ASCEND – IMPROVING ORGANISATIONAL RESPONSE TO MARAUDING TERRORIST ATTACKS

A Summary of Key Emerging Themes from Trials Conducted between 2017 and May 2018

CPNI
Centre for the Protection of National Infrastructure

COUNTER TERRORISM POLICING

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This document sets out the early lea the END trials that have taken place to date. It is part of a series titled *"M ding T ist At s: Making your organisation ready"*.

The document summarises e key rging th es from the trials and how each is being taken forward. It should not onsid as advice document. It is intended be used to inform the readership of the k to d nd prepare them for the comprehensive *"Marauding Terror tacks ak our organisation ready"* guidance document, that will be circulated th ment to vide the detailed advice.

Contents

EXECUTIVE SUMMARY

The Marauding Terrorist Attack (MTA) is an attack methodology adopted by terrorists. CPNI has a comprehensive programme of activity focused on improving protective security arrangements against MTA. One strand of CPNI's MTA work involves the repeated physical simulation of an MTA in a building environment – Project ASCEND. Broadly, this involves subjecting a building population to a simulated firearms attack and determining factors that can improve survivability.

Project ASCEND trial activity has provided a clear i[illegible] of how, by adapting the response of those bein[illegible]tacked and responders, the impact of MTAs can be red[illegible]. The trials have shown the outcome is likel[illegible] be re[illegible]ed numbers of fatalities and casualties.

As of May 2018 CPNI, has identifie[illegible]ht e[illegible]rgin[illegible]mes:

- Security Control Roo[illegible]CR) Consid[illegible]ons
- Interaction with Emergency [illegible]vices
- Public Ad[illegible]s Vo[illegible]Announcements
- Lo[illegible]
- [illegible]unsh[illegible]Detecti[illegible]ystems
- Active [illegible]Systems
- Training Considerations
- Impact on Attackers.

The eight themes have [illegible]be[illegible]broken down into 45 findings which are detailed i[illegible]port. Each finding is now being a[illegible]to establish i[illegible]ufficient work has been undertaken t[illegible]clud[illegible]NI guidance. Some themes will continue to be [illegible]vel[illegible]d: [illegible]hin the ASCEND trials during 20[illegible] elsew[illegible]within CPNI or with key stakeholders, [illegible]ch a[illegible]e eme[illegible]ncy services and the security guardi[illegible]industry.

[illegible]key learning points have been identified as a result of t[illegible]ials and analysis that have taken place up until May 20[illegible]8 and are listed on page 5.

[illegible]he ASCEND trials continue. It is crucial that the interim lessons learnt are now shared and developed into CPNI guidance, to allow stakeholders to consider how they adapt their preparation and response.

A CPNI guidance document titled *"Marauding Terrorist Attacks: Making your organisation ready"*, has been issued in parallel to this document. This includes a suite of supplements which will provide detailed advice over a number of the emerging themes. Further editions of the main guidance document and supplements will be issued as the research develops.

The following key learning points have been identified:

1. Situational awareness[1] in the Security Control Room (SCR) is critically dependent upon CCTV coverage and information transfer. MTA specific requirements have been identified.

2. Focusing SCR activity on a limited number of high priority tasks can improve the response. SCR operators must prioritise and allocate each individual task. The number of priority tasks will depend on the number of operators deployed in the SCR. Preparation and practice will improve the response.

3. Delivery of carefully considered and timely Public Address and Voice Announcements (PA-VA) can save lives. Effective announcements are difficult to deliver and new staff are given PA-VA training. The design and functionality of the PA-VA system, what is said, how it is said, and the ability of the operator will determine the impact of the announcements.

4. Early identification of an attack is critical. The deployment of Gunshot Detection Systems (GDS) linked to the SCR can reduce the time taken to alert operators.

5. Public Address Voice Announcements must enable occupants to recognise which part of a building/exit/stairwell is described. Key areas in buildings must be easily described and recognised.

6. Lockdown can save lives when properly done with. Early decision making is both crucial and challenging. Preparation of building occupants for lockdown and advising on hiding locations are key. A priority SCR task is informing occupants lockdown has been activated. Further work has been undertaken on how lockdown can be supported by GDS and other systems.

7. Preparing occupants to respond to an attack by assessing the situation rather than following "the herd" is likely to improve outcomes. Listening, looking and assessing threats should inform their response. The concept of using "local leaders" to inform decision making is being considered.

8. The provision of accurate and relevant information to Police call handlers is of critical importance to inform the emergency service response. Further work is required in this area and will include the initial response of firearms officers.

9. Improving both SCR operators and building occupants understanding of the response they should make to an MTA has been seen to improve the chance of survival. Rehearsing, briefing and training is crucial in this area.

[1] See glossary document for definition of situational awareness

INTRODUCTION

Marauding Terrorist Attacks (MTAs) are fast-moving, violent attacks where assailants m[illegible] a location aiming to find and kill as many people as possible. Most deaths occur within the first few minutes, bef[illegible]e are able to respond.

The response of the police and other emergency services to such attacks is [illegible]ailed [illegible]ational guidance (Operation Plato). That guidance refers to a wide range of attack methods, from attacks o[illegible] [illegible]phistication, such as those, using bladed weapons or vehicles, through to more complex attacks in[illegible] firearm[illegible] explosives. The emergency services' response to an Operation Plato declaration is supported by a [illegible] of ag[illegible]d princ[illegible]s. These Joint Operating Principles (JOPs) have been developed by the Home Office and the e[illegible]gency [illegible]vices co[illegible]munity in order to ensure that there is an interoperable response.

CPNI has a comprehensive programme focussed o[illegible] improv[illegible]roted[illegible] security arrangements against MTA. Basic guidance has already been published by CPNI which wi[illegible] built upo[illegible]er in 2019. One strand of CPNI's MTA work involves the repeated physical simulation of an MTA in a bui[illegible] environm[illegible] – Project ASCEND. Broadly, this involves subjecting a building population to a simulated atta[illegible]d loo[illegible]at fac[illegible]s that can either improve or reduce survivability before the arrival of an armed police response.

This paper provides a short summa[illegible] of th[illegible]work u[illegible]rtaken to date and the emerging trends identified so far as a result of ASCEND trials. These trial[illegible]ere co[illegible]ted between August 2017 and May 2018. Whilst further confirmatory trials are planned and will result in t[illegible]ublication o[illegible]ther detailed CPNI guidance, readers may find it helpful to have sight of the emerging themes and f[illegible]ng[illegible]nd the early [illegible]idance to assist with assessing the implications for their own protective security arrangements.

This work sits a[illegible]gsid[illegible] National 'RUN HIDE TELL' campaign that is designed to inform members of the public on what do to in the even[illegible]an M[illegible]

THE TRIALS CONCEPT

Useful Background Information relating to Response

For this paper it is helpful to divide 'responses' to an MTA into the following

Phase 1 – Initial Response. Responses of the organisations either being atta are at risk of being attacked. The responses of such organisations in the first few minutes of a can sa ves. Broadly, these responses may include detecting an attack, communicating with emerg serv s, comm icating with building occupants, implementing any lockdown procedures, etc., and upon the al of t gency services, providing them with support.

