



Department
for Transport

Traffic Advisory Leaflet 8/14 November 2014



Extended working hours at road works

This is one in a series of Traffic Advisory Leaflets providing guidance on methods of working and innovative techniques aimed at reducing traffic congestion due to road works. The series is aimed at utility companies, highway authorities, contractors, equipment suppliers and others involved in road (or street) works. Each leaflet in this series is based on research carried out by TRL Limited on behalf of the Department for Transport and Transport for London.

Introduction

Increasing the length of the working day by implementing extended working hours can reduce overall site occupation times for street works operations. While this reduces disruption to road users, it can have a negative effect on nearby residents. This leaflet explains what needs to be taken into account when extended hours are being considered together with advice on how any potentially detrimental effects can be mitigated. It focuses on works in urban areas where there is greater need to limit disturbance to residents and others. Emergency works are outside the scope of this leaflet because in such cases, controlling

disruption and disturbance is less important than completing the works as quickly as possible to minimise risks to the public.

The requirements of road users and residents are generally different. Road users benefit from works being carried out at night and between peak periods in the day time. Residents are likely to prefer the works to be carried out during the daylight hours including peak periods. In urban areas, street works tend to be carried out during daylight hours and on busier routes, it is common practice to halt operations during morning and evening peak hours because of the need to temporarily return the road to service at these times. This working pattern represents a compromise between reducing disruption to road users and disturbance to residents.

However, this is an untargeted approach that can result in overall site occupation periods that are longer than they need to be. The key consideration, therefore, is to see if it is possible to work extended hours without causing undue disturbance to residents so that both they and road users can benefit from reducing the overall time that the works are in place. In general, road users will benefit from increasing the working window into the night so this leaflet concentrates on the needs of residents.

Acceptable conditions

Noise

Noise is the main concern for local residents, particularly at night (Figure 1). There are several factors to take into account when aiming to limit noise-induced disturbance for residents, such as:

- the loudness at source;
- the frequency of the sound;
- the length of time noise is being generated;
- the distance from the source to the residents; and
- the existence of any shielding.

BS 5228-1:2009 is a code of practice for noise on construction sites. The target for residents will be either to have an acceptable maximum level or, where noise is already an issue, to have no significant increase over existing background levels. The World Health Organisation regards 55 dB(A) Leq* as the maximum day time level before it becomes annoying (the base level for residential areas), and 35 dB(A) as the maximum desirable noise level for sleep. These values can be used as a starting point but hospitals, schools and other facilities may require lower limits whilst industrial areas could tolerate higher levels.

*Leq means Equivalent Sound Level. It is the average sound level over a given time.

Lighting

The level of lighting (Figure 2) required for safe night time working can cause annoyance to residents if not carefully targeted. Directional sources of light should ideally be aimed downwards and/or away from residential properties. Flashing lights can be a particular irritation to residents at night. The provision of lighting will also add to the noise and vibration nuisance where generators are used to provide the necessary power.

Vibration

Several operations and items of plant can produce vibrations that are transmitted through the ground. The effect of such vibrations will depend on the ground conditions, proximity to

dwelling, and dwelling construction including the depth and type of foundations used. These vibrations need to be considered in an overall assessment of the disturbance created. BS 5228-2:2009 is a code of practice for vibration on construction sites.

Vehicle movements

The whole point of working extended hours is to do so when traffic flows are relatively low. As such, vehicle movements to transport materials, equipment and personnel to and from the site are unlikely to disrupt road users in general or residents driving to and from home in particular. The main issue with works traffic is the noise from reversing alarms and noise generated by vehicles moving over uneven surfaces or road plates within the site.

Figure 1 - Night time operations



Figure 2 - Lighting the site



Methodology

In assessing which items of work can be undertaken and when, the scheme can be broken down into a series of operations. Take, for example, the following sequence of events:

- set up traffic management;
- break out the bound layers;
- excavate the unbound layers;
- shore the excavation;
- repair/install/replace apparatus;
- remove the shoring;
- replace and compact the unbound material;
- replace and compact the bound layers;
- apply road markings; and
- remove traffic management.

