

England's Economic Heartland
Programme Office
c/o Buckinghamshire County Council
County Hall
Walton Street
Aylesbury
HP20 1UA

8th January 2016

Dear Sir,

National Infrastructure Commission: call for evidence
Response of England's Economic Heartland Strategic Alliance

The Strategic Alliance is a non-statutory partnership whose participants share a collective ambition to realise the potential of England's Economic Heartland. Its participants are committed to looking beyond current success and, through collaborative working to a common purpose, raise levels of productivity to match, and where possible exceed, those of global competitors by addressing the identified barriers to economic growth.

As an Alliance of strategic authorities and their constituent LEPs, the partnership represents almost 3.5 million people from:

- Oxfordshire
- Buckinghamshire
- Northamptonshire
- Milton Keynes
- Luton
- Central Bedfordshire
- Bedford
- Cambridgeshire

It is an expressed aim of the Alliance to seek to become a statutory Sub-National Transport Body. The Alliance partners are also committed to developing a strategic infrastructure plan whose scope reflects that of the Commission: a recognition by the partners of the critical importance that strategic infrastructure has to play in supporting planned growth.

Given these ambitions, the proximity of the Heartland to London, the Midlands and North and our shared issues with connectivity, London transport infrastructure and energy supply, the Alliance looks forward to working closely with the Commission as it looks to advise Government on future infrastructure investment priorities.

Connecting Northern Cities

1. ***To what extent are weaknesses in transport connectivity holding back northern city regions (specifically in terms of jobs, enterprise creation and growth, and housing)?***

2. ***What cost-effective infrastructure investments in city-to-city connectivity could address these weaknesses? We are interested in all modes of transport.***
3. ***Which city-to-city corridor(s) should be the priority for early phases of investment?***
4. ***What are the key international connectivity needs likely to be in the next 20-30 years in the north of England (with a focus on ports and airports)? What is the most effective way to meet these needs, and what constraints on delivery are anticipated?***
5. ***What form of governance would most effectively deliver transformative infrastructure in the north, how should this be funded and by whom, including appropriate local contributions?***

The Alliance makes no response to these questions but raises the matter that the success of economic initiatives in the North are in no small part dependent upon the infrastructure connections through and across the Alliance area, particularly through improved radial and orbital movements from London and the South Coast by road and rail.

London's transport infrastructure

1. **What are the major economic and social challenges facing London and its commuter hinterland over the next two to three decades?**

London and its commuter hinterland face significant economic and social challenges in the short, medium and longer term. Unless drastic changes are made over the next two to three decades, congestion will have a severe impact on the economy and people's daily lives, with many journeys being effectively impossible. Forecasts show that additional transport capacity is required across the wider South East but this should not necessarily be through continued emphasis on focusing exclusively on radial connectivity. New or improved strategic road and rail infrastructure across the wider South East will change travel patterns thereby supporting economic development in the wider South East and at the same time provide some relief to the demand on traditional radial corridors serving London. In addition to giving rise to wider beneficial impacts for London and England's Economic Heartland, such an approach would be consistent with the Government's ambition to rebalance the economy.

It is clear from our engagement in the emerging London Plan, that the economy will continue to be over-heated in the city and there will be difficulties in meeting the housing demand that comes with this. It has also been accepted that the South-East supports London growth by delivering homes to meet the current and planned growth through our own housing allocations. A sub-national approach to strategic planning will be needed to avoid offsetting this economic growth by extending radial links outward to bring labour to jobs; rather there needs to be a shared aim to re-balance the economy across the South East (and indeed to the north as well) and seek to reduce the need for journeys through/to London by providing much needed infrastructure to support economic growth in the wider South East. This will allow London to meet more of its own need whilst supporting a more balanced economic approach.

