



Analysis of the National Infrastructure and Construction Pipeline 2021

August 2021



Infrastructure
and Projects
Authority

Reporting to Cabinet
Office and HM Treasury



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Ministerial Foreword

Lord Agnew

Minister of State for the Cabinet
Office and Her Majesty's Treasury

Rt Hon Jesse Norman MP

Financial Secretary to the Treasury



The 2021 National Infrastructure and Construction Pipeline sets out nearly £650 billion of public and private investment that will transform people's lives for decades to come. Across the UK, world-class infrastructure will act as the foundation on which to build back better, uniting and levelling up the country as we recover from the pandemic.

With the publication of the National Infrastructure Strategy in November 2020, the government set out its bold and ambitious plans to meet the short and long-term challenges facing the UK. In December we published the Construction Playbook, outlining our expectations of how contracting authorities and suppliers, including the supply chain, should mutually engage. These reforms will drive innovation and Modern Methods of Construction (MMC) to create a more productive, sustainable and resilient industry with a well-trained workforce for the future.

The Infrastructure and Projects Authority's (IPA) Transforming Infrastructure Performance: Roadmap to 2030, published alongside this pipeline, sets out the transformation required to achieve these ambitions and details how we will work together with industry to achieve this vision. It will require data from all parts of the system to inform decision making and measure efficiency. In addition, the Government has brought forward new initiatives such as Project Speed, the Chancellor-led taskforce working at pace to deliver infrastructure projects better, faster and greener by removing layers of bureaucracy, accelerating decision making and reforming the planning system.

This pipeline is one of the critical steps needed to deliver the ambitions set out in

these publications effectively. By setting out planned and projected spend over the next 10 years, we aim to continue to build market confidence in the construction industry to invest in innovation and develop capability.

We have all seen the critical role construction workers have played in supporting people's everyday lives, particularly over the last year of the pandemic. This ranges from building hospitals to maintaining vital transport and utilities networks. The ability for firms to plan and resource for these projects is of utmost importance. This year's pipeline includes forecasted future workforce demand based on planned investment on projects and programmes.

It will also be the first time that government earmarks where investments and procurements will be substantially using MMC. Encouraging and driving innovation in a sustainable manner that aligns with our path to Net Zero by 2050 is central to the government's infrastructure ambitions.

The government is committed to working hand in hand with industry to improve productivity and drive innovation to recover from the pandemic by building back better to level up the country and achieve net zero emissions by 2050.

Chief Executive Foreword

Nick Smallwood

Chief Executive,
Infrastructure and Projects Authority



Delivering excellent infrastructure and the public services that we rely on every day is critical to our national progress, prosperity and wellbeing. Between £21 billion and £31 billion of contracts across economic and social infrastructure will be brought to market over the next year, with a projected £650 billion over the next 10 years.

Well planned and delivered projects have never been more important to the UK in driving our economy's recovery from the unprecedented challenges of the pandemic. In setting out planned procurements, investments, and projections of the workforce required to deliver planned investment, this pipeline will support industry in making strategic and informed decisions to their long-term business and project planning.

The IPA's flagship change programme, Transforming Infrastructure Performance: Roadmap to 2030, was published today alongside the pipeline. It brings together our diverse infrastructure expertise to lead real system change across government and industry, delivering on our mandate for the people of the UK. It sets out a bold vision for the future of our infrastructure by recognising how significantly and rapidly the world is changing and uses our position at the centre of government to take a longer term and portfolio view. Collectively, we are working across government to create a step change in project delivery, setting high standards for success and supporting capability development across the construction sector.

Quality investment to upskill and train our future workforce is vital to improve productivity and efficiency across the sector. The IPA has developed the facility to forecast future workforce demand on the basis of planned investment on projects and programmes. To promote recruitment into construction, we have converted planned investment on projects and programmes into the workforce

requirements needed to deliver them. Delivering the investments and procurement within this pipeline means bringing more workers into the infrastructure market by attracting new apprentices, technicians, graduates and skilled workers from other industries, in addition to necessary productivity improvements required in the sector. This pipeline will support 425,000 jobs annually on average over the period 2021/22 to 2024/25.

To drive us towards our commitment to net zero emissions by 2050, the government is committed to using its position as the single largest construction client to support and encourage the adoption of more productive and sustainable practices within the UK construction sector. This pipeline outlines the extent to which new work will incorporate delivery through MMC. 170 of the contracts in procurements, totalling an estimated capital value ranging between £15.4 billion and £22.4 billion, are planned to include elements delivered by making best use of MMC.

We are committed to driving and supporting projects to achieve nothing less than world-class delivery across the construction sector. This pipeline and the package of publications working alongside it will allow industry to plan and strategise for the coming years, setting projects up for success from the very beginning. Working together, we will build more sustainably, strengthen the Union and level up the country to improve lives across the UK.

Nearly

£650bn

of projected public and private investment over the next 10 years.

Around

£400 bn

of planned investment in the pipeline, including over £200 billion to be invested by 2024/25

Supporting

425,000

jobs annually on average between 2021/22 and 2024/25



Up to

£31 bn

of planned procurement over the next year



Across

528

projects, programmes and other investments



Across

418 public sector

projects and programmes

Summary

1.0 Infrastructure investment is playing a critical role in the recovery of the construction sector and the economy as a whole from the impact of COVID-19, both by maintaining jobs in the short term, and creating the conditions for long-term sustainable growth. The government's plan to 'build, back, better' will create jobs to support the recovery from COVID-19, and level up the country ensuring key industrial areas are at the heart of the transition to net zero.

1.1 Following the publication of the National Infrastructure Strategy in November 2020, this National Infrastructure and Construction Pipeline is the most ambitious to date. It sets out future planned procurements and levels of investment alongside the workforce requirement to deliver these plans. This will support industry in making informed decisions linked to short term business planning as well as strategic plans over a longer time horizon. Alongside effective leadership from key infrastructure clients, this will also help to drive innovation and MMC to create a more productive, sustainable and resilient industry with a well-trained workforce for the future.

1.2 Increasing investment levels can lead to pinch points in capacity for key resources such as labour, plant and materials. Latest figures published by ONS in June have demonstrated how the significant increase in demand for materials relative to global manufacturing capacity has resulted in significant inflationary cost pressure. As of June 2021 producer price output inflation on the year rose by 4.3% while producer price input rose by 9.1%. This was largely driven by metallic and non-metallic products.¹

1.3 Delivering the investments and procurements within this pipeline means bringing more workers into the construction industry infrastructure market, through new apprentices, technicians and graduates and attracting skilled workers from other industries. It will mean retraining and up-skilling the existing workforce which will support improved productivity and performance. This pipeline includes for the first time the forecasted future workforce demand based on planned investment on projects and programmes. IPA will continue to provide updated skills forecasts with each iteration of the pipeline, in order to support industry to develop recruitment, retention and upskilling strategies.

1.4 Data from all parts of the system is critical to inform decision making and measure efficiency. The data included within this pipeline is sourced from a range of providers including government departments, regulators and industry. IPA collates and publishes this information on planned procurements in addition to planned and projected investment to provide clarity to industry and support their short to long term business planning.

1.5 This analysis document published alongside the pipeline data provides insights across the wide range of infrastructure the UK is planning to procure in the coming year, in addition to the investments linked to the wide range of infrastructure the UK is committed to delivering over the coming years.

¹ <https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/consumerpriceinflation/june2021>

Future Procurements

1.6 The procurements section of this pipeline is made up of work packages that are planned to go out to market for procurement throughout the 2021/22 financial year. The procurement element of the pipeline workbook contains details for more than 400 contract opportunities.

1.7 Projects where contracts have been awarded or where funding has already been drawn down are not included within the procurements section of this pipeline. Projects in early stages of development are also not included in the procurements for 2021/22. The procurements included within this pipeline are those that represent market opportunities commencing in 2021/22, some of which will be awarded within this financial year and others to be awarded in future years.

1.8 Where ranges are used, this reflects the difference between the estimated minimum and maximum contracts value. Where ranges are not used, this is due to the difference in estimated contract value being negligible or a range has not been provided.

1.9 The procurements in this pipeline include (but are not limited to) a broad range of works across infrastructure and construction such as:

- construction work including building, design & build and civil engineering contracts;
- repair and maintenance services;
- architectural, construction, engineering and inspections services; and
- consultancy services.

1.10 The level of detail included in the procurements section of the pipeline varies across projects and programmes. Information has been provided for the individual work packages that make up projects and programmes, where available. Some projects and programmes will therefore have multiple procurements included in the pipeline section of the workbook.

Future Investments

1.11 This pipeline also includes details of planned investment on announced projects, programmes and other spending commitments. The planned investment element of the pipeline workbook contains details for 528 individual projects, programmes and other investments. The investments section of this pipeline sets out around £400 billion of planned investment, of which over £200 billion will occur by 2024/25.²

1.12 This gives the best available indication of planned investment, however the pipeline alone does not provide a full picture over the long-term, including beyond 2024/25. Future price control periods for many regulated utilities have not been set for the period beyond 2022/23 and a number of multi-year capital budgets remain to be agreed through a future Spending Review.³

1.13 To help indicate the longer-term investment, we also provide a 10 year projection of nearly £650 billion of public and private investment, covering the period to 2030/31. The 10-year projection was first included in the 2017 Pipeline and then updated for the 2018 publication. It is produced to support industry with long term strategic planning.

² All pipeline investment figures and analyses have been completed in 2019/20 prices.

³ A future Spending Review will set multi-year budgets for those projects and programmes that did not receive a multi-year settlement through the 2020 Spending Review Process.

