

# **The Inland Waterways Association (IWA) Response to the Consultation on HS2 phase 1 Additional Provisions 2 Environmental Statement**

## **Introduction**

The Inland Waterways Association (IWA) is a registered charity, founded in 1946, which advocates the conservation, use, maintenance, restoration and development of the inland waterways for public benefit.

IWA members' interests include boating, towpath walking, industrial archaeology, nature conservation and many other activities associated with the inland waterways.

IWA works closely with navigation authorities, other waterway bodies, and a wide range of national and local authorities, voluntary, private and public sector organisations.

IWA accepts that the overall economic and social case for the proposed High Speed Rail network is for Government to make and for Parliament to decide.

If it proceeds it will have major adverse impacts on the local environment and quality of life of many people on its route, both during construction and operation, including impacts on the inland waterways infrastructure and users. The waterways affected include both existing navigations and canals under restoration for which equal consideration and provision should be made.

IWA considers that the project needs to be designed and implemented so as to minimise its impacts, to mitigate those impacts that cannot be avoided, and to fully compensate all those disadvantaged by its construction and operation.

## **Comments on Community Forum Areas with Waterways Impact**

The following CFAs are considered to have a waterways impact and are commented on further below:

- CFA 4 Kilburn (Brent) to Old Oak Common
- CFA 5 Northolt Corridor
- CFA 7 Colne Valley
- CFA 15 Greatworth to Boddington
- CFA 16 Ladbroke and Southam
- CFA 17 Offchurch and Cubbington
- CFA 20 Curdworth to Middleton
- CFA 22 Whittington to Handsacre
- CFA 26 Washwood Heath to Curzon Street

### **CFA 4 Kilburn (Brent) to Old Oak Common**

Plan CT- 05-009a R1 Construction Phase SES and AP2 ES shows Willesden Euro Terminal (main compound, rail import and export and materials stockpile) and Atlas Road Construction Site (satellite compound manufacturing tunnel segments) occupying both sides of land along the GU Canal

Conservation Area from a railway crossing at Bridge 7 north-west to Bridge 8 (Cricklewood to Acton Junction Line). This site originally had two separate temporary construction bridges over the canal about half way along, and enclosed aerial conveyors (max height 3.3m above ground) over the canal adjacent to or on Bridge 8. The site is a major tunnel lining manufacturing site and includes a conveyor-fed spoil heap from station and tunnel construction on the north of the canal here and may be in use for around 10 years.

The Additional Provisions 2 proposals show return of some land alongside the GU Canal as 'not required', mainly a triangle between Atlas Road, Old Oak Lane and the canal, and a further piece to the north by the upper of the two original temporary construction bridges between the Cricklewood to Acton Junction railway line and the GU Canal. The materials stockpile is now fed by an underground logistics tunnel from the Old Oak Station box, fed by the lower original temporary construction bridge, and a new temporary construction bridge about halfway between this and the original second bridge (now deleted) to the north.

#### IWA Consultation Response

- A Minimum Clearance of 3m over water and 2.75m over the towpath should be provided for the proposed temporary overhead conveyor and bridge crossings.

## CFA 5 Northolt Corridor

See CFA 4 above- the changes affecting the Grand Union Canal are actually in CFA 5, just beyond the end of CFA 4.

## CFA 7 Colne Valley

Construction work identifies the need for a 'temporary alternative route for the Grand Union Canal western tow path, to the east for a period of approximately three years and nine months adding an additional 600m. It will then be permanently reinstated along its existing alignment.' This is to avoid towpath use underneath the viaduct during its construction.

Noise adsorption barriers are shown as fitted to both sides of the viaduct up to and beyond the Grand Union Canal crossing. Noise levels in the marina are forecast to be within 50-65Db during the daytime, with noise levels at the point of crossing to be 65-70dB. Section 2.4.1 states there are no changes in the SES & AP2 that affect sound, noise and vibration. There is no additional information on sound, noise and vibration in Volume 5.

In AP2 drawing CT-06-019b confirms a noise fence barrier extending across the Colne Valley viaduct on the north side. Approximately half way across 'Harefield No. 2 Lake' and before crossing Harefield Marina, the noise fence barrier extends to both sides of the viaduct. Drawing CT-05-019b-L1 shows additional land required possibly around the crossing of the GU Canal approx 480m south of the Chiltern Main Line rail crossing of the canal, to allow rerouting of a 275kV overhead power line. The work is estimated to take 6 months. The drawing also shows a new 160m length of the west side of the GU Canal 800-960m south of the Chiltern Main Line rail crossing of the canal, included in an area for 'rerouting construction access' to avoid Buckinghamshire Golf Club clubhouse.

