

NATIONAL  
INFRASTRUCTURE  
COMMISSION

# ANNUAL MONITORING REPORT

2020



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# The Commission

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## The Commission's remit

The Commission provides the government with impartial, expert advice on major long term infrastructure challenges. Its remit covers all sectors of economic infrastructure: energy, transport, water and wastewater (drainage and sewerage), waste, flood risk management and digital communications. While the Commission considers the potential interactions between its infrastructure recommendations and housing supply, housing itself is not in its remit. Also out of the scope of the Commission are social infrastructure, such as schools, hospitals or prisons, agriculture, and land use.

The Commission's objectives are to support sustainable economic growth across all regions of the UK, improve competitiveness, and improve quality of life.

The Commission delivers the following core pieces of work:

- a National Infrastructure Assessment once in every Parliament, setting out the Commission's assessment of long term infrastructure needs with recommendations to the government
- studies on pressing infrastructure challenges as set by the government, taking into account the views of the Commission and stakeholders, with recommendations to government
- an Annual Monitoring Report, taking stock of the government's progress in areas where it has committed to taking forward recommendations of the Commission.

While the Commission is required to carry out its work in accordance with the remit and the terms of reference for specific studies, in all other respects the Commission has complete discretion to determine independently its work programme, methodologies and recommendations, as well as the content of its reports and public statements.

The Commission's binding fiscal remit requires it to demonstrate that all its recommendations for economic infrastructure are consistent with, and set out how they can be accommodated within, gross public investment in economic infrastructure of between 1.0% and 1.2% of GDP each year between 2020 and 2050. The Commission's reports must also include a transparent assessment of the impact on costs to businesses, consumers, government, public bodies and other end users of infrastructure that would arise from implementing the recommendations.

When making its recommendations, the Commission is required to take into account both the role of the economic regulators in regulating infrastructure providers, and the government's legal obligations, such as carbon reduction targets or making assessments of environmental impacts. The Commission's remit letter also states that the Commission must ensure its recommendations do not reopen decision making processes where programmes and work have been decided by the government or will be decided in the immediate future.

The Commission's remit extends to economic infrastructure within the UK government's competence and will evolve in line with devolution settlements. This means the Commission has a role in relation to non-devolved UK government infrastructure responsibilities in Scotland, Wales and Northern Ireland (and all sectors in England).

The Infrastructure and Projects Authority, a separate body, is responsible for ensuring the long term planning carried out by the Commission is translated into successful project delivery, once the plans have been endorsed by government.

## The Commission's members

**Sir John Armitt CBE (Chair)** published an independent review on long term infrastructure planning in the UK in September 2013, which resulted in the National Infrastructure Commission. Sir John is the Chair of National Express Group and the City & Guilds Group. He also sits on the boards of the Berkeley Group and Expo 2020.

**Dame Kate Barker** sits on the boards of Taylor Wimpey plc and Man Group plc. She also chairs the Jersey Fiscal Policy Panel, is the Chairman of Trustees at the British Coal Staff Superannuation Scheme, and a member of the Geospatial Commission. She was an external member of the Bank of England's Monetary Policy Committee from 2001 to 2010. In April 2020, she will become Chair-elect of the Universities Superannuation Scheme.

**Professor Sir Tim Besley CBE** is School Professor of Economics and Political Science and W. Arthur Lewis Professor of Development Economics at the LSE. He served as an external member of the Bank of England Monetary Policy Committee from 2006 to 2009.

**Professor David Fisk CB** is the Director of the Laing O'Rourke Centre for Systems Engineering and Innovation Research at Imperial College London. He has served as Chief Scientist across several government departments including those for environment and transport, and as a member of the Gas and Electricity Markets Authority.

**Andy Green CBE** holds several Chair, Non-Executive Director and advisory roles, linked by his passion for how technology transforms business and our daily lives. He chairs Lowell, a major European credit management company and has served as Chair of the Digital Catapult, an initiative to help grow the UK's digital economy.

**Bridget Rosewell CBE** is a director, policy maker and economist. She served as Chief Economic Adviser to the Greater London Authority from 2002 to 2012. She is a Non-executive Director at Network Rail, Chair of the Atom Bank and Non-executive Chair of the Driver and Vehicle Standards Agency.

**Professor Sadie Morgan OBE** is a founding director of the Stirling Prize winning architectural practice dRMM. She is also Chair of the Independent Design Panel for High Speed Two and one of the Mayor of London's Design Advocates. She sits on the boards of the Major Projects Association and Homes England.

**Julia Prescott** is a co-founder and Chief Strategy Officer of Meridiam and sits on the Executive Committee of Meridiam SAS. She has been involved in long term infrastructure development and investment in the UK, Europe, North America and Africa. Since 2019 she has sat on the board of the Port of Tyne.

# Foreword

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The immediate future offers a once in a generation chance to fix the UK's infrastructure. That chance must not be missed.

The recent shift in political momentum on infrastructure suggests that government is keen to grasp this moment of opportunity - but these pages chart the extent of catching up that is needed.

Looking back at the six studies reported on here, which were all published prior to our landmark *National Infrastructure Assessment* in July 2018, progress in 2019 was decidedly mixed.

But in recent weeks we have seen steps forward on high speed rail to serve the North and the Midlands, with government asking the Commission to conduct an assessment to inform a new integrated rail plan. We have also seen several other welcome spending commitments, primarily linked to transport investment.

However, money alone can't make up for months of lost time on some programmes, and government now needs to set these funding pledges within a cohesive long term plan. The forthcoming National Infrastructure Strategy should set out that plan.

The UK desperately needs a strategy that looks well beyond this Parliament, setting out infrastructure policy and funding up to 2050. It must contain goals, plans to achieve them, funding to deliver those plans, and deadlines for delivery.

We look forward to seeing this detailed strategy shortly. It will demonstrate the extent to which government is committed to genuinely transformational shifts in its approach to infrastructure, supporting the aspirations of each region of the UK and mapping out the path to net zero. It should also provide a refreshed set of accepted recommendations on which we can base next year's monitoring report – against which we expect to be able to record substantial progress.



**Sir John Armitt CBE**

Chair, National Infrastructure Commission

# In brief

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This government has an opportunity to get the UK's infrastructure back on track. Doing that means taking key decisions in 2020.

Too often, the UK's major infrastructure projects have faced prevarication and delay. The Elizabeth Line, which is now expected to open in 2021, was originally proposed nearly 50 years ago. The populations of our congested cities, and poorly connected towns, cannot afford to wait that long. And the climate emergency requires urgent and decisive action.

There were important steps forward in the past year, such as the legislated net zero target, progress towards the development of a national digital twin, and the government pledge to have 40 GW of offshore wind capacity by 2030. But elsewhere, political uncertainty led to delayed decisions and stalled progress on the government's infrastructure commitments.

In early 2020, there has been a shift in momentum with major announcements made on key projects including the route for the central section of East West Rail and the commitment to beginning construction on the first phase of High Speed Two. The Commission has also been asked to carry out an assessment of the rail needs of the North and Midlands. However, there is still more that must be done. The government's key priorities for 2020 should include:

- delivering a National Infrastructure Strategy setting out a clear, long term plan for the UK's economic infrastructure, with funding commitments and a genuine commitment to change
- supporting deployment of the technologies needed to deliver a 21<sup>st</sup> century flexible energy system that can help achieve net zero at lowest cost
- confirming its plans to go ahead with Crossrail 2 and committing to fund it in the Spending Review 2020
- making progress on improving mobile signal on the UK's railway networks
- clarifying its position on and agreeing the route for the Oxford-Cambridge Expressway, maintaining momentum on East West Rail, developing a spatial vision for the Cambridge-Milton Keynes-Oxford arc, and announcing the locations of new settlements.

