

## **Chartered Institution of Highways & Transportation response to the National Infrastructure Commission consultation on Congestion, Capacity and Carbon.**

*Theo Naidoo, Policy Officer, Chartered Institution of Highways and Transportation (CIHT),  
Tel: +44(0)20 7336 1581, Email: Theo.Naidoo@CIHT.org.uk*

CIHT is a charity, learned society and membership body with over 14,000 members spread across twelve UK regions and four international groups. We represent and qualify professionals who plan, design, build, manage and operate transport and infrastructure networks. Part of our vision is to demonstrate transport infrastructure's contribution to a prosperous economy and a healthy and inclusive society. Our values are to be Professional, Inclusive, Collaborative and Progressive.

CIHT welcomes the NIC's analysis on long term investment in infrastructure and it's aims to support sustainable growth, enhance competitiveness, and improve quality of life across the UK. CIHT believes that an effective transport system is integral to achieving those goals and that it will require understanding the contribution of transport, a focus on delivering for people and integrating the fields of planning and transport.

This submission draws on past documents by CIHT, including but not limited to;

[CIHT Response to the Scottish Planning System](#)

[CIHT Briefing Note on Road Pricing and Transport Infrastructure](#)

[CIHT Response to 'Fixing our broken housing market'](#)

[CIHT Response to 'Understanding and Valuing impact of transport investment'](#)

[CIHT Response to inquiry into 'the impact of Brexit on future skills needs'](#)

### **In Brief:**

#### **Q1. How does the UK maximise the opportunities for its infrastructure, and mitigate the risks, from Brexit?**

1. It is common knowledge that, as an industry, transport infrastructure is suffering a severe skills shortage at a time when investment in major projects is increasing and the demand for skilled technicians, planners, designers, engineers and managers is growing. Engineering UK recently found that we need 182,000 new engineers and technicians a year until 2022<sup>1</sup> and the National Infrastructure Plan for Skills estimated a shortfall of nearly 100,000 workers by the end of the decade.
2. Exiting the EU may increase these pressures, with nearly 12 per cent of the 2.1 million construction workers coming from abroad,<sup>2</sup> if the final agreement results in curtailment of free movement of people, the UK may lose a reliable pool of labour and this may slow down the delivery of projects, at least in the short-medium term while the UK 'skills up' to cope with demand.
3. Possibly losing the ability to recruit skilled workers from EU countries could lead to wage inflation, poaching of staff, pressure on the supply chain to deliver, negative impact on customer/end user choices, which projects to complete and which to abandon.
4. To maximise opportunities for infrastructure we must focus on recruiting and training people with the right skills and abilities to meet the Government's infrastructure

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<sup>1</sup> Dr Anil Kumar, Dr Alexander Moss and Elliott Johnson, "The State of Engineering", 2016

<sup>2</sup> Julia Kollewe. "Brexit would lead to shortage of construction staff, says Barratt boss", The Guardian, 12/05/16

targets and remain competitive in a global market. It is therefore imperative that government continues working on an over-arching skills strategy for the construction, infrastructure and built environment industries that mitigates against the potential fall-out from Brexit. There are also likely impacts on, research and development, funding pots, standards and legislation. The UK must consider expertise in science and research and benefits from international collaboration e.g. EU Horizon Scanning work, any future arrangements should not preclude the UK from being involved with science and research with European partners.

**Q2. How might an expert national infrastructure design panel best add value and support good design in UK infrastructure? What other measures could support these aims?**

5. CIHT is a membership organisation of over 14,000 professionals committed to building and maintaining transport infrastructure. By including membership organisations and other bodies it will help a high-level panel ensure that their guidance is tested, and accepted by those that will be implementing them.
6. Highways England set up a Strategic Design Panel in 2015 which allowed a number of major charities and institutions to contribute to ongoing design decisions. It has analysed a wide variety of areas to create 10 principles of good road design and may be a good model to follow.
7. Design considerations should include Real Options Appraisal (ROA) thinking (see more on this in Q4) is applied as part of the design consideration of investment decisions – for instance, individual station designs for Crossrail or space incorporated adjacent to motorway construction to allow for the later possibility of additional lanes.