Phase 2 - Emergency Services Response. For an will i e a police firearms response (initially this is likely to be Armed Response Vehicles (ARV) then rapid upple ed by e specialist capabilities. The response may also involve specialist fire and health professionals.

The response phases should not be seen olated mer s there are some important dependencies, which will be discussed later.

ASCEND TRIAL AIMS

The overarching aims of the ASCEND trials are as follows:

- To reduce casualties and save lives by characterising and developing counter terrorism capabilities to deter, disrupt and delay MTAs against organisations and building types.
- To determine if and how operational security procedures, human factors and security technologies can reduce the effect of an attack and thus redu fatalities and casualties.
- To understand how an attack can be detecte communicated to the emergency serv and b g occupants and implement physical secu measu and procedures within a build Offeri ort of emergency services on arriv

Through each individual t ese aims h been varied to allow for the elop t of specif themes.

What trials were und ken and wh d they seek to achieve?

A series cal als wer undertaken to simulate an MTA on a ild s occupants and the effectiveness a epen ncies o ous elements of protective secu The als also served to highlight general areas of weakn aps that need to be addressed.

The trials comprised of the following key features:

- A multi-storey building equipped with internal and external CCTV, a Security Control Room (SCR) equipped with a Security Management System, PA-VA, Automated Access Control System (which can be used to implement lockdown, if and when required).
- Experienced secur manning the SCR and und taking other s duties often required of secu rs.
- Role playe re senting members of the public buildin cupants. For each trial, approximately 13 ew role ayers were used.

 attac am possessing various levels of skill nd armed with AirSoft weapons, supported by rms firing blank ammunition (to simulate the noise of gunfire).

A variety of new technology was also installed within the building to assist the SCR with situational awareness or to delay the progress of an attack. This included the deployment of a Gunshot Detection System (GDS) and Active Delay Systems (ADS).

- Communication links with the emergency services, including simulated 999 call handling and information relay to armed responders.
- Equipment and resources to track the movement patterns of role players during the trials ("incident"), information on how many fatalities/injuries, and comprehensive debriefing of role players to better understand how they felt, their decisions and the impact of various types of public announcements during the trial.
- Five major trials were undertaken; each comprising seven scenarios designed to investigate a particular theme or issue.

Limitations of Trials

The trials had a number of limitations and constraints which should be borne in mind if trying to use the data or trends for shaping site security arrangements. The most significant ones are as follows:

- Human behaviour during the trials does not accurately replicate behaviour of people exposed to the threat of a violent death. With each trial, many variables were in play and altered to allow CPNI to develop a strategic picture of what the most important parameters are, and how they are connected. Most of our learning has come from observation and debriefs of role players and security officers.

- Were always 'on edge' and expecting an MTA. Despite every effort to distract the operators, put them at ease or go long periods without any 'terrorist activity', the officers were still much more tuned into security operations than CPNI would expect normally.

- The building used is representative of a simple 'office' and is therefore simple to manage, compared to, for example, a shopping centre, a sprawling [illegible] a concert venue, etc. This means that some of tasks [illegible]ed of the Security Control Room are [illegible] than [illegible]d normally be encountered and [illegible] it comparatively easy to navig[illegible]

- The trials have all bee[illegible]d on [illegible]arms a[illegible]acks and have not fully cons[illegible]ec[illegible]cks without firearms may p[illegible]e dif[illegible]nt resp[illegible]es and learning. However, the princ[illegible]are[illegible]ely to remain the same.

Despite the [illegible]itations, ma[illegible]y of the role players and security [illegible]cers [illegible]ating felt the experience was realistic, s[illegible]ss[illegible] and rewarding.

SUMMARY OF KEY EMERGING THEMES

The trials conducted were exploratory in nature; designed to identify broad issues and dependencies using representations of common security arrangements being put under pressure in a very fast-moving environment.

Eight Emerging Themes are identified:

1. Security Control Room (SCR) Considerations
2. Interaction with emergency services
3. Public Address Voice Announcements
4. Lockdown
5. Gunshot Detection Systems
6. Active Delay System
7. Training Considerations
8. Impact o ttac

Each theme will be exp in re detail within this document an the emerging s will be identified. Considerat given to an ering three key question

- fficien mation now available to allow th utcome be placed into guidance?
- ow sh the themes be developed with ey stakeholders?
- What now needs to be done to further develop the outcome?

Caution should be exercised when translating the Emerging Themes of the trials and applying these findings to a specific site/situation as there may be local site factors that may need to be taken into consideration.

1. SECURITY CONTROL ROOM (SCR) OPERATIONS AND INFRASTRUCTURE

During an attack there are many tasks to be completed, but the most important and time critical within the few first minutes of an attack are (not in priority order as this will be event, organisational and location specific):

a. to ascertain information about the incident in order to make decisions/implement processes to deal with the situation

b. to call 999 and make initial contact with the Poli

c. to alert building occupants/people in nea inity of the attack and provide any further inform

d. to track the incident/attackers for the re s of changing the course of actio g. the has caught fire), providing mor inf o eme cy services, such as loca direct travel of attackers, their num escriptions, aponry, etc.

e. to implement lock ar r deployment of any A tive Delay Sy

f. to comm icate her security personnel

a shar uilding or complex site (e shopp centre), communicate with/alert relevan security entities

h. o communicate with senior management

to obtain information on the numbers of casualties and fatalities.

In CPNI's experience, most SCRs are unlikely to be able to complete all of the above tasks during the typical duration of an MTA. To ease the burden on the SCR for the ASCEND trials, only tasks a – e were in play. From August 2018 onwards, tasks f – i will be included in the trials.

Emerging Themes - Security Control Room (SCR) Operations and Infrastructure:

1.1 It is very difficult to detect the start of an attack via CCTV alone; it can be easily missed, may occur in areas where coverage is poor or at a time when SCR operators are distracted (such as completing other tasks). If an attack occurs without SCR operators immediately noticing, then their attention is most likely to be drawn to indirect indicators, such as people running, people lying on the floor or through communications with those in the near vicinity of the attack. When this occurs, the officers are having to build a picture of what is happening and then assess what to do. All these factors immediately effect the stress levels of the SCR operators.

1.2 Once the SCR is aware of an attack, the five priority tasks (a-e), are very difficult to complete with a compliment of three experienced SCR operators and for a basic building layout which was simple (a low-rise office building, not a sports stadium or shopping centre). This was because:

- An operator is required to communicate with emergency services, which occupied them up for the duration of the incident.
- One operator had the task of tracking the incident and relaying information to others in the SCR, including the officer in communication with the Emergency services. If there are multiple attackers, or worse still, they split, it is very difficult for an operator to both accurately follow (in a timely manner) and relay information to others. This in turn affects the quality of the inform[illegible] passed to the Emergency services.
- Public Address and Voice An[illegible]A), if done well, required a d[illegible]cate [illegible]erator.
- Despite the tasks [illegible]nsibi[illegible]s being [illegible]vided between control ro[illegible]op[illegible]o[illegible] was common for duplication [illegible]effort, [illegible]s redu[illegible]e effectiveness of the SCR. W[illegible]an [illegible]er co-ordinated activity, there was more fo[illegible]less duplication, at the ex[illegible]of some tasks [illegible]being completed or give[illegible]lo[illegible]ority.

