

Attenuating energy projectiles

This page is from APP, the official source of professional practice for policing.

First published 23 October 2013 Updated 2 September 2021

Written by College of Policing

15 mins read

The attenuating energy projectile (AEP) forms part of the common weapon system approved for use by members of the police service or Her Majesty's Armed Forces in the UK. Operational use of the AEP in the UK police service is limited to authorised officers who have been specifically trained in use of the system.

This guidance relates to the approved 37 mm soft-nosed impact projectile, designated the L60A2. This is an AEP and is intended for use as a less lethal kinetic energy device.

Description

The approved AEP (designated as L60A2) is fired from a 37 mm breech-loaded weapon. The approved launcher is the Heckler and Koch L104A2, equipped with an approved L18A2 optical sight.

The projectile has been designed with a nose cap that encloses a void. This design feature is intended to attenuate the delivery of the impact energy by extending the duration of the impact and minimising the peak forces. It thereby delivers a high amount of energy to maximise its effectiveness, while reducing the potential for life-threatening injury.

Reducing the rate of onset of the impact force and reducing the magnitude of the peak force have both been shown to reduce the severity of injuries in human impact.

Deployment

AEP is intended to provide officers with a less lethal use of force option for use when appropriate and proportionate.

AEP will, where appropriate, be deployed alongside conventional firearms and other less lethal technologies already issued to authorised firearms officers (AFOs).

For detailed guidance in respect of the legal framework within which lethal and less-lethal force may be used, see [legal framework](#) and [use of force, firearms and less lethal weapons](#).

Use

The AEP is used to dissuade or prevent a potentially violent person from their intended course of action, thereby neutralising the threat. AEP use will be informed by reference to the [National Decision Model](#) (NDM).

It is recognised that the use of a kinetic energy projectile has the potential for lethal consequences in certain circumstances.

Detailed instruction on the characteristics, operation and use of AEP is covered in the training and documentation provided to officers who are accredited to use it.

An NPCC AEP discharge form needs to be completed for every operation where the AEP is discharged. This requirement is in addition to the completion of a use of force report.

Authorisation

In circumstances where firearms resources have been deployed to a situation, the authorisation for officers to use their firearm will include the authority to use any other less lethal option or technology with which they have been issued (including, where appropriate, the AEP).

In these situations, it would be inappropriate for commanders or supervisors to attempt to restrict officers to a particular, less lethal technology or use of force option.

The availability or deployment of the AEP should not be considered as a replacement for conventional firearms in situations where the deployment of conventional firearms has been authorised.

Public order policing

AEP exists as one of the approved less lethal options available in the UK. In certain circumstances, it may be necessary and proportionate to deploy officers who are only equipped with AEP, and not with conventional firearms, to situations of serious public disorder.

AEP is intended for use as an accurate and discriminating projectile, designed to be fired at individual aggressors, whether such aggressors are acting on their own or as part of a group. It is not designed for use as a crowd control tool.

The use of a kinetic energy device in a situation of public disorder may have a profound impact on crowd dynamics, with implications for public safety and order. In this situation, first aid officers and medical staff may be prevented from immediately reaching potential subjects by a hostile crowd. This risk should be considered during strategic and tactical decision making.

If officers armed with the AEP system only (ie, without conventional firearms) are deployed, this requires specific authority, is outside the scope of conventional firearms operations and should be commanded by appropriately trained and accredited public order commanders.

For further information see APP on [public order tactical options](#).

Authorisation

In situations of serious public disorder, an officer of at least assistant chief constable (ACC) or commander rank should authorise the inclusion of officers armed with AEP within the operational response plan.

Once the authority to **make AEP available**, by including the capability within the operational response plan, has been granted, the authority to deploy and then use AEP lies with the silver (tactical) commander. The silver commander should keep the authority to deploy AEPs under constant review and should liaise with bronze (operational) commanders and those operationally deployed with AEP. Decision making on deployment and use will be based on use of the national decision model.

