

# ACE Evidence: National Infrastructure Assessment

**ACE response to the:**

**National Infrastructure Commission Call for Evidence**

**10/02/2017**

## About ACE

As the leading business association in the sector, ACE represents the interests of professional consultancy and engineering companies large and small in the UK. Many of our member companies have gained international recognition and acclaim and employ over 250,000 staff worldwide.

ACE members are at the heart of delivering, maintaining and upgrading our buildings, structures and infrastructure. They provide specialist services to a diverse range of sectors including water, transportation, housing and energy.

The ACE membership acts as the bridge between consultants, engineers and the wider construction sector who make an estimated contribution of £15bn to the nation's economy with the wider construction market contributing a further £90bn.

ACE's powerful representation and lobbying to government, major clients, the media and other key stakeholders, enables it to promote the critical contribution that engineers and consultants make to the nation's developing infrastructure.

Through our publications, market intelligence, events and networking, business guidance and personal contact, we provide a cohesive approach and direction for our members and the wider industry. In recognising the dynamics of our industry, we support and encourage our members in all aspects of their business, helping them to optimise performance and embrace opportunity.

Our fundamental purposes are to promote the worth of our industry and to give voice to our members. We do so with passion and vision, support and commitment, integrity and professionalism.

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## Q1. What are the highest value infrastructure investments that would support long-term sustainable growth in your city or region?

While ACE does operate in all the regions of the UK, including the devolved nations, in this response it is taking a more national overview of the infrastructure investments that can be made. This is because the National Infrastructure Assessment should seek to take a strategic overview across the whole country, and what would provide benefits on that basis rather than looking at the narrowly regional or city-based infrastructure.

That being said, many of the investments we would propose are geographically very localised. For instance, in London, Crossrail 2 is the next stage in the development of the London Underground network, one that will bring benefits estimated to be between £6bn and £8bn per annum.<sup>1</sup> This obviously represents a significant increase, and will result in the project quickly paying back the initial investments made by government and others through increased tax revenues.

Similarly, a new runway in the South East, which government has finally decided will be at Heathrow Airport, will also lead to a significant increase in economic levels for the region, but also the country as a whole. It is estimated that over its life the project will see over £200bn in nationwide benefits and create almost 180,000 jobs.<sup>2</sup>

Elsewhere in the country, the Northern Powerhouse scheme represents a real opportunity to provide the North of the UK with an integrated transport network that will mean it can compete globally and bring more jobs and prosperity to the region, and the UK. IPPR North estimates that if the region were able to halve the gap between its own economic output per head and the national level, its economy would be £34bn bigger.<sup>3</sup>

Across the whole nation, the biggest piece of infrastructure that promises to support long-term sustainable growth is the new High Speed Rail line, linking all the major cities along the north-south axis of the UK. One challenge, however, is to ensure that we do not stop at Manchester or York but press on to Scotland. In addition, we should also begin considering the possibility of developing further parts of the high speed network, for instance down to the West Country or across from Liverpool to Hull through the Pennines.

Finally, the UK needs to ensure that its energy supply meets the demand, as well as the need to meet climate change commitments, and be secure in nature to ensure the UK is not as subject to price spikes. This means the new generation of nuclear power stations, beginning with Hinkley Point C and continuing with Wylfa and others, must be built over the next two decades. In addition, other projects designed to ensure an adequate energy mix should be considered, such as the new Tidal Lagoon project in the Swansea Bay.

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<sup>1</sup> Transport for London (TfL), *Crossrail 2: regional and national benefits* (2015)

<sup>2</sup> QUOD, *Regional Distribution of Employment and Economic Impacts* (2015)

<sup>3</sup> IPPR North, *Rhetoric to reality: A business agenda for the northern powerhouse* (2015)

## **Q2. How should infrastructure most effectively contribute to the UK's international competitiveness? What is the role of international gateways for passengers, freight, and data in ensuring this?**

Infrastructure is key to the UK's international competitiveness, both in terms of how foreign investors and companies are able to enter the country, and how they subsequently get around between the various economic centres. It is, therefore, vitally important to ensure our networks are the best in the world. This is even more the case now that the UK has decided to leave the European Union.

As already stated, one of the most important infrastructure projects that will be coming on line in the next decade stands to be the third runway at Heathrow Airport. This is a chance for the UK to state its intentions in terms of how it presents itself to travellers at what is usually the first experience they have of the country. This is also equally true of our other airports and the future National Infrastructure Assessment must not assume the job is complete. There will be need for further capacity around the country in time, and the document should seek to prepare government for the need to decide on this.

Our ports should also not be neglected, responsible as they are for all the imported goods being able to get into the UK. This ties in neatly with our airports too as, in addition to handling passengers, much also comes into the country via air routes. Indeed, Heathrow is actually one of our largest freight ports, handling 1.54m metric tonnes each year.<sup>4</sup>

The likes of Felixstowe and London Gateway will also contribute significantly to the ease with which goods can enter and exit the country and therefore must not be neglected in the conversations around the National Infrastructure Assessment. Without them, and without them being able to handle the various types of containers efficiently the UK will not be as attractive as a destination for trade and business, hampering our collective prosperity.

