

Final Draft LCC Response to National Infrastructure Assessment (Congestion, Carbon, Capacity: Priorities for National Infrastructure) 9th January 2018

Introduction

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

The UK needs a clear vision and plan for its success post Brexit, including in the way in which it develops and deploys its infrastructure. This is an opportunity to ensure that strategic review of infrastructure assets (such as the major route network) is undertaken with sensitivity to future requirements and with a view to opening up growth opportunities both in the medium and long term.

New international relationships and trading circumstances will place much greater emphasis upon the UK's national resilience. A powerful example of this is in food security, where the ability to purchase food from abroad will be increasingly constrained (at least in terms of price) as climate change places growing pressure on many current sources of imports. In this regard, the capacity of flood risk infrastructure securing and protecting 50% of the UK's highest quality food producing and processing land offers an immediate national benefit to the UK's security and future economic stability.

At present, the development of infrastructure in the UK continues to be hampered by the number of bureaucratic hurdles presented by the current systems and practice, including lengthy procurement processes. These make it difficult to deliver and improve infrastructure in an effective and efficient way. Brexit presents an opportunity to remove some of these barriers by reviewing the current rules and regulations surrounding infrastructure and replacing these with something that would offer the UK a competitive advantage as we leave the EU. In particular there should be more consideration given to achieving greater efficiencies in consenting across multi-agency regulatory regimes. We would also wish to stress the need greater alignment and flexibility for business planning between organisations with local, regional and national infrastructure responsibilities.

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?

An expert national infrastructure design panel could best add value and support by promoting the delivery of good design with the aim of embedding sustainability and whole life costs into infrastructure planning, if infrastructure is truly to provide social, economic and environmental benefit. A reasonable starting point might be reviewing the existing specifications and design guides to ensure that they present the most appropriate support to achieving good design.

Good design can occasionally cost more to deliver than existing standard designs so the delivery of good design could be encouraged by an adjustment to the existing benefit/cost models for infrastructure evaluation. This could perhaps also be encouraged by the adoption of measures reflecting the importance of achieving multiple benefits through good design.

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

A focus on key objectives, such as productivity and protection of our capacity to sustain and grow the UK economy will in itself draw out the key areas where we need to measure the effectiveness of the country's infrastructure networks.

The proposed metrics are fairly narrowly defined and may benefit from the inclusion of a wider range of data. However, there is already a great deal of data and measures relating to infrastructure in existence. Therefore, these should be used where they can help to assess the support provided by infrastructure assets to key national objectives, and to develop particular regional strengths.

There may also be benefits in incorporating infrastructure performance in a range of existing documents that create policy frameworks locally and regionally, for example through Joint Municipal Waste Management Strategies, Local Flood Risk Strategies, Local Plans and other core elements of Local Authority policy and performance management.

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?

The existing cost benefit approach tends to operate to the disadvantage of larger rural local authorities in a nationally competitive funding environment. It is better suited to facilitating major infrastructure projects in the more urban areas, and there is a need for it to more effectively recognise the impact of rurality and relative lack of congestion in comparison to large urban areas. In addition, the development of a lighter touch approach for small and medium schemes would be beneficial especially with the move towards competitive bidding rounds for many of the infrastructure related funding routes.

There may also be opportunities to include an enhanced approach to valuing a wider measure of benefits such as good design and reflecting the Public Value Framework emerging from the Barber Review.

Building a digital society

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?

6) 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?

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?

8) How can the risks of 'system accidents' be mitigated when deploying smart infrastructure?

The need for UK businesses and individuals to have access to the world's best digital infrastructure is paramount. The NIC's identification of this issue is welcomed. We would, however, suggest that the focus of the NIC could be on different issues to those identified in the consultation.

Lincolnshire has been one of the earlier adopters of superfast investment by BDUK. 90% of premises in the county are already passed by superfast technology and work is ongoing to quickly raise that figure to 95%.

