

**INTEGRATED  
REGULATORY  
REVIEW SERVICE (IRRS)  
FOLLOW-UP MISSION  
TO  
THE UNITED KINGDOM OF GREAT  
BRITAIN AND NORTHERN IRELAND**

Bootle, UK

*23 to 29 January 2024*

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY



Integrated  
Regulatory  
Review Service  
IRRS





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<b>Mission dates:</b>	<i>23 to 29 January 2024</i>
<b>Regulatory body visited:</b>	<i>Department for Energy Security and Net Zero (DESNZ); Department of Agriculture, Environment, and Rural Affairs (DAERA); Department of Health and Social Care (DHSC); Care Quality Commission (CQC); Environment Agency (EA); Health and Safety Executive (HSE); Health and Safety Executive Northern Ireland (HSENI); Healthcare Improvement Scotland (HIS); Healthcare Inspectorate Wales (HIW); Natural Resources Wales (NRW); Northern Ireland Environment Agency (NIEA); Office for Nuclear Regulation (ONR); The Regulation and Quality Improvement Authority (RQIA); Scottish Environment Protection Agency (SEPA); and UK Health Security Agency (UKHSA).</i>
<b>Location:</b>	<i>Bootle, the United Kingdom of Great Britain and Northern Ireland</i>
<b>Regulated facilities, activities, and exposure situations in the mission scope:</b>	<i>Regulated facilities, activities and exposure situations in the scope of the IRRS mission: Nuclear Power Plants, Fuel Cycle Facilities, Waste Management Facilities, Decommissioning Activities, Radiation Sources Applications, Transport of Radioactive Material, Planned and Existing Occupational, Medical and Public Exposure Situations.</i>
<b>Organized by:</b>	<i>IAEA</i>

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**The number of recommendations, suggestions and good practices is in no way a measure of the status of the national infrastructure for nuclear and radiation safety.**

**Comparisons of such numbers between IRRS reports from different countries should not be attempted.**

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## EXECUTIVE SUMMARY

At the request of the Government of the United Kingdom of Great Britain and Northern Ireland (UK), an international team of senior safety experts met representatives of the Department for Energy Security and Net Zero (DESNZ); Department of Agriculture, Environment, and Rural Affairs (DAERA); Department of Health and Social Care (DHSC); Care Quality Commission (CQC); Environment Agency (EA); Health and Safety Executive (HSE); Health and Safety Executive Northern Ireland (HSENI); Healthcare Improvement Scotland (HIS); Healthcare Inspectorate Wales (HIW); Natural Resources Wales (NRW); Northern Ireland Environment Agency (NIEA); Office for Nuclear Regulation (ONR); The Regulation and Quality Improvement Authority (RQIA); Scottish Environment Protection Agency (SEPA); Scottish Government; and UK Health Security Agency (UKHSA) from 23 to 29 January 2024 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission. The mission took place at Redgrave Court, the headquarters of HSE and ONR, in Bootle, Merseyside.

The purpose of the follow-up mission was to review the actions taken by UK to address the recommendations and suggestions made during the IRRS initial mission, which was carried out from 14 to 25 October 2019.

The follow-up mission was formally requested by the Government of the UK in May 2021. A preparatory meeting was held in London, UK, at 1 Victoria Street conference centre on 18-19 July 2023. This meeting was held to discuss the purpose, objectives, and detailed preparations of the follow-up review in connection with regulated facilities, activities and exposure situations in UK and their related safety aspects, and to agree on the scope of the IRRS follow-up mission.

The IRRS follow-up mission team consisted of seven senior regulatory experts from seven IAEA Member States, three IAEA staff members and one observer from Canada. The IRRS team carried out the review in the areas covered by the initial mission in October 2019.

In preparation for the mission, the UK conducted a self-evaluation of the status of the UK's response to the recommendations and suggestions set out in the initial IRRS mission report and prepared a self-assessment follow-up report accordingly. The results of the self-assessment and supporting documentation were provided to the IRRS team as Advance Reference Material (ARM) prior to the mission. During the mission, the IRRS team performed a systematic review of the ARM, including new evidence provided in response to requests from the IRRS team. The IRRS team noted that staff of the participating UK authorities prepared extensively to ensure the success of the mission.

In addition to the review of the actions taken by UK to address the recommendations and suggestions made in 2019, two policy issues were discussed during the mission to share experiences on:

- Regulating innovation;
- Recruitment and retention.

Overall, the IRRS team concluded that the staff of the participating UK authorities showed a strong commitment and professionalism in carrying out their mandate to ensure that nuclear and radiation safety is implemented safely in the UK. The UK authorities have considered the recommendations and suggestions made by the 2019 mission in a systematic manner and significant improvements have been made in many areas. Of the original twenty-four (24) recommendations and nineteen (19) suggestions, 19 recommendations and 10 suggestions have been closed.

The IRRS team noted achievements in the following areas:

- The establishment of the Radiological Safety Group (RSG), an overarching coordination group which consists of senior officials from all government departments and regulatory bodies having responsibilities for radiological safety, and the associated Radiological Safety Working Group (RSWG);
- The HSE developing and implementing the requirement for the submission of a safety assessment before issuing consent for operating a facility or commencing work with high-risk radiation sources;
- The Environment Agency introduced a new nuclear Radioactive Substances Regulation (RSR) business planning process to ensure a graded approach to inspections;
- The UK developed a new framework for facilitating national-level contribution and communication of IAEA standards updates;



- ONR's revision of technical assessment guide (TAG) 026 on decommissioning and TAG 050 on periodic safety review; and
- The NIEA issued a "Guidance on Decommissioning of Non-Nuclear Facilities for Radioactive Substances Activities". This was developed together with the Department of Agriculture, Environment and Rural Affairs.

In addition, the IRRS team identified four good performances in relation to: the Openness and Transparency Policy of ONR; the independent and transparent assessment of ONR's culture; the nuclear site resource prioritization tool of EA; and the UK framework's Draft Standards and Guidance Status Spreadsheet.

The IRRS team made four new recommendations and two new suggestions in relation to the topics covered during the IRRS initial mission. The IRRS team observed that some regulatory authorities lack adequate human resources to fulfil their regulatory oversight. The IRRS team also noted that the inability to retain and to recruit specialists and inspectors resulted in the reduction of HSE's and HIS's ability to carry out their mandate.

Throughout the mission, the IRRS team received the full cooperation in regulatory and technical areas and policy issues by all parties that demonstrated extensive openness and transparency.

At the end of the mission, IAEA issued a press release.

## I. INTRODUCTION

At the request of the Government of the United Kingdom of Great Britain and Northern Ireland (UK), an international team of senior safety experts met representatives of the Department for Energy Security and Net Zero (DESNZ); Department of Agriculture, Environment, and Rural Affairs (DAERA); Department of Health and Social Care (DHSC); Care Quality Commission (CQC); Environment Agency (EA); Health and Safety Executive (HSE); Health and Safety Executive Northern Ireland (HSENI); Healthcare Improvement Scotland (HIS); Healthcare Inspectorate Wales (HIW); Natural Resources Wales (NRW); Northern Ireland Environment Agency (NIEA); Office for Nuclear Regulation (ONR); The Regulation and Quality Improvement Authority (RQIA); Scottish Government; Scottish Environment Protection Agency (SEPA); and UK Health Security Agency (UKHSA) from 23 to 29 January 2024 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission. The mission took place at Redgrave Court, the headquarters of HSE and ONR, in Bootle, Merseyside.

The purpose of this peer review was to review the progress made by the UK against the recommendations and suggestions identified in the IRRS initial mission which was carried out from 14 to 25 October 2019.

The review mission was formally requested by the Government of the UK in May 2021. A preparatory meeting was held in London, UK, at 1 Victoria Street conference centre on 18-19 July 2023 to discuss the purpose, objectives, and detailed preparations of the follow-up review in connection with regulated facilities, activities and exposure situations in the UK and their related safety aspects; and to agree on the scope of the IRRS follow-up mission.

The IRRS follow-up mission team consisted of seven senior regulatory experts from seven IAEA Member States, two IAEA staff members, one IAEA administrative assistant and one observer from Canada. The IRRS team carried out the review in the areas covered by the initial mission in October 2019. In addition, two policy issues on Regulating Innovation and Recruitment and Retention were discussed.

In preparation for the mission, the UK conducted a self-evaluation of the status of recommendations and suggestions set out in the initial IRRS mission report and prepared a self-assessment follow-up report accordingly. This report and supporting documentation were provided to the IRRS team as Advance Reference Material (ARM) for the mission. During the mission, the IRRS team performed a systematic review of all topics by reviewing the advance reference material, additional information provided, and by conducting interviews with management and staff of the participating UK authorities.

Throughout the mission, the IRRS team received the full cooperation in regulatory and technical areas by all parties. In particular, the regulatory staff met by the IRRS staff provided excellent assistance and demonstrated extensive openness and transparency.

## **II. OBJECTIVE AND SCOPE**

The purpose of this IRRS follow-up mission was to conduct a review of the 24 recommendations and 19 suggestions that were given to UK during the IRRS initial full scope mission carried out from 14 to 25 October 2019 and to exchange information and experience in the areas covered by the IRRS.

The IRRS follow-up mission scope was the same as the scope of the initial full scope mission covering the following areas: responsibilities and functions of the government; the global nuclear safety regime; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities and processes of the regulatory body including authorization, review and assessment, inspection, enforcement and the development and content of regulations and guides; and emergency preparedness and response. The review also included the optional review area on interface with nuclear security. Facilities, activities, and exposure situations covered included nuclear power plants, radiation source applications, fuel cycle facilities, waste management facilities, decommissioning, transport of radioactive material, occupational exposure, medical exposure, and public exposure.

The review was carried out by comparison of existing arrangements against the IAEA safety standards.

It is expected that the IRRS follow-up mission will facilitate regulatory improvements in UK and other Member States from the knowledge gained and experiences shared between UK Counterparts and IRRS reviewers, and through the evaluation of the effectiveness of UK's regulatory infrastructure for nuclear and radiation safety.

### **III. BASIS FOR THE REVIEW**

#### **A) PREPARATORY WORK AND IRRS TEAM**

At the request of the Government of UK, a preparatory meeting for the Integrated Regulatory Review Service (IRRS) follow-up mission was conducted from 18-19 July 2023. The preparatory meeting was carried out by Mr Ramzi Jammal from Canada, IRRS Team Leader (TL); Mr Fabien Féron from France, IRRS Deputy Team Leader (DTL), Mr Jean-René Jubin, IAEA Coordinator (NSNI/RAS); and Mr Teodros Hailu, IAEA Deputy Coordinator (NSRW/RIT).

The IRRS follow-up mission preparatory team had discussions regarding regulatory programmes and policy issues with the senior management of Department for Energy Security and Net Zero (DESNZ) represented by Ms Katrina McLeay, Deputy Director, Nuclear Safety, Resilience and Regulation, DESNZ, other senior management and staff from DESNZ, Health and Safety Executive (HSE); Health and Safety Executive Northern Ireland (HSENI); Office for Nuclear Regulation (ONR); Environment Agency (EA); Scottish Environment Protection Agency (SEPA) Northern Ireland Environment Agency (NIEA); Department of Agriculture, Environment, and Rural Affairs (DAERA); Natural Resources Wales (NRW); Care Quality Commission (CQC); Healthcare Improvement Scotland (HIS); Healthcare Inspectorate Wales (HIW); The Regulation and Quality Improvement Authority (RQIA); and Department of Health and Social Care (DHSC).

The discussions resulted in agreement that the review will cover the areas covered by the initial mission conducted in October 2019.

Ms Emma Darkins (DESNZ) made presentations on the national context, the current status of UK, the main changes since 2019 and the self-assessment results to date.

IAEA staff presented the IRRS principles, follow-up mission process and methodology. This was followed by a discussion on the tentative work plan for the implementation of the IRRS in UK in January 2024.

The proposed composition of the IRRS team was discussed. Logistics of the mission, including meetings and workplaces, counterparts and Liaison Officer, lodging and transportation arrangements were also addressed.

The UK Liaison Officer for the IRRS mission was confirmed as Mr Huw Davies (DESNZ).

UK provided IAEA with the advance reference material (ARM) for review in November 2023. In preparation for the mission, the IAEA review team members reviewed the UK ARM and provided their initial impressions to the IAEA Coordinator prior to the commencement of the IRRS follow-up mission.

#### **B) REFERENCES FOR THE REVIEW**

The relevant IAEA safety standards and the Code of Conduct on the Safety and Security of Radioactive Sources were used as review criteria. The complete list of IAEA publications used as the references for this mission is provided in Appendix VII.

#### **C) CONDUCT OF THE REVIEW**

The initial IRRS Team meeting took place on Monday 22 January 2024 at Aloft Liverpool hotel, directed by the IRRS Team Leader and the IAEA Coordinator. Discussions encompassed the general overview, the scope and specific issues of the mission, clarification of the bases for the review and the background, context and objectives of the IRRS programme. The understanding of the methodology for review was reinforced. The agenda for the mission was presented to the team. As required by the IRRS Guidelines, the reviewers presented their initial impressions on the ARM and highlighted significant issues to be addressed during the mission.

The host Liaison Officer was present at the initial IRRS team meeting, in accordance with the IRRS Guidelines, and presented logistical arrangements planned for the mission.

The IRRS entrance meeting was held on Tuesday 23 January 2024, with the participation of senior management and staff from DESNZ, DHSC, HSE, HSENI, ONR, EA, SEPA, NIEA, DAERA, NRW, CQC, HIW, RQIA, and CAA.

Opening remarks were made by Ms Katrina McLeay, Deputy Director, Nuclear Safety, Resilience and Regulation, DESNZ and Mr Ramzi Jammal, IRRS Team Leader. Mr Huw Davies gave an overview of the UK context, regulated facilities and activities, and national legal and regulatory framework for safety. The results of UK's follow-up self-assessment, the main conclusions drawn from it and the action plan prepared as a result of the pre-mission self-assessment were also presented by Mr Joshua Williams (DESNZ).

During the IRRS mission, a review was conducted for all review areas within the agreed scope with the objective of reviewing UK response to the recommendations and suggestions identified during the initial mission. The review was conducted through meetings, interviews and discussions regarding the national legal, governmental and regulatory framework for safety. The IRRS team performed its review according to the mission programme given in Appendix II.

The IRRS exit meeting was held on Monday 29 January 2024. The opening remarks at the exit meeting were presented by Mr Philip Luxford, Director, Nuclear Protection and were followed by the presentation of the results of the mission by the IRRS Team Leader Mr Ramzi Jammal. Closing remarks were made by Ms Anna Bradford, Director, Division of Nuclear Installation Safety, IAEA.

An IAEA press release was issued at the end of the mission.

## 1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT

### 1.1. NATIONAL POLICY AND STRATEGY FOR SAFETY

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *While the UK government has implemented the objectives of a national policy and strategy for safety within its framework for safety, the strategy is yet to be formalized in a single policy document. This has been identified in the UK action plan.*

(1)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 1 states that</b> <i>“The government shall establish a national policy and strategy for safety, the implementation of which shall be subject to a graded approach in accordance with national circumstances and with the radiation risks associated with facilities and activities, to achieve the fundamental safety objective and to apply the fundamental safety principles established in the Safety Fundamentals”.</i>
(2)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 1 para. 2.3 states that</b> <i>“National policy and strategy for safety shall express a long term commitment to safety. The national policy shall be promulgated as a statement of the government’s intent. The strategy shall set out the mechanisms for implementing the national policy. In the national policy and strategy, account shall be taken of the following...”.</i>
R1	<b>Recommendation: The UK Government should publish a single, formalized statement of its national policy and strategy for safety to include all relevant elements of GSR Part 1, Rev 1.</b>

#### Changes since the initial IRRS mission

UK Government, with support of all departments and regulatory bodies with responsibility for radiological safety, finalized its booklet “How we regulate radiological and civil nuclear safety in the UK” to summarize in a single document the UK’s national policy and strategy for safety. This document gives an overview of the UK’s existing regulatory framework for radiological and civil nuclear safety, outlines the work of 11 government departments and 15 regulatory bodies across the UK, identifies the regulatory authorities and departmental lead for each area of responsibility, confirms the UK’s long-term commitment to safety as a top priority and highlights key elements of the UK policy and strategy for safety. This document, after being approved by all regulatory authorities and governmental departments with responsibility for nuclear or radiological safety, was published on the UK Government’s website (Gov.UK) in April 2021. The document received positive feedback from stakeholders. It will be formally reviewed every three years.

The IRRS team considered this document to be a useful information resource for understanding the UK safety framework and each organisation’s regulatory function.

#### Status of the initial mission finding

**Recommendation 1 (R1) is closed** as the document “How we regulate radiological and civil nuclear safety in the UK” has been published.

#### New observations from the follow-up mission

With regard to resources available for regulatory authorities, the document “How we regulate radiological and civil nuclear safety in the UK” states *“The UK has established a legal framework for safety that ensures all its regulators have sufficient financial and human resources to carry out their functions efficiently and effectively”.* Recruitment and retention of staff was a topic selected for the policy discussion (see Annex I). In addition, in its introductory remarks, the UK Government acknowledged resourcing challenges faced by some regulatory authorities in specific areas such as radiation protection specialists, resulting from increasing competition amongst regulatory authorities and authorized parties for a limited number of skilled and knowledgeable staff.

Although some new positions have been opened in several regulatory authorities, the IRRS team was informed that some regulatory authorities had to reduce their regulatory oversight activities due to existing vacancies, and that the UK Government has assigned additional regulatory duties without complementary budgetary support.

## FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

**Observation:** *Some regulatory authorities lack adequate human resources to fulfil their regulatory oversight. In addition, the document presenting UK national policy and strategy for safety does not elaborate on the government’s intent to provide them with the financial and human resources needed to fulfil their statutory obligations.*

(1)	<p><b>BASIS: GSR Part 1 (Rev 1) Requirement 1 para. 2.3 states that</b> “National policy and strategy for safety shall express a long term commitment to safety. The national policy shall be promulgated as a statement of the government’s intent. The strategy shall set out the mechanisms for implementing the national policy. In the national policy and strategy, account shall be taken of the following: [...] (d) The need and provision for human and financial resources;”.</p>
(2)	<p><b>BASIS: GSR Part 1 (Rev 1) Requirement 3 states that</b> “The government, through the legal system, shall establish and maintain a regulatory body, and shall [...] provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities”.</p>
RF1	<p><b>Recommendation: UK Government and Devolved Administrations should ensure that all regulatory authorities have adequate human and financial resources to fulfil their statutory obligation for the regulatory control of facilities and activities. The UK national policy and strategy for safety should elaborate on the commitment to provide adequate resources.</b></p>

### 1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY

There were no findings in this area in the initial IRRS mission.

### 1.3. ESTABLISHMENT OF A REGULATORY BODY AND ITS INDEPENDENCE

There were no findings in this area in the initial IRRS mission.

### 1.4. RESPONSIBILITY FOR SAFETY AND COMPLIANCE WITH REGULATIONS

There were no findings in this area in the initial IRRS mission.

### 1.5. COORDINATION OF AUTHORITIES WITH RESPONSIBILITIES FOR SAFETY WITHIN THE REGULATORY FRAMEWORK

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The Government could make improvements to its approach to coordinate the collaboration of all regulatory functions between the regulatory bodies and with Government departments. This is recognized in the UK action plan.*

(1)	<p><b>BASIS: GSR Part 1 (Rev 1) Requirement 7 states that</b> “Where several authorities have responsibilities for safety within the regulatory framework for safety, the government shall make provision for the effective coordination of their regulatory functions, to avoid any omissions or undue duplication and to avoid conflicting requirements being placed on authorized parties”.</p>
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## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

(2)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 7 para. 2.18 states that “... This coordination and liaison can be achieved by means of memoranda of understanding, appropriate communication and regular meetings. Such coordination assists in achieving consistency and in enabling authorities to benefit from each other’s experience”.</b>
S1	<b>Suggestion: The UK Government should consider improving the coordination among the regulatory bodies and with Government departments to ensure effective delivery of their regulatory functions including by addressing gaps in existing coordination arrangements.</b>

### Changes since the initial IRRS mission

“Regulatory families” networks have been used, for many years, to help improve coordination and cooperation between regulatory authorities with similar areas of responsibility such as environment (Radioactive Substances Policy Group (RSPG)), medical (Medical Radiation Liaison Group), transport (Transport Competent Authority Group) and occupational health and safety (UK Health and Safety Regulators Network (UKHSRN)) (see Chapter 2.2).

To further improve coordination among the multiple government departments and regulatory authorities having responsibilities for radiological safety, especially as between authorities with differing areas of responsibility, two new coordination groups consisting of all departments and regulatory bodies with such responsibilities were established in 2020:

- the Radiological Safety Group (RSG) is an overarching coordination group. The RSG consists of senior officials and meets three times a year. According to its Terms of Reference, the RSG is to provide strategic oversight of the UK’s regulatory framework for radiological safety to ensure the UK continues to be aligned with both national and international relevant good practice and maintain effective coordination between regulatory authorities and government departments. It includes exchanging information and reviewing matters relating to radiological safety, including on progress made to address the 2019 IRRS findings. It is also a forum for identifying opportunities for joint working and better co-ordination between regulatory authorities and government departments. The RSG has developed a strategic workplan for the coming years.
- the Radiological Safety Working Group (RSWG) sits beneath RSG. RSWG is the technical working group which drives forward the work of the RSG. RSWG meets quarterly. One of its duties is to review the IAEA safety standards and their implementation in the UK Framework.

Both groups support adherence to the Regulators’ Code, one of its provisions being that regulators should share information about compliance and risk to avoid undue duplication and to avoid conflicting regulations being imposed on those that they regulate.

In addition, the UK Government conducted a mapping exercise to compile existing coordination arrangements between regulatory authorities. Coordination groups, as well as existing memorandums of understanding (MoU), were documented in a stakeholder map. The UK Government concluded that, considering the “regulatory families” networks and associated meetings, there were sufficient coordination mechanisms between regulatory authorities with similar areas of responsibility.

The 2019 IRRS team noted that enhanced coordination is particularly important where a number of regulatory authorities are involved in authorisation of a facility; for example, medical facilities in England are regulated by HSE, CQC, EA and ONR. The IRRS team highlighted that there was no MoU between EA and CQC or between HSENI and RQIA. HSENI and RQIA agreed that a MoU on intelligence/whistleblowing in relation to IR(ME)R and IRR(NI) would be beneficial. As such RQIA has started to draft a MoU. On the other hand, EA and CQC considered the need for a formal MoU but concluded, taking into account that EA and CQC are unlikely to do joint inspections or joint prosecutions, the current coordination they have through the RSG, RSWG and the Medical Radiation Liaison Group (MRLG) was sufficient for sharing regulatory intelligence.



