National Infrastructure Commission
Congestion, Capacity, Carbon: Priorities for National Infrastructure – Consultation on a National Infrastructure Assessment

Historic England Response

Historic England is the Government's statutory adviser on all matters relating to the historic environment in England. We are a non-departmental public body established under the National Heritage Act 1983 and sponsored by the Department for Digital, Culture, Media and Sport (DCMS). We champion and protect England's historic places, providing expert advice to local planning authorities, developers, owners and communities, to help ensure our historic environment is properly understood, enjoyed and cared for.

We are a statutory consultee on all nationally significant infrastructure projects and have a close working relationship with High Speed 2, Network Rail, Highways England, National Grid and those involved in the Crossrail 2 proposals. Our role in national infrastructure is to ensure the historic environment is taken fully into account, and to support timely and efficient handling of the historic environment in support of infrastructure delivery. England's historic infrastructure is of considerable national importance with many of the buildings and structures being afforded statutory protection, whilst there are other parts of the historic environment that are of considerable local interest and valued by the public.

Having considered *Congestion, Capacity, Carbon: Priorities for National Infrastructure*, we understand its primary purpose is to assess national policy on economic infrastructure of national significance. It is therefore surprising, given the important role they play, that a number of key sectors appear to be absent from the consultation document, such as rail, aviation, and ports and harbours.

The majority of the questions in this consultation lie outside Historic England's remit, and we have therefore limited our response to the following:

Consultation Questions

1) How does the UK maximise the opportunities for its infrastructure, and mitigate the risks, from Brexit?

With regard to risk mitigation, it will be important that Environmental Impact Assessment is retained, or an equivalent mechanism, to ensure that environmental matters (including those in relation to the historic environment) are suitably taken into account in infrastructure planning and delivery.

Whilst we recognise that the future supply of skilled labour is a matter for the Infrastructure and Projects Authority, it is worth making the National Infrastructure Commission aware of concerns over skills shortage and general capacity issues. It is estimated the number of archaeologists will need to

increase by 25% over the next six years to meet the demand for major infrastructure projects, whilst the overall number of historic environment staff in local authorities has decreased by 5.8% between 2015 and 2016, and 35 % since 2006. In response to the archaeological skills shortage, Historic England is working with other employers in the sector and training providers, to develop and deliver apprenticeship standards and improving skills delivery to respond to the industry needs.

2) ***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?***

Historic England very much welcomes the proposal to create a National Design Panel for Infrastructure, with a remit covering all the main infrastructure sectors. We are a member of Highways England's Design Panel and the Network Rail Design Advisory Panel, and also engage with the High Speed 2 Design Panel, through their National Environment Forum. Careful thought will need to be given as to how these design panels interact in terms of lessons learned, to create synergies and avoid any possible conflicts in the provision of advice.

As noted in the consultation, the UK was the world's first industrial nation and a number of the most significant buildings and structures have been recognised as such and are subject to designation at a national, if not international level, whilst many others are of local interest and valued by local communities.

This importance has been acknowledged in speeches given by John Hayes, former Minister of State for Transport, by highlighting the high standards of design and quality in much of the nation's historic infrastructure, which is still celebrated and appreciated today. We should aspire to meet similar standards if the provision of new infrastructure is to stand the test of time, contribute positively to our surroundings, and be more readily embraced by the communities it serves. As stated by the former Minister in his 2016 speech on the 'Journey to Beauty': 'If we learn from this experience, and seek to replicate the best in our new infrastructure, we have great power to satisfy the people's will for structures that ensure our sense of worth by affirming our sense of place' (https://www.gov.uk/government/speeches/the-journey-to-beauty).

Historic England promotes an approach termed Constructive Conservation which seeks to recognise and reinforce the significance of historic buildings and places through the active management of change. The latest volume, *Sustainable Growth for Historic Places* (2013), shows the many ways these sites can contribute to job creation, business growth, economic prosperity and act as the catalyst for wider area-based regeneration (https://historicengland.org.uk/advice/constructive-conservation/sustainable-growth-for-historic-places/) – this last point being fully recognised in the consultation document. We have also published *Heritage Works* in association with the British Property Federation and Royal Institution of Chartered Surveyors, as a toolkit for best practice in heritage regeneration, which is again supported by good practice case studies (https://historicengland.org.uk/images-books/publications/heritage-works/).

