



Cross sector infrastructure interactions: next steps

Findings from our call for evidence

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About this document

This is UK Regulators Network's (UKRN's) first stage evidence review of issues that arise when the installation of new infrastructure must cross or otherwise 'interact' with in-situ infrastructure. The utility services that UKRN's members regulate are critical to the success of the British economy, with overall infrastructure spend expected to be over £200bn to the end of the decade, a significant proportion of which will be in regulated sectors. This document summarises the evidence submitted to UKRN of the issues arising when new infrastructure needs to cross in-situ infrastructure and sets out:

- why this work is important to regulators, and the economy more widely;
- our initial findings from the stakeholder engagement to date;
- the economic characterisation of the current issues and;
- the next steps for our work on interactions.

This work forms one part of our work on cross sector infrastructure. The other workstreams include:

- producing an Investor Guide to support the investment community in its understanding of how the UK regulated utility sectors work;
- a summary report on enabling innovation that focuses on current practices across the regulated sectors and the way that each regulator supports or promotes innovation; and
- a summary report on enabling investment 'ahead-of-need' that focuses on current practices across the regulated sectors and the way each regulator assesses strategic investment.

We welcome questions or comments on our findings so far and on our next steps. Please contact John Holmes (John.Holmes@orr.gsi.gov.uk) or Stephen Beel (Stephen.Beel@ofgem.gov.uk).

About the UK Regulators Network

UKRN is a network formed by the UK's economic regulators:

- The Civil Aviation Authority (CAA)
- The Financial Conduct Authority (FCA)¹, including the Payment Systems Regulator (PSR)
- Office of Communications (Ofcom)
- Office of Gas and Electricity Markets (Ofgem)
- Water Services Regulation Authority (Ofwat)
- Office of Rail Regulation (ORR)
- Northern Ireland Authority for Utility Regulation (Utility Regulator)

¹ Although it has competition and consumer protection functions, the FCA is not classed by HM Government as an economic regulator.

Monitor, the sector regulator for health, participates in the network and its projects as appropriate. The Water Industry Commission for Scotland (WICS) and Legal Services Board (LSB) are contributing members which generally participate in projects as observers.

Contributors to this document

This document has been produced by the following regulators:²

- Ofgem;
- Ofcom;
- ORR; and
- Ofwat.

² The CAA provided peer review for this report.

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I. Summary

Purpose of this report

- I.1. This document reports the findings from our evidence to date on the issues experienced when crossing, or working near, the in-situ assets of regulated utility network operators ('network operators'). We propose further work to explore the scale of issues identified that may lead to higher costs and, if appropriate, recommend practices or measures to address any barriers to fair, reasonable and cost-effective engagement with network operators.

Infrastructure 'interactions'

- I.2. 'Interactions' with, or between, network operators arise because of the need to cross or work near in-situ infrastructure assets. This will usually arise where new infrastructure is being installed by a network operator or third party developer. For example, an electricity network operator may need to install new electrical cables which cross existing rail or water network assets. Similarly, property developers or civil engineering projects developing new homes, commercial business parks, flood defences or highways will need to interact with in-situ assets. In these cases, the other network operators or third parties act as a 'client', entering into commercial arrangements to cross the in-situ assets.
- I.3. When interactions arise, existing in-situ assets may need to be modified, or measures taken to protect the asset from disturbance and ensure safe working, all of which can lead to additional cost for the network operator. These costs are then recovered from the party crossing the in-situ assets (i.e. either the other network operator or third party developer.)
- I.4. Interactions between new and in-situ infrastructure has been identified as one area where there may be further efficiencies to gain. As sector economic regulators we are interested in two issues:
- first, whether network operators, subject to economic regulation, are potentially facing higher costs themselves when installing or maintaining assets, with consequences for the customers or consumers in each regulated sector; and
 - second, whether network operators, across sectors, are potentially imposing higher costs on other types of infrastructure and therefore potentially leading to high costs for the economy more widely.

Findings from our evidence so far

- I.5. We have undertaken a broad consultation, meeting key stakeholders, holding an infrastructure forum in June 2014 and issuing a call for evidence. We received views from:
- regulated and unregulated network operators from the energy, transport and water sectors;
 - trade bodies;
 - government departments; and
 - industry networks.
- I.6. Views from stakeholders suggests that:

- the issues affecting interactions are not so big that they prevent investments taking place;
- they can in some cases make the process more difficult, time-consuming or costly; and
- there are examples of the process around interactions working well.

1.7. Issues or concerns with how interactions take place raised by respondents are summarised in the table below.

Table 1.1 – Issues raised with interactions

Issue
Clear points of contact: In some cases, respondents noted it was not clear who to contact or who was the relevant responsible person.
Firm timescales: There may be instances of failure to offer, or meet, timescales for provision of information, agreements, on-site works, visits or other steps necessary to deliver the project.
Design specifications and information: The client may often be dependent upon agreeing to, or meeting, design standards set by the in-situ operator with little information available to the client about these standards.
Governance and decision making: Some respondents noted it was difficult to reach binding agreements or a settled position on design, planning or other issues.
Accuracy of asset information: The information about the position and quality of in-situ assets is not always reliable.
Consistent treatment: A number of respondents noted that similar projects may be treated very differently by the same network operator, with different processes, design standards or access agreements.
Costing transparency: Some concern was raised with how costs or charges are determined and levied.
Access agreements and financial terms: A number of cases were cited of access agreements that were perceived as either costly or imbalanced, for example imposing greater liabilities on the client than the in-situ asset owner.
Adoption / learning of best practice: Many respondents considered there were few consistent opportunities to capture and share best practice. Only on some of the very largest projects was this more formalised.
Co-ordination of on-site access: Once assets are installed both parties may need access in the future, usually for maintenance. Some concerns were raised that information or processes were not available to help co-ordinate on-site maintenance.

Source: UKRN Call for Evidence

1.8. In economic terms, we could characterise the cause of problems raised as market failures:

- *monopoly power* that network operators' hold over their own in-situ assets; and
- *negative externalities*, where costs from in-efficiency are not borne by network operators of in-situ assets.