## Status of the initial mission finding

**Suggestion 1 (S1) is closed** as the RSG and RSWG have been established and meet regularly.

## 1.6 SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE EXISTING OR UNREGULATED RADIATION RISKS

There were no findings in this area in the initial IRRS mission.

## 1.7. PROVISIONS FOR THE DECOMMISSIONING OF FACILITIES AND THE MANAGEMENT OF RADIOACTIVE WASTE AND OF SPENT FUEL

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The planned geological disposal facility (GDF) is outside the scope of the regulated activities of ONR as the Nuclear Installations Regulations, 1971 does not define GDF as a nuclear installation. However, governmental expectation is that a GDF will be a nuclear licensed site. In the Nuclear Installations Act 1965 there is no mechanism for release of the nuclear site from regulatory control with restrictions on the future use.*

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| (1) | <b>BASIS: GSR Part 1, Requirement 2 states that</b> “ <i>The government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated</i> ”.  |
| (2) | <b>BASIS: GSR Part 1, Requirement 2, para 2.5 states that</b> “ <i>The government shall promulgate laws and statutes to make provision for an effective governmental, legal and regulatory framework for safety. This framework for safety shall set out the following:</i><br>(2) <i>The types of facilities and activities that are included within the scope of the framework for safety;</i><br>(3) <i>The type of authorization that is required for the operation of facilities and for the conduct of activities, in accordance with a graded approach;</i> (4) <i>The rationale for the authorization of new facilities and activities, as well as the applicable decision making process;</i> ”. |
| (3) | <b>BASIS: GSR Part 6 Requirement 15 states that</b> “ <i>On the completion of decommissioning actions, the licensee shall demonstrate that the end state criteria as specified in the final decommissioning plan and any additional regulatory requirements have been met. The regulatory body shall verify compliance with the end state criteria and shall decide on termination of the authorization for decommissioning</i> ”.  |
| (4) | <b>BASIS: GSR Part 6 Requirement 15 para 9.3 states that</b> “ <i>If the approved decommissioning end state is release from regulatory control with restrictions on the future use of the remaining structures, appropriate controls and programmes for monitoring and surveillance shall be established and maintained for the optimization of protection and safety, and protection of the environment. These controls shall be subject to approval by the regulatory body</i> ”.   |
| R2  | <b>Recommendation:</b> The UK Government should revise: <ul style="list-style-type: none"><li>• the Nuclear Installations Regulations 1971 such that GDF is defined as a nuclear licensed site and is subject to ONR authorization; and</li><li>• the Nuclear Installations Act 1965 to include requirements on release of nuclear licensed sites from regulatory control with restrictions on the future use.</li></ul>  |

## Changes since the initial IRRS mission

### Licensing of geological disposal facility

The UK currently envisages construction of a Geological Disposal Facility (GDF) to begin in the 2040s. The process to find a location for a GDF in England and Wales is underway.

The UK Government policy is that a GDF will be a nuclear installation under the Nuclear Installations Act 1965 and will therefore require a site licence from the Office for Nuclear Regulation (ONR). This policy was made clear in two policy documents published respectively by the UK Department for Energy Security and Net Zero and the Welsh Government. The Energy Act 2023 amended the Nuclear Installations Act 1965 and the Energy Act 2013 to make it clear that a GDF will be licensed and subject to regulatory oversight by the ONR; this was confirmed in the Energy Act 2023 explanatory notes.

However, the UK Government still has to amend the Nuclear Installations Regulations 1971 in order to implement the licensing regime for a GDF, whether located beneath the seabed or otherwise. Options for amending the Nuclear Installations Regulations 1971 are being explored by the UK Government and it may take 2 or 3 years before these regulations are amended.

### Release of nuclear licensed sites from regulatory control with restrictions on the future use

For a nuclear licensed site under decommissioning, the Energy Act 2023 allows ONR to end the nuclear licence once satisfied that nuclear safety matters have been resolved. ONR will therefore be able to delicense sites earlier than before if safety conditions are met. After delicensing by ONR, the site will remain under oversight by the relevant environment agency for site remediation and HSE for health and safety of work activities. It will be for the relevant environment regulatory authorities to determine the appropriate controls for any residual risks which will persist, including by setting conditions in the environmental permit. Therefore, when preparing delicensing with restriction on future use, as required under the Nuclear Installations Act 1965, ONR will engage with HSE and the appropriate environmental regulatory authorities to discuss relevant matters and prepare the change of responsibility for oversight.

ONR is currently developing guidance on delicensing with restriction on future use (see Chapter 9.6 Recommendation R21).

### **Status of the initial mission finding**

**Recommendation 2 (R2) is closed** as the Nuclear Installations Act 1965 has been updated to include requirements on release of nuclear licensed sites from regulatory control with restrictions on the future use and, in relation to the ongoing work to prepare an amendment to the Nuclear Installations Regulations 1971, it is superseded by Recommendation RF2.

### **New observations from the follow-up mission**

The Nuclear Installations Act 1965 requires that a nuclear site licence is in force before a site may be used for the purpose of installing or operating any nuclear reactor or any other installation which may be prescribed. Such installations are prescribed by the Nuclear Installations Regulations 1971. The UK Government made it clear that the GDF will be a nuclear licensed site, but the Nuclear Installations Regulations 1971 have not yet been updated accordingly.

### **FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES**

**Observation:** *The Nuclear Installations Regulations 1971 do not yet define GDF as a nuclear installation. However, governmental policy is that a GDF will be a nuclear licensed site.*

<b>(1)</b>	<b>BASIS: GSR Part 1, Requirement 2 states that</b> <i>“The government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated.”</i>
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## FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

<b>(2)</b>	<b>BASIS: GSR Part 1, Requirement 2, para 2.5 states that</b> <i>“The government shall promulgate laws and statutes to make provision for an effective governmental, legal and regulatory framework for safety. This framework for safety shall set out the following: [...] (2) The types of facilities and activities that are included within the scope of the framework for safety; (3) The type of authorization that is required for the operation of facilities and for the conduct of activities, in accordance with a graded approach; (4) The rationale for the authorization of new facilities and activities, as well as the applicable decision making process;”</i>
<b>RF2</b>	<b>Recommendation: The UK Government should revise the Nuclear Installations Regulations 1971 such that GDF is defined as a nuclear licensed site and is subject to ONR authorization.</b>

### 1.8. COMPETENCE FOR SAFETY

There were no findings in this area in the initial IRRS mission.

### 1.9. PROVISION OF TECHNICAL SERVICES

There were no findings in this area in the initial IRRS mission.

## 2. THE GLOBAL SAFETY REGIME

### 2.1 INTERNATIONAL OBLIGATIONS AND ARRANGEMENTS FOR INTERNATIONAL COOPERATION

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The UK Government has not yet notified IAEA of its commitment to implement the Guidance on the Management of Disused Radioactive Sources.*

(1)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 14 states that</b> <i>“The government shall fulfil its respective international obligations, participate in the relevant international arrangements, including international peer reviews, and promote international cooperation and assistance to enhance safety globally”.</i>
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S2	<b>Suggestion: The UK Government should consider notifying the IAEA of its commitment to the Supplementary Guidance on the Management of Disused Radioactive Sources.</b>
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#### Changes since the initial IRRS mission

Although the IAEA Supplementary Guidance on the Management of Disused Radioactive Sources is being implemented in practice in the UK, the Government has not yet formally notified the IAEA of its commitment to this Guidance. After conducting an internal consultation to confirm this would not create any additional constraints in the UK, a formal notification was prepared. The IRRS team was informed that this notification had very recently been sent for signature to the Foreign Secretary and would very likely be signed in the coming weeks, then sent to the IAEA. According to UK representatives, no pending issue would prevent this notification from being signed.

#### Status of the initial mission finding

**Suggestion 2 (S2) is closed on the basis of progress made and confidence in effective completion in due time** as the notification to be sent to the IAEA is in the very last step of signature.

### 2.2 SHARING OF OPERATING EXPERIENCE AND REGULATORY EXPERIENCE

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The existing processes to share operating and regulatory experience in relation to radiation safety among the various regulatory bodies may not ensure adequate participation by all relevant regulatory bodies and systematic analysis and dissemination of operating and regulatory experience (national and international) to all relevant parties. This has been identified in the UK action plan and a number of measures have been proposed to strengthen the existing system.*

(1)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 15 states that</b> <i>“The regulatory body shall make arrangements for analysis to be carried out to identify lessons to be learned from operating experience and regulatory experience, including experience in other States, and for the dissemination of the lessons learned and for their use by authorized parties, the regulatory body and other relevant authorities”.</i>
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R3	<b>Recommendation: The UK government, in consultation with regulatory bodies should formalise and improve existing processes and arrangements for sharing of operating and regulatory experience to ensure systematic analysis and feedback on measures taken in response to information received.</b>
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## Changes since the initial IRRS mission

To address this recommendation, the UK Government performed a mapping exercise to identify how information was shared between regulatory authorities. This mapping involved identifying key stakeholder groups and MoUs that exist between regulatory authorities which formalise the sharing of operational and regulatory experience. It confirmed that each “regulatory family” has a coordination group where, according to its terms of reference, operational and regulatory experience are to be shared. These coordination groups are, for example:

- The Nuclear Decommissioning Strategy and Policy Group (NDSPG);
- The UK Health and Safety Regulators Network (UKHSRN);
- The Medical Radiation Liaison Group (MRLG);
- A former group, the IR(ME)R Enforcement Authorities of the Devolved Administrations, which was paused between 2021 and 2023, is being re-established as the IR(ME)R Summit;
- The Nuclear Industry Liaison Group (NILG);
- The Transport Competent Authority Group;
- The Incident Reporting Group (IRG);
- The Radioactive Substances Policy Group (RSPG).

Despite these existing fora, where operational and regulatory experience is actually shared, and the existing MoU between relevant bodies, the UK Government decided to explore additional modalities to further share operating and regulatory experience, taking into account the establishment of the RSG and RSWG. As a result, it was agreed to:

- Develop, twice a year, a UK regulatory intelligence report for radiological safety to capture key learning identified from operational and regulatory experience and share this across the relevant stakeholders. To encourage regulators and other relevant bodies to consider whether information and lessons learned could be applicable to their organisation, discussion questions would be identified within the report;
- Host an annual workshop/seminar for sharing operational experience, lessons learned and international best practice.

A pilot Operational and Regulatory Experience (ORE) report was finalized and shared with RSWG members in January 2023. The RSWG expressed positive feedback and decided to further discuss how regulatory authorities have responded to the issues raised in this report. The IRRS team encourages the UK to improve the report contents so it becomes self-standing and allows any reader, whether from a regulatory authority or an authorized party, to have key information on the event or issue presented (including main causes and actual/potential consequences, non-compliance frequently identified during inspections...) and key lessons learned by the regulatory body or authorized party.

The first workshop to share operational and regulatory experience is being organized and will take place in spring 2024.

## Status of the initial mission finding

**Recommendation 3 (R3) is closed on the basis of progress made and confidence in effective completion in due time** as the first ORE report has been published.

### 3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

#### 3.1. ORGANIZATIONAL STRUCTURE OF THE REGULATORY BODY AND ALLOCATION OF RESOURCES

There were no findings in this area in the initial IRRS mission.

#### 3.2. EFFECTIVE INDEPENDENCE IN THE PERFORMANCE OF REGULATORY FUNCTIONS

There were no findings in this area in the initial IRRS mission.

#### 3.3. STAFFING AND COMPETENCE OF THE REGULATORY BODY

##### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *HSE is not able to inspect both its high-risk and lower-risk activities on an appropriate frequency.*

(1) **BASIS: GSR Part 1 Requirement 16, para. 4.5 states that** *“The regulatory body has the responsibility for structuring its organization and managing its available resources so as to fulfil its statutory obligations effectively. The regulatory body shall allocate resources commensurate with the radiation risks associated with facilities and activities, in accordance with a graded approach”.*

(2) **BASIS: GSR Part 1 Requirement 18, para. 4.11 states that** *“The regulatory body has to have appropriately qualified and competent staff. A human resources plan shall be developed that states the number of staff necessary and the essential knowledge, skills and abilities for them to perform all the necessary regulatory functions.”*

R4 **Recommendation: The HSE should increase the number of both Specialist Inspectors (Radiation) and Ionising Radiations Regulatory Inspectors.**

##### Changes since the initial IRRS mission

HSE mainly utilises Specialist Inspectors (Radiation) for high-risk activities, and Ionising Radiations Regulatory Inspectors (IRRI) for lower-risk activities.

The IRRS team noted that HSE considers addressing Recommendation 4 is part of the handling of the totality of the recommendations and suggestions made in the IRRS, and that delivering a new process for consent authorisations (See Recommendation 11) will mean an increase in the number of Specialist Inspectors (Radiation) from the current number of five up to nine. Funding for this increase has been granted by HSE’s senior management. This increased amount of Specialist Inspectors (Radiation) is judged to be sufficient for the required increase of inspections related to high-risk activities, and once existing consents are cleared and the renewal process is on-going, Specialist Inspectors are planned to be used operationally and in other ways in support of wider HSE regulatory approaches. The IRRS Team was informed that Specialist Inspectors (Radiation) are also to be used in HSE’s emerging approach to regulating fusion power facilities, assumed in the response to be an increasing area of activity which will require commensurate additional resource.

In relation to lower-risk activities, HSE currently plans to only maintain the number of IRRI whilst wider organisational restructuring to best deliver HSE’s recently published strategy is considered and developed.

Despite recruitment campaigns on six occasions in recent years, HSE has so far been unable to attract a sufficient number of suitable applicants and the number of full-time equivalents has actually decreased since 2019. Alternative approaches have been considered, specifically using IRRI or external consultants for tasks that should normally be performed by Specialist Inspectors (Radiation) but it has been decided not to pursue this route.

The numbers of inspections carried out over the past four years have remained more or less the same as pre-2019; this applies both to high-risk and lower-risk activities. Due to the challenging recruitment situation, the situation is not expected to improve in the short term.

### Specialist Inspectors (Radiation)

The IRRS team noted that, for Specialist Inspectors (Radiation), appropriate decisions have been made, aiming at considerably increasing HSE inspection capacity related to high-risk activities. The IRRS team was informed that corresponding recruitment efforts have had very little success, despite several attempts over the past four years. Currently there are five Specialist Inspectors (Radiation), with three fully competent and two new employees in training.

The planned increase in the number of Specialist Inspectors (Radiation) is substantial, from five to nine. However, there are a large number of authorised parties for high-risk activities and a high rate of non-compliance has been found in the relatively few inspections performed up to 2019. HSE still believes that nine Specialist Inspectors (Radiation) will be sufficient for HSE needs. This is based on the new consent process (See Recommendation 11), requiring the applicants to submit a safety assessment. HSE expects this to improve quality of operations, reducing the need for enforcement.

The increased number of Specialist Inspectors (Radiation) will lead to increased numbers of inspections of consents (processing of new consents and clearing the backlog in five years. Once the backlog has been cleared, specialist inspectors will then be available for further inspection of high-risk activities. The IRRS team was informed that while HSE’s emerging approach to regulating fusion power facilities is assumed to be an area of increasing activity which will require commensurate additional resource, these activities can be handled within the planned staff increase. There is currently a lot of activity around fusion in the UK and fusion will be regulated under ionizing radiation regulation (under HSE) rather than as a nuclear activity (under ONR). The IRRS team was further informed that HSE does not currently see this as a major resource issue and believes the increase to nine Specialist Inspectors will cover short- and medium-term fusion activities as well. Existing regulations are judged to be appropriate for fusion, and there are no immediate resource needs, although some inspection activities have already been performed.

### Ionising Radiations Regulatory Inspectors (IRRI)s

The IRRS team noted that no increase to staff have been made, and there are no plans in place for any increase, which indicates that the number of inspections related to lower-risk activities will not be increased. HSE informed the IRRS team that the number of IRRI)s will remain unchanged (nine employees) while reorganisation is implemented. The IRRI)s are employed in the Inspection division, and work with inspections in general, indicating that they work part-time in radiation, on the request from the Specialist Division. IRRI)s are trained by Specialist inspectors, and each do about 10 radiation safety inspections per year. In general, HSE applies a graded approach to the totality of risks and low-risk radiation related activities are seen in relation to all risks that are supervised by HSE.

## **Status of the initial mission finding**

**Recommendation R4 remains open.** Very little progress has been made in recruitment of Specialist Inspectors over the past four years, and the prospects seem to be very challenging. Regarding IRRI)s, no staff increase has been made, and none seem to be planned.

2019 MISSION RECOMMENDATIONS, SUGGESTIONS	
<b>Observation:</b> <i>SEPA has not implemented a competence framework, training programme and human resources plan for the department of Radioactive Substances. This has been identified in the self-assessment. The related management system procedures are not yet available. The department of Radioactive Substances is currently 35% understaffed and workload has been reduced accordingly.</i>	
(1)	<b>BASIS:</b> <b>GSR Part 1 Requirement 11, para. 2.36 (a)</b> states that “The Government shall stipulate a necessary level of competence for persons with responsibilities in relation to the safety of facilities and activities”.
(2)	<b>BASIS:</b> <b>GSR Part 1 Requirement 11, para. 2.36 (b)</b> states that “The Government shall make provision for adequate arrangements for the regulatory body and its support organizations to build

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

	<i>and maintain expertise in the disciplines necessary for discharge of the regulatory body's responsibilities in relation to safety".</i>
(3)	<b>BASIS: GSR Part 1 Requirement 18, para. 4.11 states that</b> <i>"...A human resources plan shall be developed that states the number of staff necessary and the essential knowledge, skills and abilities for them to perform all the necessary regulatory functions."</i>
(4)	<b>BASIS: GSR Part 1 Requirement 18, para. 4.12 states that</b> <i>"The human resources plan for the regulatory body shall cover recruitment and, where relevant, rotation of staff in order to obtain staff with appropriate competence and skills, and shall include a strategy to compensate for the departure of qualified staff."</i>
(5)	<b>BASIS: GSR Part 1 Requirement 18, para. 4.13 states that</b> <i>"A process shall be established to develop and maintain the necessary competence and skills of staff of the regulatory body, as an element of knowledge management. This process shall include the development of a specific training programme on the basis of an analysis of the necessary competence and skills."</i>
(6)	<b>BASIS: GSG-12 para. 6.86 (use of external support) states that:</b> <i>"If the regulatory body is not entirely self-sufficient in all the technical or functional areas necessary to discharge its responsibilities, it should seek advice or assistance, as appropriate, from external experts as described in Appendix I. In this case, the regulatory body should have the necessary competence to evaluate the work of the external expert."</i>
(7)	<b>BASIS: GSG-13, paragraph 3.312 states that</b> <i>"The regulatory body should adopt clear administrative procedures governing the taking of enforcement actions, which should be documented in internal guidance. All inspectors and other staff of the regulatory body should be trained in, and knowledgeable about, the procedures"</i> .
R5	<b>Recommendation: SEPA should continue to develop and implement a competence framework and develop a human resources and training plan in its department of radioactive substances, including related procedures.</b>

### Changes since the initial IRRS mission

SEPA has developed and implemented a competence framework and associated guidance specifying the knowledge and skills required for each post within the Radioactive Substances Unit (RSU), and which is used by each individual member of staff as part of the annual Performance Development Review (PDR) process to plan personal competence development and identify knowledge or skills gaps. The RSU has also created a training directory of relevant training courses and other learning resources that can help with developing the training plan.

SEPA does not yet have a human resources plan for the RSU and is facing significant recruitment challenges. Currently 25% of the posts within the RSU are vacant. Recent recruitment campaigns have been unsuccessful in attracting suitable candidates, with some posts having been advertised multiple times. Recruitment and retention are being examined by the SEPA Human Resources team and a human resources plan is expected to be developed in due course.

The workload of the RSU has been reduced proportionately whilst the posts remain vacant, and SEPA has sought external support for specific one-off projects. However, SEPA has not sought external support for its core regulatory duties as this might incentivise current staff to leave to earn a higher salary as external consultants.

A detailed Competence Framework and an associated Capability Assessment Guide have been developed and are being used in the annual Performance Development Review of each employee. A training directory has been developed, showing training resources available nationally or internationally, that can be used to fill knowledge or skill gaps. No human resource plan has yet been developed for SEPA RSU.



The IRRS team noted that in 2019 it was stated that SEPA management had agreed to temporarily reduce the activities, in accordance with a graded approach. This situation has not changed. SEPA informed the IRRS team that reduction of workload is achieved through prioritisation of certain activities, e.g., non-compliance issues, variations to permits, and issuing new permits. In its contacts with industry SEPA stresses the importance of being proactive in informing SEPA on upcoming issues. In some cases, SEPA has sought external support for specific one-off projects, in some cases quite extensive ones (number of FTEs). However, SEPA judges this situation to be untenable in the long run, and a few years without improvement would start to have an impact on industry.

### Status of the initial mission finding

**Recommendation R5 is closed on the basis of progress made and confidence in effective completion in due time** as considerable efforts have been put into developing and implementing a competence framework and an associated training plan, and a human resources plan is being developed.

2019 MISSION RECOMMENDATIONS, SUGGESTIONS	
<b>Observation:</b> <i>The IRRS team learned that CQC has faced challenges to implement an inspection programme that ensures that every facility, and activity is regularly inspected.</i>	
(1)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 16, para. 4.5 states that</b> <i>“The regulatory body has the responsibility for structuring its organization and managing its available resources so as to fulfil its statutory obligations effectively. The regulatory body shall allocate resources commensurate with the radiation risks associated with facilities and activities, in accordance with a graded approach”.</i>
(2)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 18 states that</b> <i>“The regulatory body shall employ a sufficient number of qualified and competent staff, commensurate with the nature and the number of facilities and activities to be regulated, to perform its functions and to discharge its responsibilities.”</i>
(3)	<b>BASIS: GSR Part 1 (Rev 1) Requirement 18, para. 4.11 states that</b> <i>“The regulatory body has to have appropriately qualified and competent staff. A human resources plan shall be developed that states the number of staff necessary and the essential knowledge, skills and abilities for them to perform all the necessary regulatory functions.”</i>
R6	<b>Recommendation:</b> <b>CQC should allocate resources to regulate relevant IR(ME)R activities, commensurate with the radiation risks associated and in accordance with a graded approach. CQC should also seek to increase its number of inspectors so as to be able to increase the frequency with which facilities are inspected.</b>

### Changes since the initial IRRS mission

CQC performed analyses to address Recommendations 6 and 15. It resulted in increase in staff (from six to ten in total) and a change of organisational structure and in staff competence and roles.

Funding for the staff increase was obtained and CQC has been very successful with recruitments, as salary levels are competitive. All roles were filled since August 2023 and induction and training is ongoing.