  Reduc[illegible]e manning in the SCR to two perato[illegible]eant that not all five tasks (a-e) could be comp[illegible]d. This meant only limited PA-VA could [illegible] causing confusion and assisting attackers.

  Reducing the manning in the SCR to one operator meant that the only task that could be completed was phoning 999.

1.3 All SCR operators had the ability to complete a maximum of seven scenarios. It was noticeable that over these runs that:

- Their performance improved significantly
- When SCR teams rotated between roles, some SCR operators were more naturally suited to undertake particular tasks. For example, some were better at tracking, some more effective at giving clear, accurate information to the police and a few were effective at giving PA-VA. Only a few were able to do all these new and unfamiliar tasks very well, despite all of them being experienced SCR operators.

1.4 The location and type of CCTV played a very important role in assisting the SCR track the incident. More work is required in this area, but initial findings are:

- Internal CCTV on major thoroughfares is essential. This includes, but is not limited to stairwells. Without this type of coverage, it is very difficult, and in some cases impossible, to provide effective PA-VA, as such coverage can provide critical information on the status of evacuation routes, location of attackers, etc.
- Cameras that allow the SCR to acquire and follow a target for longer is of great ass ce. For example, in larger areas (e.g. tside) use of Pan Tilt Zoom type of camera refera to multiple fixed cameras; internally, se of 180 degree fixed came are era to multiple conventio fixed cameras.
- The trials did n t new techn gy such as 360 degree or very -resolution cameras, but these be investig in future trials.

1.5 Consideration was given to how CCTV is displayed to an operator:

- The use of a 'Video Wall' vs spot monitor. All SCR operators preferred using a video wall to track the incident. The video wall needs to be configured to display CCTV feeds relevant to the tracking task (i.e. good geographic coverage and sented to an operator so that a subject moving c e easily spotted on adjacent feeds). T allows th CR operators to much more read and see the bigger pict shou subject lost, it also assists with rec overi em.
- None of the SCR o at red using spot monitors fo neral cking monitors were generally not r r the tracking function as this involved sw between cameras using but tc; this is ad work, was slower and can sily the subject being lost. However, they e u more detail was required on a subj ch as information about weapons or perso clothing.

2. INTERACTION WITH EMERGENCY SERVICES

When calling 999 the initial call should be to the police. The call handler will want to co certain key pieces of information, such as the nature of the emergency, locati description of attackers, information about weaponry, etc. This information will be enter call handling system and appropriate resources dispatched. The types of resourc disp will be dependent on what information is known; missing vital pieces of inform n slow the ability of the emergency services to neutralise the threat en trea dalties.

2. **Emerging Themes - Interaction with emergency se s:**

2.1 Calling and passing information relevant t TA tak any minutes and will occupy a SCR operator for much of an dent. is a important task that will reduce the capacity to undertak er tasks.

2.2 The exact question sets require differ olic ces varies for an MTA and so it is not possible, at th e, to standardised question set that could assist SC perator better prepared. However, it will be possible to issue broad g on the ject and develop this work with the emergency se es.

2.3 SCR operat wer n very stre ed when dealing with the police call handlers and a go d proportion e unfamiliar/inexperienced in relaying information in a concise a lear manne ere were several issues including, conveying what they ught the situation rather than what they actually saw, not providing inform n that had, but were not asked for by the 999 operator (e.g. we have Gunsh Detecti System, we have eyes on the attacker and have the ability th etc.). This theme requires further development with the Police.

Th ine of communication was not always left open – it can depend on the of what information is being relayed and how important they consider it. call handler will be working through a series of questions. A SCR may have CCTV or other assets that may be important for the police response, and it is important that this information is made known to the call handler. If the line of communication is broken, there should be robust means of re-establishing a connection. Further consideration is required with the emergency services as to the benefits of a dedicated line, used only for communications with emergency services (the line is not used, during normal business operations).

2.5 In some cases, the police armed response will seek to communicate with the SCR; in some scenarios, this line of communication can be very beneficial. The communication may occur by telephone, radio or as a result of police officers attending the SCR. CPNI have observed that:

- Police use specific terminology to communicate between themselves and whilst they are trained not to use this with members of the public, it was often used. This sometimes led to misunderstandings with the SCR, usually because the SCR operators either thought they understood or were not confident in asking for clarification. This could have very significant impact on the efficiency of the police armed response. Examples of misunderstandings included: how floors/levels are described; building aspects/parts of buildings; misuse of elements of the NATO phonetic alphabet to describe hostiles and non-hostiles. Similarly, security officers can use terminology unfamiliar to police officers (typically, how a building is described etc.). There is a need to improve training of security officers to ensure the use of "plain English", free of acronyms and technical jargon and improve their confidence in seeking clarification, if they do not understand.

- The location of the SCR is an important factor (but it is not the only one) in whether or not the police are able to attend it and maximise the use of its resources. CPNI has advocated locating SCRs in locations where their vulnerability is low (e.g. higher up a building). This can mean that the SCR can be very difficult to reach in an MTA; taking greater time to get to and direct officers to make safe passage. There is a need to review our guidance in this area.

3. PUBLIC ADDRESS AND VOICE ANNOUNCEMENTS

The trials explore fast time communications to building occupants or those in the very near vicinity of the building using public address systems. The purpose of the announcement is to alert people who may be attacked that they are at risk, enabling them to take appropriate action. There are various types of warning that can be given:

- Use of a siren/bell/sounder, such as a fire alarm. These were not included within ASCEND due to their significant limitations and unsuitability for MTA. It was hard to distinguish these noises from other announcements.
- Public Address Voice Announcemen -VA) using pre-recorded messages.
- PA-VA using live announcem
- PA-VA linked to a G t Detection em, which provides intellige re- ded annou ements based on whi sensor ha n activated.

Detailed examp of th es of announcements and how they have been u within CEND are provided in Annex 1. Additio rmat is pro ed as to: why they were preferred e endencies and phrases to be avoided.

In C ro f security advisor, it has seen various types of m s delivered either live or via pre-recorded announcement iew appear to be satisfactory, but has little evidence on which to base this on. Examples of types of messages being used include:

- There is an Active Shooter in the building. RUN HIDE TELL.
- There is a security incident in the building, leave the building immediately.
- There is a firearms incident in the building, located at location X. You should evacuate the building via locations Y and Z.

Emerging Themes - Pu dd s Voice Announcements:

3.1 Before ication to occupants can be given, it is first cessa ther important information about the t of the incident and decide what ruction be given. It will take time to make s e of the uation and then issue an informative ouncem t. Even for SCR operators who were g in the trials and were expecting an attack, announcements were not instantaneous and the speed delivery was heavily influenced by CCTV set up, team working and information flow within the SCR and in some cases, confidence in using a PA-VA system.

