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Author:	DCI Matt Markham – November 2015
Force/Organisation:	NABIS – West Midlands Police
NPCC Coordination Committee Area:	NCOCC
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Contact details:	nabis@west-midlands.pnn.police.uk 0121 626 7114
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This revised strategy have been produced and approved by the NABIS and the National Criminal Use of Firearms Group. It has been approved by NCOCC and VPP portfolio lead. The operational implementation of all guidance and strategy will require operational choices to be made at local level in order to achieve the appropriate police response and this document should be used in conjunction with other existing Authorised Professional Practice (APP) produced by the College of Policing. It will be updated and re-published as necessary.

Any queries relating to this document should be directed to either the author detailed above or the Head of Knowledge and Communications at NABIS 0121 626 7114

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1. Firearm related crime scenes

1.1. What is a firearm related crime scene?

What may constitute a firearm related crime scene is quite broad. Each scene may offer unique opportunities to prevent and detect crime and, should be approached with an investigative mind-set from the outset. The below list is by no means exhaustive and SIOs/policing responders should remain open minded in terms of whether, what they are faced with, is a firearm related crime scene.

- Any place where a victim has sustained a firearms related injury, irrespective of whether the victim is still there.
- Any place where the victim of a firearms related injury is found or has been to prior to being found
- Any place where a firearm has been criminally discharged
- Any place where a firearm, believed to have been used in crime, is discovered
- Any person who is the victim of a firearm related injury, or attempt to cause injury
- Any person who has had physical contact with a person involved in recent firearm criminality as either offender or victim
- Any place/vehicle where a person involved in recent firearm criminality has been
- Any firearm / ammunition / ammunition components believed to have been used or linked to crime
- Any other object damaged through the criminal discharge of a firearm
- The scene of any alleged suicide involving the use of firearms
- The scene of any alleged self-inflicted/accidental firearms injury
- Any location where a firearm or ammunition has been unlawfully manufactured, converted or test fired

Any of the above may be collocated or exist in isolation, for example, a used firearm may be found at the scene of a shooting where there is also a victim, alternatively a used firearm may be found in isolation. Where they are collocated, consideration should be given to applying a forensic strategy to each one, in addition to an overarching strategy for the whole scene.

1.1.1. Securing a crime scene

Key Points

- **The definition of a firearm related crime scene is extremely broad.**

- **Different firearms related crime scenes may coexist, for example a firearm used to commit a homicide may be found within the same location as the victim of a firearm related homicide.**
- **A forensic strategy should be applied to each and every firearms related crime scene.**
- **All firearms related crime scenes (including apparent suicide/self-inflicted injury) should be approached with an investigative mind-set from the outset**
- **All firearms related crime scenes should be promptly secured through the establishment of a cordon.**
- **Where it is not possible to immediately secure a scene, owing to ongoing danger, the location should be recorded as precisely as the circumstances allow, using, for example, landmarks, photography, lamppost numbers, air support, junction details etc.**
- **In the case of an 'Active Shooter' incident, they must follow specific guidance provided, including the *"stay safe at firearms incidents 2014"* issued by the College of Policing.**
- **Officers at a scene should consider undertaking a visual inspection of vehicle tyres before they leave any firearm related crime scene and the path they will use to exit, to ensure there is no carrying off of ballistic material.**
- **Photographs, with a scale, should be taken of any motor vehicle windows that have been shot at, before doors are closed or vehicles removed. This will aid crime scene reconstruction by recording entry holes before any glass falls out.**
- **The cordon should encompass the target (or site of the target if already removed), the location, or possible location from where any shots were fired. It should then extend beyond these features to such a point where it is unlikely that ballistic material will have travelled, and to any exit routes of offenders.**

It is vital that first responders act quickly to preserve a firearm related crime scene. This may well be a difficult and challenging task particularly where people have been injured or killed and tensions are running high.

The quicker that control of a crime scene is achieved, the more opportunities it will provide investigation teams to establish exactly what has taken place, locate key evidence and identify those responsible.

A firearms related incident will, in most cases, be declared a critical incident. Initial responders and their supervisors should use this classification to draw upon whatever resources are immediately necessary to help gain control, secure and preserve the scene.

