# UK Regulators' Network

# Infrastructure Data Sharing

**September 2019**

# Infrastructure Data Sharing

## Executive Summary

The UK Regulators' Network (UKRN)[1] commissioned Black & Veatch to report on the extent of 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.

Through a series of interactive sessions and written responses, participants confirmed that collaboration and cooperative behaviours do exist within sectors and that there is a growing industry commitment to share data. Respondents concluded that data is essential for decision making and, although challenging, individual and cross sector collaboration is required to continue improving behaviours and fully enable digital transformation.

The participants identified key developments they believe will drive positive change and create better collaborative working environments throughout the infrastructure industry:

- Regulatory support and guidance on data, including best practice guidelines;
- A common data standard, definitions and shared framework;
- A central data portal that holds the 'what, where and who' for all assets in the infrastructure industry;
- Organisational ownership, culture change and targets on data sharing; and
- To increase the Digital Transformation Task Group (DTTG) to a wider working group, including the telecoms sector.

## Purpose

Data has a huge importance in the infrastructure industry. It is transforming the way companies work and has become a new asset to manage that underpins every sector. Sharing data within sectors, and between sectors, is essential as it has the potential to generate significant benefits for the economy.

The release of three UK government reports (*Industrial Strategy: Building a Britain fit for the Future*, *Transforming Infrastructure Performance*, and *Data for the Public Good*) has set the stage for a transformation in how infrastructure is built, operated and managed in the UK, specifically in relation to asset data.

The National Infrastructure Commission's *Data for the Public Good* report identified key elements in unlocking these benefits and in July 2018, HM Treasury launched the Digital Framework Task Force (DFTG) to deliver the successful adoption and development of the '*Information Management Framework*' for the Built Environment.[2] The UKRN participates in the DFTG's work.

This report seeks to understand the potential role of regulators in encouraging and facilitating data sharing, and possible barriers to this within current regulatory frameworks.

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[1] For more detail on the UK Regulators Network and work programme see: https://www.ukrn.org.uk/about/

[2] For more detail on the work of the DFTG see: https://www.cdbb.cam.ac.uk/DFTG.

# Infrastructure Data Sharing

## Approach

UKRN held three round table discussions, supplemented by additional phone conferences, to establish the current status around data sharing within the infrastructure sector. The focus was on the following questions:

1. To what extent are companies in each sector already sharing infrastructure data? What benefits do you think this sharing has delivered or potentially could deliver?
2. Has there been any change in infrastructure data sharing in each sector in the last few years, e.g. new initiatives, innovative approaches? How successful have these been if so?
3. What are the challenges to sharing of infrastructure data? How do you think these could be overcome?
4. What needs to change to improve data sharing?
5. What is your view on the appropriate role for regulators in this context?

## Respondents

This report is based on responses from the transport, water, energy and telecoms sectors. A full list of participants can be found in Appendix A. The findings are based on the responses and discussions with these participants and may not represent the views of all organisations in the sector.

## Glossary

| | |
|---|---|
| **BIM4Water Task Group** | Promotes the development of BIM capability contributing to delivery of benefits in the Water Sector. |
| **Building Information Modelling** | A process for creating and managing information on a construction project across the project lifecycle. |
| **Centre for Digital Built Britain** | A partnership between the Department for Business, Energy & Industrial Strategy and the University of Cambridge, supported by industry. |
| **Digital Framework Task Group** | The Digital Framework Task Group (DFTG), reporting to the Centre for Digital Built Britain (CDBB) brings together government, industry, academia and regulators to steer the development and adoption of the Information Management Framework for the built environment. |
| **Digital Transformation** | The wide adoption of digital technology and moving towards a new approach, involving large volumes of data, ever increasing connectivity and automation. |
| **Digital Transformation Task Group** | A working group of the Infrastructure Client Group which represents major infrastructure clients and demonstrates collaboration between government and industry. |
| **Digital Twin** | A realistic digital representation of something physical, to improve insights that support better decisions, leading to better outcomes. |
| **Energy Data Task Force** | Launched by the government and Ofgem and looks at reducing costs and facilitating innovation through improving data availability and transparency. |