However, our analysis of the situation in Lincolnshire shows that:

- Consumers still do not understand that superfast broadband is available
- The initial roll-out of superfast broadband in Lincolnshire needed to be subsidised by the public sector because rural areas are felt to be unviable by the private sector –yet take up of the BT superfast service has exceeded their targets. This suggests that there is a market failure in place.
- Businesses have a different interpretation of the word "superfast" to consumers
- Digital businesses need more capacity than other businesses. There is little doubt that attempting to provide 'ultrafast' fibre based broadband to all businesses isn't necessary and the flexibility of alternative technological solutions can be used to ensure the correct level of need/future growth capacity is provided where it is actually needed. This would drive a more cost efficient deployment strategy.

Many rural businesses rely on digital technology to overcome the problems they face with peripherality, distance, and rurality. These are not lifestyle businesses. They are often knowledge based businesses providing specialist support to help the UK's most important businesses to grow. The current Government thinking in terms of attempting to provide Fibre to the Premises (FTTP) to as many UK premises as possible is theoretically the correct path to follow.

However, there is a very real risk where encouraging private investors to deploy as much FTTP, the digital divide between urban/sub-urban and rural communities actually widens. Historically, we have already seen the divide created where incumbent providers deployed to areas deemed commercially viable and at the same time, ignoring more rural areas. The intervention of BDUK to fund broadband build in the remaining areas was the only realistic way that these areas would get better broadband. There is a real risk that current policy will do the same again with FTTP.

Instead, the NIC might wish to consider investing in further deployment of the rural fibre footprint, whilst at the same time, encouraging other technologies to utilise the increased fibre reach. This would ensure high speed broadband would be more

widely available in rural areas, whilst accepting that funding isn't limitless and that blanket FTTP coverage is at this point, a bridge too far.

Our further discussion with businesses shows that the level of mobile phone coverage is not comprehensive, and that certain providers have strong signals in areas where other providers do not –and vice versa. It is readily acknowledged that mobile technology is at least as important for business applications as superfast broadband and arguably it will overtake that level of importance in the coming years.

From liaison with counterparts elsewhere in the country it appears that the situation in Lincolnshire is not dissimilar to that of other areas.

The National Infrastructure Commission could tackle these problems by:

- Assessing whether current levels of promotion of digital infrastructure by government and non-governmental organisations are appropriate; it is important that investment in infrastructure is supported by helping individuals to use infrastructure to the best effect
- Commissioning studies into the level of real demand for digital infrastructure in rural areas, scrutinising the planning assumptions of telecommunication businesses and understanding the real benefit of rural digital infrastructure on the national economy
- Identifying how different digital technologies can sit alongside one another to the benefit of consumers and businesses –firstly balancing business and consumer definitions of "superfast" and secondly juggling mobile coverage between providers to the benefit of customers

Connected, liveable city-regions

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?

A substantial proportion of the UK's economic activity, including tourism, and the majority of its food producing and processing capacity, takes place outside the city regions. City-regions depend for many of their basic necessities on the rural areas of the UK, while their capacity to support the city-regions is likewise supported by appropriate and effective infrastructure. To consider city regions as separate entities from the domestic regional and national supply chains, amenity and food provision risks arriving at infrastructure priorities that are in themselves unsustainable.

Lincolnshire is a sparsely populated rural county with only Lincoln (pop. c. 90,000) recognisable as an urban area in regional terms. The emphasis on large city regions as the main engines of economic growth is at odds with one of the NIC's main objectives which is to "support sustainable economic growth across all regions of the UK" (page 37). Given the predicted volume of growth nationally, but particularly in London and the South East, there is a need for a National Planning Spatial Strategy

(in addition to NPPF) which seeks to address issues of congestion and overheating by challenging "predict and provide" assumptions of where development should be located. Cost benefit analysis for new infrastructure must include quality of life and dis-economy of scale considerations before investment decisions are made. Small to medium cities have an important role to play in supporting economic growth because of their superior quality of life and efficiency as measured by such indicators as house prices, air quality and lower congestion. The cost of infrastructure will also be less based on lower land values and labour costs plus the ability to deliver solutions at surface level rather than underground.