Modern Methods of Construction (MMC)

1.14 The Government is committed to using its position as the single largest construction client to support adoption of a more productive, efficient and sustainable business model within the UK construction sector. This innovation is a key part in reaching the Government's goal of net zero emissions by 2050. In the 2017 Autumn Budget the Government announced its commitment to MMC through the adoption of a presumption in favour of offsite construction for relevant departments from 2019. This was followed in December 2017 by the publication of Transforming Infrastructure Performance, setting out a long term programme to improve the performance and delivery of infrastructure assets.⁴

1.15 The Government took this commitment a step further by setting out specific proposals for how this approach could be developed over time and used to deliver its capital investment programmes. This is called 'A Platform Approach to Design for Manufacture and Assembly (P-DFMA)', which was described in a Call for Evidence in November 2018.⁵ In December 2020 the Government published its Summary of Responses to the Call for Evidence and noted the importance of a strong, committed and visible pipeline of projects.⁶ The IPA's TIP: Roadmap to 2030 published alongside this pipeline sets out the long term vision for a platform approach to construction.

Future Workforce Requirement

1.16 Delivering the investments and procurement within this pipeline means bringing more workers into the infrastructure market, through new apprentices, technicians and graduates and attracting skilled workers from other industries. It will mean retraining and up-skilling the existing workforce which will support improved productivity and performance.

1.17 To support industry's investment in future skills, for the first time since 2013 this pipeline sets out future workforce demand generated by the planned investment in the pipeline. This demonstrates the need for, on average, 425,000 workers across infrastructure and construction to deliver this planned investment up to 2024/25. As new projects and programmes are approved this figure will rise further and could potentially lead to skills shortages if not appropriately managed. To help industry manage these potential constraints the IPA will continue to provide updates on future workforce requirements through each future iteration of the pipeline.

⁴ <https://www.gov.uk/government/publications/transforming-infrastructure-performance>

⁵ <https://www.gov.uk/government/consultations/proposal-for-a-new-approach-to-building-call-for-evidence>

⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/941816/2020-12-8_response_-_Proposal_for_a_New_Approach_to_Building.pdf

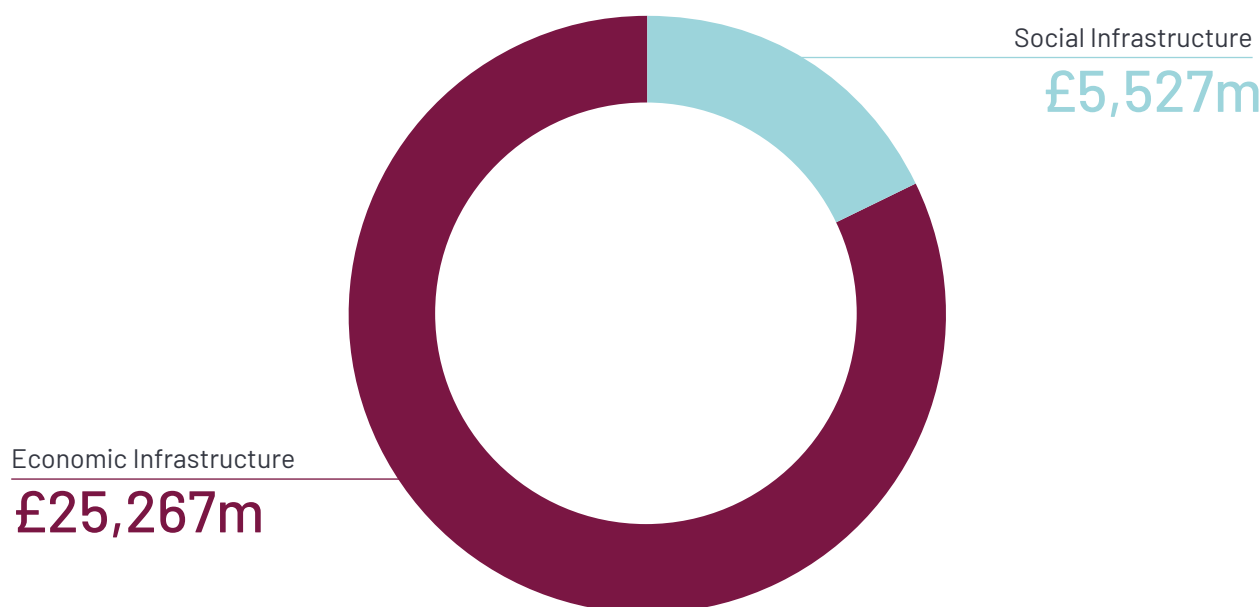
Analysis of the 2021 Pipeline

2.0 The total value of procurements across economic and social infrastructure planned for 2021/22 ranges between £21 billion and £31 billion.⁷ The total value of planned public and private investment in the pipeline up to 2024/25 is over £200 billion.

Procurements in 2021/22 by Sector

2.1 The procurement section of the pipeline brings together procurements for the 2021/22 financial year across social and economic infrastructure sectors including Transport, Energy and Digital Infrastructure. Social Infrastructure incorporates nine sub-sectors including Education and Health. The chart below shows the maximum estimated value of contracts, split by economic and social infrastructure.

Chart 1: Estimated Maximum Contract Value of Procurements in the Pipeline by Sector (£'m)



2.2 The chart above shows that economic infrastructure accounts for c.80% of the estimated value of planned procurements ranging from a minimum of £16 billion to a maximum of £25 billion. The remaining estimated value of planned procurement is split between social infrastructure sub-sectors (£5.1bn – £5.5bn).⁸ Table 1 below provides a more detailed breakdown of planned procurements by sector.

⁷ In this report economic infrastructure includes Transport, Energy, Digital Infrastructure, Science and Research, Waste and Floods and Coastal Erosion. This is different to the definition of economic infrastructure in the National Infrastructure Commission's fiscal remit, which only includes public investment in Transport, Flood and Coastal Erosion, Digital Communications and Waste. In this report social infrastructure includes Culture, Work and Pensions, Rural Affairs, Justice and Security, Education, Healthcare and Housing and Regeneration.

⁸ Where ranges are used, this reflects the difference between the estimated minimum and maximum contract value.

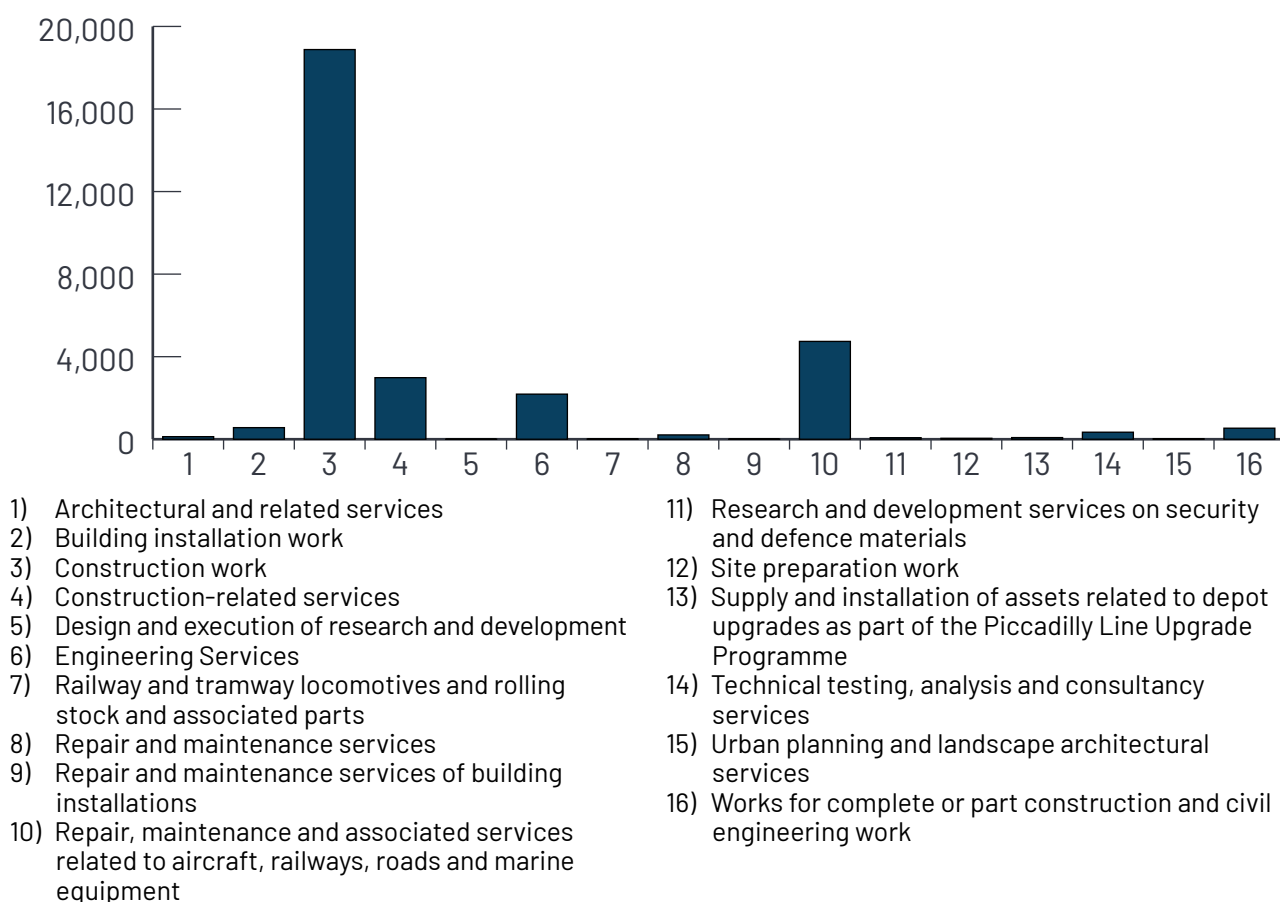
Table 1: Pipeline Procurements by Sector⁹

Sector	No. of Procurements	No. of Projects	No. of Programmes	Estimated Minimum Contract Value (£'m)	Estimated Maximum Contract Value (£'m)
Housing and Regeneration	16	4	12	£ 177.7	£ 242.5
Education	165	165	0	£ 2,408.1	£ 2,504.1
Energy	22	13	9	£ 139.9	£ 298.7
Flood Defence	41	40	1	£ 953.1	£ 953.1
Home Office	2	0	2	£ 0.3	£ 5.3
Justice	23	10	13	£ 2,525.4	£ 2,775.4
Science and Research	8	8	0	£ 338.0	£ 338.0
Transport	132	19	113	£ 14,806.3	£ 23,665.4
Waste	9	0	9	£ 11.6	£ 11.6
Total	418	259	159	£ 21,360.4	£ 30,794.1

Procurements in 2021/22 by Work Type

2.3 Procurements within the pipeline extend beyond the construction of critical infrastructure to renewals, maintenance and consultancy, architectural and engineering services that will support the development of new schemes. Chart 2 below splits out the procurement section of the pipeline by the type of work being procured.¹⁰

Chart 2: Estimated Maximum Contract Value of Procurements in the Pipeline by Work Type (£'m)



⁹ Information has been provided for the individual work packages that make up projects and programmes, where available.