#### IWA Consultation Response

- IWA's concerns about noise impact from the viaduct on the GU Canal and Harefield Marina & its occupants remain apparently unaddressed, as originally petitioned.

### **CFA 15 Greatworth to Boddington**

No changes are proposed to plans to construct the culvert over the Boddington Feeder. Canal & River Trust need to remain involved in the approval of works design and programme, as EA is currently shown as the 'go to' regulator for design approval.

#### IWA Consultation Response

- Canal & River Trust need to be involved in design and approval of works to culvert the Boddington Feeder in this section, in addition to the EA as the watercourse is a canal feeder important to the operation of the Oxford Canal.

### **CFA 16 Ladbroke and Southam**

Drawing CT-05-080 Construction Phase SES and AP2 ES shows increased height bunds provided along both sides of the track in the vicinity of the Wormleighton canal loop which passes within 30m of the HS2 track on an embankment, becoming an engineered footpath underpass for the diverted SM116a footpath. On the same drawing increased height bunds are also provided to mitigate visual impact in the vicinity of the Oxford Canal crossing east of Willison's Bridge, and line the route as it moves further north. Sound map SV-05-041 shows a 250m section at the canal overbridge, where 'averaged equivalent' noise levels of >65dB can be expected, in a currently tranquil situation. No information is provided about the effect of the increased height bunds alongside the tip of the canal loop. It is not clear what impact, if any, these bunds will make to noise mitigation. Vol 5 Sound and Vibration shows no impact at the Oxford Canal viaduct, with 75m width of >70dB at the crossing point. No data is shown for noise impact in the vicinity of the Wormleighton canal loop.

#### IWA Consultation Response

- In this CFA, the enhanced height bunds may reduce noise transmission on the footpath SM116A underpass or Oxford Canal viaduct crossing. However the actual effect of the reduction is hard to see given the lack of data at Wormleighton Loop, and the work is only intended to mitigate visual impact. At the Oxford Canal viaduct, the lack of noise barriers on the viaduct show the original effect remains. On this basis, IWA's original petition for better noise mitigation will still apply here.

### **CFA 17 Offchurch and Cubbington**

The AP2 work relates to Offchurch Greenway crossing over the Fosse Way, and additional drainage with no change in impact on the canals in the area. IWA's concerns over inadequate noise mitigation on the crossing of the Grand Union Canal remain.

#### IWA Consultation Response

- No change to our position that in this CFA, where no noise barriers are proposed on the Longhole Viaduct crossing, sections of noise barriers or equivalent should be fitted to achieve suitable mitigation.

## CFA 20 Curdworth to Middleton

The route runs over the Birmingham and Fazeley Canal in the pound between locks 5 and 6.

No noise barrier is shown on the viaduct as it crosses the canal and proceeds northwards in plan CT-06-119

Revised landscape mitigation and planting is shown on the embankment to the west side of the Birmingham and Fazeley Canal, along with a revised access to an auto transformer station however neither have any impact on the canal, mainly reducing good agricultural land take. There are no improvements to noise mitigation on the viaduct over the canal itself. As a result a 325m stretch of the canal is shown as experiencing 55dB (night ) and 65dB (day) averaged equivalent noise levels. Section 5.9.12 also states that there are ‘...changes where reassessment is considered to be required in respect of agriculture, forestry and soils; cultural heritage; ecology; landscape and visual assessment; sound, noise and vibration; traffic and transport; and water resources and FRA’ as a result of AP2. SES and AP2 ES Appendix SV-004-020 Table 1 indicates maximum impact from noise in the area of the canal crossing.

### IWA Consultation Response

- In this CFA, where baseline noise levels close to the canal crossing are already high, noise fence barriers or other mitigation are required on the viaduct to minimise additions to existing noise nuisance.
- Noise mitigation during construction activities is also required. Canal and towpath users should not be exposed to indiscriminate noise from uncontrolled construction activities whilst legitimately using the navigation.
- The viaduct and embankment will have a potentially severe adverse effect on the setting of the canal and locks. Good design needs to be deployed to mitigate this impact, and maximise the positive impressions from the necessary infrastructure. IWA supports the use of CRT’s Design Principles for waterway intersections.

