Bedfordshire Fire and Rescue Service

Arson prevention advice for derelict and unused buildings and unoccupied buildings under construction or renovation

Derelict and unused buildings and buildings under construction or renovation are often subject to offences of arson, criminal damage and theft. Such buildings are seen as an easy target by offenders during the times when they are insecure and unoccupied. Many of the arsons in such buildings are 'opportunist' in nature as offenders who commit arson offences rarely bring anything with them that could be used to commit the offence other than a source of ignition (usually a lighter or box of matches). They thus require other items to be readily available on site to provide them with the opportunity to commit the offence. To commit an offence of arson they will need access to combustible materials to provide fuel for the fire and will also make use of any items they can use to carry the combustible materials around the site to vulnerable parts such as insecure buildings where they can start a fire. They will also need opportunities to gain access to the site and/or access to the derelict building(s).

It is often the case that derelict and unused buildings are of little value to their owners and as such implementing some of the measures described below may not be viable on the basis of cost. However, some derelict and unused buildings can be of significant value as can many buildings that are under construction as new developments or as renovation projects. It will be for the owner of the buildings to consider the measures described below and select which one(s) are most appropriate for their circumstances.

1.0 Deter unauthorised entry onto the site

1.1 Perimeter Security

The first line of defence for a site that has one or more derelict or unused or buildings under construction is the perimeter fencing and gates. Ideally the site will be fully enclosed by robust perimeter fencing of at least 2m in height that will be difficult for intruders to breach or climb over. Gates should be locked out of hours and any potential climbing aids such as structures adjacent to the fences/gates, foliage growing over the fences/gates or trees with overhanging braches adjacent to the fences/gates should be removed or trimmed back to ensure that intruders cannot take advantage of these to climb over the fences/gates and gain unauthorised access to the site.

The perimeter security gates should have anti-lift hinges and avoid any features that assist intruders to climb over them. Many perimeter gates have square openings that provide access to the locking mechanism (e.g. bolt and padlock). If these are present consider fitting angled metal anti-cut plates over the square openings to prevent intruders using them as foothold climbing aids.

There are various types of security fencing available (e.g. palisade, weld mesh, chain link etc.). The local Crime Prevention Officer can provide guidance on which type or combination of types would be the most appropriate for the site. Your local Crime Prevention Officers can either be

contacted via the Bedfordshire Police switchboard (01234 841212) or via their team email address as below:

crimereduction@bedfordshire.pnn.police.uk

1.2 Pedestrian and vehicle access

If you need to have regular access to the site (e.g. a site with buildings under construction as a new development) the number of entrances to the site should be reduced to the minimum practicable and preferably direct vehicles and pedestrians through one main entrance and exit that should ideally be attended whilst the site is in use or monitored and subject to remote access control in order to minimise the opportunities for unauthorised access to the site.

Clear directional signage should be on display for all persons and vehicles entering and moving around the site to ensure they use specified routes and only have access to the areas necessary for their specific purposes. There should be clear directional signage at all access points to the site directing visitors to report to the reception area. There should be a clear sign outside the reception area and all visitors should be required to report to the reception staff, identify themselves and the purpose of their visit, sign in and take receipt of and openly display a visitor's pass whilst on the site.

Authorised visitors will comply with such signage and direction and this will deter the opportunist intruder as they will feel more vulnerable to being challenged if they were to stray from the specified routes or to be on the site without a visitor's pass.

1.3 Natural surveillance

If intruders gain access to the site out of hours (i.e. when it is unattended) and approach the derelict or unused buildings or the buildings under construction 'natural surveillance' can have a deterrent effect by making them feel vulnerable and exposed to observation, either from neighbouring properties, passing pedestrians and vehicles or from CCTV, any of which could report their presence to the police.

If the site is visible to neighbouring properties and/or to passing pedestrians their view of the site, and thus the intruders view of them, should not blocked by overgrown trees, foliage etc. that will provide cover for intruders. As a general rule all bushes and shrubs should be trimmed back to a maximum height of 1 metre high and all trees should have their lower branches trimmed so that all are at least 2.2 metres above ground level. This will maintain a clear field of view for all areas subject to natural surveillance. All cleared vegetation should be removed from the site as soon as possible, especially in dry conditions as it can soon become easily combustible and provide a ready source of fuel for a fire.

The use of security guards to patrol the site 'out of hours' will have a deterrent effect as the intruders will be wary of being seen or disturbed by the security

guards. Appropriate signage should be on display to maximise the deterrent effect.

1.4 External lighting and CCTV

To be effective during the hours of darkness external lighting must protect the vulnerable parts of the site and in particular access points to the derelict or unused buildings or the buildings under construction that cannot be secured by conventional means such as doors, windows or steel screens and shutters etc. The external lighting needs to be planned to ensure that it maximises the deterrent effect without assisting intruders by providing light to work with in areas where they are not subject to any surveillance or shadows to work in that allow them to avoid surveillance. Circumstances will dictate whether motion operated sensor lights, photo-cell operated lights that come on at dusk and go off at dawn or floodlights will be the most effective solution for the site or any part thereof.

