Building on firm foundations
A response to the National Infrastructure Assessment

September 2018
Balfour Beatty welcomes the publication of the National Infrastructure Assessment (NIA), the National Infrastructure Commission’s (NIC) first ever appraisal of the country’s future infrastructure need over the next 10–30 years.

There is much to be positive about within this strategic vision — for the UK, and for the construction and infrastructure industry. It reaffirms the transformative impact new and upgraded infrastructure has on growth and the economy and the positive contribution it makes to the lives of people across the country. And it sets out a bold plan for the future in which a digital society lives in strong, empowered towns and cities, where greater connectivity via roads and rail opens up business and employment opportunities, and clean energy underpins our daily lives. It also outlines how a range of high-profile schemes such as Crossrail 2 and Northern Powerhouse Rail, teamed with smaller, but equally important projects, would help the UK remain economically competitive and cement its status as an infrastructure leader in the post-Brexit world.

While we support most of the recommendations in the NIA, the outstanding question now is what it actually means for the future. We have seen infrastructure assessments before. This one is too important to be left to gather dust until the next NIA in five years’ time.

The Government will respond to the recommendations within the next year. That response should be decisive and detailed, plotting a course to action. It should set out how the Government plans to deliver the key elements of the Assessment, backed up with a similarly clear timetable and blueprint for investment in the plans. To realise the vision set out in the NIA, industry needs certainty from the Government about which elements will be adopted and to what timescales, and it needs clarity as to how it will react to points such as the recommendation that the Government’s plans for up to six nuclear power stations be put on hold. To get the delivery right and to invest in skills, supply chains and equipment, industry needs the confidence that the investment will be worthwhile. Not just a visible pipeline, but a firm one.

There are also points within the NIA which have not attracted as much attention as the headline recommendations. For example, the Assessment rightly states that delivering the plans set out depends on being able to access people equipped with the right skills. A key element of this must be ensuring that the Apprenticeship Levy is amended so it delivers the skills the economy needs.

However, it does not discuss the importance of having a strong, resilient UK construction industry standing ready to deliver the plans. And yet the sector faces structural issues which must be addressed to ensure the future sustainability of the sector — especially, for example, how major infrastructure projects are procured.

We look forward to seeing the Government’s response and to playing our part in delivering the vision.

Leo Quinn
Group Chief Executive
Key points and recommendations

1. The Government’s response to the NIA should be decisive and detailed, plotting a course to action and setting out a clear timetable and blueprint for investment.

2. Realising the vision set out in the NIA requires the construction and infrastructure industry to be in a position to deliver it. The skills shortage and structural issues the industry faces must be addressed.

3. The recommendation in the NIA that Government provide £500m a year of funding from 2025/26 to 2034/35 to address the local road maintenance backlog may not be enough given the poor state of local roads and the underinvestment of recent years.

4. Balfour Beatty supports the NIA’s recommendations on flooding, but also believes that a ‘presumption’ towards a higher and more consistent defence standard should be provided in our larger cities, backed by developer funding.

5. While giving the NIC statutory independence would help resolve the tension between the need for certainty to finance infrastructure and short-term decision making linked to political cycles, we do not believe it is likely to happen in the short-to-medium term.

6. Private Finance 2 (PF2) could play a useful role in helping the UK meet its substantial infrastructure financing needs and should be considered alongside other options.

7. We welcome the proposal that the Government establish an operationally independent UK infrastructure finance institution by 2021. However, the 3-year timescale may be ambitious, especially given the challenges which must be surmounted first.

8. Balfour Beatty agrees that it is vital that local areas are given more powers to influence decisions on transport, housing and employment. Local road and rail projects have as important a role to play as bigger schemes such as HS2 and Crossrail 2 in keeping transport flowing around towns and cities and in supporting local supply chains.

9. Devolved infrastructure budgets will provide the revenue certainty that areas need to determine their own destinies, thus ensuring that the decisions are made by those with the best understanding of local needs. However, these are ambitious plans and they will require long-term commitment from successive Governments to ensure they are delivered.