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| **The Gemini Principles** | Guiding values for the national digital twin and information management framework. |
| **Infrastructure Client Group** | A group of major infrastructure clients that demonstrates the value of effective collaboration between government and industry to support the development and exchange of best practice and delivery improvement. |
| **Internet of Things** | The interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data. |
| **Local Resilience Forum** | Multi-agency partnerships consisting of representatives from local public services, supported by the Highways Agency and public utilities. |
| **National Digital Twin** | An ecosystem of digital twins connected via securely shared data. |
| **National Underground Asset Register** | A Geospatial Commission-led initiative to produce a digital register of underground pipes and cables to reduce accidental damage and improve worker safety. |
| **RIIO-ED1** | RIIO-ED1 is the first electricity distribution price control to reflect the new RIIO (Revenue = Incentives + Innovation + Outputs) model for network regulation. |
| **The Geospatial Commission** | An independent, expert committee within the Cabinet Office, tasked with unlocking the economic, social and environmental opportunities offered by geospatial data and reinforcing the UK's geospatial expertise on the global stage. |
| **Transport Data Task Force** | The body through which the industry cooperates to improve performance by bringing together industry expertise. |

## Abbreviations and Acronyms

| | |
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| **BIM** | Building Information Modelling |
| **CDBB** | Centre for Digital Built Britain |
| **CNAIM** | Common Network Asset Indices Model |
| **DFTG** | Digital Framework Task Group |
| **DNO** | Distribution Network Operator |
| **DTTG** | Digital Transformation Task Group |
| **EU** | European Union |
| **GDPR** | General Data Protection Regulation |
| **GIS** | Geographic Information System |
| **HS2** | High Speed 2 |
| **ICG** | Infrastructure Client Group |
| **ICO** | Information Commissioner's Office |
| **IoT** | Internet of Things |
| **KPI** | Key Performance Indicator |
| **LRF** | Local Resilience Forum |
| **NDT** | National Digital Twin |
| **ORBIS** | Project Offering Better Information Services |
| **QR** | Quick Response Code |

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| **RIIO-ED1** | Revenue = Incentives + Innovation + Outputs for the Electricity Distribution Network |
| **SRWR** | Scottish Road Works Register |
| **UKRN** | UK Regulators' Network |
| **VAULT** | Scottish Community Apparatus Data Vault |

## 1.    Findings – Current Status

Effective data sharing is critical for the UK economy. Sharing data within sectors and combining it with data from other sectors is key to delivering innovative solutions with financial benefits.

Our findings indicate there is already a large degree of data sharing taking place within sectors. There are good examples of co-operation, collaboration and openness around data, with certain sectors such as energy being well advanced in this area. The overall view from respondents was that there has been a distinct move in favour of open data over the past number of years.

However, data sharing between sectors is less advanced. Participants felt that while there are clear benefits to increasing cross-sector data sharing, significant perceived risks, high costs and closed cultures have meant there has been less activity in this area.

### Government-led Initiatives

Participants in the workshops highlighted several Government-led initiatives to promote and facilitate data sharing. The Digital Framework Task Group (DFTG), reporting to the Centre for Digital Built Britain (CDBB) brings together government, industry, academia and regulators to improve the quality and openness of infrastructure data. The DFTG has recently published The Gemini Principles and the Roadmap to the Information Management Framework, two key enablers for a National Digital Twin (NDT).

Running in parallel with the DFTG is the Digital Transformation Task Group (DTTG), a working group of the Infrastructure Client Group (ICG). The ICG represents major UK infrastructure clients and demonstrates collaboration between government and industry. The DTTG has been created to facilitate and accelerate digital transformation in the UK's infrastructure industry and to increase infrastructure performance and national productivity.

