

# ROAD TRANSPORTATION OF DEFENCE NUCLEAR MATERIAL IN SCOTLAND

## PREPAREDNESS REVIEW

June 2019



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Riaghaltas na h-Alba  
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Produced and Published by:

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## Ministerial Foreword



“The Scottish Government is firmly opposed to the possession, threat and use of nuclear weapons. We are committed to the safe and complete withdrawal of Trident from Scotland, and have repeatedly called on the UK Government to cancel plans for its renewal.

The responsibility for the road transportation of Defence Nuclear Material in Scotland lies with the UK Government, through the Ministry of Defence. The Scottish Government, however, expects any such road transportation to be carried out safely and securely.

Indeed, public safety in Scotland is our absolute priority and the Ministry of Defence has assured Scottish Government that robust arrangements are in place to ensure the safety and security of the road transportation of Defence Nuclear Material in Scotland at all stages of the transportation process.

In August 2017, the ‘Unready Scotland’ report raised safety and security concerns with the road transportation of nuclear weapon convoys in Scotland. Subsequently, a motion for debate was raised within the Scottish Parliament and this took place on 2 May 2018. In response, Scottish Government made a commitment to carry out a review, of the consequence management planning, response and recovery aspects related to road transportation of nuclear weapon convoys in Scotland, led jointly by the Police and Fire Inspectorates. It would look at the close working arrangements with local authorities and the other responders in Scotland’s regional resilience partnerships to ensure that response arrangements are indeed up to date and current.

During the course of the review, there has been strong cross sector engagement and collaboration from many agencies, enabling the review to identify a number of key findings, which re-assure me regarding our responder preparedness arrangements, namely:

- That the quality of the response arrangements in our regional resilience partnerships is high
- There is excellent collaboration between responders, on the principles of integrated emergency management
- There are strong plans in place for the key consequences of any such incident – in keeping with responder plans for other emergencies. The generic consequence nature of our planning process should not be confused with a lack of plans for the cause of a specific incident. Local authorities are not required to have a specific emergency plan in respect of transportation of defence nuclear materials
- That the risk assessment and planning process is proportionate to the risk, which in the case of the transportation of defence nuclear material is extremely low. There is no risk of an ‘atomic bomb’ type of explosion
- The emergency services undertake on-going specialist training in respect of the transportation of defence nuclear material
- Learning points are focused on fine tuning the training, clearance and information sharing processes within and between agencies.

I would like to personally thank the Police and Fire Inspectorates and colleagues from the Society of Local Authority Chief Executives in Scotland, who have worked tirelessly together to conduct the review within the agreed parameters and timescale, supported by Scottish Government Officials. This report is a testament to their commitment and dedication.

I would also like to personally thank the authors of the 'Unready Scotland' report and those members of the Scottish Parliament who raised and participated in the debate.

Finally, I believe that the work undertaken in this review will reassure Parliament and our communities that our responder agencies are well prepared and contribute to further enhancing our preparedness, so that Scotland is indeed ready”.

I commend this report to you.

A handwritten signature in black ink, appearing to read 'Ash Denham', written in a cursive style.

**Ash Denham**

Minister for Community Safety

## Background

The office of Mark Ruskell MSP, Scottish Green Party, submitted Freedom of Information requests to local authorities in Scotland on or near known convoy routes in the autumn of 2016. The responses formed the basis of the Nukewatch 'Unready Scotland' report published in August 2017.<sup>1</sup> The report concluded by recommending that the Scottish Government urgently head up a review of the civil authority response to the threat of an incident or accident involving the nuclear weapons convoys.

Mr Ruskell subsequently lodged a motion in parliament, which was debated in the Scottish Parliament on 2 May 2018. At the conclusion of the debate Ms Ewing, the then Minister for Community Safety, gave the following commitment:

*"I have listened carefully to the concerns raised by members and I can confirm that I will be writing to Her Majesty's Inspectorate of Constabulary in Scotland and to Her Majesty's Fire Service Inspectorate in Scotland to ask them to consider conducting a joint review of the resilience work of Police Scotland and the SFRS. That review would be able to look at the close working arrangements with local authorities and the other responders in Scotland's regional resilience partnerships to ensure that response arrangements are indeed up to date and current, because we all want to have that assurance. I trust that that will provide members who have participated in the debate and, indeed, our guests in the public gallery with some reassurance about the serious approach that the Scottish Government takes to these matters."*

Following the debate, Mr Ruskell wrote to Ms Ewing welcoming the commitment. In response, Ms Ewing confirmed that the Integrated Emergency Management (IEM) approach to preparedness for emergencies, which Scotland adopts in common with other countries, recognises that the most effective preparation for any event rests on planning for a range of consequences rather than the characteristics of a specific event. The process is a collaboration between the category 1 responders (under the Civil Contingencies Act 2004),<sup>2</sup> with the Scottish Fire and Rescue Service and Police Scotland playing the prominent roles.

The Regional Resilience Partnerships therefore collectively assesses a range of risks and their consequences, which include the risks and consequences which could potentially occur as a result of an incident involving Road Transportation of Defence Nuclear Material in Scotland (including – Fatalities, Casualties, Radiation contamination (people and/or environment), Evacuation, Care for People and Public Information). This approach enables them to plan generically in respect of response to the consequences of major incidents and emergencies, regardless of the cause.

Ms Ewing subsequently wrote to Her Majesty's Inspectorate of Constabulary in Scotland (HMICS) and to Her Majesty's Fire Service Inspectorate in Scotland (HMFSI) to request that they consider undertaking a review of resilience work in this area. Both inspectorates agreed to do so.

Scottish Government Officials in the Resilient Essential Services Team commenced discussions with HMICS and HMFSI on the Aim, Scope, Process and Membership of the review. The aim, scope and process of the review was agreed and refined as the review progressed (see page 7). It was recognised that for the review to be comprehensive in nature, the participation of Local Authorities and Health Boards was essential. Discussions therefore took place with the Society of Local Authority Chief Executives (SOLACE) and Scottish Government Health Resilience and participation was secured.

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<sup>1</sup> [Unready Scotland – the critical gap in our response to the transport of nuclear weapons](#)

<sup>2</sup> Civil Contingencies Act 2004, <https://www.legislation.gov.uk/ukpga/2004/36/schedule/1>

The review was entirely focused on the consequence management planning, response and recovery aspects related to road transportation of Defence Nuclear Material in Scotland. It did not address reserved policy issues in relation to Defence Nuclear Material, as it remains the case that the responsibility for the maintenance of the Trident weapons system and transportation of Defence Nuclear Material lies with the UK Government's Ministry of Defence.

A fundamental principle of the review was that it should be as comprehensive, open and transparent as possible, with a publicly available report at the conclusion.

The report structure is based on 'Chapters', which contain the desk assessments of preparedness, carried out by HMICS, HMFSI, SOLACE and Scottish Government in respect of the Police, Fire, Local Authority and Health responders.

# Aim, Scope and Process of the Review

## Aim

- To review the resilience of response arrangements relative to road transport of Defence Nuclear Material in Scotland.

## Scope

- Define the Reserved roles and responsibilities for the security, resilience and response relative to the convoy.
- The Devolved roles and responsibilities for the operational security, resilience and response relative to the convoy.
- Risk Assessment process, including National Risk Assessment, Scottish Risk Assessment and the Risk Preparedness Assessments at Resilience Partnership level.
- Legislation, Doctrine and Guidance, including the Civil Contingencies Act and Preparing Scotland hub and spokes arrangements.
- Resilience Partnerships arrangements, including Integrated Emergency Management (IEM) approach to planning, response and recovery at a Resilience Partnership level.
- Awareness, training and exercising in Scotland.

## Process

- The review will consider the risks and consequences associated with Road Transportation of Defence Nuclear Material in Scotland.
- Information gathering will focus on the areas identified in the scope.
- HMICS and HMFSI will carry out a desk assessment of the evidence gathered relevant to their respective areas of responsibility.
- SOLACE and Scottish Government will carry out desk assessment of Local Authority and Health preparedness.
- Review report to be prepared, including recommendations / areas for improvement.

# Strategic Context

## Legislative Competence

1. The safety and security of road transportation of defence nuclear material in Scotland is a reserved matter.
2. The transportation of nuclear and other hazardous materials is governed by international and national regulations, which includes the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG), as amended in 2013 and in 2019, in order to transpose the radiological emergency preparedness and response requirements contained in the European Atomic Energy Community (EAEC or Euratom) Basic Safety Standards Directive (2013/59/Euratom) (the Directive), in relation to the transport of radioactive materials in the UK by road.
3. The purpose of the amended regulations is to strengthen the United Kingdom's emergency preparedness and response arrangements for the transportation of radiological materials. It consolidates emergency preparedness and response requirements for the transport of radioactive materials into the CDG.<sup>3</sup>
4. Although there are exemptions for certain defence-related activities, UK Government policy is to comply with the principles of those regulations. The Ministry Of Defence (MOD) confirms that the Secretary of State for Defence has stated that where the MOD has exemptions or derogations from the Regulations, they will put in place processes and procedures at least as good as the Regulations. As such, the Regulations apply to both the civil carriage of radioactive material and the carriage of such goods for specified military purposes.
5. The Secretary of State for Defence formally delegates responsibility for conducting defence activities safely, through the management structure of the MOD, and he separately charges the Permanent Under Secretary (PUS) with oversight of the Department's (MOD) safety and environment management arrangements and the responsibility for Defence regulation of them. In respect of nuclear and radiological safety in the Defence Nuclear Programme (DNP), PUS requires the Director, Defence Safety and Environment Authority (D DSEA) to appoint the Regulator and provide him/ her with a letter of delegation.<sup>4</sup> In this case it is provided to the Defence Nuclear Safety Regulator - Head (DNSR-Hd).
6. DNSR-Hd formally authorises a Nuclear Weapon Programme operator, designated as Authorisee, through the issue of an Authorisation. Each Authorisee is responsible for a phase of activities associated with a weapon, termed a Life Cycle Phase (LCP) in the Nuclear Weapon Programme; LCP 2, in the case of transportation of nuclear warheads. Each Authorisee is required to develop and maintain robust safety management systems.
7. A system of authorisation has been determined as fundamental to safety management arrangements within the Defence Nuclear Programme. Authorisation is a system closely equivalent to licensing under the Nuclear Installations Act. The requirements are defined in 36 Authorisation Conditions (AC) which are as far as possible identical to the 36 Licence Conditions applied under statute to operators of nuclear installations.

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<sup>3</sup> Because of the nature of certain military operations the regulations cannot always be met in the same way as civilian operations. The Secretary of State's statement drives the MoD to operate procedures and processes which achieve the same effect as that of a civilian company; i.e. that we are as safe and secure as possible.

<sup>4</sup> A Letter of Delegation is a formal process for empowering the recipient.

8. Regulation in respect of nuclear licenced sites and other sites that hold radioactive material is also a reserved matter in the UK and includes the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPiR), due to be amended by the Radiation (Emergency Preparedness and Public Information) Regulations 2019<sup>5</sup> – to implement the remaining emergency preparedness and response aspects of the “Directive”. Under the regulations, a local authority in whose area there is situated premises at which there is carried out work with ionising radiation to which the Regulations apply and in respect of which an assessment made by the operator pursuant to regulation 4(1) or regulation 5 shows that it is reasonably foreseeable that a radiation emergency might arise (having regard to the steps taken by the operator under regulation 4(2)), shall prepare an adequate emergency plan.
9. UK legislation does not place a similar requirement in respect of transportation of materials of such a nature.
10. The management of the consequences of any emergency<sup>6</sup> in Scotland is a devolved matter.
11. The Civil Contingencies Act 2004 and the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005, as amended by the Civil Contingencies Act 2004 (Contingency Planning)(Scotland) Amendment Regulations 2013, places duties on the key organisations (Category 1 responders under the Civil Contingencies Act 2004)<sup>7</sup> responsible for ensuring the effective management of emergencies in Scotland, including preparation of plans for dealing with such emergencies.

## Resilience Arrangements in Scotland

12. The development of resilience in Scotland is based on the principle of Integrated Emergency Management (IEM). The IEM concept recognises that the most effective preparation for any emergency rests on planning to develop flexible and adaptable arrangements for a range of consequences rather than specific causes. See page 14 for more detailed information on IEM.
13. IEM promotes a collaborative approach among the category 1 responders. Each Regional Resilience Partnership (RRP)<sup>8</sup> therefore assesses a range of risks and their consequences, including those which could potentially occur as a result of an incident involving Road Transportation of Defence Nuclear Material in Scotland (including – fatalities, casualties, radiation contamination (people and/or environment), evacuation, care for people and public information). This approach enables them to plan generically in respect of response to the consequences of major incidents and emergencies, regardless of the cause.
14. IEM is underpinned by five key activities, namely:
  - Assessment
  - Prevention
  - Preparation
  - Response
  - Recovery

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<sup>5</sup> Radiation (Emergency Preparedness and Public Information) Regulations 2019 <http://www.legislation.gov.uk/uksi/2019/703/made> come into force on 22 May 2019.