10. A clear commitment from Government is needed to both Crossrail 2 and Northern Powerhouse Rail, along with a clear timetable and funding arrangements to ensure that both are delivered as soon as possible.

11. While it may seem to be simple to put the nuclear energy programme on hold, the NIA’s recommendation essentially amounts to stopping, rather than pausing it.

12. Without the certainty of a nuclear energy programme, industry will not maintain its investment in either the skills or the equipment needed to deliver it. The UK has a world-leading nuclear industry. It would be a shame to lose this expertise, the supply chain and the skills, only to later conclude that they are needed.

13. Nuclear energy remains the only source of baseload electricity which best provides simultaneously low carbon and large scale generation which is able to plug the gaps left by renewables. Balfour Beatty therefore recommends maintaining the nuclear programme until it has been conclusively proven that it is no longer needed.
The UK’s National Infrastructure Commission (NIC), established in 2015, launched its first ever NIA in July 2018. The NIC was set up partly to take the politics out of planning and funding national infrastructure. The production of the NIA is a key part of the NIC’s role. It aims to make evidence-based, impartial recommendations for the country’s infrastructure requirements for the next 30 years to ensure that infrastructure meets the future needs of society and that it is planned in a strategic, holistic way.

The very publication of the NIA is a welcome step. The construction and infrastructure industry had long called for an independent body such as the NIC to advise the Government on how best to meet the country’s long-term infrastructure needs in an impartial way, using in-depth analysis and data from a wide range of sources.

The ambitious recommendations made by the NIC include a national network of charging points for electric cars alongside funding for schemes including Crossrail 2 and Northern Powerhouse Rail, greater devolution of powers and the improving of flood resilience. It also recommends that the Government spend 1.2% of annual GDP to infrastructure spending between 2020 and 2050 – an annual average of £29.8 billion.

The Government has committed to lay the NIA before Parliament and to respond to it within a year detailing recommendations that it will implement, any further work required, and alternative proposals if necessary.
Delivering the vision: a sustainable construction industry

Balfour Beatty supports the bold vision set out in the NIA. However, realising it will require both courage and commitment from successive governments. It also needs the construction and infrastructure industry to be in a position to deliver it. The sector is experiencing turbulence at the moment, with a number of structural issues and a skills shortage. There are steps which can be taken to address all of these issues. For example, on skills, it is vital that the sector does not lose the skilled staff and the knowledge and expertise developed in the construction of key schemes such as Crossrail. This would worsen the skills shortage and ultimately make delivering future schemes more expensive, which is why the Government should commit fully to Crossrail 2 as soon as possible and provide as much certainty as possible on other short-term and long-term infrastructure projects. This assists the industry in retaining skilled staff and investing in equipment and operations, and helps support the supply chain.

In terms of the structural issues the sector faces, key amongst these is a public sector bias to lowest price bidding. In spite of the good intentions by public sector procurement to take a more holistic view of value, awarding contract to the lowest cash bid remains the norm. In many cases, this is due to the pressure local authorities and other commissioners are under on costs given the tight fiscal climate. In our discussions with those in public procurement, a consistent theme is that, whilst in an ideal world they would take a more holistic view, and spend more to get better longer term outcomes, they feel they have to respond to immediate needs on limited budgets. As a consequence contractors are incentivised to bid as low as possible on contracts in order to secure them, even though pricing this low is damaging to the industry over the long-term, as is being increasingly acknowledged.

It is important to note that the tender price on a construction project is not the same as what the scheme actually ends up costing. If the tender price is too low to cover the actual cost of the scheme, the result is either corner-cutting and poor quality work, not paying local subcontractors a fair price in order to deliver at the tender price, or legal claims to recover additional costs incurred during construction, which can result in delays. In many cases, it is also leading to the Government or other public sector commissioners repeatedly having to renegotiate contracts with the private sector, which is time consuming and costly in itself. In either case, the outcome is not a saving, but rather increased costs. Furthermore, lowest price tendering can reward companies which do not invest in training, skills, innovation and leaving a positive legacy and which pay lip service to social value where it is included in tender documents, with either unambitious commitments, or without the intention of delivering them.