3.2 At the start of the trials programme it was assumed that the PA-VA announcements would be most beneficial to and be targeted at those closest to the threat. CPNI discovered that this assumption was incorrect and found those in the immediate vicinity of the threat (they could see or hear it) were, on the whole, less influenced by an announcement and more influenced by what they could see or hear of the threat, with only about one-third being influenced by the announcements. Over the series of trials CPNI developed the model shown in figure 3 (page 17) to help tailor messages:

Figure 3: ASCEND attack influence zones

ZONE 1	Persons are b attacked or are close enough that they can either see or hear the attack. C unications is group is important, but many will be distracted and their ability to act on infor on given impaired.
ONE 2	Pe ns are under imminent/approaching threat, but they are unaware of the attack or ill informed. diagram, all persons within the building are under threat. Communications to this group is vita there is a good opportunity to reduce their exposure to harm and they are likely to listen to PA-VA announcements
ZONE 3	Persons in this area are not directly exposed to the threat, but may wander into the area of attack, putting themselves at risk. Communications to this group is also vital to minimise their exposure to harm.

3.3 CPNI observed that people in Zone 1 were often preoccupied with what they were seeing or hearing and on the whole, were less influenced by announcements over the Public Address system. However, if they were hiding they did find announcements reassuring, knowing that they were not alone and information was being provided.

3.4 So far, only one trial was conducted with messages specifically tuned to Zone 2, but the results so far support the theory that targeted communications according to Zone are effective, as they are most likely to be received by the occupants and inform their decision making.

3.5 Pre-recorded announcements are easier for the security control room to give – simply press a button and an automated announcement is given. However, so far, CPNI have found it to have limited effectiveness due to:

- The messages have to be generic and whilst they contain useful information, they can't be specific to the situation. For example: "There is an Armed Attack in the building. Evacuate the building or hide if you can't." It is not possible/impractical to provide information on the location of the [redacted] which assists occupants' decision making.
- Repeated messages are the same. After several repeats the effectiveness of the communication to the building occupants diminishes. Role players [redacted] that after several minutes of broadcast, they found the communication of little value.
- A repetitive, pre-recorded announcement wasn't regarded as being as credible, authoritative or as effective as a live announcement, although a proportion of role players did not differentiate between pre-recorded and live message broadcast less frequently.

3.6 Many SCR operators participating in the trials, [redacted] with giving live announcements: sometimes they [redacted] to give them; when given delivery was sometimes inconsistent; and they struggled with delivering clear and concise messages. Throughout the series of trials, it became clear that what was experienced is likely to be representative of a wider industry issue, that security control room operators are rarely given any form of training on delivering PA-VA announcements, certainly not in a fast moving and dynamic situation. CPNI found this to be a bigger issue than the exact content of the PA-VA announcement itself (see 3.7).

3.7 ASCEND trialled scripted and unscripted (but guided/prompted) messages, which broadly comprised of the following elements: nature of incident, location and what action to take (examples of preferred and non-preferred messages are detailed in Annex 1). CPNI found that:

- Messages needed to be accurate, concise and frequently repeated; speed is of the essence and every second counts; messages need to reflect that. The use of 'bing bongs' to gain parties ("May I have your attention") and other similar distractions have no value and delay the delivery of delivering core information.
- A more efficient message is clearer, stating: the type of incident (where it is (currently), if one or multiple attackers (only important if they split) and what action is to be taken (e.g. leave the building if you can, hide if you can't – but this depends on [redacted] and layout of building). The message should not provide information that would be helpful to attackers (e.g. directing persons to leave via exit X, see 3.9).
- The tone, clarity and confidence of the announcer were also important – as these impacted on how seriously people took the message and therefore how they responded to it.
- The phrase 'security incident' did not have the desired effect, with many role players not understanding the imminent threat they were facing. It was better to be more explicit about the nature of the threat (e.g. armed attack) but care is needed to choose words that can't be misheard (e.g. "firearm" sounds like "fire alarm").

The messages needed to be clear, concise and repeated regularly (at least every minute), either providing new information or confirming current status. It wasn't necessary, for all repeated messages, to repeat the full text, just pertinent points.

3.8 Those role players and SCR operators who were less familiar with the building, struggled to relate to the name of specific areas of a building with its actual location. This led to false information/misunderstanding or delay in trying to decipher the message. Many building occupants and certainly visitors, struggle with knowing the names/locations of key features of a building, such as stairwells, entrances, etc., unless steps are taken to prepare staff and also use terms/colour/signage to make it easier to associate with a location. This is a significant issue that requires further work.

3.9 Some announcements directed people to leave via particular routes, but the attackers picked up on this and acted on the information to intercept role players. It was also problematic to be certain that specific routes were clear and set a false sense of security for role players and in some cases led them to their 'deaths'. CPNI do not advocate this type of messaging.

3.10 People have a strong tendency to herd/follow the crowd; people running away and screaming/shouting is often enough to persuade others to follow. This can often lead to people running with no understanding of what they are running away from or where they are going too. In some cases, they run towards the threat. CPNI have observed that pe... are influenced by individuals who lead (i.e. ... will follow directions given). The trials did ... have the opportunity to explore this issue further, ... it is possible that "local leaders" could ... select ... trained and better prepared to direct st... safet...

3.11 Following the debriefs of ...le p... analysis ... their behaviour using C..., CPNI ...ss there is merit in encouragin... bers of the ...lic to take a moment to ass... the ...ation, using ...eir senses, before acting. ...his may so... obvious, but many people did not ... the time to ...his. This approach would be ...ilar t... Green Cross Code – Stop, Look and L...n (alth...h is not an ideal phrase, as it im... that t... cannot ... done whilst on the move).

3.12 Pre-recorded announcements, of the type that simply confirmed the type of incident and action to be taken, were not found to be effective. As the attacks unfolded they became simply a source of noise which do little good for anyone. They partially masked the noise of attacks and denied the opportunity of members of the public to use their hearing; it frustrated the SCR operators and hindered police arm... response communications. The operators' ability to p...vide live updates over the PA-VA were also comp...sed by the automated announcemen... Despite this, pre-recorded a...noun...ents we... better than no announcement... articu...early into an attack or for those l...ated in ...nes 2 ... 3.

3.13 It is possible to ...se aut...ated ...cements linked to a Gun... Dete...n Syste..., where the announcement can i... live update of where shots ... fired. This type ... stem would be potent... ...re advantageous for informing the SCR ...d bu... ...upants of attacker location and will b... ...ed in ASCEND in 2018/19.

3.14 D...ng some ...enarios, a PA-VA was given that stated ...arrived', which was intended to reassure the role players. Generally, this announcement changed the behaviour of the attackers where they started to prepare ...he inevitable arrival of armed officers. This meant that they stopped targeting members of the public, regrouped/took some time to ready themselves and then awaited the response. This made the response of the police firearms team more difficult. For reassurance purposes, rather than state 'police have arrived' it would be better to state 'police have been called'.