**Q3. How can the set of proposed metrics for infrastructure performance (set out in Annex A) be improved?**

8. No Comment

**Q4. Cost-benefit analysis too often focuses on producing too much detail about too few alternatives. What sort of tools would best ensure the full range of options are identified to inform the selection of future projects?**

9. CIHT undertook a piece of work called CIHT FUTURES that explored the implications of different future scenarios for transport policy and practice for Transport<sup>3</sup>. The results of this study proposed a move from the regime-compliant pathway to the regime-testing pathway that introduces real options analysis (ROA) as an alternative to cost-benefit analysis.
10. Cost-benefit analysis concerns a predicted assessment of a one-shot long-term decision (especially in terms of investment in a piece of major new infrastructure). By contrast, ROA considers how greater upfront investment in a more flexible design of a scheme could pay a longer-term dividend by being able to respond to uncertainty. ROA builds in the option to do something at a later date if circumstances become appropriate.
11. Tools must utilise a holistic approach that assess the contribution of transport to society and individuals.

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<sup>3</sup> See [www.ciht.org.uk/futures](http://www.ciht.org.uk/futures) for more information

## Section 1: Building a digital society

### **Q5. What changes are needed to the regulatory framework or role of Government to ensure the UK invests for the long-term in globally competitive digital infrastructure?**

12. The collection of data and the commensurate computer power to analyse it identified in the consultation document has the capacity to radically reshape how we use our transport networks. Digital infrastructure does not solely mean providing the wires and frequencies but establishing the rules for the services that are provided over them. For transport services this requires getting regulation, standards and contracts correct to reap the economic and social benefits.
13. In the UK, transport modes tend to work in isolation, with some claiming the nearest to integration a passenger meets, is a taxi rank at their local rail station. Overcoming these divisions to deliver a globally competitive digital infrastructure will require implementing the correct governance and incentives to drive cooperation in the market, and may require varying models in different parts of the country. Our members have highlighted the need for;
  - Requirements to share data between providers, including timetables, fares, real-time information
  - Secure standards for digitally sharing data between providers
  - Development of API's to create room for innovation and better
  - Ability to purchase door to door tickets from a single point of contact
  - Cooperation between the public and private sector
14. The unwillingness of providers to share data, a desire to protect their current commercial position and the difficulty in allocating customers and revenue are all barriers to building a digital first society. This can be seen in the limitations to existing mobile applications and services. For example, they can be used to order a car on demand, however it cannot be linked with your train arrival. A user can find out journey details including distance and price based on TfL services, e-hailing services, cycling and walking on a single screen in the Citymapper app, but is not able to book tickets or plan journeys using multiple providers. These silos must be overcome to realise any realistic market benefits from a digital transport strategy. This is an opportunity for government to encourage commercial growth through setting out the appropriate frameworks.
15. Train operators have faced their own issues in providing joined up service but have been able to establish joint standards for buying tickets (and sharing that revenue between the point of sale and the operator), as well as a variety of data feeds and API's for developers to build apps and services around rail passenger journeys.
16. CIHT would encourage that services and infrastructure are 'designed for people' rather than looked at in isolation, and that applies equally to digital services.

### **Q6. What are the implications for digital infrastructure of increasing fixed and mobile convergence? What are the relative merits of adding more fibre incrementally over time compared to pursuing a comprehensive fibre to the premises strategy?**

17. No comment

**Q7. What are the key factors including planning, coordination and funding, which would encourage the commercial deployment of ubiquitous connectivity (including, but not only, in rural areas)? How can Government, Ofcom and the industry ensure this keeps pace with an increasingly digital society?**

18. No comment

**Q8. How can the risks of 'system accidents' be mitigated when deploying smart infrastructure?**

19. CIHT believes that risks can be mitigated by moving from the events driven review of 'system accidents' to regular review and planning by asset owners. This would create a more resilient system better able to cope with incidents, and applies to both smart infrastructure and otherwise.
20. CIHT recommends a formal review and commitment for asset and infrastructure resilience assessment to be made a statutory requirement. Consequently, all transport asset owners would be required to address vulnerable areas. This would apply to both those in the public sector (highways) and those in the regulated private sector (rail, aviation). Equally this should apply to central government and its transport agencies (including Network Rail, Highways Agency etc.), as well as local transport authorities.
21. These regular reviews and strategic plans should then be the basis for funding bids linked to the national infrastructure agenda. In the case of local authorities this would enable the consideration of infrastructure needs outside of competition with other local authority services. This would enable the resilience of infrastructure to be dealt with as a 'capital' funding issue.