Where, owing to an ongoing situation, and in the interests of safety a scene cannot be immediately secured and preserved, then steps should be taken to enable it to be readily located later on. This may be achieved through an officer's body camera, photography, air support video, or other CCTV. Where possible, officers should request that location details are recorded on an incident log. This should contain as much detail as possible, for example, house numbers, road junctions, lamppost numbers and other landmarks.

Nothing in this guide seeks to override advice provided in relation to an 'active shooter' incident. In such incidents, officers must rely upon the guidance and training provided through NCALT and the College of Policing (2014) "*Stay Safe at Firearms Incidents"* document, and respond accordingly.

Determining the parameters of a firearms related crime scene, and the extent of any cordon can be difficult. Most shootings occur at a relatively close range, however, ballistic material can travel some considerable distance.

The target of the shooting may be easy to identify, from which responders might be able to establish a general trajectory. Any cordon should go beyond the target and as far as is reasonable, for example it might stop at a brick wall where there is no likelihood of ballistic material having travelled any further.

Determining the position of the cordon in the other direction, back from the target, to the location from where the firearm was discharged is sometimes more difficult. Officers should work back from the target following the general trajectory. They should look for signs of firearm discharge such as spent cartridges that have been ejected from a weapon. They should be mindful, however, that revolvers and most shotguns do not eject cartridges. In the absence of ballistic evidence enabling the location from which a firearm was discharged to be identified, officers will need to rely on other indications, such as footprints, damaged fencing, flattened grass, or simply, witness accounts. The cordon should encompass the location from where shots were likely to have been discharged and extend to any possible entry exit routes.

When securing a firearms related crime scene, consideration should be given to the likelihood of vehicles, for example, ambulances, carrying off ballistic material such as bullet fragments, as they are picked up by tyres. Where possible, officers should consider

undertaking a visual inspection of vehicle tyres before they leave a scene, and also the path the vehicle will take.

Where a firearms related crime scene involves the shooting at a motor vehicle, it offers forensic scientists the chance to interpret and reconstruct the events of the shooting. Where vehicles have been shot at, it is likely that the windows will have been smashed. Vehicle glass is most likely to be tempered meaning that it is extremely fragile when shattered. Any movement of the vehicle is likely to lead to glass falling out making it impossible to identify any bullet/projectile entry point and therefore frustrating any attempt to reconstruct the events (DeFrance and Rosati 2009: 32-33). It is important therefore, that where possible, photographs are taken before vehicles are moved or doors are closed etc. Such photos should include the use of a scale.

Police forensic investigators should ensure that, prior to a vehicle being removed from a firearm related crime scene, the position of movable fittings inside, such as seats, headrests and steering wheels are recorded (and if possible fixed/marked) to prevent changes occurring during transportation. This will aid any subsequent crime scene reconstruction.

1.2. Interpretation of firearm related crime scenes

Key Points

- **Consideration should always be given to calling out a forensic firearms expert (forensic scientist) to interpret firearm related crime scenes (including apparent suicide/self-inflicted injury).**
- **A forensic firearms expert will be able to help the SIO look for evidence that might otherwise be overlooked.**
- **A forensic firearms expert might quickly be able to establish that a firearm related injury or death was self-inflicted/accidental and therefore reduce significantly the need for further investigation that would otherwise be necessary**
- **The additional evidence provided by a forensic firearms expert might provide the SIO with a better understanding of what has taken place, the sequence of events etc. that can be invaluable in identifying suspects/witness and or challenging their accounts.**
- **The cost of using a forensic scientist might be largely offset, if it leads to the prompt identification/arrest of a suspect and prevents further crime, in**

particular homicides. It might be of great benefit therefore using a forensic scientist for crime scenes thought to be a pre-curser to series-linked events.

It is strongly recommended that a forensic firearms expert (a forensic scientist) is called to all scenes of firearms related injury/homicide. Serious consideration should also be given to calling a forensic scientist to all shooting incidents, particularly those believed to be or suspected of being a precursor event linked to ongoing tensions or threat to life investigations.