## **Q3. How should infrastructure be designed, planned, and delivered to create better places to live and work? How should the interaction between infrastructure and housing be incorporated into this?**

The first point to be made in this case is to ensure that proper considerations as to the design and function of the infrastructure in question be given at the earliest possible stages in its development. This will ensure that the most appropriate designs and innovative solutions can be incorporated into the project, with the best minds that the engineering consultancy sector has contributing to it. This will ensure better outcomes, lower costs, and smoother delivery as changes at later, more costly and difficult stages are minimised.

Secondly, there remains a need to ensure that infrastructure is viewed in a more holistic way, with new transport networks taking linkages with other forms of infrastructure into account. For instance, there is much work being carried out now in cities where HS2 will call at to integrate it with existing or

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<sup>4</sup> Heathrow, *Facts and figures* webpage (2016)

upgraded local networks. Again, this is something that needs to be considered at the earliest possible stage to ensure seamless delivery within timely and cost-efficient fashions.

Procurement is a third vital area that must be in the best possible shape to ensure infrastructure is designed, planned, and delivered. Too often, especially at local and regional level where cost-constraints are a significant issue, but also at national level, procurement function is viewed a secondary one. ACE thinks this is mistaken and procurement actually constitutes a strategic investment function that should be taken at the highest levels.

Procuring bodies should, therefore, be encouraged and even mandated to ensure they have the requisite skills within their workforce to ensure infrastructure plans meet the required outcomes. There will be major disbenefits if this is not the case, as a lack of experience or expertise leads to delay, extra cost, and potentially inadequate delivery.

#### **Q4. What is the maximum potential for demand management, recognising behavioural constraints and rebound effects?**

ACE is not in a position to provide an answer to this question.

#### **Q5. How should the maintenance and repair of existing assets be most effectively balanced with the construction of new assets?**

ACE is not in a position to provide an answer to this question.

#### **Q5. What opportunities are there to improve the role of competition or collaboration in different areas of the supply of infrastructure services?**

ACE feels that the big opportunity in terms of improving the role of competition and collaboration in the delivery of the UK's infrastructure assets is in how SMEs are better able to access and take part in the supply chain. Very often these smaller businesses can bring a different approach to the project, while they are also much more likely to be local in nature, therefore ensuring that the project being delivered also benefits the area in which it is situated in other ways.

These benefits will not only mean more in terms of jobs and wealth creation that remains in the local area, but will also give the opportunity for the creation of good quality apprenticeships with the engineering and construction supply chain, for instance. It will also help to make the case for large scale infrastructure projects more acceptable to local stakeholders who will see the benefits earlier, and not just the disruption caused by construction.

Future procurement of large infrastructure projects should see the increased participation of SMEs as a key performance metric, either as a direct part of the supply chain or as part of a joint-venture with other SMEs or larger companies. This will mean that the procuring authority will have to take a smarter, more expert approach to ensuring issues such as liability and other legal terms and conditions are neutralised. ACE and its members realise that these are fundamental parts of any project delivery, however we feel they can be better managed so as to not exclude SMEs.

## **Q6. What changes in funding policy could improve the efficiency with which infrastructure services are delivered?**

ACE believes that there is little room to make changes in funding policy that could improve the efficiency with which infrastructure services are delivered. In essence, there are only two ways in which infrastructure services can be funded, that is paid for: either through general taxation (as the National Health Service is, for instance); or through user charges (as energy infrastructure is, through billing.)

There might be the possibility of funding new infrastructure services through a hybrid method of the two mentioned above, such as that which funds the UK's rail network at the present time, i.e. a mixture of government subsidies (out of general taxation) and revenue raised through ticketing (user charges). ACE believes this is the only opportunity to vary funding options.

In addition, however, future governments should be encouraged to take an innovative view when it comes to funding the provision of infrastructure services. It should also consider these approaches on a case-by-case basis, as what is appropriate for one project would not necessarily be so for another and will be dependent on the financing required to ensure delivery.

## **Q7. Are there circumstances where projects that can be funded will not be financed? What government interventions might improve financing without distorting well-functioning markets?**

This is a highly complex area and one that is worthy of a separate review to determine the issues involved. ACE's members and wider stakeholders have continually identified issues with projects that cannot be financed. We would urge the NIC to hold a separate investigation on this topic.

In a general sense, there is an issue with the way local authorities are able to finance the projects that they determine necessary for their areas as they do not have the financial powers to put the appropriate deals together. London is the area that is most affected by this with projects like Crossrail 2 struggling to meet the financial hurdle necessary for project approval.

London government has access to the capital it needs to fund the projects identified to promote growth in the city but it lacks the financing powers to be able to properly pay for them. ACE would like to see London and other Metro cities to be able to issue local infrastructure bonds as a way of meeting this challenge.

Likewise, local infrastructure financing through CIL and Section 106 is not working as well as it should, as has been highlighted in the new report "A New Approach to Developer Contributions"<sup>5</sup> that shows that CILs are only collecting between 5-20% of estimated revenue leaving local authorities with considerable funding black holes. ACE supports the report's recommendations for the creation of Strategic Infrastructure Tariffs and Local Infrastructure Tariffs as a way to solve this issue.