1.9. The *monopoly* over assets could lead to weak incentives on network operators to offer good quality services, such as prompt timescales, and potentially to charge higher prices for design approvals, diversion works or other agreements to businesses that must cross or interact with in-situ assets. In particular, monopoly may lead to the following.

- Imbalance in bargaining power – businesses wishing to interact with a network operator of in-situ assets may have a relatively weak bargaining position, resulting in poor service standards, opaque costing methods or other issues which make interaction time-consuming and costly.

- Information asymmetry – network operators of in-situ assets may have little incentive to disclose information about their networks or establish transparent or consistent practices for dealing with third parties, which weaken third parties' ability to challenge network operators effectively.
- Excessive risk-transfer – network operators of in-situ assets could demand high or unlimited liability from a third party, raising insurance premiums and the length of negotiations.

I.10. There were a number of issues raised in our engagement with stakeholders which do not sit directly within the scope of this project, namely street works and issues with wayleave agreements. Nonetheless, we have captured comments made by stakeholders within this document and we will consider further if there is a role for economic regulators or whether these are issues for government.

Next steps

I.11. We have developed a clearer picture of the issues facing those installing infrastructure. Nevertheless, the evidence to date has not allowed us to identify, on a systematic basis, where problems arise, and gaps remain in our understanding. This includes:

- the scale and significance of the issues, specifically how often and on what types of projects problems may arise;
- whether the principal cause of problems differ, for example by type of project, by sector or from the behaviour of specific network operators; and
- whether the regulatory regimes in each sector promote, or undermine, cost-effective interactions.

I.12. We are also aware that work is on-going by Government and other organisations to improve the processes and working practices in construction and infrastructure. It is important that the impact of these developments can be considered as we work towards a firm set of proposals.

I.13. To address these gaps we intend to do the following.

- Compare the practice of network operators when dealing with requests to cross infrastructure, noting good or best practice that other network operators and sectors could benefit from.
- Review good practice from other sectors that regularly install infrastructure, including airports and ports amongst others. Liaise with stakeholders, in particular, industry trade associations, to understand what has worked well in their experience.
- Seek further evidence of the scale and frequency of problems when interacting with network operators, drawing this out through case studies.
- Undertake a comparative analysis of the rules or practices required by economic regulators, to identify if there is any impact from sector-specific regulation.
- If appropriate, develop and seek views on any emerging remedies and views on how these may be most effectively implemented.

Stakeholder engagement

I.14. Non-confidential responses to our call for evidence are published on UKRN's website.³ We will be following up on some of the issues raised by stakeholders in coming months. Any stakeholder interested in or affected by the issues in this document should feel free to contact John Holmes.

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Links to other UKRN projects

- I.15. This project is specifically concerned with interactions between owners and developers of network infrastructure. We are separately undertaking a project reviewing cross-sector infrastructure interdependencies. Specifically, we are reviewing how resilience is managed in each sector and whether we, as regulators, should collectively do more against common threats or vulnerabilities and resilience against the loss of a service provided by another regulated sector.
- I.16. The UKRN is also undertaking a project looking at the affordability issues consumers of regulated services face. The project is specifically seeking to better understand the drivers of affordability and consider whether there are opportunities for greater alignment between regulators when dealing with affordability issues.

Document structure

I.17. The remainder of this document is structured as follows:

- Section 2 – outlines the importance of efficient infrastructure investment and the circumstances where interactions occur.
- Section 3 – presents the findings of our evidence review.
- Section 4 – presents the analysis of the evidence received and the next steps.

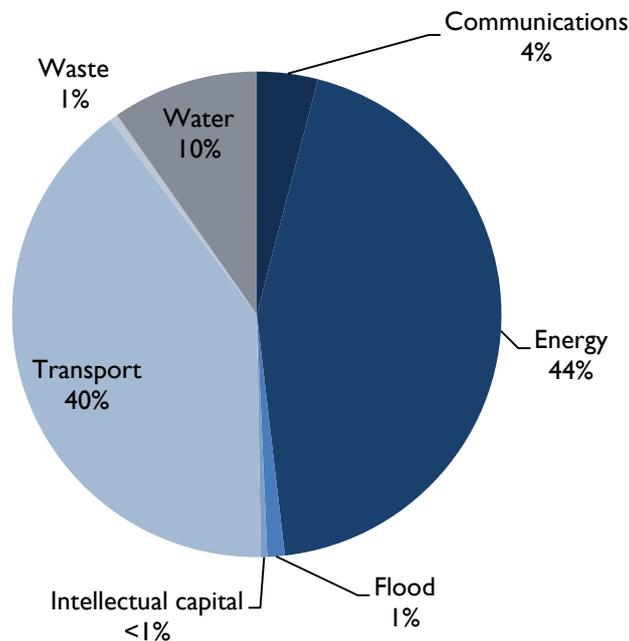
³ See http://www.ukrn.org.uk/?page_id=308

2. The importance of efficient infrastructure interactions

Infrastructure in the UK: its scale and benefit to consumers

- 2.1. Regulated network operators own and manage large parts of our national infrastructure, much of which was developed under public ownership and subsequently privatised. This infrastructure includes water, energy, and communication services (voice and data communications) and transport networks. These networks are often regional or national monopolies. This means that economic regulation is necessary to protect consumers’ interests, ensuring the management and operation of these assets is done efficiently and investments meet the changing needs of consumers, society and the economy.
- 2.2. There has been significant investment in economically regulated sectors since privatisation, reversing historic under-investment in some sectors. This includes over £100bn of capital expenditure by regulated companies in the last five years alone across the rail, energy, water & wastewater, aviation and telecoms sectors.
- 2.3. Despite the significant sums invested in recent years, the government remains concerned that overall infrastructure investment across the economy has not been sufficient to meet the UK’s future needs. It wants to reverse this and has published the National Infrastructure Plan to set out how this can be achieved.⁴ This includes a forward pipeline of potential infrastructure investment of over £200bn to 2020, with much of this falling within the regulated utility sectors.

Figure 2.1: Infrastructure, total investment 2020 by sector



Source: the National Infrastructure Pipeline, HM Treasury, 2014.

- 2.4. This investment has a critical impact on consumers: those relying on the services delivered by this infrastructure and who may also fund some or all of this investment as bill payers or tax payers.