## CFA 22 Whittington to Handsacre

### Wyrley and Essington (or Lichfield) Canal Diversion Impacts

9.4.17 confirms that AP2 includes the necessary realignment of approximately 300m of the Wyrley & Essington Canal at Cappers Lane by construction of a diversion channel to maintain the continuity of the canal beneath the HS2 viaduct and the replacement Cappers Lane canal bridge. This will ensure that the continuing restoration of the Lichfield Canal will not be prejudiced. IWA welcomes this commitment.

Figure 4: Indicative construction programme, shows construction of the Wyrley & Essington canal diversion between 2018 quarter 4 and 2019 quarter 2. Construction of the new section of canal needs to be to Canal & River Trust (CRT) standards, and provide the necessary minimum navigable dimensions under the Cappers Lane viaduct and the replacement Cappers Lane overbridge specified by Lichfield & Hatherton Canals Restoration Trust (L&HCRT). The construction should include a towpath on the south side with public access to it from the present line of Cappers Lane, and a private vehicular access to the offside (north side) of the canal to meet requirements for maintenance and moorings access.

As the realigned canal will be constructed across land owned by both CRT and L&HCRT, and a section of highway owned by Staffordshire County Council, the ownership and therefore maintenance responsibility of the completed canal infrastructure needs further clarification.

The replacement canal channel as shown will be constructed on a curve making mooring more difficult and will be crossed by a new road bridge with restricted access to the offside for mooring. The main impact is that the former rural tranquillity of these moorings will be lost to significant and frequent noise disturbance from both HS2 on the elevated railway viaduct and road traffic on the road bridge crossing the moorings. Whilst not long-term residential moorings, nevertheless boat owners expect to be able to stay for weekends or overnight on their moorings without the constant disturbance which would effectively render the 12 moorings west of Watery Lane Bridge permanently uninhabitable.

9.4.15 refers to the use of alternative mooring facilities nearby for a period of up to 2.5 years, and that the moorings will be reinstated upon completion of construction. However this takes no account of the limited availability and higher cost of other moorings, or the differences between commercial moorings and the social facilities offered by the Club, as described in 9.4.14.

IWA therefore considers that provision of the replacement mooring facilities as requested by LCC should be included in AP2, and that this should be at an early stage to avoid prolonged displacement. 9.4.16 recognises that due to the amended vertical alignment of HS2 at Cappers Lane and construction of the canal and road diversions, LCC will further suffer permanent loss of its boat maintenance area and slipway, and the significant effect of this on users and the club.

LCC has through correspondence and meetings put forward a practical scheme, plan and preliminary costings for replacement of its lost facilities by construction of a boat mooring arm, covered slipway, crane hard standing and car parking on land in its ownership adjacent to Cappers Lane, linked to the remaining canal at the present winding hole (turning basin) adjacent to Watery Lane Bridge, with a towpath footbridge to maintain continuity.

The loss of its boat maintenance area, slipway, crane hardstanding and car parking would be a major additional impact on the functioning and viability of the club. The further loss of 12 of its moorings, not just for 2.5 years during construction, but in effect permanently would also be most significant. Together, these losses would grievously impact the functioning and finances of the Club. Compensation should only be necessary where appropriate mitigation cannot be incorporated in the works, and in this case both the moorings and the maintenance facilities can and should be replaced.

#### Alternative route avoiding 3 crossings of the Trent and Mersey Canal

The revision of the horizontal and vertical alignment of the link lines to the West Coast Main Line reducing the number of crossings of the Trent and Mersey Canal from 4 to 1 is very welcome. However, in realigning Wood End Lane around the new rail alignment, the road has been threaded between the link lines and the Trent and Mersey Canal, leading to additional noise and visual intrusion around the canal where it turns through 90<sup>0</sup> on its way to Wood End Lock. In addition as the road approaches Wood End Lock Cottage it rises up on an embankment to cross the link lines. Appendix CH-003-022 WHA340 states that the AP2 revised scheme will be 150m away from the Trent & Mersey Canal Conservation Area, but this is incorrect. The railway will be only about 35m away from the canal at its closest point on the bend southeast of Wood End Lock. Also, at that point the proposed diversion of Wood End Lane will be within 20m of the canal and yet there is no assessment of the visual or road traffic noise impacts that are a direct consequence of HS2.