Government's Building Information Modelling (BIM) programme is an integral part of the joint industry-government industrial strategy for construction, an enabler to achieve significant improvements in cost, value and carbon performance during construction and operation. The newly published BIM standards means that all government funded projects (i.e. HS2 and Crossrail) follow mandatory data specifications and are constructed in a similar way. BIM is foundational for a digital replica of the country's physical infrastructure.

A further government initiative highlighted by the Environment Agency is the creation of the data.gov.uk site, containing open data published by central government, local authorities and public bodies. Central government has committed to making open data an effective engine for easier access to public data, engraining a 'presumption to publish' mindset except for commercially sensitive and confidential data.

The Environment Agency also highlighted the existence of Local Resilience Forums (LRFs) which are multi-agency partnerships consisting of representatives from local public services (i.e. category 1 responders), supported by the Highways Agency and public utilities (i.e. category 2 responders). During local incidents and catastrophic emergencies, category 2 responders have an obligation to co-operate with category 1 responders, sharing relevant information and data as and when required.

The workshops highlighted the existence of a Scottish Government-owned initiative, known as the Scottish Community Apparatus Data Vault (VAULT). The aim was to centralise information on a national database, storing locations of all underground pipes and cables alongside details of where works are taking place. The VAULT allows the display of information from different Geographic Information Systems (GIS) and transforms it into a common GIS format, accessible via the Scottish Road Works Register (SRWR). A set of pre-agreed transformations are applied to the supplied data, resulting in a map using common colour coding, symbols and terminology. All the major asset-owning organisations in Scotland and the majority of the road authorities have now supplied data to VAULT.

Currently, there is no uniform process for sharing data related to underground utility assets outside of Scotland. The Geospatial Commission is tasked with unlocking economic opportunities offered by geospatial data, and estimates £245m per annum in value could be unlocked by creating a national underground assets register (NUAR) to share data in a consistent and efficient manner by asset owners and their operators. The register would include electricity and phone cables and water and gas pipes, aiming to reduce accidental strikes on underground assets which have an estimated cost of £1.2bn per annum. The Geospatial Commission has committed funding to pilots in London (led by the Greater London Authority) and in the North East to validate assumptions related to the feasibility of creating a national data-sharing platform. Ordnance Survey is leading a similar project working alongside Northern Powergrid, Northern Gas Networks, Northumbrian Water and Openreach. Findings from the pilots will be shared with interested parties and will inform the Commission's decision to proceed with a regional or national build.

Participants also highlighted joint government and industry initiatives, including the Energy Data Task Force, launched by the government and Ofgem, which looks at reducing costs and facilitating innovation through improving data availability and transparency; and the Transport Data Taskforce, the body bringing together passenger and freight operators, Network Rail, the Office of Rail and Road Regulation and the Department for Transport to improve performance.

## Industry-led Initiatives
Participants also pointed to the many industry-led initiatives already taking place relating to improving data and data collaboration within the industry.

### *Water and the Environment*
The Environment Agency highlighted that they have made open data the default within their organisation, with the exemption of confidential data (data that is commercially confidential, confidential due to national security reasons or data that contains personal information).

Respondents from the water sector noted that long-term data cleansing projects exist in the water industry and various pilot projects are underway. They emphasised the existence of the BIM4Water task group (part of the National BIM group), where water utilities are actively sharing details about their asset data and how to define, categorise and structure hierarchies, inventories and catalogues. One participant from the water sector advised that they are involved in multi-stage collaboration and engagement with large European Union (EU) research projects. An example is the 4-year EU research programme which looks at how the water industry can benefit from the use of Fiware, with a focus on maximising the value of the Internet of Things (IoT) and data sharing, that may move the industry forward.

### *Transport*

There are already formal data sharing agreements in place in the transport sector for major infrastructure projects such as High Speed 2 (HS2). Collaborative engagement already occurs between Network Rail's Asset Management teams and representatives from the HS2 construction project due to their interconnected networks. Similar arrangements are in place where Crossrail interconnects with Network Rail on the Anglia Route. Network Rail did however highlight that bi-lateral agreements can be difficult due to the fear that shared data could lead to breaches in privacy, security and safety.