4. LOCKDOWN

The building was equipped with an Automated Access Control System (AACS), which was used in several but not all trials. The AACS was linked to magnetic locks aka 'maglocks' securing (to a low level) perimeter, reception and stairwell doors. Three general scenarios were investigated:

1. AACS controlling entry to persons carrying a token/pass (representative of security in many offices, access to back of house in public venues etc.).

2. Lockdown (exit only), where all tokens/passe[illegible]ere deactivated, which prevented persons fro[illegible]pening doors which led onto floor plates but allowe[illegible]ople to escape/exit.

3. Lockdown (secure/full), wher[illegible]ll token[illegible]s were deactivated and doors s[illegible]d prev[illegible] entry and exit.

Emerging Themes – Lo[illegible]w

4.1 There [illegible]confusion/ambiguity in relation to what mean[illegible]kdown" – this was a recurring [illegible]m discussions with SCR operators [illegible] obser[illegible]. There is a need to issue clearer g[illegible]ance o[illegible]e subject, including the different t[illegible]es of lock[illegible]own (perimeter only, internal, lock [illegible]) (secure), exit only and the legal implications of instigating either option.

4.2 On occasion, upon lockdown some role players attempted to escape from the building, not realising or ignoring, by doing so they put themselves and others (within the building/compartments within the building) at risk. On several occasions the attackers shot at people fleeing and then exploited a door that had been left open. Once inside a supposed secure area, filled with people, the casualty rate was very high. Personnel/staff need to be made aware of what lockdown is, what it is designed to do and what actions staff should take.

4.3 When a building is put into lockdown it is very important to communicate this to building occupants. Without this communication, some role players were not aware the building was in lockdown, particularly if it was in lockdown (exit only) mode, creating confusion and irrational or illogical decisions were more likely.

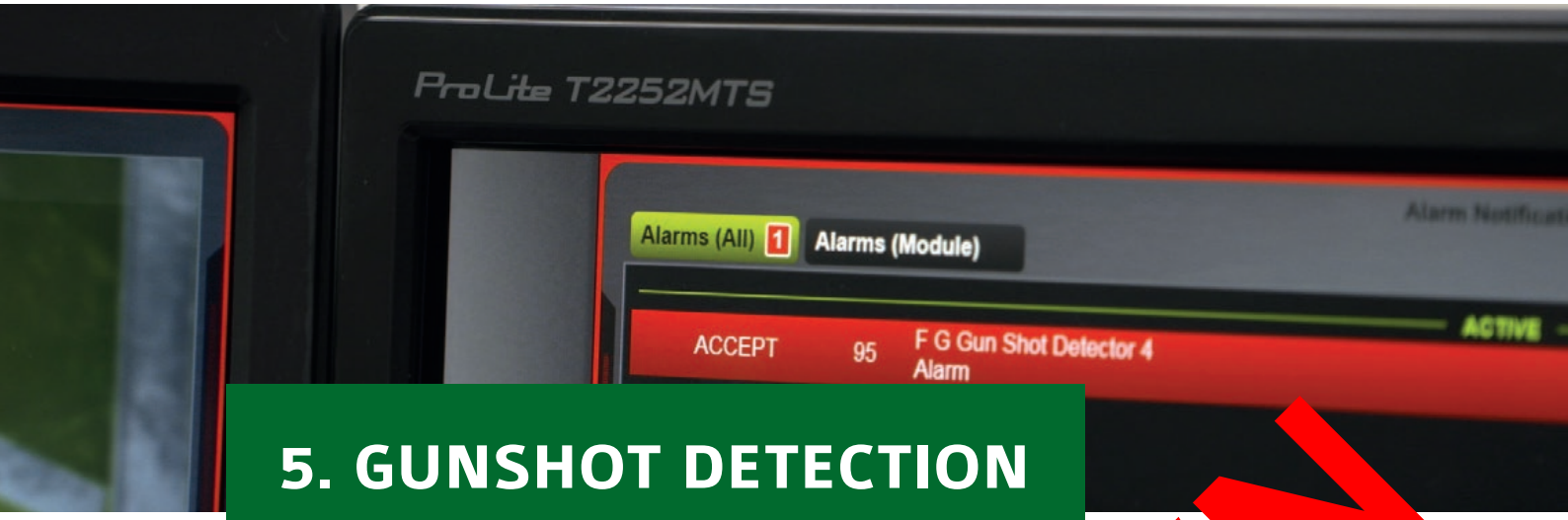
4.4 In relation to communications, SCR operators initially struggled with the urgent need to inform role players that the building was in lockdown. This should be reflected in SCR operators training.

4.5 Despite all the above, the use of AACS and lockdown, even when secured using low security maglocks, had a significant impact on the progression of the attackers. Encountering a locked door meant they had to revise/modify their plan and caused additional stress and sowed doubt in their minds about how successful they were going to be. This reinforces previous CPNI research. Some attackers did eventually work out they could breach doors by shoulder barging/pulling or, in some cases, stealing staff passes. However, this took time and gave more time for people to escape or hide, and for armed police to arrive.

4.6 The AACS door alarms, presented in the SCR, were a distraction during the incident to the operators; once the attack had started, the SCR operators had key tasks to focus on and any door alarms were simply ignored. In an MTA, such alarms provide little, if any, useful information.

4.7 Police responding to a building in lockdown will have difficulty progressing beyond locked doors unless they have access to keys/activated pass or have a line of communication to the control room to unlock doors. Both options are feasible, but there are significant logistical issues for each. The trials highlighted multiple issues with these approaches which c only be better understood and solved throu urther consideration and then rehearsal/practic ercising.

4.8 It is very difficult for a control room to ct an attack, assess the situation and then imp ent lockdown in a timely way. Te ology s such as a Gunshot Detec n S an gre improve situational aw ess and uce the time taken to imple ckdown – many seconds/minutes a fr n of a seco d.



5. GUNSHOT DETECTION SYSTEMS (GDS)

An indoor Gunshot Detection System was investigated during some of the trials. The GDS comprised of small sensors located at all building entry points, on thorough-fares and in meeting rooms within the building, enabling the control room to track where gunshots were located. The GDS available to CPNI had the function to generate mass notifications as well as being fully integrated into a Security Management System (e.g. to auto queue needed CCTV camera, lock doors etc.). For these exploratory trials, the functionality was intentionally limited, the GDS was a stand-alone system located to one side in the control room. In a few serials, limited levels of integration were permitted with the SMS, such that lockdown could be automatically activated or an Active Delay System deployed.

Emerging Themes – Gunshot Detection Systems:

5.1 The specific GDS on trial was very reliable – it detected all blank gunshots, had no false alarms and there was very little delay between detecting the gunshot and presenting the information to the operator. The GDS improved the situational awareness of the SCR operators. Consequently, it could provide the first warning that the building was being attacked. In doing this it provided mitigation to the issue raised in emerging theme 1 – difficulty to rapidly detect the start of an attack, escalation to the SCR operators not always being able to identify the commencement of attacks through CCTV monitoring alone. In this regard, the system provided near instant detection and confirmation of the nature of the attack, greatly assisting the SCR operators.