⁴ The National Infrastructure plan - <https://www.gov.uk/government/collections/national-infrastructure-plan>

However, investment in infrastructure will also bring substantial benefits to its consumers. It creates wider choice and higher quality services, amongst other things allowing consumers to:

- enjoy better mobile coverage and services, for example, investment in 4G networks will increase bandwidth, enhancing the services and products available such as streaming movies whilst on the go;
- enjoy greater frequency and reliability of rail services, for example HS2 is expected to reduce journey times for a range of destinations that can use part of the new high-speed link and free up capacity on the existing rail network;
- ensure that new forms of energy generation are efficiently and reliably connected and delivered where it is needed; and
- ensure water and sewerage infrastructure allows us to meet consumers' expectations of environmental protection.

UKRN's work on interactions

Understanding infrastructure interactions

- 2.5. The UK is crossed by a complex network of pipes, wires, railway tracks and other infrastructure owned and managed by regulated utility network operators. Network operators will undertake a range of work on their infrastructure, including:
- renewing, repairing and maintaining existing assets;
 - facilitating planned new capacity to meet expected future demand; or
 - reacting to serve unplanned demand, such as new connections to the network.
- 2.6. 'Interactions' with, or between, network operators arise because of the need to cross or work near these in-situ infrastructure assets. This will usually arise where new infrastructure is being installed by a network operator or third party developer. For example, an electricity network operator will install new electrical cables potentially crossing existing assets. Similarly, property developers or civil engineering projects developing new homes, commercial business parks, flood defences or highways will need to interact with in-situ assets.
- 2.7. When interactions arise, existing in-situ assets may need to be modified, or measures taken to protect the asset from disturbance and ensure safe working. Prior to such works, agreement is needed to allow access to land and on the engineering design suitable for the works. These interactions can lead to additional cost for the operator of the in-situ asset. These costs are then recovered from the other network operator or third party, which acts as a 'client' by entering into commercial arrangements to cross the in-situ assets.
- 2.8. By their nature, many interactions are also likely to be 'cross sector', meaning that several network operators' assets are affected by new infrastructure, or they must deal with one another. For example, a new rail line or water main will cover a long distance and is likely to pass through (and therefore 'interact' with) multiple water, sewerage, electricity and gas operators' networks, as well as roads and privately owned assets. As a result, legal and commercial arrangements must be agreed to give access to land and protect the existing in-situ assets.

- 2.9. Interactions are often inherently complex. They are influenced by a range of legal, regulatory, commercial and voluntary frameworks all working together, and in some cases, against one another. The differences between these frameworks, and the fact that regulated and third party developers work within different frameworks, are part of the reason interactions can be complex.

Importance of efficient interactions to regulators

- 2.10. The level and efficiency of investments undertaken by a regulated network operator is of key concern to economic regulators. Economic regulators operate under a range of statutory duties. Although these duties differ between sectors they share a common focus on protecting the interests of consumers or customers and ensuring network operators deliver services economically and efficiently. The investments made by network operators are, for the most part, directly paid for by customers through their bills. Regulators aim to ensure that investment by operators represents value for money, in part so that essential utility services remain affordable to a wide range of consumers.
- 2.11. Although promoting efficiency is a key objective for sector economic regulators, scrutiny is mainly focused on the activities of the regulated operator and its treatment of its own customers. For example, the efficiency of installing and maintaining an electricity distribution network for the benefit of energy supply companies and consumers of electricity. This project allows the UKRN to consider the interactions with and between regulated networks and the extent that incentives exist to deal efficiently and fairly with third party clients installing infrastructure.

Wider concerns with the cost of infrastructure

- 2.12. Government is also concerned that the cost of delivering infrastructure in the UK is too expensive. It identified a number of potential causes of higher cost:
- policy issues (e.g. planning or regulatory compliance);
 - funder issues (e.g. stop-start investment); and
 - delivery issues (e.g. effective co-ordination and partnership working).⁵
- 2.13. The government's study found that higher costs occurred most commonly in early project formulation and the pre-construction phase of infrastructure projects. It set a target of 15 per cent reduction in the costs of infrastructure delivery. Recent evidence has found improvements in collaborative behaviours that support better delivery of outcomes, leading to over £3.4 billion of savings.⁶ Regulated sectors, in particular water and rail, are seen to have made the most progress in working collaboratively with infrastructure clients.

Our work on interactions

- 2.14. Given the expected on-going pressure on consumer bills and an investment programme which will heavily revolve around the regulated sectors, the UKRN is seeking to understand if interactions with or between network operators could work more efficiently.

⁵ HM Treasury, *Infrastructure Cost Review: Main Report*, December 2010.

⁶ HM Treasury, *Infrastructure Cost Review: Measuring and Improving Delivery*, July 2014.

- 2.15. The objective of our work is to identify the practices or measures that can facilitate fair, reasonable and cost-effective engagement with or between network operators when crossing, or working in close proximity to, in-situ assets. We aim to identify the barriers or potential causes of inefficiencies and, where appropriate, encourage specific actions that regulated networks, industry more widely, government or economic regulators could take to adopt cost-saving measures.
- 2.16. Various stakeholders have indicated that interactions with network operators can be time-consuming and costly. This report sets out our findings so far, mainly from our call for evidence but also our ongoing dialogue with interested parties. However, the evidence available is mainly anecdotal, supported by some specific case studies where interactions have not proceeded smoothly, or have in fact worked well. A clearer understanding of the problem is needed: its size, nature and location; how often and on what types of projects problems arise; or whether behaviour differs across regulated sectors. Our next steps aim to address these gaps, and are presented in Section 4.