From our considerable experience in infrastructure schemes, where we are a statutory consultee on all nationally significant infrastructure projects, early and on-going engagement with the statutory environmental bodies is one of the key ingredients of success in delivering better places to live and work. When undertaken in a meaningful manner, potential risks and solutions can be identified from the outset which, together with master plans, can help ensure effective delivery. By recognising and sensitively reusing existing heritage assets, wherever possible, and ensuring new infrastructure takes account of an area's local distinctiveness, we very much hope these new investments can be designed in such a way that they create the heritage of tomorrow.

Historic England looks forward to working with the proposed National Infrastructure Design Panel, and drawing on our knowledge from elsewhere, would strongly suggest it includes individuals with heritage expertise. We are pleased this need has been recognised in the consultation document and can provide this from within our own organisation or suggest outside nominations, if this would be helpful.

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

The goals of the Commission to support sustainable economic growth and improve quality of life have strong social dimensions, but these are not currently reflected in the proposed metrics. They should therefore be revised to include social measures, such as impact on visual quality and aesthetics, impact on relocation and fragmentation, impact on historical and cultural resources, and impact on cultural diversity and journey quality.

4) ***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?***

In order to meet the Commission's goals of sustainable economic growth and improve quality of life, it is vital that cost benefit appraisals measure the right things, including use and non-use values of transport investments, such as long-term impacts on the historic environment. The Green Book guidance recognises the necessity of valuing non-market uses and the focus should be on contingent valuation, hedonic modelling and wellbeing approaches to valuation. The work of the Natural Capital Committee on natural capital accounting should also be used.

5) ***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?***

Existing regulatory mechanisms provide an obvious starting point when considering future challenges, and here it is worth noting that much has already been done to ensure efficiency in the handling of planning controls, including the introduction (and extension) of various permitted development rights. National planning policy, and the (regularly revised) Code of Best Practice on Mobile Network Development in England further support the delivery of mobile infrastructure, balancing the economic and social benefits of this technology with environmental protection (with appropriate reference to the historic environment). These provisions provide a suitable basis for the further consideration of 5G networks.

7) ***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?***

As noted in response to Q5 above, existing planning mechanisms already encourage the deployment of telecommunications, having recently been amended in support of this objective. With regard to rural areas, Historic England supported the recent Mobile Infrastructure Project, which sought to reduce the number of 'not spots', and has since produced advice on the installation of telecommunications equipment, including broadband and mobile, in churches and other listed places of worship (https://www.historicengland.org.uk/images-books/publications/installation-telecomms-equip-in-places-of-worship/).

9) 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?

Historic England welcomes the recognition in the report (page 78) that it is important to pay attention to making cities safe and pleasant places to live and work, with regard to both attractive, functional streets and green infrastructure. Our '*Streets for All*' publications (currently being updated: https://historicengland.org.uk/images-books/publications/streets-for-all/), provide practical advice for anyone involved in planning and implementing highways, and other public realm works in sensitive historic locations, whilst research by Historic England and others, underlines the importance of green infrastructure, notably in relation to historic parks (e.g. http://research.historicengland.org.uk/Report.aspx?i=15442; http://en.calameo.com/read/00087401259cc61bceeaf). In terms of strategic planning, the retention of the relevant policy in the '*National Planning Policy Framework'* (NPPF [Department for Communities and Local Government, 2012]) is essential if these important elements of successful places are to be planned for and implemented.

A balanced approach to sustainable development is needed to ensure that infrastructure is not provided in an economic vacuum. To achieve this, we would expect the Commission to take into account all three stands of sustainable development in preparing the National Infrastructure Assessment as set out in the *NPPF*. These include social and environmental considerations, as well as economic; the historic environment is, of course, an important factor in all three.

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

There are undoubtedly important interactions between infrastructure and housing, but the interdependencies between infrastructure and other forms of development also need to be carefully considered, and an unbalanced approach which delivers only housing development (and not the other elements of successful communities and local economies) avoided. Care will also need to be exercised to ensure that infrastructure is not being used to determine future housing supply and its location, thereby impacting on, and possibly undermining, the plan-led planning system.

14) What should be the ambition and timeline for greater energy efficiency in buildings? What combination of funding, incentives and regulation will be most effective for delivering this ambition?

The ambition for greater energy efficiency in buildings should, of course, maximise such efficiency, but be built on a strong research base which is currently lacking for the majority of the building stock (pre-1919 buildings) which would be damaged structurally were current precepts in energy efficiency, which are largely based on modern buildings, be applied to them. Pre-1919 buildings do not perform like their modern counterparts, as they do not depend on impermeable barriers to control the movement of moisture and air through the building fabric like most modern buildings. Interruption of the ability to take up moisture from their surroundings and release it according to ambient conditions, such as changes made to building fabric, heating or ventilation to increase energy efficiency, can lead to unintended consequences including moisture accumulation, overheating, fabric damage, and ill health of householders due to poor indoor air quality. Not only do current standards on energy efficiency tend to ignore the needs of older buildings, research on energy costs for listed buildings and conservation areas can often make erroneous assumptions based on a simplistic notion of heritage protection legislation, policy and practice.