Long-term data cleansing projects such as Project Offering Better Information Services (ORBIS) are aiming to improve Network Rail's approaches to acquisition, storage and use of asset information. Rail representatives agreed there was scope to improve relationships with utility companies, particularly given most major infrastructure projects require collaboration with utilities and that knowing where other assets are located could have huge benefits for the industry. An example was given when a project team at Network Rail hit a telecoms cable under the railway track whilst carrying out works to major infrastructure. Similar events have resulted in the closure of main lines for repair, causing major disruption to customers and huge cost implications for the company.

An example of good practice on recent construction projects is the creation of unique QR codes, introduced on drawings for the remodelling of London Bridge station, as well as the upgrade of other London stations. When each drawing is printed, a unique Quick Response (QR) code is generated and when scanned, the QR code directs the user to an external website which is connected to the document management system. When each drawing is scanned, a clear statement is sent back to the application in either green or red (i.e. the most up-to-date version of a drawing or a statement warning that it has been superseded by a more recent version, respectively). This has helped to reduce costs and delays construction programmes. To have this as a standard tool in the industry is seen to have huge benefits.

Within the aviation industry, it was highlighted that there have been some major infrastructure changes in recent years and consequently a significant drive in data sharing taking place between airports within the UK. Digital transformation is being driven at Board level, with significant investment being channelled into the creation of a dynamic digital twin. A UK airport is set to spend several million pounds creating a common data structure which is leading the way for the rest of the industry.

Representatives from the transport industry felt the industry recognises its role in improving access to data, and the need to coordinate a system-wide approach to create a cultural change across the sector around data sharing.

*Energy*

Energy sector respondents generally agreed that data quality and openness requirements were already well established within their sector. Energy companies already provide considerable volumes of data and information to the regulator, reporting against agreed performance commitments across a range of operational and investment areas and for the purposes of price control reviews. The quality of data is an essential aspect of the regulatory performance evaluation and energy companies engage in detail on this with Ofgem.

Participants also highlighted the industry-wide Common Network Asset Indices Model (CNAIM), a common framework of definitions, principles Dand calculation methodologies, adopted across all British Distribution Network Operators (DNOs) for the assessment, forecasting and regulatory reporting of asset risk. The requirement for a CNAIM grew out of the development of Health Indices and the use of Criticality Indices as an input to the calculation of Asset Risk for the RIIO-ED1 price

control submission. All DNOs and Ofgem representatives worked collectively on the development of the methodology and its implementation, developing a common approach to the measurement of condition-related risk.

As described above, the creation of the Energy Data Task Force, launched by the Government and Ofgem, has been exploring what more can be done to reduce costs and facilitate innovation through improving data availability and transparency. In June 2019, it made five key recommendations[3], which are as follows:

> *Energy Data Task Force Recommendations:*
> *1: Digitalisation of the Energy System* – *Government and Ofgem should use existing legislative and regulatory measures to direct the sector to adopt the principle of Digitalisation of the Energy System in the consumers' interest;*
> *2: Maximising the Value of Data* – *Government and Ofgem should direct the sector to adopt the principle that Energy System Data should be Presumed Open, supported by requirements that data is 'Discoverable, Searchable, Understandable', with common 'Structures, Interfaces and Standards' and is 'Secure and Resilient;'*
> *3: Visibility of Data* – *A Data Catalogue should be established to provide visibility through standardised metadata of Energy System Datasets across Government, the regulator and industry;*
> *4: Coordination of Asset Registration* – *An Asset Registration Strategy should be established in order to increase registration compliance, improve the reliability of data and improve the efficiency of data collection; and*
> *5: Visibility of Infrastructure and Assets* – *A unified Digital System Map of the Energy System should be established to increase visibility of the Energy System infrastructure and assets, enable optimisation of investment and inform the creation of new markets.*

*Telecoms*

Participants suggested that sharing data in the telecoms sector is more difficult than in other sectors due to the competitive conditions within the industry (i.e. there are more commercial risks to businesses when sharing data with what would be a possible competitor). An example of this is where network owners are concerned that their information will be used by competitors to target areas where they plan to invest. However, respondents indicated that limited data sharing still occurs with regulators, developers, other utilities and communications providers where there are legal and regulatory requirements to share data, specifically when it comes to ducts and poles or through Openreach's regulated Physical Infrastructure Access (PIA) product.