3. Evidence review

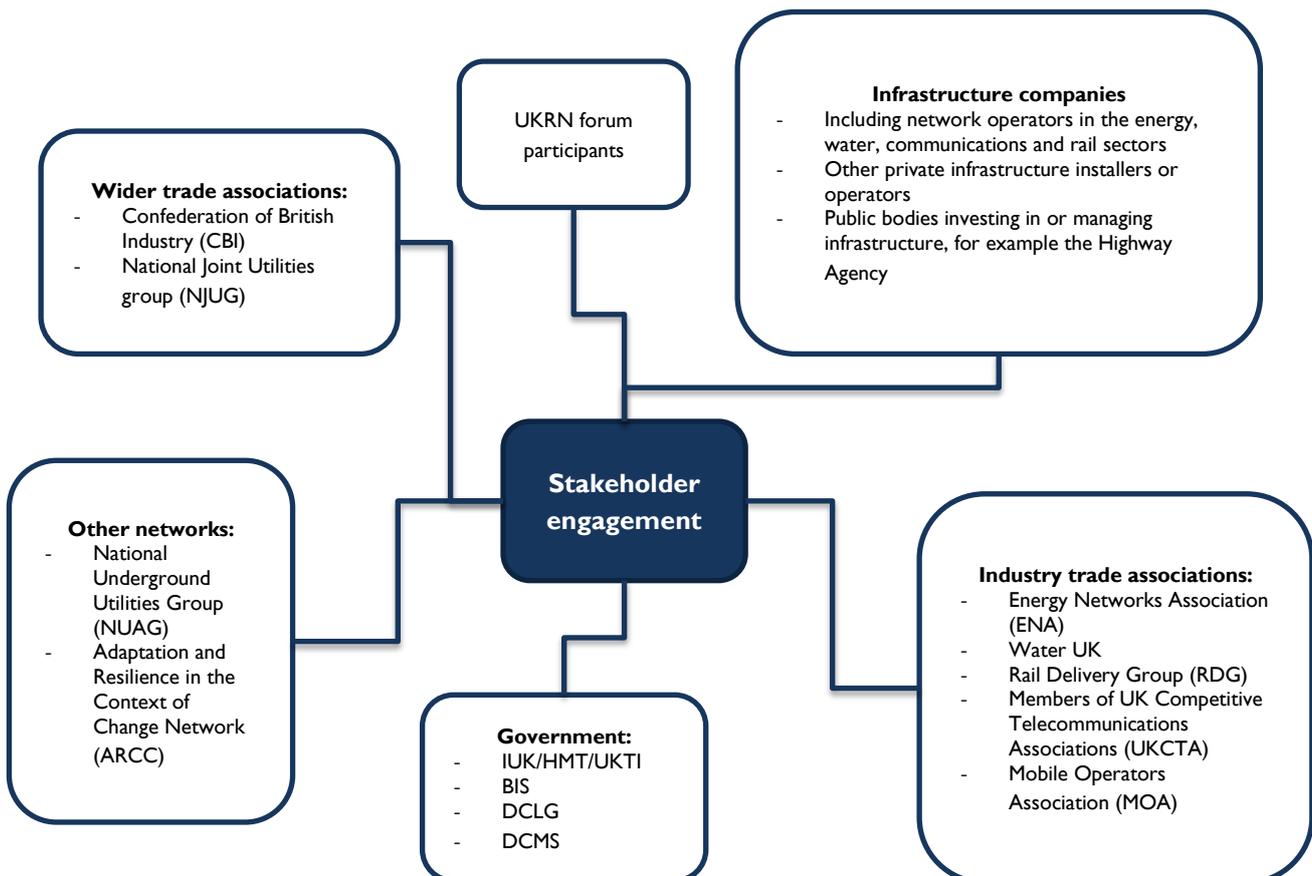
Stakeholder engagement

3.1. In seeking to build a thorough evidence base, we have sought views from all interested parties by undertaking an extensive programme of engagement. This has included:

- Ofgem, as the lead regulator of this work, hosting a UKRN cross sector infrastructure forum in June 2014 attended by companies from the energy, water, communications and rail sectors;
- bi-lateral discussions with trade bodies from the energy, water, rail and communications sectors,
- issuing a Call for Evidence seeking stakeholder views and experiences with infrastructure interactions; and
- holding an on-going dialogue with interested government departments, including HMT, DCLG and DCMS.

3.2. This is depicted in the diagram below:

Figure 3.1 – Stakeholder engagement



3.3. The rest of this section presents the evidence we have collected over this period.

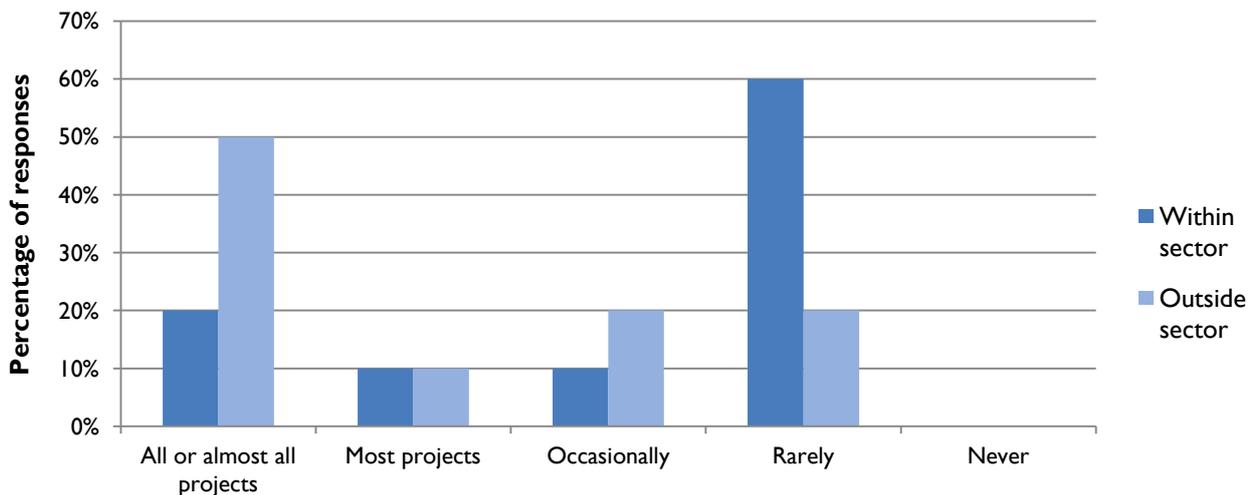
Understanding interactions

- 3.4. We received responses to our call for evidence from a range of stakeholders from the energy, water and transport sectors.⁷ Many of these responses were confidential but where possible we have reflected the issues or concerns raised in this summary. We have supplemented this information with discussions we have had with trade bodies and other such stakeholders as well as the industry forum we held in June 2014.
- 3.5. Within our call for evidence, we asked stakeholders a number of questions seeking to better understand context in which interactions occur. Specifically, when needing to interact with another operator, we asked:
- how often interactions occur (a) within its sector and (b) outside its sector; and
 - what size of projects these usually occurred in.
- 3.6. The responses we received captured infrastructure spend of over £10bn per annum across the rail, energy and water sectors.

