

What more can be done to reduce congestion caused by roadworks?

This short paper sets out the need for new approaches to delivering roadworks and managing the associated impacts on congestion. It proposes solutions focused on:

- The greater use of outcome-based decision making in agreeing roadworks
- Effective communication and sharing of best practice on innovative approaches (including international examples)

The scale of congestion

According to Department for Transport (DfT) figures, urban traffic congestion caused by utility roadworks and other highway interventions cost the economy £4 billion a year. DfT estimates that there are around 2.5 million roadworks carried out in England each year.¹ According to the Inrix report 'London Congestion Trends March 2016', London is one of the most congested cities in the world and congestion rose noticeably between 2012 – 15, with journey times in Central London increasing by 12% annually. One of the most significant drivers of increased congestion in London was roadworks, increasing 362% over the four year period.²

The National Infrastructure Commission (NIC) identifies urban road congestion as a major issue in its recent consultation ahead of the National Infrastructure Assessment *Congestion, Capacity, Carbon: Priorities for National Infrastructure*.³

What is the problem?

The public has two differing needs:

1. The need for utilities to function efficiently
2. The need to use roads to get from A to B

It is also the public who ultimately pay for these two services, either directly or indirectly, and who suffer when they go wrong.

One cause of roadworks is utility companies installing, maintaining and upgrading essential services. These services are necessary to the efficient functioning of vibrant urban communities that account for much of our GDP and future growth, including broadband infrastructure. Others are the result of local council teams carrying out maintenance and repairs to the road network.

However, when these essential works are carried out at peak times this causes congestion and delays. Aside from the frustration experienced by drivers, especially seeing roadworks

¹ Department for Transport (2017) [Roadworks: The future of lane rental](#)

² Inrix (2016) [London Congestion Trends March 2016](#)

³ National Infrastructure Commission (2017) [Congestion, Capacity, Carbon: Priorities for National Infrastructure](#)

with no-one working on them, the delays have knock on effects; for example: loss of working hours, reduced productivity to those users of roads and increased carbon emissions.

Any solutions must also take in to account the following three factors:

1. Health and safety: there should be no unintentional consequences for the public's health and safety, for example, through companies trying to do roadworks more quickly.
2. Whole life maintenance of the asset: undermined asset integrity needs to be taken in to consideration so that a cyclical problem is not created where roadworks are required to fix issues created by previous roadworks; for example: potholes around former trenches.
3. Easing congestion on the roads requires a solution that reduces the need for frequent roadworks, as well as the duration of the disruption.

The New Roads and Street Works Act 1991⁴ only requires undertakers (generally utilities) to use their 'best endeavours' to coordinate works and to minimise inconvenience to road users but does not stipulate what this means in practice. The introduction of Section 74 permitted highway authorities to charge undertakers if street works are unreasonably prolonged i.e. take longer than previously agreed. Some of the issues arise from the fact that a lot has changed since 1991 when the Act was formulated - there were only a handful of utilities and non-disruptive trenchless technology was in its infancy. Today there are many utility companies with largely unfettered highway access and with no legal obligation or incentive to, wherever practicable, use proven non-disruptive technologies or to consider carbon impacts. There is therefore no real necessity to utilise or invest in research in new technologies which are already used extensively around the world and, in many instances, can mitigate or remove entirely the necessity of highway disruption when installing utilities.

What solutions have been put forward to date?

The Government has proposed a range of initiatives to the issue of congestion in its recent consultation on roadworks: The future of Lane Rental September 2017.⁵

1. Permits for roadworks: 60% of local authorities have taken up permit schemes and the Government aims to improve their consistency and encourage greater take-up. Well-run permit schemes include: proportionate fees, discounts for joint works and compliance with permitting regulations and guidance. Future schemes should support the delivery of national infrastructure projects like HS2 and broadband/full fibre roll-out. Data from local highway authorities to date shows that permit schemes can reduce the average duration of works significantly and that they are an effective way of planning and managing roadworks.
2. Lane rental: On the busiest and strategic routes, the permit scheme is not enough. In the autumn, the DfT will produce guidance to help councils develop lane rental schemes after trials in London and Kent led to reduced congestion. The first schemes could start by the end of 2019, under which utility companies could be