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<sup>5</sup> The CIL Review Team, *A New Approach to Developer Contributions*, 2016

## **Q8. How can we most effectively ensure that our infrastructure system is resilient to the risks arising from increasing interdependence across sectors?**

In general, ACE sees the increasing interdependence across sectors as an opportunity for infrastructure providers and should produce more efficiency across the transport and utilities networks in the longer term.

However, there is concern that capital expenditure is often prioritised in government planning on infrastructure while maintenance of our complex and interdependent networks can be put to one side. Engineers should be as involved in the process of ensuring that assets are used effectively throughout the entirety of their lifecycle as they are in designing new infrastructure.

The UK's infrastructure is indeed becoming more interdependent but the risks associated with this issue should be considered in conjunction with the antiquated nature of our infrastructure in some parts of the country. This issue is especially relevant in much of the rail network and the sewerage systems of the country's cities. However, the UK has developed a national expertise in conducting improvements on aging infrastructure, such as the London Underground, while keeping the rest of the system running. This expertise has become relevant in the UK comparatively early because Britain was the first country to industrialise, but, as mass transit systems age in Asian and European cities, this expertise could represent a real comparative advantage and export opportunity for the UK.

## **Q9. What changes could be made to the planning system and infrastructure governance arrangements to ensure infrastructure is delivered as efficiently as possible and on time?**

ACE is not in a position to provide an answer to this question.

## **Q10. How should infrastructure most effectively contribute to protecting and enhancing the natural environment?**

ACE recognises the matter of ensuring the protection of natural environments while expanding infrastructure is an important one. ACE has briefly consulted our membership on this issue and some initial thoughts were pointed out and are referred to below:

- Biodiversity offsetting and the effectiveness of the methodology used in the UK (<https://www.gov.uk/government/collections/biodiversity-offsetting>). We are not convinced the current system works and the opportunities for creating habitats are effective.
- The impact of habitat severance with linear infrastructure – roads cutting through habitats etc. and how this is mitigated.
- Further clarity is needed with regards to ancient woodlands, PAWS and veteran trees. We are encouraged to note that the government is planning to consult for clearer rules on this issue in the Housing White Paper.
- Infrastructure's ability to improve the public's access to natural capital should be taken into account.

These ideas represent 'food for thought' and we would welcome further work with the NIC going forward to establish some more concrete suggestions for the government.

## Q11. What improvements could be made to our current cost-benefit analysis techniques that are credible, tractable, and transparent?

ACE does not necessarily contain the expertise to delve down into the detail of how cost-benefit analyses are arrived at, however there is one area in which the organisation and its members feel that improvements could be made. This is from the government side of things where, too often infrastructure projects are at the whim and mercy of HM Treasury's 'Green Book', the manual for deciding if something meets spending guidelines and value for money tests.

ACE and its members are not against ensuring that value for money is extracted from each project that is proposed, and robust business plans should obviously make this element clear. In fact, too often those involved in the construction of infrastructure are not mindful enough of the need to present decision-makers with believable figures regarding the project they are proposing. This is a short-coming that we hope is being addressed.

It is true to say, however, that in many cases the adherence to the criteria outlined in the 'Green Book' is too strict, or indeed the criteria themselves are too strict, especially around the timelines that are being used to judge whether a project provides value for money. In the case of infrastructure, especially large scale projects that are long in development and construction, this can lead to a skewed view of how much the project will cost and how much money it will generate.

Take the example of the Tidal Lagoon Project in the Swansea Bay, which is being unfavourably compared to the Hinkley Point C (HPC) nuclear power station. The latter has a guaranteed strike price of £92.50 per MWh, while the former's is being presented as more than £160 per MWh over a 35 year period. This is clearly unsatisfactory until the 120-year life cycle of the Tidal Lagoon array is taken into consideration, which drops this to almost half that of HPC.

If a more realistic approach to costing long term infrastructure projects were taken by Treasury, the case for such schemes would be more straightforward and the true cost of them could be presented to the public. ACE would, therefore, urge the NIC to take a view on proposing this change or a more flexible approach to estimating value for money.

Transport

## Q12. How will travel patterns change between now and 2050? What will be the impact of the adoption of new technologies?

Three considerations need to be taken into account when examining travel patterns: when, where, and how, while these are affected by two factors, namely demography and economics. With the population of the UK set to continue to grow, possibly as high as 77m by 2050, demand overall is clearly going to increase.<sup>6</sup> In addition, as the population grows so too will the economic activity, with higher numbers of jobs, increased demand for consumer goods, and therefore more movement.

Most of this growth is forecast to occur within cities and towns of the UK, meaning consideration of future travel needs should be focussed in these areas, while obviously not ignoring the countryside and more peripheral areas of the UK. We must also consider the fact that as the population grows, it

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<sup>6</sup> Office for National Statistics (ONS), *National Population Projections* (2015)



will also be aging as life expectancy increases, meaning travel patterns will change accordingly, as more travel outside of the peaks takes place, for instance.<sup>7</sup>

How people will travel is also expected to change during the next thirty years, especially as government policy around climate change and air pollution, public health more broadly, and spending change. Those cycling, for instance, have increased significantly over the past decade, with those commuting in London on bikes increasing threefold between 2000 and 2014. This is in the context of a halving of car use over the same timeframe.<sup>8</sup>

It is clear that while car ownership is increasing, the trend in trip rates is downward, with 13% fewer trips in 2015 than in 2002, while the proportion of young adults holding driving licences has decreased since the 1990s.<sup>9</sup> This is also at a time when public transport, particularly in London, is seeing record passenger numbers, meaning future policy decisions will need to be made in this context.