5.2 The GDS triggered voice announcements confirming the location of the last shot detected were valuable to the room operators. This meant relaying this information over a PA-VA system was simple, in comparison to the alternative of using CCTV to locate attackers. The GDS can automate PA-VA and CPNI have found that when the PA-VA message is structured correctly, it gives accurate and timely information to building occupants.

5.3 The GDS was most impactful during the first minutes of an attack, removing tasks/burden from the SCR operators. This is particularly important as the first few minutes have the greatest loss of life and are often the most confusing and difficult for the SCR and a system that automatically takes control of announcements was very beneficial.

5.4 Despite the positive impact of the automatic announcements, CPNI still found it necessary to deliver specific announcements giving the building occupants additional information (e.g. location of attackers when they had "gone quiet" not firing a weapon, fire in building). The system should permit a SCR operator to override and provide an announcement. However, it is common for such systems and fire PA-VA systems not to be overridden, which is an issue that must be addressed.

5.5 Control Room operators were initially sceptical about the GDS as it is a relatively new technology and they were unfamiliar with it. Do they rely on GDS or use CCTV, which is tried and tested, as their primary source of information? Both systems provide different types of information and further work is required to work out how best use the two together for maximum MTA mitigation.

5.6 The GDS presented locations of shots fired on two dimensional floor schematics, which meant that as shots were subsequently fired on different floor plates, the maps would be replaced. Having a 3D schematic showing different floors would be helpful for control room staff.

5.7 It is possible to configure the GDS with the SMS so that certain actions can be automated, such as lockdown, deployment of Active Delay System(ADS), announcements, etc. It has not yet been possible to fully explore full integration and its effectiveness (but it will be explored in future trials), but the following levels of automation were explored:

- GDS automatically deploys Security Fog (see Active Delay Systems for issues relating specifically to the performance of the fog). Deployment of the fog was much timelier and therefore more effective when activated by the GDS compared to a manual deployment.

- The GDS was very successful at locking doors – it could do this within a very short time, much faster than a human. This dramatically slowed and, in some cases, prevented, the attackers getting further into the building.

- Only specific GDS sensors should be permitted to deploy security fog and care is needed in programming of the SMS to ensure the fog is not deployed in scenarios where an attacker is already beyond the area where the fog is deployed – this will hinder the escape of personnel.

- The GDS could not differentiate between 'good' (police) and a 'bad' (attacker). There were instances when the police entered the attackers and the fog was deployed, creating a dangerous and confusing situation. More work is required to resolve this issue, possibly deactivating fog deployment to the building on arrival of police and ensuring suitable fog extraction systems are deployed on a timely basis.

5.8 The SCR operators felt that it would be beneficial for the activation of a GDS sensor to be automatically accompanied by CCTV providing coverage of the area. This would assist them to verify the GDS and also provide further information on the numbers, descriptions and type of weapons carried by attackers.

5.9 Due to the success of the GDS, CPNI is exploring the possibility of taking an alert from the GDS and relaying it directly to the Police. The intent is being to speed up the notification of a firearms incident and accuracy of the information initially provided. This work will feed into later ASCEND trials. Consideration is also required to providing those controlling operations with an awareness of exactly what the GDS is delivering, the information they should receive and actions police will take when such an activation is received.

6. ACTIVE DELAY SYSTEMS (ADS)

Deployment of an Active Delay System (ADS), such as security fog, is intended to slow the progress of an attacker by changing the environment they are working in; such as using noise, security fog, darkness etc. In this series of ASCEND trials security fog was the only type investigated, others will be covered in subsequent trials. Security fog was chosen because previous CPNI research has demonstrated its deployment has a significant impact on reducing the proficiency of attackers, but there are a range of practical issues to be worked through before it can be deployed safel

For these trials, the security fog was located onl pre-identified strategic locations. These w the ma reception and choke points along the grou or corridors leading to other external entrances/

Emerging Themes – Active ay Sy s:

6.1 ADS was extreme ffi to deploy b CR operators. Tra ing may a but it is unlikely to be fully effe e.

6.2 Use of GDS depl DS works well. However, th wing ues ne o be worked through:

- S rity fo ds to be activated by very pe c sensors. There is a danger of multiple being effected by gunshot causing 'non nded' activation.

- Discharge of Police firearms caused further activation of fog, causing issues for further movement through the building. Consideration needs to be given as to how this can be managed.

- It is very difficu th ntrol room to know the statu of the deploy a simple 'fire and forget' is d option as it ay endanger occupants' esca g a r police response. More work is req ed bette understand how to control the fog on ployed. Should it be extracted or further deploym ts made? Auto extraction is generally helpful, b information needs to be relayed to the status. Standard air conditioning systems are not capable of extracting fog quickly.

- Thermal Imaging Cameras (TIC) alone do not help assessing when fog has been sufficiently extracted. Consideration needs to be given as to how dual TIC and Visible CCTV could be deployed in areas where fog is being deployed.

- Some people hid in fog – this was unexpected but worthy of further exploration.

- Attackers were deterred by fog and generally attempted to avoid it. No attackers randomly fired their weapons – some who considered doing so felt they may hit fellow attackers.

- Consideration as to how armed police can operate in security fog.

7. TRAINING CONSIDERATIONS

The trials have shown that the response of the SCR operators to an MTA will have a considerable impact on the outcome of an MTA. Little training is currently provided to SCR operators to enable them to provide a better response to an MTA and there is generally no opportunity for them to practice the response to any such incident.

Emerging Themes – Training Considerations

7.1 During the trials to date consideration has only been given to how control room staff and control room supervisors deployed to the SCR are able to influence the outcomes of an MTA incident. As new capabilities are developed consideration must be given to the related training requirements for potential responders. This should include all building guard force and management team roles and the emergency service call handlers and responders.

8. IMPACT ON ATTACKERS

The primary focus of the trials conducted has been on changing the ability of all building occupants to respond to an MTA as a result varying of the physical or operational security measures and procedures. Through this CPNI have seen how they can have a direct impact on the behaviour of the attackers. The results of this have been listed above under the emerging themes for further development.

Emerging Themes – Impact on Attackers:

8.1 The trials have shown successfully that incre ng the numbers of attackers decreased the a y of the SCR to mitigate the impact of the attack. It me much more difficult for the SCR to tra eir m ent and make accurate identifications. In t this m it more difficult to provide acc rate info n to th Emergency services of their l ion d als ake decisions to take action t wou otect the building occupants. Future w should see understand how the impact of d numbers ttackers could be mitigated.

WAY FORWARD

The ASCEND trial activity up to May 2018 has provided a clear indication of how, by improving the response of those being attacked and those responding to the attack, the impact of MTAs can be mitigated.

The trials have shown that the outcome of this work is likely to reduce fatalities and casualties when an MTA takes place.

This work has identified 8 emerging themes and a total of 45 findings. Each has now been assessed to estab if sufficient work has been undertaken to now incl the findings in CPNI guidance seeking to mitigate MTA threat. Some themes will continue to be develop ithin the ASCEND trials during 2018/19 to dev the le g to date and elsewhere within CPNI research key stakeholders such as the emergen service the security guarding industry.