The benefit of taking this approach is that such an expert will have better knowledge of what and where to look for evidence that might otherwise be overlooked. This then makes interpreting the scene and challenging or confirming suspect/victims accounts easier to achieve at an earlier stage. A forensic firearms expert will be able to help an SIO to, amongst other things:

- Establish the number and type of firearms that have been used
- Establish the trajectory of the projectiles
- Identify where the shots may have been fired from, allowing more focussed trace evidence recovery attempts
- Interpret damage caused

Having achieved this level of knowledge early on in an investigation can provide suspect interviewers with greater leverage.

An SIO has a responsibility to ensure investigations are both effective and efficient. It may be thought that calling a scientist to a non-injury scene is too costly an exercise. However, a thorough interpretation of a scene might provide vital evidence to promptly identify suspects/offenders and ultimately provide a murder supersession benefit. In this sense, it might be seen as a very efficient approach.

1.3. Recovery of Weapons that have been used in crime

Key Points

- **There are several possible variations to the sequence of making safe, recovering trace evidence, recording a guns condition and packaging it, each with benefits and potential compromises. Notwithstanding this, safety must never be compromised.**

- **SIOs must ensure a clear strategy to reconcile the processes behind making weapons safe, recording the condition of the firearm, recovering trace evidence, and packaging it, in the context of the particular incident, or circumstances, they are investigating.**

Any place, where a firearm believed to have been used in crime is discovered, should be considered a crime scene.

There are generally four steps to consider in recovering a firearm believed to have been used in crime, from a scene:

1. Making safe
2. Recording the condition of the firearm
3. Recovering trace evidence
4. Packaging

Steps 1-2 & 3 may take place in a different sequence to that outlined above, or indeed as part of a combined process. It may also be desirable to leave out step 3 altogether at the scene, and have it completed later on at an appropriately accredited laboratory (ISO 17025).

Some forces may take a wholly different approach insomuch as they may record only the immediately observable condition of the firearm within the context of the scene, then put it directly into a sterile ballistic bag for steps 1-2 & 3 to take place at the laboratory (ISO 17025).

It is absolutely essential that the SIO, forensic firearms expert and/or police firearms expert, together with police forensic investigators, take time to plan the best possible strategy for dealing with the firearm, in the context of the scene they are dealing with. This strategy must be recorded.

1.4. Forensic Recovery Considerations

Key points

- **Selecting what evidence might be relevant is most effective and efficient when done at the scene, within the context that it was produced, as opposed to sweeping up lots of potential evidence and trying to determine its relevance later on.**

- **SIOs should not rush, or be forced to rush closing down a firearms related crime scene.**
- **SIOs should be aware of all their options in relation to forensically recovering firearms.**
- **Making a weapon safe at the location where it is found requires handling that can compromise trace evidence recovery. It also requires additional people entering a scene which has the potential for other cross contamination to occur.**
- **Swabbing a firearm prior to it being made safe, or otherwise working within a scene containing a firearm not yet made safe, presents a risk which needs to be managed through the advice and support of a firearms expert.**
- **Safety must not be compromised for the sake of securing/preserving evidence.**
- **If a firearm is removed to a laboratory it must be one which is UKAS ISO 17025 accredited**

There are a number of things that can make the investigation of a firearms related crime scene difficult. This may be because it is situated within an area or community where there are on-going hostilities between groups and individuals, or hostilities towards the police. There may be challenges owing to weather or physical geography. It may be that the situation is unfolding in front of a wide range of media (traditional and social). Whatever the challenges, it must still be acknowledged that the process of selecting what within a scene is relevant or not, referred to as the recognition and recovery stage, is one of the most important stages of any firearms investigation. It is acknowledged that this process of selecting what is relevant is "*most efficient and effective when it takes place at the scene, where the potential evidence exists in the context in which it was produced" (*UNODC 2009: 13), rather than the alternative of hurriedly collecting as much potential evidence as possible and then later trying to establish its relevance away from the scene. SIOs should therefore, where possible, not rush or allow themselves to be rushed to close down a scene, whatever the pressures/difficulties.

Consideration must be given to forensically recovering all suspected firearms, component parts, ammunition, and discharged ballistic material which is linked or believed to be linked to crime. This presents investigators with a challenge, insomuch as officer, staff and public safety cannot be compromised during this process. Therefore, it is essential that the forensic recovery of firearms, component parts and ammunition is undertaken with the support, guidance and supervision of suitably trained firearms experts and / or a forensic

firearms expert who can help ensure all activity is safe whilst not compromising potential forensic evidence.