## **Section 2: Connected, Liveable City Regions**

**Q9. What strategic plans for transport, housing and the urban environment are needed? How can they be developed to reflect the specific needs of different city regions?**

22. CIHT argues that transport and planning must be closely integrated to build infrastructure that delivers for people. Experience has shown that inadequate and isolated housing can contribute to fewer job opportunities, lower educational achievement and increase social exclusion and that proper planning can help avoid those issues.
23. Combined authorities, particularly those with metro mayors, are steadily grasping their new powers and the opportunities that devolution has given them. They are best placed to join up transport plans with economic development and land-use strategy.
24. The new sub-national transport bodies like Transport for the North will develop a regional vision for connectivity by road, rail and air, in conjunction with a national infrastructure plan. Reflecting this emerging new city and regional governance will be crucial in successfully implementing strategic plans.
25. Strategic plans should be underpinned by the concept of a 'place making' framework, providing the means of delivering communities that are sustainable in the longer-

term. The inherent inter-relationship of planning and transport (of goods and people) offers an important opportunity for development planning to minimise adverse impacts of congestion, safety and poor air quality through good design and site selection processes.

26. Planning must address the delivery of transport infrastructure to meet the needs of development in the right place at the right time and should systematically include transport networks and acknowledge the important role they play in economic and social development.

**Q10. What sort of funding arrangements are needed for city transport and how far should they be focused on the areas with the greatest pressures from growth?**

27. It will be crucial to ensure that infrastructure, particularly for new housing, is sufficiently funded in the face of developer viability requirements, and the cost to future purchasers. Section 106 and CIL have provided a revenue stream but this is arguably insufficient for major developments and can result in lower capacity infrastructure being implemented.
28. Highways England has been broadly recognised as bringing consistency of funding and maintenance to the Strategic Road Network but the vast majority of journeys start on local roads. CIHT argues that these need to receive attention in order to improve journey times and reliability.

**Q11) How can the Section 106 and Community Infrastructure Levy regimes be improved to capture land and property value uplift efficiently and help fund infrastructure? Under what conditions are new mechanisms needed?**

29. It will be important to investigate new methods of fund raising to deliver infrastructure on time, to facilitate good quality new affordable housing, and maintain those assets, as the current funding arrangements/allocations is not sufficient.
30. One method could be to identify a mechanism to capture part of the land value uplift from planning allocation and consents. It is reliant however, on land ownership being in the hands of a public-sector body that can spend funds on infrastructure
31. Should this body be a local authority for example, then Treasury rules need to allow for ring fencing of the value uplift, capturing it (once the land is then sold on at a higher value for development by the local authority) and channeling it to local infrastructure. In turn this requires initiatives at the outset to purchase land at pre-growth value. A question may arise whether government action/rules are required to peg land at the lower value once this process starts, otherwise land value enhancement anticipation will nullify the opportunity for land value growth to be achieved.

### **Section 3: Infrastructure to Support Housing**

**Q12) What mechanisms are needed to deliver infrastructure on time to facilitate the provision of good quality new housing?**

32. Housing provision must not be seen in isolation from the need to provide jobs, improve health, protect the environment and enhance the quality and economic functionality of existing places and transport. Changes to planning policy and delivery of sustainable housing should recognise these connected requirements rather than

focusing on a single policy area. Putting the right mechanisms in place to provide sustainable, efficient and maintainable infrastructure will be key to making sure that our housing stock is fit for the future.

33. Local Plans, Infrastructure Delivery Plans, Local Cycling and Walking Infrastructure Plans are amongst some of the tools already in use to implement these but we still see a gap between intention and practice. CIHT would advocate more investigation into where lack of coordination between developers, planners, transport planners, and local government is leading to failure in achieving desired policy outputs.
34. Transport is a core factor in delivering good quality housing whether for social, economic or environmental reasons. CIHT believes that any housing infrastructure strategy should be linked to a high-level spatial strategy that integrates national and local planning, and should;
  - Fully address short and long term access and transport requirements.
  - Be based on effective engagement with transport authorities, operators, schooling, hospitals, digital and other key agencies.
  - Engage with transport providers (bus/train/rail freight operators, PTEs) from the outset to ensure sustainable accessibility is feasible in the chosen locations.
  - Integrate transport provision across multiple modes.
  - Ensure the infrastructure delivered meets the ongoing needs of residents.
  - Address how land usage affects resident's transports decisions.
  - Puts place making at the heart of house building.
  - Assesses the health and wellbeing, and social care impacts of transport infrastructure on residents.
35. There needs to be an integrated approach from Government (national, sub-national and local) and its agencies. This should extend beyond a five-year framework to produce a long-term spatial strategy that links the future transport needs of the country. CIHT's response to the National Planning Policy Framework highlighted the importance of effectively integrating planning and transport to ensure that the objective of delivering sustainable growth is realised. There is a need for changes to the National Planning Policy Framework in order to facilitate better/improved and timely delivery.
36. The commission should recognise the challenges provided by the operation of the current housing market: the majority of housing availability sits within the current housing stock and locational choices are a trade-off between affordability and travel costs for households.
37. The principles of speeding up and shortening of local plans and the recognition of the importance of local community engagement is crucial. As it stands development management policy and housing delivery is focused on the number of houses built rather than the development of quality places.