Some projects and programmes will therefore have multiple procurements included in the procurement section of the workbook.

¹⁰ Types of work are based on Common Procurement Vocabulary.

2.4 Construction work including building, design & build and civil engineering makes up over two thirds of the work opportunities available to the market in 2021/22. Of the remaining estimated contract value, £0.8 billion to £1.1 billion is architectural, engineering and design services, £2.9 billion to £5 billion is repair and maintenance services.

Contract Awards in 2021/22

2.5 Contracts with an estimated value of between £13.4 billion and £20.7 billion are planned to both commence procurement and be awarded within the 2021/22 financial year as shown in Table 2 (below). The full breakdown can be found in the procurement section of the pipeline workbook.

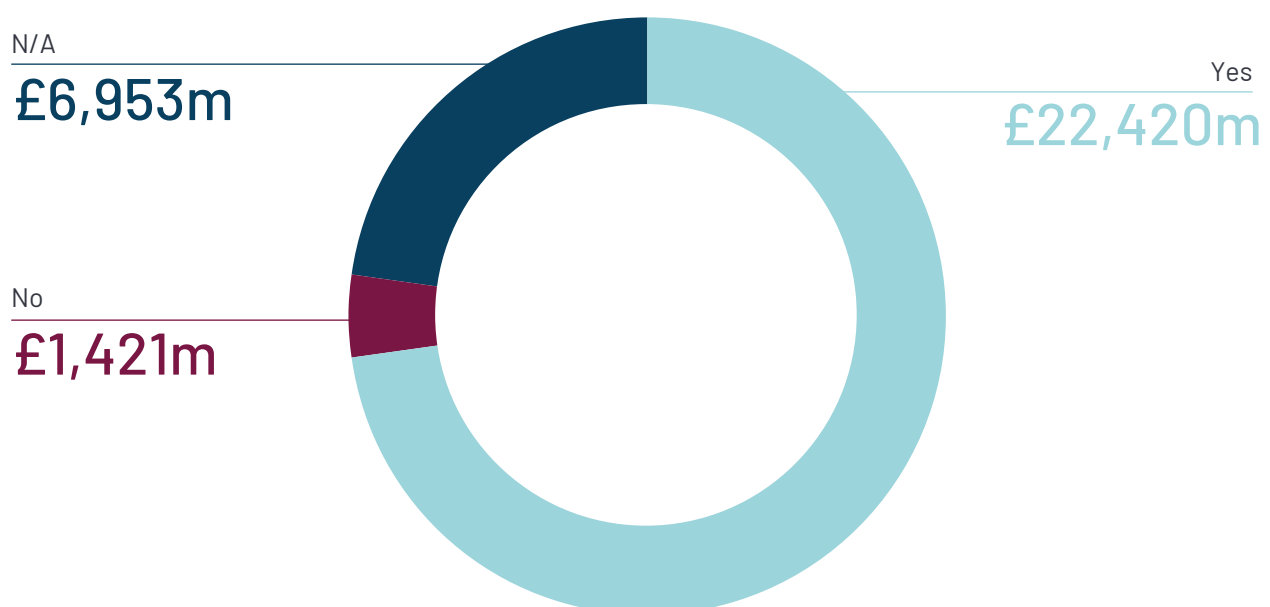
Table 2: Contract Value of Pipeline Procurements Planned to Commence and be Awarded in 2021/22

Contract Award Date	No. of Procurements	Estimated Minimum Contract Value (£'m)	Estimated Maximum Contract Value (£'m)
Q1 2021/22	17	£ 335.0	£ 349.0
Q2 2021/22	92	£ 5,834.7	£ 8,577.8
Q3 2021/22	44	£ 2,386.6	£ 3,559.5
Q4 2021/22	67	£ 4,758.0	£ 8,187.2
Multiple award dates in 2021/22	12	£ 38.0	£ 63.4
Total	232	£ 13,352.3	£ 20,736.9

Procurements Delivered Using Modern Methods of Construction

2.6 In line with the response from industry, for the first time, the Government is setting out the extent to which new work will include elements delivered through MMC.¹¹ Of the contracts included within the procurement section of the pipeline, over 170 with an estimated capital value ranging between £15.4 billion and £22.4 are planned to be utilising some form of MMC.

Chart 3: Estimated Maximum Contract Value of Procurements in the Pipeline to Include Delivery via MMC (£'m)



¹¹ In this report MMC includes all innovative approaches to the delivery of infrastructure and construction projects ranging from digital design to offsite and volumetric construction. Schemes that have self reported that at least 50% or greater of the project or programme will be delivered via MMC have been included within this group.

Case Study:

Department for Education – MMC GenZero



The Department for Education (DfE) is promoting the development of off-site market responses to the education sector through a unique MMC framework. This framework drives innovation and performance through compliance with a detailed and challenging performance specification. This is part of DfE's journey towards a construction platform that can deliver the widest range of buildings at the most economic cost and at optimum performance.

To kick start the platform approach Innovate UK/Construction Innovation Hub have partnered on a DfE-led Research and Development programme to develop the designs for zero-carbon secondary schools utilising Design for Manufacture and Assembly (DfMA) principles and which will allow easy adaptation for cross-government use.

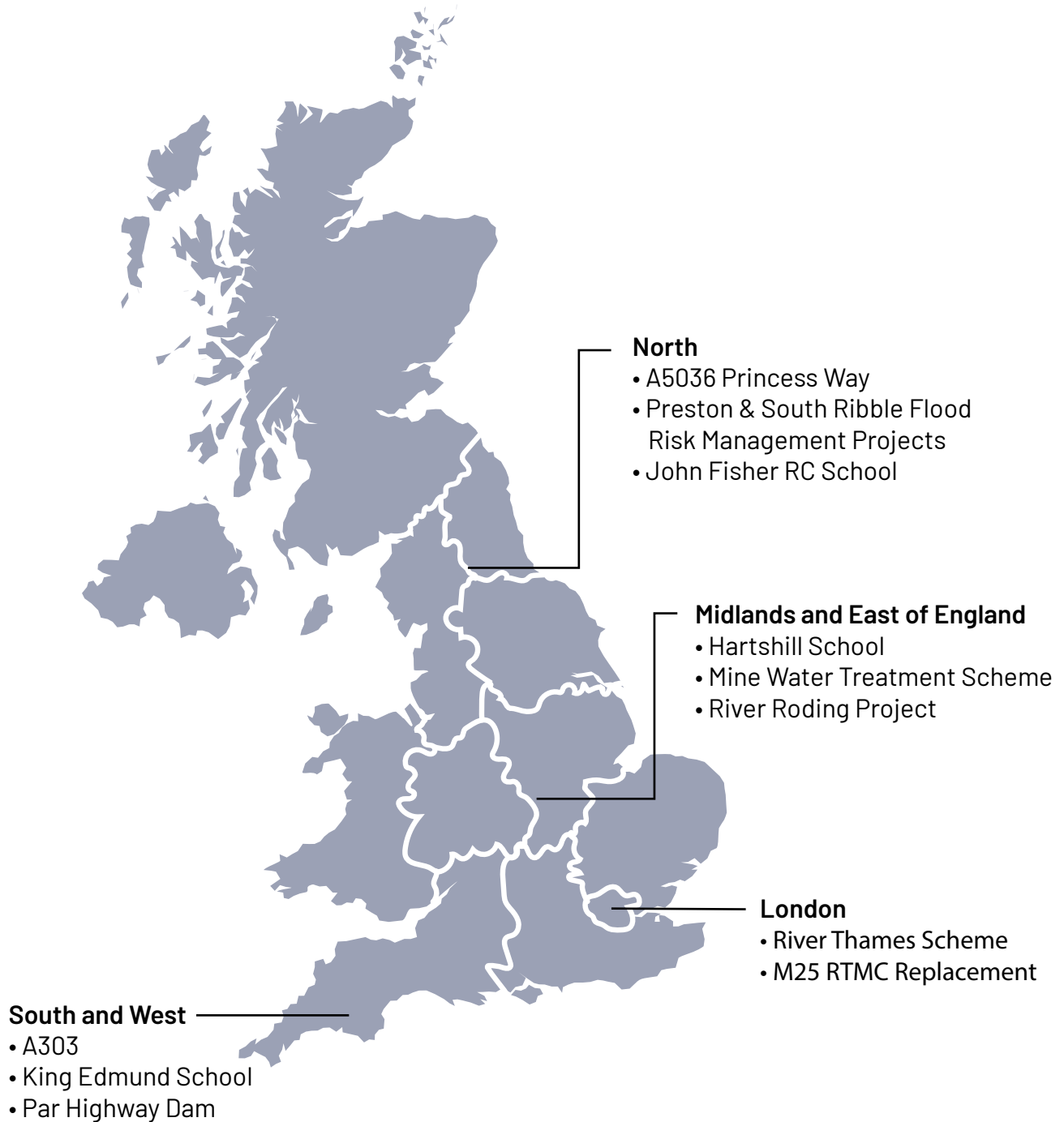
This research has taken a whole-site approach using innovative measures to mitigate against climate change for over 60 years and provide sustainable long-term welfare benefits for both pupils and

teachers at school. The proposal builds on some of the principles adopted by DfE in its MMC solutions; GEN5 (primary schools) and GEN7 Special Educational Needs and Disabilities schools, and takes a radical approach to developing standardised, repeatable, large-scale building component platform design solutions that can be mass-manufactured, and that can be rapidly assembled on-site to create new school buildings that will be low carbon in construction and use.