Frequency of interactions

3.7. Figure 3.2 presents the results for how often interactions within and outside of the respondent’s own utility sector arise. Interactions are most prominent with operators outside of the respondents’ own sector. This will be dependent on the type of operator that is requesting the interaction. For example, operators with large networks, such as railways, will interact more frequently with a wider range of other network operators or third party firms installing infrastructure.

Figure 3.2: frequency of interactions



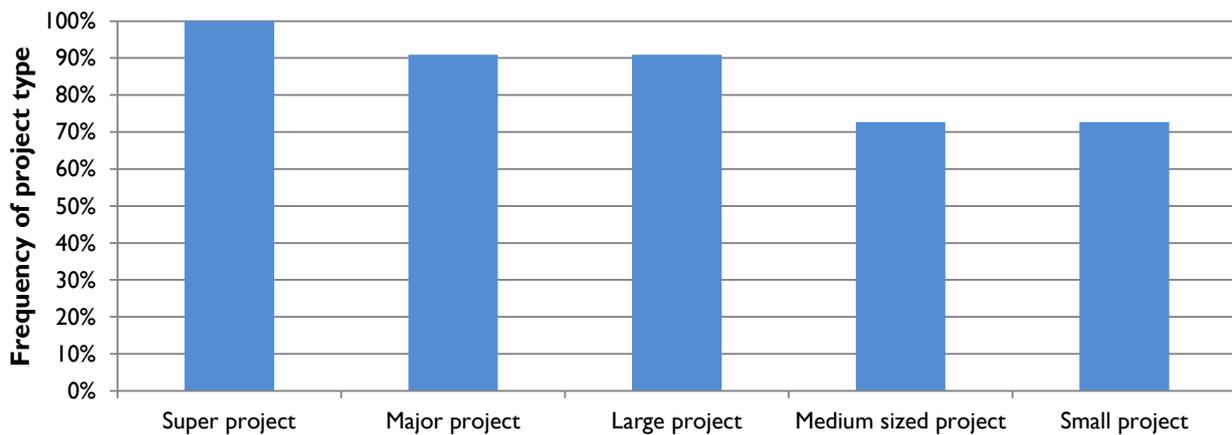
Source: UKRN Call for Evidence

⁷ We have published the non-confidential responses from Anglian Water, South Staffs Water, National Gas Grid Distribution, National Grid Transmission, Network Rail, NJUG, Northumbrian Water, RWE and Western Power Distribution on the UKRN website (http://www.ukrn.org.uk/?page_id=308). Additionally, we received a number of confidential responses which have not been published but do inform this document.

Projects which attract interactions

3.8. Figure 3.3 illustrates the frequency that respondents' considered different types of project results in interactions with a network operator is required. Larger projects nearly always require interactions, but even small projects involve interactions (just over 70%).

Figure 3.3: the type of project where interactions occur



Source: UKRN Call for Evidence

Size of the interaction issue

3.9. We asked stakeholders to provide estimates of the costs incurred by having to interact with the in-situ assets of network operators. Most respondents noted that these varied depending upon the type of project undertaken. It was also noted that these costs are not generally captured or recorded separately and may arise as the project evolves, so they cannot be fully anticipated upfront.

Stakeholders experience with interactions

3.10. We have sought to draw out the specific issues experienced when having to interact with the in-situ assets of a network operator.

The process for interacting

3.11. There are a number of issues that were raised that can be grouped under how interactions are initiated and managed.

Identifying the correct point of contact

3.12. In order to better understand how interactions are managed by network operators, we asked stakeholders to identify which department they would contact if arranging to cross or interact with an operator's in-situ assets.

3.13. Responses suggest that this varies greatly depending on the network operator in question, and may in part depend upon the stage at which the project requires the interaction. The departments most commonly contacted include the legal, land/property, commercial or technical/engineering teams. Contact may also occur through the operators designated contractor or the finance department.

- 3.14. A number of respondents noted the importance of identifying the right contact within the network operator with which they were attempting to interact, and that this is one of the main area problems occur. For example, a water utility company noted that one of the main drivers to the success of an interaction is regular communication with the other network operator involved, with a single point of contact who has the appropriate authority to make decisions within the organisation.
- 3.15. Responses to the call for evidence highlighted that a number of network operators do not have a central point of contact or department to deal with interaction requests. Instead requests tend to feed-in through various different departments within the same operator, making it more time-consuming for discussions on interactions to commence.

On-going engagement

- 3.16. A water utility company highlighted that the key to successful interactions is timely planning and clear lines of communication. Respondents cited a number of examples where upfront agreement about each operators' requirements when installing assets and on-going progress meetings led to effective delivery of infrastructure.

Process for interacting

- 3.17. A clear process for interaction was cited by a number of stakeholders as important to avoid or minimise delays. National Grid's response notes its adoption of a standard 'Plant Protection Process' for dealing with third party developers. Its Plant Protection team works to defined timescales and holds monthly internal best practice meetings to develop and improve the way it deals with some third party infrastructure schemes.
- 3.18. Interactions with National Grid were cited as working well by one other respondent. It noted National Grid will work with the third parties to find a workable solution to asset interactions.
- 3.19. Many of the respondents to the call for evidence suggested that they use a standard approach to dealing with interactions, for example through the use of a template agreement. Other respondents however deal with the specific requirements of an interaction on a case by case basis.
- 3.20. A network operator noted that the process for reaching agreement can be difficult because of internal governance arrangements, sign-off requirements or resource constraints of the other operator. A lack of resource to manage negotiations for crossing infrastructure was cited by another respondent as a concern in some cases.
- 3.21. Two respondents noted that interactions overseen by the Highway Authorities and Utilities Committee (HAUC) tended to work well. Respondents considered that a similar approach to govern large infrastructure operators could be a sensible way for to drive through efficiencies through standardisation and the adoption of best practice.