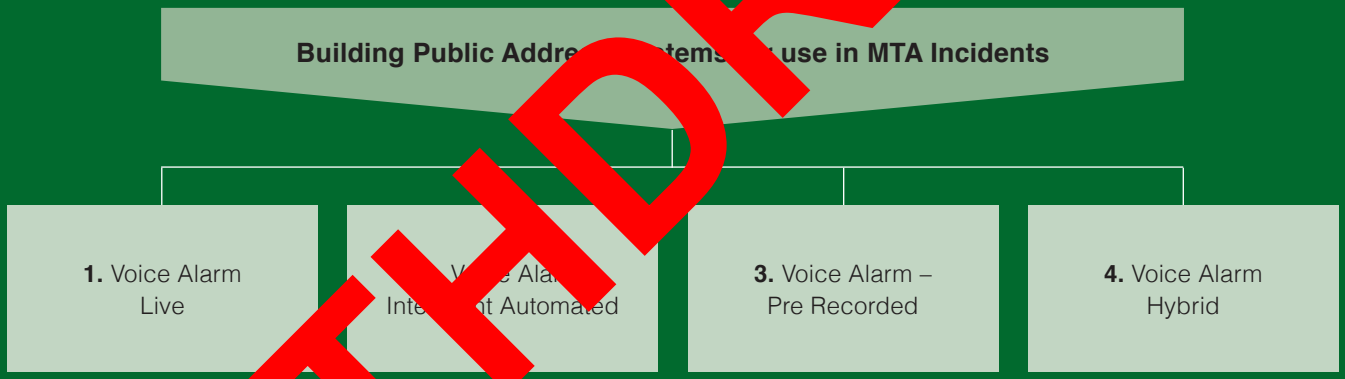
The programme is not co e, but a co rable number of important lessons h be earnt and it important that interim guidanc is release takeholders that allows them to each cons how they s vary and improve their response such impact th eats in light of this emerging learni

A CPNI g dc ment titled *"Marauding Terrorist A sks: your organisation ready"* has is d in parallel to this document. This includes of supplements which will provide detailed adv relation to the emerging themes. Further editions of the main guidance document and supplements will be issued as the research develops.

ANNEX A: VOICE ANNOUNCEMENTS

Announcements can be delivered in different ways. Figure 1 summaris[illegible] high level, the four ways to deliver announcements.

Figure 1: Ways to deliver PAVA announcements



1. VOICE ALARM LIVE

Live voice announcements made by security officers in security control room

The table below summarises the four ways to deliver announcements. Against each type it provides examples of good announcements, explains why they are good, identifies key dependencies and identifies phrases to be avoided.

Example of good announcement made by a person:	Why is this a good announcement?	Being able to make this announcement depends on...	Phrases or communications to avoid
First announcement: 1. The building is under armed attack 2. There is a single/multiple attackers 3. They are located at… 4. Basic action to be taken, such as: 1. Evacuate the building or hide if you can't (if internal threat), or 2. Personnel on the ground and 1st floors should proceed immediately up to level X. All personnel to stay away from external windows and doors. 3. **Note:** if building has been put into lockdown then this should be communicated with any further key information. Eg. "The building is in lockdown, do not leave locked areas. Stay away from doors and windows." See Guidance on Lockdown Announcements 4. Whole announcement to be repeated immediately	People need to react quickly and need to understand the type of threat they face. Being explicit will assist this. Single/multiple attackers is an important piece of information if attempting to provide any form of location. If multiple groups, multiple locations may be given which was found to be confusing. Location information assists people with deciding their own plan of action. We have found it also affects attackers, impacting both their confidence and focus. Location information can also assist police response once they arrive, particularly if they have no direct communication with the SCR.	SCR Operators need to be well practised and exercised in giving such announcements (e.g. clarity, delivery, tone, pace etc.). Not all operators will be suitable for this role. Public address system needs to be controlled from SCR. Public address needs to be able to override any other sirens, alarms or pre-recorded announcements (such as fire) Requires good situational awareness, particularly CCTV or other systems such as CSPN, Gunshot Detection Systems. Language used to explain locations need to be easily understood by personnel so work would be required to prepare SCR operators and also develop easy to understand terms for parts of buildings. Requires a sufficient number of SCR operators.	"Firearm" as we found this can be misheard as fire alarm. "Security incident" rather than "armed attack" as only incident is a common term used to cover all locations and we found it was less effective at enabling people to quickly mobilise. "Ding Bongs" at the start of announcement – this simply takes up time. Every second counts. "Attention" or "this is Security Control" – takes up too much time. Every second counts. Credibility of message comes from use on PA-VA system, what is said and how it is said. Using language that personnel will not be able to understand/or action. Most commonly, how to describe a stairwell in a building – do personnel know where Stairwell 1 is? "Exit only" as this can be seen to mean all personnel should exit.

Subsequent / further update announcements to be given thereafter (e.g. 1 minute pause) 1. If single attacker or multiple attackers staying as a single group: 2. Armed attackers are located at xxxx 3. Basic action to be taken (including if building is in lockdown) 4. The police have been called. The above should be given, irrespective if the situation remains unchanged. 5. If multiple attackers have split/more than one group: 6. There are multiple armed attackers (confirm if inside or outside the building) 7. Basic action to be taken (including if building is in lockdown) 8. The police have been called	Central to this message is whether there are multiple attack fronts/groups. If there is more than one attack front, then it is too confusing (for personnel) if multiple locations are given. Regular updates will assist people to revise their plans Regular updates were found to be reassuring for personnel, particularly those hiding. Without updates, people tended attempt to come out of hiding too soon. "Police have been called" was found to be reassuring to personnel. However, the phrase "Police have arrived" or "Armed Response is on scene" (or words to that effect) should not be used, as this is likely to complicate response. Continue to announce "Police have been called" after the police have arrived. Frequency of deli[illegible] is very important[illegible]ntinuous broadcast is ve[illegible]nerous for the S[illegible] and a[illegible]inders members [illegible] pub[illegible] to listen for t[illegible]eat. T[illegible] fa[illegible]art [illegible]ns [illegible]ple are mor[illegible] to come[illegible]t of hiding.[illegible]uency of about 1 every mi[illegible] was found to [illegible] about right.	As above.	As above. Do not use a sounder/ alarm continuously between voice announcements, as this hinders people's ability to listen for the threat and communicate.
Announcement[illegible]s o[illegible] police arrive and ha[illegible]stab[illegible]ed communicatio[illegible] The po[illegible]req[illegible] certain a[illegible]unc[illegible] to be g[illegible] to as[illegible]t their re[illegible]ponse. These[illegible]b[illegible]ase specific.			

2. VOICE ALARM - INTELLIGENT AUTOMATED

Pre recorded announcements (made in response to a gunshot detection system activation)

Announcements to be triggered automatically in response to an alert being triggered by the **Gunshot Detection Systems**

Example of good announcement:	Why is this a good announcement?	Being able to make this announcement depends on...	Phrases or communications to avoid
1. There is an armed attack 2. Gun shots detected at xxxxx (states brief location of detection system) 3. Evacuate the building if you can 4. Or hide if you cannot Announcement to be immediately repeated twice and then repeated after 30 and 60 seconds. After 90 seconds SCR takes control of announcement informing the building "police have been called".	Provides most basic form of information and guidance. Short and specific. Location of activation must be clear to alert personnel as to the area they should avoid. Immediate repetition required to help personnel understand and act to message.	Initial announcement has been pre-recorded and is triggered automatically by the GDS activation.	See Live Announcements.