Overall, respondents recognised the benefits to sharing data, as described below:
- As fibre network deployment is still in its infancy, data sharing would allow infrastructure providers to more appropriately select areas for investment;
- It may mitigate the likelihood of two or more operators digging up the same road twice, hence contributing to a more effective rollout of fibre with minimal risk of disruption;
- Creating greater visibility of the rollout of fibre will allow public subsidies and state aid finances to be better allocated to areas with limited investment;
- Although detailed data is not normally readily shared with other companies in the sector, it was highlighted that information is regularly shared to the areas where fibre is being rolled out;

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[3] Energy Data Taskforce, *A Strategy for a Modern Digitalised Energy System*:
https://es.catapult.org.uk/news/energy-data-taskforce-report/

- The sharing of infrastructure location information is key to helping reduce damage to equipment and infrastructure when civils works are being carried out.

Telecoms participants recognised that there are opportunities for local authorities to use their statutory powers to bring utilities together and coordinate the sharing of relevant information, prioritising the decision to invest for all parties. This was emphasised as a way to help speed up the roll out of networks and generate cost reductions by resolving streetwork obstacles earlier in the project lifecycle. They also felt that there may be opportunities to investigate the launch of a comprehensive database of infrastructure which could encompass both location data and the coordination of civil works, although stressed that this would need the active support of the industry and regulators.

## Cross-sector Initiatives

Participants discussed the existence of cross-sector data sharing initiatives. An example being a London borough currently exploring pooling asset data with the Highways Agency. A further example of cross-sector data sharing is collaboration within the multi-stakeholder SIM4NEXUS research project to improve its understanding of the inter-relationships and interdependencies of water, energy and land management in the South West of England.

Another respondent noted the existence of the online site digdat.co.uk, which enables 24/7 access to plans of underground assets, providing compliance with statutory requirements to protect assets from damage and keeping contractors and the public safe. Utility assets currently available to view on digdat.co.uk are Anglian Water, Bristol Water, Hartlepool Water, Thames Water and Virgin Media.

## Summary

The study found that data is already being made available on fairly open terms within sectors, with a shift over recent years towards more open data. However, some sectors are more advanced than others in taking this forward, and despite a range of Government initiatives to promote and facilitate data sharing and drive innovation, data sharing across sectors is limited and often at the stage of initial trials and pilot schemes.

## 2. Findings – Barriers and Challenges

Although a significant amount of data is already being shared (as described in Section 1), the workshops found that there are a number of challenges and barriers preventing the development of a fully enabled digital transformation. The main challenges are described below[4]:

- **Confidential data**. Respondents noted industry concerns over the risk of misuse of confidential data (data that is commercially confidential, confidential due to national security reasons or data that contains personal information) particularly when this is provided to competitors. Respondents also recognised the importance of regulatory data protection requirements such as the General Data Protection Regulation (GDPR) in helping protect some types of data, but noted that this increased the complexity of sharing data. Guidance from the regulators clarifying what data can be shared, including best practice guidelines was deemed to be a requirement moving forward.

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[4] These recommendations emerge from the views and experiences of participants we engaged with during the process of compiling the report. While we endeavoured to engage with a wide range of industry representatives as part of the process of compiling this report, it is possible that those we did not speak to are less engaged with these issues and therefore the barriers for them may be greater.