<sup>6</sup> Civil Contingencies Act 2004 - definition of emergency <http://www.legislation.gov.uk/ukpga/2004/36/section/1>

<sup>7</sup> Civil Contingencies Act 2004 - <https://www.legislation.gov.uk/ukpga/2004/36/schedule/1>

<sup>8</sup> <https://www.readyscotland.org/my-community/ready-in-your-area/>

## Assessment

15. The MOD is responsible for the risk assessment in relation to the probability of a defence nuclear transport incident leading to a release of radiation. The assessment by MOD is that the probability is extremely low, based on the requirements for inherent safety and security features and procedures, together with the limited movement of nuclear defence material. The MOD states that the routes are carefully selected as part of a rigorous risk assessment process and are regularly reassessed for their continued suitability. This assessment is checked and agreed by an Independent Nuclear Safety Assessment and the Defence Nuclear Safety Regulator, prior to being 'Approved' by the Authorisee.
16. MOD confirms that in over 50 years of transporting nuclear material by road in the UK, there has never been an incident that has posed any radiation hazard to the public or the environment.
17. The MOD position is that it no longer publishes the Defence Nuclear Safety Regulator Annual Assurance Reports, as to do so during the current age of intensifying threats to the UK would risk our national security. The MOD further advises that the Defence Nuclear Programme achieves the required standards of nuclear and radiological safety, and this decision does not prevent the effective management and independent assessment of the programme, or preclude its duty holders being held to account.
18. Category 1 responders, through the RRP structures, are responsible for assessing whether an emergency is **likely to occur**. The information is used to inform the public facing Community Risk Register. Given the MOD risk assessment is "Extremely Low" probability, defence nuclear transport accident does not appear on Community Risk Registers. (See page 14 for additional information).

## Prevention

19. MOD has provided the following assurances in respect of the safety and security of the convoys.
20. The weapon by its very nature is an extremely robust device, designed to withstand launch and re-entry into the Earth's atmosphere. There is no risk of an 'atomic bomb' type of explosion. It is transported in a secure custom-designed container that is tested to protect against a range of scenarios, including impact on a motorway at speed, a drop from height and a fuel fire. The vehicle that carries the container is custom-designed to provide robust crash protection, even in the event of a severe road accident.

21. It is vital that the road transportation of Defence Nuclear Material in Scotland is rigorously planned, carried out in close co-operation with Police Scotland, and supported by a large number of highly-trained specialists.
- Public safety is the MOD absolute priority and robust arrangements are in place to ensure the safety and security of all these convoys. There has never been an incident posing a radiation hazard.
  - The safety of convoy operations is carefully considered at all stages of the transportation process. Operational planning always takes into account such factors as road and weather conditions, and the MOD consult with Police Scotland and Scottish Fire and Rescue Service on convoy moves. The convoy is operated by a highly trained crew, consisting of a first-aid team, fire-fighters, mechanics and others to enable roadside repairs and personnel equipped to monitor for radiological hazards.
  - The risks associated with terrorist attack are mitigated by a range of counter-measures, including the vehicle itself, specific warhead protection measures, monitoring and armed escort, which includes the Ministry of Defence Police (MDP). These security arrangements are kept under review, frequently tested and subject to formal inspections to ensure that they meet the required standards.

## Preparation

22. Scotland's emergency services have plans in place for responding to any major incident regardless of the cause. There are well established resilience structures in place in Scotland to manage the consequences of any emergency. These structures have been robustly tested, and proven to be effective by exercising and real emergencies.
23. Notice is provided to Police Scotland and the Scottish Fire and Rescue Service in advance of movements. The MOD position is that for security reasons, it does not share details of individual movements more widely.
24. As Lead Government Department (LGD) for the response to a defence nuclear emergency, the MOD organises regular training and exercises in respect of its emergency response planning and arrangements. A key aspect of the training and exercises is the co-operation of the different agencies that would contribute to the response.
25. Under the auspices of the Defence Nuclear Safety Regulator (DNSR), there is at least one Defence nuclear emergency exercise per year to rigorously test the effectiveness of response arrangements, that requires the emergency services, other government departments and local agencies to participate as appropriate. A major exercise 'Astral Climb' witnessed by the DNSR, took place in Scotland in June 2016. It included the full participation of Police Scotland, Scottish Fire and Rescue Service and Scottish Ambulance Service and was designed to demonstrate to the regulator that the MOD, and in particular the personnel who travel as part of the convoy, can work closely with the civilian emergency services. The DNSR confirmed, "The overall assessment of Astral Climb 2016 was adequate,<sup>9</sup> the performance of the Convoy Team against the individual DNSR objectives was largely above adequate".
26. The MOD Local Authority and Emergency Services Information (LAESI)<sup>10</sup> document provides prior information for the emergency services, Local Authorities and Health Boards on contingency arrangements to be implemented in the highly unlikely event of an emergency during the transportation of Defence Nuclear Material. It also sets out the Local Authority areas which defence nuclear material may pass through the UK.

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<sup>9</sup> The Regulator only uses a pass/fail criteria of adequate or not adequate.

<sup>10</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/643525/20170831-LAESI-Ed\\_11.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/643525/20170831-LAESI-Ed_11.pdf)

27. LAESI states: “The response by the emergency services and local authorities to a transport emergency involving Defence Nuclear Material (DNM) will have much in common with the response to any major incident or emergency. The Police provide strategic direction of any multi-agency response through the Strategic Co-ordinating Group (SCG).<sup>11</sup> The principles laid down in the Cabinet Office publication “Emergency Response and Recovery” and the Scottish Government publication “Preparing Scotland” form the basis of MOD’s own arrangements which are fully integrated into the overall response.”
28. Category 1 responders have a duty to warn the public, and to provide information and advice, if an emergency is likely to occur or has occurred, under the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005. In performing this duty they must take account of the importance of not alarming the public unnecessarily.

## Response

29. The MOD has confirmed that it understands that there are various scenarios which could impact on convoys, which include protests, severe weather and road traffic collisions. Computer modelling helps the MOD understand the mechanisms and magnitudes of energies involved. By understanding how damage is caused to the vehicles, they can predict the response of the system to the threats and how better to recover the situation.
30. MOD advises that although the probability of an incident that causes the release of radioactive material is extremely low, the MOD, as a responsible operator, has developed response plans to enable the convoy team’s Immediate Response Force (IRF) to quickly deal with an incident, further minimising the risk of release. The IRF comprises firefighting, medical, security and radiation monitoring capabilities and works to Joint Emergency Services Interoperability Principles (JESIP), to co-ordinate the emergency response through the local police force Incident Commander who is the response lead.
31. While LAESI provides detailed information on the hazard presented by nuclear material, in the event of an emergency the MOD Joint Operations Centre (JOC), which co-ordinates the MOD response, sends a one-page ‘Information in Writing’ document to the emergency services control rooms to ensure that they provide an appropriately informed response to the incident. The IRF will set up a forward control point at the edge of the cordon that will have been immediately established, where they will provide a similar brief to the responding Incident Commander(s). In addition, MOD provides pre-scripted public protection advice for dissemination by the emergency services through their normal channels.
32. In the event that the incident has been of such a magnitude that there is uncertainty on the condition of the material, or there has been a confirmed release of radioactive material, MOD has a scaled military and civilian response including specialist engineering support, security, radiological monitoring, radiological health protection and material recovery teams. These wider arrangements to respond to any incident, no matter how unlikely, is part of the MOD rigorous approach to safety, which includes the Nuclear Emergency Organisation.<sup>12</sup>
33. The MOD’s response to such an incident is trained on a regular basis and undergoes regulatory assessment by the Defence Nuclear Safety Regulator.

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<sup>11</sup> In Scotland this is delivered through Resilience Partnership arrangements.

<sup>12</sup> The Transport Nuclear Emergency Organisation is comprised of two key elements: the Immediate Response Force, which provides support and advice to the emergency services during the emergency phase e.g. hazard information, medical support, immediate monitoring capability and the initial management of the incident; and the Follow on Forces, which provide specialist strategic, operational, technical, logistical and administrative services in support of the recovery phase of an incident. The follow on forces would be deployed to the operational site and to the strategic headquarters. Both teams are trained and equipped to respond to any incident.

## Recovery

34. When the emergency phase is over, there will be an agreed transition of the co-ordination role from the police to the relevant local authority.
35. MOD policy is that support will continue to be provided to the relevant Resilience Partnership, until it is agreed that their role is no longer required. It is foreseen that this support will include, for example, ongoing monitoring, remediation and compensation for losses that are attributable to the incident.

## MOD Recommendations

36. Whilst assessment of reserved matters is not within scope of the review, following discussions with the review team, MOD staff have confirmed a commitment to assess arrangements in respect of consequence management planning, response and recovery and provide any recommendations for improvement.
37. The following commitment has been identified by MOD.
  - Greater MOD convoy staff engagement with non-nuclear transport major emergency exercises, to enhance consequence management understanding and to build stronger relationships and knowledge of how Scottish responders operate.

# Integrated Emergency Management (IEM) – Legislation, Doctrine, Guidance and Risk Assessment

38. This section provides an overview of the legislation and regulations under which those responsible for planning for and responding to emergencies (the category 1 responders) operate. It also provides an introduction to the doctrine and guidance available as well as an explanation of the risk information and assessment process.
39. In common with other countries, the development of resilience in Scotland is based on the doctrine of IEM. The aim of IEM is to develop flexible and adaptable arrangements for dealing with emergencies, whether foreseen or unforeseen. It is based on a multi-agency approach and the effective co-ordination of those agencies.
40. This all-risks approach, concentrating on consequences rather than causes, allows a process of generic planning which can be adapted readily to fit to a wide range of issues around response and recovery.

## Legislation

41. The Civil Contingencies Act 2004<sup>13</sup> forms the legal basis for emergency preparedness in Scotland and across the UK. The Act seeks to minimise disruption in the event of an emergency and to ensure that the UK is better prepared to deal with a range of emergencies.
42. In Scotland, the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005<sup>14</sup> as amended in the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Amendment Regulations 2013 (the amendment merely reflected the change from multiagency Strategic Coordinating Groups to Regional Resilience Partnerships after the move to a single police service and a single fire and rescue service) provides further information on the application of the Act in Scotland, in particular, on the duties and roles of responders.
43. Section 2(1)(g) of the Civil Contingencies Act 2004 requires category 1 responders (such as the emergency services and local authorities) to maintain arrangements to warn the public, and to provide information and advice to the public, if an emergency is likely to occur or has occurred (“emergency” is as defined in section 1 of the CCA 2004).
44. In performing its duty under section 2(1)(g), a Scottish Category 1 responder must have regard to the importance of not alarming the public unnecessarily.

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<sup>13</sup> [http://www.opsi.gov.uk/acts/acts2004/pdf/ukpga\\_20040036\\_en.pdf](http://www.opsi.gov.uk/acts/acts2004/pdf/ukpga_20040036_en.pdf)

<sup>14</sup> [http://www.legislation.gov.uk/ssi/2005/494/pdfs/ssi\\_20050494\\_en.pdf](http://www.legislation.gov.uk/ssi/2005/494/pdfs/ssi_20050494_en.pdf)

## Doctrine and Guidance

45. Preparing Scotland<sup>15</sup> provides guidance on preparing for, responding to and recovering from emergencies in Scotland and forms the basis of emergency arrangements. It has a 'Hub' which sets out the philosophy, principles and good practice, and 'Spokes' that provide detailed guidance on specific matters. The Hub<sup>16</sup> incorporates:
  - The doctrine of resilience in Scotland
  - The principles that underpin effective Integrated Emergency Management
  - Regulatory guidance and recommended good practice
  - Clear signposting to the detailed “Spokes”.
46. The Scottish Government has published Risk and Preparedness guidance (part of Preparing Scotland) to help the Resilience Partnerships assess the risks relevant to their region and to determine how prepared they are to deal with the consequences of these risks.
47. The MOD Local Authority and Emergency Services Information (LAESI) document provides prior information for the emergency services, Local Authorities and Health Boards.

## Risk Assessment Processes

48. **Risk and Preparedness Assessment.** Resilience Partnerships including the local authorities and other category 1 responders, supported by Scottish Government Resilience Co-ordinator teams, undertake a Risk and Preparedness Assessment process on a regular basis. This enables the Resilience Partnerships to identify and assess the main risks relevant to their region and to determine how prepared they are to deal with the consequences of these risks.
49. **Overarching Risk Information.** The UK National Risk Assessment (NRA), the UK National Risk Register (NRR), the Scottish Risk Assessment (SRA) and the Resilience Partnership Community Risk Register (CRR) arrangements, provide an evidence based and priorities approach to risk at national, Scottish and local level respectively.
50. These risk assessment products are designed to be strategic risk assessment tools and are therefore pragmatically selective. They are not designed to capture every risk, but instead focus on scenarios that are representative of the wider risk landscape and which inform our understanding of the range of consequences that we could face as a result of civil emergencies.
51. The NRA is produced by UK Government to articulate the national Threats (malicious risks) and Hazards (non-malicious risks.) The NRA is a classified document which is available to appropriately vetted and cleared members of the resilience community.
52. The NRR<sup>17</sup> produced by the UK Government is publicly available and informs the public about the range of risks the UK may face.
53. The SRA is produced by Scottish Government to complement the UK National Risk Assessment by providing the level of detail on Hazards required for Scotland in those areas where that is different from the rest of the UK. Like the NRA it is a classified document.

