6th floor, Western House
Station Road
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South Stoke & Goring Gap Railway Action Group
c/o Ian Haslem

21st May 2015

Dear Ian,

Re: Great Western Route Modernisation electrification programme.

Thank you for the notes of our meeting on 6th May. As agreed, please find attached our responses to the series of questions raised by the South Stoke Action Group, as issued at that meeting.

As also agreed at the meeting, we are in the process of producing a report further explaining the rationale behind our current design proposals, also looking at mitigation options. We will issue this document to the Action Group by the end of June, at which point we would hope to arrange a follow-up meeting with the group, the Chilterns Conservation Board and local councillors, to discuss the report in more detail.

Please be assured that we do understand your concerns and will seek to work with you to reach a satisfactory conclusion.

Yours sincerely,

S. C. Maple.

Simon Maple
Route Project & Programme Sponsor (Western)

Questions received from South Stoke & Goring Gap Railway Action Group

6th May 2015

1) ***Did NR ask its designer, Furrer & Frey, to take any account of aesthetics or environmental sensitivity in areas such as AONB's?***

F&F were commissioned to provide a suite of designs (Series 1) that could be used as a catalogue at a national level, which therefore includes a variety of different structure types that can be selected by the designers of specific electrification schemes to provide a bespoke solution best suited to the local constraints.

2) ***It appears that the design of the OLE through the AONB at Goring Gap and South Stoke is the same as that being used in urban areas of low landscape value: is that correct?***

The simple answer is yes. However, we have sought to minimise visual impact by avoiding the siting of more visually intrusive components, specifically the anchor portals, within the sensitive area of South Stoke village. This was in response to the concerns raised by the community during the early engagement with the community.

3) ***Does NR agree that this new design is more visually intrusive than anything previously used in UK rail? (most portals have lattice verticals, and no protrusions above the horizontal lattice beam)***

No. However, it is not possible to provide an objective answer, as the question of comparative visual intrusiveness is a matter of opinion and not a matter of fact. There are many design variants across the national network, a number of which may be considered to be more visually intrusive.

Except at anchoring locations, the new design generally uses square hollow section masts with 'Vierendeel' type lattice portal booms (i.e. with vertical bracing) that are approximately 600mm deep. Similar booms are used extensively on other electrified railways, such as the French and Swiss networks.

The special structures designed for the Moulsford viaduct and other locations are usually also designed as hollow section structures and have a comparable section size ('kneebraced' circular masts in the case of Moulsford).

The square hollow section masts are some 2m – 3m shorter than they would be if the area was designed with conventional headspan structures – it must be noted that those headspan structures would use universal column masts depending on the loading, not lattice structures.

In addition the size of the boom is very much smaller than earlier designs of 'Vierendeel' booms used at Paddington Station and elsewhere on the Paddington to Heathrow route section (electrified in the 1990's and currently subject to Crossrail works) and many portal boom designs used on the Euston - Manchester - Liverpool route section, electrified in the 1960s. For

reference, some of these 'Paddington' booms have been installed in the Reading Station area, for example over the lines to the east of the station.

The protrusions above the masts are needed for the 25kV auto transformer feeder wire – we believe that extending the mast above the boom to support this feeder wire is more efficient than using additional bolted-on supports.

4) ***NR went to a lot of trouble to do an environmental impact assessment - Why did NR do this?***

The electrification project falls under schedule 2 of the Town and Country Planning (Environmental Impact Assessment) regulations 2011 which, based on the size and scope of the works undertaken, requires the production of an Environment Statement, the content of which is determined under schedule 4 of those regulations.

5) ***The environmental assessment identified the large severe impact of the OLE design in the AONB, and determined that mitigation was necessary. Can NR confirm that no mitigation is currently planned?***

Our intention has always been to undertake planting to provide some level of screening, but we recognise that this will not serve to provide mitigation from all possible viewpoints.

6) ***Does NR agree that the railway land is not wide enough to support wide scale planting of mature trees (in fact most have been removed)?***

Yes

7) ***7. Does NR propose to purchase strips of land or enter into long-term agreements with landowners to plant mature trees and maintain them?***

We remain committed to exploring the potential to plant on third party land, and these discussions will also discuss maintenance costs for a period of time – this will be subject to mutual agreement with any private landowner, authority or community group, as appropriate.