# Executive summary

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**This government must take urgent action to turn ambitious rhetoric into tangible long term improvements to the UK's infrastructure. Infrastructure is clearly at the heart of the political agenda. But delivering world leading infrastructure for the UK will require good decisions and long term planning. The government has committed to responding to the *National Infrastructure Assessment* with a comprehensive strategy, and the Commission has high expectations that this will set out an ambitious, long term programme of work, with funding commitments and a genuine commitment to change.**

But the past year has seen a different story, with political uncertainty leading to prevarication and delay on Crossrail 2 and the Cambridge-Milton Keynes-Oxford arc. There were some positive announcements in 2019, including the legislated net zero target and the government pledge to have 40 GW of offshore wind capacity by 2030.

The first weeks of 2020 have seen a marked shift in momentum, with several major announcements on key projects, including a confirmed route for the central section of East West Rail and the commitment to begin construction of the first phase of High Speed Two – alongside the request for the Commission to carry out an assessment of the rail needs of the Midlands and the North, to inform an integrated rail plan for that area.

However, this report shows that it is not enough to merely signal intention. Government must follow through on its commitments by taking difficult decisions, making clear plans, and providing necessary funding. Government needs to get the UK's infrastructure back on track to address the issues the country faces.

**It is not too late to address these issues. But the first step must be a National Infrastructure Strategy with a long term perspective, clear goals and plans to achieve them, a firm funding commitment, and a genuine commitment to change.**

In 2020, there have already been several key decisions taken and commitments made which will support the delivery of the Commission's recommendations. Following the publication of the Oakervee review of High Speed 2, the Commission has been asked by the government to carry out an assessment of the rail needs of the Midlands and the North, to inform an integrated rail plan for that area. However, there is still more that must be done. The government's key priorities for 2020 should include:

- delivering a National Infrastructure Strategy setting out a clear, long term plan for the UK's economic infrastructure, with funding commitments and a genuine commitment to change
- supporting deployment of the technologies needed to deliver a 21<sup>st</sup> century flexible energy system that can help achieve net zero at lowest cost

- confirming its plans to go ahead with Crossrail 2 and committing to fund it in the Spending Review 2020
- making progress on improving mobile signal on the UK's railway networks
- clarifying its position on and agreeing the route for the Oxford-Cambridge Expressway, maintaining momentum on East West Rail, developing a spatial vision for the Cambridge-Milton Keynes-Oxford arc, and announcing the locations of new settlements.

More details on the expected response to the *National Infrastructure Assessment*, and the specific actions government needs to take for each of the six studies it has responded to so far, are set out in the chapters in this report.

## The National Infrastructure Assessment

Too often, the delivery of the UK's major infrastructure projects has been slow and uncertain. And 2019 has been no exception. The National Infrastructure Commission was set up to address the problems with long term infrastructure planning in the UK, and in 2018 the Commission's *National Infrastructure Assessment* set out a long term vision for high quality, good value, sustainable economic infrastructure for the UK, and a clear plan to achieve it. But none of this will be achieved without a response from government. Government has already made progress on several recommendations from the *National Infrastructure Assessment*; however, the formal response, in the form of a National Infrastructure Strategy, is expected in 2020. The government must take this opportunity to address the current piecemeal approach to infrastructure planning, and deliver the clear, long term plan for world class infrastructure that the UK needs.

The new legislated net zero target also underlines the urgency and importance of several of the Commission's recommendations from the National Infrastructure Assessment. The Commission recommended that government should deliver a highly renewable, flexible, 21st century power system by 2030, and will shortly publish updated analysis reflecting the net zero target, which shows the recommendation to be consistent with the new emissions target. The Commission also recommended that government undertake trials of heat pumps and hydrogen heating to support a decision on how to move to low carbon heat at least cost. Recommendations on recycling and delivering charging infrastructure for electric vehicles are also vital for the UK to meet the net zero target. Government must set out clear plans to support achieving the net zero target in the coming Strategy.

## High Speed North

Setting out a long term strategic transport plan for the North and delivering Northern Powerhouse Rail will ultimately mean reduced journey times, increased capacity and improved reliability in the North of England.<sup>1</sup> Recent years have seen delays to these plans for the North, which has not always seen the political interest and investment that London has. However, the government has recently committed to considering how best to accelerate delivery of Northern Powerhouse Rail, including looking at options for a new joint delivery body, and the second Roads Investment Strategy is expected to confirm funding for the upgrades to roads in the North.<sup>2</sup>



In 2020, the Commission will carry out an assessment of the rail needs of the Midlands and the North, to inform an integrated rail plan for the Midlands and the North, as requested by government following the publication of the Oakervee review of High Speed 2.

## Smart Power

This government needs to make the necessary tough decisions to deliver net zero greenhouse gas emissions by 2050. Since the recommendations in *Smart Power* were endorsed, government and Ofgem have made good progress to increase the capacity of flexible technologies deployed on the UK's electricity networks. In 2019, an additional gigawatt of interconnector capacity entered operation;<sup>3</sup> government launched a consultation on removing barriers on storage in the planning system;<sup>4</sup> the capacity market was reinstated;<sup>5</sup> and government launched a consultation on smart charging for electric vehicles<sup>6</sup> – a significant potential source of flexibility.

These ongoing successes show there is potential for the UK to develop a flexible, highly renewable energy system. The climate emergency demonstrates the importance of concerted and decisive action to achieve this. And more needs to be done. The Commission expects the National Infrastructure Strategy to include a full response to the further recommendations on decarbonisation from the *National Infrastructure Assessment*. And in 2020, to further the recommendations from *Smart Power*, the government should prioritise ensuring there are no barriers to future interconnector projects as the UK exits the EU, and amending legislation to support the deployment of electricity storage technologies.

## Transport for a World City

Even while increasing investment in other parts of the UK, the government must not lose sight of the importance of providing increased public transport capacity in London. In the North, new transport connections are needed to link cities. In London, the need for additional transport capacity is increasingly pressing as the city's population grows. Crowding on the underground and the railways remains a significant problem. For example, there are currently more than five people per square meter on the Northern Line during the morning rush hour.<sup>7</sup>

Despite the ongoing need for increased capacity, continued delays mean that Crossrail 2 is now unlikely to open until the late 2030s at the earliest.<sup>8</sup> This misses all the Commission's recommended deadlines. And it will delay the benefits Crossrail 2 will bring to London, the surrounding area and the UK's economy.

The case for Crossrail 2 is still strong, but urgent progress is needed even to meet a late 2030s deadline. Delays and cost overruns from the Elizabeth Line and other major projects need to be learned from, but they are not arguments against building Crossrail 2. The government and Transport for London need to show how they have thought about the affordability of the scheme: London should still meet at least half the costs of Crossrail 2; and the cost-saving measures recommended in the Independent Affordability Review and the Commission's report should be carried out. Government should commit to building an affordable Crossrail 2 at the forthcoming Spending Review and agree a fair funding deal for the programme with Transport for London and the Greater London Authority.

## Connected Future

The Commission's *Annual Monitoring Report 2019* flagged the Commission's concern about the slow rate of progress on improving mobile connectivity on the UK's road and rail network, as recommended in *Connected Future*. The report said that the Commission would carry out an in depth review of progress, assessing how the evidence base has developed and identifying priority actions for government.<sup>9</sup> This review has concluded and the full report, *Connected Future: Getting back on track* was published earlier this year.<sup>10</sup> The government must take swift action to address the identified barriers preventing the delivery of improved mobile connectivity on the rail network, to secure the economic and quality of life benefits of nationwide mobile connectivity. Government progress against the actions identified in the in-depth review will be monitored in the coming years, and the Commission will carry out further reviews in future as necessary on this topic or others.