The Research and Development programme will conclude with a Royal Institute of British Architects Stage 4 Technical Design from which the platform principles and revised specification and Net Zero Carbon data can be extracted. The new platform system for low carbon schools is based on a new manufactured timber system. The research project has provided a robust open-source digital model of two schemes – a city centre proposal and suburban expansive site solution. This provides a reference tool from which capital and whole life costs are being constructed, and carbon data generated.

A full size prototype section of the timber construction is currently being manufactured by the Manufacturing Technology Centre in Scotland utilising UK timber and manufacturing processes.

Example procurements included in the pipeline



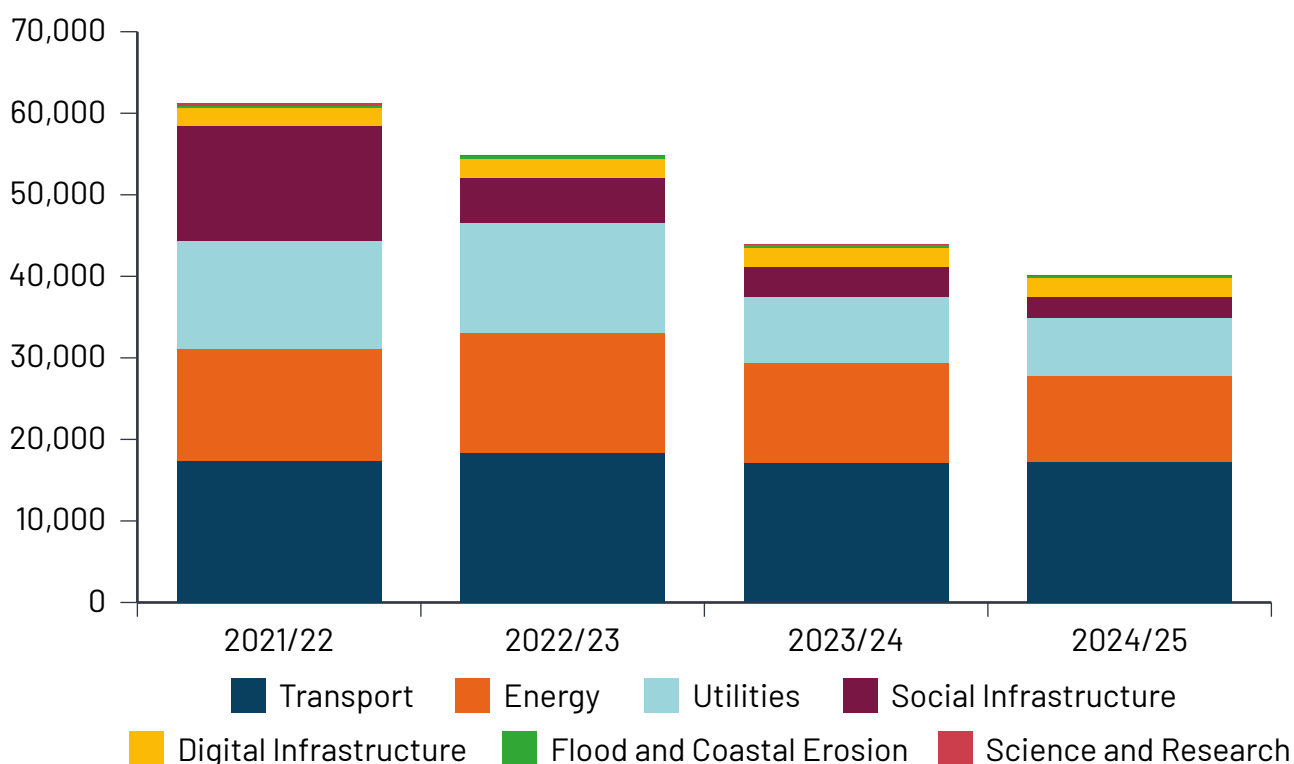
Investment in the Pipeline from 2021/22 to 2024/25

2.7 Over £200 billion of planned investment in the pipeline will be delivered by 2024/25. We provide specific investment figures to this date to reflect likely cycles in infrastructure investment, as 2025 marks the end of the current 2020 Spending Review period. A future Spending Review, will set out future capital budgets for portfolios that did not receive multi-year settlements as part of the 2020 Spending Review.

2.8 Due to the fact that not all projects and programmes received multi-year settlements up to 2024/25 the *planned* investment in the pipeline will underestimate actual investment over the coming years in some sectors.

2.9 For this reason, for the first time the IPA has applied its projection estimates to the current Spending Review period in order to provide a comprehensive view of estimated future planned *and projected* investment. The profile of planned investment in all sectors, up to 2024/25 is set out in Chart 4 and reflects the likely underestimate from 2023/24 to 2024/25.

Chart 4: Annual Profile of Planned Pipeline Investment by Sector (£'m)



2.10 Table 3 below shows the value of planned investment in each sector in the investment section of the pipeline between 2021/22 and 2024/25. The full breakdown can be found in the investment section of the pipeline workbook. This does not include projected investment across regulated utilities, social infrastructure, economic infrastructure and other investments, which can be found in Chart 9.

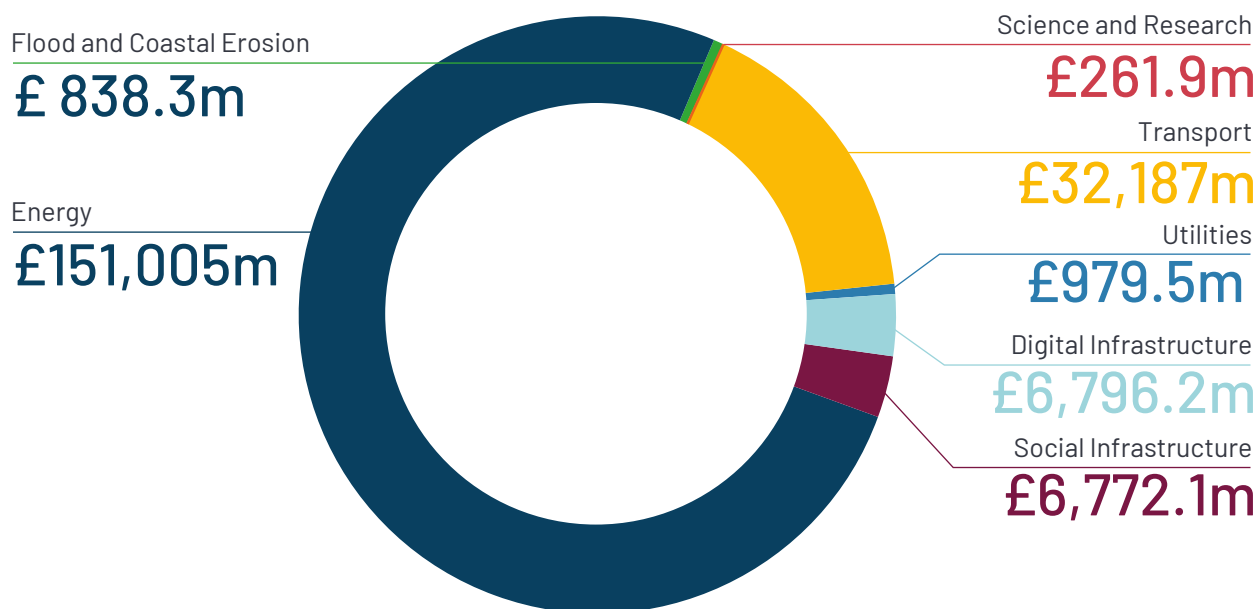
Table 3: Planned Investment in the Pipeline 2021/22 to 2024/25 by Sector (£'m)

Sector	2021/22	2022/23	2023/24	2024/25	Total 2021/22 to 2024/25
	(£'m)	(£'m)	(£'m)	(£'m)	(£'m)
Transport	17,403	18,274	17,046	17,229	69,952
Energy	13,696	14,777	12,384	10,438	51,295
Utilities	13,186	13,382	8,084	7,165	41,817
Social Infrastructure	14,188	5,532	3,570	2,587	25,876
Digital Infrastructure	2,177	2,425	2,387	2,376	9,365
Flood and Coastal Erosion	234	268	266	215	984
Science and Research	364	229	178	130	901
Total	61,247	54,887	43,915	40,140	200,190

Planned Investment in the Pipeline Beyond 2024/25

2.11 Around £200 billion of currently planned investment in the pipeline will be delivered after 2024/25. This includes major projects and ongoing investments that will be delivered over a number of years, such as HS2, and Lower Thames Crossing in addition to investment programmes such as the Affordable Homes Programme. This does not include projected investment across regulated utilities, social infrastructure and economic infrastructure and other private investment which can be found in Chart 9.

