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12 January 2018

To whom it may concern,

Response to the consultation on the interim National Infrastructure Assessment

The Royal Town Planning Institute (RTPI) welcomes the opportunity to provide evidence to the National Infrastructure Commission's consultation on the interim National Infrastructure Assessment: *Congestion, Capacity, Carbon: Priorities for National Infrastructure.*

The RTPI has over 25,000 members who work in the public, private, voluntary and education sectors. It is a charity whose purpose is to develop the art and science of town planning for the benefit of the public. The RTPI develops and shapes policy affecting the built environment, works to raise professional standards and supports members through continuous education, practice advice, training and development.

Please see our submission to the consultation below.

Yours faithfully,

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General comments

The RTPI is broadly supportive of the interim National Infrastructure Assessment (NIA) from the National Infrastructure Commission. Historic infrastructure choices in the UK have been sub-optimal due to the ad hoc nature of project justification, a lack of mechanisms for considering the cumulative impact of infrastructure decisions, and a failure to properly consider the transformative nature of infrastructure investment. Meanwhile, successive policies and strategies from government have often failed to account for their impacts on different parts of the country, or combined to produce unintended spatial consequences. As such, the 'threats' of congestion, lack of capacity and carbon, and the seven key priorities set out by the Commission, provide a much improved framework by which to meet the Commission's overarching objective, which is to "*inject vision and purpose into how we plan, fund, deliver and operate the networks which underpin our economy and society*".

We note that the final NIA, due to be published summer 2018, will contain a strategy for addressing each of these seven priorities. For these to be successful, we believe there are several overarching issues that need to be addressed in the final NIA. Comments on the specific questions then follow.

<u>Emphasising the spatial dimension of scenarios</u>

The Commission has developed its own scenarios in order to inform its assessment of infrastructure need up to 2050. These scenarios respond to four drivers: population change and demography, technological change, economic growth and environment and climate change.

Each of these is characterised by significant uncertainty and influenced by complex feedback loops related to the provision of infrastructure itself. For example, greater investment in transport infrastructure across the north of England could encourage population and economic growth away from the south east, and infrastructure can unlock sites for development and expand markets in areas where economic activity and population levels were previously low. Flood defence infrastructure can protect communities in areas which may otherwise be lost to flooding and coastal erosion. Conventional project appraisal generally fails to capture the processes by which infrastructure investment acts as a driver of change.

In the absence of a national spatial vision from central government, the Commission's own choice of scenarios will have to inform the strategies adopted by the NIA. From this, recommended infrastructure projects will flow. When government accepts these recommendations, these scenarios will move towards becoming reality.

While this is preferable to ad hoc project justification, it does place a greater weight on the Commission to demonstrate transparency and democratic engagement in the development of the scenarios which inform the final NIA. This is especially important when considering scenarios for distribution of population and economic growth, given that these drivers are themselves influenced by the provision of infrastructure, and that disparities in infrastructure investment are partly responsible for the serious regional inequalities that now exist across the UK.

The Commission must be able to show why the scenarios which informed their final understanding of infrastructure 'need' have been selected. This can be achieved by reference to how they help to meet wider government objectives such as the Modern Industrial Strategy, Clean Growth Plan, National Climate Adaptation Programme, Housing White Paper, Air Quality Strategy, the Future Generations Act (Wales) and the new 25 Year Environment Strategy. Indeed, the NIA can play a valuable role in pulling these various strategies together, and highlighting where discrepancies exist.

Demonstrating a dynamic approach to assessing infrastructure need

In our response to previous consultations, we emphasised the need for the Commission to use a dynamic methodology when making assessments of infrastructure need. This was described as one which captured the ability of infrastructure to reduce regional inequalities by allowing investment to be directed to the places where it could have the most transformative impact, creating new markets and unlocking areas for development.

The Commission has employed this approach to their work across the Cambridge – Milton Keynes – Oxford corridor, which showed how strategic infrastructure planning can drive above-trend levels population and economic growth. While that level of stakeholder engagement cannot be expected across the whole country, the final NIA will need to demonstrate buy-in from sub-national bodies including local and combined authorities, Local Enterprise Partnerships (LEPs) and Sub-National Transport Bodies (SNTBs), as well as the Welsh, Scottish and Northern Irish governments.