Several of the devolution deals signed with English city-regions required a commitment to draw up a conurbation-wide statutory spatial plan. The government's housing white paper, published early this year, announced a drive "to promote the alignment of decisions on infrastructure and housing at higher spatial levels, including through joint local planning and statutory spatial plans". The November 2017 Budget, made the government's support of cross-boundary strategic planning even more explicit. In the Budget documents, the government makes it clear that it sees strategic planning as key to ensuring that the £15 billion of new financial support for housebuilding over the next five years is "well targeted". As a further incentive to plan across boundaries, the Budget documents also say that combined authorities and planning joint committees with statutory plan-making functions could be given the option to levy a "strategic infrastructure tariff", in the same way that the London mayor has levied his own community infrastructure levy to fund Crossrail.

The existing Local Plan system allows neighbouring local authorities to combine as a statutory joint authority (through parliamentary statutory instrument) to cover the geography (usually housing market and journey to work areas) necessary to deliver and manage growth thereby achieving a strategic overview. This has been achieved successfully in Central Lincolnshire (West Lindsey, City of Lincoln and North Kesteven) where Lincoln is the centre of an identified Urban Area able to accommodate significant growth. Across Central Lincolnshire, a total of 9 Sustainable Urban Extensions are proposed. Lincolnshire County Council is responsible for producing a Strategic Infrastructure Delivery Plan for the Greater Lincolnshire Local Enterprise Partnership which covers all the county's districts and the two south Humberside unitaries. This co-ordinated approach informs each Local Plan as to priority schemes, funding arrangements and the local policy and land requirements necessary for delivery.

10) 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?

The importance of transportation between cities, regional centres and their hinterland cannot be underestimated in the context of labour supply. Strengthening commuter

routes and access to opportunities between urban and more rural areas is essential to long term sustainability for both.

The role that the major urban areas have to play in delivering economic growth nationally is understood. The announcement by the Government in the recent Budget of a new 'Transforming Cities Fund' within the National Productivity Investment Fund is recognition of this role. However, too great a focus on the larger urban areas will result in a three tier funding regime for transport – London and the South East, the larger Cities and the rest of the UK. This will not help those smaller authorities such as Lincolnshire who are looking to stimulate economic growth and housing delivery locally but are finding it difficult to secure funding for the necessary transport infrastructure often required with such proposals. There is a danger of these authorities not being able to play their part in moving the focus of economic growth nationally away from the South East and improving the prosperity for their local communities. To this end, LCC would support the Commission's suggestion that any new mechanism to capture land values should reflect the fact that land value uplift in London and the South East can make a more significant contribution to the necessary infrastructure thereby reducing competition for scarce national funding in other parts of the country.

11) 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?

There needs to be a better understanding of relative land values and the opportunity that exists for development uplift in value in large rural and currently marginalised geographical areas. This ultimately affects overall scheme viability and therefore reduces the potential for the delivery of local benefits through the development process with much greater demand than there is funding. It is important to emphasise that the planning system and process alone cannot be expected to provide the full delivery of all identified infrastructure and other social needs.

Attempts to 'capture land and property value uplift' have been challenging for local and national Government well before the introduction of CIL. The Government recently appointed an expert panel to review CIL effectiveness. The Panel found CIL to be wanting in certain areas and recommended a way forward which would at least simplify rate setting and in respects would simplify implementation, it seemed without the need for primary legislation. Although recommended changes were set out in the 2017 Budget for further consultation, these were less significant than the Panel recommendations. There has been virtually no time at which CIL has not been proposed for review, with the 2010 Regulations a few months before the Coalition Government. The Government now seems to have made its position clear it would be best that there is now a period of stability. CIL and section 106 are not perfect but those looking to deliver infrastructure need to be given the chance to try to make the system work. One area where particular challenges are emerging is in relation to

the restrictions on section 106 pooling. The current limit (of five contributions to one piece of infrastructure) is a challenge to delivery. The Government is right to look at this area as suggested in the 2017 Budget.

