## Organisation (if applicable):

High Speed Two (HS2) Ltd

## Additional comments:

## Question 1: Have we correctly identified the future characteristics of mobile data demand?:

I think more reference to the increase of data demand by people in transit would be useful and also to extend the M2M discussions beyond just cars into all forms of transport. It is interest that in section 3.10 the examples given are of static equipment. Could a split be made between communication to static machines and communication to mobile machines, such as trains, buses, etc..

## Question 2: Do you agree that there is a prospect of significant continuing growth in demand for mobile data services?:

Yes. It would be useful if comments were also made about SMS texting and whether this simple form of data could also be offloaded to wifi. If so, and given the drop or repalcement of voice use by voip, then a prospect of data only area would seem feasible.

## Question 3: Have we identified all the challenges in realising future growth in citizen and consumer benefits from use of mobile data services and do you have any comments on the nature or the scale of the challenges we have identified?:

In a railway context the ability to use radio to transfer mission critical data packets is vital if the benefit and cost savings of the new signalling system (ETCS) is to be successful. So I think there is another challenge of ensuring that critical pckets of data are delivered in a given time with a high level of reliability and repeaterability.

## Question 4: Have we correctly identified all the areas where Ofcom has a role in addressing the challenges of growing demand for mobile data services?:

I think OFCOM should also have the duty to work with other operators and government departments to provide radio solutions which support systems which bring benefit to the country.

## Question 5: Do you agree that the main additional area that our mobile data strategy needs to address is in relation to potential future spectrum options?:

Whilst I think this is important, I think OFCOM should also lead on the development of some of the technical solutions, eg. how to make offloading to wifi work without user action, supporting SMS and voice over wifi, etc..

## Question 6: Is Ofcom doing all that it needs to do in other areas identified as being relevant to the mobile data challenge?:

No, I think of stream of work to consider the best solutions for groups of people travelling in a vehicle is necessary. As in some ways within the vehicle it maybe that the items identified for indoor use may be relevent and suitable. This work stream could cover trains, buses, water taxis, tourist buses, ships and aircraft.

## Question 7: Do you agree with our high-level assessment of likely technology and topology trends and their implications for future spectrum use? We are particularly interested in views on: a) the potential demand for spectrum above 10 GHz, b) the potential impact of integrating broadcast capability into mobile networks, c) whether the technical and commercial challenges of supporting additional frequency bands in mobile devices drives interest towards bands close in frequency to existing bands, d) the relative importance of large contiguous blocks of spectrum versus aggregation of smaller blocks:

Whilst the strategy document acknowledges the transfer of mobile data to wifi, perhaps a wider review should also take place about whether or not broadcast of TV programs using radio is appropriate when a robust fibre network could meet this need and release spectrum.

## Question 8: Are there any additional technology or topology trends that we need to consider that could have an effect on spectrum use?:

The strategy could also consider the splitting of applications from the bearer system. This could allow better use of spectrum by bearer services provided that the control of application priorities, traffic, etc. is controlled in a suitable way. Some of these applications could be meet by the ubiquitous coverage layer discussed in section 5.47. As stated about the envrioment table could be usefully extended to cover groups of people travelling in a vehicle.

## Question 9: Do you agree with the short list of bands we have identified for more detailed consideration?:

No view

## Question 10: Do you agree with our methodology for prioritising potential bands for mobile data use?:

I think the method should also consider the benefits of certain bands to enabling systems which provide benefit to the country.

## Question 11: Do you agree with our provisional assessment and the results of our band prioritisation?:

No view

## Question 12: Do you agree with the possible timelines we have identified in this section?:

The plans defined would benefit from solutions being defined faster than identified so that they could be implemented quicker if the demand rose faster than expected.

## Question 13: Do you have any comments on the capacity implications outlined in this section?:

It is not obvious if the identified plans for spectrum are sufficient to meet the demand. It would be good to show both demand and capacity for the different uses.

## Question 14: Do you agree with the next steps we have identified for further domestic work based on the proposed prioritie?:

The plan should include work to enable offloading of mobile data and broadcast to fixed infrastructure and wifi.

## Question 15: How do you think we should adjust our support for international harmonisation based on our proposed priorities?:

Enhanced engagement at international level on public transport solutions would be useful.