## Partnering for Prosperity

The Commission's *Partnering for Prosperity* study made recommendations to maximise the potential of the Cambridge-Milton Keynes-Oxford arc as a connected, knowledge-intensive cluster that competes on a global stage. The proposals were to protect the area's high-quality environment and secure the homes and jobs that the area needs. The Commission's main finding was that rates of house building would need to double those at the time of publication if the arc were to achieve its full economic potential.<sup>11</sup>

In 2019, although the rate of housebuilding has increased, there is still a long way to go and no clear plans have been brought forward to increase the delivery of new homes to reach the levels needed. There has been limited progress on the major decisions required both to improve transport connectivity across the arc, and to effectively integrate road and rail schemes with major new housing developments. In 2020 the government should clarify its position and take key route decisions on the Oxford-Cambridge Expressway, and maintain momentum on East West Rail following the recent announcement of the preferred route between Bedford and Cambridge.<sup>12</sup> It should demonstrate clear ministerial ownership within government for the programme and publish timetables for the development of a spatial vision, as well as announcing the locations for new settlements in connection to major transport schemes.

## Data for the Public Good

Over the past year, the government has made significant progress against the recommendations it endorsed from *Data for the Public Good*. The aim of the recommendations from this study was to promote better understanding of the value of data and new technologies in UK infrastructure productivity. In 2019, the Infrastructure Client Group published an updated report covering the readiness of the infrastructure industry for digital transformation,<sup>13</sup> and the UK Regulators Network published a report on infrastructure data sharing.<sup>14</sup> Furthermore, the Centre for Digital Built Britain, in a roadmap published in 2019, set out how the Information Management Framework for the built environment will be delivered, which will enable the development of the National Digital Twin.<sup>15</sup> The outstanding priority for 2020 is for government to commit funding to the National Digital Twin Programme so that this work can continue.

# Monitoring government's progress

The government established the National Infrastructure Commission in 2015 to assess the UK's long term infrastructure needs, provide impartial, expert advice on how to meet them, and hold the government to account for delivery. The *Annual Monitoring Report* sets out the Commission's views on the extent to which the recommendations government has endorsed are being achieved and identifies the Commission's priorities for government over the coming year.

The Annual Monitoring Report 2020 reviews the government's progress over the past year against the recommendations it has accepted to date, covering the six studies that government has responded to and endorsed recommendations from. This report does not formally review progress against recommendations that the government is expected to respond to in the coming year, including those made in the *National Infrastructure Assessment*. The judgements the Commission has made are supported by evidence, which is summarised in an annex published alongside this document. The report also sets out the priority activities that the Commission believes government should undertake in 2020 to ensure the UK gets the world-class infrastructure it needs.

## Government's existing commitments

To date, the government has responded to six Commission studies on pressing infrastructure challenges, as set by the government:

- *Smart Power*, which looked at how the UK electricity system can better match supply and demand (published March 2016)
- *High Speed North*, on transport connectivity in the North (published March 2016)
- *Transport for a World City*, which considered the case for further large-scale transport infrastructure in the London region (published March 2016)
- *Connected Future*, on 5G deployment and applications (published December 2016)
- *Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes-Oxford Arc*, which considered housing and transport in the arc (published November 2017)
- *Data for the Public Good*, which looked at how data and technology can improve infrastructure productivity (published December 2017).

This report assesses progress by government and others since the *Annual Monitoring Report 2019* in response to the recommendations from these studies. It doesn't comment on progress made, or recommendations that have been closed, in previous reporting periods.

## Further Commission recommendations

The Commission has also published a further three sets of recommendations to government which are not covered formally in this report, as responses are expected from government during 2020:

- the *National Infrastructure Assessment*, an assessment of the UK's infrastructure needs up to 2050 (published July 2018)
- *Better Delivery: The challenge for freight*, on the future of freight (published April 2019)
- *Strategic Investment and Public Confidence*, a study on the regulation of the UK's energy, telecoms and water industries (published October 2019).

## A new approach to monitoring

In annual monitoring reports prior to 2020, the Commission has provided a view on government's progress against its recommendations and provided a qualitative justification for those views. In future, the Commission intends to make its reporting more accessible, by introducing objective measures of progress which will underpin the Commission's judgements.

The Commission's annual monitoring reports will now include a summary of the results that recommendations were intended to achieve, and the information that the Commission has drawn upon to assess progress. The Commission will also identify priority actions that need to be taken before the publication of the annual monitoring report the following year.

Being transparent about the results the Commission expects to see and how it will track progress will provide the government – and other parties responsible for delivering on the recommendations – with clarity about what they need to prioritise. It will also allow third parties to independently review government progress. From 2021, the Commission will include an “at-a-glance” summary of government progress.

The information the Commission has used to support the judgements in the *Annual Monitoring Report 2020* is set in an annex published alongside this document.

# The National Infrastructure Assessment

In 2018 the Commission's *National Infrastructure Assessment* set out a long term vision for high quality, good value, sustainable economic infrastructure for the UK up to 2050, and a clear plan to achieve it. It made recommendations on improving digital networks, decarbonising heat and power at least cost, recycling more and wasting less, delivering low emission transport, building well designed cities that support growth, reducing the risks of drought and flooding, choosing and designing infrastructure, and ensuring all of this is good value for money.

Government has already made progress on several recommendations from the *National Infrastructure Assessment*. However, the formal response, in the form of a National Infrastructure Strategy, is expected this spring. The government must take this opportunity to address the current piecemeal approach to infrastructure planning, and deliver the clear, long term plan for world class infrastructure that the UK needs.

## Progress since publication

Government has already indicated its support for recommendations made in the *National Infrastructure Assessment* and has made progress in some areas. Key successes include:

- government's continued ambition to deliver full fibre, including creating a digital infrastructure team to work with local authorities to support the delivery of full fibre<sup>16</sup>
- setting an objective for the water industry to halve leakage by 2050<sup>17</sup>
- committing to reaching 40 GW of offshore wind capacity by 2030.<sup>18</sup>

These actions do not however represent government's formal response, which will instead be provided through the National Infrastructure Strategy. These successes, and the government's overall progress against the recommendations in the *National Infrastructure Assessment*, will only be formally monitored once the government has officially responded to the recommendations in the National Infrastructure Strategy.

## Net zero

A key development over the past year has been the legislated target for the UK to reach net zero greenhouse gas emissions by 2050. This was recommended by the Committee on Climate Change (CCC) in its report *Net Zero – The UK’s contribution to stopping global warming*, published in May 2019.<sup>19</sup> The report also set out a roadmap for how the net zero target could be achieved, which included deploying at scale hydrogen production in the 2020s, developing the carbon capture and storage infrastructure to support low carbon industrial clusters, and a ban on the sales of conventional cars and vans by 2035 at the latest.