Infrastructure to support housing

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

In our experience a principal difficulty reported by developers in delivering infrastructure is predicting costs and low levels of certainty regarding payback periods. This is in part due to shifting costs in the first place, but also arises from limited customer focus from providers and the time lag in installing infrastructure to new developments.

There is a strong case for Local Plans and Infrastructure Plans to broaden their emphasis from development roads to a much wider range of infrastructure provision. In Lincolnshire this has already been done in respect of roads and sustainable drainage, but there is scope for a wider application of this principle across a much wider range of types of infrastructure.

There may also be opportunities to allow exploration of new methods of development, for example encouraging investment in modular construction, similarly to the current practice of Enterprise Zones, in order to accelerate their production pipeline.

Throughout Chapter 3 (Infrastructure to Support Housing), there is an implication that infrastructure be treated as a commercial product with the need for a healthy financial return. One approach to securing this outcome is to transfer ultimate risk to the taxpayer by, for example, guaranteeing revenue to private investors. It should be acknowledged that infrastructure is essentially a "public good" for the benefit of all and in the case of housing a necessary condition for development to proceed sustainably. The perennial "chicken and egg" debate about which comes first can be resolved by institutionalising a forward funding mechanism which funds infrastructure based on the sound social, environmental and economic assessments included in existing Infrastructure Delivery Plans.

Regional Investment Banks should be created and funded by the Treasury with disbursements based on Local Plan housing allocations and indices of deprivation. This will incentivise local planning authorities to adopt ambitious growth targets and grant planning permission to secure investment. Housebuilders and local authorities will not have to bankroll opening up infrastructure but developers will ultimately repay all or a significant amount of the cost based on scheme viability. This model of funding would eventually replace the Community Infrastructure Levy which is unhelpfully collected in arrears and overly bureaucratic in its administration. Sc 106 would remain to deliver affordable housing site by site. A major benefit of providing infrastructure funding on this basis would be increased community confidence in

development which was properly planned and designed resulting in fewer objections locally.

Eliminating carbon emissions from energy and waste

13) What will the critical decision factors be for determining the future of the gas grid? What should the process for deciding its future role be and when do decisions need to be made?

Theddlethorpe on the Lincolnshire coast is a major facility redistributing gas piped ashore from the North Sea fields, which will be decommissioned as North Sea gas fields cease production. Nationally it is vital that major existing assets of this nature are seriously considered for their potential continued use for energy provision once their legacy functions have been superseded.

In addition, the cumulative national impact of local energy production from a variety of sources must be considered in addition to a more centralised model based around large scale individual assets. There are also significant advantages in the use of locally deployed alternative fuels, particularly in relation to current costs and the issue of fuel poverty.

Fuel poverty mapping in a rural county like Lincolnshire frequently echoes the areas that are not on the gas network, as household choice is very limited and the cost of heating oil is high. It is not feasible to bring the gas mains to all areas it may be possible to extend the mains supply into areas that are close to the existing gas infrastructure.

The authority is seeking to exploit heat generated as a by-product, in particular: heat from energy from waste plants or Combined Heat and Power from Anaerobic Digestion plants. Consideration may also be able to provide a more renewable heat source especially if these plants are located correctly.

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?

Building regulation should be used to directly influence the take up of more energy efficiency by stipulating levels of efficiency and or energy consumption and or generation. Developers would be able to select from a range of measures: such as solar PV, rain water harvesting etc to achieve specifications. This would mean that appropriate technologies are put into buildings as standards rather than using the model at the moment (part L) which allows the developer to choose.

The current housing stock also needs to be addressed; local authorities could provide local delivery for national schemes. However, the private sector, in particular the energy sector has a leading role to play.