Some of the fastest-growing towns and cities in England are located in a belt to the north of London which already enjoy some strong, albeit well-used, links which support London. England's Economic

Heartland – with an economy worth £90bn but with the potential to grow another 20 per cent - clearly has the potential to help offset some of the over-heated economic impacts on London so that existing radial networks can more efficiently serve in and out-commuting to meet demand. The economic potential of the Heartland area reflects its competitiveness in global markets, driven by its leadership in the digital economy. Our approach to investment in transport infrastructure must avoid reinforcing traditional patterns of movement when economic growth derives from the new economy.

England's Economic Heartland sits on the busy road and rail transport corridor between the south coast ports, the Midlands and the north and enjoys easy links to London and the West Midlands via the M40. However, it suffers a lack of east-west connectivity, in particular to the high-value growth areas around Milton Keynes and Cambridge, and also in terms of access to/from the international gateway at Luton Airport (including business aviation needs arising from businesses in the Heartland area operating in the global market).

There are currently no direct rail connections between the centres of Oxford and Cambridge and to the areas in between (forcing commuters to travel into London in order to come out again), while travel by road involves cross-country single-carriageway routes or use of the M25 around London. Improving the connectivity on this corridor – through East-West Rail and the Oxford to Cambridge Expressway projects - will place the authorities in the Alliance at the centre of the south-east orbital corridor as a key hub for south-west to north-east transport. As a result, England's Economic Heartland would realise further improvement in agglomeration opportunities for jobs, growth and innovation, with its vastly-improved road and rail links to these high-value centres of the UK economy.

2. What are the strategic options for future investment in large-scale transport infrastructure improvements in London - on road, rail and underground - including, but not limited to Crossrail 2?

The focus for investment to help London should not solely be within London. Existing radial routes, much the focus of current and previous national investment, serve to provide vital lifelines for labour supply to meet London's booming economy. While the Heartland area has good radial connections into and out of London, the service level on transport connections across much of the area - for example, including between major economic hubs such as Oxford, Cambridge, Aylesbury, Milton Keynes and Luton – is notably poor, a consequence of existing high levels of economic activity and travel demand already looking to avoid the need to transit the London area.

The lack of transport for people and freight between these areas creates an artificial barrier between hubs of knowledge-based growth. This area was recently recognised as being the most innovative part of the UK - connectivity between this area, and particularly north London, will not only reinforce London's and the UK's attractiveness in terms of investment, but as the area also links very well to the North West and North East, it provides a good platform for linked innovation growth in the Midlands and Northern Powerhouses.

Pushing forward with plans to complete East-West Rail and the Oxford to Cambridge Expressway (including vital links to the A34 linkage to the South Coast ports) provides a critical and long overdue outer-orbital that complements growth in London by reducing the need for traffic to transit through

it, supports the Alliance partners to realise the potential of England's Economic Heartland, as well as enabling the logistical needs of the national economy to be supported.

- ***How should they be prioritised, taking account of their response to London's strategic transport challenges, including their impact on capacity, reliability, journey times and connectivity to jobs?***

East-West Rail will reconnect Oxford to Milton Keynes and Cambridge by rail, and direct rail access from the west into Heathrow. This is due for completion in Control Period 6, post 2019 and must not slip any further in delivery.

In addition, work on the Oxford to Cambridge expressway is underway and we are working with Highways England to develop a route based strategy linking Southampton and the East Midlands, which will include improvements to the A34 and the development of an expressway to connect the two growth centres, linking up major economic hubs along the way (i.e. Milton Keynes, Aylesbury, Luton). England's Economic Heartland will put forward an initial statement of investment priorities in autumn 2016 as part of the input into the review of the Road Investment Strategy (due to be reviewed in 2017) and the related review of the rail infrastructure review.

- ***What might their potential impact be on employment, productivity and housing supply in London and the southeast?***

Work to date has demonstrated that improvements in economic productivity across the Heartland area would generate an additional 20% GVA per annum – equivalent to c£10bn per annum. Just as important, a failure to invest in the Heartland will result in the level of service on existing infrastructure declining making existing business activity increasingly uncompetitive in global markets. A decline in economic performance would reduce the Heartland's net contribution to the Exchequer, thereby reducing the scope for investment by Government across the UK.