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<sup>15</sup> Preparing Scotland - guidance to assist Scotland plan, respond and recover from emergencies

<https://readyscotland.org/ready-government/preparing-scotland/>

<sup>16</sup> <https://www.readyscotland.org/media/1457/preparing-scotland-hub-updated-published-version-august-2018.pdf>

<sup>17</sup> <https://www.gov.uk/government/publications/national-risk-register-of-civil-emergencies-2017-edition>

54. The CRRs are publicly available and are published by the three resilience partnerships to communicate the key risks for the north, east and west regions of Scotland. These are publicly available and provide advice on what to do and who to contact in an emergency.
55. **MOD Risk Assessment.** The MOD risk assessment is that the probability of a defence nuclear transport accident leading to a release of radiation is extremely low. There has never been an incident posing a radiation hazard.
56. The risk assessment by MOD is accepted by category 1 responders in relevant RRP's because of the assurance of the process carried out.

## Summary

57. The conduct of civil contingency resilience in Scotland is based on UK Acts and subsequent Scottish Regulations. A shared doctrinal approach (Integrated Emergency Management) is explained in guidance provided by Scottish Government. Risk assessment and the planning that follows is based on core national assessments provided by UK and Scottish Government. It is important, however to recognise that IEM, a concept which has proven validity, encourages, wherever possible, responders to prepare for the consequences of emergencies generically.

## Chapter (i) – HM Inspectorate of Constabulary in Scotland (HMICS)

58. HM Inspectorate of Constabulary in Scotland (HMICS) is established under the Police and Fire Reform (Scotland) Act 2012<sup>18</sup> and has wide ranging powers to look into the ‘state, effectiveness and efficiency’ of both the Police Service of Scotland (Police Scotland) and the Scottish Police Authority (SPA).
59. We have a statutory duty to ensure that the Chief Constable and the SPA meet their obligations in terms of best value and continuous improvement. If necessary, we can be directed by Scottish Ministers to look into anything relating to the SPA or Police Scotland as they consider appropriate. We also have an established role in providing professional advice and guidance on policing in Scotland.
- Our powers allow us to do anything we consider necessary or expedient for the purposes of, or in connection with, the carrying out of our functions
  - The SPA and the Chief Constable must provide us with such assistance and co-operation as we may require to enable us to carry out our functions
  - When we publish a report, the SPA and the Chief Constable must also consider what we have found and take such measures, if any, as they think fit
  - Where our report identifies that the SPA or Police Scotland is not efficient or effective (or best value not secured), or will, unless remedial measures are taken, cease to be efficient or effective, Scottish Ministers may direct the SPA to take such measures as may be required. The SPA must comply with any direction given
  - Where we make recommendations, we will follow them up and report publicly on progress
  - We will identify good practice that can be applied across Scotland
  - We work with other inspectorates and agencies across the public sector and co-ordinate our activities to reduce the burden of inspection and avoid unnecessary duplication
  - We aim to add value and strengthen public confidence in Scottish policing and will do this through independent scrutiny and objective, evidence-led reporting about what we find.
60. Our approach is to support Police Scotland and the SPA to deliver services that are high quality, continually improving, effective and responsive to local needs.<sup>19</sup>

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<sup>18</sup> Chapter 11, Police and Fire Reform (Scotland) Act 2012.

<sup>19</sup> HMICS, [Corporate Strategy 2017-20](#) (2017).

## Key Findings

### Outcomes

61. Police Scotland is in a high state of preparedness to manage the consequences of an emergency,<sup>20</sup> critical incident,<sup>21</sup> or major incident.<sup>22</sup>
62. Police Scotland has facilitated the road transportation of Defence Nuclear Material in Scotland by the Ministry of Defence (MOD) without there being an incident posing a radiation hazard.
63. There is a high awareness among the relevant officers and staff of the desired outcome of the road transportation of Defence Nuclear Material in Scotland, which is to facilitate the safe passage of the convoys whilst in Scotland.
64. There is scope for Police Scotland to identify a means of recording lessons learned in respect of the convoys and from the training exercises associated with the convoys.

### Leadership and Governance

65. The MOD has responsibility and accountability for the road transportation of Defence Nuclear Material in Scotland and it has provided assurance to Police Scotland that it takes sufficient measures and precautions to mitigate risk during the convoys.
66. A Police Scotland superintendent holds the national portfolio for emergency planning to ensure the service is well prepared to implement plans and deal with the consequences of an emergency, critical incident or major incident, regardless of the cause.
67. Police Scotland officers and staff are familiar with recognised command structures to be implemented in the event of declaring an emergency, critical incident or major incident.
68. Police Scotland provides an operational public order bronze commander to accompany the Road Transportation of Defence Nuclear Material in Scotland, there is scope for Police Scotland to increase the cadre of bronze commanders to improve resilience. In normal circumstances the command structure has three levels: Strategic, Tactical, and Operational. These command functions are also referred to as Gold, Silver and Bronze (see table below).

<b>Gold</b>	Strategic – The overall intention to combine resources towards managing and resolving an event or incident. This may include direction of tactical parameters.
<b>Silver</b>	Tactical – The way that resources are used to achieve the strategic intentions within the range of approved tactical options or constraints.
<b>Bronze</b>	Operational – Organises the groups of resources to carry out the tactical plan Operational Public Order Commander is a trained public order officer.

69. The command structure relies on the paramount principle of flexibility and as such is role-specific and not necessarily rank-related, the most capable or appropriate officer will take the role.

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<sup>20</sup> Emergency, in terms of the Civil Contingencies Act 2004, is defined in the context of the Act as: 'An event or situation which threatens serious damage to human welfare in the UK, the environment of a place in the UK, or war or terrorism which threatens serious damage in the security of the UK'.

<sup>21</sup> Police Scotland define a Critical Incident in its Critical Incident Management SOP as 'Any incident where the effectiveness of the police response is likely to have a significant impact on the confidence of the victim, family or community'.

<sup>22</sup> A major incident is defined within the Joint Emergency Services Interoperability Programme (JESIP) as, 'An event or situation with a range of serious consequences which requires special arrangements to be implemented by one or more emergency responder agency'.

70. Roles and responsibilities regarding command levels during the road transportation of Defence Nuclear Material in Scotland are understood by the relevant officers and staff in Police Scotland.

## Planning and process

71. In terms of preparedness, Police Scotland has a Major Incident Plan,<sup>23</sup> which is tested and exercised to ensure it remains fit for purpose. The plan can be implemented for any incident, regardless of the cause.
72. Police Scotland is committed to the principles of Integrated Emergency Management (IEM)<sup>24</sup> and Joint Emergency Services Interoperability Principles (JESIP)<sup>25</sup> and provides training for officers and staff.
73. Police Scotland and the MOD have a secure notification process in place regarding the Road Transportation of Defence Nuclear Material in Scotland, but the correct vetting levels of staff with access to information regarding the convoys in Police Scotland should be ensured.
74. The relevant officers and staff in Police Scotland are verbally briefed on the composition of the convoy and the response arrangements should an incident occur, however there is scope to develop the operational order and formalise the briefing.

## People

75. Police Scotland delivers training courses to provide officers and staff with comprehensive understanding in relation to incident response; including incident command; specialist skills such as (CBRN);<sup>26</sup> police incident management and emergency planning.
76. Police Scotland officers deployed within the convoys are trained to specific standards and undergo regular refresher training.
77. Police Scotland officers involved in facilitating the convoys are committed to their roles and professional in their approach.

## Resources

78. Police Scotland has the capability and capacity to deploy local and national resources in the event of an emergency, critical or major incident in Scotland.
79. Police Scotland confirmed they are satisfied with assurances from the MOD that they have appropriate types of vehicles, equipment and capability within the convoys.
80. Police Scotland and the MOD have access to secure communications with the convoy to ensure information is shared throughout the journey.

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<sup>23</sup> Police Scotland: <https://www.scotland.police.uk/assets/pdf/151934/184779/major-incidents-initial-response-roles-sop>

<sup>24</sup> IEM is key activities to provide a strengthened, integrated approach to emergency management.

<sup>25</sup> JESIP is primarily about improving the way the Police, Fire and Rescue and Ambulance services work together when responding to major multi-agency incidents.

<sup>26</sup> CBRN, Chemical, biological, radiological and nuclear defence.

## Partnerships

81. Police Scotland and the MOD have well established relationships to ensure information and updates are exchanged effectively.
82. Police Scotland is a key partner in the Regional Resilience Partnerships and take part in preparedness exercises for major incidents on a regular basis.
83. Police Scotland participate in multi-agency training to ensure a joined up approach to incident management.

## Context

84. The background to HMICS being requested to carry out this review, and the terms of reference for it are fully described in the background section of this report.
85. In summary, HMICS was requested to carry out an assessment of the evidence gathered in respect of Police Scotland's working arrangements with local authorities and the other responders in Scotland's Regional Resilience Partnerships, with a view to providing assurance that Police Scotland's response arrangements in respect of the Road Transportation of Defence Nuclear Material in Scotland are relevant and appropriate.
86. This assessment does not constitute a formal HMICS inspection. Further, it does not assess the arrangements regarding the convoys, for example the safety of the convoys or the routes taken. These are matters for the MOD. The responsibilities of the MOD are addressed in the background section of this report.
87. The HMICS assessment was carried out alongside the wider review of preparedness carried out by Her Majesty's Fire Service Inspectorate, Society of Local Authority Chief Executives and Scottish Government Health Resilience.
88. The earlier part of this report co-ordinated by the Scottish Government Resilient Essential Services Team, provides information on the relevant legislation, roles and responsibilities; the principles of Integrated Emergency Management; Risk Assessments and details regarding the composition and safety arrangement of the convoys. HMICS will not duplicate this information, albeit Police Scotland has demonstrated it is aware of such information and has provided evidence to reflect its understanding of these issues.
89. HMICS does not have the authority to inspect the MOD.
90. Likewise, HMICS does not have the authority to inspect the Ministry of Defence Police (MDP) which resides with Her Majesty's Inspectorate of Constabulary and Fire and Rescue Service (HMICFRS). Key personnel from MDP were interviewed by HMICS and we would like to thank HMICFRS for facilitating this.

## Methodology

91. Information was gathered through reviews of documentation and fieldwork, including interviews with key people involved in the preparedness of Police Scotland to respond to emergencies, critical and major incidents, as well as officers involved in the facilitation of the road transportation of Defence Nuclear Material in Scotland.

## HMICS Leadership Framework

92. Whilst this was not a formal inspection the HMICS inspection framework was applied in order to provide a structure to respond to key elements of the work. The framework focuses on the key headings as follows:
- Outcomes
  - Leadership and governance
  - Planning and process
  - People
  - Resources
  - Partnerships

## Outcomes

93. A key outcome for Police Scotland in relation to preparedness is to work collaboratively with partners to ensure response arrangements to emergencies, critical incidents or major incidents are current, tested and exercised. Police Scotland, as a category 1 responder<sup>27</sup> under the Civil Contingencies Act 2004, participates in training and exercising with partners to ensure they are prepared.
94. The Police Scotland Major Incident Plan has been implemented on numerous occasions, during which the multi-agency response has been tested and proven to be effective.
95. In terms of the road transportation of Defence Nuclear Material in Scotland, Police Scotland engage with the MOD in order to facilitate the convoys and keep Scottish communities safe. It is not a statutory requirement that Police Scotland facilitate the convoys. Police Scotland has agreed to provide a level of support to the convoy operations.
96. Whilst the officers and staff carry out de-briefs following a convoy, there is an opportunity to create a means of formally recording any lessons identified, to encourage continuous improvement.

## Leadership and Governance

97. In terms of preparedness, Police Scotland takes a range of measures to ensure it can respond to emergencies, critical incidents and major incidents. HMICS determined that there are well established relationships between Police Scotland and partners at operational, tactical and strategic levels. This includes Police Scotland being a key partner within the Local and Regional Resilience Partnerships. These structures support effective management of incidents, and the multi-agency response has been tested on numerous occasions, including in circumstances of extreme weather; significant fires and road network issues.
98. Police Scotland also retains an emergency planning department, under the leadership of a superintendent. The emergency planning department ensures response plans are current, training is provided where needed, and information is circulated to the relevant staff. The Emergency Procedures Advisor (EPA) course is a multi-agency course. An EPA will provide specialist advice regarding the JESIP principles<sup>28</sup> to commanders on scene.