- **Common data standard**. Participants highlighted that different sectors have different data standards leading to inconsistencies in data sharing and a lack of compatibility across sectors. This could also apply within sectors, where different organisations or different parts of the same organisation collected, classified and structured data differently. Many respondents suggested that there is a requirement for a common language across sectors i.e. in the form of a common data standard, definitions and shared framework.
- **Liability**. Some companies are worried about the liability risks associated with sharing data about asset location or quality. This was particularly the case if that data was old or low quality.
- **Data quality**. Where companies are required to provide data to the regulator, for instance for purposes of price controls, there can be concern about the extent to which they are able to be open about data quality issues, particularly with historic or unaudited data, without being penalised. Both companies and regulators will need to have transparent, open conversations about wider data-sharing where this is the case.
- **Lack of a user-friendly central portal**. There were discussions around current data platforms, such as data.gov.uk, that are not always deemed to be user friendly and can be difficult to navigate. Participants agreed that the lack of a central portal to access other organisations' asset data makes data sharing more difficult, and that a central gateway containing the 'what is it, where is it and who owns it' from each organisation would be beneficial in moving things forward.
- **Organisational culture**. Participants highlighted that organisational culture can be a potential factor inhibiting data sharing. A poor understanding of what data can be shared and concern about risks around security and liability, particularly among senior management, means this work is not always prioritised within organisations. Named accountability at Board level and defined ownership at senior level were suggested ways for data sharing to be a priority within organisations. Training and guidelines on data sharing (that are understood at all levels of the organisation) were seen as ways to improve organisational culture, with data quality measures incorporated into organisations' Key Performance Indicators (KPIs).

## 3.    Findings – The Role of the Regulator

Overall, participants felt that the current regulatory structures, including sector specific regulators and the Information Commissioner's Office (ICO), were sufficient to support the transition to interoperable infrastructure data across the utilities and transport sectors. However, there was agreement that further regulatory support and guidance in this area would be beneficial.

Participants felt that different regulatory requirements, expectations and practices appear to contribute to inconsistencies in data sharing and data quality across sectors, suggesting there is a need for a consistent data standard, definitions and shared framework. Most participants felt this should be industry-led, with support from regulating bodies to help with its development. This was considered to be a potential catalyst to drive a higher level of data quality within the industry. In telecoms, respondents felt that the role of the regulator is currently suitable to monitor and effectively hold the operator accountable for the data which they disclose. However, more rigorous monitoring of data being accurate, coupled with more clarity and transparency over handling of commercially sensitive data by regulators, would be desirable.

A number of respondents felt that because data sharing is not generally mandated by regulators, the cost of data sharing is not included when regulators calculate costs and set appropriate rates of return in the price control processes. This means that infrastructure data sharing initiatives that are likely to

incur costs for the company are not prioritised. Some participants felt that their companies were therefore unlikely to fully commit to the resources and focus needed to make infrastructure data sharing happen, particularly across sectors, unless this was mandated by regulators. However, there was recognition that there were likely to be mixed views within companies on the desirability of mandating this. Some participants also queried whether regulators themselves had the skills and organisational capacity to provide the thought leadership and quality control required if data sharing was mandated.

Despite these reservations, most participants agreed that an enhanced role for regulators would drive positive change and better collaboration. Ideas for what this could involve included regulators providing:

- Promotion of data standards, definitions, and shared frameworks, to enable easier and more confident data sharing;
- Further clarity, granularity and definition of what data can be shared, including best practice guidelines; and
- Guidelines on consistent data quality measures and targets.

Participants concluded that whether regulatory input is in the form of softer encouragement or stronger mandated requirements, such as the creation of a common data standard, it is an important part of improving data sharing moving forward.

This chimes with the conclusions made in the DTTG report '*Commercial Confidentiality: A Barrier to Data Sharing*' which suggests regulators should take positive actions to grow a data sharing mind-set in industry, with a need to recognise that everyone is starting from a different level.

## 4.    Findings – Conclusions and Recommendations

With the acceleration of innovation and digital technologies, the use of data and data sharing is becoming essential. Discussions with regulators and regulated companies has found that all sectors see some value in sharing infrastructure data, that collaborative and cooperative behaviours do exist, and there is a growing commitment to sharing data. Many initiatives are already taking place relating to data sharing, although these tend to be sector specific and more work is needed to build the foundations and relationships that will enable effective, widespread cross-sector data sharing. All participants agreed that a central gateway containing the 'what, where and who' from each organisation in each sector would be helpful moving forward.