3. What opportunities are there to increase the benefits and reduce the costs of the proposed Crossrail 2 scheme?

No comment.

4. What are the options for the funding, financing and delivery of large-scale transport infrastructure improvements in London, including Crossrail 2?

- ***What is an appropriate local and regional contribution - given the potential distribution of benefits to business, residents, transport users and the wider economy - and how could this be achieved?***

If there was to be evidence of a proper regional distribution of investment and growth in support of London, then regional contributions to the solutions would be defensible and fair. The uplift in growth realized through delivery of both East-West Rail and Oxford to Cambridge Expressway will be significant and would need to be reflected in some way. The Alliance members already have a well-established partnership in support of East-West Rail contributing over £45m to its delivery.

Furthermore, the likelihood of such an arrangement would be improved should the Alliance be

successful in its attempts to become a Sub-national Transport Body as provided for in emerging legislation.

- ***What innovative funding mechanisms could be considered to support delivery of key schemes?***

Notwithstanding the potential to deploy innovative financing mechanisms to deliver key schemes, the cost of those schemes will ultimately have to be met from one of three funding sources – the user or beneficiary of the infrastructure, local sources of funding (council tax payers or local businesses), or central Government investment.

5. *How have major metropolitan areas in other countries responded to similar challenges and priorities? Are there any lessons to be learned and applied in London?*

No comment.

Electricity Interconnection and Storage

The responses in this section are based on our experience of the grid or distribution network in Oxfordshire, however they are reflective of the challenges faced across the Heartland area. The Alliance partners commitment to develop a strategic infrastructure plan reflect a recognition on their part that the issues need to be addressed at a sub-national scale

The questions below assume that the installation of renewable energy generation is proceeding unhindered so as to provoke the need for balancing of supply and demand, including deploying energy storage. Unfortunately, this is not the case.

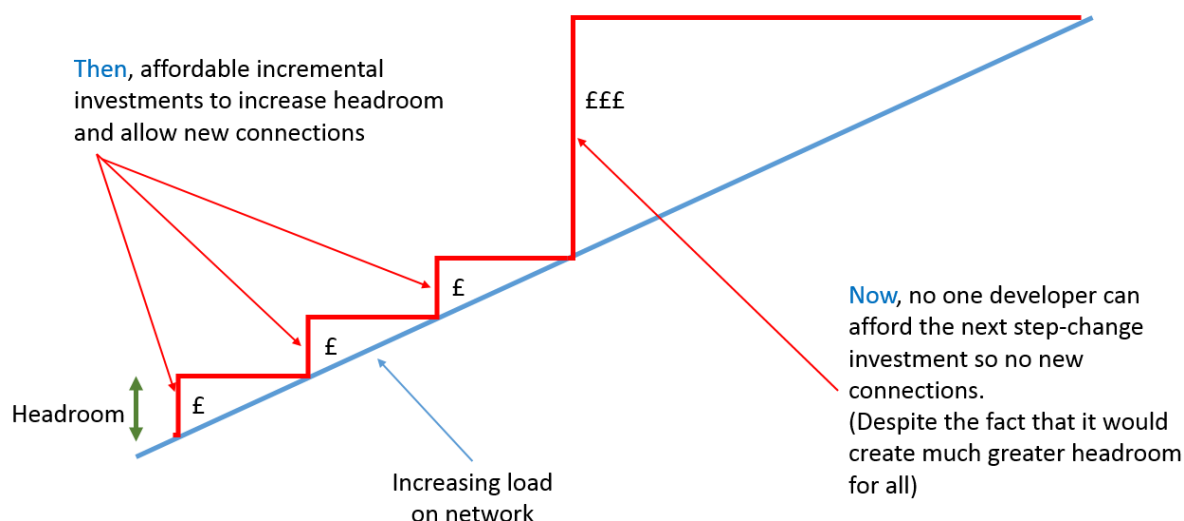
It is worth pointing out that there are two fundamental issues:

- There is an acute need to invest in renewable energy to diversify and add to current supply to meet demand; and,
- There is a need for additional capacity full stop to support large scale economic/housing growth.