Traditionally, for many forces, the process to make a weapon safe utilised firearms officers who would be called to prove a recovered weapon safe and clear of ammunition. This invariably required physical handling of the weapon and may have caused some unwanted forensic disruption to occur.

Today, various forces undertake weapon recovery in different ways. Notwithstanding their own force policy, SIOs have a number of different choices available to them depending on the circumstances of the situation.

- In some circumstances, SIOs may consider that because of the nature of a scene, the immediate safety of officers and others is the overriding concern or, that the situation is otherwise too dangerous to leave a weapon in place or to take the time to process the scene in a more methodical manner (e.g. risk of further shootings or shootings are on-going etc.). In these types of circumstances, which should be the exception, the SIO may choose to permit a degree of handling of the weapon to ensure it cannot be accidentally discharged so as to allow staff to work within close proximity of it, or alternatively, immediately recover and remove it.
- It may be considered appropriate to allow a forensic officer to swab/fingerprint certain parts of the weapon at the scene before it is made safe. This must be done under the close supervision of a firearms expert to prevent any unintentional discharge. This has the benefit of securing trace evidence that might otherwise be disrupted or destroyed during any handling of the weapon to make it safe.
- It may be considered advantageous to leave the firearm untouched and forensically process the surrounding scene first to reduce the chances of cross contamination arising from other persons entering the scene to deal with the weapon. This approach should be undertaken with caution, and precautions taken, as determined by a firearms expert. These may include, for example, working outside of any potential line of fire should the weapon discharge, or placing of ballistic shields etc. between the weapon and officers/staff.
- Some forces may also have the capability to remove a weapon from the scene in a ballistic bag, with a clean forensic liner, whereupon it can be taken to a laboratory (UKAS ISO 17025 accredited) where the weapon can be made safe in a controlled environment and trace evidence can be recovered.

1.5. Recording the condition of a firearm

In addition to making any firearm safe, recovering trace evidence, and weapon recovery, it is vital that the condition of the firearm is carefully recorded, both for immediate investigative purposes, and subsequent criminal proceedings. A forensic firearms expert is often the best person to be able to do this. However, a police firearms officer with familiarity with the particular type of weapon may also be able to fulfil this role. SIOs should consider who is going to be able to provide them the best evidence that will withstand scrutiny in court. An SIO should almost certainly consider a forensic firearms expert undertaking this work where the incident involves rarely encountered, adapted or reactivated firearms.

A complete record of the condition of a firearm may provide vital evidence in showing the intent of a suspect, details of shots fired, and the capability of the weapon to cause harm etc. SIOs need to be aware of, and consider, the potential loss or disruption of trace evidence during this process and whether it is best done at the scene or at an ISO 17025 accredited laboratory.

Although firearms officers and/or forensic firearms experts should be aware of what to record, it is useful for an SIO to be mindful of the following (non-exhaustive) considerations:

- As far as can be observed, a full and detailed description of the firearm, including the apparent type/make/calibre
- Photography of the weapon
- Does the weapon have safety catches/devises? What position are they in?
- Does a revolver have a double or single action? What position is the hammer set?
- Is there a round in the breach?
- In the case of revolvers, is there a round in the chamber aligned with the barrel? (Consider marking this chamber).
- If there is a round in the breach (or chamber aligned to the barrel in the case of revolvers), is it live or spent?
- Is the firearm loaded with additional rounds? In the case of detachable magazines, it is not desirable to remove the rounds from the magazine, this can be done at the laboratory at a later stage. In the case of integral magazines, each round should be removed and recorded as spent or unspent. If it was necessary to cycle the rounds through the firearm action to remove them, then this must be recorded.
- In the case of revolvers, each additional round must be removed and its condition, (spent/unspent) along with its position in relation to the top chamber (aligned to the barrel), must be recorded.

In addition to helping investigators, a full detailed description of a firearm, as set out above, will meet many of the requirements of the CPS, as set out in their guidance, ahead of any changing decisions being made.

1.5.1. Details required by the Crown Prosecution Service

The CPS guidance on firearms states that a firearm or suspected firearm should always be recovered by a trained firearms officer (firearms expert), who should exhibit each and every weapon, component part and item of ammunition stating where each item was found.