In England, the Commission has indicated a focus on working with recently elected mayoral authorities, a pragmatic approach that works with the grain of the devolution agenda. However, the Commission must also be able to demonstrate that its scenarios and strategies work for *all* parts of the country, including rural areas and places outside the combined authorities, in order to tackle regional disparities. This needs to recognise that towns and cities have different infrastructure baselines, with some places still missing quite fundamental economic infrastructure.

The relationship to the UK Nations

It is helpful that Commission has clarified its responsibilities with regards to the devolved governments (Table 1, page 26). This says that in four of six sectors covered by the Commission, there is substantial devolution to the devolved Governments with only energy and digital communications not entailing significant devolution. Given this, it would be useful if the Commission and the devolved governments agreed and published protocols setting out how to manage their relationships where issues are developed, and where they will work together where the issues are not.

The NIA should demonstrate how its strategies relate to the objectives of the relevant activities in Scotland including the new Planning Bill (which looks to encourage the better coordination of development plan strategies with infrastructure capital investment plans and programmes), the continued agreement and implementation of the city region deals; the review of the National Planning Framework; the Scottish Government Infrastructure Investment Plan; the review of the National Transport Strategy; and the impending Climate Change Plan.

Similarly, the NIA should set out its relationship with the proposed National Infrastructure Commission for Wales (NICfW) and the development of the National Development Framework for Wales[1]. It is desirable for the NICfW to work collaboratively with the Commission where relevant, particularly in relation to infrastructure that has a cross-border function (e.g. rail networks and flood risk management). A NIA should set out a clear protocol to underpin any joint working between the two commissions and relevant government departments.

Responses to specific questions

Overarching

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

   Brexit could prove detrimental to the delivery of homes and infrastructure unless the construction industry can easily draw on EU workers while it upskills a stronger domestic workforce. UK government must provide confidence and stability to the built environment sector through infrastructure funding and development during this period of uncertainty.

   The Commission should do recognise the potential of port and coastal cities as exporting hubs in light of Brexit. Protecting key access routes to ports and where appropriate safeguarding existing land and infrastructure is important. This includes the need to support demand-driven investment in road-rail-port interchanges to help meet demand for storage and distribution of freight. Even if Government is able to negotiate a streamlined or customs free border, there will still be a need to conduct other border activities in ports on a greater scale than before. Ports themselves often have limited room for expansion and so provision may need to be made inland for holding goods while they clear customs.

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?**

   We support the need to place good design at the heart of infrastructure planning. The proposal by the Institute for Government to create a Commission for Public Engagement (CPE), based on the French *Commission Nationale du Débat Public*, has merit in ensuring that the public have a proper voice in project selection and design[2].

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

   In addition to the metrics proposed, the Commission should consider the embodied emissions from construction and decommissioning within each infrastructure sector.

   We support the Commission's proposal to work with the Natural Capital Committee to develop metrics to better understand the relationship between infrastructure and natural

[1] Read the RTPI Cymru response to the proposal for a National Infrastructure Commission for Wales
[2] Institute for Government. (2017) How to design an infrastructure strategy for the UK

capital. This would also help to emphasise the role that green and blue infrastructure can play in meeting economic, social and environmental objectives.

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?**

   A greater recognition is needed in CBA of the negative impacts that result from transport investments which facilitate a more scattered or dispersed pattern of development, as these are a major cause of growing demand, congestion, car dependency and transport emissions[3]. We welcome the Commission's intention to focus on developing better land use and transport interaction (LUTI) models, which reflects a growing move to formally recognise and incorporate land use change in the appraisal process for larger and more transformative transport schemes. Although land use modelling is complex, it is critical that we better understand the impact of transport schemes on the location and form of residential and employment development, and the impact on congestion and transport emissions that results from improving or constraining the accessibility of locations by different modes of transport (including active travel).