The new net zero target and the CCC’s roadmap both underline the urgency and importance of several of the Commission’s recommendations from the *National Infrastructure Assessment*, including that government should:

- deliver a highly renewable, flexible, 21<sup>st</sup> century power system with at least 50 per cent renewable generation by 2030 – the Commission will shortly publish its updated power system analysis reflecting the net zero target, which found the Assessment recommendations to be consistent with the new target
- undertake trials of heat pumps and hydrogen heating – including testing hydrogen production with carbon capture and storage – to develop the evidence base needed to take a decision in the early 2020s on how to decarbonise heat at least cost
- implement ambitious recycling targets to reduce emissions from waste
- deliver the charging infrastructure required to facilitate a shift to 100 per cent of new car and van sales being electric by 2030, to begin reducing emissions from surface transport – the infrastructure sector with the highest emissions in the UK.<sup>20</sup>

## Four tests for a successful Infrastructure Strategy

In May 2019, the Commission set out the four tests that the Commission believes a successful National Infrastructure Strategy will need to meet.<sup>21</sup> These are:

- *a long term perspective* – the strategy must look beyond the immediate spending review period and set out the government’s expectations for infrastructure funding and policy up to 2050
- *clear goals and plans to achieve them* – where the government endorses an Assessment recommendation, this should be backed up with a specific plan, with clear deadlines and identified owners, to ensure the Commission can easily check progress
- *a firm funding commitment* – the government should commit to providing funding in line with the upper limit of the agreed guideline of 1.2% of GDP a year invested in infrastructure
- *a genuine commitment to change* – recommendations such as devolving funding for urban transport to cities and a national standard for flood resilience are fundamental policy changes, and the strategy needs to respond in the same spirit.

These tests will be central to the Commission's assessment when it comes to review the government's progress against the recommendations in the *National Infrastructure Assessment* next year.

# High Speed North

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**Despite delays in 2019 due to political uncertainty, the government recently confirmed its commitment to delivering Northern Powerhouse Rail as quickly and cost-effectively as possible. Following the publication of the Oakervee review of High Speed 2, the Commission has been asked by the government to carry out an assessment of the rail needs of the Midlands and the North, to inform an integrated rail plan for the area.<sup>22</sup>**

## Background

In October 2015, the government asked the Commission to consider the long term inter urban transport needs of the North of England, drawing upon Transport for the North's developing plan to radically improve connectivity between northern cities.<sup>23</sup>

*High Speed North* was published in March 2016. Its central finding was that transport networks in the North of England need both significant short term investment and a plan for longer term transformation to reduce journey times, increase capacity and improve reliability.<sup>24</sup> The *High Speed North* recommendations have received ongoing and widespread political support. Despite this, progress following the publication of the report has been slow, but recent government announcements have signalled a fresh impetus behind the scheme.

## Progress in 2019

This month the government has committed to delivering Northern Powerhouse Rail as quickly and cost-effectively as possible, and will look at how best to accelerate delivery of the scheme, including by working closely with northern leaders and exploring options for creating a new joint delivery body for Northern Powerhouse Rail.<sup>25</sup>

Despite this positive announcement in early 2020, no major steps forward were made in 2019. However, there was some incremental progress: in February 2019, Transport for the North published a Strategic Transport Plan and submitted their strategic outline business case to the Department for Transport;<sup>26</sup> and Transport for the North commissioned an independent review of the work done to date on the options for Manchester Piccadilly which is due to report to the board of Transport for the North in March 2020.<sup>27</sup>

In September 2019, the government announced that delivery of the second phase of High Speed Two would be delayed to between 2035 and 2040,<sup>28</sup> which would have affected the existing plans for Northern Powerhouse Rail, which assumed that the second phase would be completed by 2033.<sup>29</sup>



However, government confirmed this month that construction could begin on Phase 1 of High Speed Two from London to Birmingham, and legislation to deliver Phase 2a, from Birmingham to Crewe, would be brought forward. The government has also asked the Commission to carry out an assessment of the rail needs of the Midlands and the North, to inform an integrated rail plan for that area.<sup>30</sup>

*High Speed North* also made recommendations to improve roads in the North. The work to increase capacity between junctions 6 (Manchester Airport) to 8 on the M56 has been delayed and is now expected to start in spring 2020.<sup>31</sup> The work is due to complete in spring 2022.<sup>32</sup> The second Roads Investment Strategy is expected to confirm funding for the outstanding road upgrades recommended in our report.<sup>33</sup>

## Priorities for 2020

In 2020, the Commission will be carrying out an assessment of the rail needs of the Midlands and the North, to inform an integrated rail plan for that area.<sup>34</sup> The Commission is therefore not identifying actions for government to carry out in order to deliver Northern Powerhouse Rail in this annual monitoring report.

In 2020, government should carry out the following priority action to support improvements to roads in the North:

- the next Roads Investment Strategy to include a commitment to funding upgrades that provide capacity enhancements to the Lofthouse Interchange between the M1 and M62, and junctions 35A to 39 on the M1.

# Smart Power

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**In 2020, government should continue the strong progress on the Commission's *Smart Power* recommendations. Although significant progress has been made to increase the capacity of flexible technologies on the UK's electricity networks, more needs to be done. The challenge of moving to a highly renewable energy system and achieving net zero greenhouse gas emissions underlines the importance of creating an electricity system with high flexibility.**

In the coming year, government should work to maintain access to future interconnector projects in its negotiations with the EU, amend legislation to support the delivery of storage capacity on the electricity network, and set out a clear level of ambition for overall system flexibility, including a transparent framework to monitor it.

## Background

In October 2015, the government asked the Commission to consider how the UK could make the most of emerging technologies to balance electricity supply and demand at lowest cost in the future, with the aim of securing an electricity market where prices are reflective of costs to the overall system.<sup>35</sup>

*Smart Power* was published in March 2016. The Commission's central finding was that a smarter electricity system, principally built around three innovations – interconnection, storage, and demand flexibility – could save consumers up to £8 billion a year by 2030, help the UK meet its 2050 carbon targets, and secure the UK's energy supply for generations.<sup>36</sup> The government endorsed all the Commission's recommendations.<sup>37</sup> Government has been supportive of *Smart Power* and has made good progress in many areas since publication, including through its Smart Systems and Flexibility Plan.<sup>38</sup>

In 2018, the Commission published the *National Infrastructure Assessment*, which included several recommendations on the power system, building on the changes recommended in *Smart Power*. The Commission has updated the analysis from the Assessment in light of the new net zero legislation and has found that the target further underlines the case for increasing electricity system flexibility.

## Progress in 2019

*Smart Power* aimed to increase the capacity of flexible technologies deployed on the UK's electricity networks, specifically interconnection, storage, and demand flexibility. Progress on implementing the recommendations in the *Smart Power* report and developing a more flexible electricity system continued in 2019. But more action is needed across the recommendations from *Smart Power* in the coming year.

Interconnection capacity increased in 2019, with an additional gigawatt of interconnection capacity entering operation,<sup>39</sup> and Ofgem has given regulatory approval in principle for a further 12.9 GW of interconnection capacity to be built (equivalent to roughly a third of average UK electricity demand).<sup>40</sup> However, expansion of the UK's interconnector capacity could be at risk if access is not agreed in the negotiations on the UK's future relationship with the EU.

In 2019, the Department for Business, Energy and Industrial Strategy launched a consultation on exempting storage, excluding pumped hydro, from the Nationally Significant Infrastructure Projects regime.<sup>41</sup> This is a good first step. Battery storage projects have a small land footprint and are not expected to have significant planning impacts.<sup>42</sup> However, amendments have yet to be made to the Electricity Act 1989 to provide a statutory definition of storage. This should happen in the next year.