Inspection planning has previously been impacted by lack of data on sources and generators. In past years, efforts have been devoted to compiling relevant data to have an overall picture of authorized parties, the type of medical practice they are performing or type of sources used, safety performance record, so that a risk matrix, with associated inspection frequency, can inform inspection planning. As a result, the IRRS team noted the improvements accomplished to date addressed the needs for developing an inspection strategy in accordance with the graded approach.

## Status of the initial mission finding

**Recommendation R6 is closed** as additional staff have been recruited and an inspection strategy has been defined in accordance with a graded approach.

## New observations from the follow-up mission

### HSE recruitment challenges

HSE has encountered significant difficulties in recruiting suitable qualified personnel. HSE informed the IRRS team that these difficulties are due mainly to large salary differences, estimated at 25%, relative both to the industry and to other regulators (mainly ONR). This is the case even though the role of Specialist Inspector is considered to be very attractive.

HSE informed the IRRS team that while it considered the use of external consultants, given the difficulties in recruitment, it has not pursued this option as the use of consultants would not meet IAEA guidance and expectations when it comes to higher hazard activities. The IRRS team notes that given the extreme challenges encountered by HSE in recruitment, the use of external experts should possibly once again be taken into consideration. (GSG-12 para. 6.86).

HSE informed the IRRS team that a Task and Finish Group established under the UK Government's Radiological Safety Working Group (RSWG) has considered and reported on access to skills and expertise, and some of the recruitment challenges. The group is seen as valuable by HSE as it will mean a recognition that access to competence is an issue not only for HSE, and for providing a co-ordinated approach all over UK for securing competence in the radiation safety field. The group will present options for future work, which could help Government to fulfil IAEA requirements.

HSE informed the IRRS team that it will continue to work with its Human Resources function in further recruitment exercises. The IRRS team is of the view that given the limited success in the area of recruitment, changes could be needed to HSE's approach.

The IRRS team noted the importance of resolving the challenges HSE faces in the recruitment and retention of radiation specialists. To mitigate this and other concerns, a review of HSE pay started in 2021 and was undertaken to simplify the complex pay structure, specifically in relation to specialist roles, and to implement pay progression based on competency (CBP).

The submission of a Pay Flexibility Business Case was formally approved by DWP Ministers in December 2023, following a lengthy and thorough approval process. Following formal discussions with Cabinet Office and HM Treasury colleagues the pay case is now with the Cabinet Office Minister for approval (as of 23 January 2024).

The HSE case for pay reform and progression based on capability will undoubtedly help with the challenges faced in attracting and retaining specialist resource in a competitive public sector market. The IRRS team considered that pay reform is essential to support HSE's ability to recruit and retain radiation specialists in order to deliver their statutory remit recognising wider public sector affordability constraints.

## FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

**Observation:** HSE faces considerable challenges related to recruitment which seem to be due to a very large extent to the rigid salary structure in HSE, with salary differences estimated at 25%, relative both to the industry and to other regulators, mainly ONR. This weakens HSE in two ways by both increasing turnover of experienced staff and making recruitment of senior experts extremely challenging.

(1)

**BASIS: GSR Part 1 (Rev 1) Requirement 1 states that:** *The government, through the legal system, shall establish and maintain a regulatory body, and shall confer on it the legal authority and provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities.*

## FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

<b>RF3</b>	<b>Recommendation:</b> The UK Government should provide the conditions that allow necessary recruitment to be accomplished, including provisions for offering competitive salaries for expert positions.
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## FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

**Observation:** HSE has considered the use of external consultants. This has not been pursued, as HSE’s assessment is that consultants would not meet IAEA guidance and expectations on the higher hazard activities.

<b>(1)</b>	<b>BASIS:</b> GSG-12 para. 6.86 states that “If the regulatory body is not entirely self-sufficient in all the technical or functional areas necessary to discharge its responsibilities, it should seek advice or assistance, as appropriate, from external experts”.
<b>SF1</b>	<b>Suggestion:</b> HSE should consider the use of external experts, given the extreme challenges encountered in recruitment.

### SEPA recruitment challenges

The IRRS team notes that while action has been taken to address recruitment of specialists and experienced personnel, very serious challenges remain for SEPA.

The IRRS team notes few improvements and a loss of highly knowledgeable and experienced staff at SEPA. There are over 25% vacant positions (10 FTE out of 31 FTE); these vacant positions are also due to some staff working reduced hours. SEPA informed the IRRS team that the difficulties in both recruitment of new senior staff and retention of existing senior staff are primarily due to the considerable differences in salaries between SEPA and other potential employers, including other regulators (mainly EA and ONR) and industry. SEPA estimated differences of around 30% for a similar post in the EA, with ONR and industry being significantly higher. The basis for setting salaries within SEPA is quite inflexible, with positions tied to grades (A, B, C...) with a relatively narrow salary band. It is possible to implement salary supplements (corresponding to moving up one grade), but this requires government acceptance. Work in this area between SEPA and the Scottish Government is on-going. SEPA activities are largely fee based.

## FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

**Observation:** SEPA faces considerable challenges related to recruitment which seem to be due to a very large extent to the rigid salary structure in SEPA, with salary differences estimated at well above 25%, relative both to the industry and to other regulators, mainly ONR and EA. This weakens SEPA by both increasing turnover of experienced staff and making recruitment of senior experts extremely challenging.

<b>(1)</b>	<b>BASIS:</b> GSR Part 1 (Rev 1) Requirement 1 states that: <i>The government, through the legal system, shall establish and maintain a regulatory body, and shall confer on it the legal authority and provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities.</i>
<b>RF4</b>	<b>Recommendation:</b> The Scottish Government should provide the conditions that allow necessary recruitment to be accomplished, including provisions for offering competitive salaries for expert positions.

### 3.4. LIAISON WITH ADVISORY BODIES AND SUPPORT ORGANIZATIONS

There were no findings in this area in the initial IRRS mission.

### 3.5. LIAISON BETWEEN THE REGULATORY BODY AND AUTHORIZED PARTIES

There were no findings in this area in the initial IRRS mission.

### 3.6. STABILITY AND CONSISTENCY OF REGULATORY CONTROL

There were no findings in this area in the initial IRRS mission.

### 3.7. SAFETY RELATED RECORDS

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *A national dose register (CIDI) receives data on an annual basis. Besides maintaining data relevant to occupational exposures it may be valuable for other purposes.*

(1)	<p><b>GSG-7, para. 7.265 states that</b> <i>“Consideration should be given to the establishment of a national dose registry as a central point for the collection and maintenance of dose records. The storage of information at the national dose registry should be such as to allow workers, during and after their working life, to retrieve information on the doses they received while occupationally exposed. Long term storage of such information in a national dose registry also serves the following purposes: ...</i></p> <p><i>(b) It allows periodic analysis of all data on exposures collected in order to characterize the situation at the national level with regard to occupational exposure”.</i></p>
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S3	<p><b>Suggestion:</b> <b>The HSE should consider reviewing the operational aspects of CIDI to receive data more frequently and enhance its capabilities to facilitate its own and other regulatory bodies’ activities.</b></p>
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#### Changes since the initial IRRS mission

HSE considered the suggestion against HSE priorities in respect of the radiation hazard, coming to the conclusion that HSE as a regulatory authority should only collect information it will use, in order not to place an undue burden on those supplying the information (UK Government Regulators' Code). HSE also notes that the Ionising Radiations Regulations 2017 already require employers to report overexposures and certain accidents and incidents to the HSE. HSE therefore believes it already has the mechanisms for appropriate targeting and intelligence gathering.

HSE is of the view that more frequent data submission would increase the burden both on the parties submitting the information and on HSE. The IRRS team was informed that HSE will keep the current arrangements under review subject to priorities. However, HSE is yet to enhance the databases capabilities to facilitate its own and other regulatory bodies’ activities.

#### Status of the initial mission finding

**Suggestion S3 is open** as HSE has not enhanced the databases’ capabilities to facilitate its own and other regulatory bodies’ activities.

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The register of radiation sources and radiation generators maintained by HSE, HSENI and ONR does not contain information about their exact numbers, characteristics and location, to enable adequate regulatory oversight by the relevant regulatory authorities.*

(1)	<p><b>BASIS: GSR Part 1 Requirement 35, para. 4.63 states that</b> <i>“The regulatory body shall make provision for establishing and maintaining the following registers and inventories</i></p> <p><i>- Registers of sealed radioactive sources and radiation generators”.</i></p>
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## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

R7

**Recommendation:** The HSE, HSENI and ONR should establish and maintain a single register of radiation sources and radiation generators which contain information about their exact numbers, characteristics and location to enable adequate regulatory oversight by the relevant regulatory authorities.

### Changes since the initial IRRS mission

HSE, HSENI and ONR have jointly considered this recommendation and acknowledge that a register of radiation generators would support their regulatory functions and the enforcement of regulatory requirements.

Since 2011, SEPA, on behalf of the environment agencies, ONR (and the Defence Nuclear Safety Regulator (DNSR)), maintain the UK National Register of all HASS that are registered with the environment agencies as well as those that are kept on nuclear licensed sites. The IRRS team was informed work is ongoing to improve either direct or indirect access to this UK register by the various regulatory authorities.

For radiation generators, two separate registers have been set up, one by HSE covering radiation generators located outside of nuclear sites (RADAN), and one by ONR covering radiation generators located on nuclear sites (included in its WIRed duty holder portal).

HSE has developed a new supporting digital platform, known as RADAN (RADiation, Authorisations, and Notifications). In developing RADAN, HSE has worked with ONR, HSENI and the various health regulators. RADAN is designed to capture necessary information on consent practices and in addition, those practices requiring registration and notification as part of the graded approach. The IRRS team noted that the development of RADAN has been a significant achievement since the initial IRRS mission.

ONR has established a separate register of radiation generators located on nuclear sites and required nuclear sites to provide information relating to their holdings by the end of 2023. This register is part of the WIRed database. The information will be updated periodically by further data requests every five years.

A number of registers have been established. The approach taken has been to develop separate registers for ONR and for other regulators, both for HASS and radiation generators. Thus, there will be four registers in total.

RADAN was coordinated by HSE, and developed in consultation with ONR, HSENI and the various health regulators. However, ONR use a different register (included in WIRed).

RADAN provides a register of all licensed, authorized, and registered entities. However, the IRRS team recognized an opportunity to improve the register by providing numbers, characteristics and location of radioactive sources and radiation generators.

### Status of the initial mission finding

**Recommendation R7 is closed on the basis of progress made and confidence in effective completion in due time** as registers are being populated and full access to other regulatory authorities will be established.

## 3.8. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *ONR is not required by the Nuclear Installations Act to consult on its regulatory decisions and regulatory guidance.*

(1)

**BASIS:** *GSR Part 1 Requirement 36 para. 4.67 states that “Interested parties including the public shall have an opportunity to be consulted in the process for making significant regulatory decisions, subject to national legislation and international obligations”.*

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

(2)	<b>BASIS: GSR Part 1 Requirement 36 states that</b> <i>“The regulatory body shall promote the establishment of appropriate means of informing and consulting interested parties and the public about the possible radiation risks associated with facilities and activities, and about the processes and decisions of the regulatory body”.</i>
(3)	<b>BASIS: GSR Part 1 Requirement 34 para. 4.61 states that</b> <i>“The government or the regulatory body shall establish, within the legal framework, processes for establishing or adopting, promoting and amending regulations and guides. These processes shall involve consultation with interested parties in the development of the regulations and guides ...”.</i>
R8	<b>Recommendation: ONR should establish provisions for interested parties and the public to be appropriately consulted in its process for making significant regulatory decisions, establishing regulatory guidance or when updating licence conditions.</b>

### Changes since the initial IRRS mission

ONR has primarily addressed this recommendation through its new Policy on Openness and Transparency, published on ONR’s website in March 2023. On the development of the Openness and Transparency Policy, ONR consulted with a range of internal and external stakeholders. The IRRS team considered the Openness and Transparency Policy as a Good Performance.

The policy sets out three guiding principles: accessibility, confidence, and accountability which ONR will apply in its communications and engagement with interested stakeholders and the public. The policy includes a three-tier framework for how and when ONR informs, engages and consults interested stakeholders and the public on its work and regulatory decisions, and when and how it takes account of feedback.

In general, ONR will consult either formally or undertake informal, non-statutory consultation with interested stakeholders and the public where it is necessary and appropriate to inform them about the ONR organisational strategy and priorities, regulatory processes and guidance, and regulatory decisions. ONR’s website also provides the opportunity for the public and interested parties to participate in its consultations and discussions, and to have sight of ONR’s responses as a statutory consultee to Government consultations.

Formal consultation is already undertaken when there is a legal requirement to do so, where it is deemed necessary, and where there is a need for relevant evidence, views and/or other information to inform ONR work.

Informal, non-statutory consultations can be undertaken for a number of different reasons. This will include face-to-face and virtual engagements, meetings, forums and workshops to promote dialogue and discussion about ONR’s role, work and regulation. Forums include Site Stakeholder Groups (SSGs) and Local Liaison Committees (LLCs) which include the public, local community groups, environmental groups and NGOs with an interest in a site; and direct engagement through bespoke workshops, for example, with NGOs and local campaign groups to discuss and explain the regulatory process and licensing decisions. Informal consultations are also done related to commissioning research, commissioning work/expert input via the ONR Technical Support Framework, ONR’s independent expert panels, and requesting Party comments received as part of the Generic Design Assessment (GDA) process.

ONR’s Annual Stakeholder Research Report 2023 confirms improvements year on year where ONR is considered to do well at engaging with stakeholders, including interested parties and the public. To measure its performance against the Policy on Openness and Transparency, ONR will use feedback and insight from its regular stakeholder surveys. The implementation of the policy will also be subject to formal review and update.

The IRRS team notes that the ONR’s new policy provides considerably increased focus on informal non-statutory consultations. This includes the creation of new fora for interaction and engagements, such as bespoke workshops, events and meetings, in addition to the already established NGO-ONR forum.

Information presented on the ONR website has been extended, in many cases with the added possibility to provide feedback. ONR consultation responses as a statutory consultee to the Government were not published before but are

now presented on the website to support its commitment to be open and transparent, and so the public can see and understand ONR's views and position. In parallel, more face-to-face fora have been created.

Under ONR's new policy, increased interaction with NGOs is done through bespoke face-to-face meetings and workshops to promote dialogue and discussion on specific topic areas, and consequently ONR has seen a decrease in written enquiries. Information is given particularly around regulatory processes and guidance, such as changes in Safety Assessment Principles (SAP) etc. It is published on the ONR website, and comments can be given through the website.

Engagement is achieved through several fora, including the aforesaid Site Stakeholder Groups and Local Liaison Committees, which meet on a regular basis to share information on, e.g., ONR organisational strategy, key regulatory decisions and regulatory priorities. In addition to the established NGO forum, ONR has implemented further provisions through increased interaction, which includes face-to-face events or workshops on specific issues of special interest to the NGOs; for example, a recent series of workshops was held on its regulation of climate change, co-chaired by ONR and an NGO; concerns regarding low level radiation; and Sizewell C nuclear site licence application. The IRRS team was informed that this new policy format has contributed to improving the engagement with NGOs.

During the development of the Openness and Transparency Policy, ONR consulted with a large number of internal and external stakeholders. Starting with internal consultation with senior management and the ONR Board, consultation then was extended to domestic regulators (including HSE and EA), international regulators, NGOs and campaign groups, and other public bodies as well as insight from its annual stakeholder survey. ONR has noted that it will continue to measure its performance to ensure the policy is effective and undertake more non-statutory consultation in the future as part of reviewing it for improvement.

#### **Status of the initial mission finding**

**Recommendation R8 is closed** as a new Openness and Transparency Policy has been developed documenting and guiding the overall ONR approach.

#### 4. MANAGEMENT OF THE REGULATORY BODY

##### 4.1. RESPONSIBILITY AND LEADERSHIP FOR SAFETY

There were no findings in this area in the initial IRRS mission.

##### 4.2. RESPONSIBILITY FOR INTEGRATION OF SAFETY INTO THE MANAGEMENT SYSTEM

There were no findings in this area in the initial IRRS mission.

##### 4.3. THE MANAGEMENT SYSTEM

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The existing management systems of ONR does not fully comply with the IAEA Safety Standards with respect to the formalization and implementation of the integration of environmental elements with all other management system elements, regulatory core/management and support process, promotion of safety culture, processes for measurement, assessment and improvement of management system, leadership for safety and of safety culture, as well as formalization of the use of a graded approach for all facilities and activities. Most of these findings were also identified by ONR in their Action Plan.*

(1)	<b>BASIS: GSR Part 2 Requirement 6 states that</b> <i>“The management system shall integrate its elements, including safety, health, environmental, security, quality, human-and-organizational-factor, societal and economic elements, so that safety is not compromised”.</i>
(2)	<b>BASIS: GSR Part 2, Requirement 10 states that</b> <i>“Processes and activities shall be developed and shall be effectively managed to achieve the organization’s goals without compromising safety”.</i>
(3)	<b>BASIS: GSR Part 2, para 4.29 states that</b> <i>“The sequencing of a process and the interactions between processes shall be specified so that safety is not compromised. Effective interaction between interfacing processes shall be ensured”.</i>
(4)	<b>BASIS: GSG 12 para. 2.27 states that</b> <i>“The regulatory body should establish policies to promote the use of a graded approach, transparency and consistency, and the broad sharing of information and ideas, to help ensure the highest standards of protection and safety, while giving due account to the protection of sensitive information”.</i>
(5)	<b>BASIS: GSG 3.1 para. 2.40 states that</b> <i>“For all products and activities within a process, all the requirements of and demands on the relevant process should first be considered. By using the grading methodology, it may be possible to identify products and activities of lesser significance within a process. For products and activities of lesser significance, it is then possible to determine whether all the controls and checks of the process are necessary. Controls and checks that could be graded include, for example, aspects such as qualification and training for individuals, type and format of procedures, and requirements on verification, inspection, testing, material, records and the performance of suppliers”.</i>
(6)	<b>BASIS: GSG 3.1 para. 2.43 states that</b> <i>“It is common sense to apply tighter controls to more important products and activities. A methodology for grading should be developed that ensures that all individuals in the organization apply this common sense approach in a uniform manner”.</i>
(7)	<b>BASIS: GSR Part 2, Requirement 12 states that</b> <i>“The management system and leadership for safety shall be such as to foster and sustain a strong safety culture”.</i>



## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

(8)	<b>BASIS: GSR Part 2, Requirement 13 state that</b> <i>“The effectiveness of the management system shall be measured, assessed and improved to enhance safety performance, including minimizing the occurrence of problems relating to safety”.</i>
(9)	<b>BASIS: GSR Part 2, para 6.4 states that</b> <i>“Independent assessments and self-assessments of the management system shall be regularly conducted to evaluate its effectiveness and to identify opportunities for its improvement”.</i>
(10)	<b>BASIS: GSR Part 2, Requirement 14 states that</b> <i>“Senior management shall regularly commission assessments of leadership for safety and of safety culture in its own organization”.</i>
R9	<b>Recommendation: ONR should further develop and implement its Integrated Management System to fully comply with the IAEA safety standards.</b>

### Changes since the initial IRRS mission

ONR set up a Management System Improvement Project in 2019 to support preparations for the 2019 Mission and to address observations made during the IRRS initial mission. The IRRS team noted that significant improvements have been brought to ONR’s management system. All management and support processes have been formalized, and the sequences of, and interfaces between them have been clarified. Moreover, ONR has nearly completed the effective integration of health, safety and wellbeing (HSW), environmental, security and information protection, and quality elements with all other management system elements.

The provisions to regulate safety in accordance with a graded approach are in place. For example, the enforcement policy which expresses the commitment of ONR to apply a graded approach is supported by the ONR’s Enforcement Management Model (EMM), a logical system that helps inspectors to make enforcement decisions in response to a non-compliance with legal and regulatory requirements. EMM ensures that enforcement action is proportionate to the health and safety risks and the seriousness of the non-compliance.

According to the ONR management system manual independent culture assessments are required to be conducted every six years alternatively with self-assessments to be carried at the mid-time. In 2022, ONR hosted an independent culture assessment conducted by a research team from Alliance Manchester Business School to better understand its culture in relation to the delivery of its mission, and to identify strategies to improve its culture. The report of this assessment highlights the strengths of ONR together with a number of issues under consideration. It has been made publicly available. The IRRS team considered this a good performance.

Furthermore, HSW of the ONR’s staff is subject to an assessment every two years. In 2021, ONR’s HSW team organized focus group discussions to do so. For periodic assessments after that, the Safety Climate Survey tool developed by HSE is used, as in 2023. Safety Climate Survey provides insight into staff perceptions of the value placed on health and safety in the workplace at a particular point in time.

The effectiveness of the management system is subject to a periodic review by the senior management who assess the performance, effectiveness and suitability of the management system. This review is conducted according to a formal procedure.

The process owners are clearly identified in the Management System Document Register. Their roles are clearly described within the management system; they include the maintenance, review and monitoring of the effectiveness of the process that they are responsible for. ONR uses WIREd, an online database, to monitor regulatory activities such as technical assessment and inspections, based on a series of indicators.

The non-conformities are managed in accordance with ONR’s Integrated Audit and Assurance Framework (IAAF) through "Recommendations Tracker", a database set up to monitor, inter alia, the implementation of the corrective actions.

## Status of the initial mission finding

**Recommendation 9 (R9) is closed** as the observations on the management system, and on the leadership and culture for safety have been effectively addressed.

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The existing management systems of EA does not fully comply with the IAEA Safety Standards with respect to the formalization and implementation of the independent review to be made before decisions significant for safety are made, formalization of the use of a graded approach, regulatory process interfaces and its associated performance indicators, as well as processes for measurement, assessment and improvement of management system, including the establishment of process for non-conformances reporting and corrective action plan. These findings were also identified by EA in their Action Plan.*

(1)	<b>BASIS: GSG Part 2, Requirements 6 para. 4.14 states that</b> “Arrangements shall be established in the management system for an independent review to be made before decisions significant for safety are made”.
(2)	<b>BASIS: GSR Part 2, Requirement 10 states that</b> “Processes and activities shall be developed and shall be effectively managed to achieve the organization’s goals without compromising safety”.
(3)	<b>BASIS: GSR Part 2, para 4.29 states that</b> “The sequencing of a process and the interactions between processes shall be specified so that safety is not compromised. Effective interaction between interfacing processes shall be ensured”.
(4)	<b>BASIS: GSG 12 – Table 2A, Process Management states that</b> “Develop individual process: .... (4) Specify control points and performance indicators”.
(5)	<b>BASIS: GSG 12 para. 2.27 states that</b> “The regulatory body should establish policies to promote the use of a graded approach, transparency and consistency, and the broad sharing of information and ideas, to help ensure the highest standards of protection and safety, while giving due account to the protection of sensitive information”.
(6)	<b>BASIS: GSG 3.1 para. 2.40 states that</b> “For all products and activities within a process, all the requirements of and demands on the relevant process should first be considered. By using the grading methodology, it may be possible to identify products and activities of lesser significance within a process. For products and activities of lesser significance, it is then possible to determine whether all the controls and checks of the process are necessary. Controls and checks that could be graded include, for example, aspects such as qualification and training for individuals, type and format of procedures, and requirements on verification, inspection, testing, material, records and the performance of suppliers”.
(7)	<b>BASIS: GSR Part 2, Requirement 13 state that</b> “The effectiveness of the management system shall be measured, assessed and improved to enhance safety performance, including minimizing the occurrence of problems relating to safety”.
(8)	<b>BASIS: GSG -12, para. 5.48 states that</b> “The integrated management system review should cover all significant sources of information on performance, including the following: ... Non-conformances and the progress and effectiveness of corrective and preventive actions”.
R10	<b>Recommendation:</b> EA should further develop and implement its Integrated Management System to fully comply with the IAEA safety standards.

