concluded. This should be compared with the 2013 Sustainability Statement Volume 1 and Appendix E1 – Landscape, Townscape and Visual which states "minor or locally **moderate** visual impacts would affect recreational users of the Shropshire Union Canal, the Trent and Mersey Canal and the North Cheshire Way walking route".

(3) Impact of Recreational users

a. Annually the Trust produce a lockage report which measures lock usage for selected locks across our 2000 mile network (see https://canalrivertrust.org.uk/media/original/31240-annual-lockage-report-2016.pdf). Lockage can be defined simply as lock usage through the filling and emptying of a lock chamber, which in turn allows the movement of water and passage of boats. It is important to distinguish lockage from boat movements, which are the actual number of boats which travel through a lock. Boat movements are separated from lockage to acknowledge that averages can be skewed by the boat:lockage ratio (in the case of a typical broad lock, the ratio can be between one and four boats per lockful of water used). Lock 75, Big Lock on the Trent & Mersey Canal is a monitored lock for the lockage report. Please see Appendix 3 for a map showing the location of the lock. The Trust ranks lock usage from the most frequently used – number 1 to the least frequently used, number 175. During 2016 Lock 75, Big Lock was ranked number 27. In 2015 it was ranked number 26, showing that lock usage is high.

b. During 2016 the Trust estimates that the number of boat movements at Lock 75, Top Lock, a broad lock, were 12256. These figures show the importance of this location on the waterway network.

c. The canal forms part of the Cheshire Ring which is a cruising ring (see Appendix 2). Such rings allow boaters to experience as much of the canal network as possible without re-tracing their route. Cruising rings are therefore very popular, particularly with holiday hire boaters.

d. The Trent & Mersey Canal Towpath in this location forms part of the Cheshire Ring Canal Walk.

Appendix C9 of the Sustainability Statement at 3.10.1 acknowledges that "changes in townscape and landscape character and views can become a focus for concern and anxiety. The built environment can impact in public health and the way that people utilise their environment including decreased physical activity. If visual environments deteriorate, so too can the physical and mental health of the people that live in them". We refer to our comments on the severe adverse visual impact that this proposed alignment will have.

Please also see our routewide comments relating to boating businesses.

(4) Impact on Heritage

The canal is a conservation area in this location. The Trent & Mersey Canal Conservation Area appraisal states:
"*The Trent and Mersey Canal is of great industrial archaeological importance. It was the first major element of the national canal network, and the greatest civil engineering project of the eighteenth century*".

The section on Urban Form from Croxton Aqueduct to Broken Cross states:
"*after bridge 181" (and heading north, see Appendix 3 for the location of bridge 181) "is the first sighting of the intrusive Morrison's warehouse which dominates the views along this section and has a detrimental effect on the character and setting of the canal. Noise from traffic, Morrison's warehouse, encroaching development from Gadbrook Park to the west and the increased boating activity associated with Orchard Marina all disturb the tranquillity of the canal*".

It is therefore reasonable to conclude that the character of the conservation area in the area of the HS2 crossings is tranquil. An extract from conservation area appraisal is in Appendix 4.

The visual and noise impact of HS2 will change the way in which the canal is experienced, having a major adverse impact on the canal conservation area.

Our concerns are reflected in the Sustainability Statement including Post Consultation Update Volume 1: Main report of the Appraisal of Sustainability which recognises that "the route crosses the Trent & Mersey Canal at three locations east of Bostock Green. The 19th century canal is designated a Conservation Area for its whole length and these three crossing would have a major impact in its character and appearance". It also identifies key changes from the 2103 consultation. In the new and increased impacts potentially affecting the significance of the heritage asset section, the adverse impacts on the character and appearance of the Trent & Mersey Canal Conservation Area at Bostock Green are listed. Appendix C2 Cultural Heritage of the Sustainability Statement recognises the direct impact on the canal conservation area. It identifies a major impact.

(5) Impact on Assets

The crossing of the canal at the Trent & Mersey Flash (north crossing, chainage 21+750) is shown to be on an embankment. 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.

There is a small area on land that we own near the Trent and Mersey River Dane flood plain viaduct GR: 368558:368754. This may be an old dredging disposal site.

