

## INTRODUCTION

**9** This section describes how to plan, provide and maintain suitable perimeters and barriers at locations where it is necessary to separate the public and others from the work. This section also shows how the principles of risk management explained in Appendix 1 can be implemented after you have identified the hazards which are likely to affect members of the public and visitors. The risk assessment should also indicate where and when risks arise and their significance. The section ends with a simple summary.

## PLANNING PROVISION AND MAINTENANCE OF PERIMETERS

### *Planning*

**10** For most sites the perimeter is a geographical area within which construction work will be carried out. Determining the perimeter is an important aspect of managing public risk. Specific areas of risk may occur within the site such as around deep excavations. Sometimes, construction work can create risks outside the site perimeter, (for example, unloading materials from a delivery lorry outside the perimeter). Three issues need to be considered: **planning** what form the perimeter will take, **providing** the perimeter and **maintaining** what has been provided.

**11** Identifying the issues at pre-tender stage allows specific items to be included in the bill of quantities and it can therefore be included in the pre-tender health and safety plan. This means that prospective principle contractors can take them into account when tendering.

**12** Risk assessment should decide how the perimeters will be defined, what type will be needed to protect the public and where it should be placed. Factors to consider will include:

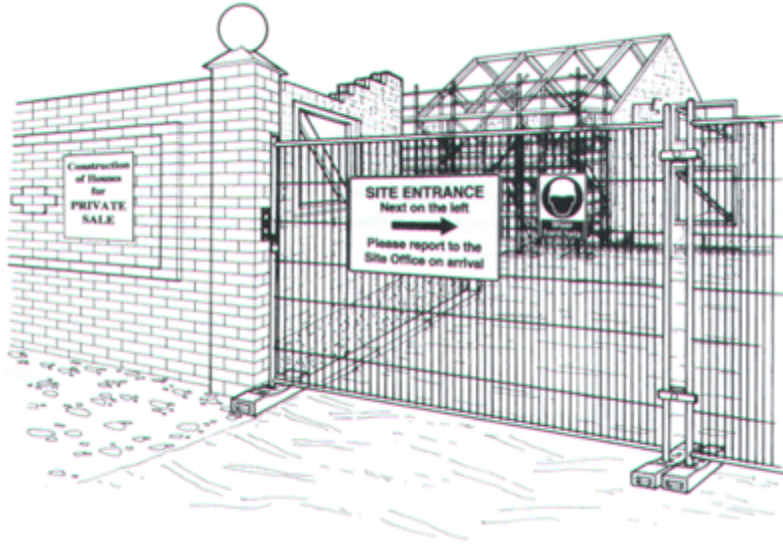
- The nature and type of the construction work;
- How heavily populated is the area;
- Who will need to visit the site during the work;
- Whether the site may attract children
  
- Site characteristics.

### *The Site Perimeter*

**13** On many sites the location of the site perimeter will be obvious. The layout of the site and the site characteristics will influence the position of the site perimeter fencing, for example it may be possible to consider using existing permanent features such as walls, fences or other structures provided they are structurally sound.

**14** It may also be possible to phase the construction of the new structures so they will form an effective barrier as the work progresses. Where existing features cannot be used, you will need to decide what materials will form a suitable barrier and where it is required.

## USE OF A NEW STRUCTURE AS PART OF THE NEW PERIMETER OR BOUNDARY



**15** The precautions taken to secure the site perimeter should reflect the level of risk.

**16** The location of site offices will need to be considered in the development of the site and preferably, they should be located near the main site entrance. This allows supervision of those arriving and avoids people having to cross the site, unnecessarily. The entrance and access routes to the site office should be clearly sign posted. This is particularly important where there are multiple entrances, where the site is shared, or where the office is located outside the perimeter fencing. Space constraints will affect activities such as site deliveries and off-loading, and may affect the types of construction plant and techniques which can be used.

**17** During the planning of the project certain local issues such as public footpaths or rights of way which may cross the site may be identified. It will be necessary to consider appropriate closure or diversions of these, with the owner, and relevant authorities' consent as early as possible.