Consideration also needs to be given to the safety of any staff that go onto the site in the hours of darkness. If any parts of the site are in darkness the staff should turn the lights on before checking the interior or exterior of the buildings to reduce the potential for an ambush or confrontation.

In some cases neighbours may not be supportive of conventional external lighting. If this is the case infra red lighting with infra red compatible CCTV cameras may be an option to provide protection to vulnerable areas that cannot be subject to conventional external lighting.

CCTV can provide an effective deterrent effect as well as assisting in the identification of offenders and providing evidence to help secure a prosecution. As per the external lighting the CCTV should be set up to cover the vulnerable parts of the site and in particular access points to the derelict or unused buildings or the buildings under construction that cannot be secured by conventional means. The CCTV should be supported by the external lighting system and the type and quality of both the CCTV and external lighting should be such that images of evidential quality can be gained of intruders as they approach, enter (or attempt to enter) and leave the site during daylight, low light (dawn and dusk) and hours of darkness.

Most CCTV cameras are ‘fixed focus’ which means that they only provide a clear image at a certain distance. As a subject moves towards their focal point their image will become clearer and as they move away from the focal point their image will become less clear. These cameras need to be deployed in such a way that the focal point is aligned to the vulnerability they are protecting. There are also CCTV cameras available that provide greater flexibility than a fixed focus camera as they have pan, tilt and zoom (PTZ) facilities. Most CCTV cameras can be adapted to be motion activated and as such will only record images during the time that their sensor detects movement in their field of view.

CCTV systems are most effective when they are monitored as the operator will be able to see the intruder in real time and take action to maximise the opportunities for them to be apprehended whilst minimising the opportunities

for them to commit offences. There are security companies that can provide a monitoring service ‘out of hours’ and can also provide a response themselves or contact the local police to provide a response. If the CCTV images are recorded they can be used to assist in the identification of offenders and providing evidence to help secure a prosecution. If the recordings are to be used for these purposes they need to be of an evidential standard. Even if the recordings are not of an evidential standard they can still be used to identify the areas that have been targeted by intruders and the means they have used to gain or attempt to gain entry to the site or to the derelict or unused buildings or the buildings under construction on the site. This information can enable the site management to take action to make it more difficult for a repeat attack to occur.

Ideally the recordings will be retained for a sufficient period of time to enable them to be reviewed if an incident does occur and for copies to be made to hand over to the police if required. The usual standard is for recordings to be retained for 28 days.

A regular review of the fields of view of the CCTV cameras and external lighting should be carried out to ensure that items such as growing vegetation, tree branches, hedge lines and temporary or permanent structures do not obstruct the camera views or the external lighting and that the external lighting remains effective, especially during winter months.

If CCTV is installed there should be appropriate signage on display to ensure that person on the site know that they may be subject to CCTV surveillance.

1.5 Securing the derelict or unused buildings and the buildings under construction

If the site itself cannot be secured the focus should be on securing the buildings themselves. In order to prevent intruders gaining access to the buildings all doors, windows and other potential access points should be locked or otherwise adequately secured ‘out of hours’. The condition of all external doors, windows and skylights, including the frames and locking mechanisms should be subject to regular review and any deterioration in condition that may allow an intruder to gain access to the buildings should be addressed promptly.

If the buildings do not have doors and windows etc. robust metal screens or shutters should be installed to prevent unauthorised access to the buildings. It is often the case that missing doors or windows are ‘boarded up’ using chipboard panels. This is undoubtedly the cheapest option but chipboard panels are also the easiest for intruders to remove and once removed the panels provide a ready source of fuel to set a fire.

Any items that could be used as levers to force open doors, windows, skylights or to remove chipboard panels to enable intruders to gain access to the buildings should be kept in a secure storage facility out of hours to prevent them being used as described above.

Ideally all external doors should be of modern construction with multiple locking points. All external outward opening doors are vulnerable to attack at the hinges and ideally such doors should be fitted with hinge bolts to improve security. Any external wooden doors that are not of solid construction should be reinforced with 3mm thick steel plate to make it more difficult for intruders to break through them.

Ideally all windows should be of modern secure construction with at least two locking points. Old metal framed single glazed units are particularly vulnerable as they can become bent out of shape with use/time to the extent that they cannot be closed properly. Once in such condition these windows can be easily forced open by an intruder and consideration should be given to replacing them with more modern secure units or covering them with robust metal screens or shutters.