This combination recreates exactly the noise and visual intrusion IWA petitioned about initially, although to a lesser extent. The noise and intrusion of HGVs which frequently use the road will cause a major impact on this tranquil environment. IWA have proposed several alternatives to HS2 Ltd, which we believe are feasible and no worse than equal cost. These include crossing under both main and link lines or crossing above the link lines on a longer skew similar to the original route of the road. Where noise and visual mitigation has been designed between Wood End Farm and the rail link lines, either suggested road route could be placed alongside the rail route with the mitigating embankment south of both rail and road route, to maintain the benefit to the farm buildings.

The only significant objection made by HS2 Ltd to the IWA routes have been that drainage of the road 'sump' under the railway bridge might need a pumping station, however it should be possible to drain this by gravity pipeline to the nearby Curborough Brook.

The benefits of the IWA route include:

- Avoidance of the very high road embankments near the Trent & Mersey Canal, reducing visual impact and noise disturbance from road traffic to the canal, at nearby properties, and to the local landscape;
- Avoiding noise and visual impacts on the heritage interest of the Trent & Mersey Canal Conservation Area and the setting of its Listed Buildings;
- Minimising construction impacts on the canal and towpath users, and minimising ongoing loss of tranquillity;
- Avoiding wider impacts on the recreation, tourism and economic benefits of the canal system;
- Minimising the changes to connecting roads including Netherstowe Lane;
- Preferred by both main farming families and the bottling plant business.

The SES assesses the impacts of the railway but does not assess the negative impacts of the elevated road diversion.

#### Inaccuracies in the SES

In the main Environmental Statement, Volume 2, CFA22 Section 6.2.21 states that the Manchester Spur 'dives-under' the southbound connection from the WCML at Handsacre, using retaining walls where adjacent tracks are at different heights (see SES and AP2 ES Volume 2: Map CT-06-127, 17);

However, in Volume 5 Technical Appendices, CFA22, SES and AP2 Appendix WR-003-022 states that the route will 'carry the Manchester Spur over the southbound connection from the WCML at Handsacre utilising retaining walls where adjacent tracks are at different heights (see SES and AP2 ES Volume 2: Map CT-06-127, 17);

Our reading of the plans, and the cross sections in Volume 3, is that the Manchester Spur passes over the southbound Handsacre Link line (the Up line, on the eastern side) so the Vol 5 Technical Appendix is correct but the main Environmental Statement is not.

The SES and AP2 also includes the following comment in section: 16.3.10 'One navigable waterway, the Trent and Mersey Canal, which the AP2 revised scheme passes alongside and crosses once, will be directly affected in the Whittington to Handsacre area. A usage of five boats per day was identified during a survey'. This is not representative, as was pointed out in IWA's response to the Final ES. According to the Canal & River Trust Annual Lockage Report for 2012 published January 2013 ([canalrivertrust.org.uk/media/library/323.pdf](http://canalrivertrust.org.uk/media/library/323.pdf)) the annual lockage in 2012 for Lock 20 Woodend Lock was 8491, which converts to an average over the whole year of 32 boats per day.

This survey has been updated in January 2014 and 2015, giving 7661 and 7068 boats respectively converting to 29 and 27 boats per day.

#### IWA Consultation Response

- The proposed rail route alterations around Fradley are a major positive benefit for the canal, which IWA is very pleased to see. The remaining rail crossing of the Trent and Mersey Canal appears inevitable, and good design of the structures and effective noise mitigation is needed to minimise the impact on canal users in this popular spot. Appropriate clearances (3m for water and 2.75m for towpath) are necessary.
- Construction of the new section of diversion channel canal proposed near Cappers Lane needs to be to Canal & River Trust (CRT) and L&HCRT standards. The construction should include a towpath on the south side with public access to it from the present line of Cappers Lane, and a private vehicular access to the offside (north side) of the canal to meet requirements for maintenance and moorings access.
- IWA considers that the works proposed by Lichfield Cruising Club as mitigation for the loss of its facilities should be constructed as part of the Advance Works, programmed to start in 2018 quarter 2, so as to be available before the existing moorings and facilities are lost on commencement of the main AP2 works in 2018 quarter 4 (Fig. 4 Indicative construction programme).
- The proposed design of the realigned Wood End Lane is not satisfactory, resulting in a significant effect on the historic character and landscape setting of the Trent & Mersey Canal and its enjoyment for leisure and tourism. The new road route would result in increased visual impact and noise to the immediate local area where the road approaches within 20m of the canal, and notably to the Grade II Listed Wood End Lock Cottage. IWA considers that the engineering, environmental and social advantages of our alternative alignment for the Wood End Lane diversion should be fully assessed against the presently proposed AP2 route.
- Once again, HS2 appear to have chosen an unrepresentative occasion to collect their boat traffic information, and have not updated their information with CRT's readily available and more representative data. This means any decisions made based on that data are flawed.
- Any overnight closures of the canal mentioned in SES and AP2 6.3.43 should be managed by CRT, and publicised in conjunction with CRT's stoppage notification system to maximise publicity and minimise disruption to overnight traffic.
- Noise mitigation is required on whatever design is confirmed for the link line connections to the West Coast Main Line, to ensure the Trent and Mersey Canal conservation corridor remains as tranquil as possible using best available technology.
- Noise mitigation during construction activities is also required. Canal and towpath users should not be exposed to indiscriminate noise from uncontrolled construction activities whilst legitimately using the navigation.