The local market for connecting new renewable energy schemes to the distribution network has effectively failed. All of the sub-stations operated by Scottish and Southern Energy Power Distribution (SSEPD) across Oxfordshire for example, are constrained by fault levels. So, in practical terms, there will be no new large installations (above 50kW) in Oxford for the foreseeable future. In Bicester, there will be no new renewables, nor allocation of new supply connections until 2019 at the earliest. There are similar examples from elsewhere in the county: In November, a £240k solar PV scheme in Chipping Norton, Oxfordshire, was recently quoted a connection cost of £437k with a delay of two years, making the scheme unviable.

As elsewhere across the Heartland area, Oxfordshire's local grid needs significant investment to make it fit for the 21st century. It needs to move from a centralised energy system designed to distribute electricity in one direction to the smart system needed to manage embedded generation and storage, as well as the increasing up-take of electric vehicles. At present, this is funded by individual developers as they request a connection. We have reached the point where no one individual developer can afford the cost as shown in Figure 1 – The Investment Hurdle

Figure 1 – The investment hurdle



We also believe there is a significant information failure in this market: scheme developers are unaware of each other, making it difficult to pool resources. The Distribution Network Operator (DNO) reacts only to firm requests to connect rather than taking a strategic view based on the much wider range of information available. The Alliance suggest that the regulatory framework within which the 5-year investment plans are prepared by the operators (and approved by the Regulator) must be required to take into account the strategic growth identified by local partners. We feel the most efficient and effective way of doing this would be at a sub-national level reflecting the reality that networks extend beyond individual local authority boundaries.

The current approach is inefficient thereby increasing costs to developers – in re-scaffolding when limits on schemes size are relaxed or in abortive costs when schemes turn out to be financially unviable because of the high cost of connection.

To develop as it should, the energy grid needs mechanisms to facilitate funding in advance of a connection request, based on a strategic vision of the development of the grid. There may also be a ‘public good’ argument for investment in the grid, analogous to investment in other infrastructure such as roads and broadband.

The strategic vision needs to be owned by local stakeholders as much as the DNO. This requires much greater dialogue between planners, the DNOs and major users to avoid pinch-points blocking development, as is happening in Bicester with knock-on impacts on Oxfordshire’s economic growth.

The Alliance suggests that an obligation should be placed on the DNO to work with sub-national bodies to identify the longer term strategic needs for additional installed capacity – and then a requirement on the regulator to take that into account when agreeing to specific 5-year investment plans. The Alliance partners are keen to work with the Commission to develop its thinking in this area with a view to shaping the remit of the Commission moving forward (and ensuring future legislation is fit for purpose).

We would also like to see greater use of the Ofgem innovation funds to help support the area’s long term innovation and growth strategies. Exploring smart solutions to fault-level constraints is key as is

supporting the innovative work we are doing in the electric car market which impacts on the grid and could provide a balancing function. In this example, the electric car is part of the storage chain and adds a wider value to the energy use/storage cycle without the need for wider storage investment. This presents a huge opportunity, so reinforcing the point that forward planning must improve.

1. *What changes may need to be made to the electricity market to ensure that supply and demand are balanced, whilst minimising cost to consumers, over the long-term?*

Investors need a secure and equitable investment environment with clear long-term signals within which to plan multi-year projects that have investment and construction timescales that extend well beyond the timeframes associated with regulatory reviews. The recent reviews on rail infrastructure investment have noted the difference in terms of cost and efficiency of large scale investment schemes handled outside the 5-year regulatory framework (i.e. Crossrail and Thameslink) with those handled as part of the regulatory framework (i.e. GWML electrification) – if Government is sympathetic to shifting more strategic schemes outside of regulatory frameworks then one could see a similar approach being applied to other sectors. The Alliance wants to work with the Commission to explore this opportunity further. Without this environment, new energy supply projects will not come forward at the rate needed