⁴ [New Roads and Street Works Act 1991](#)

⁵ Department for Transport (2018) [Government response to consultation on the future of lane rental](#)

charged up to £2,500 a day for digging up busy roads at peak times. This scheme will encourage work to be carried out outside of rush hour, and for companies to collaborate with others to avoid roads being dug up multiple times. Monitoring and enforcement will be key to ensuring that this approach is effective. The lane rental system only seeks to control the highway disruption caused by utility installation. There is nothing in the legislation that mandates utilities to consider non disruptive trenchless solutions where practicable and economic, and the highway authorities have virtually no powers to ensure that in sensitive areas trenchless solutions are mandatory if practicable.

3. Standards: The standards to which streets must be reinstated after works are set out in the Specification of the Reinstatement of Openings in Highways⁶ (SROH).
4. Better data management and communication: The Street Manager project, which is envisaged will eventually replace the Technical Specification for the Electronic Transfer of Notifications (EToN), aims to transform the planning, management and communication of roadworks through open data and intelligent services to minimise disruption and improve journeys for the public. It will provide up-to-date and accurate data on roadworks via open data platforms. This will enable other companies or organisations to develop apps and tools for road users, network managers and others. It should also help support greater co-ordination of works, forward planning, performance management and reporting.⁷ Users should be able to start using Street Manager from 2019.

What happens with other strategic infrastructure?

The powers of local highway authorities over highway interventions are very limited when compared with bodies responsible for strategic infrastructure, such as Highways England and Network Rail.

There are clear regulatory charges and incentive mechanisms in place in the UK rail industry, while in the water sector, regulation forced the industry to take action on flooding, leakage and district metering.

There have been successes across different sectors, with owners concentrating on what is best for their assets and looking at long-term solutions, as for example: Anglian Water's @one Alliance. However, more successes could be had if there were better data sharing and cross-sector solutions. This would not only encourage joint working but the sharing of information gained from site work and mitigating the risks of resilience. The National Needs Assessment⁸ recognises that resilience and flexibility needs to be built in to all major infrastructure so that it is easily adaptable to new priorities and changing needs.

Should the public be more demanding?

Reducing and streamlining roadworks is only one way, and an intermediary step, to resolve the wider issue of congestion. As the public are the users, and the people paying, should

⁶ Department for Transport (2010) [How to reinstate a road after doing street works](#)

⁷ Department for Transport (2017) [Street Manager: Frequently Asked Questions](#)

⁸ Institution of Civil Engineers (2016) [National Needs Assessment](#)

they be expecting a higher standard of reliability and lower disruption from the road network forcing more innovative solutions even if these may involve additional costs?

A holistic approach is required, including reviewing legislation, technological development, academic research, international practice and ensuring that the utility regulators police their individual utilities to meet the interests of all stakeholders.

A more comprehensive approach should focus on the following:

1. Consideration should be given to facilitating outcome-based decision making: the focus should be on the needs of customers in resolving congestion, rather than on the method or process for solving it. Government and clients should be incentivising the right outcomes through regulations and tender assessments that protect the integrity of the highway. The ultimate outcome is the installation of utilities with minimal disruption to the highway and this should be a key objective of any utility contract affecting the highway in traffic sensitive urban area. Options include requiring utilities and other bodies that need extended access to congested key urban roads to be required to produce an impact statement covering the period of occupation, the measures proposed to minimize disruption and an estimate of the cost to the community of their work. It could include the estimated costs of delay to traffic and the impact on local businesses. This is done in other countries.
2. Communication and sharing of information: there needs to be better sharing of information across sectors. There should also be information sharing between the tech and the construction industry, to ensure awareness of available technology.

Solutions already exist, and are being utilised, in other parts of the world and could provide learnings for the UK. The NIC Study on international best practices in using technology to improve productivity has a section of case studies on urban transport and traffic control including Dubai, Hong Kong, Singapore and Sweden.⁹

Outcome-based decision making

There is a need for clear decision making and specification on outcomes whilst allowing freedom on the how. Decision making should be aimed at the efficient use of the highway infrastructure and land space rather than just the use of transport and take into account wider traffic management. Measuring congestion could be included in regulatory outcomes as a way of holding the utilities to account.