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<sup>27</sup> Preparing Scotland: <https://www.readyscotland.org/media/1457/preparing-scotland-hub-updated-published-version-august-2018.pdf>

<sup>28</sup> JESIP: [https://www.jesip.org.uk/uploads/media/pdf/JESIP\\_Joint\\_Doctrine-The\\_Interoperability\\_Framework\\_%5bedition\\_2-July-2016%5d.pdf](https://www.jesip.org.uk/uploads/media/pdf/JESIP_Joint_Doctrine-The_Interoperability_Framework_%5bedition_2-July-2016%5d.pdf)

99. A superintendent in the emergency planning department has the portfolio for leading on nuclear matters. The superintendent provides a point of contact for the MOD and attends regular meetings with the MOD and partners, predominantly regarding fixed sites but these meetings also provide an opportunity to discuss any issues or updates regarding the road transportation of Defence Nuclear Material in Scotland.
100. Additionally, Police Scotland works with specialist groups involved in the governance of nuclear resilience, including the Scottish Government Nuclear Resilience Group. Police Scotland chairs the Joint Operational Practice Working Group (Scotland), which includes the Ministry of Defence Police, which is also involved in the road transportation of Defence Nuclear Material in Scotland. Police Scotland is represented on the National Group on Firearms and a Shielding Group, which sits to address civil nuclear issues. This participation is evidence of Police Scotland's commitment to preparedness and an understanding of the risks and arrangements in relation to nuclear matters.
101. As the MOD is the responsible body for the road transportation of Defence Nuclear Material in Scotland, they have the responsibility for risk assessment, routes, and capability. Police Scotland is assured by the MOD that it has applied a robust methodology to these issues and the relevant safety standards are met and regulated.
102. From the documents inspected and the interviews carried out, there is evidence to show there is a clear understanding of who is in command both in terms of the convoys and regarding emergencies, and how a transfer of command would be conducted. The Chief Constable of Police Scotland has primacy in dealing with any public order type incidents, whilst the MOD has primacy over the safety and security of the convoy and any potential threats towards that security, until such time as command is passed to Police Scotland in its entirety.
103. At the time of our fieldwork, Police Scotland had a command structure that would be implemented should a transfer of command take place. The silver and gold commanders would have been allocated as per the Major Incident Plan. Therefore either a senior officer in the division the incident occurred in, or the on call senior officer would be allocated to the incident. Police Scotland reviewed this position after speaking with HMICS and it is now the case that a pre-identified officer will adopt the Incident Tactical Commander (silver) role. This is to ensure that any officer who may be required to take command at short notice has been identified and briefed in advance.
104. In the event of a major incident where Police Scotland has primacy the procedures contained within the Major Incident Plan would be implemented.

## **Planning and Process**

105. In terms of preparedness and working arrangements with local authorities and other responders, there are a number of ways in which Police Scotland prepares its response to incidents. One of these is major incident testing and exercising, which is carried out on a regular basis. HMICS is assured that Police Scotland is committed to contributing to major incident testing and exercising and resilience planning with other responders. It is also a key partner in The Scottish Multi-Agency Resilience Training and Exercising Unit (SMARTEU).
106. Evidence has been provided by Police Scotland which demonstrates robust planning and strong partnership working. This ensures security and safety measures are adhered to, including reviews of threat and risk assessments; intelligence sharing; communication links and relevant training and briefing.

107. It is well accepted within Scotland that the IEM system is the approach agencies will use when preparing for incidents. This focuses on the effects of an incident rather than the cause. Major Incident Plans do not require to be incident specific. It is the process, structure and partnership arrangements that ensure incidents are well managed. 'Preparing Scotland' sets out guidance on resilience, including the principles of IEM, which recommend the development of flexible and adaptable arrangements for dealing with emergencies.
108. Police Scotland also participates fully in JESIP training, which ensures all partners are prepared, when they attend an incident, to co-locate commanders; communicate; co-ordinate; jointly understand risk and have a shared situational awareness. These principles are well understood by Police Scotland and trained, tested and exercised often.
109. Police Scotland is a key partner within the Local and Regional Resilience Partnerships across Scotland and contributes to and supports this structure in terms of planning for response to major incidents and emergencies.
110. Ultimately, as the road transportation of Defence Nuclear Material in Scotland is the responsibility of the MOD, Police Scotland has no statutory obligation to carry out any duties regarding the convoys, including planning or participating in the convoys. Furthermore, Police Scotland has no locus in notifying other services or informing the public. We are satisfied that Police Scotland has a full appreciation of the MOD operation, including the convoy movements and the risk assessments involved.
111. In terms of Police Scotland involvement, notification processes are secure and allow sufficient time for considerations to be made. An operational order is produced containing all the relevant information, which is briefed to the relevant staff, who can access the order on a secure system on the day of the operation.
112. Police Scotland Service Overview<sup>29</sup> remain in contact with the convoy commander and the Joint Operations Centre<sup>30</sup> for the duration of the movement.
113. Evidence was also provided to demonstrate that Police Scotland officers facilitating the convoys are briefed prior to being involved on the convoy. This takes the form of a verbal briefing and there would be merit in considering a more formal process to provide a record of the information given to officers.
114. Police Scotland also has Standard Operating Procedures (SOP) in relation to Hazardous Materials and Chemical, biological, radiological and nuclear (CBRN).
115. Police Scotland has participated in numerous exercises to test its responses to various scenarios. This includes Exercise Astral Climb, which was a significant exercise in 2016. The exercise facilitated the MOD annual assessed Convoy Nuclear Emergency Organisation Standardisation Test and was centred on a road transportation of Defence Nuclear Material in Scotland emergency. The aim of the exercise was to test the multi-agency arrangements for responding to a nuclear emergency arising during the road transport of Defence Nuclear Material in Scotland. Training exercises are also carried out for fixed sites, which also provides opportunities for learning.
116. We are satisfied Police Scotland uses robust structures, processes and procedures regarding the convoys and that it has the capability to respond to incidents. HMICS is satisfied that Police Scotland's approach to planning and process regarding preparedness and the road transportation of Defence Nuclear Material in Scotland is relevant and competent.

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<sup>29</sup> Police Scotland control centre.

<sup>30</sup> MOD Joint Operations Centre.

## People

117. Whilst the road transportation of Defence Nuclear Material in Scotland is a reserved matter, Police Scotland works in partnership, in the form of liaison and to provide a level of resource to accompany the convoy.
118. We found that Police Scotland officers involved with the convoys are well experienced and have the appropriate skill set, and that shadowing opportunities are provided to ensure resilience.
119. Police Scotland is content with the assurances from the MOD regarding the specialisms of officers deployed within the convoy as well as those available in the event of an incident. HMICS is satisfied there are a range of available specialists who can assist, so that should local officers from Police Scotland attend the scene they will be given appropriate instructions to mitigate risk.
120. Consequently, police officers may be called upon to implement cordons who will not have received specialist training but will be properly briefed as to their duties at the time, just as they would with any incident involving hazardous material.
121. Officers and staff of Police Scotland attend a range of training courses designed to ensure preparedness for responding to major incidents and emergencies. This includes:
  - Emergency Procedures Advisors
  - Police Incident Officers
  - CBRN
  - Hazardous Material
  - Joint On Scene Incident Command training
  - Radiation Emergency (RAMERC) course
  - RAMERC Light
122. HMICS is assured that Police Scotland has training and documentation in place to ensure officers and staff are equipped to deal with major incidents and emergencies.

## Resources

123. We found that Police Scotland uses appropriate measures to secure information but there was a lack of clarity regarding vetting and which staff and officers have access to sensitive information.
124. Communication links between Police Scotland and the MOD operations centres is maintained throughout the road transportation of Defence Nuclear Material in Scotland.
125. Police Scotland confirmed that the relevant officers and staff are fully briefed on the types of vehicles and equipment used in the convoy and what an incident involving the convoys might entail. Police Scotland is comfortable with the assurances it has been provided from the MOD that both the MOD and Police Scotland have the appropriate resources required.
126. HMICS is assured that Police Scotland has training and documentation in place to ensure officers and staff are equipped to deal with major incidents and emergencies.

## Partnerships

127. This review has highlighted that Police Scotland participates fully with key partnerships in relation to preparedness for emergencies, critical and major incidents.
128. In the event of a major incident, Police Scotland supports the Local and Regional Resilience Partnerships, as well as the Scottish Government Resilience Room.<sup>31</sup>
129. In relation to the road transportation of Defence Nuclear Material in Scotland, despite there being no legal requirement for Police Scotland to be involved it elects to be engaged on the convoy operations and provides a commitment to working with MOD and other key partners.
130. These strong partnerships ensure that regardless of the incident, Police Scotland and other category 1 responders are prepared. This readiness can be seen in practice in the way that major incidents such as severe weather events are dealt with in Scotland.

## Conclusion

131. The remit of this work was to look at the close working arrangements of Police Scotland with local authorities and the other responders in Scotland's regional resilience partnerships to ensure that response arrangements in respect of the road transportation of Defence Nuclear Material in Scotland are current.
132. HMICS has reviewed evidence provided from Police Scotland that demonstrates its commitment to work with the MOD and other partners so that a response to an incident involving convoys will be coordinated and follow tried and tested procedures contained within the principles of Integrated Emergency Management and JESIP. There is clear evidence there is willingness and commitment to work together and share information and review procedures. Officers and staff with specialist roles are well trained and confident in their ability to carry out their designated functions.
133. HMICS is also confident that Police Scotland is fully embedded in the resilience partnerships and structures in terms of preparedness, assessment of risk and ability to respond.

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<sup>31</sup> <https://www.readyscotland.org/ready-government/resilience-division/>

## Chapter (ii) – Her Majesty's Fire Service Inspectorate (HMFSI)

### Pre-planning

#### Liaison – Co-locate/Communicate/Coordinate

135. The Scottish Fire and Rescue Service (SFRS) enjoys a good relationship with colleagues in the Ministry of Defence (MOD) in relation to Defence Nuclear Material (DNM), with the single service in Scotland proving beneficial in enabling a single point of contact and consistency of approach. The SFRS has formed a specialist Nuclear Resilience Team (NRT) whose members are security cleared to 'Security Check' (SC) level and who deal with all aspects involving the road transportation of Defence Nuclear Material in Scotland, in accordance with the 'Joint Emergency Services Interoperability Principles'<sup>32</sup> (JESIP) for joint working.
136. The SFRS is a member of specialist groups involved in the governance of nuclear resilience, including:
- Scottish Government Nuclear Resilience Group
  - UK Blue Light working Group Nuclear Resilience
  - MOD Defence Nuclear Emergency Organisation (DNEO)
  - Scottish Nuclear Users Group (SNUG)
137. The SFRS is aware, through regular briefing and liaison, of destinations and potential routes in Scotland that a DNM convoy may take, however the SFRS plays no part in route planning.
138. The SFRS is aware, through regular briefing and liaison visits, of the types of vehicle used in convoys and how they might react in certain events including impact and fire. It is also aware of the specialist roles and equipment inherent within the convoy and how they might co-locate, utilise, engage and interact with them in the event of an emergency incident.
139. The SFRS NRT does not engage directly with Local Resilience Partnerships (LRPs) or Regional Resilience Partnerships (RRPs) on DNM, this is carried out via the 'Scottish Government Nuclear Resilience Group'. SFRS Local Senior Officers (LSOs) routinely engage with LRPs at a local level where training and exercising takes place and generic 'Major Incident Plans' are robustly scrutinised and tested regularly at operational, tactical and strategic levels.
140. The SFRS is currently working with the MOD on a 'Joint Protocol for Operational Intelligence Sharing between the SFRS and the Defence Nuclear Emergency Organisation' (DNEO), which is soon to be finalised.

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<sup>32</sup> <https://jesip.org.uk/home>

## Joint Understanding of Risk

141. Those SFRS Command Officers who may respond to incidents involving DNM convoys are targeted for briefing sessions by the MOD DNEO. Additionally, members of the SFRS NRT receive additional training involving exercising and attendance at MOD training events.
142. The 'Atomic Weapons Establishment Fire and Rescue Service' (AWE FRS) receives briefings from the SFRS NRT on SFRS procedures including the 'Incident Command Structure' into which they will be incorporated. AWE FRS has fire ground radios which are tuned to SFRS frequencies to aid inter agency communications and ensure communications are established at first contact. These measures have been successfully tested during exercise.
143. The SFRS has access to various sources of documented information relating to DNM movements including:
- Local Authority and Emergency Services Information (LAESI) Edition 11
  - Generic Risk Assessment (GRA) 5.5 Incidents Involving Radiation
  - Theory based learning modules, Core Hazmat and Advanced Hazmat
  - The Ionising Radiation Regulations 2017 (IRR17)
  - The Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR)
  - The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG), as amended in 2013 and in 2019
  - Defence nuclear emergency response (JSP 471)
144. The Ionising Radiation Regulations 2017 (IRR17), combined with advice from the Health and Safety Executive (HSE), defines the SFRS as a 'Radiation Employer' and as such the services of a competent Radiation Protection Advisor (RPA) are required. After a tendering exercise which included provision of a formalised training package, the SFRS appointed 'Bureau Veritas' to fulfil this role. This ensures that up to date specialist technical advice is available through initial and refresher training, on scene attendance at an incident or through 'reach back' facilities providing remote advice to Incident Commanders.
145. The SFRS has specialist appliances and officers who, as part of their role, are trained to deal with incidents involving radiation:
- Hazardous Material and Environmental Protection Officers (HMEPO) who are distributed throughout the country across all duty groups providing continuous cover
  - Detection, Identification and Monitoring Officers (DIM). DIM appliances are strategically placed at four locations in Scotland. DIM Officers are distributed throughout the country, providing continuous cover
  - National Inter Agency Liaison Officers (NILO). These officers are security cleared to a minimum of SC level and receive specialist training (including DNM Convoy) for a multi-agency liaison role
  - Environmental Protection Units (EPUs). EPUs are strategically located at six locations throughout Scotland
  - Mass Decontamination Units strategically placed at three locations in Scotland in support of NHS resources, if or when additional support is required.