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**

Demand for electricity whether for heating or through more use of electric vehicles is going to dramatically rise. The use of battery storage for renewable technologies is likely to go some way to providing a stable supply as part of the development of SMART networks. There could be an increased focus around renewables such as tidal that can provide a steady supply and are not dependant on either daylight or wind, although much like nuclear government funding will be required if the sector is to develop.

16) What are the critical decision factors for determining the role of new nuclear plants in the UK in scenarios where electricity either does, or does not, play a major role in the decarbonisation of heat? What would be the most cost-effective way to bring forward new generation capacity? How important would it be for cost-effectiveness to have a fleet of nuclear plants?

Lincolnshire County Council is keen to be at the forefront of rural authorities exploring new technologies to enable SMART grids and the decarbonisation of transport. As such we are keen to examine a variety of options. Nuclear whether on the scale of Hinckley Point or on a smaller scale – Small Modular Nuclear Reactors – brings very many challenges, not least cost and the issue of waste. Potentially a fleet of SMNRs across the country could resolve many of the supply issues that are currently being projected, while addressing some concerns around carbon. It is clearly important that the government explores this technology at the same time as examining other sustainable options, and that decisions are led using an evidence based approach.

Many new technologies will require a substantial shift in public opinion before they can be considered acceptable, and Local Authorities are well placed to explore such issues with their communities in a way that would be less cost effective from a national perspective.

17) What are the critical decision factors for determining the role of carbon capture and storage in the UK in scenarios where electricity either does, or does not, play a major role in the decarbonisation of heat? What would be the most cost-effective way to bring it forward?

Lincolnshire County Council believes that the demonstration carbon capture project should be reconsidered. This technology offers a medium term solution to rising carbon levels whilst some of the more promising but highly technological solutions are developed in the coming years. Lincolnshire has a number of businesses

working on very innovative low carbon and carbon reduction technology, carbon capture work could be complementary so a renewed interest in this area nationally could be of interest to the business community in Lincolnshire.

18) How should the residual waste stream be separated and sorted amongst anaerobic digestion, energy from waste facilities and alternatives to maximise the benefits to society and minimise the environmental costs?

The waste hierarchy places great emphasis on reducing generation of waste in the first place, thereby placing less reliance on disposal methods further down the chain. This is especially the case for food waste, which can contaminate otherwise recyclable materials, but can also provide a valuable feedstock for AD plants.

Lincolnshire is currently exploring the potential viability for separate food waste collection alongside the possible benefits that could be achieved from greater consistency in approaches to collection. Experience also makes very clear that extensive and ongoing publicity campaigns are essential in engaging people in making changes to the waste that is collected kerbside and presented to recycling centres.

19) Could the packaging regulations be reformed to sharpen the incentives on producers to reduce packaging, without placing disproportionate costs on businesses or creating significant market distortions?

Lincolnshire County Council would welcome stronger regulation with regard to packaging. Of particular concern is that packaging in lots of cases is excessive and not recyclable when this could be reduced without any detrimental effect on the product. Also packaging type i.e. plastic not only confuses consumers on whether it is recyclable but there are numerous types used. Some of these are recyclable whilst some are not, with a bit of thought and work with distributors the types of plastics could be reduced with only recyclable plastics used making recycling easy. Lincolnshire's "Pack it In" campaign resulted in many producers redesigning their packaging and far from disproportionate costs being added to their product the reduced packaging ended up being cheaper and resulting in less waste.

A strong line on this from central government could have a very significant impact on recycling results locally. Many people are confused by plastic food packaging. Regulation to only allow recyclable material to be used in food packaging would resolve this issue instantly and would drive creativity in the industry.

A revolution in road transport

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?

As the NIC report rightly highlights, "*the right changes to the road and road use will take detailed investigation*". This investigation will need to fully consider both the final position when the all vehicles are fully connected and automated, as well as the interim position when there is a mix of differing levels of connectivity and automation across the vehicle fleet. It is the latter which perhaps presents the greatest challenge. Lincolnshire is very interested in exploring opportunities to pilot potential solutions to these challenges.