The timeline for greater energy efficiency in buildings is therefore reliant on adequate research and published recommendations on the approaches to pre-1919 buildings, which do not have the unforeseen result of damaging them. Such research could usefully look into the optimum combination

of funding, incentives and regulation, which would be most effective for delivering greater energy efficiency in pre-1919 buildings.

The need for research into energy efficiency in older buildings should be seen against the following background:

1) It is a widely held view that older buildings are not energy efficient and must be radically up-graded in order to improve their performance. In reality, the situation is more complicated and assumptions about poor performance are not always justified. Nevertheless, the energy and carbon performance of most heritage buildings can be improved, helping them remain viable and useful, now and in the future. But the challenges in striking the right balance between benefit and harm can be considerable. The unintended consequences of getting energy efficiency measures wrong (or doing them badly) include: harm to heritage significance, harm to human health and building fabric, and failure to achieve the predicted savings or reductions in environmental impact.

2) It should be recognised that pre-1919 buildings perform differently to modern buildings, therefore a different approach to improving energy efficiency is needed to sustain heritage values and minimise technical risks that threaten the well-being of building users and building fabric.

3) 'Efficiency gains could also be achieved by improving building insulation and making appliances more efficient' (page 109, paragraph 2 on the consultation document). Enhancing building performance should be seen in broader terms than this - people/services/fabric (i.e. the 'building performance triangle'). Improving insulation and making appliances more efficient are only two of many ways of reducing energy demand - larger energy savings may be made by improving the management and control of building services.

4) It is important to emphasise the importance of engaging the enthusiasm of businesses and consumers for saving energy and reducing waste. Challenging conventional assumptions and expectations about building environments and comfort, and increase awareness of design solutions that reduce reliance on energy consuming heating and cooling systems.

5) Reducing energy bills is probably a greater motivation to most businesses and consumers to take action than reducing carbon emissions, Measures to increase energy efficiency need to be affordable and clearly cost effective. A joined-up approach to assessment and implementation that takes into account building users/services/fabric as an integrated system (the 'building performance triangle' again), is essential if unintended consequences are to be avoided.

6) Greater clarity and better co-ordination are needed in legislation, policy and guidance concerning energy efficiency and the historic built environment to help reconcile conflicting aims and assist implementation [see Historic England Research Report by the Centre for Sustainable Energy: *The Sustainable Use of Energy in Traditional Dwellings: Using Legislation and Policy to Guide Decision-Making* (2017) http://research.historicengland.org.uk/Report.aspx?i=15638&ru=%2fResults.aspx%3fp%3d1%26n%3d10%26ry%3d2017%26t%3denergy%26ns%3d1.

There are around 5.5 million historic and traditional buildings (constructed before 1919) in England and their repair and maintenance requires a labour force with traditional skills in order to meet an annual spend of around £3.8 billion (based on the latest available figures from 2012, down from £5.3 billion in 2008). Over the last ten years the skills shortage to meet demand has ranged from 85,000 to 110,000,

together with an aging demographic, and a drop of 78% in the number of apprentices and heritage-related craft skills between 2005 and 2013/14.

15) How could existing mechanisms to ensure low carbon electricity is delivered at the lowest cost be improved through:

- ***Being technology neutral as far as possible***
- ***Avoiding the costs of being locked in to excessively long contracts***
- ***Treating smaller and larger generators equally***
- ***Participants paying the costs they impose on the system***
- ***Bringing forward the highest value smart grid solutions***

Wind turbines are increasingly being used to deliver low carbon electricity, but may impact on heritage assets and their settings. If a large number of on-shore turbines are expected, it would be preferable to take a strategic view of their location with integrated input from local planning authorities (including their specialist environmental advisers), making best use of microclimates and areas of lower environmental sensitivity, to ensure infrastructure is provided to support the development of generation in the most sustainable locations. The consultation document does not mention large solar array installations, but we have noted these may have potentially significant impacts on landscape character that deserve careful consideration. Our comments in Q1 with regard to the loss of local authority specialist historic environment staff who provide advice on such matters, is also of relevance here.