(6) Impact on biodiversity

The crossings will cause significant shading which will impede growth of vegetation - particularly marginal fringe, and hedgerow. There is evidence of water vole and otter using the canal in these areas, and the crossings could sever the connectivity of the canal corridor for these species & habitats. The flashes will be used by wildfowl.

(7) Impact of noise on the wider canal corridor

There will be additional noise impact on an area acknowledged for its tranquillity. Please refer to our routewide comments.

(8) Impact on Moorings

There is a marina under construction at GR: 368300 – 3711120. Park Farm Marina opened in March 2016 at GR: 368240 – 371700. The operation of these in the context of the proposed route should be discussed with the marina operators.

There are Trust owned visitor moorings on the non-towpath side of the canal in the vicinity of the southern HS2 crossing point. The location of the visitor moorings (Bramble Cut) has been adopted by a boat club. This is a popular location for casual mooring.

Note: We would like to make it clear that despite two formal requests from the Trust since December 2016, HS2 has been unable to provide us with detailed information regarding the selection process for the proposed route through the Cheshire salt plains. Although responses were received, these were lacking in details of a testable methodology for route selection, and thus we have not been given the opportunity to offer a critique of the selection criteria for the route. This is disappointing.

Without prejudice potential suggested mitigation/opportunities

(1) Revert back to the 2013 route to avoid the two additional crossings or an alternative which has no waterway impact.

(2) **If** the route is to remain in the 2016 position the only mitigation for multiple crossings is to make each crossing as positive as possible.

The Trent & Mersey River Dane floodplain viaduct (southerly crossing, chainage 19+700) non-towpath side abutment is a major concern. It is difficult to see how this can be mitigated. The alternative arrangement would be to extend the abutment face towards the canal, reducing the dead space, however, this will increase the structural elements (abutment plus wing walls). The crossing is c.10m above the canal and will likely be the second span of a significant viaduct over the river valley. The skewed nature will make it critical to address the setting of the piers in relation to the canal to minimise clutter and bulk from the structure. Dead space under viaduct spans will have to be addressed to ensure they do not adversely impact upon the canal character, or create problems with antisocial behaviour.

The Trent & Mersey Puddinglake Brook Viaduct (central crossing, chainage 21+150). To the north hedgerow planting and management is required to ensure the current hedgerow is sustained. To the south some woodland planting and management in the corner of scrub between the canal and Whatcroft Lane is required to reduce the visual impact and improve the ecological value of the area. Careful consideration will have to be given to the landscape quality of the space below the viaduct.

Trent & Mersey Flash (north crossing, chainage 21+750). The embankment shown on the drawings will have to be replaced with a structure to allow for navigation and towpath access. Please refer to our routewide comments. From the west, over the existing railway, the crossing should be a continuous viaduct to the farm on the horizon to the east, to retain the openness of the landscape. It will be important to optimise the landscape setting and reflective quality of the open water to create a striking piece of modern rail infrastructure. The viaduct should create a clear span of the canal and the flash. Retention of the emergent aquatic vegetation between the flash and the canal may be used to knit the HS2 structure into the waterway corridor and soften the impact on the waterway. Consider the benefit of appropriate habitat creation planting between the canal and existing railway, to support biodiversity and reduce visual impacts to the west.

In the area around Billinge Green (parallel running of the HS2 line to the canal, chainage (21+900 to 23+000) – please see the comments above regarding replacement of the embankment with a viaduct to Higgins Lane farm. In addition to this consider woodland belt planting along the crest of the hill between the proposed line of HS2 and the canal to reduce visual impact.

(3) The impact on otter and water vole would need to be mitigated by habitat enhancement or creation nearby. We also suggest hedgerow improvements (gap planting, laying), woodland planting and marginal fringe improvement (along with bank protection design) in the sections which are not directly crossed.

(4) We expect the principles of noise mitigation agreed with the Trust on Phase 1 of HS2 to be adopted in terms of crossing points.

(5) Mitigation for the loss of our land which could be used for the disposal of waterway dredgings.

Question 3 Do you support the proposal to change the alignment of the approach to Manchester Piccadilly station? Please indicate whether or not you support the proposal together with your reasons.

Answer: The Trust has no specific comments to make on the proposal to change the alignment here. The HS2 development is a catalyst for wider development around the canal corridor. Please refer to the comments we made in Appendix 1 of our 2013 consultation response. We are keen to work with HS2 and Manchester City Council to optimise the potential of the canal environment in place making for the HS2 station development; and how the HS2 station development can enhance Manchester's waterways.