1.6 Roofs

It is often the case that intruders will climb onto low flat roofs in order to seek a way into buildings via skylights or doors/windows that are not external to the building. In addition to items that can be moved around the site (see below for more detail) there are certain fixtures and fittings that intruders can use as climbing aids to gain access to low flat roofs. Examples include hanging basket brackets mounted on walls below low flat roofs, low walls and fences adjacent to parts of the buildings with low flat roofs, storage sheds and other ‘temporary’ structures adjacent to parts of the buildings with low flat roofs, water butts under drainpipes adjacent to parts of the buildings with low flat roofs, handrails leading into doors providing access to parts of the buildings with low flat roofs, trees growing adjacent to parts of the buildings with low flat roofs etc.

Consideration should be given to removing the climbing aids wherever possible. If this is not possible then consideration should be given to putting something on top of the climbing aid or along the edge of the low flat roof that would deter intruders. There are a variety of devices and methods available such as anti-climb paint, static spikes, rotary spikes etc. The local Crime Prevention Officer can provide guidance on which devices or methods will be most effective for the particular circumstances at the site or part thereof. Please ensure that you speak to your local Crime Prevention Officer before fitting any anti-climbing measures that may cause harm such as spikes, barbed or razor wire etc. Additional advice from the relevant Local Authority Risk Management Team should be sought regarding this point in order to comply with relevant Health and Safety legislation.

The presence of metal circular profile drainpipes, especially in areas where there are low flat roofs, make those areas particularly vulnerable to intruders who want to get onto the roof areas. The fitting of ‘L’ angled metal plates or wooden boxing or cladding on the upper sections of drain pipes in such areas will prevent them being used as climbing aids. This may not always be practical due to the layout of some of the drainpipes and in such cases the use of anti-climbing paint would be an effective alternative deterrent.

Once onto roof areas intruders often use skylights as a means of gaining access to buildings. Ideally the skylights will be secured by an adequate

locking mechanism and/or covered by a secure metal grill to prevent intruders using them as a point of entry into the buildings.

1.7 Intruder detection

If the buildings are of value consideration should be given to installing comprehensive mains powered intruder detector cover that will be linked to an alert system in the form of a monitoring service as this will ensure that the key holder(s), security patrols and/or the police get prompt notification of an intrusion in the buildings out of hours.

If the intruder detectors cannot be linked to a monitoring service then they should be linked to an external audible warning system that can be heard by neighbours. This is not the ideal as our experience is that neighbours do not always respond promptly to the sound of an external audible warning system. The resultant increases the likelihood of the intruders being given sufficient time to set fires, cause damage or to find and remove items of value and make good their escape.

If the buildings are not comprehensively covered by automatic intruder detectors that are linked to an alert system it is likely that any intrusion into the buildings out of hours will remain undetected until the building is next attended, by which time the intruders will have caused all the damage and/or removed all the items of value that they came for.

Ideally all rooms with external doors, windows or other points of access and all corridors will have intruder detectors (e.g. motion sensors or contacts). This should include rooms with external doors and windows in enclosed courtyards if intruders could get into such courtyards via flat roofs.

It is important to regularly review the intruder detectors to ensure they are in good working order and that the fields of view of the motion sensors are not obstructed by any items that are kept inside the buildings (e.g. building materials in the case of buildings under construction).

2.0 Reduce the opportunity for an offender to start a fire

2.1 Combustible waste management

Effective management of the combustible waste on site can reduce the opportunity for an intruder to utilise combustible waste in an arson attack. Combustible waste bins are a ready source of combustible material. If these are not kept secure out of hours the combustible waste can be removed and used as fuel for a fire. It is often the case that such bins have wheels to make them easy to move and if they are left insecure intruders can move them around the site to use as climbing aids to gain access to roof areas or to transport larger quantities of combustible waste to vulnerable parts of the site in order to set a fire.

Ideally the site’s combustible waste bins should be kept in a secure compound at least eight meters away from any buildings. If it is not possible to have a secure compound then consideration should be given to chaining the combustible waste bins to each other and to a secure fixture such a wall or floor mounted anchor point to prevent intruders moving them around the site.

If it is not possible to install a secure anchor point then even just chaining the combustible waste bins to each other will make it more difficult for intruders to move them around the site.

Ideally the combustible waste bins should be made of metal as they are better able to withstand the temperatures generated if their contents are set on fire and should be able to contain all but the most intense of fires. If the contents of a plastic combustible waste bin are set on fire the bin itself is likely to catch fire once the temperatures inside exceed the ignition threshold of the plastic. Once this occurs the plastic will burn fiercely, thus increasing the risk of the fire spreading. The burning plastic will also give off toxic fumes that may cause harm to anyone who inhales those fumes.

Ideally the combustible waste bins will have lockable metal lids that should be locked out of hours. This will make it harder for intruders to open the bins in order to remove any combustible waste to use as fuel for a fire or simply set the contents of the bin on fire. Even if a metal lid is forced open and the contents of the bin set on fire the metal lid will not melt and provide further fuel to the fire. Once the plastic lids catch fire they do tend to burn fiercely and increase the risk of the fire spreading.