146. All of these resources are able to respond to a wide range of hazardous materials incidents, not just DNM in isolation.
147. From its cadre of specialist officers, the SFRS at time of writing has trained 28 command officers in the role of 'Radiation Protection Supervisor' (RPS) who will act as tactical advisor to the on-scene Incident Commander in the event of a radiation incident. This number will ensure a good spread of tactical advisors over all duty groups providing a robust response should an incident occur. A number of command officers are available 24/7 through designated duty groups, throughout Scotland.<sup>33</sup>
148. Courses available to selected officers who are likely to attend a DNM incident are:
- National Arrangements for Incidents Involving Radiation (NAIR) course
  - Radiation Emergency (RAMERC) course
  - RAMERC Light (an abbreviated version of the course above)
  - Radiation Safety (RAD SAFE) course
  - SFRS Incident Command Course (covering all command levels)
  - Joint On-Scene Incident Commanders Course (JOSIC multi-agency IC)
149. The training courses above are only open to command officers. For other officers, two modules on Hazardous Materials are available on the SFRS internal learning system. There is a basic/core module that all watch based officers and firefighters will complete every year which gives a very basic generic overview and an advanced module which can be accessed by all frontline firefighters and contains information on radiation. The advanced module is mandatory for whole-time firefighters who will complete it once every three years, and is discretionary for retained duty system firefighters who, dependent on local risk, may or may not be required to complete it. DNM convoys are not mentioned at all throughout the module.

### Procedure - Shared Situational Awareness

150. SFRS procedure is built upon the MOD document 'Local Authority and Emergency Services Information' (LAESI) edition 11, which is published open source material.
151. An 'Interim Operational Guidance for DNM Movements' is in draft form and soon to be finalised. This document has been created in conjunction with DNEO personnel in order to promote a shared situational awareness and will be available only to key personnel within the SFRS due to government security classifications.
152. A Standard Operating Procedure (SOP) for dealing with incidents involving DNM is soon to be finalised. This document has been created in conjunction with DNEO personnel in order to promote a shared situational awareness and will be available to all SFRS staff.
153. At the time of writing, DNM movement is not formalised in the SFRS 'Incident Response Control Operating Procedure' (COP) and this has been recognised as a gap however, an appropriate 'Pre Determined Attendance' (PDA) is in place for this incident type which means that a pre-determined number of appliances will initially be dispatched to this incident type, as detailed in paragraph 169. SFRS control room staff have no security clearance other than basic employment checks. HMFSI think that this should be enhanced for some control room managers.

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<sup>33</sup> 50 Command Officers as standard, reducing to an absolute minimum of 44 to allow for sickness or special leave.

## Arrangements when Convoy is mobile

### Liaison – Co-locate/Communicate/Coordinate

154. Key personnel within the SFRS are given notice of a 'time window' for DNM movements by the MOD utilising the current draft, 'Joint Protocol for Operational Intelligence Sharing between the SFRS and the Defence Nuclear Organisation'. This is a semiformal (unpublished) procedure at present, however a formalised procedure is in draft form and soon to be finalised.
155. The appropriate SFRS Operations Control/s (OC) is/are briefed on the potential DNM movement in their area of responsibility by key personnel in the SFRS prior to any planned movement.
156. When a convoy is mobile a MOD Joint Operations Centre (JOC) monitors all DNM movements and is constantly active during convoy movement. Key on duty personnel within the SFRS can liaise directly with this facility if there is a requirement to do so.
157. There is no requirement for any additional multi-agency partnership arrangements at this stage.

### Joint Understanding of Risk

158. The composition of a DNM convoy and its route are wholly matters for the MOD and as such will not form part of this submission.
159. Key on duty personnel within the SFRS can liaise with the convoy, if there is a requirement to share operational intelligence, at any time during a DNM movement, via the JOC.

### Procedure - Shared Situational Awareness

160. When a convoy is mobile in Scotland, the SFRS will maintain business as usual (BAU) and therefore there is no requirement for specific procedures above and beyond the pre-planning detailed above.
161. During this BAU phase, key on duty personnel within the SFRS will have knowledge of a potential DNM movement in compliance with the 'Joint Protocol for Operational Intelligence sharing between SFRS and the DNEO' (draft).

## Actions on receiving request for assistance (both minor and major)

### Liaison – Co-locate/Communicate/Coordinate

162. Should an incident occur involving a DNM Convoy a request for assistance could come into a SFRS OC from any of the following:
  - JOC
  - MDP Control Room
  - Convoy Commander
  - Police Scotland
  - Member of the public

163. Should a major incident be declared on first call or subsequently, the SFRS will support the affected LRP/RRP/Scottish Government Resilience Room (SGoRR) at all relevant levels incorporating the principles of 'Integrated Emergency Management' as advocated by 'Preparing Scotland Guidance'.<sup>34</sup> SFRS will also support any multi-agency considerations at the scene of operations in line with the principles of JESIP.
164. Specialist officers will be mobilised in support of the incident as tactical advisors. These officers have the capability to liaise with MOD specialists on the incident ground, at the JOC and also with the Radiation Protection Adviser either by 'reach back' facilities or directly on site should the RPA be required to attend.
165. Emergency Responders will be co-located in order to effectively manage the multi-agency response to the incident.

### Joint Understanding of Risk

166. A DNM convoy travels with a cadre of personnel who are subject matter experts in their area of responsibility and in the event of an incident would comprise the 'Immediate Response Force' (IRF). They will provide the initial response and be directly available to the SFRS initial and subsequent Incident Commanders to provide up to date specialist advice and guidance.
167. Specialist information can be accessed via the JOC at all times during a DNM movement.
168. SFRS specialist officers will be mobilised as tactical advisors in support of the Incident Commander and emergency responders will be co-located in order to effectively manage the incident. A joint dynamic risk assessment will take place in order to promote a common understanding of the risk information and organisational requirements. Individual organisations will have access to their own RPA, who will provide specialist advice. HMFSI feel that the specialist advice available both immediately on scene and mobilised by the SFRS in support of the incident commander is robust and will allow for a full understanding of risk.

### Procedure - Shared Situational Awareness

169. On receipt of an assistance call from the DNM convoy, the SFRS will mobilise the Pre-determined Attendance (PDA) for the DNM convoy which consists of a level 2 SFRS response:
  - 6 x Pumping Appliances
  - 1 x Command Support Unit
  - 1 x Detection, Identification and Monitoring Unit (DIM)
  - 1 x Environmental Protection Unit with Decontamination Capability
  - DIM Officer
  - Hazardous Materials and Environmental Protection Officer (HMEPO)
  - Incident Command Officers, as per SFRS Incident Command Procedure
  - Any further specialist officers, vehicles or equipment as required

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<sup>34</sup> <https://www.readyscotland.org/ready-government/preparing-scotland/>

170. Should a Major Incident be declared on the initial call or subsequently, the SFRS Operations Control (OC) will mobilise or upscale to the Major Incident PDA which will include in addition to the above:
- 3 x Pumping Appliances
  - Additional Incident Command Officers
  - Any further specialist Officers, vehicles or equipment as required
171. SFRS crews will be mobilised to a specifically chosen Rendezvous Point (RVP) designated by the Convoy Commander utilising a designated safe route to an upwind position, this safe route will be advised by the Convoy Commander at first call.
172. The MOD IRF embedded within the convoy will provide a full and up to date briefing to the SFRS IC at the RVP prior to the SFRS committing resources to the incident. In order to triangulate advice given, additional specialist information is available to the IC from SFRS resources such as the RPA, DIM officer, HMEPO officer, RPS and any other specialist tactical advisors requested to attend.
173. An Inner Cordon will be established to isolate the risk area taking into consideration both hazard management and security and agreed by multi-agency partners. Access and egress to the Inner Cordon will be via a gateway and be strictly controlled in accordance with organisational protocols.
174. The incident will be managed utilising a multi-agency approach incorporating the principles of 'Integrated Emergency Management' at all levels as advocated by 'Preparing Scotland' guidance.

### **Lessons learned from exercise**

175. Exercise Astral Climb 2016 was an MOD annual assessed DNM Convoy emergency exercise which took place in Scotland. It was delivered by the Defence Nuclear Emergency Organisation with the participation of the Civil Emergency Services coordinated by the Scottish Multi-Agency Resilience Training and Exercise Unit (SMARTEU). The SFRS supported the exercise with a full deployment of assets.
176. A thorough debrief was held resulting in a suite of multi-agency recommendations. There is no evidence that the SFRS has transferred its specific recommendations into an action plan. The SFRS claims to have taken cognisance of lessons learned from the debrief, however HMFSI feels that this issue merits a more stringent governance process.
177. The MOD has an excellent safety record relating to DNM convoys. In over 50 years of transporting nuclear material by road in the UK, there has never been an incident that has posed any radiation hazard to the public or the environment. That said, the SFRS should continue its commitment to the training and exercising programme in order to enhance its response should an event occur.

## Conclusions

### Liaison/Communication/Coordination

178. HMFSI recognises the hard work and willingness of all parties involved in DNM movements to liaise and share operational information at every stage in the process, where feasible, and we would encourage all parties to ensure its continuation and enhancement where possible. HMFSI acknowledge as good practice the establishment of the SFRS NRT and use of Security Clearance to allow the sharing of intelligence and to reinforce the 'trusted partner status' which all parties have worked hard to establish and we would again encourage the continuation and enhancement of this. To this end it is of note that key OC staff are not security cleared and HMFSI would recommend that this be considered to support the monitoring and control of sensitive information.
179. It is pleasing that the SFRS is firmly embedded in governance arrangements for DNM movements and is represented both in Scotland and UK wide. HMFSI note that the SFRS NRT does not directly engage with LRPs, however we consider it appropriate that this is carried out at a national partnership forum and at local level by SFRS LSOs in the formulation and testing of generic 'Major Incident plans', with local 'Civil Contingency'<sup>35</sup> partners, under which the management of such an incident would rest. HMFSI are content that the SFRS will support all levels of incident management incorporating the principles of 'Integrated Emergency Management' as advocated in 'Preparing Scotland'.
180. HMFSI recognise that the MOD gives the SFRS a DNM convoy mobilisation 'time window' through what is, at present, an informal procedure and we encourage both parties to formalise this process as soon as possible in order to secure a robust system of common practice and information sharing between both organisations.
181. Should an incident occur with a DNM convoy HMFSI are content that sufficient lines of communication are in place in order for OC to mobilise a sufficient PDA via a suitable safe route to a designated RVP identified by the CC and that the SFRS will work at the scene in accord with the principles of JESIP in a multi-agency approach.

### Joint Understanding of Risk

182. HMFSI acknowledge good practice in the training, combined with regular briefings from the AWE FRS to SFRS command officers, who will take on key roles should an incident occur. This training is reciprocal, with the AWE FRS receiving similar engagement with SFRS staff.
183. HMFSI also recognise as good practice the employment by the SFRS of an RPA with associated training packages in place and are pleased to see the proliferation of RPS trained personnel throughout the command officer cadre in order to offer tactical advice to Incident Commanders should an incident occur. Individual organisations will have access to their own RPA, which should assist in the confirmation of advice given at the scene.
184. HMFSI are content that the specialist appliances, officers and equipment available to the SFRS are in a position to robustly participate in a multi-agency response to an incident involving a DNM convoy and have trained and exercised with partners in order to achieve this. HMFSI are also content that the SFRS duty system allows for an adequate spread of specialist officers on duty at any one time in order to support attendance at such an incident.
185. There is no mention of DNM convoys in SFRS theory based learning modules for watch based officers and firefighters who will be first in attendance should an incident occur and HMFSI would recommend that this be rectified.

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<sup>35</sup> <https://www.legislation.gov.uk/ukpga/2004/36/contents>

## Procedure - Shared Situational Awareness

186. The LAESI document is a good foundation for SFRS procedures to be built upon and HMFSI are encouraged that the SFRS has two procedural documents soon to be finalised, in the form of 'Interim Operational Guidance for DNM Movements' for security cleared personnel and 'Standard Operational Procedure' for dealing with incidents involving DNM' for general publication and HMFSI would encourage the SFRS to publish these procedures as soon as possible in order to enhance procedure and situational awareness amongst its responders.
187. DNM convoys have been intermittently mobile in Scotland over the past 50 years without an incident involving the release of radiation and so it is only right that SFRS employ a business as usual stance, with key personnel aware and ready to lead the response in the event that an incident occurs.
188. The SFRS has recognised the need for a prescriptive response to this type of incident and as such has an appropriate PDA which will be mobilised to a RVP via an advised safe route indicated by the CC on first call.
189. Specialist advice is immediately available to an IC by way of the convoy safety officer and IRF and this can be triangulated by SFRS specialist advisors to ensure the purity of information given.
190. HMFSI are confident that the SFRS will work with all partner agencies on scene utilising their incident command structure in accordance with the principles of JESIP in order to bring about a successful conclusion to any incident involving DNM movements. HMFSI are also confident that the SFRS will support the management of the wider implications working with partners in LRPs, RRP, and SGoRR in accordance with the principles of 'Integrated Emergency Management' at all levels as advocated by 'Preparing Scotland' guidance.

## Lessons Learned from Exercise

191. It is encouraging that what was considered a successful major exercise was held in Scotland and rigorously tested multi-agency procedures at all levels. As is normal from events such as these, recommendations to improve on performance were issued from the debrief. HMFSI would expect the SFRS to incorporate these into an action plan to ensure rigorous governance and to monitor improvement.
192. HMFSI would expect a training and exercising regime to continue and for the SFRS to work with partners in order to satisfy this important area of response.