As described in Section 2, challenges and barriers relating to infrastructure data sharing are preventing the development of a fully enabled digital transformation. Respondents noted a number of barriers to greater sharing of data, including concern that sharing low quality data might open them up to legal challenge and liabilities; a lack of a common language and compatible data standards and architecture across sectors, exacerbated by different regulatory approaches and requirements; and concern over the risk of misuse of confidential data and navigating complex data protection requirements such as GDPR, sometimes resulting in an overly cautious approach to data sharing beyond that necessary to address the issues that would benefit from further exploration and challenge.

Regulators powers to compel regulated companies to share data are limited. Where those powers exist, they would need to be clearly linked to existing duties and powers and be required for the regulator to conduct its functions. Exercising these powers would need to be proportionate in the burden placed on companies and supported by a clear costs/benefits case. Given this, and the fact that many regulated companies are already taking steps in this area, an approach that focuses on encouraging and supporting, rather than compelling, companies to engage in this work is likely to be more fruitful.

Overall, respondents did not perceive regulation to be a barrier to improved data sharing but agreed that transformation into a digital era would be difficult to do without support and guidance from the regulators. They felt that an enhanced role for regulators (i.e. the promotion of data standards and frameworks and further granularity and definition of what data can be shared) would be a driver for positive change and better collaboration.

Some significant steps have already been taken to unlock the benefits to consumers and the economy of sharing infrastructure data more widely. Drawing together the input that we received to this report, we have identified a number of key recommendations that would support industry to build on this work. We have also identified a number of shorter term 'quick wins' that would help support the delivery of these recommendations, acting as catalysts to improve the future of data sharing and wider collaboration between sectors. These are set out below.

# Infrastructure Data Sharing

**UKrn**

## Recommendations

**Data Support & Guidance**
[Regulators]

- Regulators to provide guidance around what data can be shared.
- Regulators to produce best practice guidelines around sharing data.

**Common Data Standard**
[Industry with regulatory support]

- Industry to work collaboratively, with support from regulators, to agree common data standards, definitions and shared framework.

**Central Data Portal**
[Government/ Regulators]

- Government and/or regulators to explore the creation of a central data portal that holds the 'what, where and who' for each asset in each sector.

## Short Term Recommendations / Quick Wins

**Increase DTTG**
[ICG]

- The Infrastructure Client Group should consider increasing the membership of the Digital Transformation Task Group to a wider working group incorporating more industry representatives.

**Ownership and Culture**
[Industry]

- Defined ownership of data at senior level.
- Named accountability at Board level (i.e. a Chief Information Officer).
- Organisational culture - training and guidelines on data sharing, understood at all levels of the organsiation.

**Organisational Targets**
[Regulators / Industry]

- Consistent data quality measures to become part of company KPIs so that the whole business is focused on improving capabilities.

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This study highlights long and short-term recommendations, for the infrastructure industry, regulators and governments, that can break down the barriers to data sharing and create a culture where organisations are able to safely and securely share data across sectors.

The report focuses on the areas that require further action to enable regulators and regulated companies to contribute to the DFTG's ambitions to lead the development and adoption of an information management framework for the built environment, and the Government's initiative to create a digitally integrated nation.

A coordinated and collaborative approach by all parties involved has the potential to unlock significant social, economic and environmental benefits for the UK, helping deliver a digital revolution.

## Appendix A

This report is based on participation and responses from the following companies:

Anglian Water
CAA
CityFibre
Digital Framework Task Group
Environment Agency
Heathrow Airport
Highways England
HS2
Network Rail
Ofcom
Ofgem
Ofwat
Openreach
ORR
Sellafield
South West Water
SP Energy Networks
TfL
Thames Tideway Tunnel
Thames Water
Utility Regulation NI