There were also successes for improving the use of demand flexibility in 2019. The capacity market, which supports security of electricity supply by providing payment for reliable sources of capacity, was reinstated,<sup>43</sup> and government committed to implementing new emissions standards and continuing to review the evidence for lowering barriers to entry for demand side response.<sup>44</sup> The government also launched a consultation on smart charging for electric vehicles – an essential source of electricity system flexibility in the long term.<sup>45</sup>

In April 2019 the National Grid Electricity System Operator announced that it will be able to operate a zero-carbon grid by 2025. This is a welcome announcement and reflects the positive steps the Electricity System Operator has taken to date to facilitate the transition to a highly flexible electricity grid. However, this target must be backed by concrete action in line with the Commission's recommendations.

In 2019, government also endorsed the recommendations made in the Energy Data Taskforce report which sets out steps to ensure that data is more effectively collected, shared and used – a key enabler for effectively using flexible assets on the system.<sup>46</sup> But further action is needed to facilitate the transition to more actively managed local networks and Distributed System Operators.

Finally, one of the *Smart Power* recommendations – to ensure energy companies make long term, strategic decisions – was covered in the Commission's study on regulation, *Strategic Investment and Public Confidence*. This will no longer be monitored as part of the *Smart Power* recommendations once government responds to the regulation study.

## Priorities for 2020

In 2020, government should:

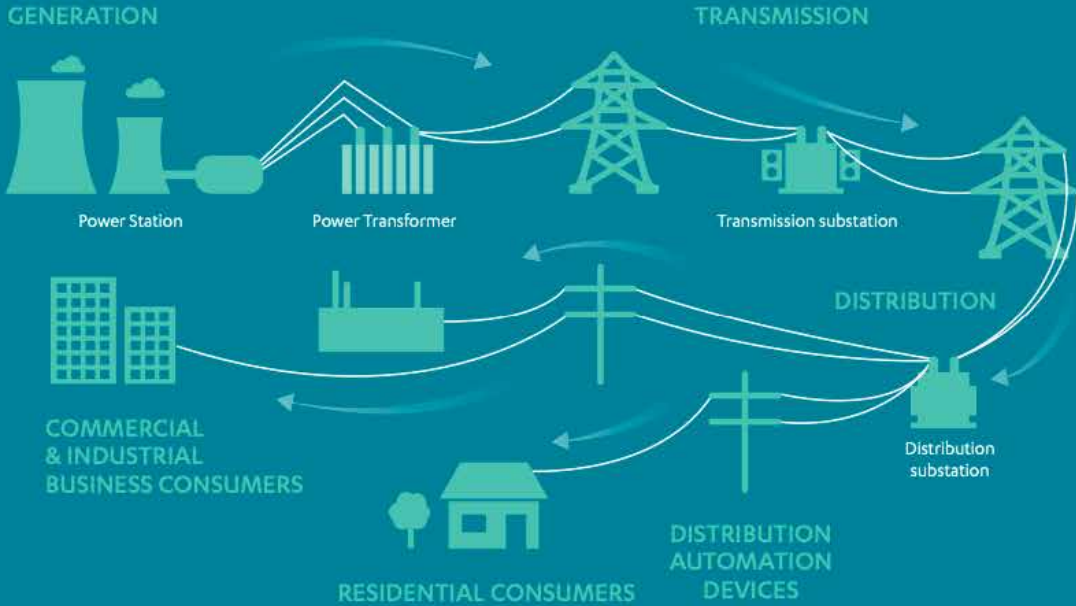
- maintain access to future interconnector projects in negotiations with the EU, and prioritise retaining access to EU power markets and market coupling to ensure that interconnector capacity can be used in an effective way
- amend the Electricity Act 1989 to define storage as a distinct subset of generation
- continue to review the latest evidence on costs of and barriers to access for demand side response technologies in the capacity market
- proactively facilitate the transition to more actively managed local networks and Distribution System Operators
- set out a clear level of ambition for overall system flexibility including a transparent framework to monitor it.

Additionally, in 2020, Ofgem should also ensure that effective and rapid progress is made on the *Access and Forward Looking Charges Significant Code Review* to support the continued deployment of flexible technologies. Ofgem should also finalise modifications for a generation licence for storage, and ensure that it publishes its decision on market wide half hourly settlement in Autumn 2020, in line with its current commitments.

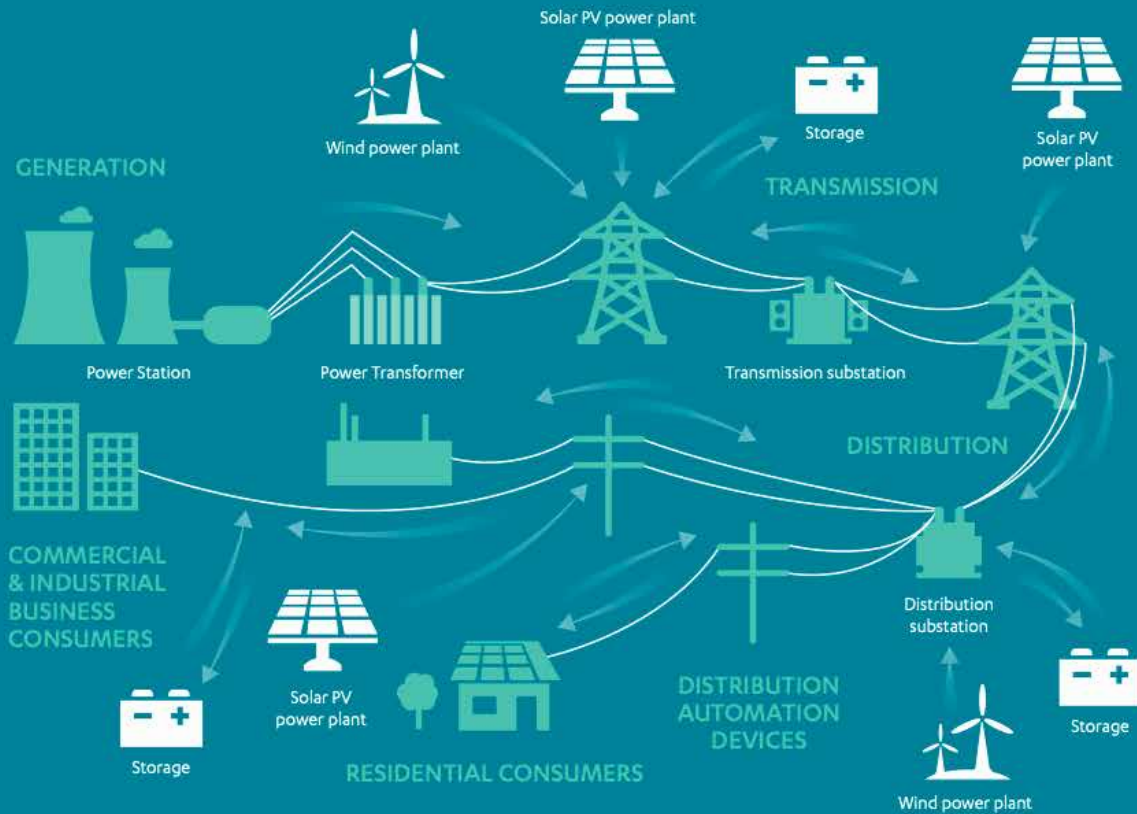
In 2020, the Electricity System Operator should make further progress in increasing access to balancing services for flexible technologies and increase transparency and competition in the design of balancing products.

Figure 1: The power system is undergoing fundamental change

## TRADITIONAL POWER SYSTEM



## FUTURE POWER SYSTEM



# Transport for a World City

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The government should commit to building Crossrail 2 and agreeing a fair, affordable funding package at the 2020 Spending Review. The case for Crossrail 2 is still strong. Overcrowding remains chronic and investments in London's transport network will provide benefits to the region and the wider economy. But even if a decision is made in 2020, it is not certain that Crossrail 2 would be able to open in the 2030s, missing all the Commission's recommended deadlines.<sup>47</sup> A decision must be taken urgently in 2020 to ensure that Crossrail 2 is delivered quickly and cost effectively.