8) ***Does NR agree that acceptable mitigation through planting and screening is not likely to be possible on the sections under discussion?***

See response to question 5

OLE Reliability

We have previously asked what the difference in reliability between the gantries and the less intrusive wire head spans is, but NR has not given any answers. The questions are:

9) ***How has NR calculated the whole-life improvement in reliability of gantries rather than wire head spans on this 2 mile section?***

- ***We would expect that this calculation, for the two, one-mile sections in the AONB would:***
- ***Be based on the current performance of wire head-spans, now that train- based monitoring of OLE and improved maintenance has been introduced by NR***
- ***Take into account the absence of level crossings, points & crossings, curves and low bridges on this section.***
- ***Include current performance of gantries and the possibility of effects of failures on adjacent lines.***
- ***Take in account improved reliability and maintenance of new trains***

The decision to move away from headspan construction to using portal construction for new works has been based on several factors, one of which is reliability. Other considerations though that influence this decision include access for construction (headspans need significantly more 4-track access), output rates (portals are more suitable for construction with high output wiring methods), working at height, impact on track maintenance (headspans need more control over the lateral track position), safety and maintenance access (with headspans live OLE on an adjacent track is closer, meaning that more equipment needs to be switched off and earthed during maintenance work) and extended repair times in the event of dewirements.

If headspan sections are installed and there is a dewirement in the general area, it is not immediately possible to determine which wire the dewirement has actually occurred on, and safety requirements will therefore mandate a closure on all four tracks until this can be established. Dewirements without head spans will normally require the closure of just one track.

Existing headspan designs on East and West Coast lines are not designed for high speed multi-pantograph operation.

We are also obliged to provide lowest whole life or lifecycle cost solutions which take into account maintenance and operational costs.

10) ***What is the calculated additional number of de-wirements (and associated train delay) in our 2 mile section over 20 years if wire head spans are used rather than gantries?***

As mentioned above, the design option selected is not based whole on reliability, so we have not calculated this number.

11) Can NR confirm that, as Richard Turner said, wire head spans are to be retained between Paddington and Heathrow Junction, because it is not cost effective to replace them?

Headspan supports were used extensively between Westbourne Park and Hayes (Heathrow Airport Junction) for the original electrification, with portal structures at Paddington Station itself. It is Network Rail's aspiration to replace these with portal structures when the opportunity arises, for the reasons already noted, and we have already replaced a number of structures in this area.

12) Can NR confirm that on this London section, there is over 5 miles of l25mph track, with many bridges, points and crossings?

Yes

13) Can NR confirm that there are many more trains on this London section, and that the impact on train delay of an OLE failure would be far greater than in the Goring Gap & South Stoke?

A headspan failure on this route section would undoubtedly affect more trains than one between Reading and Didcot, as it would affect Crossrail and Heathrow services, which will not operate west of Reading. Nevertheless, a failure between Reading and Didcot will still have a significant impact, because of the lack of available electrified diversionary routes. This would, for example, prevent all Intercity services to Bristol and South Wales and local services to Oxford from operating.

Gatehampton Viaduct

14) We can see that a special design has been produced for the Moulsford viaduct, but the design at the Gatehampton viaduct uses portal frames. We can see that these two bridges are built differently, but what are the reasons for the Gatehampton design being far less sensitive than that being used at Maidenhead bridge?

Both the Moulsford and Gatehampton viaducts have bespoke designs, but at Gatehampton, the only realistic option for the OLE solution was a portal structure over-sailing the track. Lack of space within the deck of the viaduct meant that mounting the portal masts within the parapet walls (reducing visual impact on the external face of the viaduct) was not possible. The solution therefore was to design a fixing method for attaching the OLE to the spandrel walls which, whilst needing to achieve engineering requirements, acknowledged and sought to mitigate the visual impact on the viaduct. The fixing plates visible on the spandrel wall have been designed to successfully distribute the anticipated load and moments associated with the OLE portal structure whilst not being oversized/over-engineered for the task. The solution was developed in discussion with the local authority conservation/planning officers and Historic England, and Listed Building Consent has been granted for both structures.