Canal & River Trust Response to HS2 Phase 2b Crewe to Manchester West Midlands to Leeds Route Refinement Consultation 2016

Question 4 Do you support the proposals to re-align the route to the east of Measham? Please indicate whether or not you support the proposal together with your reasons.

Answer: The Trust does not favour one route over the other, as both routes potentially prejudice the Ashby Canal restoration scheme. The 2016 consultation does not acknowledge the impact HS2 has on the restoration scheme. We set out details below. Whichever route is taken the outcome must ensure that it does not prejudice the route and desirability of the Ashby Canal restoration.

(1) Impact on the Ashby Canal restoration project.

Whilst this part of the Ashby Canal is not currently owned or being restored by the Canal & River Trust, the Trust is named in the Ashby Canal Transport and Works Act Order as the nominated statutory transferee covered by the Order. This means that the promoter of the Order (Leicestershire County Council) could transfer all of the land and powers covered by the Order to the Trust without the need for any further statutory process, although there is no obligation on LCC to transfer and, equally, no obligation on the Trust to accept that transfer.

The Sustainability Statement including Post Consultation Update Volume 1: Main report of the Appraisal of Sustainability sets out at 4.4.1 the criteria used for a review of major development proposals known at the time of appraisal. This includes major infrastructure schemes. Paragraph 4.4.2 also considered local planning policy allocations within adopted and emerging development plan documents. This review has failed to identify that the route of HS2 crosses the route of the 2005 Transport and Works Act Order for the Ashby Canal restoration. There is also a saved policy in the North West Leicestershire Local Plan (adopted 2002) which seeks to prevent development which would prejudice the re-opening of the Ashby Canal. The North West Leicestershire Local Plan is currently at examination stage. Policy IF6 relates to the Ashby Canal. This states:
"Development which would prejudice the restoration of the Ashby Canal and its historic route, as identified on the policies map, or the provision of canal side facilities will not be permitted.

The reconstruction of the Ashby Canal from Snarestone to Measham, to include the construction of a new canal wharf at Measham, is supported.

The principle of the provision of an alternative route for the Ashby Canal will be supported where it can be demonstrated that the existing historic route is no longer appropriate".

At chainage 13+650 (approx.) HS2 will cross the proposed line of the Ashby Canal restoration. The canal water level here will be approximately 2.7m higher than the HS2 line. Proposals which prejudice future restoration of the canal are not acceptable to the Trust.

(2) Impact on Heritage

The HS2 line will cross the original route of the Ashby Canal.

Canal & River Trust Response to HS2 Phase 2b Crewe to Manchester West Midlands to Leeds Route Refinement Consultation 2016

Without prejudice potential suggested mitigation/opportunities

(1) Whichever route is taken the outcome must ensure that it does not prejudice the route and desirability of the Ashby Canal restoration. One option may be to re-route the restoration line of the canal to a point along the proposed HS2 alignment which would allow the canal to pass under the HS2 alignment with sufficient navigable headroom.

(2) We would recommend archaeology recording at the point where the HS2 line will cross the original route of the Ashby Canal.

Question 5 Do you support the proposal to realign the route in the area around East Midlands Airport? Please indicate whether or not you support the proposal together with your reasons.

Answer: The Trust is neutral on this matter.
Although the 2016 route will introduce further parallel running of the line with the River Soar navigation, our 2013 consultation response stands, with the exception of the following update:
The planning application for the marina proposal at Redhill Marina referred to in our 2013 response was dismissed at appeal. A current planning application at Redhill Marina for the construction of an inland leisure marina; associated ancillary building, infrastructure, car parking and landscaping with incidental mineral extraction is being considered by Nottinghamshire County Council.

Question 6 Do you support one of the two options being considered by the Secretary of State for the alignment through Long Eaton? Please indicate which option together with your reasons.

Answer: Our preference is for the lower alignment. Our reasons are set out below.

(1) Visual Impact
The station platform and associated infrastructure will be located at a lower level with this proposal. The lower the level of the station the less potential there is for impact on the Erewash Canal.

Canal & River Trust Response to HS2 Phase 2b Crewe to Manchester West Midlands to Leeds Route Refinement Consultation 2016

Question 7 Do you support the proposal to amend the route to serve South and West Yorkshire? Please indicate whether or not you support the proposal together with your reasons.