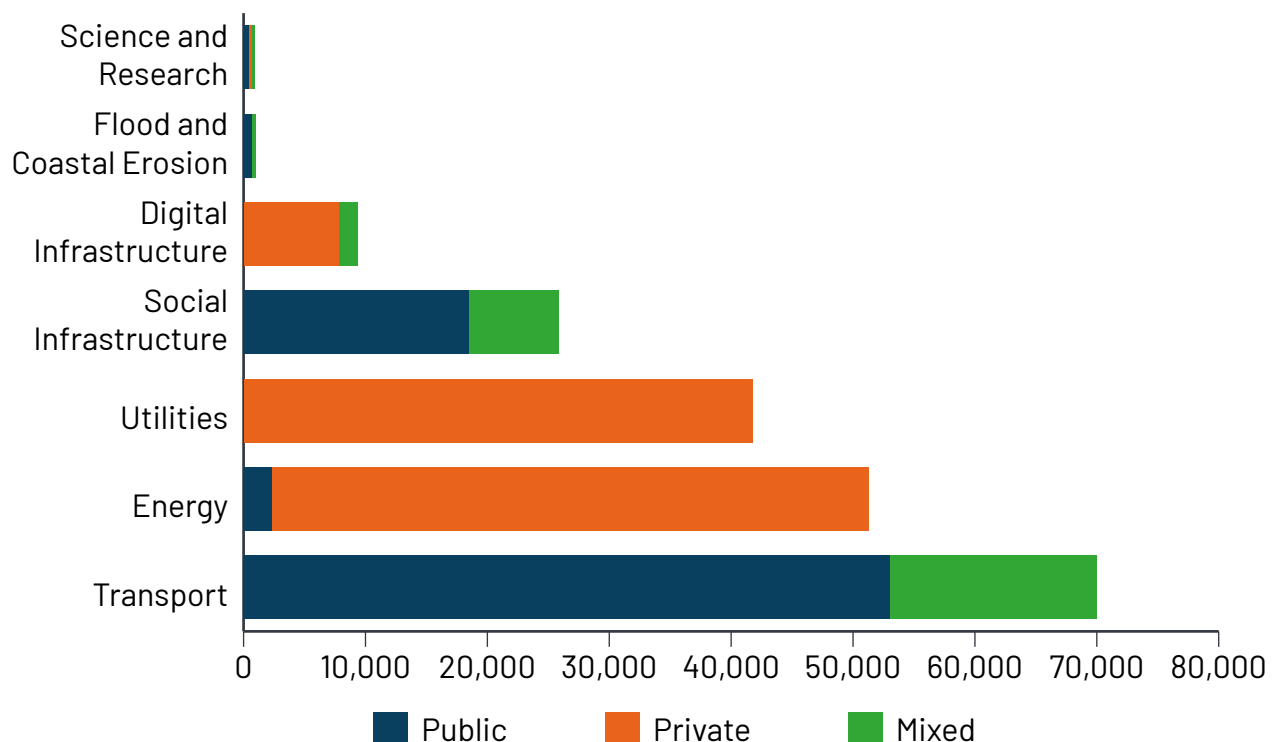
Chart 5: Planned Investment in the Pipeline Beyond 2024/25 by Sector (£'m)



Funding Mix of Planned Investment in the Pipeline from 2021/22 to 2024/25

2.12 The UK uses a mixed model to fund and finance its infrastructure, using both public and private investment. This includes public investment covering economic infrastructure such as roads and telecommunications, in addition to social infrastructure such as schools and hospitals. The Government also supports private investment through established tools such as the UK Guarantees Scheme, Contract for Difference and the Regulated Asset Base model. At Budget 2018 the Government announced that it will no longer use Private Finance 2 (PF2), the current model of Private Finance Initiative (PFI), however the Government will continue to support private investment through other means including the UK Infrastructure Bank.

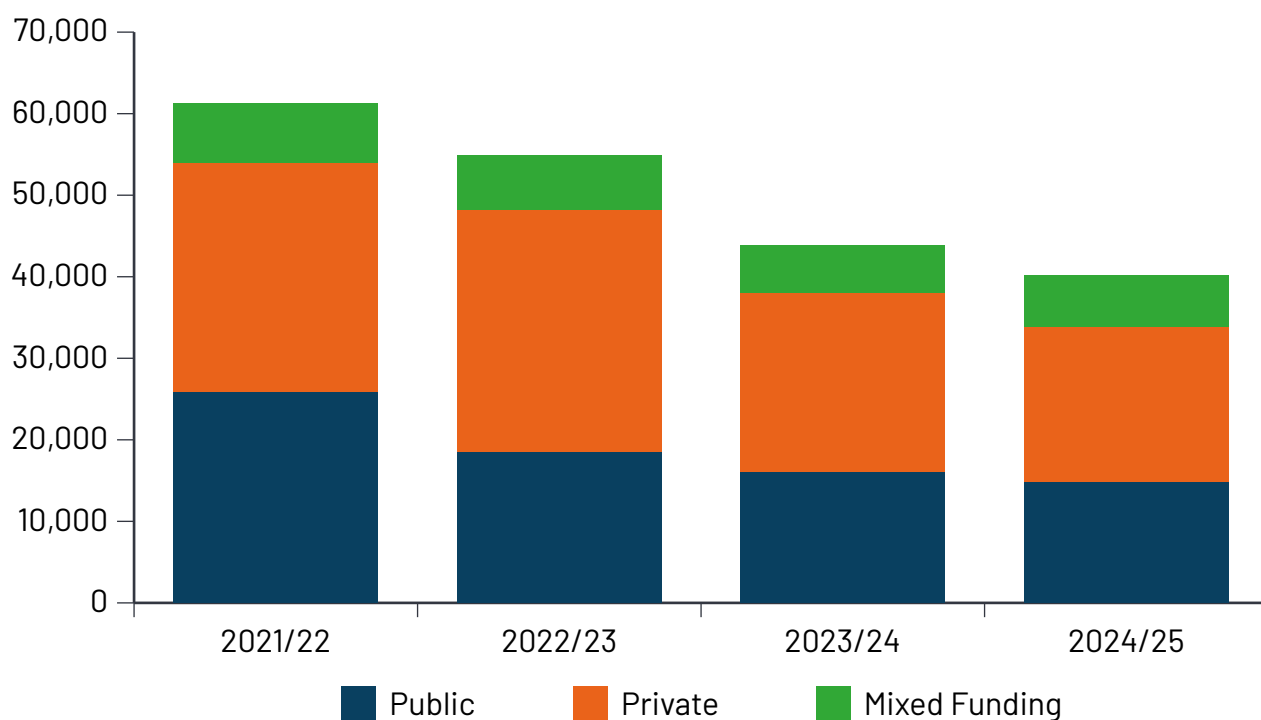
Chart 6: Funding Mix of Planned Investment in the Pipeline from 2021/22 to 2024/25 by Sector (£'m)



2.13 Chart 6 above sets out the funding split of each sector of the pipeline to 2024/25. Chart 7 below shows the funding split by year. Around 50% of the pipeline to 2024/25 is funded and delivered by the private sector, whilst the other 50% of the pipeline to 2024/25 is made up of public funding.¹²

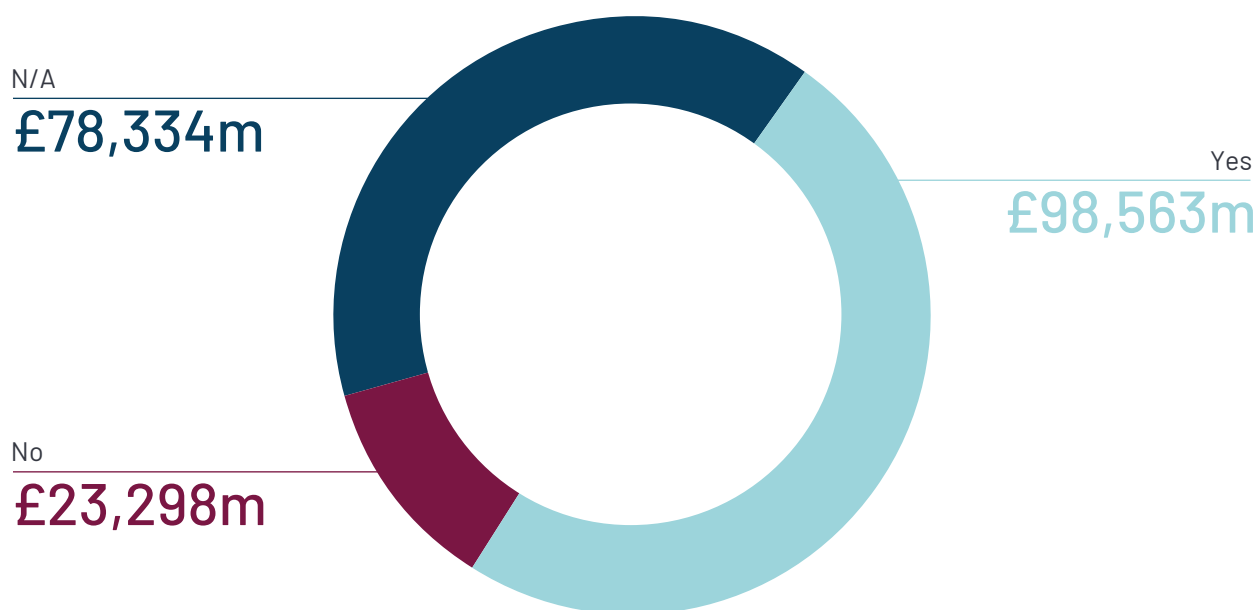
¹² Public funding includes an element of mixed funding. Mixed funding is classified as any combination of funding sources. Of the total planned investment within the Pipeline 49.3% of funding (£98.7bn) is private whereas 50.7% (£101.5bn) is funded by the public sector.

Chart 7: Funding Mix of the Planned Investment in the Pipeline from 2021/22 to 2024/25 by Year (£'m)



2.14 Over 115 schemes included within the pipeline, representing nearly 50% of total planned investment between 2021/22 and 2024/25 represent private corporate or project finance opportunities for institutional investors.¹³

Chart 8: Opportunities for Private Corporate or Project Finance Linked to Planned Investment in the Pipeline from 2021/22 to 2024/25 (£'m)



¹³ As part of the Pipeline commission the IPA requested that contracting authorities confirm whether there is an opportunity for institutional investors to provide private corporate or project finance in relation to their scheme(s). Of the 528 projects, programmes and other investments included within the Pipeline 116 schemes (representing 49.2% of total planned investment up to 2024/25) confirmed that there is an opportunity for private corporate or project finance.