## Background

In October 2015, the government asked the Commission to consider the case for additional large scale transport infrastructure in the capital and its region.<sup>48</sup>

*Transport for a World City* was published in March 2016. The Commission's central finding was that Crossrail 2 should be taken forward as a priority, with funding made available to develop the scheme with the aim of submitting a hybrid bill by autumn 2019. This would enable Crossrail 2 to open in 2033.<sup>49</sup>

## Progress in 2019

Until government confirms that Crossrail 2 will be taken forward – and puts funding behind it – very little progress can be made. Although some progress was made in 2019, recommendation deadlines either have already been, or will be, missed. But the case for Crossrail 2 is just as strong, if not stronger, than when the Commission published *Transport for a World City*.

Unlike other parts of the country, which need improved transport connections, London's problem is overcrowding and a lack of capacity. London has benefited enormously from establishment of the Mayor of London and the Greater London Authority in 2000. The ability and mandate to plan a city's strategic growth and transform its transport infrastructure is a model that should be rolled out to all the UK's cities, but it is not a panacea. Lack of capacity driven by population growth still needs to be managed, as London's population continues to grow; from 2015 to 2018, London's population grew by over 240,000 people,<sup>50</sup> equivalent to a city the size of Derby.

Continued population growth therefore poses significant challenges for London's transport network, as well as the wider South East. In 2016, the Commission projected that, by 2041, the number of passenger kilometres travelled in severely crowded conditions on the Underground would more than double.<sup>51</sup> Updated data shows that, between 2016 and 2050, this is now expected to triple.<sup>52</sup> And this is not just a problem for the future; capacity is already strained. The Northern Line – which would be one of the key beneficiaries of Crossrail 2 – currently has more than five people standing per square metre during the morning rush hour.<sup>53</sup> Nor is the problem confined to the underground; a higher percentage of trains arriving in London are overcrowded than in any other city and Waterloo is consistently the UK's busiest mainline station.<sup>54</sup> Without further investment, crowding pressure will increase on both the majority of underground lines in inner London and on key National Rail corridors. By 2041, this will be particularly acute in the South West corridor, for journeys through Clapham Junction and into Waterloo.<sup>55</sup>

Crossrail 2 will also help to address London's acute shortage of affordable housing. Opening up new areas for development is expected to add up to 200,000 homes in and around London.<sup>56</sup> It benefits neither London, nor the UK, if housing becomes out of reach of most of the population, especially as affordability of housing in London is already significantly worse than the national average.<sup>57</sup>

It is important that London's transport issues are addressed alongside those in the rest of the country, given its economic importance. London's success benefits the whole country, not least as it tends to compete with global cities like Singapore, New York or Paris, rather than with other big cities in the UK. London also contributes to infrastructure investments in other parts of the country, with residents and businesses based in London paying £4,350 per head more in taxes than they receive in services.<sup>58</sup>

Despite the strong case for Crossrail 2, there has been an increase in calls to further delay, or even cancel it. The continuing delays and increasing cost overruns on the Elizabeth Line are the most prominent argument, but budget increases and delays on other major rail programmes, including High Speed Two and electrification of the Great Western Mainline, have also contributed. However, these are arguments for better project management and costings, not for delaying or cancelling Crossrail 2. As the Commission advocated in the first *National Infrastructure Assessment*, better evaluation and outturn data from past projects will help to learn from past mistakes and deliver better plans and more accurate costings going forward. This matters for Crossrail 2, but also for other urgent transport priorities.

The second Mayoral Community Infrastructure Levy, earmarked to fund Crossrail 2, is now also funding cost increases on the Elizabeth Line.<sup>59</sup> This clearly has implications for how Crossrail 2 is funded and will need to be considered when agreeing a funding deal. The Mayor and Transport for London will need to continue to work with government to ensure that funding proposals are affordable. It should not be used as an excuse for failing to reach a funding agreement, but it remains important that London pays its fair share, by contributing at least half of the costs of Crossrail 2. Given the high costs associated with Crossrail 2 there is a clear imperative to focus on delivering the scheme in a cost-effective way, and learning the lessons from the Elizabeth Line, including keeping scope and costs under review and ensuring that phasing is considered – for example phasing the northern branches of Crossrail 2 – to maximise affordability. Publication of the updated route and costs would help to demonstrate how these potential cost savings have been delivered. London needs further capacity, but this can't come at any price.

Despite the delays and lack of political impetus, some progress has been made. The new Strategic Outline Business Case has been developed and government should show how this has changed plans for the scheme by publishing details of the updated route and costs as soon as possible. This is particularly important to avoid incompatible development around the new proposed route. With the new London Plan due to be published shortly,<sup>60</sup> there is an opportunity to build on the new business case and create momentum behind plans to deliver the housing that Crossrail 2 can deliver.

## Priorities for 2020

In 2020, the key priority for government should be to confirm plans for Crossrail 2, and commit funding to it, at the coming Spending Review. Further inertia will only increase the likelihood of delays and cost increases on a project already behind schedule.

Government should also:

- publish the Independent Affordability Review, alongside details of the updated route and costs, demonstrating how the actions to reduce costs recommended in the review and by the Commission have been taken forward
- approve the revised business case for Crossrail 2
- agree governance arrangements between the Greater London Authority, Transport for London and central government departments to begin work on delivery options for housing
- publish its assumptions about when gaining consent for the scheme should be achievable, subject to a funding deal being agreed.

In addition, the Mayor of London should publish a final London plan, setting out how Crossrail 2 will support and be integrated with planning and development strategies for the areas it serves.



# Connected Future

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In 2020, the government should look to the actions identified in the Commission's paper *Connected Future: Getting back on track*, the Commission's in depth review of progress against the recommendations made in *Connected Future* to strengthen mobile connectivity on the UK's road and rail network. The review found that while progress has been made to improve mobile connectivity on the road network, the rail network is still lagging behind. The actions identified for government will enable progress to be made improving mobile connectivity on the UK's rail network in 2020.

## Getting back on track

Having conducted an in depth review of government progress, the Commission's paper *Connected Future: Getting back on track* found that there has been clear continuous progress to deliver mobile connectivity on the UK's road network. Motorways now have near universal mobile coverage for both voice calls and 4G data, and work is progressing on the rest of the network.

In contrast, progress in improving mobile connectivity on the rail network has been limited, and work appears to have stalled since government endorsed the *Connected Future* recommendation. The in-depth review identified four areas in which government needs to improve progress: leadership and direction; access to trackside land; commercial barriers; and filling evidence gaps. The full assessment of the government's progress on mobile connectivity on road and rail can be found in *Connected Future: Getting back on track*.<sup>61</sup>

## Actions for 2020

Government's priorities for 2020, as identified in *Connected Future: Getting back on track* should be to:

- establish a single ministerial lead within the Department for Transport for improving mobile connectivity on the railway before the publication of the National Infrastructure Strategy
- no later than December 2020, publish a clear programme, timeframe and a set of standards for delivering mobile connectivity on main line routes and addressing the institutional and commercial barriers highlighted by the Commission, incorporating currently planned trials

- instruct Network Rail to clarify arrangements and facilitate access for third parties to deliver a trackside connectivity network on railway land, including access to trackside facilities and making use of planned railway possessions, with these arrangements being published no later than December 2020
- no later than June 2021, begin running competitive processes for delivering mobile connectivity improvements on at least four main line routes (or sections of routes), drawing lessons from the active trials being undertaken on routes across the country.