Officers armed with the AEP who are to be deployed within a public order situation should be fully trained to undertake the role within that context, as prescribed within the [National Police Firearms Training Curriculum](#) and the National Police Public Order Training Curriculum.

Criteria for use

Officers trained in the use of AEP may be deployed in situations of serious public disorder where its use is judged to be necessary to reduce a serious risk of either:

- loss of life or serious injury
- substantial and serious damage to property where there is, or is judged to be, a sufficiently serious risk of loss of life or serious injury to justify its use

In assessing the risk of loss of life or serious injury occurring in a public order situation, the risks to police officers, members of the emergency services, members of the public and others should be taken into account

Where AEP is deployed or used, a chief officer must submit a written report to the Home Office as soon as is practicable.

Northern Ireland

If it is necessary to deploy officers armed with an AEP in a public order or any other situation in Northern Ireland, the Police Service of Northern Ireland (PSNI) operational instruction will be in accordance with this guidance and include additional requirements, as deemed appropriate by the chief constable of PSNI to meet local legislation and oversight arrangements.

Effects

The AEP is designed to deliver an impact that is not intended to cause serious or life-threatening injury, but that is of sufficient force to dissuade or prevent a violent or potentially violent person from their intended course of action, thereby neutralising the threat.

However, as with all applications of force, there is a potential for unintended serious – and even fatal – injury, either as a direct result of an impact or as a result of secondary injuries, such as those caused by the subject falling.

Remember

No weapon system is universally effective, including conventional firearms

The reaction of a person struck by the AEP will vary depending on the area of the body struck and the degree of motivation being exhibited by the individual. Persons who are under the influence of

alcohol or drugs, or who are experiencing mental ill health or [acute behavioural disturbance](#), may also exhibit a wider range of responses.

Officers using the AEP should not rely on an immediate or significant effect. Unless follow-up action is taken, a subject struck with an AEP may continue with their previous behaviour. Officers should, therefore, continually assess the threat being posed and consider other tactical options as necessary.

Issue and possession

The AEP will be issued only to authorised officers who are appropriately accredited in accordance with the relevant common national standards. The authority for the issue of AEP will, therefore, be in line with local operating procedures pertaining to the issue of such equipment in each force area.

The authorised launch platform (L104A2) may also be used for launching other projectiles. As a result, section 5 of the Firearms Act 1968 applies. On-duty police officers are exempt from the requirements of the legislation and do not need any additional legal authority to possess the AEP.

Officers should carry out function checks on the weapon approved to launch the AEP whenever the weapon is issued and, where practicable, prior to deployment.

For further information see [section 5](#) of the Firearms Act 1968.

Risk factors

The Defence Scientific Advisory Council (DSAC) sub-committee on the Medical Implications of Less-Lethal Weapons (DOMILL) has provided an independent view for the UK government on the medical implications of using the AEP L60A2 system.

Specific advice on risk factors associated with strikes to certain parts of the body is provided in a 2005 DOMILL document. This is predicated on the system being used in accordance with guidance and zeroing instructions.

Users should be made aware that AEPs can ricochet in some circumstances. Consideration should also be given to minimising the possibility of striking individuals behind the identified subject. The presence of obstacles and of personnel other than the intended target, and the possibility of direct strikes and strikes as a result of ricochet, should form part of the risk assessment in the decision to

fire the weapon.

Mental ill health

Sometimes it may be necessary to use the AEP on a person who is exhibiting violent behaviour who is experiencing a mental disorder or illness. Where it is practicable in the circumstances to discuss options with mental health professionals present at the scene, this should be considered.

Consultation with appropriate healthcare professionals (for example, mental health or GP), social workers, carers, friends and relatives of the subject may contribute to the implementation plan for planned operations or joint activity. Relevant and appropriate information or intelligence taken from this process should form part of the briefing and may assist in deciding on the most appropriate use of force response.

The final decision on the most appropriate use of force options in these circumstances rests with the officer concerned.