The impact of new technologies on travel patterns is hard to gauge, given the inherent uncertainties around predicting what will be forthcoming in the years ahead. A lot of attention is being devoted to driverless cars, for instance, and they promise much in terms of making more efficient use of road space and time, however there is still a lot of development that is needed.

That being said, we can expect the next three decades to bring forward improvements in digital technology, much as we have done in recent years, as well as more flexible approaches to many working practices. This could lead to more people taking advantage of the option to ‘work from home’ or in remote offices closer to home, for instance, meaning travel patterns especially during traditional peaks will change.

### **Q13. What are the highest value transport investments to allow people and freight to get into, out of, and around major urban areas?**

Major urban areas rely on their transport infrastructure networks enormously, with the ability to move people and goods around vital for their economies, leisure activities, and other functions. Public transport networks such as the London Underground and the UK’s bus network, as well as private cars provide the bulk of this transport and rely on significant amounts of investment, maintenance, and upgrading if they are to continue to thrive.

Arguably the most efficient forms of transport that allow people and freight to get into, out of, and travel around major urban areas are those that can carry the most people in the quickest time. In London’s case we see this with the underground, rail, and bus networks, and Manchester’s tram network. These types of investment would, in the view of ACE, provide the best solution to the question posed.

In the next decade, we will see further discussions about the need for further expansion of tram systems across the UK, as well as the need for Crossrail 2 in London. These are just examples of what is

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<sup>7</sup> ONS, *ibid.*

<sup>8</sup> Transport for London (TfL), *Travel in London 8* (2015)

<sup>9</sup> Department for Transport (DfT), *National Transport Survey* (2016)

needed but they represent the best possible solutions we have to ensure those who need to travel into our urban areas for them to function and provide benefits for the whole country, can do so.

In addition, there is a case to be made that a proper, integrated freight pathway should be constructed, that will allow transportation of cargo across the country from ports to our major urban centres, without need to put more lorries on the road. This will be especially important if the UK is to become a major global trading centre in the wake of the UK's exit from the European Union, as is the government's ambition.

Finally, however, we must not neglect the road network, which is equally important when travelling around our cities. They are important to ensure delivery of goods in the final journey from warehouse to store. As in other cities, the vast majority of London's journeys on public transport still take place on surface level roads.

#### **Q14. What are the highest value transport investments that can be used to connect people and places, as well as transport goods, outside a single urban area?**

In this regard, roads often play the biggest role and thus provide the highest value transport investment in terms of connecting people, places, and goods outside a single urban area. Public transport networks rarely extend out to serve these parts of the country and so people have to rely on their own cars or other vehicles to get around, do business, and live their day-to-day lives.

In the National Infrastructure Assessment, ACE would expect this view to continue on the whole, with roads playing the major part in connecting people. Specifically, there is need of better road connectivity in the more rural areas such as East Anglia, Wales, the South West, and in the North. Our members would expect to see much of these types of proposals in the final document when it is issued in due course.

This document does, however, present a significant opportunity for the NIC, the government, and the whole country. It is a chance to propose new thinking on our infrastructure and how we utilise it. We can continue to do things the same way, especially in rural areas, and provide more road capacity, better surfaces, etc. Or we could use this as a chance to think more innovatively and ask the question of how would we want to be getting around in 2050 if we did not live in a major town or city?

ACE and its members would like to see the NIA begin to ask these questions. Is there a way that we can provide good transport links for people without necessarily needing them to resort to their cars? Too often the rural areas of the UK are left to feel like they are being left behind, with all the focus on investment and infrastructure being on the towns and cities. Perhaps this is a chance to show these places that this is not to be the case in the future, government will seek solutions to these types of questions. A National Infrastructure Assessment that is truly strategic and innovative should not shy away from posing these sorts of questions.

#### **Q15. What opportunities does 'mobility as a service' create for road user charging? How would this affect road usage?**

'Mobility as a service' (MaaS) could present a significant opportunity to instigate a system of road user charging as a means of collecting revenue to be spent on the road network, especially in light of declining levels of fuel duty and Vehicle Excise Duty (VED). A system could be established where technology is fitted to vehicles hired under the MaaS scheme records the time, distance, and roads travelled on in journeys. Users are then charged accordingly when they return the vehicles at the end of their hire period.

Care must be taken, however, that the potential negative consequences of this are taken into consideration, and mitigated as far as possible, otherwise the policy could be undermined from the start. This would have the knock on effect of also undermining efforts to establish a broader road user charging model, which ACE has argued is the logical next step in motoring tax policy, most recently in its report *Funding Roads*.<sup>10</sup>

Forcing companies to install this kind of technology and asking them to take payment under the road user charging scheme which they then pass on to HM Revenue and Customs could add a layer of cost that makes MaaS schemes uneconomic, for instance. Existing car clubs such as Zip Car would therefore be reluctant to take part, or even downright hostile to the new system.