Restricting the use of particular lanes on motorways and major A roads to platooning vehicles may well provide an appropriate solution where more than one lane is available. However, for many rural counties such as Lincolnshire, there are very limited lengths of such roads, with few rural dual carriageways and no motorway. Great care will need to be taken to ensure that rural-based businesses, such as the economically important agri-food industry in Lincolnshire, are not put at a disadvantage as new technologies are rolled out. It is important that technologies to enable the introduction of CAVs in rural areas are available for end-to-end journeys if the benefits for non-drivers, such as the elderly, the disabled and the young currently struggling to access key services and employment due to rural isolation, are to be delivered. For example, CAV technology will be heavily dependant upon the use of 5G mobile signals. Currently, 4G coverage across rural parts of Lincolnshire is far from complete.

In urban areas, the introduction of CAV technology should eventually allow for a shift in balance between the impact of vehicles and the wider street-scape. For example, a move away from the current car ownership model (which sees commuter's vehicles parked in city centres unused for most of the day) towards a 'Mobility as a Service' model (where CAVs are hired for specific journeys and can then be used elsewhere) should release land currently used for car parking for other uses. The NIC report also highlights the possible benefits in reducing congestion by the more efficient flow of vehicles through junctions, in particular at traffic lights. However, many such junctions also provide opportunities for pedestrians to cross busy roads and the interaction of CAVs in urban areas with not only pedestrians, but also cyclists and motorcycle users, will need to be given careful consideration.

A further concern relates to the ongoing maintenance of road signing and lining. It currently appears likely that the technology used by autonomous vehicles to position themselves on the road will, to some degree, include the need to be able to clearly distinguish road markings (and possibly signage) using on-board cameras. This presents a major challenge to local transport authorities in keeping these in a state fit for such use, particularly if they are to avoid the possibility of legal claims following any incidents. Further guidance will be needed from government as to the precise requirements, but with one of the largest highway networks in England at some

8940km, Lincolnshire (along with other authorities) is likely to require additional funding to bring all lines and marking up to the necessary standard.

The move to CAVs will be a major step change for travel for most of the population. Hence it will be important to ensure that the general public are fully engaged at an early stage and the benefits properly articulated to gain their acceptance and avoid the scale of opposition seen in the early discussions on road pricing. Of particular importance will be the need to demonstrate that the benefits will be just as relevant in the rural parts of the country such as Lincolnshire and not to be seen to be favouring the urban areas.

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 Government's announcement on the ending of the sales of new conventional petrol and diesel cars and vans by 2040 is welcomed since this gives some clarity to the anticipated timeframe going forward for the car industry, businesses and the public in general. Similarly, the continued and new funding announced in the recent Budget for charging infrastructure and electric vehicle grants will help to grow the demand for electric vehicles and move them into mainstream use.

It should be noted, however, that manufacturers are increasingly aiming to be able to offer viable alternatives to diesel and petrol vehicles by 2020/21, which suggests that the pace of change envisaged in the consultation document may not be sufficiently advanced. The importance of public behavioural change in driving implementation of such a significant shift is at least as important as infrastructure investment and should be seen as part and parcel of it.

The requirement in the new Automated and Electric Vehicles Bill currently going through Parliament for motorway service stations and larger petrol stations to provide electric charging points is also a move in the right direction, although there is a question of how well this will benefit Lincolnshire residents, due to the lack of motorways in the county and the rural nature of the road network. There is also a possible risk that Lincolnshire EV owners might find access to an EV charge point is limited compared to other areas of the country. However, the Government could provide a stronger lead in this area by strengthening the reference in the national Planning Policy Framework to make it a firm requirement that all new residential developments with dedicated parking provide charging facilities. Consideration should also be given to also making it a requirement at other developments such as larger retail sites and employment sites.