Other

- 3.22. Two stakeholders noted the co-ordination difficulty when dealing with multi-utility interfaces. These can arise from the legal complexity of determining access rights and protection of in-situ assets, affecting the transparency or accountability of access rights.
- 3.23. Some respondents considered that interactions on small projects, where there is less time for parties to understand the frameworks and for working relationships to be forged, can be more difficult. In

contrast, it was noted that effective engagement is often easier on larger projects, such as HS2 or Crossrail, where there are regular interactions between operators over a number of years. Larger projects also tend to develop specific, be-spoke, arrangements to deal with crossing infrastructure, rather than relying on a standard or established procedure that may not be suitable for all third parties. Not all respondents agreed that interactions on larger projects always work more effectively, considering that the concerns of smaller parties involved can be overlooked, resulting in significant costs being incurred.

Agreeing terms of engagement

- 3.24. Agreeing the terms and conditions to cross or work near in-situ assets can cause delays and additional cost. The details that must be agreed include cost allocation, levels of liabilities and asset upgrades and relocations. Some respondents felt that unnecessary costs and timescales are imposed on the development of new infrastructure by owners of in-situ infrastructure.

Cost and timescale imposed on requesting party

- 3.25. Some respondents highlighted the level of charges, time to respond to applications for works and levels of detail required in applications by operators of in-situ assets as a concern, in particular when crossing rail assets. Another operator felt that there is no “requirement for the existing asset owner to act reasonably” when dealing with third parties, making agreement difficult to reach. This operator also noted that some agreements are only completed days before the work is due to commence.
- 3.26. Others cited the extensive options appraisal work that is sometimes required of them when proposing a crossing, sometimes without clearly defined limits or expectations. Again this can be a source of costs which are seen as burdensome or unnecessary.
- 3.27. Some respondents benefit from statutory powers that may be intended to aid interactions, but noted that the behaviour of counter-parties and clarity of the processes adopted still have an important role to play. Those stakeholders involved in operations in offshore waters cite a general lack of standardised approaches and often a form of absent landlord in relation to certain in-situ assets.

Asset upgrades and protection

- 3.28. A number of respondents raised concerns about the extent that asset upgrades⁸ are required when crossing or interacting with in-situ infrastructure. There was a perception that both the scope and costs of diversion works may go beyond that which was necessary, but that fundamentally a lack of transparency makes it difficult for third parties to be clear whether this is the case. This was combined in some cases with unease about the condition of assets prior to diversion, the lack of visibility on condition and location prior to works being designed and the value of the benefit afforded to the crossed party as a result of the diversion work.
- 3.29. In some instances, respondents cited that ‘unfair’ liability terms were required, specifically, that in-situ operators would essentially require ‘gold-plated’ liabilities before agreeing to grant access. In addition, some respondents noted that high or uncapped insurance liability, including for consequential losses, is one of the main problems encountered during negotiations.

⁸ ‘Upgrades’ refers to additional work or assets required to improve the capacity of the existing in-situ network or to physically allow another asset to cross, for example diversion works.

- 3.30. A number of regulated network operators noted the difficulty of interacting with operators or third parties that are not regulated, due to their lack of understanding of the regulatory process and some of the obligations or constraints that may come with it.
- 3.31. A water utility company noted it faced similar problems when interacting with unregulated infrastructure operators, such as planning and highways authorities. It considered, therefore, that streamlining interactions between regulated network operators alone would not remove all delay or additional cost for infrastructure projects.
- 3.32. Some respondents noted that regulatory frameworks across sectors were not aligned causing potential complications to the interaction of assets in different sectors. For example, an electricity distribution network operator explained its concerns with different regulatory regimes and the potential conflicts, noting:

“Different sectors have differing regulatory and legal obligations. For example DNOs operate to the ‘economic and efficient’ principle so we would not expect to obtain wayleaves/land rights for future assets unless the need case was known. Network Rail operate under a legal and regulatory regime to protect the future of the railways and as such restrictions such [as the] need to reserve rights to divert our assets in future can conflict with our long term regulatory principles.”

Other issues

- 3.33. Respondents to the call for evidence also raised a number of issues that they considered were related to issues with interactions. These are out of the scope of this project but we are keen to keep each under review and welcome further views from those that are interested. Where relevant we will escalate issues internally as required.

Street works

- 3.34. A number of respondents raised concerns over difficulties when interactions require street works.⁹
- 3.35. Whilst we recognise that respondents to our call for evidence only represent one particular segment of the stakeholder community, respondents noted the number of different local authorities that companies interact with and the wide variety of different approaches taken to overseeing street works. The lack of a consistent approach amongst local authorities was claimed to create barriers to more efficient management of these interactions. Some stakeholders suggested that adopting more common or standardised processes nationally would enable companies to operate more efficiently and deliver value to the end consumer.
- 3.36. NJUG, an industry network representing utilities and their contractors on street works issues, noted the ability to co-ordinate major schemes is also limited because of the different investment planning and funding arrangements of utilities and local authorities. Local authorities funding arrangement are on an annual basis whereas utilities will work to longer periods of 5-8 years in line with the regulatory review periods.
- 3.37. NJUG encourage a longer term perspective by local authorities and utilities when planning and delivering infrastructure investments to allow more cost effective, co-ordinated works.

⁹ Street works are defined in the New Roads and Street Works Act 1991 (NRSWA), which govern the arrangements and access to infrastructure work on the highway, in particular affecting utility companies.

Wayleaves

- 3.38. Respondents cited that wayleaves can often prevent the sharing of existing infrastructure which causes an additional layer of complexity. Re-negotiating agreements can be time consuming and costly, such that the benefits of sharing infrastructure diminish and as a result the project will not progress.
- 3.39. Some stakeholders considered that reforming current wayleave arrangements would be opposed by many land-owners.
- 3.40. As part of our report on innovation and the potential for cross-sector innovations, particularly greater sharing of infrastructure assets, we have received information about the complexity of current wayleave arrangements. We will share our findings with other stakeholders, including government, and will consider how these issues impact on this project.

