

Briefing: The real cost of street works

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This briefing paper describes the problem of identifying the total costs of street works, not only to the utility undertaking the work but to road users, local businesses and residents and society in general. UK Water Industry Research commissioned a research project which reviewed work to date and which produced a best estimate for these costs in Britain of £5.5 billion. The key findings of that work are summarised.

There is a vast network of utility and local authority infrastructure buried beneath highways and footways in the UK. For example, the combined network of water, sewer, gas and electricity services extends to over 1.5 million km, which is almost five times longer than the country's road network. The data for telecommunications cables and local authority infrastructure (e.g. cabling for street lighting and traffic lights, highway drains and so on) are rather patchy but when estimates of these are taken into account the total length of buried infrastructure could be well over 4 million km.

To repair, maintain and upgrade this network of buried infrastructure the utility industry alone undertakes about 1.5 million street works annually. Not surprisingly, this results in significant costs both to the utility industry and to society as a whole. The utility industry bears the direct construction costs of these works, such as the labour, material, planning, design and supervision costs. In addition, there are indirect costs to the utilities due, for example, to third-party damage to private property or other utility apparatus. The costs that are borne by society are the 'social' costs incurred through, for example, delay to road users, disruption to businesses and the local community, increased levels of noise and air pollution, and damage to the environment. Taken together these direct, indirect and social costs are the real costs associated with utility street works.

The social costs of street works can be significant, particularly those associated with delays to road users, and can often exceed the combined costs of the direct and indirect costs of the works. Given the sheer size of the network of infrastructure buried beneath the nation's highways, its upgrading and maintenance requirements in the years to come, and the continually increasing levels of traffic on the roads, there is potential for the social costs to increase still further in the future.

In recent years, with the growing concern over the level of traffic congestion, efforts have been made to improve the administration

procedures for street works and to encourage utilities to minimise their work in the street, for instance through the New Roads and Street Works Act.¹ There have been trials of lane rental schemes and the Traffic Management Act,² which was passed in 2004, will place further constraints on organisations working in the street, although some of the detailed regulations for this act have still to be finalised.

Regulatory and commercial pressures on the utilities mean that they generally focus on the direct costs to the utilities and this would appear to be in conflict with any initiatives to reduce the social costs arising from street works. In addition, exactly what these costs are has not been clear. Figures for the UK quoted by different organisations ranged from several million to several billion pounds.^{3,4} Any cost-benefit study for future changes in administration or technology needed to have a clear view of the direct, indirect and social costs involved. To this end, UK Water Industry Research commissioned the Transport Research Laboratory to identify a best estimate of all the costs as well as current gaps in knowledge.⁵

The aim of the project was to clarify the debate regarding the costs of street works by reviewing all the current research and providing an objective view of all the costs of street works, both those paid directly by utilities and those borne elsewhere. In addition the project would identify the extent to which some of these costs could be reduced by further technical innovations such that a clear view can be given of the benefits of carrying out research to improve working practices in street works activities. The project would identify the gaps in knowledge, shortcomings in legislation and other issues preventing cost reduction by these initiatives and identify further research needs to address these.

Previous studies into both the direct and indirect costs of utility trenching^{6–9} have noted the difficulty of obtaining comprehensive and up-to-date data on the subject, perhaps because such information is considered by many utilities to be commercially sensitive. Similar problems were encountered in this project, but some information has been obtained following consultations with industry bodies and regulators as well as reviews of relevant literature, and library and internet searches. Analysis of the data suggests that direct construction costs in the utility sector are currently running at about £1.5 billion a year, while indirect third-party damage and associated costs may be of the order of £150 million a year.

The social costs associated with street works have been identified as

- (a) costs to highway users
- (b) costs to business
- (c) costs to the local community
- (d) costs to the highway authority
- (e) environmental costs
- (f) safety (i.e. traffic accidents and injuries to site operatives).

With such a broad range of costs, many of which are hard to quantify and have not yet been studied in any great detail, it is very difficult to determine a precise value for the social costs of street works at the present time. Nonetheless, from the limited data supplied and published information, it would appear that by far the largest of these is road-user delay, which has been calculated at about £5.1 billion for the UK as a whole. Although smaller than the road-user delay costs, the remainder of the social cost is by no means insignificant and the total social costs may well amount to £5.5 billion. Therefore, overall, the real cost of street works in the UK could currently be of the order of £7 billion a year.

The cost of delays to road users at street works has been examined in a number of studies, but a major gap in knowledge is the lack of understanding of the impact that street works have on disruption on urban roads, particularly in comparison with other causes of congestion. There has also been relatively little research undertaken on other aspects of social costs. These gaps in knowledge include: ways in which less disruptive construction methods can be promoted, best practice for operatives which will help reduce social costs, the affect of street works on local businesses and the community, the impact of street works on highway maintenance and lifetime and the costs of environmental and safety impacts. These have to be addressed before the real costs of street works can be fully determined, although this report provides an initial assessment. The report provides recommendations for further work in this field and up-to-date cost estimates that can be used in the preparation of subsequent research proposals in the field of street works activities.

There is scope for reducing the real costs of street works through improvements in working practices and more extensive use of innovative techniques, such as trenchless technology, multi-service ducts, better location of assets, and improved diagnosis and location of faults. The potential savings from extending trenchless technology may be as great as £700 million a year. At present, however, there is no incentive for utility companies to consider anything other than the installation and rehabilitation methods which provide the lowest overall costs to themselves, and these often involve traditional open-cut trenching, which can generate significant social and environmental impacts.

Social costs can be reduced by a variety of methods that include wider adoption of night-time working, training of operatives to

appreciate the issues and greater cooperation among utilities and highways authorities.

Although utilities endeavour to minimise the impact of their street works on road users and the local community, regulatory and commercial drivers mean that methods of work are chosen which deliver the least direct cost rather than minimising the total cost of the work including social costs. Although some improvements can be made through further training and cooperative working as well as changing the hours of working, these changes will not solve all the problems. Technical development to reduce the costs of trenchless technology, give better location and ultimately, performance information of buried assets will help to extend the use of less disruptive approaches and the cost of developing these innovations is small compared with the benefits they could provide.

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