Government would also need to provide reassurance to the public that any future revenue generated via a road user charging scheme (or at least a significant proportion of it) would be spent on the upkeep of the local, major, and strategic roads. Currently, the lack of confidence that monies raised through motoring duties is a key stumbling block among public acceptance of a road user charging scheme.

All that being said, were the policy to be implemented effectively and the negative aspects successfully avoided, it could have major implications for road usage. Vehicle ownership could decline as users do not need to purchase and maintain a significant asset such as a car, meaning trips would decrease as users were more likely to take short journeys on foot or bike. It would also potentially make better use of existing road space, as more journeys took place at cheaper times of day or on less expensive routes.

Digital Communications

### **Q16. What are the highest value infrastructure investments to secure digital connectivity across the country (taking into consideration the inherent uncertainty in predicting long-term technology trends)? When would decisions need to be made?**

Much of the investment into the UK's digital connectivity takes place via the private sector and in a very piecemeal way, with private operators seeking to open markets where they see value. This has obviously left many areas less well served than others when it comes to connection to the superfast broadband network, hampering businesses, preventing better consumer choices, and leaving parts of the UK lagging behind.

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<sup>10</sup> Association for Consultancy and Engineering (ACE), *Funding Roads: Reducing inefficiency and securing investment in roads for future generations*, (2013)

Government efforts to redress this through organisations such as Broadband Delivery UK and targets such as those seeking to provide access to broadband speeds of at least 20Mbps by 2017 for 95 per cent of the country, have seen some success. Further detail on this is given below. The key question to answer is whether this is enough, both in the short term and in the long term. ACE is of the opinion that it is not and that a stronger steer needs to be given to the sector by the government and investment brought forward in a more strategic fashion.

A much-mooted idea during the early stages of the development of High Speed 2 was to use the opportunity of constructing a rail line through the centre of the UK was to use the opportunity to embed a high speed fibre optic broadband cabling network. This could then have branched off to various parts to provide a central spine. This is obviously not going ahead, however it displays the issue, that there is not enough of a strategic view on how we provide what is fast becoming an essential utility, similar to water or power.

Had greater consideration been given to this possibility at the earliest possible stage, the UK could be looking forward to taking a big step forward in the provision of superfast broadband to the whole country. This is the key point, however, that this major potential investment should, firstly, be one considered by government, secondly, that to do so in the context of an overall, high level broadband connectivity strategy would be most beneficial.

Additionally, a project such as this would need to be planned well in advance, allowing time for plans to be developed, resources collected and allocated, and delivery to be achieved. This is the case for all large scale infrastructure projects.

### **Q17. Is the existing digital communications regime going to deliver what is needed, when it is needed, in the areas that require it, if digital connectivity is becoming a utility? If not, how can we facilitate this?**

ACE and its members are fully supportive of the recent report published by the NIC on the subject of 5G digital connectivity, *Connected Future*.<sup>11</sup> The findings that, despite the importance of mobile digital telephony to everyday life, with 93 per cent of adults owning a mobile phone, the UK still has large areas of 'digital deserts' are concerning. In addition, that the UK lags behind the likes of Albania, Panama, and Peru is equally worrying, especially at a time when the UK's infrastructure should be a key advantage when it comes to attracting investment.

The work in recent years to ensure that coverage of high speed broadband services in the UK improves has been welcome, and ACE is pleased that significant sums have been spent. This has seen the UK achieve the highest levels of superfast broadband coverage of the EU5 (Germany, Spain, France, and Italy), and speeds of up to 30Mbps now available in 83 per cent of UK premises.<sup>12</sup>

It is not all good news, however, with a 2015 EFRA Committee report suggesting that the government target of ensuring 95 per cent of premises receive superfast broadband by 2017 'may slip'.<sup>13</sup> In addition, Ofcom estimates that by 2017 almost one-fifth of SMEs will still not have access to superfast

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<sup>11</sup> National Infrastructure Commission (NIC), *Connected Future* (2016)

<sup>12</sup> House of Commons, *Superfast Broadband Coverage in the UK*, (2016)

<sup>13</sup> Environment, Food, and Rural Affairs (EFRA) Committee, *Rural Broadband and digital only services* (2015)

broadband. This is in the context of an FSB survey taken in 2014 that found that 14 per cent of small businesses felt the lack of a reliable and fast broadband connection was their main barrier to growth.<sup>14</sup>

One major limiting factor in the deployment of improved infrastructure that allows for faster internet connectivity has historically been a reluctance by the owner, BT, to install and/or upgrade existing lines. This has hampered other providers of broadband services such as Virgin Media who have been unable to open up new markets and connect new customers. ACE is hopeful that recent announcements around the establishment of 'Chinese walls' between BT and BT Openreach will see this problem disappear. Government should, however, stand ready to intervene quickly and effectively should this prove not to be the case.

Energy:

**Q18. What is the highest value solution for decarbonising heat, for both commercial and domestic consumers? When would decisions need to be made?**

Energy efficiency measures, micro-generation and renewable energy.