At the local grid level, for example, Oxfordshire's thriving community sector is already demonstrating balancing projects which have significant potential:

- Project **ERIC** (Energy Resources for Integrated Communities) is an initiative bringing solar PV power and smart energy storage to up to 100 homes in Rose Hill, East Oxford. Project ERIC is led by Moixa Technology and Bioregional and is part-funded by Innovate UK. Using domestic Maslow batteries and a new software platform, Project ERIC aims to demonstrate how distributed storage in a community can be managed to reduce average peak grid load by 65% and increase self-consumption of local PV energy across the community by twofold¹.
- The award winning **Energy Local** project aims to use smart technology systems to pool community demand so that members can access the time of day tariff and locally generated renewable power directly, adjusting demand to reflect local generation².

The market needs to facilitate local initiatives such as these by minimising the cost and resources needed to participate. Whilst they will initially contribute to local balancing, they can of course contribute to the national balancing market at scale, which is the long term intention.

What role can changes to the market framework play to incentivise this outcome:

- ***Is there a need for an independent system operator (SO)? How could the incentives faced by the SO be set to minimise long-run balancing costs?***

There is a major need to upgrade the local grid in Oxfordshire so that it facilitates new approaches to the generation, storage and use of electricity rather than blocking them as at present. Such an upgrade will also require a change in the role of the District Network operator (DNO) to an

¹ <https://localisedenergyeric.wordpress.com/>

² <http://www.energylocal.co.uk/>

independent system operator, if not a new operator. The incentive scheme should encourage the strategic rather than reactive management of the network in partnership with local stakeholders. It could also remove the barriers in the current system which mitigate against long term strategic investment.

- ***Is there a need to further reform the “balancing market” and which market participants are responsible for imbalances?***

As above

- ***To what extent can demand-side management measures and embedded generation be used to increase the flexibility of the electricity system?***

Oxfordshire has shown that community energy initiatives, such as ERIC and Energy Local, can make a significant contribution to both demand-side management and embedded generation. In particular, the Low Carbon Hub has demonstrated that there is a strong demand for local investment opportunities. It must be recognized though that this is only part of the supply offer to meet what will be significant growth in the Alliance area.

At present, this is held back by fault level constraints and by the failure to develop a smart grid in the county.

2. What are the barriers to the deployment of energy storage capacity?

- ***Are there specific market failures/barriers that prevent investment in energy storage that are not faced by other ‘balancing’ technologies? How might these be overcome?***

Battery-based storage is still expensive. Further government investment in battery innovation, testing and de-regulation are required for example to meet the challenge of creating a step change and shift away from carbon-based engines. The Alliance area is at the forefront of this and needs continued investment to succeed.

Some energy storage devices, such as batteries, can contribute to fault levels. At present, fault level constraints in Oxfordshire and the consequent market failure limit the roll-out of such devices at scale. This basic issue needs addressing as described above.

- ***What is the most appropriate scale for future energy storage technologies in the UK? (i.e. transmission network scale, the distributed network or the domestic scale.)***

All scales are appropriate to make the best fit with the technology and source of funding eg pumped storage will work at the transmission network scale. In contrast, businesses, schools and households will invest in small-scale battery storage which in aggregate will make a significant contribution.

3. What level of electricity interconnection is likely to be in the best interests of consumers?

- ***Is there a case for building interconnection out to a greater capacity or more rapidly than the current ‘cap and floor’ regime would allow beyond 2020? If so, why do you think the current arrangements are not sufficient to incentivise this investment?***

- ***Are there specific market failures/barriers that prevent investment in electricity interconnection that are not faced by other 'balancing' technologies? How might these be overcome?***

We assume these questions relate to interconnection at the level of the transmission network and therefore have no comment.

4. What can the UK learn from international best practice in terms of dealing with changes in energy technology when planning to balance supply and demand?

How best to roll out and use a smart grid to make more efficient use of the grid asset.

The Alliance partners look forward to working closely with the Commission as it discharges its functions. If you need any further information in response to this submission please contact me on

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