Ideally the combustible waste bins will be emptied regularly and the combustible waste removed from site. The combustible waste bins should not be allowed to become so full that they cannot be closed and locked as this makes them particularly attractive and vulnerable to an arsonist.

Similarly any bulky combustible waste such as wooden pallets, dismantled wooden sheds, fences and furniture etc. that cannot fit into the combustible waste bins should be kept somewhere secure out of hours and removed from the site as soon as possible.

2.2 Combustible external fixtures and fittings

Poorly maintained combustible external fixtures and fittings can provide intruders with access to combustible materials. Examples include broken fence panels, disused wooden sheds and outbuildings, insecure wooden trellises etc. Such items provide a ready source of combustible material for intruders to use as fuel for a fire.

Buildings and structures such as derelict or unused portacabins and mobile classrooms can be particularly vulnerable to an arson attack due to their combustible nature. Such buildings and structures often have slated skirting underneath which does provide intruders with the opportunity to push combustible materials through the gaps which they can then set on fire. These vulnerabilities can be reduced by fitting robust solid sheet skirting that will reduce the potential for combustible rubbish and other items to accumulate underneath those buildings and structures and this will also prevent intruders from placing combustible materials underneath those buildings and structures in order to set a fire.

2.3 Letter box and vented external doors

The conventional letter box presents an easy opportunity for an arsonist to introduce lighted combustible materials into a building. If the building has a conventional letter box but is not in use the conventional letter box should be sealed to eliminate the opportunity for an arsonist to introduce lighted combustible materials into the building by that route.

External vented doors such as those fitted on boiler rooms also present an easy opportunity for an arsonist to introduce lighted combustible materials into a building. If the building is not in use robust steel screens or shutters should be installed to prevent combustible waste being introduced into the building via the vents. If the building is intended for future use (e.g. a building under construction or a restoration/renovation project) a fine wire mesh grill should be fitted over the vents on the inside of the door. This will prevent combustible waste being introduced into the room via the vents without interfering with the function of the vents which is to provide ventilation for the equipment inside the room.

2.4 Flammable materials

All flammable materials on site such as solvent based paint, petrol, flammable chemicals etc. should be locked away in a secure store out of hours to prevent intruders using them as fuel for a fire.

2.5 Climbing aids

In addition to large wheeled waste bins items such as loose wooden pallets, ladders etc. can be used by intruders to gain access to low flat roofs or to get through low open or insecure windows. Any items that could be used as climbing aids should either be locked away in secure storage or securely fixed in situ to deny intruders the opportunities to use them as climbing aids.

3.0 Measures to mitigate the spread of fire

3.1 Fire detection/suppression

Prompt attendance by the Fire Service can make a significant difference in terms of reducing the damage, cost and disruption that can be caused by a fire if it is allowed to take hold. If the derelict or unused buildings or the buildings under construction are of value consideration should be given to installing a system that can detect a fire in the buildings out of hours and provide an alert to enable a prompt and effective response to the fire to be put in place.

Ideally the buildings will have comprehensive mains powered automatic fire/smoke detector cover that will be linked to an alert system in the form of a monitoring service as this will ensure that the key holders and/or Fire Service get prompt notification of a fire in the buildings out of hours.

If the fire/smoke detectors cannot be linked to a monitoring service then they should be linked to an external audible warning system that can be heard by neighbours. This is not the ideal as our experience is that neighbours do not always respond promptly to the sound of an external audible warning system.

The resultant delay can significantly increase the damage, cost and disruption caused by the fire as it takes hold.

If the buildings are not comprehensively covered by automatic fire/smoke detectors that are linked to an alert system that can provide a prompt response to any outbreak of fire it is likely that a fire in the buildings out of hours will remain undetected until smoke and/or flames are rising from the building, by which time the fire has become well established and has already caused significant damage.

A comprehensive sprinkler system that automatically attacks any outbreak of fire as soon as it is detected is without doubt the most effective measure that can be taken to mitigate the effects of a fire within a building. The typical cost of installing a sprinkler system is in the range of 2% to 5% of building costs where extensions, new builds or renovation projects are concerned.

Consideration should be given to installing a sprinkler system or alternatively a water mist system which can be even more cost effective. Installing such systems should be seen as an investment that may save a lot of money by minimising smoke/fire damage in the event of a fire. Further details regarding such systems can be obtained directly from specialist suppliers.

3.2 Closing doors to prevent the spread of fire

One of the most effective measures to prevent fire from spreading through a building and to reduce smoke damage is to ensure that all internal doors are kept shut, particularly out of hours. A routine should be established to ensure that this is done whenever the building is left unattended.