Whilst responsible companies will refuse to compromise on quality and will attempt to leave a positive legacy, this is not sustainable over the long-term if procurers’ primary objective is to save short term cash. The emphasis must therefore move towards a balance of value and price, both in order to deliver value for money for the taxpayer and local communities, and to ensure the construction industry remains healthy, and is able to continue to deliver infrastructure and social value in the future.

Balfour Beatty believes that changing this is possible — and necessary — but that it will require improved guidance for commissioners as well as courage from the commissioners themselves and a genuine culture change in public sector procurement.
**The Strategic Roads Network (SRN)**

Roads are rightly a key focus of the NIA, given the important role they play in underpinning the UK's economic prosperity. The report makes a range of recommendations relating to the availability of charging infrastructure for electric vehicles, putting in place policy incentives for smart charging, and the need to ensure that the impacts of connected and autonomous vehicles are taken into account when planning for the next rail control period and road investment strategy. All of these are welcome and important to ensure that next generation of roads and road vehicles.

The NIA also advises that the Government consider its revenue base from road transport, given that as the switch to electric vehicles takes hold, fuel duty income will decrease. Balfour Beatty agrees that alternative ways of funding the maintenance and enhancement of the SRN, involving less public sector subsidy, will be required moving forward. In our view, the two key ways in which this could be achieved are by:

- Maximising the potential of existing SRN assets for example, by releasing the economic value from non-core assets such as verges and service areas, and generating revenue using new ways of public/private working to fully realise their commercial value.

- Setting the objective of making the SRN self-financing over the long-term, with the aim of ultimately achieving zero build and maintenance costs for the taxpayer, through innovative approaches such as selling electricity to the grid, and exploring other new opportunities to generate alternative income.

Balfour Beatty believes that, moving forward, more emphasis should be placed on understanding customer needs and on involving road users and local communities and businesses around the roads network, more actively in decision-making. This is vital in order to ensure that the roads network of the future meets the needs of the needs of those using the SRN and living and working around it, and also that schemes have the buy-in of these key stakeholders and can proceed swiftly and safely.

**Local roads**

Specifically in relation to local roads, these are the lifeblood of local economies across the country, keeping transport flowing around towns and cities and supporting local supply chains. Although local roads account for 98% of the network and carry two-thirds of the country’s traffic, the tight fiscal envelope local authorities operate within means that these roads often do not receive the investment they need resulting in poorly maintained local roads in some cases.

Highways England has rightly recognised that most journeys do not begin or end on the SRN. The road user in many cases is not aware of the differences between the networks and will not differentiate between them. Ensuring that Highways England joins up more effectively with neighbouring highway authorities is therefore important in order to ensure that the road user has door-to-door journeys that are as seamless as possible. Ensuring the SRN is well supported by high quality local roads and a robust new Major Road Network will also help network resilience.

Other steps should also be taken to ensure investment continues over the long-term, for example, considering ways to enable to local authorities to raise more money for road maintenance and improvements.

The recommendation in the NIA that Government provide £500 million a year of funding from 2025/26 to 2034/35 to address the local road maintenance backlog is extremely welcome. However, it may not be enough given the poor state of local roads and the underinvestment of recent years.

It will be important that both Highways England and contractors working on the different networks interact and communicate effectively in order to deliver the seamless journeys and increased reliability the customer needs.

This need to prioritise a joined up approach to transport infrastructure goes beyond strengthening the interface between the SRN and the local roads network. While we welcome the fact that the SRN and Major Road Network are now being considered together, this is still a long way from a fully integrated system. In particular, there is also a need to improve the way different Highways authorities and other transport modes work together. At the moment, the lack of a joined-up approach means that transport planning is disjointed and both slower and more costly than it should be.
Flooding

The UK has a significant amount of critical infrastructure in areas that are increasingly at risk of flooding and from the impacts of drought. This includes over 530 sites such as power stations, roads, railway lines, care homes and hospitals, schools, and even mobile phone masts\(^4\). The cost to the economy could be significant if we fail to plan ahead and respond fully to the risk posed by the changing weather conditions. For example, the total economic damages for England from the winter 2015 to 2016 floods were estimated to be around £1.6 billion\(^5\). Given that probability of severe flood events in the UK is set to increase by 20-30% in coming years\(^6\), we must ensure that we are as prepared as possible to cope with the impacts.