Oral and visual warning

Where circumstances permit, officers should give a clear warning of their intent to use the AEP. They should give sufficient time for the warning to be heeded, unless to do so would unduly place any person at risk, or would be clearly inappropriate or pointless in the circumstances of the incident.

All officers should receive training in communicating with subjects. On first verbal contact, officers should normally:

- identify themselves as police officers and state that they are armed with an AEP
- clarify who it is they are seeking to communicate with
- communicate in a clear and appropriate manner

Visual deterrents

Where weapons are fitted with torches or laser sights, officers should consider the effects of their use during any confrontation. The deliberate pointing of a weapon at an individual constitutes a use of force and may, in certain circumstances, constitute an assault.

It may, in certain circumstances, be appropriate to provide a display of officers visibly armed with an AEP launcher, as this may have a deterrent effect.

Important: A visual display may constitute a use of force and where appropriate should be recorded as such.

Public order warning messages

In a public order situation, warning can be invaluable in alerting the crowd of police intentions and providing the opportunity for the crowd to disperse or remove themselves from danger.

Unless circumstances do not permit, AEPs are only to be fired after an oral warning has been given – for example, using a loud hailer or PA system to tell the crowd to disperse and informing individuals that force will be used against them.

The warning should make it clear that if individuals do not stop their violent action, force will be used without further warning. A record should be kept of the words used in giving the warning.

The oral warning should be given as many times as is reasonably practicable in the circumstances, ensuring that the police intention to deploy the AEP and/or use force is clearly communicated prior to use. If a tactic is to be used over a period of time, or a large area, it may be desirable to repeat the warning messages.

When the use of a specific tactical force option is imminent, a final warning should be given.

Point of aim

The AEP should be aimed to strike directly (for instance, without bouncing) the lower part of the subject's body (below the rib cage). Officers are trained to use the belt-buckle area as the point of aim, at all ranges, to reduce the likelihood of upper body hits.

Unless there is a serious and immediate risk to life which cannot otherwise be countered, the AEP must not be fired at less than one metre, or aimed to strike a higher part of the body at any range. In these circumstances, the risk of serious and fatal injuries is increased and the firer must be able to justify the increased use of force.

Aftercare

Steps should be taken to ensure that early medical attention is available and provided for persons struck by AEP. This may involve having officers ready who are trained in appropriate first aid and/or placing an ambulance on standby.

Close monitoring

Close monitoring of a subject throughout the period following a direct strike from any kinetic energy device is of utmost importance. If there are any signs of adverse or unusual reactions, medical attention should be provided immediately and, if necessary, this must be given precedence over conveying a subject to the police station.

Where officers are informed, or believe, that someone who has been struck by the AEP has a pre-existing medical condition that might lead to increased medical risk, immediate transfer to hospital should be considered.

Medical assessment

A forensic medical examiner must examine all arrested persons who have been struck by an AEP as soon as practicable.

Detainees

Information that a person has been struck by an AEP should be provided immediately to the custody officer when booking-in.

The appropriate level of observation and monitoring of the detainee will be decided through risk assessment. The minimum level of supervision that is appropriate for a detainee who has been struck by an AEP is Level 2 Intermittent Observation.

Persons at increased risk

Some people may be at increased risk from potential harm, particularly those who are under the influence of alcohol and/or drugs or individuals who have any existing medical condition or illness.

If a person is exhibiting violent behaviour, it may be caused by an underlying medical problem or illness (see acute behavioural disturbance). Where this is suspected, the individual should be treated as a medical emergency and conveyed directly to hospital.

In the event of a child or physically vulnerable person being struck with an AEP, they should receive immediate medical assessment and be conveyed directly to hospital where necessary.

Post-deployment

Appropriate post-incident procedures should be considered following the operational discharge of the AEP. The appropriate procedure will depend on the nature of the injury or harm caused and will be in accordance with the relevant standard operating procedure for the force area where the discharge occurred.