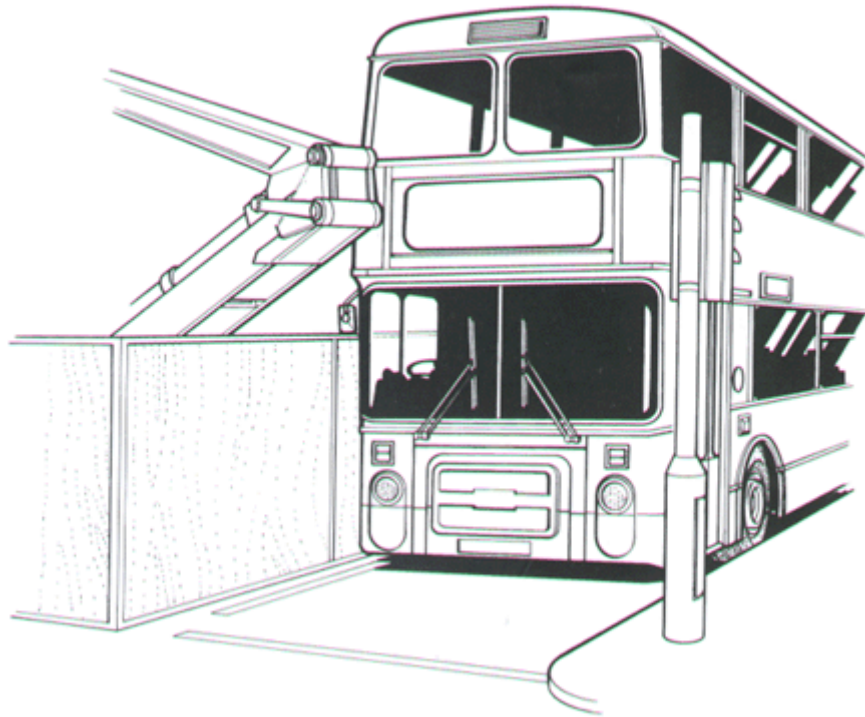
**On a project which involved the construction of a new road in a non-urban area, the principal contractor's risk assessment identified that very few members of the public were likely to be in the area and risks from the work were low. Suitable means of demarcating the perimeter of the site using tape and warning signs were erected. However, in certain parts of the site where public access, or process risks were higher, additional precautions were taken such as a 2 metre high fence.**

**In a shopping precinct, minor construction work involving the painting of timber benches was carried out. The clients, in conjunction with the contractor, decided to provide a barrier although it was not needed on health and safety grounds, but it was felt it was required to prevent people getting paint on their clothes primarily.**

#### ***Outside the site perimeter***

**18** Construction work can present a risk to the public outside the perimeter. These risks might include materials falling from access platforms, materials stored temporarily off site, the operation of cranes and other lifting equipment either on or off site. This can change as construction work progresses. The process of risk assessment should have identified these areas as well as any necessary control measures.

***ALWAYS ENSURE THAT EQUIPMENT AND PARTS OF EQUIPMENT SUCH AS ELBOWS OF CRANES, EXCAVATORS, LOADERS, ETC, DO NOT SWING INTO THE PATH OF VEHICLES OR PEDESTRIANS***



### ***Within the site perimeter***

**19** Inside the main site perimeter there may be also specific risks which need to be specially controlled, for example around deep excavations or areas where site radiography is taking place. Precautions taken to control the risks might involve excluding contractors and others not directly involved in the work. Areas of risk will change as the work progresses. Risks may also be created at levels above the ground. For example, where mast climbing platforms are used during the external refurbishment of tower blocks, residents opening windows can create a hazard for themselves and the workers at each floor. In these circumstances physical control measures and a safe system of work are necessary to control the risks at higher levels.

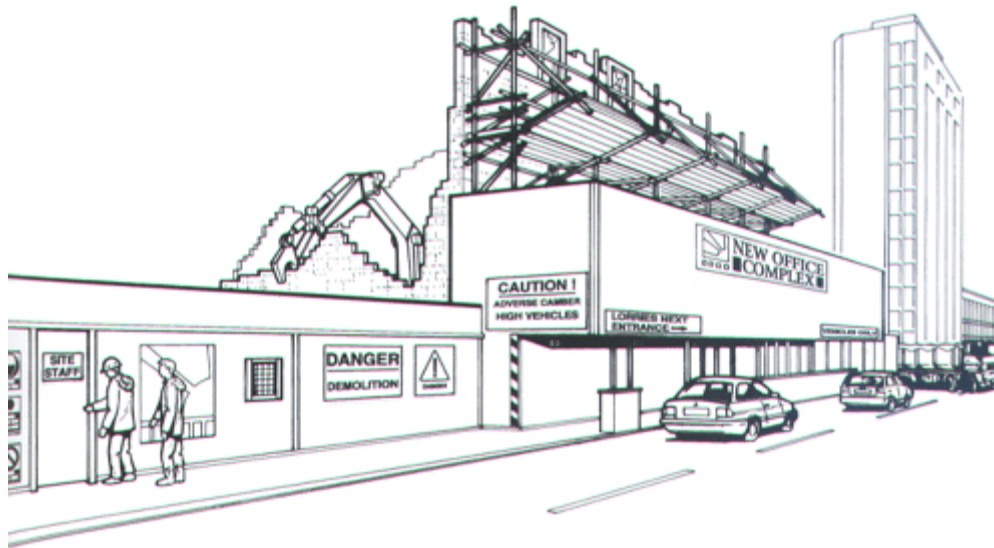
### ***Provision - The site perimeter***

**20** Experience shows that a 2 metre high fence usually provides a reasonable site barrier, even for short duration work. Perimeter fences can be constructed from a range of materials, including metal mesh. If a fence is to be used then it should be difficult to climb. Using a close mesh which prevents children getting their hands and feet through, should mean that no-one can gain handholds or footholds. Sectional fencing should be locked together and not easily separated without using a tool from the inside of the site. Keep gaps underneath the fence or gate as small as possible to stop anyone gaining access under the fence. Make sure children cannot get access through gaps under temporary fencing. On uneven ground gaps can be quite considerable if steps are not taken to level the surface. Where the feet of sectional fencing points into pedestrian areas, these should be highlighted to avoid tripping hazards.