Answer: We are supportive of the proposal to amend the route to serve South and West Yorkshire subject to ensuring that the 2016 route satisfactorily addresses its impact on the Chesterfield Canal restoration scheme, the Norwood canal tunnel, Sheffield and South Yorkshire Navigation at Mexborough and the Barnsley, Dearne and Dove restoration proposal. Further details are set out below.

Our 2013 consultation response set out in detail:

a. the prejudicial impact the 2013 route would have on the Chesterfield Canal restoration scheme;
b. the prejudicial impact the 2013 access to the Staveley Infrastructure Maintenance depot would have on the Chesterfield Canal restoration scheme;
c. the potentially significant negative impact the station at Meadowhall would have on the environment of the Sheffield and South Yorkshire navigation at Meadowhall. The HS2 crossing when combined with the existing A6178 road bridge would result in 130m of waterspace being covered;
d. the prejudicial impact the 2013 route would have on the Barnsley, Dearne and Dove canal restoration proposal; and
e. the impact the 2013 route have on the Coal Canal Arm of the Barnsley Canal, part of a canal restoration proposal.

The 2016 route still presents issues for the waterways but on balance these are considered to be easier to mitigate than the issues identified with the 2013 route and station proposal. We set out the issues with the 2016 route below along with suggested, without prejudice, mitigation/opportunities.

Issue

Rail levels on approach to the Staveley Infrastructure Maintenance Depot.

The rail access to the Staveley Infrastructure Maintenance Depot crosses the route of Chesterfield Canal restoration scheme at approx. chainage 7+500. A railway already crosses the canal restoration at this point with sufficient headroom for the canal to be accommodated beneath it. It appears that the HS2 rail level will be below the level of the current railway. This could prejudice the Chesterfield Canal restoration. Prejudicing of the restoration scheme is not acceptable to the Trust.

Without prejudice potential suggested mitigation/opportunities

Sufficient headroom has to be provided to accommodate the canal beneath the HS2 rail level.

Canal & River Trust Response to HS2 Phase 2b Crewe to Manchester West Midlands to Leeds Route Refinement Consultation 2016

Issue

Impact on Chesterfield Canal restoration scheme HSL14 chainage 2+500 and the Norwood canal tunnel HSL 14 chainage 2+600, Norwood Area.

The HS2 route crosses the line of the proposed Chesterfield Canal restoration scheme at Norwood, at approximately chainage 2+500.

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. 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.

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 East: Restoration of the Chesterfield Canal from Killamarsh to Kiverton Park sets out the social, economic, ecological, environmental, historical and archaeological context of the canal and assesses the impact of restoration.

The Norwood area lies within Rotherham Metropolitan Borough Councils area. The adopted Rotherham Core Strategy 2014 states “The Council supports the broad aims of the Chesterfield Canal Strategy and Viability Study. This is reflected in Objectives 8 and 9 and by Policies CS19 Green Infrastructure and CS23 Valuing the Historic Environment”. The emerging Rotherham local plan publications sites and policies document states in Policy SP 34 Canals **“**The Council will be supportive of proposals for the sensitive restoration and maintenance, to navigable status, of the canals within its boundaries and will, wherever feasible, seek to protect the lines of those canals or an alternative, designated route from developments likely to prejudice any such future restoration and maintenance”. This plan is currently at examination stage.

The historic line of the canal passes through the 2,665m long Norwood tunnel. A partial collapse of Norwood tunnel in 1907 resulted in severance of the Chesterfield Canal. To address this, the restoration scheme proposes an over ground route for the canal. It will use an existing underpass beneath the motorway. HS2 is shown on an embankment in this area which would prejudice the canal restoration scheme. Prejudicing of the restoration scheme is not acceptable to the Trust.

The Sustainability Statement including Post Consultation Update Volume 1: Main report of the Appraisal of Sustainability recognises that the Cuckoo way – the footpath along the route of the Chesterfield Canal is crossed by the route of HS2. In this location the footpath (and eventually when restored the canal) offers panoramic views of the Rother Valley. These would be blocked by the HS2 embankment causing severe adverse visual impact.