Clients should set the contractors the challenge of offering solutions that offer the best outcomes for all affected stakeholders: road users, businesses and the public more widely. If part of the problem is that only eight out of 24 hours are being used to resolve the issue there should be incentives to drive innovation and come up with the technology to resolve the problem of working silently at night, including the use of drills.

In Tokyo roadworks are done at night and have to stop before morning. The use of pipe jacking and other non-disruptive technologies which can reduce carbon emissions and long-

⁹ National Infrastructure Commission (2017) [Study on international best practices in using technology to improve productivity](#)

term damage to the asset, is widespread in Japan. The more demand there is for a new technology, the cheaper it becomes, due to positive competition and economy of scale.

In the UK, Metro Mayors could lead the way in demanding more innovative outcome based decisions. Last August the Mayor of the West Midlands, Andy Street, launched an action plan aimed at combatting congestion on key regional roads. The role of Director of Network Resilience was also created to work with Highways England, Network Rail, the Department for Transport, local authorities and other key players to ensure transport construction works are coordinated and congestion issues tackled.

Andy Burnham, Mayor of Greater Manchester, held a consultation on congestion last year and will be publishing an initial plan to ease traffic congestion across Greater Manchester in spring 2018. He has also set up an Expert Reference Group made up of business leaders, transport experts, health professionals, cycling ambassadors, freight operators and road specialists tasked with finding innovative and forward thinking solutions to tackle congestion now and in the longer term.

Communication and sharing of best practice

Technology has come a long way in recent years, and new ideas are always emerging. There are many innovative technologies either in development or already in use which the industry could benefit from, such as robotics, 3D printing and SMART concrete. There are a number of organisations and bodies, including the UK Society for Trenchless Technology (UKSTT) with over 25 affiliated organisations throughout the world (International Society for Trenchless Technology) that are at the forefront of technological development. Birmingham University has carried out numerous research projects on buried infrastructure, smart pipes and trenchless technology. The UK Pipe Jacking Association has carried out extensive research at Oxford, Cambridge, Leeds and City Universities. However, there is no clear mechanism for letting construction stakeholders know what exists although it is interesting to note the international body representing the electrical supply industry (the Council on Large Electric Systems) is, through the offices of Mott Macdonald, developing a trenchless technology manual for this sector.

Assessing the Underworld (ATU) is an ambitious 10-year research programme largely funded by the Engineering and Physical Sciences Research Council¹⁰ (EPSRC). It is developing an Integrated Web-Based Decision Support System for Inter-Asset Management of Streetworks and Subsurface Utilities (ATU-DSS). This consists of an interactive computer system that supports asset management decisions by integrating and reasoning with diverse information sources about assets and their relationships. Although it is not the role of the local authorities to have the in-house expertise, or knowledge of all the latest technological developments, this tool aims to help them challenge if they have been offered the right solution by the contractor to the problem they want to resolve.

The Infrastructure Industry Innovation Platform¹¹ (i3P) allows the brightest minds in infrastructure to collaborate to deliver infrastructure for the future. As a primary driver for innovation in UK infrastructure, it helps transform ideas into opportunities and practical

¹⁰ Engineering and Physical Sciences Research Council (2018) [Assessing the Underworld](#)

¹¹ i3P (2018) [Innovating the Future](#)

solutions; providing a mechanism for strategically directing innovation to address the major challenges facing UK infrastructure.

Project 13

Project 13 is an industry-led response to infrastructure delivery models that fail not just clients and their suppliers, but also the operators and users of our infrastructure systems and networks.

It seeks to develop a new business model – based on an Enterprise, not on traditional transactional arrangements - to boost certainty and productivity in delivery, improve long-term value in operation and support a more sustainable, innovative and highly skilled industry. Moreover, this new model will provide better value for money for the taxpayers and consumers who ultimately fund our infrastructure investment.

One of the features of this new approach is establishing a shared understanding of how digital technologies will transform organisations managing infrastructure networks. This includes identifying ways of putting the tech industry in touch with the constructions industry and allowing the freedom for new, innovative solutions to be developed and applied.

More information about Project 13 is available [here](#) .