**Q19. What does the most effective zero carbon power sector look like in 2050? How would this be achieved?**

The most effective zero carbon power sector must take into account the other two corners of the 'energy trilemma'. This means that the UK must develop an energy sector that, as well as being zero carbon, must also be affordable for consumers and be reliably secure. To achieve this, the UK must adopt a complimentary set of renewables that can generate capacity regardless of weather conditions – nuclear, wind, solar and tidal power – subject to cost effectiveness. The government could also take measures to ensure that individuals and businesses take responsibility for their own energy generation and develop strategies to see more renewable microgeneration.

To achieve a zero carbon power sector as quickly as possible, we need to ensure that there is as energy efficient consumption of heat and power as possible, as soon as possible. In recent years, the government has taken steps to place less emphasis on the kinds of measures, such as the roll back of the Green Deal, that would deliver savings in energy use. Furthermore, reports like EIC's *Driving Energy Efficiency in Commercial Property Portfolios*<sup>15</sup> highlight the need for policy consistency post-Brexit as schemes such as ESOS and EPCs originate in the European Union and may be subject to deregulation. This report also makes the case for the government to focus its efforts on organisations that own/manage larger numbers of properties rather than on creating behaviour change among individual home owners, which would be must more piecemeal.

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<sup>14</sup> Federation of Small Businesses (FSB), *The fourth utility: Delivering universal broadband connectivity for small businesses across the UK* (2014)

<sup>15</sup> EIC *Driving Energy Efficiency in Commercial Property Portfolios* (2015)

**Q20. What are the implications of low carbon vehicles for energy production, transmission, distribution, storage, and new infrastructure requirements?**

ULEV present a huge opportunity to the energy sector, but infrastructure for ULEV should be targeted and precise. As electric cars' range increases, there will be less need for charging points on every street corner and we should do all we can to encourage charging at home, in the first instance. Charging at home would mean that the energy required would come at a lower cost to the consumer and avoid peak usage times, taking pressure off the grid and balancing energy use.

Thus, the government is faced with a dilemma – provide more charging infrastructure now so stimulate the market for electric vehicles or hold off on a roll-out of charging points to secure the maximum benefits from ULEV, by creating the conditions for consumers to rely primarily on charging points based in the home.

Water and wastewater (drainage and sewerage):

**Q21. What are the most effective interventions to ensure the difference between supply and demand for water is addressed, particularly in those parts of the country where the difference will become most acute?**

ACE is not in a position to provide an answer to this question.

**Q22. What are the most effective interventions to ensure that drainage and sewerage capacity is sufficient to meet future demand?**

ACE is not in a position to provide an answer to this question.

**Q23. How can we most effectively manage our water supply, wastewater, and flood risk management systems using a whole catchment approach?**

ACE is not in a position to provide an answer to this question.

Flood risk management:

**Q24. What level of flood resilience should the UK aim to achieve, balancing costs, development pressure and the long-term risks posed by climate change?**

The UK should seek to achieve the highest flood resilience level it can balancing costs, development pressure and long-term risks.

If we accept that the government will need to make trade-offs because there is clearly a limit to the flood defence budget (welcome recent increases notwithstanding), the government must be transparent and clear with the public and business about the decisions it makes. As such, what is

missing from this question is an opportunity to discuss the government's relative priorities for flood resilience. The questions about whether flood resilience should prioritise homes vs businesses, deprived areas vs areas that are economically significant, the North vs the South East, people vs the environment, societal assets vs critical infrastructure.

Stories such as [this](#) imply that the government is making these decisions without public oversight. As a result, this presents a risk that the government will lack credibility on flood resilience when the next flood event does happen, unless its priorities are clearly communicated.

Climate change is clearly set to have a severe impact on flood risk management over the coming decades. The Committee on Climate Change's recently published Climate Change Risk Assessment, published every 5 years, points to evidence that highlights action and adaptation that needs to be taken immediately, to stall the seemingly inevitable rise in global sea levels that the CCC's report highlights for the rest of the 21st century and beyond.

Below is a synopsis of a recent presentation by Daniel Johns, the Head of Adaptation for the Committee on Climate Change. It highlights four clear areas where reform is required:

A) Infrastructure: The National Flood Resilience Review looked at the infrastructure assets within the extreme flood outline and identified more than 500 energy, water, communications, health clinics and other kind of infrastructure assets within that extreme flood outline, but there has been no published action plan about how those risks and vulnerabilities are going to be addressed. Within the Autumn Statement we had more money for road and for rail infrastructure resilience projects, but so far there has been no published account about how we're going to address, over the long term, the assets that are probably in the wrong place. The December 2013 tidal surge reminded us how much of the coastline is vulnerable to storms and tidal surge. We will see more examples like this where homes cannot be saved and need to be demolished.

B) We are halfway through the first planning epoch within shoreline management plans and at the end of the planning epoch, many policies are due to turn from "hold the line", to policies which are about managed alignment, and realignment, and no active intervention; this is a problem we are storing up, and at the moment we are not gearing up to engage those communities who in the past have seen people protect and maintain defences, where the implication of these shoreline management plans is that there will be people stepping back.