The Government has published a 25-year plan\(^7\), which aims to respond to this increased risk amongst other things, and which has water resilience as a core theme. The Plan sets out the Government’s approach to flood defences over the next 25-years. Balfour Beatty has publicly welcomed the Plan and the overarching ambitions set out within it. However, it is important to note that surface water flooding, which poses a greater threat to properties across the country than coastal and river flooding, is not addressed in the Plan. We therefore welcome the recommendation within the NIA, that water companies and local authorities should work together to publish joint plans to manage surface water flood risk by 2022.

Furthermore, to deliver the vision set out in the 25-year plan, we believe it will need to be underpinned by legislation, a long-term strategy setting out how delivery will happen and to what timescales, clear metrics to assess progress, and increased funding. Many of the measures will also require the relevant funding to be devolved to local authorities. We therefore hope that the Plan will be evolved in response to the publication of the NIA, particularly in the area of flooding.

The NIA calls for flood and drought management to be joined up, and recommends that the Government should put in place a long-term strategy to deliver a nationwide standard of flood resilience with an annual likelihood of 0.5% by 2050 where this is feasible—with a higher standard of 0.1% for densely populated areas where the costs per household are lower. It also highlights the need for significantly more funding for flood risk management in the coming decades via a rolling 6-year funding programme in line with the funding profile set out by the Commission, by the end of 2019. We support these recommendations. We furthermore believe that the Environment Agency should make use of its Delivery Framework to build a robust rolling 6-year programme. In order to help drive funding to match the programme, the Environment Agency and other areas of Government should work more closely with Local Enterprise Partnerships and other local developments, for example, the Smart Cities initiatives, in a catchment area.

Balfour Beatty’s view is that a ‘presumption’ towards a higher and more consistent defence standard should be provided in our larger cities. Given that consistent and higher standards of defence are likely to cost more, therefore putting even greater pressure on the public purse and on local authorities in particular to bridge the funding gaps, our view is that this presumption could be backed by developer funding. The rationale for this is that cities that are better protected against flooding are better for developer confidence and hence bring in more funding to generate greater growth.

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\(^4\) National Flood Resilience Review, HMG, 2016  
\(^5\) The costs of the winter 2015 to 2016 floods, The Environment Agency, 2018  
\(^6\) National Flood Resilience Review, HMG, 2016  
\(^7\) A Green Future: Our 25 Year Plan to Improve the Environment, HMG, 2018
Funding and financing

The NIA highlights that the UK must invest more in infrastructure using a range of funding solutions. In particular, it recognizes that to meet future infrastructure requirements will necessitate both public and private financing. Balfour Beatty has a number of observations on this point:

1. Private finance plays a valuable role in delivering the UK’s infrastructure. However, the long lead times of large infrastructure projects fit uneasily within five-year political windows, as the highly politicized nature of infrastructure serves to fuel uncertainty around key schemes. The many delays in the commissioning of the Heathrow third runway are a good example of a major infrastructure scheme which has become a political issue. The uncertainty this creates around infrastructure has an impact on the appetite investors have to invest. The private sector tends to follow state investment in major projects, rather than to lead it. It relies on strong signals from Government: too much political uncertainty ultimately means more expensive finance. While giving the NIC statutory independence would help resolve this tension and overcome short-term decision making linked to political cycles, we do not believe it is likely to happen in the short-to-medium term.

2. Private sector expertise and skills have played a significant role in delivering existing public infrastructure services in the UK. The private sector also contributes much needed capital: the 2017 iteration of the National Infrastructure and Construction Pipeline identifies over £460 billion of planned infrastructure investment, more than half of which is currently financed or planned to be financed by the private sector. Although there are other ways of securing private sector in infrastructure investment, Private Finance 2 (PF2) could play a useful role in helping the UK meet these financing needs. For example, in cases where Government borrowing cannot be used, particularly where Departmental capital budgets are not sufficient to cover the investment.