## Changes since the initial IRRS mission

The management system of EA is organized around five regulatory core processes: Pre-permitting, Permitting, Regulation of site, Enforcement, and Surrender Permit. Since 2019, EA has further improved them in due consideration of the observations made in 2019.

EA Instruction LIT 12477 specifies to peer review, at relevant times, all major documents, including the draft and final Decision Document and permit. This is reflected in the "Duly Made and Determination Checklist (LIT 12478)" which includes in Part 2 / Phase 5 "Reviewing, Deciding and Issuing" a check to ensure independent review before making decisions significant for safety.

EA has established provisions to regulate discharge of radiation and nuclear facilities in accordance with a graded approach. For example, "Assessing environmental permit compliance for radioactive substances activities" LIT 12427 describes a classification system of non-compliances based on the determination of its "reasonably foreseeable impact" to determine the proportionate regulatory response. Then, a non-compliance which may lead to radioactive discharge significantly in excess of a permitted discharge limit causing people to receive a radiation dose above statutory limits would be Compliance Classification Scheme (CCS) Category 1, whereas an incident having no, or negligible, impact on people and the environment (e.g., failure to return information on time, as required by the permit) would be classified categorized CCS 4.

The documentation is managed through a web-based application. The IRRS team noted this system is user-friendly and allows an easy navigation between processes through effective interfaces.

Key Performance Indicators (KPIs) covering the regulatory functions of EA are set up together with associated targets. They are reviewed quarterly during the National Scorecard Review meeting. In addition to KPIs, EA has established a number of tools to measure, assess and improve its management and performance. Thus, EA commissions internal and external audits and the non-conformances are properly managed by the EA Internal Audit.

## Status of the initial mission finding

**Recommendation 10 (R10) is closed** as all the observations on the management system have been effectively addressed.

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The existing management systems of CQC does not fully comply with the IAEA Safety Standards with respect to the formalization process for identification, planning, control and management of organizational change, content and format of the inspections and enforcement processes with regards to the establishment of associated performance indicators and process owners, arrangements for measurement, assessment and improvement of leadership for safety and of safety culture. Some of these findings were also identified by the CQC and will be considered in its next strategy.*

(1)

**BASIS: GSR Part 2, Requirement 10 states that** *"Processes and activities shall be developed and shall be effectively managed to achieve the organization's goals without compromising safety".*

(2)

**BASIS: GSR Part 2, para 4.29 states that** *"The sequencing of a process and the interactions between processes shall be specified so that safety is not compromised. Effective interaction between interfacing processes shall be ensured".*

(3)

**BASIS: GSG 12, para 5.13 states that** *"The roles and responsibilities of individuals involved in each process should be identified in the development phase of the integrated management system, which includes the identification and definition of the processes. For each process a process owner should be assigned".*

(4)

**BASIS: GSR Part 2, para 4.13 states that** *"Provision shall be made in the management system to identify any changes (including organizational changes and the cumulative effects of minor changes)*

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

	<i>that could have significant implications for safety and to ensure that they are appropriately analysed”.</i>
(5)	<b>BASIS: GSR Part 2, Requirement 14 states that</b> “Senior management shall regularly commission assessments of leadership for safety and of safety culture in its own organization”.
S4	<b>Suggestion: Within its Integrated Management System, CQC should consider enhancing its processes for oversight of radiation safety.</b>

### Changes since the initial IRRS mission

CQC issued in 2021 a new strategy in order to discharge its responsibilities in a more effective and efficient manner in accordance with a graded approach with a better consideration of risks and uncertainties. The implementation of the strategy has resulted in significant changes of the organization and CQC management system.

At the time of the IRRS follow-up mission, the changes were still ongoing including the development of the new management system to support new ways of regulating health and care providers. The IRRS team was informed that the current system will be abandoned in 2024, with the objective to be replaced by the new management system.

### Status of the initial mission finding

**Suggestion 4 (S4) remains open** as new processes are not yet finalized.

## 4.4. MANAGEMENT OF RESOURCES

There were no findings in this area in the initial IRRS mission.

## 4.5. MANAGEMENT OF PROCESSES AND ACTIVITIES

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The existing management systems of HSE does not fully comply with the IAEA Safety Standards with respect to the clear visibility of the process owners.*

(1)	<b>BASIS: GSR Part 2, Requirement 10 states that</b> “Processes and activities shall be developed and shall be effectively managed to achieve the organization’s goals without compromising safety”.
(2)	<b>BASIS: GSG 12, para 5.13 states that</b> “The roles and responsibilities of individuals involved in each process should be identified in the development phase of the integrated management system, which includes the identification and definition of the processes. For each process a process owner should be assigned”.
(3)	<b>BASIS: GSG 12, para 5.14 states that</b> “The process owner is responsible for the management of the assigned process and should be made accountable for ensuring that the process is clearly identified, documented, reviewed, maintained and improved. Usually, this is a manager with a direct interest in the outcome of the process or who has the most resources involved”.
S5	<b>Suggestion: HSE should consider improvement of its Integrated Management System with respect to the clear visibility of the process owners.</b>

### Changes since the initial IRRS mission

The management system of HSE is based on a set of documents, mainly procedures and guidance, that support the conduct of regulatory activities such inspections, enforcement and investigations, in a consistent manner. The IRRS team highlighted that the use of well-designed processes enables all aspects of regulatory activities to run in an

efficient manner and facilitate the review and monitoring of the workflows, and this includes visibility and clarity in process ownership.

**Status of the initial mission finding**

**Suggestion 5 (S5) remains open** as no progress has been made with respect to the clear visibility of the process owners.

**4.6. CULTURE FOR SAFETY**

There were no findings in this area in the initial IRRS mission.

**4.7. MEASUREMENT, ASSESSMENT AND IMPROVEMENT**

There were no findings in this area in the initial IRRS mission.

## 5. AUTHORIZATION

### 5.1. GENERIC ISSUES

There were no findings in this area in the initial IRRS mission.

### 5.2. AUTHORIZATION OF NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

### 5.3. AUTHORIZATION OF FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

### 5.4. AUTHORIZATION OF RADIOACTIVE WASTE MANAGEMENT FACILITIES

There were no findings in this area in the initial IRRS mission.

### 5.5. AUTHORIZATION OF RADIATION SOURCES FACILITIES AND ACTIVITIES

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** Under IRR17 and IRRN17, employers who intend to work with ionizing radiations must either notify, register or gain consent from the competent regulatory body. When a consent from the regulatory body is required (i.e., an authorization), safety assessments are not required to be submitted to and subsequently assessed by the regulatory body prior to the granting of the authorization.

(1)

**BASIS:** GSR Part 1 Requirement 24 states that “Prior to the granting of an authorization, the applicant shall be required to submit a safety assessment, which shall be reviewed and assessed by the regulatory body in accordance with clearly specified procedures. The extent of the regulatory control applied shall be commensurate with the radiation risks associated with facilities and activities, in accordance with a graded approach”.

(2)

**BASIS:** GSR Part 3, Para 3.29 states that “the regulatory body shall establish requirements for persons or organizations responsible for facilities and activities that give rise to radiation risks to conduct an appropriate safety assessment 28. Prior to the granting of an authorization, the responsible person or organization shall be required to submit a safety assessment, which shall be reviewed and assessed by the regulatory body”.

(3)

**BASIS:** GSR Part 1 Requirement 24, para. 4.31 states that “In the granting of an authorization for a facility or an activity, the regulatory body may have to impose limits, conditions and controls on the authorized party’s subsequent activities”.

R11

**Recommendation:** The ONR, HSE and HSENI should request the applicants seeking authorization for the safety significant activities and facilities to submit a safety assessment in accordance with IRR17, which should be reviewed before granting the authorization. When deemed necessary, the ONR, HSE and HSENI should be able to impose limits, conditions and controls on the authorized party’s subsequent activities.

#### Changes since the initial IRRS mission

HSE with ONR and HSENI, in coordination, have developed a new process for issuing consent authorizations and have developed two electronic systems for its effective implementation. According to the new process, applicants

seeking consent must submit safety assessment of the facility and activity. ONR is responsible for issuing consent to practices on nuclear sites and HSE and HSENI in Northern Ireland are responsible for issuing consent to all practices on non-nuclear sites. Applications for consent in the new process are submitted through the Well-Informed Regulatory Decisions (WIREd) system for ONR, and the RADiation, Authorisations, and Notifications (RADAN) system for HSE and HSENI.

ONR, HSE and HSENI have developed guidance on the content and form of submitting safety assessment and the guidance documents are available at their websites. Following the review of the safety assessment, an inspection will be conducted and if all safety requirements are fulfilled, a consent will be issued. New consents will be valid for five years and if the facility has not reported any material change, the consent will be renewed. Guidance on what constitutes a material change has been produced and is available on ONR and HSE’s websites.

ONR, HSE and HSENI have started implementation of the new process in October 2023 and authorized parties that had received consent prior to October 2023 are required to reapply to the regulatory authorities. The IRRS team was informed that the backlog for re-issuing consents in accordance with the new process is expected to be completed in the next five years in all regulatory authorities.

**Status of the initial mission finding**

**Recommendation 11 (R11) is closed** as HSE, with ONR and HSENI have established and are implementing a new process of reviewing safety assessment of the facility or activity before consent is issued.

**5.6. AUTHORIZATION OF DECOMMISSIONING ACTIVITIES**

There were no findings in this area in the initial IRRS mission.

**5.7. AUTHORIZATION OF TRANSPORT**

There were no findings in this area in the initial IRRS mission.

**5.8. AUTHORIZATION ISSUES FOR OCCUPATIONAL EXPOSURE**

2019 MISSION RECOMMENDATIONS, SUGGESTIONS	
<b>Observation:</b> <i>Providing training and proper instructions for work are required to be provided by the employers or external services and does not need approval from the regulatory body. The radiation protection supervisors may receive training from service providers which are not approved by any regulatory body.</i>	
(1)	<b>BASIS:</b> <i>GSG-7, para. 3.156 states that “It may be appropriate and convenient for the regulatory body to recognize certain training centres and courses for their quality and suitability. Such recognition can be formally conferred by the process of accreditation”.</i>
S6	<b>Suggestion:</b> <b>The HSE should consider setting up appropriate mechanisms for either the formal recognition or accreditation of training and educational service providers.</b>

**Changes since the initial IRRS mission**

There were no changes since the initial mission.

According to the Health and Safety at Work etc. Act 1974 it is a general duty of the employer to provide training to workers. HSE considered the possibility to approve training and educational service providers, but this would require fundamental changes in the regulatory framework. Radiation protection supervisors and workers may receive training and education from any such service provider chosen by their employer. It is up to the discretion of their employer to assess the appropriateness of these services.

### Status of the initial mission finding

**Suggestion 6 (S6) remains open** as no appropriate analyses were conducted for either the formal recognition or accreditation of training and educational service providers.

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** According to the approved code of practice guideline for IRR17, the regulation gives the opportunity to employ a suitably qualified person to perform calibrations of instruments. This devolves the responsibility of employing the appropriate services for calibration to the employers, while the regulatory body should retain the right to approve and recognise such services.

(1) **BASIS: GSR Part 3 Requirement 20, para. 3.73 (c) states that** “The regulatory body shall be responsible, as appropriate, for: ...  
(c) Authorization or approval of service providers for individual monitoring and calibration services ...”

(2) **BASIS: GSG-7 8.1 states that** “Any technical service providers for protection and safety should be qualified by certain procedures. The services provided by technical service providers can be divided into two categories: ...  
(b) Calibration and testing and assay services, including:  
(i) Monitoring services, including individual monitoring, workplace monitoring and environmental monitoring;  
(ii) Calibration and calibration verification services for monitoring devices and radiation sources.”

S7 **Suggestion: The HSE should consider providing, in addition to the UKAS, approval to certain calibration services or individuals.**

### Changes since the initial IRRS mission

There were no changes since the initial mission.

HSE considered whether to implement the suggestion and has decided that it will not do so, on a basis similar to Suggestion 6. In addition, HSE noted they believe it is not the role of the regulator to approve accreditation services provided by third parties. However, HSE noted that it does operate two radiation-related approval regimes as part of its regulatory function.

### Status of the initial mission finding

**Suggestion 7 (S7) remains open** as there are no mechanisms in place for the approval of individuals performing calibrations and calibration services which are not accredited by the UKAS.

## 5.9. AUTHORIZATION ISSUES FOR MEDICAL EXPOSURE

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** The IR(ME)R does not require authorization for other sources than for the administration of radioactive substances to individuals as part of medical exposures. Hence, the use of medical applications, such as plain radiography; computed tomography; interventional radiology; or linear accelerators for external beam radiotherapy, for medical purposes (diagnosis and treatment) is not subject to an authorization process in relation to medical exposure.



## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

(1)	<b>BASIS: SSG-46, para. 2.71 states that</b> “Regulatory bodies should consider which form of authorization is appropriate for a given type of medical radiation facility. Coupled with the type of authorization is the level of complexity of the documentation that should be submitted to the regulatory body prior to the authorization”.
(2)	<b>BASIS: SSG-46, para. 2.72 states that</b> “Medical radiation facilities are, in principle, better candidates for individualized licensing than for registration. It would be expected that licensing would be used for radiation therapy facilities, nuclear medicine facilities, facilities performing image guided interventional procedures and for most diagnostic radiology facilities. For some simple forms of diagnostic radiology, such as dental radiography (without CBCT) and DXA, authorization through registration may be acceptable”.
S8	<b>Suggestion: The UK Government should consider establishing a licensing regime for radiation therapy facilities, facilities performing image guided interventional procedures and diagnostic radiology facilities with regards to medical exposures.</b>

### Changes since the initial IRRS mission

Currently, the use of medical applications, such as plain radiography, computed tomography, and interventional radiology for medical purposes (diagnosis and treatment), is subject to authorization by registration from HSE and HSENI.

HSE have developed and launched in October 2023 a new electronic system, RADAN, for applications for consent that would also include information of registrants. The IRRS team was informed that regulatory authorities responsible for enforcing the Ionising Radiation (Medical Exposure) Regulations (IR(ME)R), such as CQC, HIS and HIW, would have access to the database by April 2024 to enable them to have information on all radiation sources in medical applications. This is expected to provide medical regulators with sufficient detail to enable adequate regulatory oversight of medical establishments providing medical exposure services. However, considering that RADAN is a new system and information on facilities and radiation sources is still being collected, it is not yet clear whether the information that would be provided to medical regulators would be sufficient for a comprehensive regulatory oversight of medical exposure in medical facilities nor systems of frictionless sharing of this information tested and in place. (See Recommendation 7)

### Status of the initial mission finding

**Suggestion 8 (S8) remains open** as at this stage, medical regulators do not have access to the information and cannot confirm its efficacy.

## 5.10. AUTHORIZATION ISSUES FOR PUBLIC EXPOSURE

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** The regulatory framework related to “Consumer Products” is not reflected in the draft document “Framework for Radiation Protection and Nuclear Safety”. Also, there is no sufficient guidance available pertaining to “Consumer Products” regulation.

(1)

**BASIS: GSR Part 3, Requirement 29 para 3.118 states that** “The government or the regulatory body shall establish the responsibilities of registrants and licensees, of suppliers, and of providers of consumer products in relation to the application of requirements for public exposure in planned exposure situations”.

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

S9

**Suggestion:** The UK Government should consider including information on the regulation of “Consumer Products” in its draft “Framework for Radiation Protection and Nuclear Safety”. In addition to that, the OPSS and the HSE should consider developing further guidance pertaining to “Consumer Products” regulations.

### Changes since the initial IRRS mission

DESNZ renamed the “Framework for Radiation Protection and Nuclear Safety” to “How we regulate radiological and civil nuclear safety in the UK” and included a new chapter. The new chapter “Consumer products and radiation” contains information on which regulatory authorities are responsible for the regulatory oversight of consumer products. This document informs consumers and clarifies the roles of the regulators and the responsibilities of the manufacturers and importers. It was not intended to be a guidance document.

In addition, the team noted that OPSS published two new documents under the main title “Product Safety and Noncompliance Notification Guidance” to help businesses and authorities comply with consumer product regulations, however these do not contain guidance specific for consumer products which deliberately incorporate radionuclides.

### Status of the initial mission finding

**Suggestion 9 (S9) remains open** as guidance on consumer products which deliberately incorporate radionuclides has not been developed.

## 6. REVIEW AND ASSESSMENT

### 6.1. GENERIC ISSUES

#### 6.1.1. MANAGEMENT OF REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

#### 6.1.2. ORGANIZATION AND TECHNICAL RESOURCES FOR REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

#### 6.1.3. BASES FOR REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

#### 6.1.4. PERFORMANCE OF REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

### 6.2. REVIEW AND ASSESSMENT FOR NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

### 6.3. REVIEW AND ASSESSMENT FOR FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

### 6.4. REVIEW AND ASSESSMENT FOR WASTE MANAGEMENT FACILITIES

There were no findings in this area in the initial IRRS mission.

### 6.5. REVIEW AND ASSESSMENT FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

There were no findings in this area in the initial IRRS mission.

### 6.6. REVIEW AND ASSESSMENT FOR DECOMMISSIONING ACTIVITIES

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The ONR review of decommissioning plans is not in line with UK decommissioning policy.*

(1)

**BASIS:** GSG 47 para 7.11 states that “As stated in para. 7.5 of GSR Part 6 [1], the decommissioning plan is required to be updated by the licensee and is required to be reviewed by the regulatory body periodically (typically every five years or as prescribed by the regulatory body), or when specific circumstances warrant.”

S10

**Suggestion:** The ONR should consider revising the relevant decommissioning guidance to provide clarity on how it undertakes periodic regulatory review of decommissioning plans.

## Changes since the initial IRRS mission

In March 2023, the UK Government and Devolved Administrations published draft a UK policy framework for Managing Radioactive Substances and Nuclear Decommissioning for consultation. This draft policy no longer recommends ONR to conduct periodic review of operators' decommissioning plans. This enables ONR to apply a graded approach to review site decommissioning strategies and plans.

Following publication of the draft policy, ONR has reviewed its Technical Assessment Guide (TAG) on decommissioning (NS-TAST-GD-026; (TAG 026)) which is technical guidance to ONR inspectors in relation to decommissioning. Recent version 6 of TAG 026, which was published in January 2024, identifies the range of regulatory tools to undertake periodic review of operators' decommissioning plans:

- Inspection of decommissioning arrangements and their implementation;
- Ongoing regulatory oversight of progress with implementation of decommissioning strategies and plans as part of routine site regulation;
- Assessment of safety documents submitted to ONR in accordance with Licence Condition 15, particularly where a facility is expected to enter into decommissioning in the next review period;
- Technical Assessment Guide on periodic safety review (NS-TAST-GD-050; (TAG 050)) which was updated and published in December 2022 provides further guidance. Expectations for a decommissioning periodic safety review performed by ONR inspectors are summarised in Annex 2 of TAG 050; and
- Assessment of decommissioning strategies and plans for proposed new nuclear power plants in the Generic Design Assessment (GDA) process.

Responsibility for reviews of decommissioning strategies and plans rests with the Nuclear Liabilities Regulation Specialism, which is ONR's expert group on decommissioning. This group mandate includes planning the oversight activities for decommissioning.

## Status of the initial mission finding

**Suggestion 10 (S10) is closed**, as ONR has updated its relevant decommissioning guidance TAG 026 and TAG 050 to provide clarity on regulatory reviews of decommissioning plans.

### 6.7. REVIEW AND ASSESSMENT FOR TRANSPORT

There were no findings in this area in the initial IRRS mission.

### 6.8. REVIEW AND ASSESSMENT FOR OCCUPATIONAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

### 6.9. REVIEW AND ASSESSMENT FOR MEDICAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

### 6.10. REVIEW AND ASSESSMENT FOR PUBLIC EXPOSURE

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *It is not always obvious for the operator to decide on the on-site "representative person" in the non-nuclear facility towards compliance of IRR17 requirements.*

(1)

**BASIS: GSR Part 3 Requirement 29 states that:** *"The government or the regulatory body shall establish the responsibilities of relevant parties that are specific to public exposure, shall establish and enforce requirements for optimization, and shall establish, and the regulatory body shall enforce*

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

	<i>compliance with, dose limits for public exposure”.</i>
S11	<b>Suggestion:</b> HSE should consider making a guidance document on the identification of the on-site “representative person” in the non-nuclear practices. This would assist the operator and HSE to ensure appropriate implementation of the requirements with respect to public exposures.

### Changes since the initial IRRS mission

HSE implements a new authorization scheme for consent. Safety assessments are submitted at the time of application for a consent. The submitted safety assessments identify the member of the public (“representative person”) and dose constraints that were used for the risk assessment. The HSE did not experience any difficulties in determining the representative person during its reviews of the safety assessments. The Approved Code of Practice IRR17 provides guidance on this matter and advises the use of 0.3 mSv annually as a dose constraint for such persons who are most likely to receive the highest dose from a practice.

In addition, the team noted that the results of the 2022 “Post Implementation Review of the Ionising Radiations Regulations 2017 (IRR17)” also did not identify difficulties pertaining to “representative persons.”

### Status of the initial mission finding

**Suggestion 11 (S11) is closed** as the HSE made appropriate arrangements to ensure that compliance with the requirements of IRR17 for the risk assessment of members of the public are in place.

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The MoU and any other arrangements between the HSE and EA have not been updated to incorporate the overlap of responsibilities arising from revised IRR17 and EPR, 2016.*

(1)	<p><b>BASIS: GSR Part 1 Requirement 7 para 2.18 states that:</b> “Where several authorities have responsibilities for safety within the regulatory framework for safety, the responsibilities and functions of each authority shall be clearly specified in the relevant legislation. The government shall ensure that there is appropriate co-ordination of and liaison between the various authorities concerned in areas such as: (1) Safety of workers and the public; (2) Protection of the environment ...;</p> <p><i>The co-ordination and liaison can be achieved by means of memoranda of understanding, appropriate communication and regular meetings. Such co-ordination assists in achieving consistency and in enabling authorities to benefit from each other’s experience”.</i></p>
S12	<b>Suggestion:</b> HSE and EA should consider updating their MoU to ensure it reflects changes in relevant legislation and IAEA guidance since 2012.