   As we stated in the introduction, there is a broader weakness with the concept of CBA in that it only measures the impact of a scheme. It would be more helpful to consider the assessment, using existing tried and tested methods such as sustainability appraisal, of whole-area strategies which combine land use and transport policies and programmes. Within wider areas like city-regions you cannot effectively assess the 'need' for infrastructure, you can only evaluate the advantages and disadvantages of different scenarios. The Commission has started to address this issue in its work on the Cambridge – Milton Keynes – Oxford corridor. Here, a high growth scenario will both require *and also* be enabled by a certain level of infrastructure investment in order to provide a certain level of economic and social benefits. A low growth scenario requires and is enabled by different levels of infrastructure investment. As we said in our introductory comments, it is impossible to ascertain the 'need' for infrastructure independently from policy choices.

   The Commission should also advance a set of CBA tools which level the playing field between different types of infrastructure project (such as transport and climate resilience) and which capture wider economic, social and environment costs and benefits. This should, for example, enable comparisons between 'hard' flood defence infrastructure which has a single aim of reducing flood risk, green infrastructure which delivers wider benefits. Appraisal should be able to account for embodied emissions during construction and decommissioning.

Building a digital society: fast, reliable data services everywhere

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?**

   No comment.

[3] Wenban Smith, A. (2016) Land use drivers of transport emissions - revisited

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?**

   No comment.

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?**

   Investment in digital infrastructure should go hand in hand with transport infrastructure improvements. The Commission's 'Connected Future' report stated that infrastructure should be in place for 5G mobile connectivity on motorways and key rail routes by 2025. The Commission states that local government needs to be more proactive in facilitating planning process to encourage the deployment of infrastructure through coordinating connectivity plans across LA boundaries and rapid approval of digital infrastructure.

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

   No comment.

Connected, liveable city-regions: linking homes and jobs

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?**

   The NIA should emphasise the need for comprehensive coverage of spatial strategic plans across the UK, enabling a joined-up approach to housing, employment, infrastructure, health, education and the environment. The devolution agenda in England is supported as a means to ensure greater democratic accountability in strategic planning, and greater coverage of combined authorities and other joint planning mechanisms is required. Our paper on strategic planning sets out general principles on how this should work, and also contains specific recommendations for UK nations[4].

   The Commission is correct to recognise that congestion represents a serious constraint on economic productivity and leads to air pollution, public health crises and a decline in the quality of the urban realm. Changes to planning policy, and pressure to meet housing numbers, have also led to developments occurring in unsustainable locations, generating increased traffic and air pollution. For example in England, an increased emphasis within the National Planning Policy Framework (NPPF) on the speed of delivery and returns to land owners/developers can favour dispersed patterns of development in remote locations, where land is cheaper and easier to purchase and develop[5]. Meanwhile a fragmented approach to transport and land use planning, both within and across local authority boundaries, can mean that new development is not supported by the infrastructure needed to encourage sustainable modes of travel.

[4] RTPI. (2015) Strategic Planning: Effective Cooperation for Planning Across Boundaries

[5] See the RTPI's work on the location of development

Strategic plans must therefore promote land use policies which prevent sprawl and the dispersal of homes and jobs, promoting compact, dense settlement patterns and associated infrastructure which reduces the need to travel by car and supports public and active travel. This should be complemented with strategic transport plans that include congestion charging and low/ultra-low emissions zones, walking and cycle infrastructure, and high-frequency public transport. They should incorporate strategies which facilitate the maximum benefit in terms of homes and jobs from new transport investment, and maximising opportunities for the funding of transport investment via land value capture.

NIA scenarios should reference the infrastructure cost implications for different configurations of settlement size, location and urban form, based on existing research on this subject[6].

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 government should commit to phasing in greater funding for *intra*-urban infrastructure as major capital projects like HS2 and Crossrail move towards completion. This should be completed with the development of strong incentives in order to facilitate cooperation on strategic planning between local authorities, including the devolution of powers and resources which are conditional on having jointly agreed plans to cater for housing need, and providing greater certainty around the infrastructure delivery needed to support this growth.

An example through the concept of a long-term infrastructure pipeline endorsed by the Commission in its work on the Cambridge – Milton Keynes – Oxford corridor. This should provide greater certainty on the location and timing of infrastructure investment (covering transport, utility and social infrastructure), but in the medium and long-term, seek to integrate funding streams and investment programmes into existing governance structures like combined authorities. Additional local infrastructure funding should be unlocked as key milestones are met.