3. The European Investment Bank (EIB) has invested in a range of key infrastructure projects in the UK in the past decades. However, it remains unclear whether it will continue to do so after Brexit. In spite of the fact that the UK remains attractive to investors, with private finance across the world still willing to provide competitive finance for the UK’s infrastructure, something will need to replace the EIB. The NIA recommends that by 2021 the Government should establish an operationally independent UK infrastructure finance institution, to address the possibility that financial support from the EIB is no longer accessible following Brexit. We welcome this proposal, although the three-year timescale which has been set out may be ambitious, especially given the challenges which must be surmounted before such an institution could become a reality, for example, the impact it would have on the Government’s balance sheet.

4. Given the country’s significant infrastructure needs, teamed with ongoing fiscal constraints on the public purse, those commissioning infrastructure will increasingly need to consider how to capture both the potential income streams stemming directly from the asset and those from the impacts of the asset, to help fund its construction. The most established example of the latter is land value uplifts, which capture increases in the value of land, however, new options should be developed.

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8 National Infrastructure and Construction Pipeline 2017, HMG, December 2017
9 PFI and PF2, National Audit Office, 2018
Devolution and regional connectivity

Balfour Beatty is a firm supporter of the devolution agenda. We believe devolution is key to ensuring a more consistent pattern of growth across the country.

It is well-documented that infrastructure is a key driver of productivity and economic growth. It is also widely accepted that improvements to the UK’s regional infrastructure are needed across the piece, especially in rail and roads, to better connect towns and cities, enable people to access employment and get goods to market. The best way of achieving this as effectively as possible, is, we believe, to ensure that our core cities and the regions are increasingly empowered to set their own strategic directions and to deliver and fund their own infrastructure priorities.

One of the headline conclusions from the NIA is that transport networks are close to capacity in many UK cities. Given the key role urban transport plays as an enabler for economic growth, this must be addressed as a matter of urgency. To do so, the NIA calls for more powers to be given to the metro mayors and city leaders. In particular it recommends that:

- Metro mayors and city leaders should develop and implement long term integrated strategies for transport, employment and housing by 2021, that will help drive growth in their cities. To help realise these strategies, the Government should devolve the necessary powers to these authorities in a timely fashion.
- The Government should pass legislation by 2020, requiring cities to be given regular five-year infrastructure budgets.

Balfour Beatty agrees that it is vital that these areas are given more powers to influence decisions on transport, housing and employment. Local road and rail projects have as important a role to play as bigger schemes such as HS2 and Crossrail 2, in keeping transport flowing around towns and cities and in supporting local supply chains. Devolved infrastructure budgets will provide the revenue certainty areas need to determine their own destinies, and ensuring that the decisions are made by those with the best understanding of local needs. However, these are ambitious plans and they will require long-term commitment from successive Governments to ensure they are delivered.

The NIA also recommends funding for planned transport projects including Crossrail 2 in London, and Northern Powerhouse Rail, which would link major cities in the north of England. Given the importance of these projects for national connectivity, what is needed following this recommendation is a clear commitment from Government to both schemes, and to a clear timetable and funding arrangements to ensure that both are delivered as soon as possible.
The NIA recommends that the Government prioritise a highly renewable electricity generation mix as the lowest-cost option for the energy system over the next 30 years, with at least 50% renewable electricity generation by 2030 and the continued use of contracts for difference and the capacity market.

It furthermore concludes that, after the next nuclear power plant, the Government should support only one additional nuclear plant before 2025, placing in doubt the Government’s plans to build up to six nuclear plants to replace the ageing coal and nuclear reactors due to close in the 2020s.

Balfour Beatty has the following reflections on these points:

1. Firstly, Balfour Beatty agrees that the next decade will provide greater certainty about the likelihood that renewables will be able to fulfil the majority of the UK’s energy needs. We also acknowledge the fact that nuclear power stations are generally underwritten, to a significant extent, by the public purse, while renewables are less expensive to produce, although both have a significant impact on customers’ bills.