## Recommendations

### 193. Liaison - Co-locate/Communicate/Coordinate

- The SFRS and the MOD should agree and finalise 'Joint Protocol for Operational Intelligence Sharing between the SFRS and the Defence Nuclear Emergency Organisation' as a matter of priority.

### 194. Joint Understanding of Risk

- The SFRS should raise awareness, as appropriate, of DNM movements amongst frontline staff by its inclusion in theory based learning modules.

### 195. Procedure - Shared Situational Awareness

- The SFRS should finalise 'Interim Operational Guidance for DNM Movements' and 'Standard Operational procedure for dealing with incidents involving DNM' as a matter of priority
- The SFRS should add a section on DNM movements to the Incident Response COP
- The SFRS should consider having security clearance enhanced for some control room managers in order to support the monitoring and control of sensitive information.

### 196. Lessons Learned from Exercise

- The SFRS should incorporate recommendations from exercise Astral Climb 2016 into an action plan in order to quantify and monitor improvement.

## Chapter (iii) – Society of Local Authority Chief Executives (SOLACE)

### Specific role of local authorities

197. In the event of any incident, as well as participating in the multi-agency response arrangements, including supporting any evacuations necessary, the local authority's primary role would be in relation to care for people who have been displaced as a consequence of the incident. Managing consequent impacts on the local road network would also fall to the relevant local authority/authorities. It is likely that leading the multi-agency response during the recovery phase of the incident would also rest with the local authority.

### Survey of relevant local authorities

198. Fifteen local authorities, being those covering the areas through which the convoy would travel were surveyed. The conclusions of the survey are as follows:

#### Awareness

199. All Local Authorities are aware that movements are made through their area but are not notified when they occur.
200. Notice is provided to Police Scotland and the Scottish Fire and Rescue Service in advance of movements. For security reasons, the MOD does not share details of individual movements more widely.
201. It was generally felt that the decision on what information to provide on convoy movements was a matter best determined by MOD albeit the information is sought from time to time from local authorities via Freedom of Information requests. The balance within the warning and informing duty between keeping people advised and unnecessarily alarming them was known and accepted.

#### Risk Assessment

202. Scotland's three Regional Resilience Partnerships, which includes local authorities and other Category 1 responders, undertake a Risk and Preparedness Assessment process on a regular basis. This enables the Regional Resilience Partnerships to identify and assess the main risks relevant to their region and to determine how prepared they are to deal with the consequences of these risks. This information is used to inform the public facing Community Risk Register.
203. A key part of assessing risk is likelihood. MOD has provided assurances that robust arrangements are in place to ensure the safety and security of all these convoys. There has never been an incident posing a radiation hazard. Therefore, probability of a defence nuclear transport accident leading to a release of radiation is extremely low.

## Planning

204. The Office for Nuclear Regulation (ONR) has responsibility for determining the off-site emergency planning areas around licensed nuclear sites under the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPPIR). This is the area where local authorities must have an emergency plan in place to protect the public in the event of a reasonably foreseeable radiation emergency.
205. MOD publishes the publicly available LAESI document. This provides information for the emergency services, local authorities and health authorities on contingency arrangements to be implemented in the unlikely event of an emergency during the transportation of defence nuclear material. It also sets out the local authority areas which defence nuclear material may pass through or fly over in the UK.
206. Every local authority in Scotland has a major incident plan, or equivalent. These set out how the Council will respond to any emergency, regardless of the cause. It will also outline how they fit into the wider response structure.
207. Local Authorities also have a statutory responsibility to co-ordinate the off-site planning for certain hazardous sites. The arrangements in place are well tried and tested and would be appropriate for managing other events.
208. The three RRP areas also provide a platform for generic planning to deal with the consequences of any major incident regardless of the cause. Planning covers such areas as incident response, care for people, public health, Chemical, Biological, Radioactive, Nuclear (CBRN) related incidents, environmental impacts, public communications, loss of essential services, animal health, scientific and technical advice, and recovery.

## Response and Recovery

209. The response by local authorities to a transport emergency involving defence nuclear material will have much in common with the response to any major incident or emergency.
210. The police provide strategic coordination of any multi-agency response through a Resilience Partnership. This response structure is well established, understood, tested regularly and proven through exercising and real events. In general the response at all levels will have the following objectives all underpinned by clear public communication:
  - Protecting human life, property and the environment
  - Minimising the harmful effects of the emergency
  - Managing and supporting an effective and coordinated joint response
  - Maintaining normal services as far as is possible
  - Supporting the local community and its part in recovery

211. Each of the three Regional Resilience Partnerships (RRP) has a Care for People capability group which considers all aspects of the relevant plans where people in the area may be affected. These plans reflect the guidance within Preparing Scotland that deals specifically with care for people and provide for the establishment of appropriate reception centres in the event of an incident together with specific arrangements for safeguarding those considered to be vulnerable depending on the circumstances of the incident. In respect of reception centres, specific guidance could be provided by MOD teams on site in respect of individuals presenting who considered they may have been contaminated. Established CBRN protocols would also be deployed. Ongoing work led by the Scottish Government aims to significantly improve the management of arrangements in relation to vulnerable people and several local authorities have already adopted the new ways of working.
212. Local authorities also have a role in environment monitoring. This is described in Chapter iv, Part 2 – Environment.

## Public Communications

213. Under the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005, local authorities, as Category 1 responders, have a duty to warn the public and to provide information and advice, if an emergency is likely to occur or has occurred. In performing this duty they must take account of the importance of not alarming the public unnecessarily.
214. Each RRP area has a Public Communications response plan, the aim of which is to clearly detail the multi-agency coordination arrangements for responding to the significant public communications demands likely to result from the occurrence of a significant incident or major emergency. In the event on an incident involving a convoy, significant reliance will be placed on information provided by MOD which seems well placed to provide this effectively and timeously.
215. Best practice, particularly in the use of social media continues to develop and is being shared within and among RRP communications groups.

## Training and Exercising

216. All local authorities regularly test their plans and procedures, either in standalone events, or when participating in wider events, such as site or hazard specific exercises.
217. All are involved in an extensive RRP learning and development programme.
218. There is also a national lessons learned process that feeds into RRP and local planning.
219. Specific examples were given of participation in Exercise Senator, which runs on a five year programme with the most recent being earlier this year, of the RAMERC course run by the Defence Academy of the United Kingdom for resilience practitioners and specific REPPIR training and exercising undertaken by local authority staff in association with their REPPIR off site plans. It was suggested that wider participation in these opportunities would be beneficial to all relevant local authorities and this forms a recommendation within this chapter.

## Recommendations

220. Training and Exercising
- Wider participation of all relevant Local Authorities in nuclear / radiological related training and exercising.

## Chapter (iv) – Health and Environment

### Part 1 - Health

#### NHS Responsibilities

221. Both territorial NHS Boards and the Scottish Ambulance Service, a national NHS Board, are designated category 1 responders under the Civil Contingencies Act 2004 and as such are required to demonstrate that they can respond to a range of incidents. They are required to assess risk, have relevant plans in place to mitigate the impact of incidents and to co-operate with each other to enhance co-ordination and efficiency. The latter of these duties is discharged through the Local/Regional Resilience Partnerships.
222. The Public Health etc. (Scotland) Act 2008 also places duties on NHS Boards to protect public health, including providing a public health response to those who may be contaminated by a radioactive substance. Territorial NHS Boards have a statutory duty to provide care for all patients including those that may be contaminated with radiological material.
223. Health and Safety at Work legislation also places expectations on NHS Boards as employers to provide staff with relevant personal protective equipment and relevant training to carry out their roles safely.

#### Potential Hazards from Road Transportation of Defence Nuclear Material (DNM) in Scotland Incident

224. The hazards associated with a Defence Nuclear Material incident are related to the explosive, radioactive and toxic materials that the Defence Nuclear Material contains. The explosive hazard is the same as that which is associated with any chemical high explosive. The main radioactive materials are plutonium and uranium. Plutonium and uranium are both toxic and radioactive. The convoy may also contain other toxic (but not radioactive) materials such as beryllium and lithium. Beyond the immediate hazard area, the potential dispersion of airborne plutonium particles represents the dominant radioactive hazard.
225. Conventional hazards, which may arise in the event of an accident (i.e. fire, smoke and the remote possibility of explosively propelled debris), pose a much more immediate threat to life than any hazard possibly arising from radioactive or toxic materials.<sup>36</sup>

#### Guidance and advice to the NHS

226. NHS Scotland operates within a framework of guidance and other documentation which are relevant to the response to an incident such as one involving the road transportation of Defence Nuclear Material in Scotland. As well as the legal duties under the Civil Contingencies Act, Scottish Government guidance is also available in relation to issues such as preparing for emergencies, managing public health incidents, organisational standards for resilience, business continuity, hospital lockdown, decontamination and radiation monitoring. The Scottish Ambulance Service also operates under guidance and procedures specific to their roles in such an incident. Specialist guidance for the treatment of patients affected by radioactive materials is also available to clinicians at NHS Boards.

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<sup>36</sup> MOD: Local Authority and Emergency Services Information (LAESI) Edition 11.

227. Key relevant expectations in such guidance for the NHS include having the following in place:

- Generic plans for responding to major incidents, including those with mass casualties
- Specific arrangements for dealing with Hazardous Materials (Hazmat)/Chemical, Biological, Radiological and Nuclear (CBRN) incidents,
- Plans (with resilience partners) for scalable radiation monitoring capacity
- A capability to decontaminate patients with radioactive/hazardous material
- Access to appropriate Personal Protective Equipment (PPE) for staff
- Capability to treat patients suffering from the effects of conventional explosives and/or radioactive contamination
- Plans to lock down areas or an entire hospital to protect staff, patients, and facilities from cross contamination.

### Specialist Advice for the NHS

228. During an incident, specialist advice is available to NHS Boards. They would be able to draw on both relevant expertise from within the territorial Board e.g. in relation to radiation protection, and from Health Protection Scotland. For radiological emergencies, Public Health England (PHE) provide specialist advice on the public health implications across the whole of the UK. In Scotland, the arrangements for receiving this advice from PHE are underpinned by a Memorandum of Understanding (MoU). PHE would work with relevant local experts in the NHS, HPS and in collaboration with other scientific and technical advice provided by other agencies as part of a Scientific and Technical Advice Cell (STAC). This would stand up during a Defence Nuclear Material incident to provide expert advice on a range of scientific and technical issues in order to deal effectively with the immediate and longer term consequences of a major incident.

## NHS Response

### Pre-Hospital Care

229. At the scene of an incident involving a convoy, the Scottish Ambulance Service would respond alongside the other first responders, namely Police Scotland and the Scottish Fire and Rescue Service (SFRS). Scottish Ambulance Service responsibility lies in the provision and coordination of medical care at the incident site and/or in the transportation of casualties, if necessary, to an appropriate receiving hospital. How this is achieved is largely dependent on the scale of the incident, the nature and type of injuries and the number of casualties generated as a consequence. These will determine whether it is defined as a major incident or a major incident with mass casualties. The latter will trigger specific actions, as part of the recently agreed *Major Incidents with Mass Casualties (MI-MC): National Plan for NHS Scotland and the Health and Social Care Partnerships (HSCP)*. This replaces the existing equivalent plan from 2015.

230. The Scottish Ambulance Service has an 'inner-cordon' capability whereby appropriately trained special operations paramedics can access casualties in the 'hot' and 'warm' zones,<sup>37</sup> to provide immediate lifesaving clinical care whilst utilising a range of Personal Protective and Respiratory Protective Equipment.

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<sup>37</sup> *Hot Zone*: The area where the initial release occurs or disperses to. It will be the area which may pose an immediate threat to the health and safety of all those located within it and is the area of greatest risk. *Warm Zone*: An area uncontaminated by the initial release of a substance, which becomes contaminated by the movement of people or vehicles. (From *Responding to a CBRN(e) Event: Joint Operating Principles For The Emergency Services* (2016)).

231. This inner-cordon capability is provided by Special Operations Response Teams (SORT) of which there are 3 in Scotland (based in Glasgow, Edinburgh and Aberdeen, with another base in development in Dundee). In an incident where casualties had become contaminated by a radiological source, Scottish Ambulance Service (SAS) through SORT, also has the responsibility for leading and coordinating the decontamination of casualties with support from the Scottish Fire and Rescue Service, prior to transporting them to hospital.

### **Hospital Casualty Management**

232. The national MI-MC Plan referred to above is predicated on NHS Scotland and HSCPs responding in a collective and integrated manner, pooling resources and working across territorial boundaries where necessary. It provides the national framework on the NHS Scotland response to a range of major incidents. Although the national plan is essentially focussed on physical trauma injuries, the encompassing response framework would be implemented if necessary to ensure a robust and comprehensive response from health and social care services.

233. In the event of an incident with a nuclear convoy which involved a conventional explosion, there may be a number of casualties suffering trauma and burns. If the incident is declared a 'major incident with mass casualties' and involves a large number of casualties being triaged at the scene as Priority 1 or 2 i.e. seriously injured, all territorial NHS Boards will stand by to receive those who may require hospitalisation.