Each of these operations will create a certain amount of noise, vibration or other disturbance depending on its nature, the equipment available and the conditions on site. The effects of each need to be assessed for the property most affected by the works, bearing in mind that it might not be the nearest property - see below on sound barriers. The assessment should demonstrate whether it is appropriate to undertake any particular operation outside normal hours (Figure 3). It may be necessary to measure noise, vibration, etc., of certain operations at the property in question to confirm the level of disturbance.

For operations that are too noisy to carry out at night, it may be possible to schedule the works so that quieter operations leading up to the noisier elements of work are timed so that the latter can commence when the normal working window starts.

Disturbance reducing techniques

Noise can be reduced by using new equipment because old equipment may have become noisier with wear and because manufacturers tend to develop quieter models over time.

Muffling of equipment can also reduce noise and it is assumed that such muffling would be taken into account when assessing the impact of any particular operation.

Where space permits, noise barriers and screens can be used to reduce the impact of

Figure 3 - Less noisy operations being conducted at night



noise and lighting respectively. However, noise barriers can deflect noise to other properties so the nearest one might not be the one most susceptible to generated noise. Experience has shown that sound barriers can focus noise from ground level to flats above. Nevertheless, barriers and/or screens might be viable if they reduce the overall impact of the work to an acceptable level.

Site vehicles can create a noise nuisance if they are equipped with reversing alarms. Reversing vehicles are a serious risk and the works should be planned so that reversing is minimised by, for example, providing turning areas. However, this is not always practicable owing to the generally linear shape of street works sites. If reversing can not be eliminated then other safety procedures should be implemented, (see, for example, the Health and Safety Executive guidance on *The safe use of vehicles on construction sites*). If properly implemented these precautions may allow vehicles to be reversed safely without using audible warning systems.

Planning

In general, planning for working extended hours is undertaken by the contractor who then obtains approval from the highway authority. Sometimes, planning is undertaken by the highway authority. In such cases, the highway authority should consult the contractor to ensure that their proposals are workable.

Where it is essential that works are carried out at unsocial hours and noise is unavoidable, a letter drop to local residents can help make the resulting disturbance more acceptable. The letters can be used to warn them of the forthcoming operations, explain the need for the disturbance, and inform them of how long they can expect the works to last.

Recommended further reading

- Specification for the Reinstatement of Openings in Highways. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/11042/sroh.pdf
- Specification for Highway Works. <http://www.dft.gov.uk/ha/standards/mchw/vol1/>
- Manual handling. (The Health & Safety Executive). <http://www.hse.gov.uk/toolbox/manual.htm>
- The safe use of vehicles on construction sites: A guide for clients, designers, contractors, managers and workers involved with construction transport. (The Health & Safety Executive). <http://www.hse.gov.uk/pubns/books/hsg144.htm>
- BD 21/01 The Assessment of Highway Bridges and Structures. <http://www.dft.gov.uk/ha/standards/dmrb/vol3/section4/bd2101.pdf>
- HD 27/04 Pavement Construction Methods. <http://www.dft.gov.uk/ha/standards/dmrb/vol7/section2/hd2704.pdf>
- The Construction (Design and Management) Regulations. <http://www.legislation.gov.uk/uksi/2007/320/contents/made>
- New Roads and Street Works Act 1991. <http://www.legislation.gov.uk/ukpga/1991/22/contents>
- The Street Works (Records) (England) Regulations 2002. http://www.legislation.gov.uk/uksi/2002/3217/pdfs/uksi_20023217_en.pdf

- The Construction Plant-hire Association publications. <http://www.cpa.uk.net/publications/>
- BS 5975:2008+A1:2011 Code of practice for temporary works procedures and the permissible stress design of falsework. <http://shop.bsigroup.com/ProductDetail/?pid=000000000030240690>
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. <http://shop.bsigroup.com/ProductDetail/?pid=000000000030258086>

Useful contacts

Mapping the Underworld

www.mappingtheunderworld.ac.uk

OXEMS

www.oxems.com

Utility Mapping Association

www.utilitymappingassociation.com/

The Survey Association

www.tsa-uk.org.uk/guidance.php

Energy Networks Association

www.energynetworks.org/news/public-information/dial-before-you-dig.html

The Construction Plant-hire Association

www.cpa.uk.net/home/

Health and Safety Executive

www.hse.gov.uk/contact/

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