Experience of interactions working well

- 3.41. Respondents provided examples of interactions that have worked well. As noted above, respondents regarded clear and on-going communication as important to successful engagement. For example, interactions overseen by HAUC are cited as working effectively. Access to information, such as Local Authority Development plans, also allow operators to influence plans for investment or re-schedule planned work as a result of being involved in this planning process.
- 3.42. Northumbrian Water cites its experience of developing a bio-methane ‘gas to grid’ plant at Howden on Tyneside as an example of interactions working well. It puts the success down to regular communication and points of contact able to take decisions within their organisations.
- 3.43. NJUG provided a number of examples where it considered interactions had worked effectively:
 - Dudley Town Centre where South Staffs Water, National Grid Gas and Western Power Distribution worked together with Dudley Council to carry out a co-ordinated, 18 month programme of combined utility works in the town centre;
 - the Bewdley Town Centre Mains Replacement Programme;
 - Borough High Street Blueprint where this project saved more than a whole year in work days, and included work with the developers of the Shard and London Bridge Station;
 - the Midlands Metro extension project, which was shortlisted for the Partnership Award last year. It brought together West Midlands Passenger Transport Executive, Birmingham City Council, Arquiva, Openreach, BT Payphones, COLT, IPN, Kingston, National Grid Gas, Severn Trent Water, Verizon, Virgin Media, Vodafone and Western Power Distribution.
- 3.44. Through responses to the call for evidence and other sources, we are aware of a number of Memorandum of Understandings (MoUs) aimed at improving co-operation between infrastructure asset owners. For example, Network Rail has MoUs with London Underground, the Highways Agency and the Crown Estate.
- 3.45. Standardised processes are considered helpful to achieve more efficient interactions. For example, some network operators have established standardised processes for dealing with third party developments. Other standards include the County Surveyors’ Society agreement, cited as helping interactions work well with local highways authorities.

How lessons are learned and shared

- 3.46. Most respondents tend to capture and share learning only within their own organisation and usually on an ad hoc basis. Where infrastructure projects are similar, such as in the renewables industry, it is more likely lessons can be learned for future projects. Lessons may be more easily applied to larger projects, with one respondent noting that it could apply some of the lessons learnt during HSI and Crossrail to its involvement in HS2.
- 3.47. There were few examples provided of companies sharing their experiences with other companies or organisations. The exception being 'working groups', which may provide a forum for sharing experience and lessons.

4. Analysis of evidence and next steps

4.1. This section:

- assesses and categorises the issues raised by stakeholders when interacting with a network operator; and
- outlines the next steps to gather further specific evidence and, if appropriate, identify practices or measures that could enable more cost-effective interactions.

Potential concerns with interactions

4.2. Respondents to our call for evidence cited a range of practical challenges and experiences that risk project delays or cost overruns when dealing with network operators of in-situ assets. We have summarised these in Table 4.1 below.

Table 4.1 – Issues and potential impacts

Issue	Potential impact
Clear points of contact: There is a wide range of different ways that clients may contact operators, at different levels of seniority and in different teams. In some cases, respondents noted it was not clear who to contact or who was the relevant responsible person.	Clear lines of communication are essential to good project management. Projects risk delay if effective liaison with a network operator cannot be established.
Firm timescales: Failure to offer, or meet, timescales for provision of information, agreements, on-site works, visits or other steps necessary to deliver the project.	This was cited as a critical issue: cost over-runs arise directly where delays are experienced, or planned timescales not met.
Design specifications and information: The client is often dependent upon agreeing to, or meeting, design standards set by the in-situ operator. Relatively little information may be available to guide clients as to what is required in different circumstances. Parties may lack a mutual understanding of the needs or purpose of specific assets or changes to design practices.	Clients may have relatively little information on which to estimate necessary design works, costs or to effectively challenge and negotiate with the asset owner. Similarly, clients may not understand the needs or role of assets of a network operator, meaning delays in reaching a mutual agreement
Governance and decision making: Some respondents noted it was difficult to reach binding agreements or a settled position on design, planning or other issues. This included failing to keep to previously agreed decisions, or the introduction of new issues requiring negotiation at a late stage in the project. This may also arise where insufficient resources were available to liaise effectively with counter-parties.	A lack of certainty with decisions risks delaying project completion and leads to more management or legal time to resolve issues.
Accuracy of asset information: The information about the position and quality of in-situ assets is not always reliable.	A direct cost can arise where additional work is required to move or work around in-situ assets. Assets may need additional repair work to allow the client to continue working.
Consistent treatment: A number of respondents noted that similar projects may be treated very differently by the network operator, with different processes, design standards or access agreements.	Different practices may lead to unanticipated costs or delays. A lack of information on the design standards may mean clients cannot understand why different treatment is justified.
Costing transparency: Some concern was raised with how costs or charges are determined and levied. This	A lack of transparency or consistency in charging makes it difficult for clients to price projects or challenge charges

included cases where charges were made where works would benefit the network operator.	effectively when negotiating agreements.
Access agreements and financial terms: A number of cases were cited of access agreements that were perceived as either costly or imbalanced, for example imposing greater liabilities on the client than the in-situ asset owner.	Respondents considered this a direct, or potential, additional financial cost.
Adoption / learning of best practice: Many respondents considered there were few consistent opportunities to capture and share best practice. Only on some of the very largest projects was this more formalised.	Operators and clients are unable to address causes of time delays or cost overruns, or avoid mistakes.
Co-ordination of on-site access: Once assets are installed both parties may need access in the future, usually for maintenance. Some concerns were raised that information or processes were not available to help co-ordinate on-site maintenance.	Co-ordinating inspections / repairs of installed assets would potentially reduce disruption/ interruption of services to customers and reduce costs to operators.

Source: UKRN Call for Evidence

4.3. Examples of good practice or experiences were cited in submissions to our call for evidence. In many cases these hinged on early and consistent communication between all parties involved in the project. It also included less tangible factors such as a supportive and co-operative attitude to working together effectively.