### Changes since the initial IRRS mission

A new draft MoU between HSE and EA includes the changes in relevant legislation, however it has not been issued.

### Status of the initial mission finding

**Suggestion 12 (S12) is closed on the basis of progress made and confidence in effective completion in due time** as the MoU between HSE and EA has been drafted and only formal acceptance of this document is pending.

## 7. INSPECTION

### 7.1. GENERIC ISSUES

There were no findings in this area in the initial IRRS mission.

### 7.2. INSPECTION OF NUCLEAR POWER PLANTS

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *ONR inspection programme guidance does not establish expectations regarding how much general surveillance of facilities inspectors should be performing and how it should be accomplished.*

(1)	<b>BASIS: GSG 13, Requirement 28, para. 3.271 states that</b> <i>“The regulatory inspection programme should provide time for general surveillance of the facility or activity by regulatory inspectors. Such surveillance is aimed at gaining an overall impression of the authorized party’s capabilities and performance and is not restricted to specifically designated components and systems or designated scheduled activities and tests”.</i>
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S13	<b>Suggestion: ONR should develop clear expectations and associated guidance for inspection staff in how much time should be dedicated to general surveillance of facilities and how it should be accomplished independent of scheduled inspection activities.</b>
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#### Changes since the initial IRRS mission

ONR developed and issued updated detailed inspector guidance ONR-INSP-GD-059, “Guidance for Inspection Strategy Planning and Recording,” on the generation and delivery of a scheduled and reactive site surveillance plan for all sites. This guidance was revised to include clearer expectations and more detailed guidance on the potential content and purpose of other site engagements, and when ONR would expect inspectors to plan for and deliver site governance surveillance, including engagement with duty holder organisation representatives.

Additionally, ONR developed and issued updated guidance ONR-INSP-GD-064, “General Inspection Guide,” related to inspection delivery to include a clear expectation as to the frequency and duration of general site surveillance activities (Section 5.2):

*“NSIs visiting nuclear licensed sites should consider setting aside time, typically half a day, on each visit for general site or plant walk-downs and interaction with site staff and support contractors etc. The aim is to gain an overall impression of the prevailing site safety culture and the site material condition.”*

The guidance also includes suggested facility activities to observe during general surveillance observation time to help maintain consistency of regulatory intelligence gathering across all ONR’s sites.

The updated ONR guidance provides clearer expectations for the frequency, duration, and scope of general surveillance activities at sites, and adherence to this expectation is checked as part of existing operational leadership oversight of the operational teams allocated to site(s).

#### Status of the initial mission finding

**Suggestion 13 (S13) is closed** on the basis of ONR having updated the inspection programme to include clear expectations and guidance for conducting general surveillance inspections.

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *EA inspection programme guidance does not stipulate how to determine the appropriate frequency of inspection in accordance with a graded approach for nuclear facilities.*

(1)	<b>BASIS: GSR Part 1 Requirement 4.50 states that</b> <i>“The regulatory body shall develop and</i>
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## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

	<i>implement a programme of inspection of facilities and activities, to confirm compliance with regulatory requirements and with any conditions specified in the authorization. In this programme, it shall specify the types of regulatory inspection (including scheduled inspections and unannounced inspections), and shall stipulate the frequency of inspections and the areas and programmes to be inspected, in accordance with a graded approach”.</i>
<b>R12</b>	<b>Recommendation:</b> EA should provide guidance on how to apply a graded approach in determining the appropriate frequency of inspections for the areas and programs inspected for nuclear facilities.

### Changes since the initial IRRS mission

The Environment Agency introduced a new nuclear Radioactive Substances Regulation (RSR) business planning process (LIT59982) published on 27 July 2022. The purpose of the new process is to describe the key arrangements for planning and managing the nuclear RSR business. Nuclear RSR business includes providing advice and guidance for projects and programmes; generic design assessment; permitting; compliance; enforcement; radiation safety; radiological monitoring and assessment; and radiation incident management.

The new business planning document defines the Environment Agency’s graded approach to the regulation of nuclear sites. This document also fulfils the requirement of the Environmental Permitting Regulations (England and Wales) 2016 (as amended) (Schedule 23, Part 4, Section 3, Paragraph 5) which states: “When establishing an inspection programme in relation to radioactive substance activities, the regulator must take into account the potential magnitude and nature of the hazard associated with such activities, a general assessment of radiation protection issues in the activities, and the state of compliance with the requirements of these Regulations.”

Annex 1 of LIT59982 covers prioritisation of resources for the Nuclear Sites Programme, with reference to a nuclear sites resource prioritisation spreadsheet tool used to model the range of resource expected to be required to deliver these activities at each of the nuclear sites.

The nuclear sites resource prioritisation tool is based on a ‘regulated unit’ factor. This factor takes account of the size; complexity; and nature and magnitude of the potential hazard of each nuclear site. The ‘regulated unit’ factors for nuclear sites are detailed and justified in the nuclear sites’ prioritisation spreadsheet tool.

A rolling programme of core inspections is carried out at nuclear sites on environmental management and leadership; radioactive effluents; lower activity waste and radiological environmental monitoring to ensure that operators are minimising the risk to the environment through permit compliance. The default number of inspections is modified by the ‘regulated unit’ factor to ensure there is a graded approach.

The Environment Agency’s Site Environmental Review (SER) reports describe the regulatory activities which will be conducted at each nuclear site to protect and enhance the environment, based on the hazards, issues and risks at the site and the history of compliance. This evidence is collated in strengths, weaknesses, opportunities and threats analysis. The allocation of additional compliance assessment resources is based on the environmental risks and issues described in the SER and may result in additional inspections to the core inspections. Addressing risks / issues may be dealt with through engagement with operators and provision of advice and guidance.

The team determined the nuclear sites resource prioritisation tool to be a comprehensive mechanism to effectively integrate the hazards, issues and risks and the history of compliance at sites to develop the frequency of inspections and the areas and programmes to be inspected, in accordance with a graded approach. Therefore, the IRRS team considered the nuclear sites resource prioritisation tool as a Good Performance.

### Status of the initial mission finding

**Recommendation 12 (R12) is closed** on the basis of EA having provided guidance on how to apply a graded approach in the frequency and scope of inspections.

### 7.3. INSPECTION OF FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

### 7.4. INSPECTION OF WASTE MANAGEMENT FACILITIES

There were no findings in this area in the initial IRRS mission.

### 7.5. INSPECTION OF RADIATION SOURCES FACILITIES AND ACTIVITIES

2019 MISSION RECOMMENDATIONS, SUGGESTIONS	
<p><b>Observation:</b> <i>HSE, HSENI, and ONR do not have inspection programmes that covers all relevant authorized facilities and activities which stipulate the inspection frequency and the areas and programmes to be inspected, in accordance with a graded approach.</i></p>	
(1)	<p><b>BASIS:</b> <b>GSR Part 1 (Rev 1) Requirement 29, para. 4.50 states that</b> <i>“The regulatory body shall develop and implement a programme of inspection of facilities and activities, to confirm compliance with regulatory requirements and with any conditions specified in the authorization. In this programme, it shall specify the types of regulatory inspection (including scheduled inspections and unannounced inspections), and shall stipulate the frequency of inspections and the areas and programmes to be inspected, in accordance with a graded approach”.</i></p>
R13	<p><b>Recommendation:</b> <b>HSE, HSENI and ONR should develop and implement a programme of inspection which stipulate the frequency of radiation sources safety related inspections and the areas and programmes to be inspected, in accordance with a graded approach.</b></p>

#### Changes since the initial IRRS mission

HSE develops an annual plan that targets a certain number of inspections. The HSE inspection plan currently focuses only on facilities and activities that have consent. The new process of reviewing safety assessments prior to issuing consent, introduced in October 2023, also includes inspection before consent is issued. As a result, the IRRS team was informed that due to resource limitations, the focus of HSE radiation specialist inspections for the coming years would be concentrated on new consent applicants and those facilities and activities that have been issued consent prior to October 2023. New consents issued are valid for five years, at which time they would be up for renewal. The IRRS team was informed that the renewal process will not include inspection unless changes have been reported by the authorized party or HSE has gathered information that triggers inspection. HSE’s inspection is risk based and intelligence informed.

Similarly, HSENI plans to implement inspection with a focus on both new applicants and the backlog of consent facilities and activities in accordance with the new process. HSENI also plans each year to inspect some percentage of registration inspections. The IRRS team was informed that HSENI inspectors conducted inspection in 38% of consent facilities and activities in four years until March 2023, although the number of inspections were limited due to the pandemic. HSENI’s inspection plan is also risk based and intelligence informed.

ONR is updating its inspection guide TIG54 to establish an inspection frequency; for consent practices every five years; for registered practices every 6-8 years; and notified practices only where intelligence indicates it is necessary. The guide is expected to be approved in February 2024. The guide also includes provisions that the frequency of inspection related to IRR17 are set based on the level of hazard and risk posed by the facility or activity and also the authorized party’s safety performance. Radiation sources and practices under the authorization scheme of ONR include those authorized by notification only, by registration or consent. When contractors authorized by HSE conduct work in a nuclear facility, the facility has to get consent from ONR to ensure safety. If ONR decides that an



inspection is required, an inspection would be conducted; where necessary, the inspection may be a joint inspection together with HSE. For nuclear facilities that have their own radiation sources, inspections are planned based on the risk and intelligence informed approach similar to all other facilities and activities.

The frequencies and areas of inspection are specified by respective ONR operational divisions based on a specific risk informed and intelligence led approach to inspect a certain facility and activity. ONR has started implementing the new process for issuing consent which includes a review of the safety assessment submitted by the applicant, and pre-consent inspection, and plans to address all facilities with consent in a time limit of five years. The IRRS team was informed that during renewal of consents, ONR might conduct an inspection at the facility or activity based on the risk informed and intelligence led approach to inspections.

### Status of the initial mission finding

**Recommendation 13 (R13) remains open** as HSE and HSENI have not developed an inspection programme that stipulates the frequency of radiation sources safety related inspections.

## 7.6. INSPECTION OF DECOMMISSIONING ACTIVITIES

There were no findings in this area in the initial IRRS mission.

## 7.7. INSPECTION OF TRANSPORT

There were no findings in this area in the initial IRRS mission.

## 7.8. INSPECTION OF OCCUPATIONAL EXPOSURE

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *HSE, HSENI, and ONR inspection guidance does not provide adequate clarity to ensure inspection of all relevant safety aspects associated with IRR17 inspections. The existing procedure relies heavily on the individual inspector’s experience and expertise to cover all relevant safety aspects.*

- |     |  |
|-----|--|
| (1) | <p><b>BASIS: GSR Part 1 Requirement 29, para. 4.53 states that</b> “<i>In conducting inspections, the regulatory body shall consider a number of aspects, including:</i></p> <ul style="list-style-type: none"> <li>- Structures, systems and components and materials important to safety;</li> <li>- Management systems;</li> <li>- Operational activities and procedures;</li> <li>- Records of operational activities and results of monitoring;</li> <li>- Liaison with contractors and other service providers;</li> <li>- Competence of staff;</li> <li>- Safety culture;</li> <li>- Liaison with the relevant organization for joint inspections, where necessary”.</li> </ul> |
|-----|--|

R14	<p><b>Recommendation:</b> <b>HSE, HSENI, and ONR should review their individual occupational exposure inspection guidance to ensure they adequately address the relevant safety aspects to be included in the scope of inspections.</b></p>
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### Changes since the initial IRRS mission

ONR has issued several technical inspection guides to support its inspectors for assessing duty holders’ compliance with the requirements of IRR17. ONR has reviewed and updated the technical inspection guide TIG-54 and clarified in a matrix, provided as Annex to the inspection guide, the specific IRR17 requirements that should be taken into consideration during inspection. The IRRS team was informed that TIG-54 is also planned to be reviewed in September 2027.

ONR, HSE and HSENI organize competence training, mainly on how to conduct inspections, for their inspectors, and inspectors are assessed against a competence framework to ensure that they have the necessary expertise for conducting an inspection. The IRRS team was also informed that there is an internal peer review mechanism to assess the performance of inspections and share knowledge and information among inspectors.

HSE has developed guidance (Guidance on Inspection under the Ionizing Radiations Regulations 2017 (IRR17)) and made it available to its inspectors through its intranet document management system since December 2021, together with other relevant guides. HSENI has also adopted the HSE guidance (Guidance on Inspection under the Ionizing Radiations Regulations (Northern Ireland) 2017) and made it available to its inspectors.

The IRRS team was informed that HSE and HSENI have practice-specific “Inspection Guidance for Radiation Specialists” documents that also include corresponding enforcement actions for preparation and conduct of inspection of the respective facilities and activities. The IRRS team was provided with examples of such documents.

**Status of the initial mission finding**

**Recommendation 14 (R14) is closed** as ONR, HSE and HSENI have developed guidance, they train their inspectors and evaluate their competence to ensure that all safety aspects are assessed during inspection.

**7.9. INSPECTION OF MEDICAL EXPOSURE**

2019 MISSION RECOMMENDATIONS, SUGGESTIONS	
<p><b>Observation:</b> <i>CQC, HIW and HIS do not have a programme of inspection that includes the frequency of inspections for all facilities and areas and programmes to be inspected, in accordance with a graded approach. This has been recognized in the action plan of CQC, HIW and HIS as applicable.</i></p>	
(1)	<p><b>BASIS: GSR Part 1 (Rev 1) Requirement 29 § 4.50 states that</b> “<i>The regulatory body shall develop and implement a programme of inspection of facilities and activities, to confirm compliance with regulatory requirements and with any conditions specified in the authorization. In this programme, it shall specify the types of regulatory inspection (including scheduled inspections and unannounced inspections) and shall stipulate the frequency of inspections and the areas and programmes to be inspected, in accordance with a graded approach</i>”.</p>
(2)	<p><b>GSR Part 1 (Rev 1) Paragraph 4.52 states that</b> “<i>inspections shall cover all areas of responsibility of the regulatory body, and the regulatory body shall have the authority to carry out independent inspections. Provision shall be made for free access by regulatory inspectors to any facility or activity, at any time, within the constraints of ensuring operational safety at all times and other constraints associated with the potential for harmful consequences. These inspections may include, within reason, unannounced inspections. The manner, extent and frequency of inspections shall be in accordance with a graded approach</i>”.</p>
R15	<p><b>Recommendation: CQC, HIW, and HIS should develop a programme of inspection that includes the frequency of inspections for all facilities and areas and programmes to be inspected, in accordance with a graded approach.</b></p>

**Changes since the initial IRRS mission**

CQC developed a Standard Operating Procedure ‘CQC IR(ME)R Graded approach model for regulating the safety of medical exposures’ that includes the frequency of inspections for all facilities, areas and programmes in accordance with a graded approach. The IRRS team was informed that pilot testing of the new methodology commenced, following its approval in September 2023, and the methodology will be fully tested, monitored, and adjusted once full implementation commences in April 2024. The IRRS team was informed that CQC’s inspection plan for April 2024 to March 2025 was developed in accordance with the new inspection programme.

CQC currently has 10 specialist inspectors across all modalities to ensure the correct expertise is aligned to assess compliance with the regulations in the implementation of the inspection programme.

The IRRS team was informed that CQC is exploring options including providing a train-the-trainer programme for CQC’s dental regulators to ensure that the inspection programme will be released in accordance with its established frequency in dental practices.

HIS has developed a guidance document ‘Ionising Radiation (Medical Exposure) Regulations - Inspection Methodology’, issued in December 2023. The document establishes the frequency of inspections for medical facilities and practices under its oversight in accordance with a graded approach in three modalities: general diagnostics, nuclear medicine and radiotherapy services.

Although HIS has developed a guidance document, there are plans to conduct inspection at least once in all facilities under its regulatory oversight before implementation of the new inspection programme commences and as a result implementation of an inspection programme based on the graded approach is planned for April 2025. The IRRS team was informed that HIS has currently two inspectors that meet all elements of the competency framework for IR(ME)R inspections; however, one of the inspectors, although expected to be available to support inspections and training, has moved on to other responsibilities within HIS. Recruitment plans are underway and HIS is developing a training programme that will increase the number of inspectors by four to five staff. This will create increased capacity and resilience by having a greater number of inspectors able to conduct IR(ME)R inspections as part of their role. The IRRS team was informed that HIS’s approach to inspection is focused on inspection of service providers based on sampling of the several facilities and radiation sources they might have, not on each facility or activity. This approach could potentially affect the effective implementation of the inspection programme when implemented.

HIW has not developed a programme of inspection for facilities and activities that includes frequency of inspection. HIW currently has the capacity to carry out eight inspections per inspection year across Wales, in Diagnostic Imaging, Nuclear Medicine, and Radiotherapy. Relevant areas of IR(ME)R compliance also form part of the Dental Inspection Methodology for HIW. The IRRS team was informed that due to the resources available to carry out IR(ME)R compliance inspections, a programme of inspection that includes frequency of inspections has not yet been developed.

#### **Status of the initial mission finding**

**Recommendation 15 (R15) remains open** for HIW and HIS as they have not developed and implemented an inspection programme that includes frequency of inspection based on a graded approach.

### **7.10. INSPECTION OF PUBLIC EXPOSURE**

There were no findings in this area in the initial IRRS mission.

## 8. ENFORCEMENT

### 8.1. ENFORCEMENT POLICY AND PROCESS

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *Other governmental bodies may need to be informed about ONR enforcement actions. Exchange of information on enforcement actions is not fully formalised, and not addressed in enforcement related guidelines.*

(1)

**BASIS:** GSG-13 para. 3.46 states that “...Guides should also indicate which other governmental organizations, if any, are to be informed in the event of enforcement actions”.

(2)

**BASIS:** GSG-13 para. 3.314 states that “Procedures should stipulate which other governmental bodies, if any, should be informed in the event of enforcement actions being taken”.

S14

**Suggestion:** The ONR should consider improving its guidance to indicate which other governmental organizations are to be informed of its formal enforcement actions.

#### Changes since the initial IRRS mission

ONR developed and issued updated detailed inspector guidance ONR-ENF-GD-006 Issue 5.2, “Enforcement Guide,” on the process for determining and delivering an appropriate and consistent level of enforcement for all duty holders.

Specifically, section 7.4.2 of the revised document now includes explicit guidance for all inspectors indicating which organisations would need to be involved in enforcement decisions and when ONR should ensure that such communication is undertaken:

“For enforcement action which may be deemed of interest to the Environment Agency (EA), Scottish Environment Protection Agency (SEPA), or Natural Resources Wales (NRW), the Inspector should inform the relevant counterparts in a timely manner, in accordance with the respective MoUs with each body.

Consideration should also be given to the extent to which other relevant external stakeholders are informed of the formal enforcement action, and in particular other regulatory bodies/agencies.”

The guidance is applicable to Security directions, Improvement Notices (IN)/Enforcement Notices (EN), License Condition (LC) powers, and Enforcement Letters.

Additionally, ONR has set a clear expectation for all inspectors that such communication could include the need to work collaboratively to determine what enforcement action is to be taken, as well as the requirement to inform duty holders of ONR’s enforcement actions in a timely manner.

#### Status of the initial mission finding

**Suggestion 14 (S14) is closed** on the basis of ONR having provided updated guidance indicating which organisations would need to be informed of enforcement decisions.

### 8.2. ENFORCEMENT IMPLEMENTATIONS

There were no findings in this area in the initial IRRS mission.

## 9. REGULATIONS AND GUIDES

### 9.1. GENERIC ISSUES

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *Regulatory bodies’ processes do not explicitly consider the review and update of the regulatory guidance to include applicable IAEA safety standards.*

(1) **BASIS: GSR Part 1 Requirement 33 states that** “Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration of relevant international safety standards and technical standards and of relevant experience gained.”

R16 **Recommendation: The EA, NRW, SEPA, NIEA, HSE, HSENI and CQC should further develop processes and procedures for the establishment, review and update of regulatory guidance to include applicable IAEA safety standards.**

#### Changes since the initial IRRS mission

The UK developed a new process for contributing to and implementing IAEA standards and established an expectation that regulatory bodies update their own internal processes to ensure they update regulatory guidance to include applicable IAEA safety standards.

The UK Framework for Contributing to and Implementing IAEA Standards was developed by a task and finish group of membership drawn from the Radiological Safety Working Group (RSWG) and was published in 2021. The process was reviewed and updated after 18 months of use.

Key elements of the framework include:

- The establishment of advisory groups to mirror the IAEA safety standards committees. Advisory groups consist of relevant UK regulators and provide a mechanism to discuss and comment on standards under development at the IAEA.
- The establishment of the Safety Standards System Manager (SSSM) role. The role supports with the coordination of the UK Safety Standard Committee leads and advisory groups. The SSSM provides a quarterly presentation to the RSWG on standards under development at the IAEA and due for publication.

The UK Framework for Contributing to and Implementing IAEA Standards includes maintenance of a Draft Standards and Guidance Status Spreadsheet. The spreadsheet includes columns that consider the relevance and importance of each standard to different UK regulatory bodies. The team noted the spreadsheet to be a very useful tool for facilitating national-level coordination and communication of IAEA standards updates as part of the UK Framework for Contributing to and Implementing IAEA Standards. It provides a consolidated national accounting of the status of IAEA standards available for UK regulatory bodies with responsibility for radiological safety to contribute to and for communicating standards that have been updated and which should be assessed for potential impact to regulatory bodies’ guidance. The IRRS team considered the UK framework’s Draft Standards and Guidance Status Spreadsheet as a good performance.

The IRRS team noted that the UK Framework established an expectation that each organization would develop its own internal processes to review their internal guidance to include applicable IAEA safety standards. The EA, NRW, SEPA, NIEA and CQC have developed their own internal processes, which is consistent with the Standards. However, HSE and HSENI have not developed their internal processes and the UK Framework has no expected timeline for it to occur.

The IRRS team also highlighted an opportunity to incorporate an explicit reference to the Draft Standards and Guidance Status Spreadsheet in each regulatory body’s internal processes to enable clear and efficient implementation of the UK Framework.

#### Status of the initial mission finding

**Recommendation 16 (R16) remains open** for HSE and HSENI as they have not developed internal processes to review their internal guidance to include applicable IAEA safety standards.