If 50% of vehicles on the road were electric, there would be an increase in demand for electricity of 16%. A large proportion of this charging would occur at peak times,

mostly 5pm to 6pm. To avoid power outages and associated problems, there are three possible solutions:

1. Upgrade the traditional network, through upgrading existing cables, installing new cable routes, re-balancing phases and installing larger transformers and static balancers.
2. Install a "smart" network, that includes street power storage, dynamic phase balancing, secondary transformer tap changers, in-street voltage regulators, power factor management and street level demand side management
3. Solutions within the home: install dynamically charged energy storage and micro renewables; and demand side management.

Scottish and Southern Electricity Network propose that the ideal response would be a combination of a smart network and solutions within the home, and should therefore be a key focus. The National Grid goes one step further, by suggesting that the ideal answer would be a "mosaic" of solutions, including in home changes (e.g. behaviour change) to rapid chargers available in all public places.

Another method to ensure the electricity network can cope with the increased demand would be further research and investment into vehicle to grid (V2G) technology, whereby energy stored in EVs is fed back to the national electricity grid to help supply energy at peak times. V2G technology is often combined with renewable energies, as the energy created can be stored for when it is needed.

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

As vehicles move away from petrol and diesel power (with the consequential fall in revenue to central government from fuel tax), it is perhaps inevitable that this will mean an eventual move towards some form of road pricing. Gaining public acceptance for such an approach will be challenging. It will be important to set out what is proposed at an early stage before those who are among the first to take up electric-powered vehicles see their initial savings in travel cost (and hence improved overall financial position) eroded away by a new road pricing regime. Key to gaining public acceptance will be a government assurance that all such revenue will ring-fenced to be used to improve transport in general.

Careful consideration will also need to be given to the weighting between congestion-based and distance-based charging. An over-emphasis on the distance-based element will disadvantage people living in large, rural areas such as Lincolnshire who need to travel longer distances to access employment, as well as health, retail and leisure services. Many rural households already have lower than average household incomes and spend a larger proportion of this income on travel. Any road pricing regime which exacerbates this further should be avoided.

Reducing the risks of drought and flooding

23) What should be done to reduce the demand for water and how quickly can this have effect?

The Greater Lincolnshire LEP is committed to maximising the impact of water efficiency and management as a driver for economic growth. This applies equally in terms of agricultural production, food processing and the requirements of the visitor economy. Currently demand management plays a prominent role in planning for the future of public water provision, and while this clearly has a place it is unlikely to meet the requirements of the levels of future growth projected in Local Plans and in Strategic Economic Plans.

In broader terms, strategic provision of good quality water to support housing and business growth needs a longer term vision which takes account of potential future growth and capacity to provide this locally and regionally. A key factor in this will be smarter use of existing supply, such as retention of water for use at a later date or for redistribution to areas vulnerable to water stress, or where significant growth can be unlocked by improving water availability.

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

It is essential that water supply infrastructure is designed, where possible, in a way that contributes to local and regional flood risk mitigation, facilitates community and business resilience and growth (by securing current and future need for water supply & quality) and enables environmental enhancement. Key factors that should be considered include future growth, both planned and potential, utility provision, and opportunities to align with – and contribute to - future infrastructure plans for flood risk management, water retention and drainage or water level management.

25) How can long term plans for drainage and sewerage be put in place and what other priorities should be considered?

We are aware that Water Companies are developing Water Resource Management Plans along with Water Supply and Drainage Management Plans. It is very important that long term plans developed by the water industry are able to align with and support other key plans (such as Local Flood Risk Management Strategies) in a way that respects local prioritisation and governance arrangements. In particular local flood risk and drainage management arrangements are based on a level of democratic accountability through Local Authority and Drainage Board decision-making that would be difficult to replicate at regional or supra-regional level. A high level of dialogue with local elected representatives will be essential if such plans are genuinely to complement local water management arrangements, as well as effective engagement with key partnership bodies involved in flood risk and drainage activities. In addition, there is a need to engage closely with Local Planning

Authorities and with Local Enterprise Partnerships, not least in order to fully reflect the nature and extent of planned development as well as aspirations for unlocking future growth potential.