Projects, Programmes and Other Investments Delivered through Modern Methods of Construction

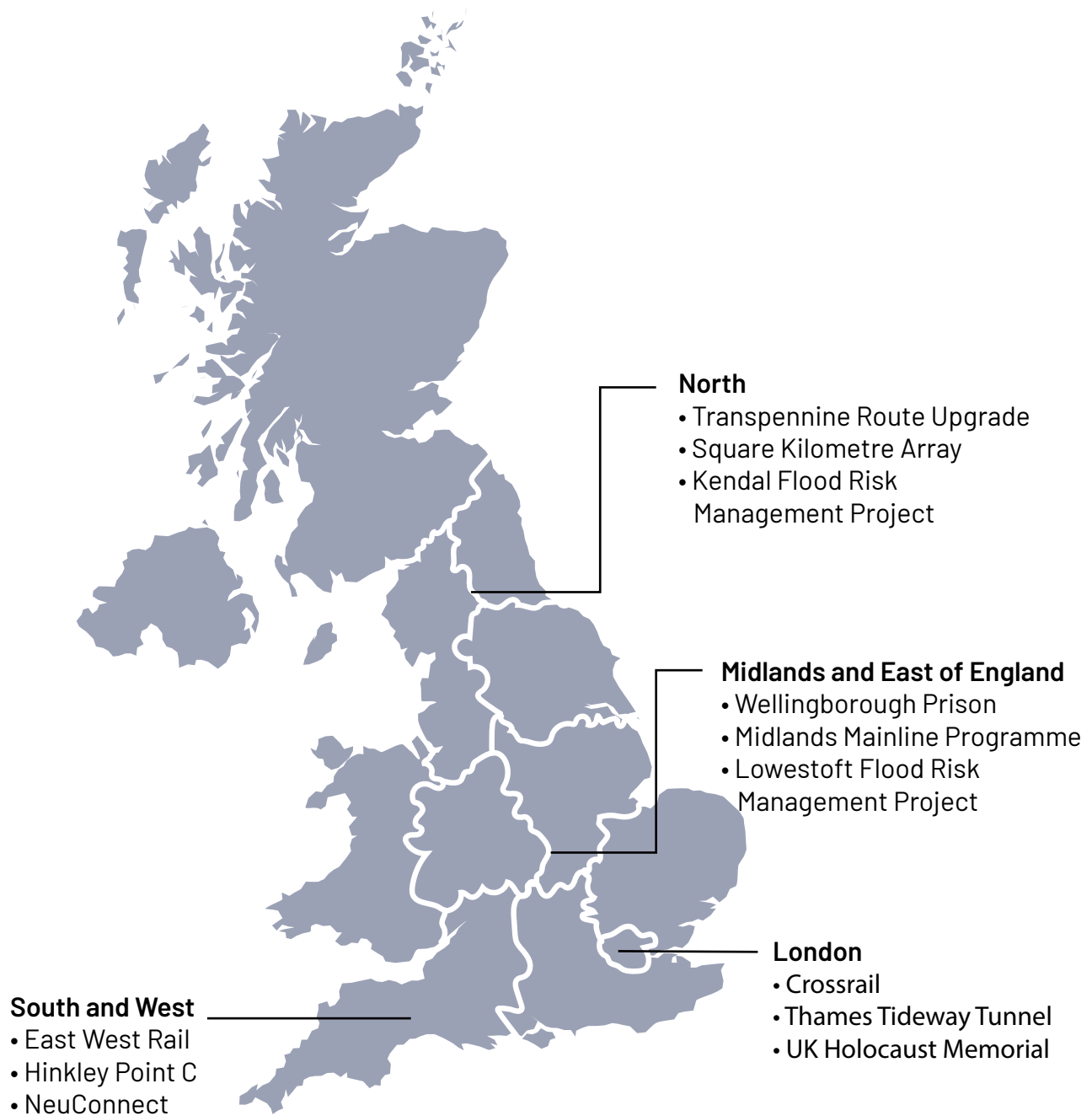
2.15 Of the 528 projects, programmes and other investments included within the investment section of the pipeline, 143 will include delivery through MMC. This ranges from digital design to offsite and volumetric construction and represents £79 billion of investment out of the total £200 billion planned to 2024/25.¹⁴ Table 4 below sets out the level of investment including elements delivered through MMC by sector.

Table 4: Planned Investment in the Pipeline from 2021/22 to 2024/25 to Include Delivery via MMC (£'m)

Sector	2021/22	2022/23	2023/24	2024/25	Total 2021/22 to 2024/25
	(£'m)	(£'m)	(£'m)	(£'m)	(£'m)
Transport	12,037.3	11,722.8	11,663.2	12,261.7	47,685.0
Utilities	5,499.9	5,526.0	5,298.6	4,433.0	20,757.5
Social Infrastructure	3,123.8	1,809.2	1,753.7	1,747.1	8,433.7
Digital Infrastructure	239.3	399.6	374.9	463.9	1,477.8
Flood and Coastal Erosion	1.2	1.2	1.1	1.0	4.6
Science and Research	86.0	122.8	94.6	89.4	392.8
Total	20,987.5	19,581.6	19,186.1	18,996.2	78,751.4

¹⁴ This figure includes schemes that are in early stages of delivery such as scoping, development design as well as planning and consents. Where these schemes are marked as utilising MMC this denotes the fact that they are currently utilising digital design techniques. This does not, in all instances, guarantee that the scheme will be delivered via offsite and/or volumetric construction techniques.

Example planned investments and programmes included in the pipeline



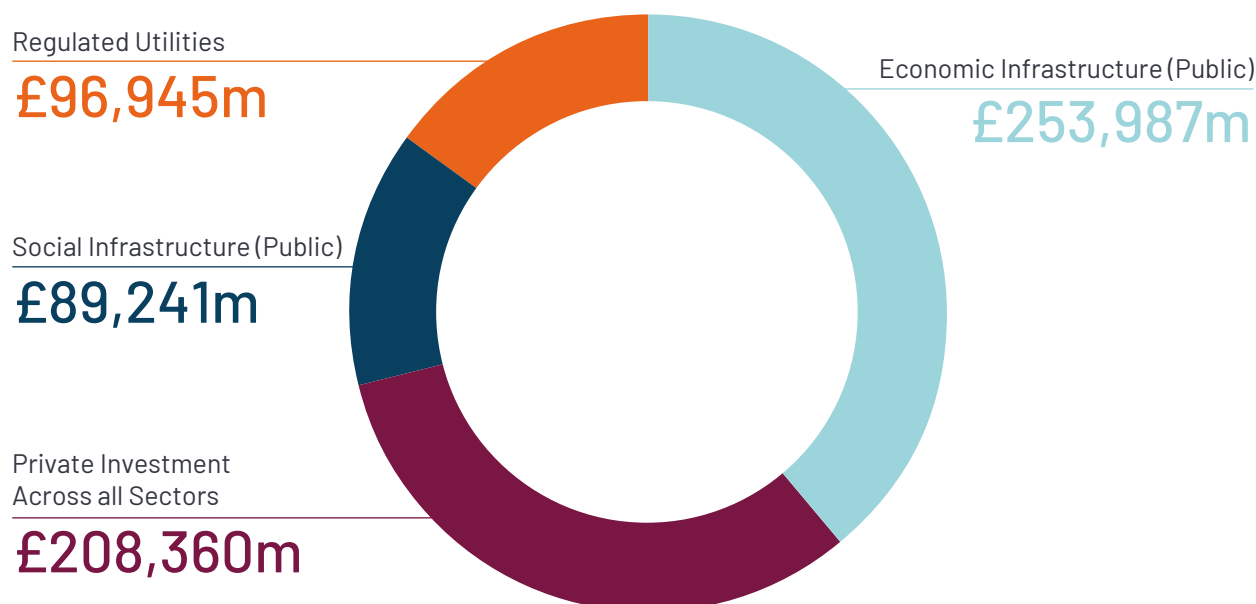
Projected Investment Over the Next 10 Years

3.0 The National Infrastructure and Construction Pipeline published in December in 2017 set out for the first time, a projection of public and private infrastructure investment levels over a 10 year period. This was later refreshed in the 2018 Pipeline. This report provides a further update to the projection to the year 2030/31. The IPA estimates that total infrastructure investment over the next 10 years will be nearly £650 billion.¹⁵

3.1 This projected element of the pipeline supplements the current planned investment within the investment section of the pipeline workbook in order to set out estimated future planned and projected investment for the next decade. This is designed to provide a more comprehensive view of the medium to long term trajectory of infrastructure investment. The IPA is unable to provide an exact profile of future investment as this will become known once new public sector schemes are approved through a future spending review and private sector investment is brought to market. The IPA would anticipate that future approved investment will bring annual average investment over the period 2021/22 to 2024/25 up to c£60bn, in line with forecasts from previous iterations of the pipeline. This would form a part of wider public sector gross investment of £100 billion a year as set out in the National Infrastructure Strategy.¹⁶

3.2 Chart 9 provides a breakdown of investment in line with the methodology for calculation, the projection set out in Annex A.

Chart 9: Estimated Public and Private Investment from 2021/22 to 2030/31 by Sector (£'m)



¹⁵ This figure represents future capital investment on projects and programmes and so is different from the £600 billion investment referenced in the National Infrastructure Strategy which represents total public sector gross investment, an element of which is capital.

¹⁶ <https://www.gov.uk/government/publications/national-infrastructure-strategy>

Regional Analysis of the Investment in the Pipeline from 2021/22 to 2024/25

4.0 This chapter provides an overview of the analysis of the distribution of the planned infrastructure investment in the pipeline from 2021/22 to 2024/25 in each region of England.¹⁷ This builds on the regional analysis first provided in the National Infrastructure and Construction Pipeline 2017, updated in 2018. The analysis is as complete as possible based on the information available, but it is not exhaustive and so should be taken as an indication of investment in each region only. A more detailed explanation of the methodology is in Annex B and an explanation of developed responsibilities for infrastructure in Scotland, Wales and Northern Ireland is in Annex C.

4.1 The analysis of planned investment by region provides an indication of where construction activity will be taking place, rather than where improvements to infrastructure and public services will be felt. Due to the nature of many energy and transport infrastructure projects, investments made in one region will deliver benefits to citizens in multiple other regions, and often across the whole of the UK. Job creation and contract opportunities for the supply chain are also spread more widely across regions as illustrated in the case studies below.

4.2 The IPA's analysis of regional investment in the Pipeline indicates average annual per capita investment of £689 across England over the period 2021/22 to 2024/25. Of this private sector investment makes up £356 of average annual per capita investment and central government investment equates to £333 average annual per capita investment.

4.3 The regional investment within the pipeline is provided as an annual average in order to ensure easier comparisons to future editions of the pipeline which will include planned investment for the remaining years of the Spending Review period through each iteration.

¹⁷ The regional analysis of the investment in the Pipeline is carried out on the planned investment in the Pipeline only and so excludes projected investment in the Pipeline.