### **Hospital Lockdown**

234. Territorial NHS Boards (and SAS) require Lockdown Plans that would be activated in the event of a CBRN incident which would cover acute hospitals receiving physically injured patients who are potentially contaminated. Controlling movement and access of people in these circumstances would ensure patient safety and confidentiality/protection (from potential media intrusion) and avoid contamination of hospital premises, especially by patients who self-present without prior decontamination.

### **Personal Radiation Monitoring**

235. The radiation monitoring function provides information on radiological contamination of individuals to inform options on decontamination and medical treatment. It also helps to reduce pressure on NHS Emergency Departments. SAS will require to determine whether those at the scene of an incident have been contaminated. Such facilities may be required at scale in the event of an incident, given the potential for larger numbers of people from the surrounding area being concerned about radiological contamination. This may depend to some degree on the location of the incident and the identified spread of radiological contamination. To provide this additional capability, requires planning by NHS Boards and other local resilience partnership agencies around key tasks including identifying required sites, staffing, expertise and equipment.

## Personal Decontamination

236. In an incident involving a number of people who have become contaminated with radioactive material, decontamination may be needed to reduce the risk of harm to the patient, or others. In this event, the distribution of casualties for decontamination would be – ambulant people will be decontaminated by SFRS, with clinical supervision from SAS SORT, non-ambulant casualties requiring clinical decontamination will be decontaminated by SAS SORT. Clinical decontamination is the process where contaminated persons are treated individually by trained healthcare professionals using purpose designed decontamination equipment. Patients with life threatening injuries would not have their treatment and transfer delayed for decontamination. Where larger scale decontamination is required, as noted in the SFRS section on this report, SFRS has Mass Decontamination Units which can be deployed for this purpose.
237. It is expected that the majority of people involved in such an incident may be decontaminated at the scene. However, it is possible that people may self-present at health care facilities, either because they were close to the incident and didn't undergo decontamination at the scene or due to concerns as they live within the relevant area which may be affected by the dispersal of radioactive material.
238. For this reason, NHS Boards are expected to maintain a decontamination capability. In practice, this means having staff trained to decontaminate, appropriate equipment, facilities and PPE in place and arrangements to maintain this capability e.g. through ongoing training and exercising.

## NHS 24 Public Communication

239. NHS 24's social media and telephone helpline capability would be activated to issue health advice messages to members of the public, signpost those who may be concerned about the possibility of having been contaminated towards the relevant services, and/or provide direct health advice based on advice from Public Health England / Health Protection Scotland.

## NHS Boards in Scotland: Preparedness

240. The Scottish Government asked the 9 territorial Boards<sup>38</sup> through which the road transportation of Defence Nuclear Material in Scotland takes place and also the Scottish Ambulance Service, to confirm aspects of their preparedness relevant to responding to an incident involving such a convoy.
241. The relevant NHS Boards have indicated that they are generally well prepared in terms of having planning arrangements and capability in place which can responding to a convoy incident involving the release of radioactive material and/or a conventional explosion.
242. All NHS Boards maintain major incident plans which set out the framework for responding to major incidents. These set out how they plan for and respond to various types of major incident. Like the planning arrangements under which other responders operate, these are based on the principles of Integrated Emergency Management, which aim to develop flexible and adaptable arrangements for dealing with emergencies, whether foreseen or unforeseen. They contain both generic response material, such as those related to command, control and co-ordination of incidents, as well as arrangements for dealing with the response required for specific types of incident and for responding to these in and out of hours.

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<sup>38</sup> NHS Boards surveyed: Ayrshire and Arran, Borders, Dumfries and Galloway, Fife, Forth Valley, Greater Glasgow and Clyde, Highland, Lanarkshire, Lothian, Scottish Ambulance Service.

243. In relation to the specific planning and preparedness requirements for the NHS of an incident involving a Road Transportation of Defence Nuclear Material in Scotland, these may include the treatment and decontamination of casualties at the scene by trained SAS staff with appropriate equipment and PPE, additional decontamination for those self-presenting at medical facilities (also by trained/equipped staff), monitoring for radioactive contamination, both in the immediate aftermath of an incident and in the following period for those in the wider area who are concerned they may have become contaminated, the treatment of those who may be suffering from injuries resulting from a conventional explosion. These would be supported by CBRN specific planning and/or CBRN response documentation, as well as relevant multi-agency training and exercising.
244. In relation to the ability to decontaminate patients, there is generally capacity and capability both at the scene through SAS and at territorial Boards, in terms of having trained staff, equipment and PPE – or plans to put this in place.
245. In relation to personal radiation monitoring, SAS have the capability to carry this out at the scene of an incident. Some Boards have planning in place to bring together the resources required to carry out larger scale monitoring which may be required in some circumstances. Others still require to develop such planning in co-operation with their local resilience partnership agencies.
246. As noted above, the national Major Incident plans set out a response mechanism for Boards to manage casualties, whether they are suffering from the effects of radiation or from the trauma or burns which may be caused by a conventional explosion at a DNM road convoy incident.
247. The relevant NHS Boards have appropriate CBRN specific planning and/or response documentation e.g. CBRN standard operating procedures. In terms of Boards which have discrete CBRN/Nuclear Incident plans, including nuclear specific standard operating procedures and CBRN specific command, control and co-ordination arrangements, these are generally restricted to those Boards which either currently have or previously had civilian and/or defence related nuclear sites within their territory. This is appropriate given the additional risks and planning requirements in those areas.
248. All relevant Boards have taken part in multi-agency training or exercising in relation to CBRN and/or nuclear issues over the past 2 years. Opportunities to participate in exercises specifically relating to incidents involving DNM road convoys are less frequent, but NHS Boards in Scotland should take advantage of opportunities to participate when possible.
249. In relation to hospital lockdown arrangements, all NHS territorial Boards, plus SAS, have these in place.

### **SAS and Equivalent Emergency Service Arrangements**

250. The Scottish Ambulance Service have confirmed that they maintain a level of preparedness equivalent to that of the SFRS described in Chapter ii covering planning governance, guidance documentation, specialist officers and training courses attended.

## Areas for Improvement

### Personal Radiation Monitoring

251. During an incident involving the road transportation of Defence Nuclear Material in Scotland, both the MOD and PHE would provide expertise and equipment to respond to this particular type of incident, including scalable radiation monitoring capability. However, this should be integrated with local plans to provide identified sites and local capability for the level of radiation monitoring which may be required.
252. Many NHS Boards still require to work with their local resilience partnership agencies to develop plans which formally bring together the resources which may be required. Relevant Resilience Partnerships should therefore review local arrangements and where required, work together to develop appropriate plans in this regard.
253. The Scottish Nuclear Resilience Group, which brings together a range of Scottish and UK agencies, has committed to support local planning to address issues in developing such plans.

### Scottish Ambulance Service and DNM Road Convoy Awareness

254. As noted elsewhere in the report, the Scottish Fire and Rescue Service is made aware of the time window in which the DNM convoys will be present in Scotland. The Scottish Ambulance Service have noted that it would be helpful for operational planning purposes if they were also made aware of this. The MOD have therefore agreed to explore with SAS the benefits and risks of sharing this information.

## Part 2 - Environment

### Road transportation of Defence Nuclear Material in Scotland - Environmental Impacts

255. In the event of an incident involving the road transportation of Defence Nuclear Materials in Scotland, there would be a need to respond to the potential impacts on the environment, on land, air and water, and those on the food chain and water supplies. Responsibilities lie with various agencies, both within Scotland and at UK level, during both the initial response and in the ongoing recovery period.
256. Key activities in relation to the environmental impacts include:
  - Identification and monitoring of radiation in the environment, including in:
    - the immediate area of the incident
    - the wider geographical area which may be affected
    - the food chain
    - water supplies
  - Identifying and restricting access to contaminated food sources and water supplies
  - Identifying options for remediation of the built and open environment, infrastructure and transport.

257. The MOD resources have responsibilities in relation to the period immediately following an incident. Other Scottish and UK agencies would also have key roles in the response and recovery periods, considering the planning and implementation of the required mitigation and recovery activities needed to minimise risks to public health and the environment. Their activities as described in this section, would often be exercised through multi-agency fora including the Resilience Partnership and a Scientific and Technical Advisory Cell (STAC).

## Environmental Radiation Monitoring

258. In the event of a DNM road incident, trained and equipped MOD personnel travelling with the convoy will monitor for the release of radioactive contamination in the immediate vicinity of the emergency. MOD Follow on Forces would also be deployed with additional capacity to carry out such monitoring.

259. The Scottish Environment Protection Agency (SEPA) is responsible for the routine monitoring of radioactivity in the environment and in the event of an incident involving DNM, would be the lead agency for providing advice to the Scottish Government, other public bodies, commercial organisations and the public on matters relating to environmental radiation. SEPA is designated as a category 1 responder under the Civil Contingencies Act and will work to provide a multi-agency response to an incident involving DNM.

260. Beyond the period immediately following the incident, Public Health England (PHE) have the lead role in the co-ordination of all available radiation monitoring resources. Decisions on what monitoring is required and what needs to be prioritised will be made by the relevant agency, e.g. SEPA and Food Standards Scotland (FSS). Depending on the level of resource required, additional resources may be drawn from a range of potential sources, including available resource from the MOD, PHE's own capability, the nuclear industry, as well as international resources drawing on existing networks and reciprocal agreements. The SEPA has a contract with PHE for routine environmental radiation monitoring in Scotland and therefore available PHE resources would be deployed for use during an incident.

261. In relation to air monitoring, SEPA have mobile air monitoring units which can be deployed. They also have static air monitors around nuclear sites and a few other locations in Scotland as part of routine monitoring for radioactivity in food and the environment, which can be used if an incident takes place in the vicinity of these. PHE would coordinate radiological incident monitoring and sampling, with SEPA and FSS advising on environmental and food sampling respectively. The UK-wide Radioactive Monitoring Network (RIMNET) has detectors placed at various locations which are capable of detecting gamma radiation in the atmosphere. However, RIMNET would only detect radiation from a DNM incident where the levels were very high.<sup>39</sup>

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<sup>39</sup> <https://www.gov.uk/government/collections/radioactive-incident-monitoring>

## Food

262. In the event of a radiological incident in Scotland, FSS will lead the Scottish Government's response on food/feed safety issues. The FSA supports FSS with independent technical advice and modelling to assess the impact of the incident on the food/feed chain and FSS will work with the relevant partners such as Scottish Government, Local Authorities, SEPA, PHE etc. to implement any necessary food restriction areas in Scotland under the Food and Environment Protection Act (FEPA). In line with the Memorandum of Understanding (MoU) between the FSA and FSS, radiological incidents are classed as UK wide incidents and as such will be led by FSA. However, incidents in Scotland may be led by FSS by mutual agreement and FSS staff would participate in relevant strategic, tactical and scientific/technical response and advisory mechanisms. Underpinning this MoU, there are a range of working level agreements, including one specifically on FSA's radiological support for FSS, intended to deliver the FSS commitment to collaborate and support each other in the interests of protecting the consumer.
263. FSS would work with SEPA in relation to monitoring of food and the environment respectively, utilising PHE and other resources to sample and analyse food.
264. FSS will aim to issue food safety advice to the public as soon as possible, following a declaration of a radiation emergency. FSS will also provide support, advice, information and guidance to Local Authorities and food businesses on the implications for food and feed. A precautionary approach will be used in developing this advice, as the primary purpose is to ensure quick protection of the public from immediate exposure. The FSA would play a supporting role to FSS by providing radiological modelling, and risk assessments to enable the size of the areas likely affected in relation to food to be defined.
265. If required, FSS can advise Scottish Ministers to impose statutory restriction orders, made under the Food and Environment Protection Act 1985. These can restrict the supply, movement or sale of produce from the affected area. In liaison with the FSA, Scottish Government Animal Health and Welfare Division (in relation to animal welfare issues) and others, FSS can also decide on other measures such as the restriction of livestock movements and the supply of milk. Various agencies would have a role in supporting implementation of such food safety (and animal welfare) controls; for example, Local Authorities, SEPA, Marine Scotland (where the affected area is offshore out with a Local Authority's jurisdiction), and SG Directorates covering animal welfare, rural and agricultural issues etc.

## Water

266. The Drinking Water Quality Regulator (DWQR) for Scotland has overall responsibility for ensuring that water supplies are safe to drink and that regulatory responsibilities imposed on Scottish Water and Local Authorities are complied with. In the event of an incident involving the road movement of DNM, DWQR would work with stakeholders such as Scottish Water, Local Authorities and Health Boards to co-ordinate work to preserve safe public and private drinking water supplies and provide consistent advice to consumers.
267. Scottish Water has statutory responsibility for the provision of the public water supply in Scotland and is responsible for ensuring that the drinking water that it provides to its customers meets the standards set by the Public Water Supplies (Scotland) Regulations 2014. Local authorities have statutory responsibilities for determining the wholesomeness of private water supplies.