The original Norwood Tunnel is in the ownership of the Trust. The HS2 embankment is proposed to be built directly over a length of the tunnel. Although this does not have a formal designation this is a heritage asset. Paragraphs 4.13.8 – 4.13.10 of the Sustainability Statement including Post Consultation Update Volume 1: Main report of the Appraisal of Sustainability, refers to non-designated heritage assets:

"*4.13.8 Non-designated assets were not considered during this stage of the work, although it is recognised that there may be some of potential significance. These include archaeological sites, features and remains including palaeo-environmental deposits, which may be of national importance, but which are not scheduled for a variety of reasons, such as having not been formally assessed.*

4.13.9. Unlisted buildings (which may be locally listed), and historic landscape features have also not been considered by the AoS although it is recognised that there may be some of potential national importance. The landscape appraisal has considered prevailing historic aspects of land use where these are influential in affecting landscape character.

4.13.10. Information on non-designated assets is held on a number of data sources, including local authority Historic Environment Records, historic landscape characterisation and local archives. Research into known non-designated assets will be carried out as part of the EIA, alongside work to identify the potential archaeological interest of affected areas. Work for the EIA will include, where possible, field investigation to inform the impact assessment. Consultation with Historic England and local authority archaeologists and conservation officers will be undertaken as part of that work".

Heritage assets on derelict waterways are under-represented in formal heritage designations. Whilst Norwood tunnel is not a designated heritage asset the James Brindley designed tunnel was the longest canal tunnel in the world when opened in 1775. The most definitive history of the tunnel is found in Norwood Tunnel: Chesterfield Canal: Four Centuries of Challenge by C Richardson. Furthermore the work of Keith Falconer "Canal and River Navigations National Overview: an appraisal of the heritage and archaeology of England's present and former inland navigable waterways" (2016) is available on the Historic England website https://historicengland.org.uk/images-books/publications/canal-and-river-navigations-national-overview/ The gazetteer, which forms Part 2 of this report, covers canals and navigations operating in the 19th century, and identifies surviving structures and historic buildings. Whilst this second part of the work is as yet unpublished, it gives the Chesterfield Canal an overall heritage value of 4 out of 5. This is classed as high. It lists the "elements of considerable significance" as "Staircase formations on Rotherham section Cuckoo Wharf and straddle warehouse, Worksop. Norwood Tunnel".

The Trust is concerned that the proposal to construct an embankment over the line of the tunnel would lead to the loss of historic fabric of the tunnel which is nationally significant in the context of canal heritage.

Without prejudice potential suggested mitigation/opportunities

Replacement of the embankment with a viaduct would provide a route for the canal restoration via a suitable span. Extending the viaduct would also retain views across the Rother Valley. HS2 should construct that section of the canal restoration in the vicinity of the viaduct. This is to ensure that the restoration scheme is not prejudiced by an increase in cost/complexity or need for approvals from HS2 when the Chesterfield Canal Trust is restoring the canal in the vicinity of the HS2.

If heritage fabric at the western end of the Norwood tunnel is to be lost full heritage recording is required (level 4 recommended). In addition, it should be noted that the existing Norwood tunnel to the east of Hard Lane is proposed to be used in the canal restoration scheme. The heritage significance of this small part the remaining section of the tunnel could be enhanced by contributions from HS2 to bring forward its reopening to the public and use as part of the restoration scheme.

Issue

Crossing of the Sheffield and South Yorkshire Navigation at Mexborough HSL 16 chainage 4+150

Although a major viaduct crossing, the local landscape is reasonably contained along the navigation corridor limiting views of the viaduct to the spans over and directly adjacent to the navigation. The future treatment of the land to the south of the navigation, post HS2, may create wider views of the viaduct, and the impact on the navigation will need to be considered. The crossing is noticeably skewed, and will generate potential issues in the siting of piers and the residual spaces created. There will also be noise issues to the wider navigation corridor. There is some evidence of antisocial behaviour around the abutments to Doncaster Road and care will need to be taken to avoid creating an environment which enables antisocial behaviour.

Without prejudice potential suggested mitigation/opportunities

We expect the design principles for viaduct design agreed with the Trust on Phase 1 of HS2 to be adopted here. Particular care will need to be taken to minimise the dead space beside the navigation. Consider a wet pier on the offside of the navigation if this can be aligned with the wash wall. The towpath side pier placement and orientation need to create a safe and attractive towpath environment avoiding an unsecured and unattractive space in the span behind the towpath pier.