Characterising the underlying causes

4.4. We have considered some of the economic issues that may explain the range of experiences when dealing with network operators. In economic terms, we could characterise the causes of problems raised as market failures:

- *monopoly power* that network operators' hold over their own in-situ assets; and
- *negative externalities*, where costs from in-efficiency are not borne by the network operator of in-situ assets.

4.5. The *monopoly* over assets could lead to weak incentives on operators to offer good quality services, such as prompt timescales, and potentially to charge higher prices for design approvals, diversion works or other agreements to businesses that must cross or interact with in-situ assets. In particular, *monopoly* may lead to the following.

- Imbalance in bargaining power – businesses wishing to interact with a network operator of in-situ assets may have a relatively weak bargaining position, resulting in poor service standards, opaque costing methods or other issues which make interaction time-consuming and costly.
- Information asymmetry – network operators of in-situ assets may have little incentive to disclose information about their networks or establish transparent or consistent practices for dealing with third parties, which weaken third parties' ability to challenge network operators effectively.
- Excessive risk-transfer – network operators of in-situ assets could demand high or unlimited liability from a third party, raising insurance premiums and the length of negotiations.

4.6. The existence of *externalities* may mean that network operators of in-situ assets do not face the cost of missed opportunities to co-ordinate work with clients, or cannot gain the full-benefit of co-ordinating

works. The opportunities to co-ordinate may also be undermined by information asymmetries, further reducing opportunities to improve overall project efficiency.

Other issues

- 4.7. There were a number of issues raised in our engagement with stakeholders which do not sit directly within the scope of this project, namely street works and issues with wayleave agreements. Nonetheless, we have captured comments made by stakeholder on these issues within this document and we will consider further if there is a role for regulators here.

Approach to remedying concerns

- 4.8. Table 4.1 notes some of the practical, day-to-day issues that may make interaction with network operators of in-situ assets more time consuming or costly than it need be. Some of the issues raised in our call for evidence may fall outside existing mechanisms to engage stakeholders, in particular where stakeholders are acting as 'clients', rather than customers, of the network operator. In addition, some issues may fall under existing regulatory processes but may not be providing outcomes that were intended. This is something we wish to understand further in the next phase of our work.
- 4.9. In the next phase, we will consider whether:
- any issues are serious enough to warrant intervention, therefore we need to understand better the scale of issue and where it arises; and
 - who is best placed to develop and implement a remedy.
- 4.10. The organisations that could take action include:
- regulated network operators – on their own initiative, or co-ordinated through a trade-body, to change practices in response to issues identified;
 - economic regulators – within the scope of their own statutory duties, economic regulators may be able to facilitate or require changes to practices by infrastructure operators in their own sector;
 - government – any broad guidance, and certainly legislative reform, may be best implemented through government; or
 - others – for example, the Crown Estate for offshore energy projects.
- 4.11. We will also need to be mindful of existing arrangements that could offer a remedy, or may play a role. We will therefore ensure we liaise effectively with IUK, and seek the views of trade bodies and other interested parties as our thinking develops.
- 4.12. Economic regulators have already encouraged or required a number of mechanisms that govern how regulated companies interact with stakeholders. In a number of cases, when setting periodic price controls, regulators expect a network operator to involve stakeholders as it draws up investment plans. For example, the setting of distribution network operators' price controls in energy required evidence of how engagement with stakeholders shaped the business plans, service quality levels and

investment decisions on which Ofgem would set a price control.¹⁰ This offers stakeholders a chance to comment on service standards, investment plans and priorities for use of the existing network.

4.13. There are also examples of self-regulation, which have helped address issues such as incentives to coordinate or information asymmetry, and may offer lessons for addressing some of the issues raised in our call for evidence. In many areas of construction or infrastructure work, professional or trade bodies have proposed principles or guidelines to help manage projects and avoid or reduce costs. For example, HAUC have a code of conduct to promote effective working between utility network operators and local authorities.¹¹ In other cases, Government has developed guidance on good procurement principles in the construction sector, focusing on improving early supplier engagement, transparency of cost, integrated team working and collaborative working. Professional bodies also publish guidance for project design, management and complete. For example, the RIBA Plan of Work sets out detailed guidance for the design and management of property construction projects, to help make the process more predictable and cost effective.¹²

Next steps

4.14. We have developed a clearer picture of the issues facing those installing infrastructure. Nevertheless, the evidence to date has not allowed us to identify, on a systematic basis, where problems may arise and gaps remain in our understanding. This includes:

- the scale and significance of the issues, specifically how often and on what types of projects problems may arise;
- whether the principal cause of problems differ, for example by type of project, by sector or from the behaviour of specific network operators; and
- whether the regulatory regimes in each sector promote, or undermine, cost-effective interactions.

4.15. We are also aware that work is on-going by government and other organisations to improve the processes and working practices in construction and infrastructure. It is important that the impact of these developments can be considered as we work towards a firm set of proposals.

4.16. To address these gaps we intend to do the following.

- Compare the practice of network operators when dealing with requests to cross infrastructure, noting good or best practice that other network operators and sectors could benefit from.
- Review good practice from other sectors that regularly install infrastructure, including airports and ports amongst others, liaise with stakeholders, in particular industry trade associations, to understand what has worked well in their experience.
- Seek further evidence of the scale and frequency of problems when interacting with network operators, drawing this out through case studies.

¹⁰ For more information on this process, see Ofgem's website at: <https://www.ofgem.gov.uk/network-regulation-%e2%80%93-riio-model/riio-ed1-price-control>

¹¹ The code of conduct can be found at: <http://www.hauc-uk.org.uk/category/26/pageid/110/>

¹² See RIBA's website at: <http://www.ribaplanofwork.com/About/Default.aspx>

- Undertake a comparative analysis of the rules or practices required by economic regulators, to identify if there is any impact from sector-specific regulation.
- If appropriate, develop and seek views on any emerging remedies and views on how these may be most effectively implemented.

4.17. The support and help of businesses and trade associations is vital, if we are to progress this work successfully. Views are invited on the evidence and thinking outlined in this paper. We are very keen to hear further evidence on the issues outlined above, specific examples of successful principles or remedies in other sectors. We plan further discussions with key stakeholders in coming months.