Evidential collection of equipment

Evidential recovery of fired AEP and spent cartridge cases should be undertaken in accordance with the relevant post deployment APP guidance.

Reporting

All firings of an AEP must be reported as soon as practicable, initially by radio, and later using the NPCC AEP discharge form. The report includes a requirement to detail:

- the reason for firing the AEP
- information about the outcome
- the number of rounds fired
- any known injuries that may have occurred as a result of using AEPs

An investigation will be undertaken in accordance with the criteria for a post-incident investigation.

An NPCC AEP discharge form must also be completed for every operation where the AEP is discharged.

If used in a situation of public disorder in England and Wales, the chief officer should supply the Home Office with a written report on the circumstances surrounding the AEP discharge as soon as practicable after the incident. Similar arrangements exist in Scotland. In Northern Ireland, there is a requirement to inform the Northern Ireland Policing Board and the Police Ombudsman of any operational discharge of an AEP.

Evaluation

Operational use will be subject to monitoring and review at regular intervals to ensure that any emerging issues are properly reflected in training and operational guidance.

Representatives of the Scientific Advisory Council on the Medical Implications of Less-Lethal Weapons (SACMILL) will be invited to contribute to the process.

Unintentional discharge

Any unintentional discharge in a non-operational situation where there has been no danger to the public will be subject to an internal investigation.

In such cases, referral to an IIA will be a matter for individual forces.

Maintenance

Proper maintenance of the AEP launcher and sights is vitally important. For further information, see the AEP information sheet (available to authorised users on the Knowledge Hub Management & Command community).

It is essential that weapon function checks are carried out when the weapon is issued and that these are repeated whenever practicable, prior to deployment.

Any weapon or munitions failures should, in addition to any local force instructions, be reported to the Dstl. In the event of a misfire, appropriate post-incident procedures should be implemented that conform to the NPCC AEP discharge form.

Storage

Electrical devices should not be stored alongside pyrotechnics, ammunition, specialist munitions or flammable products. Forces should undertake appropriate risk assessments in respect of storage and carriage.

Relevant legislation and guidance on storing the (AEP):

- [relevant health and safety at work legislation](#)
- AEP information sheet (available to authorised users on the Knowledge Hub Management & Command community)

- [storage of firearms, munitions and explosives](#)
- [storage of explosive articles and substances](#)
- [less lethal options](#)

Zeroing instructions

Qualification and zeroing of weapons must take place using the operationally approved L60A2 AEP. The AEP's launcher must be zeroed for the individual officer and this must be performed in accordance with the zeroing instructions set out in the relevant NPCC documentation. It is mandatory that the sight and the launcher combination is zeroed to the individual by live firing.

The firer cannot zero the weapon until they can achieve a five-round group size at the specified range (five-round group in 200 mm area at 20 metres).

Collimators are individually numbered and should be matched to the firers. If firers use the same collimator, they can apply their readings to any weapon. Weapons must be bore-sighted and zeroed, and the personal zero point (PZP) must be recorded, using the same firer and collimator combination.

Under no circumstances must a different collimator be used to check PZP. If this is necessary, the weapon must be re-zeroed and the reading must be re-taken.

Training

Standards of competence, training requirements and assessment for the use of AEP are set out in the [**National Police Firearms Training Curriculum**](#) and the National Police Public Order Training Curriculum. These standards apply to everyone who:

- uses the launcher
- provides tactical advice on its use
- commands operations in which AEP is deployed

AEP may be used by officers in the following circumstances:

- AFOs trained in the use of the AEP as a less lethal option alongside a conventional firearm in an armed policing context

- AFOs who are additionally trained to use the AEP system within the context of public disorder
- public order officers who are not AFOs but are trained to use the AEP launcher in a public disorder situation

Regardless of the officer's role, training must provide an awareness of the potential physical and psychological effects of an AEP strike, and the risks associated with ricochet.

Tags

Armed policing