



We care for the Chilterns

Douglas Oakervee CBE
c/o Department for Transport
Great Minster House
33 Horseferry Road
London
SW1P 4DR

3 September 2019

Dear Mr Oakervee

High Speed 2 Review

As the name implies, the Chiltern Society is a charity concerned with the conservation of the Chiltern Hills. We also work with other charities on the protection and enhancement of the Environment.

The Society has had serious concerns over HS2 since it was first announced. These relate to the significant impacts to the Chiltern Hills and the Chilterns Area of Outstanding Natural Beauty. Some of our concerns were addressed by extending the tunnel to emerge just east of Great Missenden. However, this left approximately 12km of railway running through the Chiltern Hills to Wendover.

The original parameters for choosing this route through the widest part of the AoNB included a connection to Heathrow. This requirement was dropped in 2015. This raised the question as to whether this was in fact the best route between London and Birmingham.

The arguments as to whether HS2 is to provide speed or capacity have continued. The Business Case is built upon the assumption that people, particularly business people, put a premium on time saving while travelling. With the ability to work on a train, this argument carries little weight.

Capacity

With regard to capacity, we argued a number of years ago that the West Coast Main Line (WCML) could extend the number of carriages from 9 to 12. At the time, this was dismissed as not feasible. However approximately 4 years ago, Network Rail decided to increase the number of carriages from 9 to 11, comprising 3 1st Class carriages and 8 Standard Class. This has resulted in the WCML having the lowest capacity utilisation of Main Lines into London. About the same time the Government announced that it would no longer reimburse MPs and Civil Servants for 1st Class fares. The result is that 1st Class runs at about 30% of capacity, effectively increasing the capacity available in Standard Class by a further 25%. Further capacity can also be made available on the East Coast Main Line (ECML), by providing a grade separation, where the ECML meets the railway from Felixstowe to avoid the freight trains from crossing the ECML on the level. This would enable speed to be increased on the ECML reducing the journey times from Leeds and York to London by approximately 20 minutes.

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Costs

It is clear that the Land and Construction costs are set to rise substantially.

One cost that has consistently been ignored is the cost of providing electricity to the project. The latest estimate we have seen is that HS2 will require the power generated by one medium sized power station. The country is already low on Electricity capacity, with the closure of a number of power stations and the delays in building replacement nuclear power stations. Realistically, the cost of a medium sized power station should be included in the costs of HS2.

Environment

HS2's Environmental performance has been less than stunning. Recently, the Woodland Trust issued a publication about the Threat to Ancient Woodland, posed by HS2. <https://www.woodlandtrust.org.uk/get-involved/campaign-with-us/our-campaigns/hs2-rail-link/>

When Phase 1 was going through Parliament, we highlighted the environmental impact in the Chilterns. Some actions were taken, but we will still have some 12ha of ancient woodland impacted. The map on the Woodland Trust's article shows the horrendous extent of the impact HS2 will have across the country at a time when, internationally, forests and woodlands are being conserved because of their positive impact on the fight against climate change.

We also wish to draw your attention to the other specific impacts on the Chilterns between Great Missenden and Wendover, where the line is in the open, in cuttings, on embankments and two viaducts. The latter will introduce light pollution into a particularly tranquil countryside.

In this area, there will be:

- the loss of 38km of ancient hedgerows
- the loss of 176ha of good quality farmland.
- The cutting of migration routes for wild animals for 5 km. Currently no provision has been made for Green Bridges to enable animal migration.
- The risk to the Misbourne aquifer through tunnelling and the loss of the Misbourne, a rare chalk stream.
- The risk to Bacombe Hill SSSI, where our geologist has established that the hill is unstable, and may be affected by the Wendover cut and cover tunnel (a so called "Green Tunnel2), being built at the bottom of the hill

With the current constraint on water, we understand that the tunnel boring machines will require over 1million litres of water per day. HS2 has not said where this water is coming from, and possibly this has not been included in the current costs.

Tunnel Safety

Throughout the Parliamentary process we raised the Issue of Tunnel Safety. The current design of the Chiltern Tunnel includes

- twin-bore tunnels
- 18 trains per hour each way
- 1,100 passengers, including disabled people, children and animals.
- Access walkways in the tunnels are only 1.5m wide, with no safety barriers separating them from the railway track.
- Cross passages are 350m apart.
- A section of tunnel with a 2.9° incline from under Shardeloes Lake to the North Portal.

We have engaged with HS2 with regard to safety concerns, and in May had a two and half hour meeting with Dr Reuben McDonald, Head of System Safety, Security and Interoperability at HS2. He explained how a train stopped in a tunnel would be emptied of passengers and staff in event of a fire on the train with no smoke in the carriages. We also discussed how passengers would leave the train if there was smoke in the tunnel. Having analysed Dr

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McDonald's answers, we raised a number of questions on 21st May. To date we have received no response, despite a reminder on 18th August.