Renewable electricity, such as wind and solar power, provided around 30% of the UK’s power needs in 2017\(^\text{10}\) – a 6% increase on 2016. While this shift to renewables generation is extremely welcome, we agree with the NIA, which draws attention to the difficulty of relying on modelling to make projections so far in the future and states that: “no country has yet built an electricity system with very high levels of variable renewables”\(^\text{11}\).

In our view, the risks of this approach are therefore too great to single-mindedly pursue. While it may seem to be simple to put the nuclear energy programme on hold, this would amount to essentially stopping, rather than pausing it. Without the certainty of a nuclear energy programme, industry will not maintain its investment in either the skills or the equipment needed to deliver it. The UK has a world-leading nuclear industry. It would be a shame to lose this expertise, the supply chain and the skills, only to later conclude that they are needed.

2. Renewables such as solar and wind energy are intermittent and require large scale energy storage to cover wind and solar power electricity production gaps. However, storage systems that are able to bank large amounts of power are currently prohibitively expensive, without the same upfront financing support afforded to other forms of generation. While there are emerging storage technologies, including hydrogen fuel cells and new battery technology such as graphene which will in time replace the lithium-ion battery, these are still at the research stage. Meanwhile, lithium-ion batteries, which currently dominate the market, have their own limitations, for example, that they lose their charge over time and are currently in short supply as a range of different industries increase their demand. For example, the automotive industry, in its shift to cleaner vehicles, is experiencing battery supply challenges\(^\text{12}\). While new solutions will, in time, resolve some of these issues, given the current lack of affordable, large scale and long term electricity storage, the nuclear power programme should be maintained until a reliable solution is found. In order to speed up this process, there should be more research into the cost benefit analysis of seasonal storage solutions such as pumped hydro and large scale compressed air storage, which was identified by the National Infrastructure Commission highlight as a low regrets investment.

In order to unlock the potential for renewables more needs to be done to upgrade the existing grid infrastructure. Some of the best locations for wind do not have adequate connections to the grid. To improve resilience, maximize the utilisation of our grid assets, and offer more efficient renewables integration the UK should also invest interconnectors.

There should also be increased investment in research and development on the demand side where there are a range of smart solutions being developed that can actually reduce loads. Furthermore, there should be a continued focus on building Building Research Establishment Environmental Assessment Method (BREEAM) outstanding buildings and re-introducing the now scrapped zero carbon homes policy, to reduce energy demand and consumption, and then to keep to a minimum the carbon emissions resulting from that energy use.

\(^{10}\)Digest of United Kingdom Energy Statistics 2018, Department of Business, Energy and Industrial Strategy, July 2018

\(^{11}\)National Infrastructure Assessment 2018, National Infrastructure Commission, July 2018
Until this research and investment yields significant, consistent results, nuclear energy remains the only source of baseload electricity which best provides simultaneously low carbon and large scale generation which is able to plug the gaps left by renewables, ensuring the consistent supply of energy industry and the public rely on.

Balfour Beatty therefore recommends an approach which delivers a diverse energy mix, with security of supply at its heart. We believe that nuclear energy, large scale long term storage and renewables are complementary and that all three should be maintained.

12 https://www.energy-reporters.com/storage/battery-demand-outstrips-supply-porsche/
**Conclusion**

Balfour Beatty supports the long-term vision set out in the National Infrastructure Assessment. Infrastructure plays a powerful role in driving economic growth, rebalancing the economy and improving quality of life. What is needed now is a clear commitment from Government to which recommendations it will take forward, teamed with a timetable and backed up by a plan to secure the necessary investment.
About Balfour Beatty

The UK’s largest construction contractor, Balfour Beatty, was founded in 1909 and is listed on the London Stock Exchange. With 15,000 employees and over 40 offices in the UK, Balfour Beatty finances, develops, builds and maintains the increasingly complex infrastructure that underpins the UK’s daily life.

With a legacy of projects across transportation, power and utility systems, social and commercial buildings: from Crossrail and Heathrow T2b to the M25 and M4/M5; and Sellafield; to the Olympics Aquatic Centre, we are proud to be a British company delivering iconic structures, bold engineering feats, behind-the-scenes innovation and joined-up thinking, financing and partnerships.