The firearms officer (firearms expert) should provide a full description of each item found, including measurements where relevant (the length of the barrel of a firearm shall be measured from the muzzle to the point at which the charge is exploded on firing (section 57(6) Firearms Act 1968). The measurements are particularly relevant where an offence is likely to be determined by, for example, the length of the overall weapon or the length of the barrel.

The CPS requires each weapon and component to be photographed alongside a scale to indicate dimensions. Photographs of the weapon at the scene should be submitted also if of evidential worth. Copies of these photographs must be provided to the CPS. Providing these photos in a timely manner may prevent the need for a weapon and accompanying officer to attend court at a later date.

Where a firearms expert is able to identify the weapon, component part or ammunition they should do so and also indicate which offence(s) the weapon may be covered by because of its classification. .

Where a firearms expert is able to confirm that the weapon is an imitation firearm, they should do so. They should also indicate how closely it resembles a real firearm, based on their own knowledge of firearms. Photographs are likely to be of assistance to the CPS. The CPS must determine the circumstances surrounding the possession and use of an imitation firearm.

CPS guidance provides that a full statement from a firearms expert will usually be sufficient for air weapons and straightforward shotgun offences. However, where the firearms expert suspects that the air weapon is "specially dangerous" and is therefore a firearm for the purposes of the Act, the air weapon should be submitted for forensic testing to confirm this.

Further where an air weapon is used in such circumstances that if its muzzle energy exceeds 1 Joule (section 57(1B) Firearms Act 1968) consideration should be given to proceeding upon the basis that it is a firearm, and not an imitation or an air weapon alone, then it should be submitted for forensic testing to confirm the muzzle energy.

CPS guidance stipulates that a forensic report from a Forensic Service Provider will always be needed for classification purposes where offences (other than straightforward shotgun and air weapon offences) contrary to Section 1 (possession of a firearms or ammunition without a certificate) or section 5 (unlawful possession of prohibited firearms or ammunition) of the Firearms Act appear to have been committed.

CPS prosecutors will not accept guilty pleas unless there is a forensic report and statement as to the nature of the firearm.

In cases where the police are seeking to remand the suspect in custody pending the court hearing, the prosecutor making the charging decision will apply the threshold test and may have to rely on the opinion of a firearms expert (firearms officer or force armourer), or a preliminary report from a Forensic Service Provider as to the nature of the firearm. In such cases the prosecutor will identify, via an MGFSP form, the additional forensic issues that need addressing, including the full classification of the weapon and any relevant timescales.

Whenever a person has been charged with an indictable-only offence, the CPS will require a report and statement from a Forensic Service Provider in respect of all firearms, weapons, component parts and ammunition. It will always be essential to determine the category of such items. The prosecutor and the police should identify other reasonable scientific lines of enquiry, which may include:

- Fingerprint analysis;
- DNA testing;
- Forensic Discharge Residue (FDR) on clothing and swabs;
- Ballistics;
- Compatibility of firearm with any ammunition recovered;
- Nature of any "noxious liquid, gas or other thing";
- Serial number recovery (chemical etching etc);
- Proof Mark, manufacturing mark and user mark analysis (identification of supply chain and time line / point of diversion to criminality;
- NABIS submission and analysis.

Some of these enquiries can be carried out independently of the tests needed to classify the item, e.g. ballistics analysis need not delay submission of a report to the police/CPS about classification.

1.5.2. Key points

- A full detailed description of the condition of a firearm will help provide evidence of such things as, the type of weapon, the ability of it to fire a projectile, the number of any rounds fired, the number that could have been fired etc.
- A full detailed description of the condition of a firearm may help, together with other evidence, investigators piece together a suspect's intent.
- A full detailed description of the condition of a firearm is likely to be required by the CPS ahead of them making any charging decisions.
- CPS may require detailed measurements if the offence is one determined by the length/bore etc. of specific parts of the weapon.
- CPS will require a report from a Forensic Service Provider specifying the classification of a weapon in all cases under Section 1 and Section 5 of Firearms Act 1968 (except certain straightforward offences involving air weapons and shotguns)
- Where firearms experts are able to identify a weapon/component part, they should do so and also state what offences are likely to have been committed.
- Where firearms experts are able to identify that a weapon is an imitation firearms they should do so and from their knowledge describe how closely it resembles a real weapon.
- CPS prosecutors will not accept guilty pleas unless there is formal evidence as to the nature of the firearm.
- I remand cases, CPS lawyers giving advice giving advice will apply the threshold test and may have to rely on the opinion of a Firearms Officer, Force Armourer or a preliminary report from a Forensic Service Provider, but also stipulate further work on a MGFSP form.