**21** On plywood, and other similar sheeting materials, wind loading can be considerable and this can be increased by localised environmental conditions. Design the perimeter fencing (including the support and fixing arrangements for the structures) to withstand such conditions. It can be useful to provide public provision panels. These requirements need to be reflected in its design and construction.

**22** Provide securable gates at access points. The gates should form part of the fence and be the same size. Controlling access through gates is very important. Ensure that the gate can be secured, whether it is open or not, to avoid it being blown shut in an uncontrolled manner. In some environments, it may also be necessary to close the gates while work is in progress, for example, for reasons of a schools internal security. However, this must not hamper the ability to escape in an emergency. Keep the gate locked and when the site is not occupied secure any temporary fencing.

**OFFICE DEMOLITION IN A CITY CENTRE SHOWING SEPARATE ENTRANCES FOR WORKERS AND VEHICLES AND A PROTECTED THOROUGHFARE**



**23** Site storage compounds should, whenever possible, be big enough to accommodate all the plant, equipment and materials out of working hours. Strict control over the amount and timing of deliveries will help keep storage to a minimum outside the compound area. Sometimes the compound may be in a different area to the main site; it will still need the same levels of protection, signing, etc. Avoid storing materials in a way which allows the fence to be climbed more easily. Some materials pose a significant fire risk and separate, properly constructed, secure compounds may be needed for these materials.

***Outside the site perimeter***

**24** For activities such as the delivery of materials, a banksman may be sufficient to ensure that people outside the site are not put at risk. However, for higher risk activities, for example to use of a crane, it may be necessary to temporarily extend the existing site perimeter while this work is carried out. Alternative pedestrian routes may be required and this will often need pedestrian from the local authority.

**25** It may be necessary to use pedestrian tunnels or property constructed false ceilings or crash decks to protect the public from falling materials during work over occupied areas.

***Within the site perimeter***

**26** Even if the site has a fence which is designed and constructed so that individuals cannot normally enter, precautions may still be necessary for areas of high risk within the site. This protects those working on the site, visitors and anyone else who may get in. These barriers and precautions should reflect the nature of the risk. For example, where steelwork is being erected, then warning tape, notices and instructions to site personnel to avoid the area may be adequate. However, a strong, physical barrier may be needed to prevent people falling down deep excavations which are likely to be open for a period of time.

### **Maintenance**

**27** Site perimeters may need to change as the construction work progresses. Plan how you will ensure the perimeters remain current and effective. Control measures may include nominating an individual to manage the perimeter and check it is adequately maintained. If delivery points or the office accommodation is moved, alter the signs accordingly. Review the effectiveness of the control measures. Additional measures will be needed if there is evidence that people can get in. Arrangements for maintaining the perimeter should be included in the construction phase health and safety plan where CDM applies.

### **SECURITY PRECAUTIONS**

**28** Many of the precautions taken to prevent access will improve site security. However, the use and location of extra 'Security-only' measures such as barbed wire or razor wire, needs careful consideration. Accidental contact needs to be prevented. Therefore, the use of security wire should usually be restricted to around internal compound fences at a height in excess of 2 metres. Where it is used around the perimeter, provide warning signs to make sure people know it is there. Other security precautions, including surveillance equipment such as closed circuit TV and infra-red systems, are useful deterrents.

**29** If security guards are employed on either a permanent or visiting basis, they will often work alone. You should provide information about site risks to their employer and co-operate with them. If they patrol the site, the principle contractor should ensure there is safe access, plus a well-illuminated route, and clear information including any changes to the site.

**30** Security staff may need to move around the site, so select and position the lighting to ensure that signs are readable and that shadows do not mask hazardous areas. Lighting is a good means of deterring those who wish to gain unauthorised access from the site.

**31** For advice on site security and how to prevent trespass, contact the local police crime prevention officer.

### **Summary**

Plan by:

1. Identifying the hazards;
2. Assessing the risk;
3. Eliminating the risk from construction operations by design or other means if reasonably practicable;
4. Defining the area to be protected;
5. Identifying what is required at the site perimeter and other areas where people may be at risk, for example:
  1. 2 metre sectional fencing closed mesh;
  2. 1 metre fence;
  3. 2 metre fencing broad mesh;
  4. security cameras;
  5. security guards.

Provide by:

1. Erecting the protection making use of the existing site features, for example buildings, walls, etc;
2. Erecting warning/information signs.

Maintain by:

1. implementing procedures for regular inspection, maintenance, etc;
2. reviewing in the light of experience and modify accordingly.