In addition, Ofcom should:

- publish consistent mobile coverage data for roads and in car coverage to enable progress to be more accurately tracked on an annual basis, clearly disaggregating motorways, A roads and B roads, and different types of coverage including 5G, by December 2020 for the next *Connected Nations* report
- report at least every two years on the extent and quality of mobile coverage on the railways to ensure that progress is accurately tracked, clearly disaggregating different types of coverage, including 5G.

# Partnering for Prosperity

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In 2020 the government needs to clarify its position on the Oxford-Cambridge Expressway and maintain momentum on East West Rail following the recent announcement of the preferred route for the central section.<sup>62</sup> Government should demonstrate clear ministerial ownership for the programme, develop a spatial vision and announce locations for new settlements. Although the rate of housebuilding in the Cambridge-Milton Keynes-Oxford arc increased in 2019,<sup>63</sup> there is still a long way to go and no clear plan to reach the levels needed. In 2020, government should demonstrate its commitment to achieving the economic potential of the arc by accelerating progress to integrate the delivery of new homes and improved connectivity in the region.

## Background

In 2016, the government asked the Commission to consider proposals and options to maximise the potential of the Cambridge-Milton Keynes-Oxford arc as a connected, knowledge-intensive cluster that competes on a global stage. The proposals were to protect the area's high-quality environment and secure the homes and jobs that the area needs.

*Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes-Oxford Arc* was published in November 2017. Its central finding was that rates of house building would need to double those at the time of publication if the arc were to achieve its economic potential. The Commission called for a new deal between central and local government, aligning public and private interests behind the delivery of significant east-west infrastructure and major new settlements. The deal should also seek commitment to faster growth through an integrated plan for jobs, homes and infrastructure.<sup>64</sup> The government published its response in the Autumn Budget 2018; the Commission supported the measures announced in the response but also noted that these commitments alone would not deliver new homes and transport links at the pace or quality required.<sup>65</sup>

## Progress in 2019

*Partnering for Prosperity* found that a chronic undersupply of homes could risk the potential of the arc: jeopardising growth, limiting access to labour and putting prosperity at risk. Therefore, one of the primary indicators of growth will be the uplift in the number of homes built per year in the arc. The Commission's analysis found that rates of housebuilding would need to increase to 23,000-30,000 homes per year to meet local needs in full and relieve pressures from land constrained markets.

In 2016-17, 14,290 new homes were completed across the arc, and in 2018-2019, this increased to 16,850 new homes.<sup>66</sup> Although this is welcome progress, there is still a long way to go, and there is no clear plan to meet the Commission's target.

In March 2019, the government and local partners published an ambition statement and joint declaration,<sup>67</sup> and September 2019 saw legislation passed to remove restrictions on the pooling of section 106 revenues, allowing the Commission to close one of the recommendations from this study.<sup>68</sup> Growth boards have also now been established by local partners across the area. The preferred route for the central section of East West Rail was announced on 30 January 2020 and on 4 February 2020 the Secretary of State for Transport granted permission for work to begin delivering the next phase of the western section of East West Rail, between Bicester, Bedford, Aylesbury and Milton Keynes.<sup>69,70</sup> Key decisions and announcements on the Oxford-Cambridge Expressway did not take place, partially due to wider political uncertainty and there has been little progress on identifying locations for new settlements.

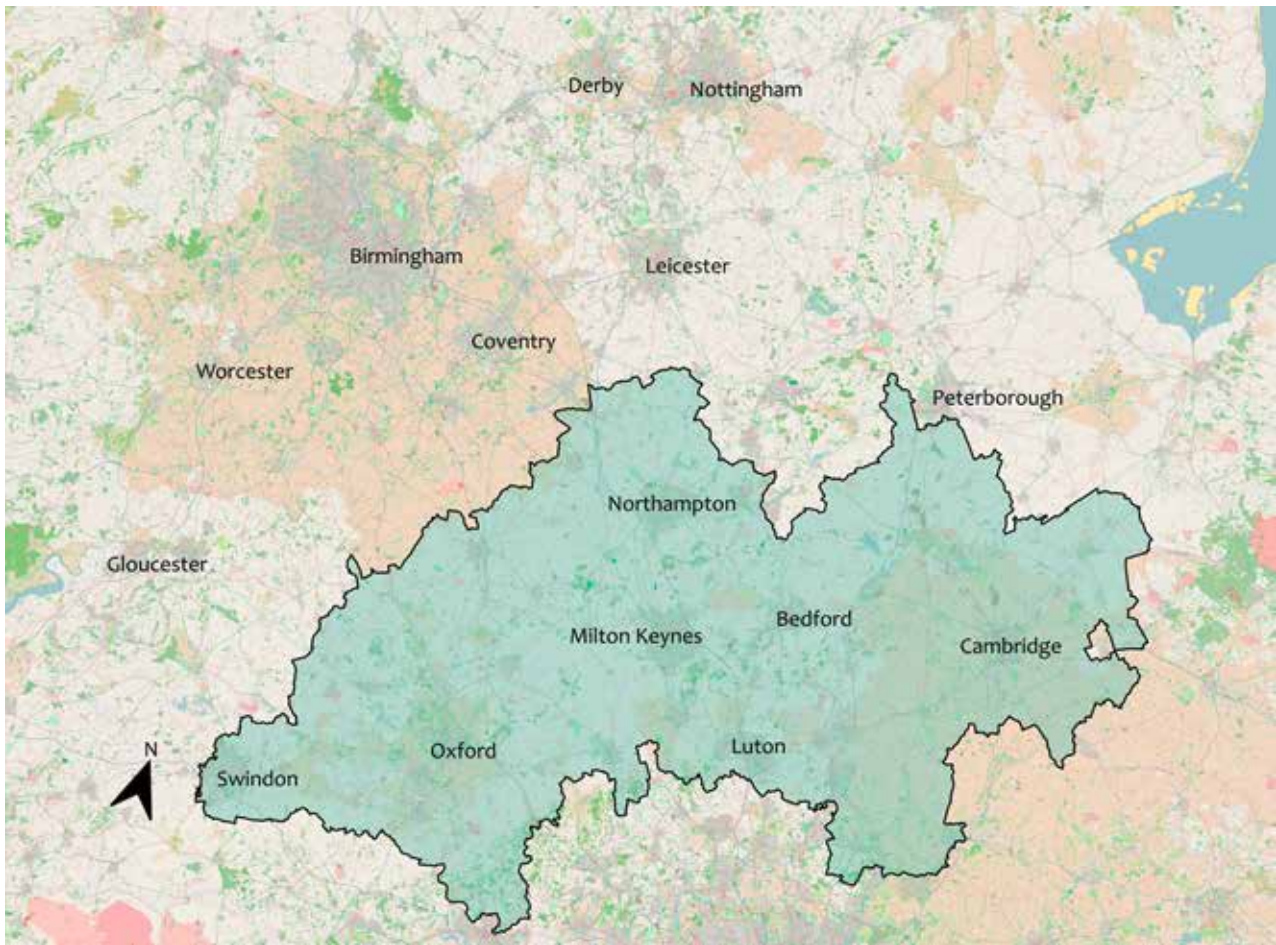
In 2019, the cross-government programme to deliver transport infrastructure and new housing in the arc appeared to function more effectively than in 2018, and work continued to progress within departments. Despite this, it is not yet clear that work on housing development and transport is fully integrated.