#### **CFA 26 Washwood Heath to Curzon Street stopped here 13.8.15**

Additional work is shown between Cranby Street and Duddeston Mill Road, on the premises occupied by TNT and Network Park Industrial Estate to the west of the GU Canal above the lock (Lock 5) on the towpath side. The work is labelled as 'widening the private road' on the TNT/ Network Park site, and SES and AP2 CFA 26 section 2.2.1 describes it as 'Temporary use of the road

network within Network Park Industrial Estate as a construction traffic route to undertake utility works and construction of an embankment and a replacement bridge over Duddeston Mill Road. The work will extend for 5 years.

#### IWA Consultation Response

- Any temporary widening will need to maintain a suitable barrier to mitigate noise and visual intrusion between the canal towpath and the private premises, including maintenance of the existing vegetation shield, and be reinstated at the end of the works as stated in Section 2.2.3.

## Volume 3-Route- wide effects

### IWA General Principles for Protection of Waterways Impacted by HS2

The following principles with respect to waterways need to be used to assess HS2's changes to the proposals for phase 1 and the limited extensions relating to phase 2 included in this consultation SES and AP2:

- Protection of Routes – No canal should be lost or blocked, whether a restoration project or a navigation in use, and where the route crosses a waterway, the waterway should be restored to a minimum of navigation standard, whether the navigation is presently extant or not.
- Navigation – There should be minimal disruption to navigation during the construction phase, and any necessary impacts should be integrated with CRT's planned stoppage programmes. IWA welcomes the specific statements about restricting closures and stoppages in individual CFA Reports.
- Waterway gauge - there should be no detriment to the constructed gauge of any waterway due to HS2, particularly in respect of headroom, taking account of any proposed enhancements on freight waterways. Any waterway crossings or other alterations to the waterway should comply with CRT's policy of headroom of 3 metres over water, and 2.75m over towpaths, with a minimum width of 12m for broad and 6m for narrow canals.
- Mitigation – wherever possible mitigation should be completed in advance of construction.
- Betterment – opportunities should be sought to achieve betterment for waterways within the planning process as compensation for environmental and heritage damage caused by HS2's construction and operation.

## Volume 4 Off Route Effects- Displaced Heathrow Express Maintenance Depot

### Topography

The site on which the displaced Heathrow Express Maintenance Yard is now proposed is in a rectangle of land bound to the north by the Grand Union Canal Slough Arm, to the south by the Great Western Slough-Iver existing railway line, to the west by Station Road/ Langley Park Road (B470), and on the east by Hollow Hill Lane. Rail connections into the depot are proposed to extend

further to the east before linking into the existing railway line, and the main construction compound is also located in this area to the south of the Mansion Lane area of housing.

#### Impact on Canal residents and leisure users

As can be clearly seen on photomontages LV-01-279 and LV-01-280, a line of boats single or double moored (according to width) occupies all the non-towpath side of the canal between the Station Road/ Langley Road, and Hollow Hill Lane. Amongst these boats are a total of 45 residential boats occupied by households, paying council tax and living permanently at this location. The remainder are leisure boat moorings, available to be used by their owners for extended periods but not as a main residence.