As the growth aspirations of local authorities are often frustrated by the challenges of coordinating infrastructure delivery between the various government departments and agencies, we welcome the Commission's proposal to developing a toolkit for strategic infrastructure planning, which could be of particular benefit to areas without mayoral combined authorities. Much more can still be done to consider the strategic implications of major transport investments from Network Rail and Highways England, looking at the places where they meet in terms of their potential to deliver highly accessible residential, logistics or mixed use development.

In considering various demand management options (e.g. road pricing, restrictive parking, and smaller projects to encourage sustainable travel and modal shift) there should be consideration of how these should be valued when compared to investment in major new infrastructure (including the opportunity costs not investing). Similarly, public

[6] Examples include: Williams, K. (2014) Urban form and infrastructure: a morphological review and VTP/LSE Cities. (2015) An analysis of public policies that unintentionally subsidise urban sprawl

health impacts should be factored into the appraisal process, showing the benefits of investment in walking and cycling infrastructure versus the costs of motorised travel.

Local and combined authorities should also be provided with the resources and technical capacity to develop integrated spatial maps of land use, transport infrastructure and air quality, in order to inform the location of development, coordinate the provision of sustainable transport infrastructure, and direct investment in mitigation.

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?

It is entirely reasonable that infrastructure is partly funded by developer contributions. We need to make it easier for public authorities to purchase land in order to provide necessary infrastructure upfront, before selling it back to developers. This would help to make development viable and provide more certainty in the market. More should be done to explore ways in which local authorities can borrow against future CIL and S106 receipts.

In England, a short term benefit would be to remove the pooling restrictions on Section 106 funding, coupled with a shift towards determining benchmark land values for viability assessments using the 'Existing Use Value Plus' (EUV+) valuation method (where the price paid for land cannot determine the uplift to the existing use value). A further steer from DCLG and other departments should clarify the relationship between infrastructure expectations from planning gain and infrastructure provided through general taxation, such as utilities.

In the longer term, a fairer way of sharing land value uplift between landowners and the community is needed to fund the housing and infrastructure the country needs. We have recommended that government link together infrastructure expenditure, policies and planning with policies and planning for housing in order to unlock potential sites, for example through budgetary processes or guarantees against future income streams. The success of innovative funding mechanisms in funding infrastructure projects such as the northern line extension (Tax Increment Financing) and Crossrail (Land Value Capture) should be considered for extending to national policy.

Local authorities can find it difficult to challenge claims from developers that the delivery of infrastructure is not viable, which means that development impact to be insufficiently mitigated. Local authority resourcing and better guidance is needed to help professionals balance transparency with issues of commercial confidentiality. The London viability protocol is also a good example of dealing with this issue.

See the answer to Q12 for further answers to this question.

New homes and communities: supporting delivery of new homes

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

Amending the powers of the 1981 New Towns Act would provide the most effective mechanism for capturing land value uplift and coordinating infrastructure with large-scale

housing. The RTPI welcomes recent efforts from the government and the Commission to revitalise this. The key issue is ensuring that Development Corporations are sufficiently resourced and that they deliver new towns of quality that make a significant impact in areas of housing need. National direction is needed to ensure that new towns are in the most appropriate locations to meet needs from a national and regional perspective, and to benefit from nationally significant transport investment which is needed in any case. This will help to provide developers and utility companies with the necessary confidence to invest.

While the cost of infrastructure is relatively constant across different geographies, the value of contributions from land values can vary considerably. Any new funding mechanisms needs to be sufficiently flexible to suit different projects and local economic conditions.

Better arrangements are needed to align planning for water and waste water capacity and housing growth. At present the regulation arrangements of OFWAT work against forward provision of infrastructure ahead of housing delivery because the regulator insists on very high levels of certainty before being prepared to sanction investment by water companies. Since funding arrangements are only set once every 5 years, unless schemes already have full planning permission in the short window available, all the costs of providing capacity fall on developers. It is not possible for local authorities to run their local plan processes to coincide with a national time table dictated by the regulator. This at best causes delay in getting housing permitted, while developers seek to reduce such costs. OFWAT should have an obligation to be involved in the local plan process and to fund any sites allocated in local plans. This issue is equally applicable to providing gas and electricity distribution capacity for new housing growth.