Case Study:

HS2 Regional Supply Chain Benefits

HS2 and its supply chain are supporting more than 16,000 jobs and creating over 500 apprenticeships.

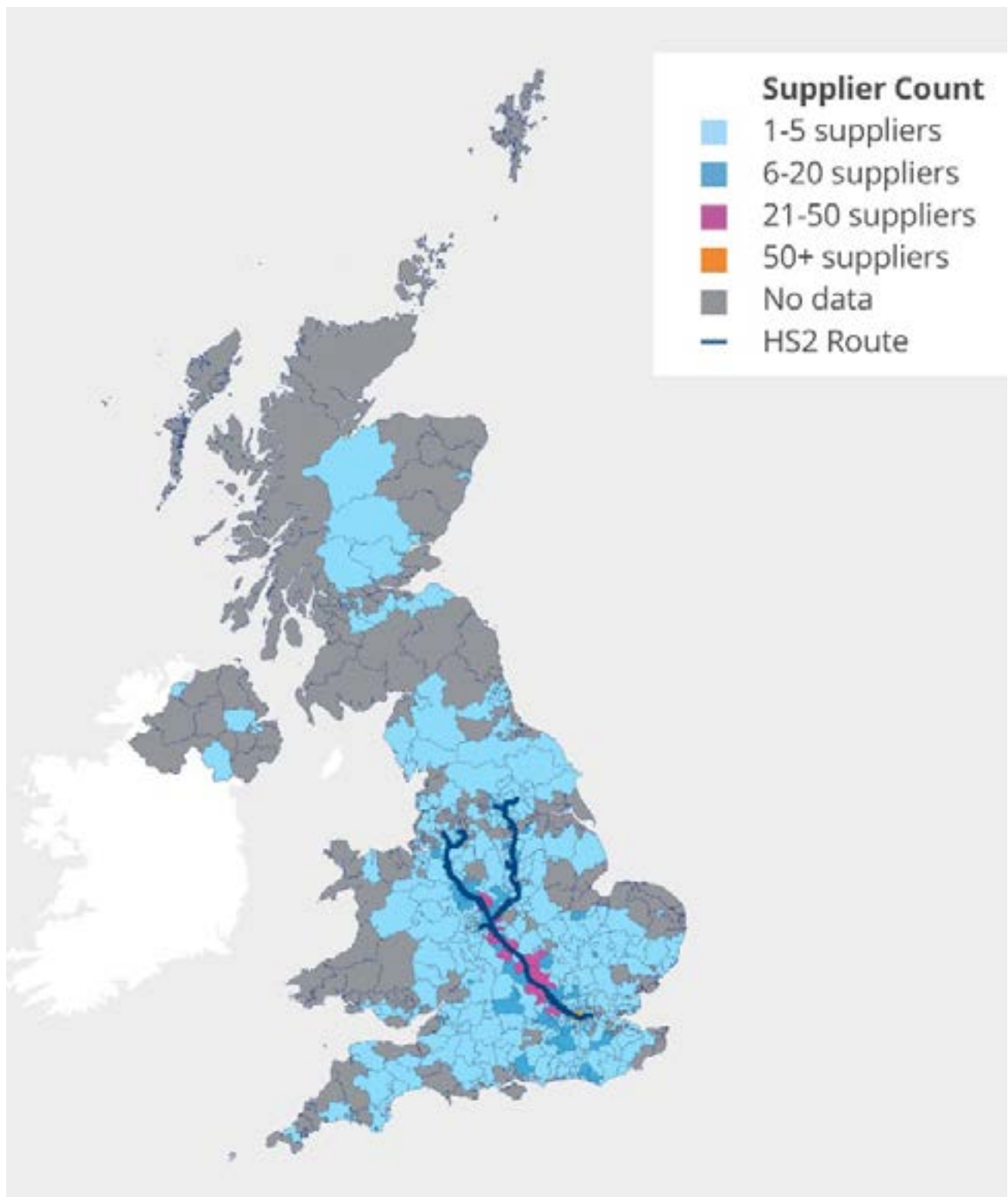
HS2 Phase One is predicted to create 400,000 supply chain contract opportunities, with an estimated 95% expected to be won by UK-based businesses, and 60% by small to medium-sized enterprises. Companies spanning from Wales to West Bromwich and Carlisle to Cambridgeshire have been awarded these contracts, supporting jobs far and wide across the UK.

For example, HS2's main works contractor for the West Midlands, the Balfour Beatty VINCI Joint Venture (BBV JV), along with its supply chain partners, has said it expects to be one of the biggest recruiters in the West Midlands over the next two years, with up to 7,000 skilled jobs required to complete its

section of the HS2 route. The EKFB Joint Venture (Eiffage, Kier, BAM Nuttall, Ferrovial) – building the section from the Long Itchington Wood site in Warwickshire south to the Chiltern tunnel portals, has said it will recruit over 4,000 roles in the next two years, many based in Milton Keynes, as work ramps up in the area.

Elsewhere, Explore Manufacturing in Worksop, Nottinghamshire, won a contract to supply major bridges to the project; as a result the company recruits a minimum of 4 apprentices each year and it will create 35 new jobs. Thomson Habitats, based in Cardiff, has employed new staff to deliver newly awarded HS2 contracts, with 35 people working on the HS2 project and the potential for more job opportunities next year.

The map on the following page shows the location of firms contracted to supply HS2 around the UK.



Case Study: Hinkley Point C¹⁸



The power station's reliable, low-carbon electricity will play a vital role for the environment, the economy and citizens through creating jobs and skills across the whole of the UK.

Thus far 11,769 jobs have been created or safeguarded on-site with a target of 25,000 during the build and 71,000 in total. To date, 64% of contracts have been awarded to UK based companies (3,600 businesses). Of these 14% are based in the North of England. The latest projections show approximately £2bn will be invested across the North alone, supporting almost 8,000 jobs.

The project is addressing specific skills shortages through new Centres of Excellence training. Over 750 apprentices have now been trained, providing ongoing workforce development and opportunities for local people to retrain and upskill.

The project also provides benefits including reducing emissions, reducing the volumes of materials used, managing water resources effectively, reducing and reusing waste, and protecting and increasing biodiversity.

Limitations of the Methodology

4.4 This analysis does not provide an exhaustive view. It only includes investment that is currently captured in the pipeline; for example, the pipeline does not currently include all local authority infrastructure investment or investment in rolling stock by train operating companies. For roughly 20% of the pipeline we have either not developed a regional allocation methodology yet, or the investment is in the devolved administrations or overseas, hence this investment has not been included in the regional analysis.

4.5 Our methodology presents investment in each region based on the location of the asset. This does not always show where the benefits of infrastructure are felt across the whole country, for example investment in electricity generation that will benefit all regions. This regional analysis also does not show where the wider socio-economic benefits of investment are felt across the country.

¹⁸ Hinkley Point C, Socio-Economic Impacts Report, 2021.

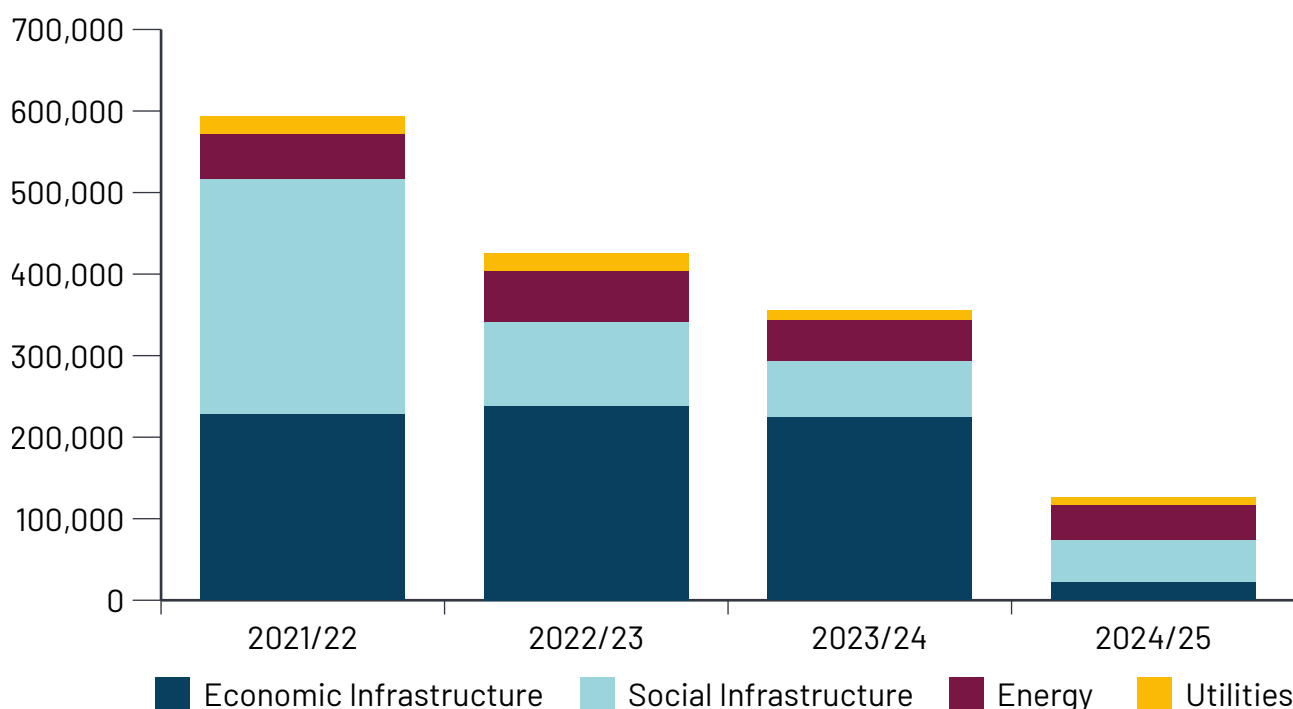
Workforce Demand Analysis from 2021/22 to 2024/25

5.0 This chapter provides an estimate of future workforce demand to deliver the planned investment within the pipeline. This analysis is derived by taking on-site labour data from samples of historic projects and programmes delivered across different sectors and schemes of varying capital intensity and applying them to the planned investment within the pipeline.