SES and AP2 ES Volume 4 Section 2.2 Overview of the Area has largely failed to acknowledge the presence of this group of residents and their properties (Sect 2.2.4, 2.14.8, 2.20.11). It is clear from the two photomontages mentioned above that these residents are the most affected by the depot. Of the 910m of non-towpath side of canal, the easternmost 445m is mainly affected by the rail track entering the site. The central 280m is approx 95m from the offices, 110m from the maintenance depot itself, and 145m from the centre of the sidings area where the largest buildings and greatest activity is taking place; and the westernmost 185m is beyond the active area at its closest. The maintenance depot building is described in Section 2.3.8 as 12m high x 150m long x 40m wide.

The land for the depot is proposed to be raised by approximately 3m over existing land levels- apparently to facilitate a level track from the main line at the expense of the community living in the area around the depot.

#### Hours of operation

Section 2.9 identifies the depot throughput as up to 19 electric trains to meet a service expected to operate from 05:10 until 23:25 Monday to Saturday and from 06:25 until 23:25 on Sundays. During the day there are expected to be five trains in the depot. One train will be kept ready to enter service in the event that a train in service fails. A further train will be available and would additionally be prepared for service if required. Up to three further trains will be in maintenance. The remaining 14 HEx trains will be used in service throughout the day and only visit the depot at driver shift change and at the end of the day.

#### Receptors and mitigation

Section 2.13 does not make any mention of the regular or occasional occupants of boats along the canal as receptors subject to impact, which is clearly not the case. Likewise there is little mention of the loss of this leisure amenity to residents in the wider area, who use the canal as a place to spend some quiet time which will be lost. It is helpful to note that Sections 2.20.31 & 32, referring to mitigation on Sound and Vibration do say 'The mitigation measures, including noise insulation, will reduce noise inside all dwellings (including boats) such that it does not reach a level where it will significantly affect residents – 'within a context that 'adverse residual effects are considered significant...'

#### Transport- access and egress for boaters...

Transport into and out of the boat yard serving the residential and leisure boaters is already difficult due to the level of existing traffic. With the additional traffic generated during construction, access and egress will become very time consuming unless some form of management is put in place.

- IWA believes the better way to mitigate the impact of this design of depot is to reduce its overall height notwithstanding the Section 2.3.7 statement- it would be preferable to have a rising track to the existing rail line to minimise the visual impact of large buildings.
- IWA considers that HS2 need to reinvestigate the Section 2.4.6 option choice, as the higher road crossing in a relatively sparsely inhabited area required for option VA3 appears a better trade-off than the more elevated site and associated noise, light pollution and visual impact of the large buildings and extensive working of Option VA2 actually selected.
- The overall design needs to keep the buildings as low as possible to do their job, and mitigate visual impact by building colour and design
- Visual and noise mitigation should also be enhanced by placing of barriers (eg bunds, noise barriers) between the maintenance and office buildings and sidings; and the canal
- Careful shielding of tracks and working areas by landscaping and earth works is a low cost way of mitigation, which additionally adds to local amenity within flood risk management works and will no doubt count as ecological mitigation or enhancement.
- IWA notes the proposal to provide noise insulation of boats. However, insulating boats will not be as simple as houses, because of the inherent structure of the vessels themselves. Maximising overall mitigation first is a more effective way to progress, to greater benefit of more people on top of insulating boats to the necessary standard.
- IWA proposes that low level lighting only be permitted, to prevent adding to light pollution
- Traffic management needs to consider how to allow access and egress to the boat yard to permit residential and leisure boaters to get safely in and out within a reasonable period of time.
- There is no information provided on the existing footprint of the Heathrow Express depot which is being displaced. It is surprising that this information has not been sought to quantify the nuisance likely to be created by this development. IWA believes this information should be obtained and incorporated in the SES.

## **Volume 5- IWA Position on Noise Affecting Waterway Users**

### **IWA Position on Noise Affecting Waterway Users**

This SES and AP2 document considers noise and vibration in a confusing variety of places, without apparently either standardising or improving on the original. The HS2 Phase 1 Environmental Statement Volume 5 Appendix SV 001-000 sets out proposals to manage noise nuisance from the project. UK government noise policy is discussed as setting out three aims, the first of which is to 'avoid significant adverse impacts on health and quality of life.' The policy states:

' any receptor forecast to experience an absolute 'end state' exposure from the source that exceeds the relevant SOAEL [Significant Observable Adverse Effect Level] should be identified as being subject, in EIA terms, to a likely significant adverse effect. This would reflect the aim to avoid significant effects on health and quality of life.'