20) What changes to the design and use of the road would be needed to maximise the opportunities from connected and autonomous vehicles on:

- ***motorways and 'A' roads outside of cities?***
- ***roads in the urban environment?***

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

The new generation of connected and autonomous vehicles presents significant opportunities in the way roads are planned, designed and operated. By reducing pollution and noise, the potential environmental benefits are considerable and as vehicles become more technologically sophisticated, it should be possible to dramatically reduce the quantity of highway furniture that has had such a detrimental impact on our rural and urban environment.

However, care will need to be exercised to ensure these major benefits are not then off-set by possible environmental impacts resulting from changes to the design and use of roads, such as unnecessary widening and junction improvements that seek to reduce congestion and allow continuous vehicle flows. For example, one of the main objectives of Highways England's Environmental Designated Funds is to address some of the key environmental problems created as a result of the network – the reduction and minimising of environmental impacts, should therefore be a fundamental objective (including those affecting the historic environment).

21) ***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?***

The greater take-up of low carbon powered vehicles and the resulting reduction in pollution and noise is most welcome, but as the consultation document points out, this will require the development of a national charging network. The adverse impact of highway furniture on the rural and urban environment has been highlighted in our response to Q20, and thought will need to be given as to how this can be done without having a negative visual impact by creating unnecessary clutter. The introduction of on-street and lamp post based charging within urban areas is likely to be particularly sensitive, especially where they retain significant historic character, and this will need to be carefully controlled by the planning process, rather than provide exemptions through permitted development.

24) ***What are the key factors that should be considered in taking decisions on new water supply infrastructure?***

In light of our previous comments, it should be noted that a number of sites associated with water storage and supply, together with sewage treatment, are of considerable historic interest. New pipelines and other transmission or storage infrastructure on the other hand has the potential to impact upon other heritage assets, especially buried archaeological remains. These factors will need to be appropriately taken into account when planning future interventions, as with any other form of development.

26) ***What investment is needed to manage flood risk effectively over the next 10 to 30 years?***

Our historic buildings and places can often seem fragile and vulnerable to harm from flooding. While flooding undoubtedly presents real risks to the heritage (and these can be direct - such as damage to historic fabric - or indirect - such as functional redundancy as a result of the inability to get sufficient insurance after a flood), there is also much that we can learn from our heritage about living with water. From landscape-scale perspectives to individual buildings, understanding the relationship between people, places and water through time can help us to plan for a more resilient future. In this context, the effects of flood management schemes or projects upon the historic environment can be positive as well as negative. In some circumstances, poorly thought out schemes or projects have the potential to be more harmful to historic fabric, settings or character, than the flooding they seek to prevent. As a finite, non-renewable resource, once the damage has been done to our cultural heritage, it is difficult to undo. If the positive impacts are to be enhanced and the negative impacts avoided or minimised, it is vital therefore to have a good understanding of the heritage assets being affected (including any below-ground archaeological remains). In this respect we would make the following more detailed comments:

1) *Natural flood management:* To be most effective, natural flood management should take into account the history of the landscape and land use, ideally at catchment scale. Ill-thought-out natural flood management can negatively affect the historic character of landscapes and places, but the history of past flooding and flood management may give important clues for designing effective natural management schemes.

2) *Property level resilience:* With many property-level resilience measures, there is a real risk that they could prove more harmful to the building and occupants than the occasional flood. This is true for all buildings, not just listed buildings, and the key factor is a good understanding of the building. One very pertinent example is waterproofing coatings, which are often proposed as an option, but tend to trap water and cause moisture problems. Many traditional building materials work extremely well in flood situations (for example, lime mortars are far more resilient than modern gypsum plaster or gypsum board), so there is considerable scope for research into the wider use of traditional building materials and techniques alongside innovative new approaches.

Similarly, in many cases it may be less damaging to historic buildings to allow the water through, rather than to try and keep it out. As-well-as structural risks from water pressure (when the waters are held back at too high a level), if the defences are overtopped they may trap the water in and around the building, leading to more wetting and material damage. In these circumstances, we would advocate that it would be more profitable to invest in research on post-flood clean-up and repair (with a view to enabling re-occupation as quickly and efficiently as possible), rather than concentrating solely on prevention.

Conclusion

In responding to previous consultations by the National Infrastructure Commission, we have suggested it might be helpful to convene an expert round table to consider all environmental matters. This might involve the relevant government departments (Department for Environment, Food and Rural Affairs and Department for Digital, Culture, Media and Sport), the statutory environmental bodies (Historic England, Natural England, Environment Agency, Forestry Commission), together with other key bodies/organisations.

Historic England very much looks forward to working with the National Infrastructure Commission in preparing the first National Infrastructure Assessment and would be willing to engage in its expert advisory panels, round tables, workshops, seminars and/or other stakeholder events.

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