Approaching the crossing from the west the existing wet (willow) woodland on the spit of land between the navigation and River Don is critical in framing the view of the viaduct over the navigation. The sustained management of this woodland needs to be undertaken. The future of the land to the south of the navigation adjacent to the crossing will significantly affect the extent to which the viaduct is visible from the navigation. Appropriate boundary treatments are required to provide a suitable interface with the waterway boundary.

Habitat management is required on the remainder of the land adjacent to the crossing.

Towpath surfacing improvements would be beneficial here to encourage the positive use of the waterway corridor. Consideration could be given to access improvements to the towpath from Doncaster Road.

We expect the principles of noise mitigation agreed with the Trust on Phase 1 of HS2 to be adopted in terms of crossing points.

Issue

Crossing of the line of the Barnsley, Dearne and Dove canal restoration proposal HSL 16 chainage 5+500.

The HS2 route will cross the proposed River Dearne option route of the Barnsley, Dearne and Dove canal restoration proposal at approximately chainage 5+500. The line will be on a viaduct over the River Dearne floodplain and River Dearne (old course) here. The location of the viaduct piers could prejudice the restoration.

Without prejudice potential suggested mitigation/opportunities

Design the viaduct to span over the proposed navigation route.

Questions 8 and 9

Do you support the potential development of a northern junction to enable high speed services stopping at Sheffield to continue further north? Please indicate whether or not you support the proposal and your reasons.

Do you support the proposed location of the northern junction in the vicinity of Clayton? Please indicate whether or not you support the proposal and your reasons.

Answer: There are no assets of interest to the Trust in this area.

Other comments

Annex A: Summary of refinements not subject to consultation

(1) Kingsbury/Whatley

Please refer to our 2013 comment on the location of moorings on the Birmingham and Fazeley canal.

(2) East Midlands Hub Station

The changes proposed to the route heading north from East Midlands Hub Station affects the canal. We welcome the change from the embankment to a viaduct to open up views in this area. The canal and adjacent pasture land provide the setting for the Grade I listed church. It will be important to consider this in the design of the viaduct.

We do however note that Appendix C4 – Water of the Sustainability Statement including Post Consultation Update advises that it will be "*difficult to avoid placing viaduct piers in the canal due to an overlap of approximately 150m. Space for realignment is limited by Ilkeston Road, however, in order to avoid obstructing navigation, the canal will require realignment, likely to the western side*". Placing piers in the canal is not acceptable to the Trust equally re-alignment of the canal is not acceptable to the Trust.

The impact on the Erewash Valley from a breach at Moorgreen Reservoir should be considered.

The highly skewed crossing of the Erewash canal at Stanton Gate will require detailed consideration.

(3) Woodlesford

The 2013 proposal resulted in significant impacts on the Aire and Calder Navigation. We welcome the tunnel at Woodlesford to overcome these issues. We do however note that the rail alignment is to move closer to the Aire and Calder Navigation in the area between HSL21 chainage 14+800 and HSL 22 chainage 0+700. Please refer to our route wide comments. In addition, we are concerned by the potential loss of vegetation and the resulting visual impact on the Aire and Calder Navigation. Mitigation for the visual impact will be required.

(4) Leeds Station

The station lies over the Aire and Calder navigation and adjacent to the Leeds & Liverpool Canal. The Trust is keen to ensure that this area makes a very positive contribution to the waterway corridor and the surrounding city. We would like to continue to engage with HS2 and Leeds City Council over the future of this area.

(5) Golborne Alignment

In isolation this is an improvement for the Leigh Branch of the Leeds & Liverpool Canal. However, please see our response to question 1.

General Comments

(1) Crossing of the Coventry Canal Polesworth HSL06 chainage 2+450
Please see our 2013 consultation response.

(2) Crossing of Cranfleet Cut Upper Trent Navigation HSL 09B chainage 12+950
Please see our 2013 consultation response.

(3) Nottingham Canal (former canal) Trowell HSL13A chainage 2+150
Please see our 2013 consultation response.

(4) Crossing of Aire and Calder Navigation (Wakefield Branch) Altofts HSL17B chainage 9+050
Please see our 2013 consultation response.

(5) Aire & Calder Navigation ECML link Woodlesford HSL17B chainage 13+450
Please see our 2013 consultation response.