268. In the event of an incident with DNM, the multi-agency response and recovery mechanisms would work to identify any potential / actual impacts on the public and private water supplies and on Scottish Water's wastewater treatment infrastructure. Scottish Water would also take any precautionary and preventative actions it deems necessary to minimise potential impacts on the public water supply, e.g. the temporary termination of treatment of raw water supplies. Local authorities would similarly be able to take precautionary action to inform users of private water supplies of the potential/actual risks.
269. Specialist environmental monitoring resources, through the MOD, SEPA/PHE etc. as outlined above, would be utilised to sample and monitor the sources of public/private water supplies, Scottish Water's operational infrastructure and treated water supplies, to identify and quantify the risks. SEPA would also provide advice on the impact of any contamination in the environment, including water courses and the potential impact on both public and private water supply sources.
270. In relation to communicating with water users, Scottish Water would issue advice to domestic and business customers on drinking water having agreed key messages with the local authority and health board in the areas affected. Local authorities would issue advice to the owners of private water supplies on any actions they should take, following guidance from government and health professionals. FSS, following liaison with FSA, would provide advice on bottled water products and use of water in food production.
271. Should there be a need to restrict water supplies, Scottish Water, in consultation with key partners, including DWQR, would put restrictions in place in relation to public water supplies. Local authorities have powers to apply for a restriction on the usage of private water supplies. Depending on the extent of the contamination risk, and following consultation, it might be appropriate (for Scottish Water in relation to public supplies and Local Authorities for private supplies) to impose a Do Not Use notice that would prohibit drinking and washing, for example, but enable toilet flushing. Where Scottish Water's ability to supply customers is disrupted, Scottish Water will look to provide alternative supplies to those customers.

## Remediation

272. Beyond the period immediately following a release of radiation from a DNM road convoy, multi-agency partners in Scotland would work together to consider the options to reduce doses from exposure to radiation and make relevant areas suitable for sustainable rehabilitation.
273. There are various options for remediating contaminated areas and in relation to environmental impacts including ongoing interventions in food production systems and drinking water supplies as outlined above – and also measures such as decontamination of relevant areas. In relation to decontamination of buildings, infrastructure and open environment exposed to radiation, the CBRN Recovery Unit at the UK Department for Environment, Food and Rural Affairs (DEFRA) (the former Government Decontamination Service) would provide advice to responsible authorities. They would also plan and arrange for the decontamination operations to be available.<sup>40</sup>
274. SEPA and the DEFRA CBRN Recovery Unit would be key agencies in providing advice in relation to the management and disposal of waste generated by a radiation emergency. For example, SEPA would advise and regulate in relation to contaminated foodstuffs and other waste arisings.

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<sup>40</sup> <https://www.gov.uk/government/groups/government-decontamination-service>

## Planning

275. For key agencies in Scotland who would respond to environmental impacts, specific plans include SEPA's 'Radioactive Substances Emergency Response Plan', which includes consideration of incidents involving the transport of Defence Nuclear Materials. Scottish Water use a 'Response to Major Water Services Incidents' document which sets out their role, including the broader multi-agency response context. FSS's Incident Management Framework outlines their response procedures to food incidents generally and a Working Level Agreement is in place with the FSA outlining FSA's radiological support. These specific plans often supplement these agencies' more general emergency response type plans, the content of which is also relevant to a DNM incident response.
276. Marine Scotland has extensive plans in place to respond to non-nuclear contamination incidents, though none specifically in relation to radionuclide contamination. See 'Areas for Improvement' below.
277. In relation to planning by the key national agencies in Scotland concerned with environmental impacts, they are also involved with the development of the off-site plans for incidents at nuclear sites across Scotland (as are local authorities near nuclear sites). Preparedness and roles in relation to such incidents have significant read across to roles which would be played in relation to an incident with the transport of defence nuclear materials by road, e.g. in relation to the respective environmental monitoring, mitigation and remediation roles of SEPA, FSS, Scottish Water, Local Authorities and Scottish Government Animal Health and Welfare; and at UK level, those of PHE and the DEFRA CBRN Recovery Unit.

## Exercising

278. Within their roles in off-site plans associated with fixed nuclear facilities, key agencies in Scotland with a focus on environmental impacts, do participate in exercises in relation to radiation emergencies. Though there has been some involvement with exercises focussed on the transport of DNM, this appears to be limited and this might be reviewed, noting that such exercises only take place in Scotland occasionally.

## Guidance

279. There is a range of guidance in relation to responding to nuclear incidents in the UK, which address the environmental response aspects. These include:
- National Nuclear Emergency Planning and Response Guidance, covering various stages from planning and response to recovery<sup>41</sup>
  - The UK recovery handbooks for radiation incidents, which specific consideration of drinking water supplies, food production and inhabited areas<sup>42</sup>
  - Recovery, remediation and environmental decontamination tools.<sup>43</sup>

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<sup>41</sup> <https://www.gov.uk/government/publications/national-nuclear-emergency-planning-and-response-guidance>

<sup>42</sup> <https://www.gov.uk/government/publications/uk-recovery-handbooks-for-radiation-incident-2015>

<sup>43</sup> <https://www.gov.uk/government/collections/recovery-remediation-and-environmental-decontamination>

## Areas for Improvement

### Co-ordination of Radiation Monitoring Resources

280. Public Health England have recognised that a radiation emergency, potentially including one involving the transport of Defence Nuclear Materials, would place strains on available resources to monitor radiation, as well as those to collect and analyse samples. They are therefore working to improve arrangements for the co-ordination of these resources. Relevant agencies and other bodies in Scotland who would provide such resources (SEPA and the nuclear operators) should therefore work with PHE in this regard as required.

### Multi-Agency Exercising

281. Further consideration should be given to the greater involvement of agencies in Scotland with a focus on the environmental impacts of a DNM incident, in relation to exercises focussed on the transport of DNM.

### Food Standards Scotland

282. Food Standards Scotland recognises that a nuclear emergency could place strain on existing resources, specifically in the area of scientific technical radiological capacity and expertise, and plan to provide training opportunities for staff to ensure resilience going forward.

### Marine Scotland

283. Marine Scotland have noted that they require to clarify arrangements further in areas such as protocols for safe collection, storage and transport of samples of biota / sediment / water; as well as arrangements for radionuclide sample analysis. Marine Scotland should therefore work with relevant Scottish and UK authorities to clarify their various roles in the event of radionuclides entering the freshwater and/or marine environments.

# Summary of Recommendations / Areas for Improvement / Commitments

## HMFSI

### Recommendations

#### Liaison - Co-locate/Communicate/Coordinate

- The SFRS and the MOD should agree and finalise 'Joint Protocol for Operational Intelligence Sharing between the SFRS and the Defence Nuclear Emergency Organisation' as a matter of priority.

#### Joint Understanding of Risk

- The SFRS should raise awareness, as appropriate, of DNM movements amongst frontline staff by its inclusion in theory based learning modules.

#### Procedure - Shared Situational Awareness

- The SFRS should publish 'Interim Operational Guidance for DNM Movements' and 'Standard Operational procedure for dealing with incidents involving DNM' as a matter of priority
- The SFRS should add a section on DNM movements to the Incident Response COP
- The SFRS should consider having security clearance enhanced for some control room managers in order to support the monitoring and control of sensitive information.

#### Lessons Learned from Exercise

- The SFRS should incorporate recommendations from exercise Astral Climb 2016 into an action plan in order to quantify and monitor improvement.

## SOLACE

### Recommendation

#### Training and Exercising

- Wider participation of all relevant Local Authorities in nuclear / radiological related Training and Exercising.

## Health and environment

### Part 1 - Health

#### Scalable Resource for Personal Radiation Monitoring

- Using the Scottish Government's guidance for local resilience partners in Scotland in relation to developing plans for scalable resources to carry out personal radiation monitoring, Resilience Partnerships should review local arrangements and where required, work together to develop appropriate scalable plans in this regard.

#### Scottish Ambulance Service and DNM Road Convoy Awareness

- The MOD agrees to explore with Scottish Ambulance Service, the benefits and risks of sharing information regarding the time window in which the DNM convoys will be present in Scotland.

### Part 2 – Environment

#### Co-ordination of Radiation Monitoring Resources

- Relevant agencies and bodies in Scotland (SEPA and the nuclear site operators) should support current PHE work to improve arrangements in relation to the utilisation of available resources for radiation monitoring.

#### Multi-Agency Exercising

- MOD to consider greater involvement of agencies in Scotland, with a focus on the environmental impacts, in exercises focussed on the transport of DNM.

#### Food Standards Scotland

- Food Standards Scotland to provide training opportunities for staff, specifically in the area of scientific technical radiological capacity and expertise, to ensure resilience going forward.

#### Marine Scotland

- Marine Scotland to clarify arrangements in areas such as protocols for safe collection, storage and transport of samples of biota / sediment / water; as well as arrangements for radionuclide sample analysis. This to include working with relevant Scottish and UK authorities to clarify their various roles in the event of radionuclides entering the freshwater and/or marine environments.

## MOD

### Commitment

- Greater MoD convoy staff engagement with non-nuclear transport major emergency exercises, to enhance consequence management understanding and to build stronger relationships and knowledge of how Scottish responders operate.

## Acknowledgements

Completion of the review, culminating in this report, would not have been possible without the active support of many organisations and key individuals within them.

The Scottish Government Resilient Essential Services team, who co-ordinated the review on behalf of the Minister for Community Safety, would therefore wish to extend sincere thanks to the review team comprising:

- Her Majesty's Inspector of Constabulary in Scotland (HMICS),
- Her Majesty's Fire Service Inspectorate (HMFSI),
- Society of local Authority Chief Executives (SOLACE),
- Scottish Government Health Resilience and
- Scottish Government Regional Resilience Partnership (RRP) Co-ordinator Teams.

During the course of the review, the review team received excellent support and co-operation from many sources including:

- Ministry of Defence (MOD),
- Ministry of Defence Police (MDP),
- Her Majesty's Inspectorate of Constabulary and Fire & Rescue Service (HMICFRS),
- Scottish Local Authorities and Health Boards (through whose areas road transportation takes place) and
- Scottish Government policy area officials.

This report is a testament to their commitment and dedication.

Finally, a specific thanks is extended to the authors of the 'Unready Scotland' report and those members of the Scottish Parliament who raised and participated in the parliamentary debate on 2nd May 2018.

## Glossary

AC	Authorisation Conditions
AWE	Atomic Weapons Establishment
AWE FRS	Atomic Weapons Establishment Fire and Rescue Service
CBRN	Chemical, biological, radiological and nuclear
CDG	Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009
COP	Control Operating Procedure
CRR	Community Risk Register
DEFRA	Department for Environment, Food and Rural Affairs
DIM	Detection, Identification and Monitoring
DNEO	Defence Nuclear Emergency Organisation
DNM	Defence Nuclear Materials
DNP	Defence Nuclear Programme
DNSR	Defence Nuclear Safety Regulator
DNSR-Hd	Defence Nuclear Safety Regulator - Head
DSEA	Defence Safety and Environment Authority
DWQR	Drinking Water Quality Regulator
EAEC or Euratom	European Atomic Energy Community
EPA	Emergency Procedures Advisor
EPU	Environmental Protection Unit
FEPA	Food and Environment Protection Act
FRS	Fire and Rescue Service
FSS	Food Standards Scotland
GRA	Generic Risk Assessment
HMEPO	Hazardous Materials and Environmental Protection Officer
HMFSI	Her Majesty's Fire Service Inspectorate in Scotland
HMICFRS	Her Majesty's Inspectorate of Constabulary and Fire and Rescue Service
HMICS	Her Majesty's Inspectorate of Constabulary in Scotland
HSE	Health and Safety Executive
IC	Incident Commander
IEM	Integrated Emergency Management
IRF	Immediate Response Force
IRR17	Ionising Radiation Regulations 2017
JESIP	Joint Emergency Services Interoperability Principles
JOC	Joint Operations Centre
JOSIC multi-agency IC	Joint On-Scene Incident Commanders Course
LAESI	Local Authority and Emergency Services Information
LCP	Life Cycle Phase
LGD	Lead Government Department
LRP	Local Resilience Partnership
LSO	Local Senior Officer
MDP	Ministry of Defence Police
MI-MC	Major Incidents with Mass Casualties
MOD	Ministry of Defence
MoU	Memorandum of Understanding
NAIR	National Arrangements for Incidents Involving Radiation
NILO	National Interagency Liaison Officer
NRA	National Risk Assessment
NRR	National Risk Register
NRT	Nuclear Resilience Team
OC	Operations Control/s
ONR	Office for Nuclear Regulation
PDA	Pre-Determined Attendance
PHE	Public Health England

Police Scotland	Police Service of Scotland
PPE	Personal Protective Equipment
PUS	Permanent Under Secretary
RAMERC	Radiation Emergency Course
REPIIR	Radiation (Emergency Preparedness and Public Information) Regulations 2001
RIMNET	Radioactive Monitoring Network
RPA	Radiation Protection Advisor
RPS	Radiation Protection Supervisor
RRP	Regional Resilience Partnership
RVP	Rendezvous Point
SAS	Scottish Ambulance Service
SCG	Strategic Co-ordinating Group
SEPA	Scottish Environment Protection Agency
SFRS	Scottish Fire and Rescue service
SGoRR	Scottish Government Resilience Room
SMARTEU	Scottish Multi-Agency Resilience Training and Exercise Unit
SNUG	Scottish Nuclear Users Group
SOLACE	Society of Local Authority Chief Executives
SOP	Standard Operating Procedure
SORT	Special Operations Response Teams
SPA	Scottish Police Authority
SRA	Scottish Risk Assessment
STAC	Scientific and Technical Advice Cell



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