Low-cost, low-carbon: ending emissions from power, heat and waste

As a general comment, all infrastructure decision-making needs to be considered within the contexts of the carbon budgets set out by the 2008 UK Climate Change Act and also the more ambitious targets agreed at the Paris. These are extremely challenging targets and will entail major transformations across all sectors of the economy – net emissions from electricity, heat and transport may need to be reduced to almost zero.

On the subject of airport expansion, there is also a risk that increased aviation demand and the associated rise in emissions will necessitate emission reductions greater than 85% in other sectors of the economy (e.g. power, buildings and transport) by 2050 - cuts which the Committee on Climate Change do not think can be realistically achieved[7]. An independent assessment is needed to consider the consistency between airport expansion and the UK's climate change obligations.

Decisions over future power generation (off-shore/coastal/onshore/nuclear) have spatial implications, and the Commission could provide government with a valuable steer in this respect. Given the stated objectives in the Industrial Strategy for greater regional rebalancing, changes in technology could also provide an opportunity for poorer regions,

[7] Committee on Climate Change. (2015) Letter to the aviation commission

as work on a Great North Plan suggested[8], but this will require coordination and leadership.

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?**

    Research suggests that, in the absence of carbon capture and storage (CCS), there is a limited scope for gas in power generation after 2030 if the UK is to meet its emission reduction targets. Without CCS, investment in gas provides only short term gains in reducing emissions, but could compromise decarbonisation targets and create the risk of stranded assets over the medium and long-term[9].

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?**

    Energy efficiency is a key priority for national infrastructure. Policies and financial mechanisms are needed to drive the energy efficiency retrofit of existing buildings, and energy efficiency and low-carbon standards are required for new buildings in order to enable an increase in housing supply while meeting the emissions reductions objectives of the 2008 Climate Change Act and Paris Agreement. Energy efficiency should be embedded into English devolution deals, giving local and combined authorities regulatory powers to set more ambitious energy efficiency standards, and the resources to put energy/carbon plans into practice.

    Energy policies should continue to be developed on using the 'energy trilemma' framework which seeks to simultaneously meet climate change targets, guarantee security of supply and minimise energy costs. It is important that decarbonisation efforts are not viewed purely as a cost – the CCC has shown that rising energy costs for households are more than offset by low-carbon policies which reduce overall energy consumption, while low-carbon policies only have only a limited impact on business energy bills[10].

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?**

    No comment.

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[8] RTPI/IPPR North. (2016) Blueprint for a Great North Plan
[9] McGlade et al. (2017) The future role of natural gas in the UK: a bridge to nowhere?
[10] Committee on Climate Change. (2017) Energy Prices and Bills – impact of meeting carbon budgets

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?**

    No comment.

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?**

    No comment.

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?**

    No comment.

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?**

    No comment.

Revolutionising road transport: seizing the opportunities of electric and autonomous vehicles

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?

    This section links back to our answers to the priorities of 'Connected, liveable city-regions'. It is important that emerging transport technologies support a transition towards compact, dense and networked city-regions. Here, more immediate changes to the road network are needed to prioritise rapid bus networks, promote integration with the rail network, and deliver new walking and cycling infrastructure. Vehicle electrification in isolation is likely to place additional pressures on the energy sector and does not address congestion and the health implications of inactive travel. It will need to be complemented with land use policies that continue to resist sprawl and promote compact settlement patterns which promote mass public and active travel. Compact settlement patterns could also permit new electric vehicle charging infrastructure to be provided more efficiently.

CAVs are likely to have greater initial value in rural areas and inter-urban roads. Within the urban environment, their deployment will require strong city-regional transport authorities who can manage fleets of shared CAVs, integrated them into the broader public transport system. This will help to avoid the problems which have resulted from largely unregulated ride hailing apps. The rise in transport data generated by CAVs will also need to be accessible to city-region transport authorities. Any changes to land use, such as a reduction in car parking spaces, will need to be planned in an integrated manner as these could become critical locations for new housing, green infrastructure or energy generation. Additional road capacity created by the move towards CAVs should be used for bus priority lanes and active travel infrastructure.