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

Defra's six year flood risk capital programme provides an element of certainty nationally for funding. However this is largely related to coastal and fluvial flood risk management, and does not necessarily guarantee a proportional investment in surface water or groundwater risk management at the local level where its impacts are most keenly and frequently felt.

Most importantly, the current allocation reflects a key assumption in the national flood risk funding formula, which is that benefits from flood risk management are calculated on the basis of what currently exists, with an emphasis on homes and protection of life. Where this creates a difficulty is that it means that national investment in this work cannot be focused on locations where the prime benefit is protection to existing business – especially rurally based business such as agri-food – and cannot anticipate potential future growth.

In effect, it means that flood risk management cannot easily be funded in order to unlock and promote future growth, and is geared towards a discrete project-by-project approach, rather than recognising flood risk and water management infrastructure as a linked system of interdependent assets and maintenance activities. It is also questionable that the current capital funding system is well suited to promoting the accumulation of smaller local improvements that collectively can support the delivery of better surface water flood risk locally and regionally.

In 2014 the Environment Agency's Long Term Investment Strategy estimated that optimal investment in flood risk management (meaning coastal, fluvial and surface water flooding) would be £750-800m per annum during 2015-2025, rising from the 2020s to 2040s to £850-900m per annum (all present value equivalents in 2014). Once discounted to present values, the cost of funding all activity to manage flood and coastal erosion risk where benefits are greater than costs would be around £25 billion over the next 100 years.

It should be noted, however, that this calculation does not include costs of repairing risk management assets beyond normal 'wear and tear' (ie it does not anticipate costs of repairing damage from flooding or coastal surge events). It also does not include economic growth benefits that could be achieved in areas where the standard of protection against flooding is improved over time, or other benefits such as health or reduced risk to life. In effect, this is the anticipated cost up to the 2040s of protecting what currently exists (in 2014), with no allowance for growth, and without factoring in investment in protection to business growth.

From 2015 Government estimated that the costs to Lead Local Flood Authorities of implementing the revised arrangements for advising on SuDS and surface water issues on developments would be a maximum of £10,000 per annum. These new arrangements make limited provision for future management of drainage assets in new developments, and leave the extent and scope of LLFA advice to the discretion and resource capacity of each area. There is, therefore, a risk that this will create a disjointed impact nationally, with varying quality of development infrastructure provision from locality to locality. In effect, there are locations where future problems may be being 'built in', in direct contrast to the intended effect of the Pitt Review and the 2010 Act.

Financing an funding infrastructure in efficient ways

27) What would be the most effective institutional means to fulfil the different functions currently undertaken by the European Investment Bank if the UK loses access? Is a new institution needed? Or could an expansion of existing programmes achieve the same objectives?

If the UK loses access to the European Investment Bank then its functions should be replaced by an expansion of existing programmes. Attempting to replace it with a new institution would have the potential to increase bureaucracy and stifle the development of infrastructure and the resultant growth.

A critical aspect of responding to such a situation would be to change the state aid rules. In their current form, these could act to prevent an effective replacement being put in place.

28) How could a comprehensive analysis of the costs and benefits of private and public financing models for publicly funded infrastructure be undertaken? Where might there be new opportunities for privately financed models to improve delivery?

The comprehensive analysis of the costs and benefits of private and public financing for publicly funded infrastructure is likely to require the establishment of a formal Commission. This complex subject would require a wide ranging study of the performance of existing models of delivering infrastructure. Well published problems with some of the existing models indicate that the factors governing effective delivery model selection are not always well understood. Lessons from previous infrastructure delivery failures are not always circulated to enable wider learning of the complex range of factors influencing the outcomes. A well-structured Commission would allow the appropriate level of knowledge capture to help inform delivery choices and to identify new opportunities for privately financed models of delivery.