1.6. Packaging of firearms

Firearms and ammunition must never be packaged together.

Key points

- **Guns and ammunition must never be packaged together**

- **Rounds in the breach, or chamber aligned to the barrel in relation to revolvers, must be packaged and exhibited separately. The condition (spent or unspent) must be recorded.**
- **Detectable magazines and ammunition can be packaged together if it is possible to ascertain how many rounds they contain.**
- **Integral magazines must be emptied but the contents exhibited together (where removing them, requires them to be cycled through the mechanism, this must be recorded).**
- **In the case of revolvers, the condition and position, in relation to the barrel, of rounds removed must be recorded, but, other than any round removed from the chamber aligned to the barrel, can be packaged and exhibited together.**
- **Where there is likely to be a need to examine a weapon for trace evidence the packaging must be contrived so as to minimise frictional contact with the weapon. Cardboard firearms boxes offer the best protection.**

Any round recovered from the breach, or in the case of a revolver, the chamber aligned to the barrel must be exhibited and packaged separately.

A detachable magazine containing rounds can be packaged as one exhibit. It is usually possible to ascertain the number of rounds within a detachable magazine by way of a visual inspection without removing each round. This number should be recorded. If the rounds do have to be removed to establish the number contained within a detachable magazine, then they can still be exhibited and packaged as one exhibit. The fact that they were removed must be recorded.

All rounds removed from an integral magazine can be packaged as one exhibit

In the case of a revolver, all other rounds removed from the chamber not aligned to the barrel can be packaged as one exhibit, however the number of live and spent rounds relative to the chamber aligned to the barrel must be recorded.

Once unloaded the firearm can be packaged and exhibited.

Forensic firearms experts/police forensic investigators can offer advice on the best method of packaging. In cases where the firearm will require trace evidence recovery, then the packaging should be contrived to minimise frictional contact with the contents. Cardboard boxes with a clear window and plastic ties are available for this purpose.

The packaging should be clean and sterile if trace evidence recovery is likely include DNA

1.7. Trace evidence from firearms

Key points

- **Swabbing the inside of a weapon's barrel may provide evidence of gunshot residue indicating that the weapon has been recently fired.**
- **Gunshot residue found on the inside of an antique, reactivated or homemade weapon may provide important evidence that the weapon has been recently fired.**
- **Swabbing the inside components may produce DNA trace evidence of the user, supplier and others who may have handled the gun. It is also less likely for this trace evidence to have been disrupted at the stage the weapon may have been handled to make it safe.**

Forensic firearms experts and police forensic investigators are likely to be experienced in terms of recovering trace evidence from weapons. However, SIOs may wish to consider additional parts of a weapon that they want to be examined.

In the process of recovering trace evidence from a firearm, an SIO may wish to consider requesting swabs from inside the barrel to check for gunshot residue (GSR). In the interests of safety, it is unlikely that such swabs will ever be taken before a weapon has been confirmed safe by a suitably qualified expert. The benefit of such a swab is that it may provide the SIO with evidence that a weapon has been recently fired. This may be useful in relation to homemade, deactivated and, perhaps in particular, antique firearms reportedly being held as curiosities or ornaments.

SIOs may also wish to consider having the inside components or area swabbed for DNA. This should be undertaken under the supervision of a firearms expert with knowledge of the particular weapon so as to not cause any damage to it. In addition, advice should first be sought from NABIS, to ensure that dismantling the weapon for this purpose will not compromise their subsequent examination of it.