## Priorities for 2020

Government must continue to demonstrate its commitment to the arc and accelerate progress to deliver the Commission's recommendations. To make the most of this opportunity, in 2020 the government should continue integrating work on East West Rail, the Oxford-Cambridge Expressway and new housing developments. In particular, government should:

- clarify its position on the Oxford-Cambridge Expressway as a matter of urgency to avoid further delay to the delivery of critical east west road connectivity
- develop a spatial vision for the arc and identify the locations of new settlements connected to key transport infrastructure connections
- establish clear ministerial ownership for the arc
- complete an application for planning permission to construct Cambridge South Station as part of Control Period 6
- publish the final report of its economic study into the arc.

Figure 2: Map of area including/incorporating the Cambridge – Milton Keynes – Oxford arc<sup>71</sup>



Source: © OpenStreetMap contributors; Office for National Statistics licensed under the Open Government Licence v.3.0; Contains OS data © Crown copyright and database right 2020

# Data for the Public Good

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**Government should build on the successes from 2019 over the coming year. In the past year, the Infrastructure Client Group published an updated report covering the readiness of the infrastructure industry for digital transformation,<sup>72</sup> and the UK Regulators Network published a report on infrastructure data sharing. The publication of these reports enabled the Commission to close two of the three endorsed recommendations from *Data for the Public Good*.**

Government should continue to support this work in 2020 by ensuring that funding is available to continue the National Digital Twin Programme, and that the work is aligned with other government initiatives, including the work of the Alan Turing Institute.

## Background

In November 2016, the government asked the Commission to consider which new technologies had the greatest potential for improving the productivity of the UK's infrastructure, and what steps government should take to support the deployment of these technologies.

The Commission responded in December 2017, publishing its report *Data for the Public Good*. The Commission's recommendations aimed to promote better understanding of the value of data and new technologies in UK infrastructure productivity.<sup>73</sup> The government accepted all but one of the report's recommendations. Since the publication of the report, good progress has been made on the recommendations accepted by government, the Digital Framework Task Group, the Infrastructure Client Group and the UK Regulators Network.

## Progress in 2019

The *Data for the Public Good* recommendations aimed to promote a better understanding of the value of data and new technologies in UK infrastructure productivity. In 2019, the Commission was able to close two of the three endorsed recommendations from the study. In 2019, the Infrastructure Client Group published an update to their 2018 report on the Project 13 Digital Transformation Workstream, covering the readiness of the infrastructure industry for transformational change, including the need to incentivise sharing information to deliver value for end users.<sup>74, 75</sup> And the UK Regulators Network published a report on infrastructure data sharing currently taking place across the transport, water, energy and telecoms sectors, the role of the regulators, and potential barriers inhibiting the progress of sharing data. The report made a number of recommendations to regulators and other organisations to support data sharing.<sup>76</sup>

The work of the Digital Framework Task Group and the Centre for Digital Built Britain also continued to progress through the National Digital Twin Programme in 2019.<sup>77</sup> The Centre for Digital Built Britain published a roadmap towards an information management framework,<sup>78</sup> and convened a group of experts to develop the proposal for the technical core of the framework, which will enable practical development of the framework in 2020. The Digital Twin hub website was also completed in draft form, and the launch planned for 2020.<sup>79</sup>

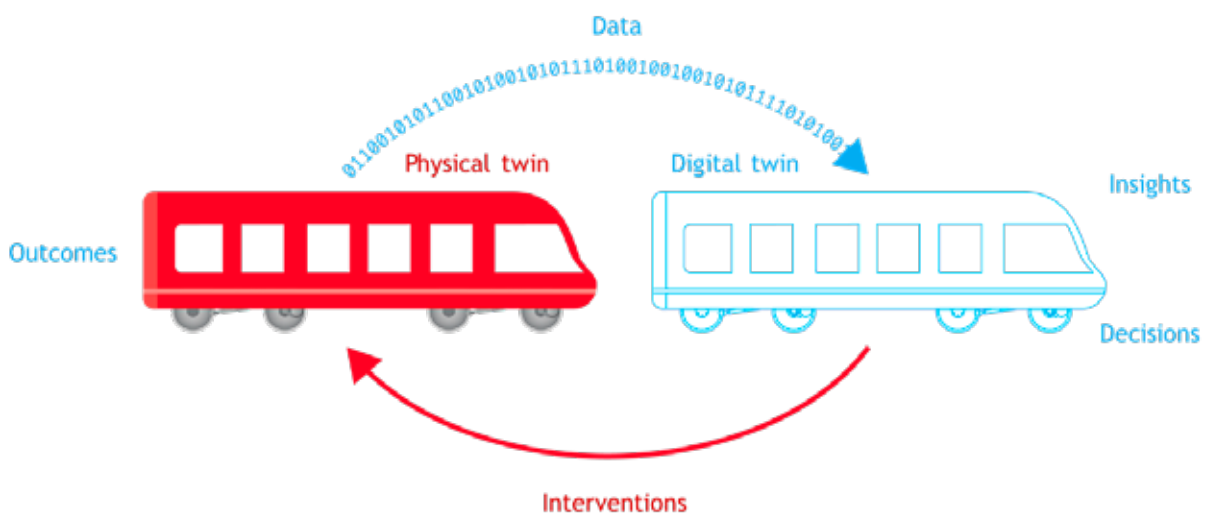
Despite this encouraging progress, the development of a National Digital Twin is likely to be a project spanning many years, and so the Commission's remaining recommendation from *Data for the Public Good*, on the Digital Framework Task Group, will need to remain open over 2020 and beyond to monitor the development of the National Digital Twin Programme. The government should ensure stable funding is committed to the project to allow it to continue and ensure a coordinated approach to infrastructure data is taken across government.

## Priorities for 2020

In 2020, government's priorities should be to:

- ensure funding is available for the Centre for Digital Built Britain to continue the National Digital Twin Programme
- ensure that the work of the Centre for Digital Built Britain is properly connected with other data-related initiatives across government and that there is alignment between the Centre for Digital Built Britain's National Digital Twin Programme and Alan Turing Institute
- provide use cases for the Centre for Digital Built Britain's digital twin pilot projects.

Figure 3: Digital twin<sup>80</sup>



Source: © Centre for Digital Built Britain (2019)

## Annex A: Key priorities for 2020

### High Speed North

In 2020, government should carry out the following priority action to support improvements to roads in the North:

- the next Roads Investment Strategy to include a commitment to funding upgrades that provide capacity enhancements to the Lofthouse Interchange between the M1 and M62, and junctions 35A to 39 on the M1.

### Smart Power

In 2020, government should:

- maintain access to future interconnector projects in negotiations with the EU, and prioritise retaining access to EU power markets and market coupling to ensure that interconnector capacity can be used in an effective way
- amend the Electricity Act 1989 to define storage as a distinct subset of generation
- continue to review the latest evidence on costs of and barriers to access for demand side response technologies in the capacity market
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### Transport for a World City

In 2020, the key priority for government should be to confirm plans for Crossrail 2, and commit funding to it, at the coming Spending Review. Further inertia will only increase the likelihood of delays and cost increases on a project already behind schedule. Government should also:

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- publish its assumptions about when gaining consent for the scheme should be achievable, subject to a funding deal being agreed.

In addition, the Mayor of London should publish a final London plan, setting out how Crossrail 2 will support and be integrated with planning and development strategies for the areas it serves.



### Connected Future (actions from *Connected Future: Getting back on track*)

Government's priorities for 2020, as identified in *Connected Future: Getting back on track* should be to:

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