## 9.2. REGULATIONS AND GUIDES FOR NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

## 9.3. REGULATIONS AND GUIDES FOR FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

## 9.4. REGULATIONS AND GUIDES FOR WASTE MANAGEMENT FACILITIES

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *In Northern Ireland, operators accumulating RAW do not have in place a waste management plan identifying the interdependencies in RAW management. This finding was also identified by the NIEA in their Action Plan.*

<p>(1)</p>	<p><b>BASIS: SSG 45, para. 3.30 states that</b> “Depending on the complexity of the operations and the magnitude of the hazards associated with the facility or the activities concerned, the operator has to ensure an adequate level of protection and safety by various means” (GSR Part 5 [3], para. 3.11). These means should include: ...</p> <p><i>(d) Establishment of a radioactive waste management strategy that includes all waste under the control of the operator, including waste that has arisen from past practices, taking into account interdependences among all steps in waste management, the available options and the national radioactive waste management policy and strategy, as far as applicable.”</i></p>
<p>S15</p>	<p><b>Suggestion:</b> <b>The NIEA should consider requiring permit holders of non-nuclear sites to have in place RAW management plans identifying the interdependencies in RAW management including the disposal option.</b></p>

### Changes since the initial IRRS mission

In June 2019, NIEA updated the template for a Certificate of Authorisation in its quality management system to include condition 14, which states: “The user must prepare, maintain and implement a management plan for waste arising from any activities involving radioactive substances and the decommissioning of associated facilities and equipment.” Since then, all new or varied certificates of authorisation have included this condition.

This certificate is applicable only for the management of liquid and gaseous waste and unsealed sources. For HASS, the requirement on having a radioactive waste management plan is a prerequisite to obtain a Certificate of Registration. For sealed sources with activities between very low activity exempted sources and HASS, there is no requirement for a waste management plan.

The management of radioactive waste in Northern Ireland follows the “Strategy for the Management of Solid Low Level Radioactive Waste from the Non-Nuclear Industry in the United Kingdom”, published in 2012. During the discussion with NIEA and DAERA counterparts about the Strategy and so called “dustbin disposal” of VLLW in landfill facilities, the IRRS team concluded that the radioactive waste classification differs from the IAEA Safety Guide GSG-1 Classification of Radioactive Waste from 2009. Given that this and other issues related to radioactive waste disposal are of concern not only to Northern Ireland but to the whole UK, UK Government may consider inviting an ARTEMIS mission to review the Strategy and associated regulations in detail.

### Status of the initial mission finding

**Suggestion 15 (S15) remains open** as the radioactive waste management plan does not need to be submitted to NIEA in Northern Ireland for all sealed sources with activities above exempted sources.

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The environment agencies do not consider RAW in closed disposal facility, once the permit has been surrendered, is no longer “radioactive waste” although it may still be radioactive. Also, the concept of discharges of liquid and gaseous radioactive waste into the environment indicate, that environment agencies consider that planned and controlled release of (usually gaseous or liquid) radioactive substances to the environment occurs during the operational and post-closure phase of disposal facility lifetime.*

(1)	<b>BASIS: SSR 5 Requirement 8 states that</b> <i>“The engineered barriers, including the waste form and packaging, shall be designed, and the host environment shall be selected, so as to provide containment of the radionuclides associated with the waste. Containment shall be provided until radioactive decay has significantly reduced the hazard posed by the waste...”.</i>
(2)	<b>BASIS: SSR 5 Requirement 9 states that</b> <i>“The disposal facility shall be sited, designed and operated to provide features that are aimed at isolation of the radioactive waste from people and from the accessible biosphere. The features shall aim to provide isolation for several hundreds of years for short lived waste and at least several thousand years for intermediate and high level waste ...”.</i>
R17	<b>Recommendation: The environment agencies should make more direct reference to the requirements for isolation and containment of radioactive waste and should clearly indicate in their guidelines that no radioactive discharges are expected from disposal facilities.</b>

### Changes since the initial IRRS mission

The environmental agencies’ (EA, SEPA, NRW and NIEA) joint guidance on radioactive waste disposal facilities was published in 2009. It refers to containment and isolation; however, the environmental agencies have decided to clarify and provide more details about the potential for, and timing of future discharges.

The environmental agencies are working together to supersede the existing guidance “Geological Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation” and “Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation” with “Disposal Facilities for Solid Radioactive Waste: Guidance on Requirements for Authorisation (GRA)”. The new draft guidance effectively addresses issues on containment and isolation.

The draft GRA describes that it is not possible to contain radionuclides completely forever, and hence there will eventually be some release from a radioactive waste disposal facility. Therefore, the draft GRA specifies that radioactive waste must be contained and isolated for long enough so that people and the environment are not exposed to unacceptable levels of radioactivity.

Some disposal facilities may be designed to include controlled discharges of radioactive substances during the operational period, which would be subject to control under the conditions of an environmental permit. For such facilities, the draft GRA requires operators to describe what systems are needed to manage such discharges, and to demonstrate that the discharges satisfy defined dose constraints and are optimised.

Key future users of the GRA, such as Nuclear Waste Services, were already consulted on the draft and it was revised accordingly in December 2023. Consultations with ONR, UK Health Security Agency (UKHSA) and involved environmental agencies will be completed soon. The public consultation is expected to start in spring 2024. Then, the GRA is expected to be published by the end of 2024.

### Status of the initial mission finding

**Recommendation 17 (R17) is closed on the basis of progress made and confidence in effective completion in due time** as a significant development of “Disposal Facilities for Solid Radioactive Waste: Guidance on Requirements for Authorisation (GRA)” has already been made and has an expected completion by the end of 2024.

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The environment agencies NSD-GRA do not consider passive institutional control period as a specific stage of disposal facility lifetime.*

(1)	<b>BASIS: SSR-5 Requirement 22 states that</b> “ <i>The period after closure and institutional controls Plans shall be prepared for the period after closure to address institutional control and the arrangements for maintaining the availability of information on the disposal facility. These plans shall be consistent with passive safety features and shall form part of the safety case on which authorization to close the facility is granted</i> ”.
(2)	<b>BASIS: SSR-5 Requirement 22, Para. 5.7 states that</b> “ <i>The risk of intrusion into a disposal facility for radioactive waste may be reduced over a longer timescale than that foreseen for active controls by the use of passive controls, such as the preservation of information by the use of markers and archives, including international archives</i> ”.
R18	<b>Recommendation:</b> <b>The environment agencies should further develop their guide NSD-GRA to clarify the role of and its expectations for passive safety in providing additional assurance of the safety of a disposal facility.</b>

### Changes since the initial IRRS mission

This recommendation will be also addressed by the publication of the new guidance: GRA.

To address the matter of reliance only on passive controls after the period of institutional control by the environmental agencies, Requirement 7: Disposal system design has been included in the GRA. This requirement specifies a disposal system to be designed so that it relies entirely on features that do not depend on human intervention or on any engineered system requiring the operation of electrical circuits or mechanical moving parts.

In addition, the GRA will require that, prior to permitting surrender, the operator must collate records of the disposal facility in the UK national archives. This means that once the formal regulation of such facilities by the environmental agencies comes to an end, knowledge is preserved through other UK institutions. This affords additional protection by ensuring an awareness of the presence of past disposal facilities is preserved by society and hence further reducing the risk of inadvertent human intrusion.

Key future users of the GRA, such as Nuclear Waste Services, were already consulted on the draft and it was revised accordingly in December 2023. Consultations with ONR, UKHSA and involved environmental agencies will be completed soon. The public consultation is expected to start in spring 2024. Then, the GRA is expected to be published by the end of 2024.

### Status of the initial mission finding

**Recommendation 18 (R18) is closed on the basis of progress made and confidence in effective completion in due time** as a significant development of “Disposal Facilities for Solid Radioactive Waste: Guidance on Requirements for Authorisation (GRA)” has already been made and an expected completion by the end of 2024.

## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The EA does not have guidance in place to facilitate the clearance of waste material, using case and site-specific activity concentrations, as an effective tool to minimise the amount of waste that needs further management as RAW.*

(1)	<b>BASIS: GSR Part 5 Requirement 8 states that</b> “ <i>... Radioactive waste arisings shall be kept to the minimum practicable</i> ”.
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## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

(2)	<b>BASIS: GSR Part 5 Requirement 8, para. 4.9 states that</b> <i>“The authorized discharge of effluent and clearance of materials from regulatory control, after some appropriate processing and/or a sufficiently long period of storage, together with reuse and recycling of material, can be effective in reducing the amount of radioactive waste that needs further processing or storage. The operator has to ensure that these management options, if implemented, are in compliance with the conditions and criteria established in regulations or by the regulatory body...”</i>
(3)	<b>BASIS: RS-G-1.7, para. 3.4 states that</b> <i>“The primary radiological basis for establishing values of activity concentration for the exemption of bulk amounts of material and for clearance is that the effective doses to individuals should be of the order of 10 µSv or less in a year. To take account of the occurrence of low probability events leading to higher radiation exposures, an additional criterion was used, namely, the effective doses due to such low probability events should not exceed 1 mSv in a year ...”</i>
(4)	<b>BASIS: GSR Part 3 Requirement 8 states that</b> <i>“The government or the regulatory body shall determine which practices or sources within practices are to be exempted from some or all of the requirements of these Standards. The regulatory body shall approve which sources, including materials and objects, within notified practices or authorized practices may be cleared from regulatory control”</i>
(5)	<b>BASIS: GSR Part 3 Schedule I, para I-13 states that</b> <i>“Clearance may be granted by the regulatory body for specific situations, on the basis of the criteria of paras I-10 and I-11, with account taken of the physical or chemical form of the radioactive material, and its use or the means of its disposal. Such clearance levels may be specified in terms of activity concentration per unit mass or per unit surface area.”</i>
R19	<b>Recommendation: The EA should review its approach to clearance, to consider the use of case and site-specific activity concentrations in helping enable the minimisation of radioactive waste production.</b>

### Changes since the initial IRRS mission

The EA is reviewing its approach to clearance, to consider the use of case and site-specific activity clearance, and this review is nearing completion. The review was delayed to take account of revisions of the IAEA Safety Guide on Application of the Concepts of Exclusion, Exemption and Clearance (RS-G-1.7) which has been recently superseded by the IAEA Safety Guide GSG-17 and GSG-18.

As the disposal of “soft” radioactive waste from Sellafield was highlighted in the 2019 IRRS mission report, the EA contacted Sellafield Ltd (SL) to determine whether they would gain benefits in a case- or site-specific clearance of radioactive waste from their site. Since the IRRS mission, SL has gained experience of managing a significant volume of soft radioactive waste through an established framework via Nuclear Waste Services for onward treatment by incineration. SL recognizes there may be benefits to better delivery of the waste hierarchy from case- or site-specific clearance, but the proximity to limits of detection and the resource needed to make any changes to the environmental permit and arrangements, outweigh those benefits.

The EA also plans to consider whether the development of future radioactive waste treatment facilities, such as melting facilities for metallic radioactive waste, might benefit from case- or site-specific clearance.

### Status of the initial mission finding

**Recommendation 19 (R19) remains open** as the EA has not completed its initial review to decide how to address this recommendation.

## 9.5. REGULATIONS AND GUIDES FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

There were no findings in this area in the initial IRRS mission.

## 9.6. REGULATIONS AND GUIDES FOR DECOMMISSIONING ACTIVITIES

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *There is no guidance on the decommissioning of non-nuclear facilities in Northern Ireland. This finding was also identified by the NIEA in its Action Plan.*

(1)	<b>BASIS: GSR Part 6 Requirement 5 states that</b> “...The regulatory body shall establish the safety requirements for decommissioning, including requirements for management of the resulting radioactive waste, and shall adopt associated regulations and guides...”.
R20	<b>Recommendation:</b> The NIEA should continue with its effort to develop a guide on decommissioning of non-nuclear facilities.

### Changes since the initial IRRS mission

The NIEA issued in September 2023 a guidance document titled "Guidance on Decommissioning of Non-Nuclear Facilities for Radioactive Substances Activities". This guidance applies to all premises that are not nuclear sites (as Northern Ireland has no nuclear installations). It addresses “satisfactory state” as the state of the authorised place after its decommissioning, details of the decommissioning plan, removal of radioactive substances, remediation of radioactive contamination, site monitoring, etc. The guidance document will be used for the first time as part of the decommissioning of R&D facilities at the Agri-Food and BioSciences Institute.

### Status of the initial mission finding

**Recommendation 20 (R20) is closed** as the NIEA guide "Guidance on Decommissioning of Non-Nuclear Facilities for Radioactive Substances Activities" was published.

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The ONR guidance does not include provisions for release of the nuclear site from initial regulatory control with restrictions on the future use. This finding was also identified by the ONR in its Action Plan.*

(1)	<b>BASIS: GSR Part 6 Requirement 15 states that</b> “On the completion of decommissioning actions, the licensee shall demonstrate that the end state criteria as specified in the final decommissioning plan and any additional regulatory requirements have been met. The regulatory body shall verify compliance with the end state criteria and shall decide on termination of the authorization for decommissioning.”
(2)	<b>BASIS: GSR Part 6 Requirement 15 para 9.3 states that</b> “If the approved decommissioning end state is release from regulatory control with restrictions on the future use of the remaining structures, appropriate controls and programmes for monitoring and surveillance shall be established and maintained for the optimization of protection and safety, and protection of the environment. These controls shall be subject to approval by the regulatory body.
R21	<b>Recommendation:</b> Once relevant legislative changes have been implemented, the ONR should review and update the decommissioning guidance to reflect the requirements on release of the nuclear site from their regulatory control with restrictions on the future use.

## Changes since the initial IRRS mission

The necessary legislative changes have been incorporated in the Energy Act 2023. The UK government has confirmed that the changes to legislation will come into force in June 2024. The Energy Act 2023 allows ONR to end the nuclear licence once satisfied that nuclear safety matters have been resolved. Some former nuclear sites will also remain under regulation by the relevant environmental agency for years or decades after the end of the nuclear licence if, for example, slightly radioactively contaminated concrete substructures and pipes will remain buried on site.

ONR has developed a project plan to review and update the relevant guidance to implement the new legal requirements on release of the nuclear site from their regulatory control with restrictions on the future use.

A new Technical Assessment Guide on Assessment for the Delicensing of a Nuclear Licensed Site (NS-TAST-GD-110; TAG 110), which will supersede ONR Criterion for Delicensing Nuclear Sites (NS-PER-POL-001) and Guidance to Inspectors on the Interpretation and Implementation of the ONR Criterion of No Danger for the Delicensing of Nuclear Sites (NS-PER-GD-019), has been drafted. TAG 110 provides technical guidance on the requirements for release of the nuclear site from ONR's regulatory control with restrictions on the future use of the site. The guidance explains how ONR will assess whether a nuclear site licensee has met the applicable conditions prescribed in legislation, including verification activities to support a decision as per GSR Part 6 Requirement 15.

A number of consultations have been completed including with the industry (EdF Energy, the Nuclear Decommissioning Authority (NDA), Sellafield Limited (SL), etc.) and local authorities but others will be conducted.

## Status of the initial mission finding

**Recommendation 21 (R21) is closed on the basis of progress made and confidence in effective completion in due time** as TAG 110 is close to being finalized.

## 9.7. REGULATIONS AND GUIDES FOR TRANSPORT

There were no findings in this area in the initial IRRS mission.

## 9.8. REGULATIONS AND GUIDES FOR OCCUPATIONAL EXPOSURE

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *Since the IRR17 and IRR(NI)17 came into force on 1 January 2018, not all of the guidelines relevant to ensure the safety of workers have been updated.*

(1)

**BASIS:** **GSG-13 3.11, states that** “*As part of its integrated management system, the regulatory body should establish a process for the development of regulations and guides. This process should ensure that the regulations and guides: ...*

*(c) Are consistent and comprehensive; ...*

*(h) Are reviewed and revised as necessary and are kept up to date.”*

S16

**Suggestion:** **The HSE and HSENI should consider updating their guidelines relevant to the approval of technical services and establishing, developing and maintaining further appropriate guidelines.**

## Changes since the initial IRRS mission

HSE publishes their guidance documents on their webpage. The guides published there, notably those which are related to Approved Dosimetry Services were reviewed in 2020 and refer to the updated regulations. Other guides related to authorisation procedures were also issued due to the initiation of RADAN. HSENI follows a similar scheme and works very closely together with HSE to develop regulatory guides.

HSE and HSENI staff members update guides on an ad-hoc basis or when the regulations are changed.

### Status of the initial mission finding

**Suggestion S16 remains open** as HSE and HSENI did not incorporate formal mechanisms to establish, develop and maintain their relevant guidelines.

## 9.9. REGULATIONS AND GUIDES FOR MEDICAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

## 9.10. REGULATIONS AND GUIDES FOR PUBLIC EXPOSURE

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *Many of the regulatory guidance documents published by the EA are beyond due date of revision. This has been identified in the Action Plan.*

(1)	<b>BASIS: GSR Part 1, Rev 1, Requirement 33 states that</b> “Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration of relevant international safety standards and technical standards and of relevant experience gained”.
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R22	<b>Recommendation: The EA should review and revise as necessary its regulatory guidance to keep it up to date with due consideration of relevant international safety standards, policy and current regulatory framework.</b>
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### Changes since the initial IRRS mission

An internally accessible platform “Content Cloud” was set up as a document repository at EA. This electronic platform has access rights management, automatic reminders to conduct a review of existing documents and several further features. By default, all documents are required to be updated every three years with the option to extend by one year.

Before the initial Mission, there was no gap assessment between EA’s guidance documents and the IAEA Safety Standards and Safety Guides, but only the EU requirements were considered. In 2023 a new procedure (LIT 72234) was developed on how to conduct the review of guidance documents and requires the consideration of the relevant IAEA Safety Standards and Safety Guides. For emerging issues (e.g., fusion and deep geological waste disposal facilities), new guidance is developed with the assistance of a sponsor. EA estimated that all its relevant documents (313 in total for radiological or nuclear, of which 120 were developed between 2020 and 2023) are going to be revised by the end of 2026, in accordance with the new procedure (LIT 72234). At the time of the follow-up mission, 51% of the documents (99) already underwent review from those which were published at the time of the initial mission (193).

### Status of the initial mission finding

**Recommendation 22 (R22) is closed on the basis of progress made and confidence in effective completion in due time** as arrangements are in place for the review and revision of EA’s regulatory guidance to keep these up to date with due consideration of relevant international safety standards, policy and the current regulatory framework.

### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *NIEA does not currently have guidance in place to cover the Radioactive Contaminated Land (RCL) regime. This has been identified in the Action Plan.*

(1)	<b>BASIS: GSR Part 3 Requirement 49 states that:</b> “Responsibilities for remediation of areas with residual radioactive material. The government shall ensure that provision is made for identifying those
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## 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

	<i>persons or organizations responsible for areas with residual radioactive material; for establishing and implementing remediation programmes and post-remediation control measures, if appropriate; and for putting in place an appropriate strategy for radioactive waste management”.</i>
<b>S17</b>	<b>Suggestion: The NIEA should consider developing guidance to cover the RCL regime.</b>

### Changes since the initial IRRS mission

An internal guidance document was issued by DAERA to the NIEA in November 2023. The document provides guidance on how to apply “The Radioactive Contaminated Land Regulations (Northern Ireland) 2006”. It is accessible for the staff of DAERA, but not accessible through the official webpage yet. The guidance is in line with the similar guidance issued for the RCL elsewhere (Environmental Protection Act 1990: Part IIA, Radioactive Contaminated Land Statutory Guidance; RCL Statutory Guidance June 2018).

### Status of the initial mission finding

**Suggestion 17 (S17) is closed** as guidance has been developed to cover the RCL regime.

## 10. EMERGENCY PREPAREDNESS AND RESPONSE – REGULATORY ASPECTS

### 10.1. AUTHORITY AND RESPONSIBILITIES FOR REGULATING ON-SITE EP&R OF OPERATING ORGANIZATIONS

There were no findings in this area in the initial IRRS mission.

### 10.2. REGULATIONS AND GUIDES ON ON-SITE EP&R OF OPERATING ORGANIZATIONS

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *The EALs and OILs are not established in the regulatory requirements in accordance with IAEA GSR Part 7 and GSG-2.*

(1)	<b>BASIS: GSR Part 7, Requirement 5, para. 4.28 (4) states that</b> <i>“Once the protection strategy has been justified and optimized and a set of national generic criteria has been developed, pre-established operational criteria (conditions on the site, emergency action levels (EALs) and operational intervention levels (OILs)) for initiating the different parts of an emergency plan and for taking protective actions and other response actions shall be derived from the generic criteria”.</i>
(2)	<b>BASIS: GSG-2 para. 3.4 states that</b> <i>“...Generic criteria are provided in terms of dose that can be projected or dose that has already been received. The operational criteria are values of measurable quantities or observables that include operational intervention levels (OILs), emergency action levels (EALs), specific observables and other indicators of conditions on the scene that should be used in decision making during an emergency. The operational criteria can be used immediately and directly to determine the need for appropriate protective actions and other response actions”.</i>
(3)	<b>BASIS: GSG-2 para. 5.3 states that</b> <i>“The EALs are the specific, predetermined, observable operational criteria used to detect, recognize and determine the emergency class of an event at facilities in threat categories I, II and III [2]. The EALs are used for classification and for decisions on the implementation of precautionary urgent protective actions corresponding to the emergency class. These criteria should be predefined as stated in Ref. [2] and implemented as described in Refs [7, 8]. Appendix III provides a discussion of the EAL development process and gives examples of EALs for the classification of emergencies at a light water reactor nuclear power plant”.</i>
(4)	<b>BASIS: GSR Part 7 para. 5.16 states that</b> <i>“The emergency classification system for facilities and activities in categories I, II, III and IV shall take into account all postulated emergencies, including those arising from events of very low probability. The operational criteria for classification shall include emergency action levels and other observable conditions (i.e. ‘observables’) and indicators of the conditions at the facility and/or on the site or off the site. The emergency classification system shall be established with the aim of allowing for the prompt initiation of an effective response in recognition of the uncertainty of the available information”.</i>
R23	<b>Recommendation:</b> <b>The Government should review the UK EP&amp;R framework to explain how the requirements of GSR Part 7 are met in terms of EALs and OILs, and if any gap exists develop appropriate regulatory requirements.</b>

#### Changes since the initial IRRS mission

DESNZ, working with the ONR and UKHSA documented the results of a detailed review of the UK’s EP&R framework to ensure that it meets the relevant GSR Part 7 requirements, including EALs and OILs, however, with a different terminology and concept. These requirements include the identification of a nuclear or radiological emergency, activation of an emergency response, and the implementation of protective actions.

The UK has provided examples of the EALs used, and they are categorized into two classes “Site Incident” and “Off-Site Nuclear Emergency”. The results of the review provide additional explanation describing how the UK uses Emergency Reference Levels to optimize and justify protective actions, while still using the concept of “averted dose”. Based on the detailed review, the UK made no changes to its EP&R arrangements.

**Status of the initial mission finding**

**Recommendation R23 is closed** as the UK has carried out a detailed review and has explained how the requirements of GSR Part 7 are met.