Our main concerns relate to:

- Stopping trains on the opposite line requires a manual override
- Should passengers have reached the other tunnel, if a train comes through at even 40mph, with only a 1.5m walkway to stand on, there is a severe risk of them being lifted off their feet.
- There appears to be no control on passengers when they reach the other tunnel. At each cross-passage, they will need to make a decision to turn right or left. Any hesitation could result in a Hillsborough situation.
- The 350 m between cross passages means that at best 500 people can be accommodated on the 1.5m wide walkway between two cross passages. There will need to be clear instructions at each cross passage.
- Having got the passengers assembled in the opposite tunnel, the proposal is to bring the trains on that line into the tunnel to remove the people. However, one must assume that those trains are full, with potential standing room for approximately 350 people. Again, when people see the train departing, there is a risk of panic.
- Should the rescue train be on the upward incline, will the trains be able to start, with the additional weight of an extra 350 people? TGV's are known to have issues starting on a 3° gradient.

In addition, we have made a number of Freedom of Information requests re Tunnel Safety matters to HS2. These have all been rejected on different and inconsistent grounds of commercial sensitivity, economic interest of third parties, disclosure of internal communications, material in course of completion and jeopardising public safety. This has been referred to the Information Commissioner.

Geology

We have a number of concerns related to the underlying Geology. Our Geological Advisor, Dr Haydon Bailey has identified a number of areas giving rise to concerns.

- Chalfont St Giles – the route passes under the village at a depth of 20m. However, of this at least 16m comprises incompetent rubbly chalk. This gives rise to risks of serious settlement over this section, plus the risk of diverting the water flow through the aquifer, with the risk of losing the River Misbourne, a globally rare chalk stream.
- Shardeloes Lake – The route passes underneath the Lake and the River Misbourne. Again, this gives rise to the risk of diverting the water in the aquifer and the loss of the Misbourne.
- North Portal of the Chiltern Tunnel – a large deep deposit of alluvial clay has been identified here. This is not strong enough to bear the weight of the tunnel and will require significant piling.
- Bacombe Hill, Wendover – This is a Site of Special Scientific Interest which sits above the site where it is proposed to build a cut-and-cover “green” tunnel around Wendover. Dr Clive Edmonds of Peter Brett Associates identified a while ago that Bacombe Hill is unstable, with the resulting risk that the SSSI could slide/collapse into the cut-and-cover trench. Such an event occurred in the directly comparable excavation and construction of the cut-and-cover tunnel on A505 Baldock by-pass in 2004.
- There are other issues here as water from the escarpment feeds Weston Turville SSSI. The proposed tunnel risks the diversion of water away from the brook that feeds the SSSI.
- Geological mapping by the British Geological Survey through the Misbourne Valley over the last two years, including HS2 borehole data, has indicated the existence of increased faulting within the Chalk section, creating additional risk to the integrity of the aquifer, which supplies water for the local population.

Clearly the lack of adequate GI before choosing the final route has led to these problems, and the consequent increase in construction costs.

Underlying the Misbourne Chalk is a layer of mixed flintless chalk and clay. This would enable a three-bore tunnel to be built, which would

- eliminate the Tunnel Safety concerns
- eliminate the concerns about water diversion in the aquifer
- eliminate the risk of settlement at Chalfont St Giles

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- eliminate the risk to Bacombe Hill
- eliminate the Environmental impacts on the Chilterns AoNB
- provide a gradient of less than 1° from the M25 to north of Wendover
- be cost effective as the time taken to drill through chalk marl would be substantially less than through chalk with flints

HS2 have opposed any additional tunnelling in the Chilterns, in part, as this would lead to a shortage of material to construct embankments further north. In effect, treating the Chilterns AoNB as a quarry.

Alternative Route

High Speed UK have developed an alternative route, which

- follows the M1.
- Has significantly less tunnel (11km cf 51km)
- Costs £20bn less than the HS2 estimate of £56.5bn
- Can connect to HS1
- Offers better integration with the existing railway network

This has been developed by a group of railway engineers, who believe that it offers a better solution at a better price. The website - <http://www.highspeeduk.co.uk/>

We understand that there are also geological risks to this, which would require detailed Ground Investigation before the route was adopted.

What are the alternatives?

- Abandon the whole scheme as unnecessary and unaffordable. Upgrade the WCML and ECML instead
- Adopt the HS UK proposal
- If necessary, construct a three-bore tunnel from the M25 to north of Wendover under the aquifer.
- If it does go ahead, ensure that HS2 meet their environmental commitments.

Yours sincerely



John Gladwin

Trustee

cc. Rt Hon Cheryl Gillan MP
 Rt Hon David Lidington MP
 Rt Hon Dominic Grieve QC MP

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