The appendix goes on to set out upper limits for the SOAEL for the project by reference to WHO and UK Noise Insulation regulations:

‘For night-time, the World Health Organization’s Night Noise Guidelines for Europe<sup>21</sup> introduced an Interim Target of 55 dB  $L_{pAeq,8hr}$  measured outdoors. This is the noise threshold used for category ‘C’ of the ABC impact criteria at night (refer to section 14 of the SMR) and again can be taken to be a SOAEL [significant observable adverse effect level]

During the daytime the free-field level of 65 dB  $L_{pAeq,0700-2300}$  is considered a SOAEL. This is consistent with the daytime trigger level in the UK Noise Insulation (Railways and other guided systems) Regulations...’

It then goes on to quantify change in noise levels as another aspect of sound from the project which can be identified by receptors as noise, by reference to the table below:

Table 7: SMR Table 33 Airborne sound from operational train or road movements - impact criteria

| Long term Impact Classification | Short term Impact Classification | Sound level change dB $L_{pAeq,T}$<br>(positive or negative)<br>T = either 16hr day or 8hr night |
|---------------------------------|----------------------------------|--|
| Negligible                      | Negligible                       | ≥ 0 dB and < 1 dB  |
| Minor                           |                                  | ≥ 1 dB and < 3 dB  |
| Minor                           | Moderate                         | ≥ 3 dB and < 5 dB  |
| Moderate                        | Major                            | ≥ 5 dB and < 10 dB   |
| Major                           |                                  | ≥ 10 dB  |

Annexes set out the basis for modelling sound generation and transmission from HS2 by reference to HS1, and academic papers on European high speed trains. Annex D2 figure 1 (pg 3) section 1.1.18 compares maximum noise levels from existing high speed trains with HS1 CTRL models, and discusses the impact of improvements in the HS2 rolling stock. From this, a maximum noise level within 15m of an HS2 train is indicated as >90dB and <100dB. Safe listening times are suggested elsewhere (Ultimateears.com chart) as 1.5hrs at 100dB.

The Appendix then uses the SOAEL (Significant Observable Adverse Effect Level) of 55dB (night time) and 65dB (daytime) and the modelling described to identify ‘receptors’ who are subject, in EIA terms, to a likely significant adverse effect. The appendix describes residential and non-residential receptors in this situation.

The Environmental Statement Appendix SV-001-000 Annex G ‘Section 1.3 Route-wide receptor specific effects’ then makes a statement on Public Rights of Way and locations that have temporary and static moorings or permit occasional overnight stays such as static moorings, camp sites or caravan parks but do not permit long term residential use. Users of such facilities are not considered to be significantly affected by noise due to construction or operation of the Proposed Scheme due to the short and irregular exposure to noise from the Proposed Scheme, and will only enjoy noise reduction where this is put in place for residential or non-residential receptors in the vicinity.

It goes on to state that permanent moorings are treated as residential, whilst allowing for the lower sound insulation provided by the ‘shell’ of a boat compared to a house.

On this basis, HS2 expects (amongst others) waterway users whether on boats or towpaths to be exposed to levels of noise above the project-determined SOAEL of 65dB (daytime) 55dB (night time), or a 'Major' change in noise levels of  $\geq 5$ dB because the impact will be transient. In practice these levels could be as high as  $>90$ dB for a boat or towpath user passing under a low bridge whilst a train passes overhead, and represent a change in sound pressure of over 20dB. This is considered acceptable by HS2, despite the context that without the project going ahead waterway users could still enjoy the current absence of noise without detriment, and in many locations no attempt has been proposed to reduce noise levels with best available technology despite the UK Government's stated policy on noise pollution '... to avoid significant effects on health and quality of life.'

It is IWA's position that this is not acceptable, particularly as all licensed boats may generally moor for up to 14 days at a time at most points on the canal network, and considerably longer at long term moorings and in marinas. Further 'best available technology' engineering and mitigation effects must be deployed at canal crossings and in the vicinity of marinas, short and long term moorings to reduce transmitted noise as far as possible towards and below the SOAEL level. This would move towards the UK Government's Noise Policy Aims for a:

'...situation where the effect lies somewhere between LOAEL and SOAEL. The aim is that "all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur." In this context, the 'adverse effects' are those arising from noise between LOAEL and SOAEL.

The UK Government policy aims do not differentiate between residential, non-residential and temporary receptors in the arbitrary way the Environmental Statement does. IWA has made detailed comments on improvements needed to achieve this position in each CFA potentially affected.