3. VOICE ALARM – PRE RECORDED

Pre recorded announcements (excluding those made with the assistan unsh detection systems)

Best for situations where staffing levels are very l a low le of PA training and/or situational awareness is extremely limited

Example of good announcement:	Why is th ood announceme	Being able to make this announcement depends on...	Phrases or communications to avoid
6. The building is under armed attack 7. Action to be taken e.g "evacuate the build or hide if you can't" 8. Stay away f m w ws". Announcement e immedi repe d twice and the p d et i ervals g. ev ute. Me s be generic and brie	P des t ba form rmation d guidan hort and specific. Supporting N, HIDE & LL principles. Be silent, combined with keep calm, are intended to improve the chances of personnel being able to hear the threat and take avoiding action and avoid detection by hostile(s). Immediate repetition required to help personnel understand and act to message.	Requires a PA-VA system that will permit multiple types of announcement (e.g. fire, bomb evac., etc.). Users need to be competent in use.	See Live Announcements. Repeating further messages continuously, without a gap, inhibits occupant's ability to listen for threat and plan their escape. Continuous announcements.

4. VOICE ALARM – HYBRID

Combination of live announcements and either pre-recorded or intelligent automated

Suitable for a Security Control Room with experienced operators supported by sophisticated PA-VA and detection systems

Announcements will combine those highlighted at 1, 2 and 3 above. See above for detail.
It must be possible to override automated announcements to deliver live voice announcements.

ACRONYMS

AACS	Automated access control system
ADS	Active Delay Systems
ARV	Armed Response Vehicle
CBRN	Chemical, biological, radiological or nuclear
CCTV	Closed Circuit Television
CNI	Critical National Infrastructure
CPNI	Centre for the Protection of National Infrastructure
CSO	Chief Security Officer
CTSA	Counter Terrorism Security Adviser
FCP	Forward Command Point
GDS	Gunshot detection systems
HART	Hazardous Area Response Teams
HM	Her Majesty's
JESIP	Joint Emergency Services Interoperabi Pro mme
JOP	Joint Operating Principles
LED	Light emitting diode
LRF	Local Resilience Forum
MERIT	Mobile Emergency Re nse Incide eam
MTA	Marauding Terrorist Atta
MTFA	Marauding Terror earm ack
NaCTSO	National C unter Ter n Secu Office
NCTP	National C ter rorisi licing
NHS	Na al Healt rvice
PA-VA	Address - v Alarm
PHE	Public lth England
PPE	Personal ctive Equipment
PTZ	n Tilt Zoom camera
RV	Re zvous point
SC	Security Control Room
SMS	Short Message Service - Text
S	Standard Operating Procedures
STAC	Scientific and Technical Advice Cell
TIC	Thermal Imaging Cameras
TCG	Tactical coordination group
VAW	Vehicle as a Weapon attack

GLOSSARY

Airsoft weapons	Airsoft guns are replica weapons used in sports and firearms training. They are essentially a special type of very low-power smoothbore air guns designed to shoot non-metallic spherical projectiles which are typically made of plastic or biodegradable resin mate The pellets have significantly less penetrative and stopping powers than conventional a guns, and are generally safe for competitive sporting and recreational purpose if proper protective gear is worn.
ASCEND	CPNI's MTA work involves the repeated physical simulation of an MTA in a ilding environment – Project ASCEND. This involves subjecting a building popula to a simulated attack and looking at factors that can either improve or sur bility before the arrival of an armed police response.
CitizenAID™	CitizenAID™ empowers the general public in situations of e ency d allow them to be effective in aiding the injured with medical support p arrival of emergency services. It is comprised of simple and l ical actions ar signed to guide the public to react safely and effectively as w municate c rectly with emergency services. The powerful combination of o nisat treatment will save lives in dangerous situations.
Exercises	Allow personnel to validate plans and r by per ing their duties in a simulated operational environment. Activities fo unctio l exerc are scenario-driven. A full-scale exercise would involve a live simu of a potential real event and involve multi-agency participation.
Hostile Incursion	As per MTA however t ntent of tho nvolved may be broader than terrorism.
Hostile reconnaissance	The inform tion gath phase by those individuals or groups with malicious intent, is a vital c on of th ack planning process.
JESIP	P amme crea specifically to further improve the way ambulance, police and fire and r e services operate together on scene in the early stages of their response to major inc ts.
L wn	L down means locking doors and other physical barriers (such as turnstiles) to restrict ent to and/or exit from a site or one or more zones within a site. It is sometimes referred to as `dynamic lockdown'.
Mag	The Magnetic lock or mag lock uses an electrical current to produce a magnetic force. When a current is passed through the coil, the magnet lock becomes magnetised. The door will be securely bonded when the electromagnet is energised holding against the armature plate.
Marauding	As defined by Cambridge Dictionary - Going from one place to another killing or using violence, stealing, and destroying.

GLOSSARY

MTA	Marauding Terrorist Attacks can take many forms. • A lone attacker, multiple attackers or multiple groups of attackers • Arrival at a location on foot, in a vehicle or an attack perpetrated by insiders • Entering without using force or forcing entry using an explosive device, a vehicle, coercion of someone with access or a combination thereof • Attackers armed with bladed weapons, guns, pipe-bombs, petrol bombs, suicide weapons.
PA-VA	PA-VA systems are used for making announcements or providing public information and delivering automatic alarm and emergency messages. Public Address (PA) systems (often known as Tannoy Systems) and VA (Voice Alarm) systems provide a quick and simple means of direct and clear communication. Voice Alarm Voice Evacuation Systems are used for delivering pre-recorded emergency messages.
Personnel	Used to describe any member of staff, contractor, visitor or other occupant to a building
RUN HIDE TELL	The National Counter Terrorism Police's Stay Safe campaign to advise the public how to respond if they are caught up in an firearms or weapons attack.
Security Control Room	The hub of a site's security, continuously receiving information from a range of security staff and systems. Many of the principles of an SCR can be carried over into an event or operations control room.
Security Management System	Integration of technical security systems, such as access control and CCTV, into a single management platform.
Smoke Fog	Chemically generated white smoke specifically used as a security measure. Current security smoke machines use glycol or glycerine mixed with distilled water to produce a dense white fog which obscures vision and presents a confrontational barrier to any intruders.
Situational Awareness	Being aware of what is happening around you in terms of where you are, where you are supposed to be, and whether anyone or anything around you is a threat to your security and health and safety.
Table top exercise	Discussion based sessions where team members meet to discuss their roles during an emergency and their responses to a particular emergency situation. A facilitator guides participants through a discussion of one or more scenarios.
Vulnerable people	Those who may need to be provided with assistance or special arrangements made, such as children and people with health conditions or impairments.