C) Soil erosion: Increasingly people are recognising the role that land management can play in helping to avoid flood risk, but it is clear that farming is part of the problem - poor land management practice is leading to and causing muddy floods and we're losing rich fertile soils off the hillsides, because we're planting things like maize and not winter cover crops that avoid these kind of muddy floods taking place. So we need to use farmland as a resource and recognise that much of it is actually part of the flood plain, to help manage the flood risk to avoid and try to reduce as far as possible the overall economic damages of these events.

D) New developments: new development is continuing and we're planning to build a million new homes in this country over the next five years, and stats from DCLG published in early December showed that one in ten new properties in recent years has been built in the 1% flood plain, in flood zone three, essentially so that means that we are still adding to the problem. At least there's the

national planning guidance which means those properties should be built in ways which minimise the residual risk, but when you're building that quantity of housing in different parts of the country it has to have consequences for the risks and the costs of flood management in future.

## **Q25. What are the merits and limitations of natural flood management schemes and innovative technologies and practices in reducing flood risk?**

SuDs (sustainable drainage systems):

The government missed a major opportunity to limit flood risk and deliver a series of other benefits in its Housing and Planning Act when Schedule 3, the clause in the Water Management Act 2010 that calls for SuDS Approval Bodies that would approve new drainage systems for new and redeveloped sites, was determined to remain unimplemented. The result is that there is very little oversight of SuDS projects that can lead to poor designs and maintenance. Ultimately, this misleads the public into thinking they are protected when they are not.

Despite this, when designed, constructed and maintained correctly, the benefits of SuDS are clear and multidimensional. To name just a few, SuDS enable decreased flood risk, improved water quality, greater amenity/liveability and rainwater harvesting – for a full list and case studies, see [here](#).

Property Level Resilience:

Property level resilience has often been overlooked by reviews of national flood resilience capacity, so we are encouraged that the technology is explicitly referred to in this document.

The property level resilience (or property level protection<sup>16</sup> - PLP) market is relatively young and there is a need for stricter standards both in terms of training and products to ensure that once a consumer believes they are protected, they truly are. At the moment, faulty products installed incorrectly by untrained (or, in some cases, opportunistic) providers mean that the certified companies in the sector are being denigrated while the two remain indistinguishable to consumers.

Furthermore, government initiatives, like the Repair and Renew Grant, are deployed in the wake of flood events rather than making subsidy available to consumers before floods to encourage members of the public to take a long term view of protecting their property. The grant also failed to ensure that the taxpayers' money spent on improvements to properties were credible products<sup>17</sup> installed by qualified professionals<sup>18</sup>. This meant that in some cases, the government has directly funded malpractice. These issues around training and standards are the risks to be considered when deploying

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<sup>16</sup> There is some debate in the flood protection sector about whether flood 'resistance' or 'resilience' should be aspired to. The Flood Advisory Service has found that when explained to the public what flood resistance and flood resilience meant, 90% of respondents expressed a preference for resistance (water exclusion strategy) to resilience (letting the water in, but adapting a home so it recovers more quickly).

<sup>17</sup> 72% of respondents to a Flood Advisory Service survey said that choosing Kitemark over non Kitemark flood products was important or very important

<sup>18</sup> 78% of respondents to the Flood Advisory Service survey said that they felt it was important or very important to choose Kitemark installation for their PLP products



PLP solutions as government policy, but could be relatively easily abated by action from the government.

Whilst we accept the need to build more homes in the UK, ACE believes that the CCC's warnings on the urgent need for adaptation must be taken into account. This will require a change to building regulations, there is a need for Part C to be adapted for new homes to include passive measures to prevent water ingress via doorways, airbricks and drainage. It is currently all too easy for developers to push through plans (with few checks and balances in some cases), and, coupled with the lack of building regulations, the absence of accountability on developers' post-sale needs to be changed. Evidence from DCLG (as outlined in point D in our response to the previous question) points to potentially 100,000 new homes being built in flood zone 3 over the next 5 years. PLP has been proven to reduce residual risk to a property, so it would be a sensible solution to require developers to incorporate flood doors, non-return valves and anti-flood airbricks to these new homes as a "belt and braces" measure. The cost of taking such measures at the "build stage" is significantly reduced compared to retro-fit. In addition, developers should take responsibility for the cost of insurance for a period of, say, 10 years for all new build homes, and this could be administered via the existing NHBC warranty. Flood insurance is not covered by Flood Re, so this would be a twin incentive for all buyers of new build property. Finally, we should be aiming to build in resistance measures as outlined here to a 1/100-year event if possible.