**2019 MISSION RECOMMENDATIONS, SUGGESTIONS**

**Observation:** *The emergency planning zones established under REPPIR 2019 are not fully in alignment with the requirements of GSR part 7.*

- (1)** **BASIS: GSR Part 7 para. 5.38 (a) states that** *“The specification of off-site emergency planning zones and emergency planning distances<sup>25</sup> for which arrangements shall be made at the preparedness stage for taking protective actions and other response actions effectively. These emergency planning zones and emergency planning distances shall be contiguous across national borders, where appropriate, and shall include:*
- (i) A precautionary action zone (PAZ), for facilities in category I, for which arrangements shall be made for taking urgent protective actions and other response actions, before any significant release of radioactive material occurs, on the basis of conditions at the facility (i.e. conditions leading to the declaration of a general emergency; see para. 5.14), in order to avoid or to minimize severe deterministic effects.*
  - (ii) An urgent protective action planning zone (UPZ), for facilities in category I or II, for which arrangements shall be made to initiate urgent protective actions and other response actions, if possible before any significant release of radioactive material occurs, on the basis of conditions at the facility (i.e. conditions leading to the declaration of a general emergency; see para. 5.14), and after a release occurs, on the basis of monitoring and assessment of the radiological situation off the site, in order to reduce the risk of stochastic effects. Any such actions shall be taken in such a way as not to delay the implementation of precautionary urgent protective actions and other response actions within the precautionary action zone.*
  - (iii) An extended planning distance (EPD) from the facility, for facilities in category I or II (beyond the urgent protective action planning zone), for which arrangements shall be made to conduct monitoring and assessment of the radiological situation off the site in order to identify areas, within a period of time that would allow the risk of stochastic effects in the areas to be effectively reduced by taking protective actions and other response actions within a day to a week or to a few weeks following a significant radioactive release.*
  - (iv) An ingestion and commodities planning distance (ICPD) from the facility, for facilities in category I or II (beyond the extended planning distance), for which arrangements shall be made to take response actions (1) for protecting the food chain and water supply as well as for protecting commodities other than food from contamination following a significant radioactive release and (2) for protecting the public from the ingestion of food, milk and drinking water and from the use of commodities other than food with possible contamination following a significant radioactive release”.*

**R24** **Recommendation:** **The Government should review the UK EP&R framework to explain how the requirements of GSR Part 7 are met in terms of planning zones and distances, and if any gap exists develop appropriate regulatory requirements.**

## Changes since the initial IRRS mission

DESNZ, ONR and UKHSA documented a detailed review of the UK's EP&R framework to ensure that it meets the relevant GSR Part 7 requirements for planning zones and distances. The review concluded that the UK meets the GSR Part 7 requirement for the establishment of proportionate emergency planning zones and distances. The UK's emergency planning zones and distances differ from those specified by the IAEA GSR Part 7.

The UK uses the concept of Detailed Emergency Planning Zones (DEPZ) and Outline Planning Zones (OPZ). The use of the DEPZ and OPZ combine the characteristics of PAZ and UPZ. Initially only DEPZ defined actions are triggered by declaration of an off-site emergency. OPZ actions (like evacuation on larger distances) are deemed to be taken based on more detailed analysis of the actual emergency situation. The UK concluded that response organizations have time available to analyse the situation and potential consequences in order to activate larger or more appropriate protective actions for the public if warranted by the scale of the emergency.

## Status of the initial mission finding

**Recommendation R24 is closed** as it is superseded by SF2.

## New observations from the follow-up mission

The REPPiR 2019 describes a process which is based on hazard assessment, consequence analysis and relevant dose calculations that are used to define necessary protective actions inside the Detailed Emergency Planning Zone (DEPZ) and the Outline Planning Zone (OPZ). Assumptions used for this process are not fully in line with the assumptions used in the IAEA Safety Standards; this process may lead to situations, where protection against severe deterministic effects could be unduly delayed or influenced with missing or conflicting information available at the time of the emergency, when prompt and predefined precautionary actions would be needed.

### FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

**Observation:** The assumptions for the emergency response operations in the UK differ from those which are outlined in the IAEA Safety Standards for the protection against deterministic effects for Threat Category I facilities.

(1)	<b>BASIS: GSR Part 7 4.23. states that</b> <i>“In the hazard assessment, facilities and activities, on-site areas, off-site areas and locations shall be identified for which a nuclear or radiological emergency could — with account taken of the uncertainties in and limitations of the information available — warrant any of the following:</i> <i>(a) Precautionary urgent protective actions to avoid or to minimize severe deterministic effects by keeping doses below levels approaching the generic criteria at which urgent protective actions and other response actions are required to be undertaken under any circumstances, with account taken of Appendix II”.</i>
(2)	<b>BASIS: GSG 2.1 Appendix II states that</b> <i>“II.2. Table 8 provides suggestions for the approximate radii of the emergency zones for facilities in threat categories I and II. The distances in Table 8 are suggested with due recognition of the great uncertainties involved and they should be revised by a factor of up to two during their application if necessary to meet local conditions. The choice of the suggested radii represents a judgement of the distance from the site of the emergency for which it is reasonable to make advanced arrangements to ensure an effective response. In a particular emergency, protective actions may be warranted only in a small part of the zones. For the most serious emergencies, protective actions might need to be taken beyond the radii suggested”.</i>
(3)	<b>BASIS: GSG 2.1 Appendix II table 8 footnote (a)</b> states that <i>the radius is the approximate default distance from the facility at which the boundary of the zone should be established. Variation by a factor of two or more during application is reasonable. A different distance should be used when this is substantiated by a detailed safety analysis.</i>



## FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

SF2

**Suggestion:** UK Government should consider further evaluating its EPR arrangements for protecting the public against severe deterministic effects in Threat Category I facilities for the most severe scenarios or accidents.

### 10.3. VERIFYING THE ADEQUACY OF ON-SITE EP&R OF OPERATING ORGANIZATIONS

There were no findings in this area in the initial IRRS mission.

#### New observations from the follow-up mission

A recent IAEA OSART mission identified that the reference levels for emergency exposures are not aligned with GSR Part 7, para 5.55.

The reference level is set by the national regulations is 100 mSv (REPPIR 2019).

The REPPIR 2019 under requirement 18 paragraph 568 states .... *“It will not be appropriate for this regulation to be applied where the action necessary to respond to or prevent a radiation emergency can be done in such a way that restricts exposures to normal dose limits.”* and paragraph 518 states that *“Emergency exposures should not be used as a means to avoid the need to keep doses as low as reasonably practicable.”*

This topic was discussed during the interviews and the IRRS team was confident that the designated emergency workers are protected by protective measures used for planned exposures to the extent practical even during the emergency response and as a first goal limiting the exposure to the same level as for occupational exposures (20 mSv). This is used as a reference level. During the interviews this was confirmed.

It was also stated during the interviews that this has been identified and the review and update process for the REPPIR 2019 is underway. This observation will be taken into account during the revision.

### 10.4. ROLES OF THE RB IN A NUCLEAR OR RADIOLOGICAL EMERGENCY

#### 2019 MISSION RECOMMENDATIONS, SUGGESTIONS

**Observation:** *ONR does not have previously agreed format for plant data and information transfer during an emergency.*

(1)

**BASIS:** *GSR Part 7, Requirement 9, para. 5.36 states that “Arrangements shall be made such that information on emergency conditions, assessments and protective actions and other response actions that have been recommended and have been taken is promptly made available, as appropriate, to all relevant response organizations and to the IAEA throughout the emergency”.*

(2)

**BASIS:** *GSR Part 7, Requirement 24, para. 6.22 states that “Adequate tools, instruments, supplies, equipment, communication systems, facilities and documentation (such as documentation of procedures, checklists, manuals, telephone numbers and email addresses) shall be provided for performing the functions specified in Section 5....”*

S18

**Suggestion:** *ONR should consider establishing pre-defined communication with the operating organizations in terms of plant data and other information during emergencies.*

#### Changes since the initial IRRS mission

ONR recognises the benefits of a review of the data and information required during a nuclear or radiological emergency. This serves to validate the nature, form, units of measurement and route of communication; assuring

ONR and government that such information can be shared accurately and in a timely manner to support common situational awareness and aid decision making.

ONR undertook a gap analysis (Pre-Defined Data Sets for delivery of plant information by Operators to ONR during emergencies – gap analysis) that confirmed those areas where pre-defined data and information is already provided. It also identified a small number of areas where further work was required to strengthen ONR’s arrangements.

ONR has implemented a prioritised plan to use the opportunities identified in the gap analysis.

During the interviews the IRRS Team received an update on the ONR response network and the measures which are in place to collect information in the Redgrave Court Incident Suite (RCIS) via different methods, including information systems (TiiMs and RREMS) or via liaison teams and predefined sets of data/assessments that operators have agreed to provide to ONR during emergencies. The ONR response organization can request data from the operators for an appropriate offsite facility.

**Status of the initial mission finding**

**Suggestion S18 is closed on the basis of progress made and confidence in effective completion in due time** as ONR has established pre-defined communication channels to receive relevant information from the significant operating organisations.

2019 MISSION RECOMMENDATIONS, SUGGESTIONS	
<b>Observation:</b> <i>The ONR does not have an overarching emergency response and preparedness plan to coordinate the response functions and maintain response capability within the RCIS. The action plan identified the ONR does not have a formal training and qualification programme for its staff responding to an emergency.</i>	
(1)	<b>BASIS: GSR Part 7 para. 6.16 states that:</b> <i>“Plans, procedures and other arrangements for effective emergency response, including coordinating mechanisms, letters of agreement or legal instruments, shall be made for coordinating a national emergency response”.</i>
(2)	<b>BASIS: GSR Part 7 para. 6.30 states that:</b> <i>“Exercise programmes shall be developed and implemented to ensure that all specified functions required to be performed for emergency response”.</i>
(3)	<b>BASIS: GSR Part 7, Requirement 25 states that:</b> <i>“The government shall ensure that personnel relevant for emergency response shall take part in regular training, drills and exercises to ensure that they are able to perform their assigned response functions effectively in a nuclear or radiological emergency”.</i>
(4)	<b>BASIS: GSR Part 7, Requirement 21 states that:</b> <i>“The government shall ensure that overall organization for preparedness and response for a nuclear or radiological emergency is clearly specified and staffed with sufficient personnel who are qualified and are assessed for their fitness for their intended duties.”</i>
S19	<b>Suggestion:</b> <i>The ONR should consider integrating its response arrangements into a response and preparedness plan and formalize training and qualification of emergency response staff.</i>

**Changes since the initial IRRS mission**

Since the 2019 IRRS mission ONR has consolidated, reviewed and updated its existing emergency arrangements into an integrated response arrangement.

ONR has released a set of documents that define the ONR Emergency Response Framework. These documents include the ONR Emergency Response Handbook, which describe in detail the ONR’s process for response and gives guidance for responders. The handbook is supported by the “ONR Emergency Response Role Guides”, which

provides detail for specific response roles. Based on this framework, the handbook and the guides, an updated training and exercise programme has been implemented with the relevant training courses.

#### **Status of the initial mission finding**

**Suggestion S19 is closed.** The ONR Emergency Response Framework with the supporting documentation has been released, a relevant training and qualification programme was put in place and training is ongoing for the staff.

## **11. INTERFACE WITH NUCLEAR SECURITY**

### **11.1. LEGAL BASIS**

There were no findings in this area in the initial IRRS mission.

### **11.2. REGULATORY OVERSIGHT ACTIVITIES**

There were no findings in this area in the initial IRRS mission.

### **11.3. INTERFACE AMONG AUTHORITIES**

There were no findings in this area in the initial IRRS mission.

## ANNEX I – POLICY DISCUSSIONS

### Policy issue 1: Regulating Innovation

Since the 1990s, the UK's nuclear electricity generation share has fallen steadily from 27% to around 15% today, with a further decrease expected later this decade. At the same time electricity demand is currently projected to double or triple by 2050. The UK Government recognises the need for innovation to meet its stated aims for civil nuclear application in the country. A combination of new technologies, innovations to existing technologies, and innovative practices will be required to meet these aspirations. Implementation of novel techniques in a safe and timely manner poses a significant challenge to the industry. The UK Government therefore aims for an 'enabling' regulatory framework to support the safe development and deployment of innovative technologies. However, there are many emerging technologies which could challenge the current regulatory infrastructure.

The IRRS team gave an overview of different approaches in their respective countries during the discussions as summarized below:

- The readiness to regulate innovative technologies requires a review of the regulatory framework to ensure no impediment in regulating these technologies. In addition, careful planning to ensure adequate Financial and human resources will be allocated to enable the capacity building for overseeing the new technologies. Some regulatory bodies have established a dedicated directorate to deal with innovation and new technologies. Funds were allocated to universities to support research related to new technologies - mainly SMRs.
- Some regulatory bodies have done a comparative analysis with other regulators. This was carried out through international cooperation and collaboration to gain lessons learned for the proper planning to regulate innovative technologies.
- Certain regulatory authorities reported that pre-licensing discussions and early engagement with vendors and designers is a must in order to provide clear and transparent processes for early engagement and to ensure that regulatory clarity and expectations are well understood to enable innovative technologies. Members of the IRRS team indicated that engagements are to be conducted based on established processes in a transparent manner with a clear scope of what information could be shared or not. Engagement protocols have been established by some regulatory authorities and are published on their websites. The protocols demonstrated to be effective in providing common understanding both within the regulatory body and the industry of what information is shared publicly and what is classified.
- Care should be taken that the regulatory bodies are enablers in their engagement with vendors and not to be promoters of the vendor's new technology. The funding source and engagement stage should evolve alongside each other to avoid any perception of regulatory capture.
- Some countries are reviewing the HTGR technology, including through a vendor design review (pre-licensing engagement), and are at the stage of environmental assessment. Engagement with other countries is also sought in this regard.
- Necessary resources and capability are needed to license fusion technology. The fusion technology could be inherently safe but also care must be taken. Some countries need to review their legislation since fusion and fission technologies are treated the same despite their varying risk profiles. There is an advantage of approaching fusion as a whole power plant, as in the UK, rather than individual technologies. Addressing the "fission mindset" could be a way to unlock a greater rate of progress.
- Resource is allocated by some regulatory bodies for engagement with vendors, including for capacity building in new technology. In some cases, if the engagement would be followed by an application for a license, the vendor might pay the regulatory body. In some regulatory bodies, vendors have to pay the regulator regardless. In other cases still, funding may be provided by government for engagement. Whatever the case, it is important that it is clear to the public the source of funds for such engagement. Informal engagement (at all levels) can also be useful to enable the regulatory body to plan for adequate resource.

- In some countries, the process for authorizing of research reactors is identical to the processes for licensing power plants in a graduated approach commensurate with the risk associated with the design of the research reactor. Other regulatory bodies reported that they have specific requirements and there is a core team that reviews such requests. It was noted that having some separation between regulation of research reactors and power generating ones – for instance through some short training to reorient staff mindset – is useful regardless of whether a separate team exists or not, to ensure that the nuances between the two activities are not confused.
- Regulations for a new technology should be based on safety objectives rather than on a prescriptive approach.
- Some countries have established a legal framework in relation to Artificial Intelligence (AI). The regulatory process for AI utilizing technology is at an early stage. Some countries have published a strategic goal in relation to AI. The strategy identified how to address requests for authorization of such technology.
- Standardization should be applied in order to reduce the duplication of technical information that will be used for regulatory determination.

## **Policy issue 2: Recruitment and Retention**

The UK’s regulatory authorities for radiological safety need access to the skills and knowledge (or suitably qualified and experienced personnel (SQEP)) required to carry out their regulatory functions. However, the UK Government recognizes that key resourcing challenges face its regulatory bodies, particularly among radiation protection specialists. Lack of specialists is expected to increase in the future as the use of radiation and nuclear applications grows, increasing the competition for a limited number of SQEP in the country. The UK therefore faces a challenging forward look, that even mitigated with actions arising from improved coordination and effort from regulators, could impact the UK’s delivery of its regulatory framework.

The IRRS team gave an overview of different approaches in their respective countries during the discussions as summarized below:

- The regulatory body cooperates with the industry to tackle the common challenge of lack of nuclear and radiation specialists. Efforts are made to attract students at the MSc level by supporting their thesis work, providing internship opportunities, etc. to promote that working in the industries associated with nuclear and radiation could be a career path. It is advised that next generation is approached before they have made up their mind on their career path, to attract them to the nuclear and radiological protection industries.
- Expertise in other industries could be transferred to the radiological protection and nuclear sector through training. A training programme could be developed to update their expertise to ensure it is appropriate and relevant.
- Some regulatory bodies work with universities to promote the benefits of joining the regulatory body and good results were observed. Collaboration with said institutes to offer university credits for rotations within regulatory bodies have proven successful. “Out of the box” approaches, such as the recruitment of retirees to provide training and share their knowledge and expertise for the new generation were also suggested.
- Some regulatory bodies assess the potential growth in sectors (e.g., energy) that could affect their staffing and regulatory capacity. Based on the analysis of the skill set that would be needed in the future against the currently available, they plan for different approaches to fill the gap.
- In some countries, due to new reactors being built, a picture is painted of a promising future career, encouraging the next generation to study nuclear science and engineering. Industry is supporting research and internship of university students to encourage interest in the nuclear sector. Training and experience within the regulatory body would help to develop capabilities in a certain time.
- It is important to share information with other regulatory bodies through different mechanisms including bilateral agreements.

- Some regulators have the independence and flexibility to set up their own pay framework for their staff. For example, one member state has a biannual assessment of pay and compensation in comparison to the industry and other government institutions. In some cases, a prospect of future growth within the organization could be more attractive than only salary.
- In some countries, the pay scale across all public organizations including the regulatory body is under the same framework for all civil servants. For a few specialist skills, special salaries might be established on an exceptional basis. In some cases, retention incentives are applied. A different pay scale could be introduced for short-term contractual agreements on specific skills.
- In some regulatory bodies, promotion to a higher hierarchy in the organization without managerial responsibility but with a similar payment was successful, while such a scheme in other regulatory bodies created its own challenges.
- Some regulatory bodies noted that special pay scales for targeted groups did not fully address the issue of recruitment and retention for those roles and outlined that other incentives, such as relocation incentives, have proven at least somewhat successful.

## APPENDIX I – LIST OF PARTICIPANTS

<b>INTERNATIONAL EXPERTS:</b>		
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<b>LIAISON OFFICER</b>		
<b>DAVIES</b> Huw	National Liaison Officer, Department for Energy Security and Net Zero (DESNZ)	<a href="mailto:Huw.Davies2@energysecurity.gov.uk">Huw.Davies2@energysecurity.gov.uk</a>



## GROUP PHOTO



**APPENDIX II – MISSION PROGRAMME**

<b>Time</b>	<b>MON</b>	<b>TUE</b>	<b>WED</b>	<b>THU</b>	<b>FRI</b>	<b>SAT</b>	<b>SUN</b>	<b>MON</b>	
9:00-10:00	Arrival of Team Members	Entrance Meeting	Interviews	TM write Report	Discussion Counterpart/Expert  Finalisation	Written comments by the Host		Exit Meeting  Press release Farewell	
10:00-11:00									TL and DTL review introductory part
11:00-12:30		Interviews		Draft text to TL					
12:30-13:30	Initial IRRS Team Briefing (Attended by the LO)	Lunch	Lunch	Lunch	Lunch	Lunch	Social Event	Lunch	
13:30-14:00		Interviews	Interviews	Cross-reading	<b>Submission of the Draft to the Host</b>			Team meeting to discuss and resolve Host comments	
14:00-15:00					Secretariat edits the report	Host reads Draft and prepares written			TL finalises the presentation
15:00-16:00				Written preliminary findings delivered	Preliminary Draft Report Ready	Discussion of Executive Summary		Plenary (Team + Host) to discuss Host comments and finalize the report	
16:00-17:00		Daily Team Meeting	Daily Team Meeting: Discussion of findings	Daily Team Meeting	Team discusses the Mission and provides IAEA with feedback				
17:00-18:00		Dinner	Dinner	Dinner	Dinner	Dinner		Dinner	Finalisation of the Report
18:00-20:00		Dinner	Writing of the report	Secretariat edits Report. TM write Report	TM Read Draft				
20:00									

**APPENDIX III – LIST OF COUNTERPARTS**

	<b>IRRS EXPERTS</b>	<b>Lead Counterpart</b>	<b>Support Staff</b>
<b>1.</b>	<b>LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES</b>		
	<b>FERON Fabien</b>	<b>WILLIAMS</b> Joshua (DESNZ) <b>PRICE</b> Richard (DWP) <b>JEYNES</b> Alison (DAERA) <b>ROBERTS</b> Anneris (Scottish Government - health) <b>COULDRIDGE</b> Daniel (Scottish Government - environment) <b>GIBBS</b> James (Welsh Government - environment)	<b>FARROW</b> Julie (DESNZ) <b>PARSONS</b> Jessica (DESNZ) <b>SHARMAN</b> Adam (DESNZ) <b>BISHOP</b> Eileen (DWP)
<b>2.</b>	<b>GLOBAL NUCLEAR SAFETY REGIME</b>		
	<b>FERON Fabien</b>	<b>WILLIAMS</b> Joshua (DESNZ) <b>OGUNBADEJO</b> Olu (DESNZ)	<b>AHMED</b> Aqsa (DESNZ)
<b>3.</b>	<b>RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY</b>		
	<b>KNOCHENHAUER Michael</b>	<b>NICHOLSON</b> Sally (HSE) <b>BROUGHTON</b> Richard (HSE) <b>TAYLOR</b> James (HSE) <b>McNAMARA</b> Kellie (HSENI)	<b>GOPALAKRISHNAN</b> Deepa (HSE) <b>AGADA</b> Nwanne (HSE) <b>MURPHY</b> Linda (HSENI) <b>McGUIRE</b> Corynne (SEPA)

	IRRS EXPERTS	Lead Counterpart	Support Staff
4.		<b>STREATFIELD</b> Ian (EA) <b>DALE</b> Paul (SEPA) <b>PETTS</b> Dawn (ONR) <b>MEDCALF</b> Lorraine (ONR) <b>BRADSHAW</b> Tracy (CQC)	<b>SWITZERLOOD</b> Jo (SEPA)
	<b>MANAGEMENT SYSTEM OF THE REGULATORY BODY</b>		
5.	<b>JUBIN</b> Jean-Rene	<b>DUNNING</b> Liam (ONR) <b>RICHARDSON</b> Mike (ONR) <b>THOMAS</b> Gareth (ONR) <b>NICHOLSON</b> Sally (EA) <b>STREATFIELD</b> Ian (EA) <b>BRADSHAW</b> Tracy (CQC) <b>BROUGHTON</b> Richard (HSE) <b>TAYLOR</b> James (HSE)	<b>BANNON</b> Amber (EA) <b>GOPALAKRISHNAN</b> Deepa (HSE) <b>AGADA</b> Nwanne (HSE)
	<b>AUTHORIZATION</b>		
	<b>ELEK</b> Richard <b>KING</b> Michael	<b>McNAMARA</b> Kellie (HSENI) <b>JONES</b> Will (DHSC)	<b>MURPHY</b> Linda (HSENI) <b>IYPE</b> Priya (DHSC)