1.8. Other ballistic material

Key points

- **All ballistic material found at a scene may be able to add something to an investigation and should not be overlooked**

Associated ballistic material recovered from a crime scene can help investigators in the following ways:

- Plastic wadding – possibly identify if a shotgun was shortened (and potentially be matched with any recovered weapon), provide evidence of the gauge of the gun used and the make/type of cartridge fired. If found lodged in a victim or object, it may help a forensic expect better interpret the scene and the events that unfolded
- Fibre wadding – the gauge of the weapon used. If found lodged in a victim or object, it may help a forensic expect better interpret the scene and the events that unfolded
- Shotgun shot - If found lodged in a victim or object, it may help a forensic expert better interpret the scene and the events that unfolded. If can provide an indication of the type of cartridge used
- Spent shotgun cartridge – This can provide important details of the weapon used and links to other crimes. It may also provide trace evidence opportunities.
- Bullet/ bullet fragments – These can provide important details of the weapon used and links to other crimes. They may also provide trace evidence opportunities, particularly in respect of unidentified, but injured, victims
- Spent bullet cartridge cases - These can provide important details of the weapon used and links to other crimes. They may also provide trace evidence opportunities

Consideration should also be given to “enabling tools” and “indicative accessories” such as ammunition re-loading press, dies, other tooling, cleaning materials, commercial documentation and postal packaging linking back to a supplier or an importation which may identify previous or additional supplies.

1.9. Gunshot Residue

Key points

- **Gunshot residue (GSR) may be able to assist in providing a better understanding of events within a firearm related crime scene, but only with the help of a forensic firearms expert. Even then, however, there are limitations.**

- **A person in close proximity to a shooter, may themselves pick up GSR on their body (including their hands), and clothing.**
- **GSR can be transferred from person to person directly or even to a third party. Therefore the relevance of any GSR found will need to be determined by a forensic firearms expert, who will consider amongst other things, time between the incident and any swabs being taken, the lifestyle/occupation of the subject, known contact with other subjects/firearms/firearms officers etc.**
- **Where GSR is likely to play an important evidential role in an investigation, SIOs will want to ensure that any involvement of police firearms officers, for example access to the scene/suspects/victims is accurately recorded.**
- **The greatest loss of GSR occurs within 2 hours of a shooting incident**
- **Firearms officers and / or their vehicles should not be used to transport prisoners/suspects**
- **Those arrested for firearm related crime should have their hands bagged to capture any GSR that they may contain that may otherwise be lost prior to swabbing taking place. Where there is a delay in swabbing a suspect's hands they should be placed into a dry cell to prevent washing.**

SIOs/Crime Scene managers have a responsibility to ensure that any persons entering a firearms related scene (save for any immediate need to save life / apprehend offenders etc), are not going to cause forensic contamination.

With this in mind, they need to consider the usual cross contamination issues associated with, for example, contact with victim, suspects and other scenes etc, but in relation to firearms scenes, they need to give additional consideration to Gunshot Residue (GSR) sometimes also referred to as Firearm Discharge Residue (FDR). In this sense, not only should an SIO consider the risks of bringing GSR into a scene, but also the risk of moving it from one place, or item, to another.

The importance of considering GSR cross contamination is because, whilst there are limitations, it may be able to provide important evidence that a person has been in proximity, both in terms of time and spatially to a firearms discharge. When a firearm discharge takes place, chemical particles are released from the weapon, which may be invisible to the naked eye, but can shower the person firing the weapon and, those nearby.

Research into GSR and what it can offer in terms of reconstructing crime scenes, linking the gun to a shooter etc., is still developing. That said, there is already some evidence showing how it can be used to assist in crime investigations.

For example, taking a sample from a deceased person, and / or, their clothing may provide some additional assistance in helping an SIO determine, with the help of a forensic firearms expert, whether the incident was a suicide or a homicide, given the likely close proximity from which the weapon is likely to have been fired in the case of the former. That said, even in this case, interpretation might be difficult given that most firearm related homicides occur at very close range. It would however, perhaps be unusual/improbable for a firearm related suicide victim not to have any GSR on them, their hands, their clothing, suggesting rather that they had been shot from a distance. There is also evidence that GSR is likely to show greater persistence in suicide cases owing to the lack of post incident movement (Chang et al 2013: 10).