The benefits to PLP products are as follows:

- It allows individual homeowners to take responsibility for their own flood risk, alleviating some responsibility of the government;
- PLP products can be installed in a bespoke way, allowing homeowners and experts to come to a solution that can be agreed based on personal priorities and risk appetite;
- PLP products can be quickly and easily installed and require limited maintenance;
- PLP could provide opportunity for developments on otherwise unfeasible plots (i.e. flood plains, which are increasingly relied upon for housebuilding)

Solid waste:

## **Q26. Are financial and regulatory incentives correctly aligned to provide sufficient long-term treatment capacity, to finance innovation, to meet landfill and recycling objectives and to assign responsibility for waste?**

There is a well-documented need for increased treatment capacity in the waste management sector. A 2014 Defra report<sup>19</sup> stated the following:

*estimating around 22 million tonnes capacity gap (per annum) between residual waste arisings and the amount of treatment infrastructure capacity either 'operating' or 'under construction'. The report also suggests that this capacity gap will decrease to just under 11 million tonnes (per*

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<sup>19</sup> Defra, *Energy from Waste: A Guide to the debate* (2014)

*annum) by 2020 if the waste treatment capacity that has planning consent (around 12 million tonnes) reaches financial close and begins construction.*

However, the question above fails to clarify which *type* of waste treatment infrastructure the UK requires – more landfill, recycling or energy from waste (EfW) capacity. Principally, the government needs to decide on this question so that investment opportunities can be taken by private companies.

For now, recycling levels have plateaued for several reasons:

- i. Recycling efforts in the UK have reached a point where the less challenging waste has been processed responsibly. This means that further investment in recycling infrastructure is likely to suffer from diminishing returns;
- ii. Local authorities, who still retain much control over domestic and commercial collection, are suffering from diminished budgets and therefore lack capacity to invest in more behaviour change campaigns which have proved successful in the past;
- iii. There has been an historical strategic reliance on the European Union to take the lead on recycling/resource policy. This has meant that the government has broadly failed to provide a vision for recycling in the UK.

Thus, if further intensive investments in recycling infrastructure were to come about, much of the capacity may go unused.

If recycling is becoming more difficult, however, that does not mean that we endorse more capacity in landfilling. The UK has come a long way in decreasing its willingness to landfill and this should not be reversed for environmental reasons. We believe the Landfill Tax has reached the right level. Any further increase in the tax would result in an even worse rate of waste crime and avoidance<sup>20</sup>, instead much better enforcement must be a priority, but it is important that it be maintained at its current level to encourage better overall environmental options.

With high levels of tax on landfill, waste companies have resorted to exporting waste. The UK has become more dependent on RDF exports since 2010 to Northern European countries such as Germany, the Netherlands and Scandinavia, as a means of managing waste in a reasonably environmentally sound way. The export of RDF has drastically increased in recent years. In 2010, the UK did not export RDF, now exports are estimated to be around 3 million tonnes. In theory, increasing the level of RDF export is a good solution to the problem, but the risk of changing demand on the continent or regulatory de-synchronisation in a post-Brexit market might mean that relying on European markets is a risky strategy.

Instead, the government should consider incentivising an increase in domestic EfW capacity. This would enable the UK to have reasonably environmentally sound and self-sufficient systems to manage waste. Though EfW capacity increases are the best solution to the lack of infrastructure in the waste sector, there are important challenges that need to be addressed by government. Energy from waste plants take 10 years to develop, have a lifespan of 20-30 years and require significant financing, normally from a range of sources.

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<sup>20</sup> See CIWM Journal Online, *£150 Million Landfill Tax Gap Reported by HMRC (2016)*

This climate of risk often leads to companies opting for proven technologies and the services of traditionally successful companies, thereby preventing new market entries and innovation. This means that innovation in the waste sector can be difficult. However, attempts by the industry to learn from other sectors, such as oil and gas, could be a way forward. There is more capital available now than any time in history but the lack of good, dependable projects in EfW is a clear barrier. Government action to make investment more likely would be encouraged.

### **Q27. What are the barriers to achieving a more circular economy? What would the costs and benefits (private and social) be?**

One major barrier to achieving the circular economy is low virgin commodity prices. For example, if oil is cheap to buy, it is less economically viable to recycle plastics and can be cheaper to simply use more raw material to manufacture new products. This price disparity undermines the business case for recycling.

Another is the lack of national regulatory instruments to push materials up the waste hierarchy. Instead, European Union targets have been the main driver for change in the sector. As noted above, preventing landfilling has been a major policy success in the UK, especially considering the country's historic habit for the practice, but the best environmental outcomes have not been attained.

Further, there are little in the way of incentives to encourage circular use of resources. Sweden has recently proposed tax reform to decrease VAT on repairs from 25% to 12%. This type of initiative would disincentivise throwing away difficult to recycle white goods and electrical goods and stimulate a domestic repairs industry at the detriment to foreign goods imports. Similar financial incentives could be a useful mechanism to deliver a meaningful transition up the waste hierarchy.

Products are also routinely produced with a linear mind set. European Union eco-design standards are encouraging and enable evermore products to be reused. The government needs to ensure that the legislative framework for product design continues to push towards more sustainable consumer goods. The European Commission's new Circular Economy Package, for example, has further standards and requirements for eco-design and we would encourage the government to adopt these standards regardless of the UK's future relationship with the EU.

Finally, there is a need to change consumer behaviour. This starts with changing the public's ideas about the merits of buying new goods and encouraging consumers to reuse, share or donate products. This is certainly a challenge for any government because the interests of product businesses, whose aim is to sell as many units as possible, do not obviously align with a change in consumption culture that would inhibit purchases. However, government can support the repairs sector, provide ample infrastructure for donation (clothes banks etc) and raise public awareness about the social benefits of a more circular approach to consumption.