#### **Section 4: Eliminating Carbon emissions from energy and waste**

38. No Comment

## Section 5: A revolution in road transport

**Q20. What changes to the design and use of the road would be needed to maximize the opportunities from connected and autonomous vehicles on:**

**I) motorways and 'A' roads outside of cities?**

**II) roads in the urban environment?**

**How should it be established which changes are socially acceptable and how could they be brought about?**

39. The UK is looking to be a world leader in connected and autonomous vehicles. Having an open regulatory environment, working closely with the automotive sector, and involving users is essential. Projects such as the GATEway demonstrate the benefits of working across a huge range of stakeholders however it is difficult to decide at this point what change is required given the uncertainty around future requirements.
40. *CIHT would highlight that there is sufficient difference in the technology, operation and closeness to market between CV and AV to require different handling when it comes to opportunities, risk and social acceptability.*
41. The implications of failure for a CV are related to customer satisfaction and not safety. The oversight needed is far less. CV do not need the vast amount of work on policy, insurance, regulations etc that automated vehicles do.
42. This will require more emphasis on nurturing public interest and engagement than is allowed for in the model – currently, public perception is based upon news stories generated by software corporations and is not based on the potential use cases or benefits. There is currently a lot of confusion in public perception as to what an AV is/can do and little awareness of Connected Vehicles themselves, let alone the potential benefits.
43. But new developments in technology are making the question of a user charge more pressing – for demand management rather than revenue raising. Driverless vehicles - whatever view you take of the current hype – are likely to offer, at some point in the future, levels of convenience and attractiveness far outweighing any existing mode of transport, private or public.

**Q21. What Government policies are needed to support the take-up of electric vehicles? What is the role of Government in ensuring a rapid rollout of charging infrastructure? What is the most cost-effective way of ensuring the electricity distribution network can cope?**

44. No Comment.

**Q22. How can the Government best replace fuel duty? How can any new system be designed in a way that is fair?**

45. The way road use will be paid for and road infrastructure will be funded is changing. In a little over two years' time, strategic roads (and it is likely some Major Road Network enhancements) will be funded from the National Road Fund fed by vehicle excise duty, recreating for road users a customer-supplier relationship not seen for decades. Meanwhile the steady erosion of fuel duty yield is well known, as vehicle fuel efficiency improves, and hybrid, electric and other vehicle technologies achieve significant market penetration. A fairer approach – to ensure all drivers contribute towards road costs – would be a general per mile charge, partly replacing fuel duty as well.

46. The imperative, therefore, will be to price the use of driverless transport to manage demand, and to protect our networks from even worse congestion. Road pricing has been a tricky issue for the public in recent years and the need to manage driverless vehicles may be what brings a variable user charge to reality.
47. Technology, cost and probably privacy issues are no longer the barriers they once were. There is a new debate to be had about charging for road use, and this is something that CIHT would welcome exploring with the NIC.

### **Section 6: Reducing the risks of drought and flooding**

48. To improve resilience of the transport network, CIHT have called for a Statutory Requirement for all transport agencies to undertake asset and infrastructure resilience assessments.

### **Section 7: Financing Infrastructure in effective ways**

49. It will be crucial to ensure that infrastructure, particularly for new housing, is sufficiently funded in the face of developer viability requirements, and the cost to future purchasers. Section 106 and CIL have provided a revenue stream but this is arguably insufficient for major developments and can result in lower capacity infrastructure being implemented.
50. The previous mention of charging for road use, if properly debated and considered, could open up new ways of providing a clear finance revenue stream for future infrastructure.
51. The introduction of a Regulated Utility Model in conjunction with direct user charging, to the management of the network may have the capacity for greater improvements in the longer term beyond the current financing arrangements for Highways England.

### **Conclusion**

52. The NIC has the potential to change the way we deliver and integrate new developments and the required supporting transport infrastructure. Current government ambitions can appear to be focused on delivering specific schemes or numbers of houses rather than the development of sustainable places.
53. Infrastructure provision should consider the interaction between housing, transport, digital, and health when developing the case for new transport schemes in the UK.
54. There is a need to understand that all infrastructure is there to support customers. *Therefore, a high-level strategy must be driven by what people need.*
55. CIHT would be interested in working with NIC in developing future proposals.