Workforce Requirement to Deliver Planned Investment in the Pipeline from 2021/22 to 2024/25

5.1 IPA estimates developed through analysis and modelling suggest that over 425,000 individuals will be required, annually on average, over the period 2021/22 to 2024/25 to deliver the £200 billion of planned investment within the pipeline.¹⁹ Chart 10 below provides the annual profile of the workforce to deliver this planned investment.

Chart 10: Estimated Annual Workforce Requirement to Deliver Planned Investment in the Pipeline from 2021/22 to 2024/25



¹⁹ A granular profile of workforce requirements over the period 2021/22 to 2024/25 and broken down to 100 individual trade skills is provided within the Pipeline workbook.

5.2 The IPA's estimates of future workforce requirements are based solely on the planned investment within the pipeline. We are unable to estimate the workforce requirements for projected investment over the next 10 years until there is greater certainty of the precise schemes that will utilise it.

5.3 The IPA anticipates that future workforce requirements will increase as new public sector schemes are approved via a future Spending Review and new private sector projects are brought to market. For this reason the IPA will continue to provide an update of future workforce requirements to deliver the pipeline as part of future publications.

Limitations of the Analysis

5.4 This analysis does not provide an exhaustive view of future workforce demand and should be treated as an indication of potential workforce demand. The analysis does not account for variations in the complexity of projects, for example where significant tunnelling and boring works are required in relation to a road or rail scheme. In addition, this analysis is limited in the extent to which it considers the adoption of new technologies that may reduce or influence the makeup of the types of skills to deliver projects and programmes in the future.

Annex A: Methodology and Assumptions Used for 10 Year Projection of Investment

6.0 The year projection is based on two approaches.

6.1 Firstly, it projects public investment in economic infrastructure and social infrastructure, assuming investment growth will continue along the pipeline growth rate trend from 2016/17 to 2022/23.

6.2 Secondly, the calculation projects private investment in regulated utilities and other sectors (digital communications, transport, water and waste). This projection is based on the following methodologies:

- Projected investment in regulated utilities is modelled on the average level of annual investment based on previous control period, assuming Government annual efficiency targets of 1.15%. This projection does not represent the level of future price control periods, which are not yet determined. Planned investment in the non-regulated utilities identified in the pipeline post 2024/25, such as Thames Tideway Tunnel, have been included in the ten year projection, but no further future forecast has been made.
- Investment in electricity generation is based on projected energy demand scenarios and IPA modelling.
- Project investment in the oil and gas sector has been forecast to 2030/31 by the industry regulator, the Oil & Gas Authority (OGA). The OGA projection extends the forecasted investment in 2025/26 to 2030/31 in real terms.
- Projected investment in all other sectors is based on the average level of investment in the pipeline between 2016/17 and 2022/23, which has been projected to 2030/31 in real terms.

Annex B: Methodology Used for Regional Analysis of Investment to 2024/25

Regional Allocation where the Asset Location is Known

7.0 Projects in the National Infrastructure and Construction Pipeline are allocated to individual regions (as defined by the ONS), based on the location of the built asset, when the asset is located within one region.

7.1 The allocation of assets to a region, where possible, helps users to filter the data by region to find specific local schemes, or to search for national programmes. It also helps inform maps such as the one included in this document.

7.2 Using this basic methodology, around 40% of the pipeline is allocated to a specific region. Many projects cannot be allocated in this way, because they are national, cross region or are broader investment programmes.

7.3 This basic allocation of projects and programmes to specific regions is not based on the analysis of the benefits that assets will deliver. For example, the pipeline does not currently reflect benefits to the supply chain of the construction and maintenance of an asset.

7.4 This allocation also does not address benefits to users of infrastructure assets once in use. In some, but not all cases, the location of the asset will be the same as where benefits are felt. For example, investment in public services infrastructure, such as schools and hospitals, largely benefit the communities in which the constructed asset is based.

Additional Regional Allocation

7.5 The IPA has worked with other Government departments and regulators to allocate a greater proportion of the pipeline to individual regions, where this cannot be done based simply on the location of an asset. The IPA has applied a methodology that allows investment in national and multi-regional programmes to be allocated appropriately between regions. Using this approach, this report provides analysis that altogether allocates over 80% of the value of the pipeline between 2021/22 and 2024/25 to specific regions. A detailed explanation of how this is done is provided below.

Methodology applied for the IPA's Regional Analysis for Sectors Other than Transport

7.6 Where possible, the total investment for the asset continues to be allocated to the region in which an asset is located. For example, investment in the Geological Waste Disposal Facility is allocated to the North West and Hinkley Point C is allocated to the South West. Apart from transport, nationwide investment in multi-regional programmes (e.g. full fibre roll out) is shared out according to the population or number of households in each region. The methodology is broken down by sector in the table below.

7.7 In addition, for specific utilities sub-sectors, investment has been regionally allocated based on household consumption. The methodology is broken down by sector as seen below:

Allocated per household	<ul style="list-style-type: none"> • Communications (Broadband) • Energy (Electricity generation, oil and gas) • Utilities (Electricity transmission, Gas distribution, smart metres)
Allocated per person	<ul style="list-style-type: none"> • Communications (Digital economy, mobile connectivity) • Education (Balance of spend identified in investing in Britain's Future, Grammar Schools expansion, Multi-academy Trust (MAT) allocations, College Capital Investment Fund (CCIF), National Colleges Capital Investment Fund and further education. • Energy (Nuclear Decommissioning Authority) • Science and Research

Methodology Applied to the Transport Sector

7.8 Transport investment supports the movement of people and goods, with journeys routinely crossing regional (and national) boundaries. Many of our biggest transport projects cross regional boundaries, particularly on the strategic rail and road networks. The regional allocation of spending and the task of apportioning benefits of projects is therefore not straightforward. Issues include:

- Investments physically located in one geographic region often benefit those who live in other regions. For example, investments in London's transport network will benefit not only London residents but also the almost 1 million people who work in London but live elsewhere, in addition to business and leisure visitors to the city.
- Key parts of our transport network serve as international travel 'hubs' for the whole of the country. For various geographic reasons, many of these are concentrated in London, the South East and the East of England. Transport spending that supports travel to and from these 'hubs' benefits the whole country through the international travel and trade that it helps facilitate.
- As large transport investments often involve substantial spending over a long construction period and long-term impacts, the regional distribution of spending at a particular point in time will not necessarily match the regional distribution of benefits in that period or the benefits over the lifetime of the investment.

Where possible, transport investment has been allocated to the region where the asset is located. For cross-regional and unallocated investment, it has been allocated using the methods set out in the table below.

Rail	The analysis uses Network Rail capital investment in renewals and enhancements as proportions. Investment is allocated to the region in which an asset is located. For projects that are cross-regional, investment is apportioned according to track length (kilometres) within the appropriate regions.
Strategic Roads	The analysis includes capital investment in the Roads Investment Strategy. Where possible, investment is allocated to the region in which an asset is located. For investment in maintenance and other unallocated spend, investment is apportioned according to the distribution of road traffic journeys across regions on the Strategic Road Network.
Local Transport	For the integrated transport block, local authority major, local spend on buses, and walking and cycling, where funding has been allocated to a region, the analysis assumes the benefits of spend are where the local authority or local economic partnerships are based. Where later years are allocated spending across regions on a per capita basis. This does not necessarily reflect future regional investment allocations.

7.9 Based on this methodology, IPA's analysis of regional transport investment suggests average annual per capita investment of £295 across all English regions over the period 2021/22 to 2024/25.²⁰

²⁰A full breakdown of average annual per capita transport investment across statistical regions for the period 2021/22 to 2024/25 can be found in the pipeline workbook.

Annex C: Devolved Infrastructure Investment

8.0 The National Infrastructure and Construction Pipeline contains projects and programmes distributed across the UK, but the majority of the value of the pipeline relates to activity in England. This is because most infrastructure spending in Scotland, Wales and Northern Ireland is the responsibility of each devolved administration, and therefore is not included within the pipeline.

8.1 The split between the responsibility of the UK government and each of the devolved administrations for infrastructure policy and funding varies according to the distinct devolution settlement in place, set out below. Each devolved administration produces its own infrastructure planning setting out spending in economic infrastructure:

- The Northern Ireland Executive's Investment Strategy for Northern Ireland 2011-2021 sets out the forward programme for investment in public infrastructure. Details of Government funded infrastructure contracts that have not yet entered procurement are also updated quarterly in the Infrastructure Investment Pipeline.²¹
- The Scottish Government published an Infrastructure Investment Plan with a Project Pipeline in 2015 with an updated Project Pipeline in December 2020.²²
- The Welsh Government published an Infrastructure Investment Plan in 2012 with an updated Project Pipeline published in November 2019.²³

Sector	Devolved administration		
	Scotland	Northern Ireland	Wales
Road	Devolved responsibility	Devolved responsibility	Devolved responsibility
Rail	The Scottish government is responsible for internal services. The UK government is responsible for cross-border daytime services.	Devolved responsibility	Not devolved
Airports	Devolved responsibility. The regulation of air services is a reserved matter.	Devolved responsibility	Devolved responsibility
Ports	Devolved responsibility, with some minor exceptions	Devolved responsibility	Devolved responsibility, with some minor exceptions
Energy	Not devolved	Not devolved	Not devolved
Communications	Not devolved	Not devolved	Not devolved
Water	Devolved responsibility	Devolved responsibility	Devolved responsibility
Flood Defence	Devolved responsibility	Devolved responsibility	Devolved responsibility
Waste	Devolved responsibility	Devolved responsibility	Devolved responsibility
Housing	Devolved responsibility	Devolved responsibility	Devolved responsibility

²¹<https://www.infrastructure-ni.gov.uk/publications/investment-strategy-northern-ireland-2011-2021>

²²<https://www.gov.scot/publications/infrastructure-investment-plan-2015-project-pipeline-update-march-2020/#history>

²³<https://gov.wales/wales-infrastructure-investment-plan-project-pipeline-2019>

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