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?**

    To reduce demand on the electricity network, demand management tools must be implemented alongside changes to vehicle technology. Available options, including road pricing, speed reductions, low emission zones and workplace charging levies, should be evaluated against their ability to deliver against the objectives of carbon, capacity and congestion.

    The planning system needs to be proactive, with the provision of charging points imposed through conditions on permissions for residential and commercial development. Major investment will be needed to upgrade the grid to enable domestic vehicle charging.

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

    This requires urgent consideration. Some form of transition payment system may be a useful way forward, as road pricing offers both an option to replace falling fuel duties and has the added benefit of discouraging road travel and reducing congestion to gridlocked urban areas. Costs should factor in both environmental and congestion impacts, and which might vary regionally. An increase to the rate of fuel duty - which has remained frozen during consecutive budgets – might also incentivise the transition towards cleaner vehicles and reduce the need to raise taxation elsewhere.

Reducing the risks of extreme weather: making sure the UK can stand up to drought and flooding

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

    The approach to water resilience should emphasise reducing water leakages and promoting demand management. The latter has become more challenging to pursue through the English planning system due to the government’s decision to cancel the Code for Sustainable Homes (CfSH). This allowed local authorities to set high standards for water efficiency in new developments, with CfSH Level 6 requiring new dwellings to consume a maximum of 80 litres/person/day. Local authorities are now only able to set

policies that require new dwellings to meet the optional requirement in Building Regulations of 110 litres/person/day, which must be backed up with evidence of a clear local need. There is limited evidence on the extent to which LPAs have adopted this more stretching target, although research has suggested that a variety of factors, including the emphasis on viability in the NPPF, has made it more difficult for LPAs to justify the inclusion of higher standards.

The long-term challenge for water resource management is that the spatial patterns of water resource contrast sharply with current distributions and future projections of population and economic growth. This is because in places like the North and West of England, spatial patterns of rainfall quantity and water supplies are usually more than sufficient, whereas in London, the South East and East of England, there are much lower levels of rainfall and water supply. There is a serious lack of long-term, joined-up thinking across government departments on the extent to which growth can be made sustainable in those parts of the country most at risk of water stress and drought.

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

Wastewater re-use should be clearly prioritised before new reservoirs, groundwater abstractions or desalination is considered. We welcome the recognition of green infrastructure in this section of the interim NIA - Sustainable Drainage Systems (SuDS) reduce strain on drainage and sewerage systems, while delivering a range of additional benefits.

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

The main challenge from a local planning perspective in England relates to SuDS. In order to plan new developments in a way which manages flood risk, changes to SuDS policy, legislation and monitoring may well be required, including:

- Making discharge of surface water to the sewer system from new development conditional on the inclusion of high-quality SuDS, and providing greater clarity around SuDS adoption and maintenance
- Developing national technical standards for SuDS which optimise opportunities to achieve amenity, biodiversity and water quality benefits alongside flood risk reduction.
- Ensuring that local planning authorities and lead local flood authorities have the resources and capacity to develop and include SuDS policies in Local Plans, including clear conditions on standards, management and maintenance, and that SUDs policies in Local Plans are consistent across wider areas (city-regions, counties and catchments)
- Ensuring that the various Planning Acts contain sufficient sanctions and powers to act as a deterrent for developments in breach of planning controls for SuDS and require that remedial action is taken, and ensuring that local authorities are properly resourced to monitor and enforce the delivery and maintenance of SuDS

Broader catchment management is also needed to reduce flood risk and increase resilience to climate change, especially in areas with high housing demand and/or communities which are vulnerable to flooding. Measures can include upstream planting, rewilding, and working with farmers to test payments for allowing their land to flood.

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

While not a full response to this question, it is important to note that resourcing must be a key part the equation. The Environment Agency. local planning authorities and lead local flood authorities need sufficient resources and technical capacity to:

- consider Strategic Flood Risk Assessment during Local Plan preparation and assess the suitability of sustainable drainage systems in their area
- model and monitor the cumulative impact of surface water from individual buildings and new developments, and to enforce planning policy on SuDS in new developments
- access technical expertise on sustainable drainage and engage with developers and consultants during the pre-application and application process to ensure that sustainable water management is designed in from the outset

Financing infrastructure in efficient ways: getting the right balance between public and private sectors

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?

No comment.

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?

No comment.