There is a range of evidence that shows the ability of GSR, like other types of trace evidence, to be transferred from person to person, object to object (French, Morgan and Davey 2014; French and Morgan 2015; and Berk et al 2007) . Whilst there is no general consensus to the amounts of GSR that can be passed, or of the longevity of the transfer process, before there are no more particles left, it does present SIOs with some important considerations to be made. It needs to be borne in mind, for example, that a handshake with a shooter soon after a shooting incident will transfer GSR to the hands of another, the handing over of a recently fired weapon will do likewise. Indeed, it has even been found that GSR can be "*deposited on the hands of an individual who was standing in close proximity of a discharge, but who has not fired the weapon" (*French & Morgan 2015: 17). These and many more conceivable scenarios might be sufficient to cast doubt in the mind of any subsequent jury member, or perhaps even worse, lead to a miscarriage of justice.

The ability of GSR to persist on a person's body is unclear. Equally, the amounts that can be expected to be found can "*vary unpredictably"* (Chang et al 2013: 10). Studies have shown however, that it is likely to be more persistent on a person's hair and clothing than their hands and face (Chang et al 2013: 10). Recent, unpublished research from the University of Portsmouth, has found that there appears to be a greater degree of persistence and / or an increased ability to recover GSR from the inside of a person's eyelids when a gel stick type swab is used.

Notwithstanding the unpredictability of the presentation of GSR, it has been established, and should be borne in mind by SIOs, that most loss of GSR has been found to occur during the first two hours after a weapon is fired (Chang et al 2013: 10). This makes it important

therefore, that they act against the fastest possible timetable in securing and preserving evidence of GSR from as many surfaces and subjects that may have been in contact with the shooter or firearm (French, Morgan, and Davy 2013: 59).

Where a firearm related suspect is arrested, and GSR samples are likely to be required, this will need to be completed promptly. As time passes the amount of GSR is likely to diminish and naturally falls off. Consideration should, therefore, be given to placing clean bags over each hand, secured by elastic bands around the wrists until the hands can be swabbed. If there is likely to be a delay in swabbing a suspect's hands, then consideration should be given to placing them into a dry cell where they will not be able to wash their hands prior to swabs being taken.

As well as general swabs for GSR, consideration should be given to using a gel stick swab on the suspect's eyelids and undertaking hair combings, given that there is evidence that GSR shows greater persistence in these areas.

Suspects' clothing should also be removed carefully, item by item, whilst they stand on a sheet to ensure any debris falling off is caught and can be exhibited /examined later if needed.

1.9.1. Gunshot residue and Firearms Officers

It is likely that most firearms incidents will necessitate the attendance of police firearms officers. This in itself, also has the potential to make the interpretation of GSR found at a scene more complex and weaken its evidential value if not handled carefully.

Firearms officers and/or their vehicles should not be used to transport firearms related suspects as they are likely to be a source of GSR (Berk et al 2007). In the case of suspected cross contamination from a firearms officer to a suspect/scene, some forces may have already referenced the profile of GSR emitted from the weapons that their officers use. This can be compared against that found on a crime scene/suspect. Where no record exists, it is possible for a forensic firearms expert to obtain this in a controlled way. This may of course still be of limited value, given that through the course of their duty, firearms officers may pick up other GSR from, for example, other weapons they are called to recover/make safe, or from suspects they encounter.

As some forces use armed officers across of range of frontline policing activity, there are going to be increased chances that they contaminate items during non-firearms related policing, such as arrests or S18 searches. This could be problematic; particularly if the owners of these items become suspects in future firearms related matters.

If GSR is likely to play an important evidential part in an investigation, accepting that this may not be known at the time, an SIO will want to ensure the actions of all firearms officers at the scene and any contact they may have had with suspects/victims etc. is clearly, and accurately, recorded. They may also wish to explore the extent of any previous contact the suspect or scene has had with firearms officers.

APP** Link to ***Critical incident management***

APP** Link to Major investigation and public protection/***Gangs and youth crime***

APP** Link to ***Investigation***

APP** Link to **Armed policing**

APP** Link to ***National Decision Model***

APP** Link to ***Risk***

APP** Link to Major investigation and public protection/***vulnerable adults***

APP** Link to Major investigation and public protection/***firearms licensing***

APP** Link to ***Intelligence Management***

APP** Link to Major investigation and public protection/***Managing sexual offenders and violent offenders***

APP** Link to ***Intelligence Management***

APP** Link to ***Prosecution and case management***

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