	<b>IRRS EXPERTS</b>	<b>Lead Counterpart</b>	<b>Support Staff</b>
<b>6.</b>	<b>HAILU</b> Teodros <b>LIETAVA</b> Peter	<b>THOMAS</b> Tony (OPSS)	<b>JACKSON</b> Beth (OPSS)
	<b>REVIEW AND ASSESSMENT</b>		
	<b>ELEK</b> Richard <b>KING</b> Michael <b>HAILU</b> Teodros <b>LIETAVA</b> Peter	<b>GRAY</b> Louise (ONR) <b>MARSHALL</b> Tim (ONR) <b>TAYLOR</b> James (HSE) <b>BROUGHTON</b> Richard (HSE) <b>STREATFIELD</b> Ian (EA)	<b>PETTS</b> Dawn (ONR) <b>MEDCALF</b> Lorraine (ONR) <b>GOPALAKRISHNAN</b> Deepa (HSE) <b>AGADA</b> Nwanne (HSE)
<b>7.</b>	<b>INSPECTION</b>		
	<b>ELEK</b> Richard <b>KING</b> Michael <b>HAILU</b> Teodros <b>LIETAVA</b> Peter	<b>STREATFIELD</b> Ian (EA) <b>TAYLOR</b> James (HSE) <b>BROUGHTON</b> Richard (HSE) <b>McNAMARA</b> Kellie (HSENI) <b>BRADSHAW</b> Tracy (CQC)	<b>BANNON</b> Amber (EA) <b>ALLOTT</b> Rob (EA) <b>GOPALAKRISHNAN</b> Deepa (HSE) <b>AGADA</b> Nwanne (HSE) <b>MURPHY</b> Linda (HSENI) <b>McGOWN</b> Alastair (HIS)

	IRRS EXPERTS	Lead Counterpart	Support Staff
8.		<b>FREEMAN-FERGUSON</b> Kevin (HIS) <b>HOWE</b> Scott (HIW)	
	<b>ENFORCEMENT</b>		
9.	<b>ELEK</b> Richard <b>KING</b> Michael <b>HAILU</b> Teodros <b>LIETAVA</b> Peter	<b>HUNTER</b> Fiona (ONR)	<b>PETTS</b> Dawn (ONR) <b>MEDCALF</b> Lorraine (ONR)
	<b>REGULATIONS AND GUIDES</b>		
	<b>ELEK</b> Richard <b>KING</b> Michael <b>HAILU</b> Teodros <b>LIETAVA</b> Peter	<b>GRAY</b> Louise (ONR) <b>MARSHALL</b> Tim (ONR) <b>STREATFIELD</b> Ian (EA) <b>LOMBARDI</b> Karl (NRW) <b>DALE</b> Paul (SEPA) <b>WASSON</b> Gillian (NIEA) <b>TAYLOR</b> James (HSE) <b>BROUGHTON</b> Richard (HSE) <b>McNAMARA</b> Kellie (HSENI) <b>BRADSHAW</b> Tracy (CQC)	<b>BANNON</b> Amber (EA) <b>ALLOTT</b> Rob (EA) <b>FAVAGER</b> Becky (NRW) <b>McGUIRE</b> Corynne (SEPA) <b>GOPALAKRISHNAN</b> Deepa (HSE) <b>AGADA</b> Nwanne (HSE) <b>MURPHY</b> Linda (HSENI) <b>PETTS</b> Dawn (ONR)

	IRRS EXPERTS	Lead Counterpart	Support Staff
<b>10.</b>	<b>EMERGENCY PREPAREDNESS AND RESPONSE</b>		
	<b>KUPILA</b> Jukka	<b>PETERS</b> Sarah (DESNZ) <b>INGHAM</b> Grant (ONR) <b>THOMAS</b> Gareth (ONR)	<b>BEAIL</b> Jake (DESNZ)

APPENDIX IV - RECOMMENDATIONS (R) AND SUGGESTIONS (S) FROM THE PREVIOUS IRRS MISSION THAT REMAIN OPEN

Module	Section	R/S	Recommendations/Suggestions
3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY	3.3.	<a href="#">R4</a>	<b>Recommendation:</b> The HSE should increase the number of both Specialist Inspectors (Radiation) and Ionising Radiations Regulatory Inspectors.
	3.7.	<a href="#">S3</a>	<b>Suggestion:</b> The HSE should consider reviewing the operational aspects of CIDI to receive data more frequently and enhance its capabilities to facilitate its own and other regulatory bodies' activities.
4. MANAGEMENT OF THE REGULATORY BODY	4.3.	<a href="#">S4</a>	<b>Suggestion:</b> Within its Integrated Management System, CQC should consider enhancing its processes for oversight of radiation safety.
	4.5.	<a href="#">S5</a>	<b>Suggestion:</b> HSE should consider improvement of its Integrated Management System with respect to the clear visibility of the process owners.
5. AUTHORIZATION	5.9.	<a href="#">S8</a>	<b>Suggestion:</b> The HSE should consider setting up appropriate mechanisms for either the formal recognition or accreditation of training and educational service providers.
	5.10.	<a href="#">S9</a>	<b>Suggestion:</b> The UK Government should consider including information on the regulation of “Consumer Products” in its draft “Framework for Radiation Protection and Nuclear Safety”. In addition to that, the OPSS and the HSE should consider developing further guidance pertaining to “Consumer Products” regulations.
7. INSPECTION	7.5.	<a href="#">R13</a>	<b>Recommendation:</b> HSE, HSENI and ONR should develop and implement a programme of inspection which stipulate the frequency of radiation sources safety related inspections and the areas and programmes to be inspected, in accordance with a graded approach.
	7.9.	<a href="#">R15</a>	<b>Recommendation:</b> CQC, HIW, and HIS should develop a programme of inspection that includes the frequency of inspections for all facilities and areas and programmes to be inspected, in accordance with a graded approach.
9. REGULATIONS AND GUIDES	9.1.	<a href="#">R16</a>	<b>Recommendation:</b> The EA, NRW, SEPA, NIEA, HSE, HSENI and CQC should further develop processes and procedures for the establishment, review and update of regulatory guidance to include applicable IAEA safety standards.
	9.4.	<a href="#">S15</a>	<b>Suggestion:</b> The NIEA should consider requiring permit holders of non-nuclear sites to have in place RAW management plans identifying the interdependencies in RAW management including the disposal option.



Module	Section	R/S	Recommendations/Suggestions
	9.4.	<a href="#">R19</a>	<b>Recommendation:</b> The EA should review its approach to clearance, to consider the use of case and site-specific activity concentrations in helping enable the minimisation of radioactive waste production.
	9.8.	<a href="#">S16</a>	<b>Suggestion:</b> The HSE and HSENI should consider updating their guidelines relevant to the approval of technical services and establishing, developing and maintaining further appropriate guidelines.

**APPENDIX V - RECOMMENDATIONS (RF), SUGGESTIONS (SF) AND GOOD PRACTICES (GPF) FROM THE IRRS FOLLOW-UP MISSION**

<b>Module</b>	<b>Section</b>	<b>RF/SF/GPF</b>	<b>Recommendation, Suggestion or Good Practice</b>
<b>1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT</b>	<b>1.1.</b>	<a href="#"><u>RF1</u></a>	<b>Recommendation:</b> UK Government and Devolved Administrations should ensure that all regulatory authorities have adequate human and financial resources to fulfil their statutory obligation for the regulatory control of facilities and activities. The UK national policy and strategy for safety should elaborate on the commitment to provide adequate resources.
	<b>1.7.</b>	<a href="#"><u>RF2</u></a>	<b>Recommendation:</b> The UK Government should revise the Nuclear Installations Regulations 1971 such that GDF is defined as a nuclear licensed site and is subject to ONR authorization.
<b>3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY</b>	<b>3.3.</b>	<a href="#"><u>RF3</u></a>	<b>Recommendation:</b> The UK Government should provide the conditions that allow necessary recruitment to be accomplished, including provisions for offering competitive salaries for expert positions.
	<b>3.3.</b>	<a href="#"><u>SF1</u></a>	<b>Suggestion:</b> HSE should consider the use of external experts, given the extreme challenges encountered in recruitment.
	<b>3.3.</b>	<a href="#"><u>RF4</u></a>	<b>Recommendation:</b> The Scottish Government should provide the conditions that allow necessary recruitment to be accomplished, including provisions for offering competitive salaries for expert positions.
<b>10. EMERGENCY PREPAREDNESS AND RESPONSE – REGULATORY ASPECTS</b>	<b>10.2.</b>	<a href="#"><u>SF2</u></a>	<b>Suggestion:</b> UK Government should consider further evaluating its EPR arrangements for protecting the public against severe deterministic effects in Threat Category I facilities for the most severe scenarios or accidents.

**APPENDIX VI – COUNTERPART’S REFERENCE MATERIAL USED FOR THE REVIEW**

<b>Reference</b>	<b>Reference title</b>
1	R01_DESNZ_REF01: How we regulate radiological and civil nuclear safety in the UK
2	R02_DESNZ_REF01: Implementing Geological Disposal - Working with Communities
3	R02_DESNZ_REF02: Geological Disposal of Higher Activity Radioactive Waste Working with Communities
4	R02_DESNZ_REF03: The Energy Act 2023
5	R02_DESNZ_REF04: Energy Act Explanatory Notes
6	R02_DESNZ_REF05: Energy Bill Impact Assessment
7	R03_DESNZ_REF01: Stakeholder mapping of coordination groups
8	R03_DESNZ_REF02: mapping memoranda of understanding (MoU) across the regulatory framework
9	R03_DESNZ_REF03: Nuclear Decommissioning Strategy and Policy Group (NDSPG) Terms of Reference
10	R03_DESNZ_REF04: Nuclear Decommissioning Strategy and Policy Group (NDSPG) meeting agenda
11	R03_DESNZ_REF05: Nuclear Decommissioning Strategy and Policy Group (NDSPG) meeting readout
12	R03_DESNZ_REF06: UK Health and Safety Regulators Network (UKHSRN) presentation including Terms of Reference
13	R03_DESNZ_REF07: UK Health and Safety Regulators Network (UKHSRN) readout
14	R03_DESNZ_REF08: Medical Radiation Liaison Group (MRLG) Terms of Reference
15	R03_DESNZ_REF09: Medical Radiation Liaison Group (MRLG) meeting agenda
16	R03_DESNZ_REF10: Medical Radiation Liaison Group (MRLG) meeting readout
17	R03_DESNZ_REF11: IR(ME)R Summit Terms of Reference
18	R03_DESNZ_REF12: Nuclear Industry Liaison Group (NILG) Terms of Reference
19	R03_DESNZ_REF13: Nuclear Industry Liaison Group (NILG) meeting agenda
20	R03_DESNZ_REF14: Nuclear Industry Liaison Group (NILG) meeting readout
21	R03_DESNZ_REF15: Transport Competent Authority Terms of Reference
22	R03_DESNZ_REF16: Transport Competent Authority meeting agenda
23	R03_DESNZ_REF17: Transport Competent Authority meeting readout
24	R03_DESNZ_REF18: Lessons Learned Working Group (LLWG) Terms of Reference
25	R03_DESNZ_REF19: Lessons Learned Working Group (LLWG) meeting agenda
26	R03_DESNZ_REF20: Incident Reporting Group (IRG) MoU Draft methodology / Terms of Reference
27	R03_DESNZ_REF21: Incident Reporting Group (IRG) meeting readout
28	R03_DESNZ_REF22: Radioactive Substances Policy Group (RSPG) Terms of Reference
29	R03_DESNZ_REF23: Radioactive Substances Policy Group (RSPG) meeting agenda
30	R03_DESNZ_REF24: Radioactive Substances Policy Group (RSPG) meeting readout
31	R03_DESNZ_REF25: Working group policy options paper
32	R03_DESNZ_REF26: Pilot Operating and Regulatory Experience (ORE) report
33	R03_DESNZ_REF27: Terms of reference for the Radiological Safety Working Group (RSWG)
34	R04_HSE_REF01: HSE Executive Committee EC/20/35 Implementing the Findings of the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS) Full Mission to the UK

35	R04_HSE_REF02: HS Portfolio Board PB/20/ Business Case to Implement the International Atomic Energy Agency's Recommendations for Improving Ionising Radiation Protection in Great Britain
36	R04_HSE_REF03: HSE Strategic Design Authority SDA/22/04 Ionising radiation: Delivery Expectations and Resource Requirements
37	R04_HSE_REF04: Protecting people and places HSE strategy 2022 to 2032
38	R04_HSE_REF05: Project 1 Frequently Asked Questions
39	R04_HSE_REF06: HSE's Enforcement Policy Statement
40	R04_HSE_REF07: HSE's Enforcement Management Model (EMM) Operational Version 3.2
41	R04_HSE_REF08: HSE 51: Regulation of Health and Safety at Work
42	R04_HSE_REF09: Radiological Safety Group (RSG) Report on Radiation Protection Skills from the Skills Task and Finish Group
43	R04_HSE_REF10: Radiation Specialist Inspector (FOD Band 3 SEO)
44	R05_SEPA_REF01: SEPA's competence framework
45	R05_SEPA_REF02: Associated guidance to SEPA's competence framework
46	R05_SEPA_REF03: SEPA's training directory
47	R05_SEPA_REF04: SEPA's staff training record template
48	R06_CQC_REF01: DHSC Paper
49	R06_CQC_REF02: People Committee Paper
50	R06_CQC_REF03: IR(ME)R Manager Job Description
51	R06_CQC_REF04: Modality Lead Job Description
52	R06_CQC_REF05: IR(ME)R Inspector Job Description
53	R06_CQC_REF06: IR(ME)R Induction
54	R07_HSE_REF01: HSE Portfolio Board PB/20/ Business Case to Implement the International Atomic Energy Agency's Recommendations for Improving Ionising Radiation Protection in Great Britain
55	R07_HSE_REF02: The Regulators' Code
56	R07_HSE_REF03: The Ionising Radiations Regulations 2017
57	R07_HSE_REF04: L121 Work with ionising radiation: Approved Code of Practice and Guidance
58	R07_HSE_REF05: HSE Operations and Regulation Committee ORCo/22/32 Ionising Radiation: Change to Consent Authorisation – Operational and Regulatory Considerations
59	R07_HSE_REF06: HSE Executive Committee EC/20/35 Implementing the Findings of the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS) Full Mission to the UK
60	R07_HSE_REF07: HSE Portfolio Board PB/23/08 Ionising Radiation Project: Delivery Update
61	R07_HSE_REF08: HSE Portfolio Board PB/23/25 Ionising Radiation Project: Delivery Update
62	R07_HSENI_REF01: HSENI webpage on ionising radiation <a href="https://www.hseni.gov.uk/articles/ionising-radiation">https://www.hseni.gov.uk/articles/ionising-radiation</a>
63	R07_HSENI_REF02: HSE/HSENI Memorandum of Understanding
64	R07_ONR_REF03: ONR-MS-PROC-001 - Control of ONR Management System Documented Information (MSDI).
65	R07_ONR_REF04: NS-PER-GD-004 - High-Activity Sealed Radioactive Sources (HASS) - Guidance for Technical Officer

66	R07_ONR_REF05: Regulators Code
67	R07_ONR_REF06: Licence Conditions Handbook
68	R08_ONR_REF01: <a href="#">ONR Strategy 2020-2025</a>
69	R08_ONR_REF02: <a href="#">Stakeholder engagement strategy 2020-2025</a>
70	R08_ONR_REF03: <a href="#">Policy on Openness and Transparency</a>
71	R08_ONR_REF04: <a href="#">Response to consultation on ONR's Policy for openness and transparency</a>
72	R08_ONR_REF05: <a href="#">ONR Annual Stakeholder Research Report 2023</a>
73	R08_ONR_REF06: <a href="#">Organisational Effectiveness Indicator (OEI) framework - ONR</a>
74	R08_ONR_REF07: <a href="#">ONR Corporate Plan 2023/24</a>
75	R08_ONR_REF08: <a href="#">Office for Nuclear Regulation Annual Report and Accounts 2021/22</a>
76	R08_ONR_REF09: ONR Public consultations and discussions webpage image <a href="https://www.onr.org.uk/consultations/index.htm">https://www.onr.org.uk/consultations/index.htm</a>
77	R08_ONR_REF10: ONR Decision Review and Appeals Process
78	R09_ONR_REF01: IAEA Safety Standard – General Safety Requirements No. GSR Part 2 – Leadership and Management for Safety. 2016. <a href="https://www.iaea.org/publications/11070/leadership-and-management-for-safety">https://www.iaea.org/publications/11070/leadership-and-management-for-safety</a>
79	R09_ONR_REF02: IAEA, GSG-12 - Organization, Management and Staffing of the Regulatory Body for Safety 2018 <a href="https://www.iaea.org/publications/12272/organizationmanagement-and-staffing-of-the-regulatory-body-for-safety">https://www.iaea.org/publications/12272/organizationmanagement-and-staffing-of-the-regulatory-body-for-safety</a>
80	R09_ONR_REF03: IAEA Safety Standards Series No. GS-G-3.1 - Application of the Management System for Facilities and Activities 2006 <a href="https://www.iaea.org/publications/7467/application-of-the-management-system-for-facilitiesand-activities">https://www.iaea.org/publications/7467/application-of-the-management-system-for-facilitiesand-activities</a>
81	R09_ONR_REF04: ONR Management System Improvement Project - Project Initiation Document (ONR record ref.: 2019/80975) 2019
82	R09_ONR_REF05: ONR Management System Improvement Project – Handover and Closure Report (ONR record ref.: 2021/5686) 2021
83	R09_ONR_REF06: ONR MSIP Benefits Realisation Plan (ONR record ref.: 2021/2592) 2021
84	R09_ONR_REF07: ONR-MS-MAN-001 - ONR Management System Manual 2023
85	R09_ONR_REF08: ONR Achieving Cultural Excellence in Health, Safety and Wellbeing - Project Initiation Document (ONR record ref.: 2023/1067) 2022
86	R09_ONR_REF09: ONR-HSW-MAN-001 - Achieving Cultural Excellence (ACE) in Health, Safety and Wellbeing Strategy. n.d.
87	R09_ONR_REF10: Minutes of the ONR Board. 28 July 2021 <a href="https://www.onr.org.uk/meetings/2021/21-07-00.pdf">https://www.onr.org.uk/meetings/2021/21-07-00.pdf</a>
88	R09_ONR_REF11: ONR's Statement of Intent for an Environmental Policy November 2021 <a href="https://www.onr.org.uk/documents/onr-statement-of-intent.pdf">https://www.onr.org.uk/documents/onr-statement-of-intent.pdf</a>
89	R09_ONR_REF12: ONR's Estates Strategy 2021-25. n.d.
90	R09_ONR_REF13: ISO 27001:2013 - ONR's Certificate of Registration (Ref QEC/12/8677436704). n.d.
91	R09_ONR_REF14: ONR-SEC-STRAT-001 - ONR's Corporate Security Strategy. n.d.
92	R09_ONR_REF15: ONR-DPC-POL-001 - Data Protection Policy. n.d.
93	R09_ONR_REF16: ONR Quality Management Policy n.d.
94	R09_ONR_REF17: ISO 9001:2015 - Quality management systems - requirements Geneva: International Organisation for Standardisation (ISO), 2015

95	R09_ONR_REF18: ONR-MS-PROC-001 - Control of Management System Documented Information. n.d.
96	R09_ONR_REF19: ONR NS-TAST-GD-108 - Guidance on Production of Reports for Permissioning. n.d.
97	R09_ONR_REF20: ONR NS-TAST-PROC-001 - Peer Review and Acceptance of Reports for Permissioning. n.d.
98	R09_ONR_REF21: ONR-HR-R2A2-023 - ONR Roles, Responsibilities, Accountabilities and Authorisations (R2A2) - Process Owner. n.d.
99	R09_ONR_REF22: ONR Safety Assessment Principles (SAPs) 2014 Edition. January 2020 <a href="https://www.onr.org.uk/saps/saps2014.pdf">https://www.onr.org.uk/saps/saps2014.pdf</a>
100	R09_ONR_REF23: ONR NS-TAST-GD-005 - Guidance on the Demonstration of ALARP (As Low as Reasonably Practicable). n.d.
101	R09_ONR_REF24: ONR Enforcement Policy Statement.” December 2020 <a href="https://www.onr.org.uk/documents/enforcement-policy-statement.pdf">https://www.onr.org.uk/documents/enforcement-policy-statement.pdf</a>
102	R09_ONR_REF25: ONR-ENF-GD-006 - Enforcement. n.d.
103	R09_ONR_REF26: AMBS, An independent culture assessment of the ONR 2022
104	R09_ONR_REF27: ONR Strategy 2020-2025.” July 2020 <a href="https://www.onr.org.uk/documents/2020/onr-strategy-2020-2025.pdf">https://www.onr.org.uk/documents/2020/onr-strategy-2020-2025.pdf</a>
105	R09_ONR_REF28: OECD The Characteristics of an Effective Nuclear Regulator. 2014 <a href="https://www.oecd-ilibrary.org/nuclear-energy/the-characteristics-of-an-effective-nuclearregulator_9789264218741-en">https://www.oecd-ilibrary.org/nuclear-energy/the-characteristics-of-an-effective-nuclearregulator_9789264218741-en</a>
106	R09_ONR_REF29: ONR-MS-PROC-003 - Management Review of ONR's Management System. n.d.
107	R09_ONR_REF30: ONR Integrated Audit and Assurance Plan (IAAP). n.d.
108	R09_ONR_REF31: Audit and Assurance Framework (IAAF). n.d.
109	R09_ONR_REF32: HM Treasury, Assurance Frameworks. December 2012 <a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/270485/assurance_frameworks_191212.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/270485/assurance_frameworks_191212.pdf</a>
110	R10_EA_REF01: Sector Internal Audit Standards (PSAIS 1 April 2017)
111	R10_EA_REF02: LIT 12477 Handling and determining applications for radioactive substances activities on nuclear sites
112	R10_EA_REF03: Guidance on EA’s consultation process <a href="https://www.gov.uk/government/publications/environmental-permits-when-and-how-weconsult/environmental-permits-when-and-how-we-consult">https://www.gov.uk/government/publications/environmental-permits-when-and-how-weconsult/environmental-permits-when-and-how-we-consult</a>
113	R10_EA_REF04: LIT 11156 Governance of Enforcement - responses, sanctions, interventions and resources
114	R10_EA_REF05: Nuclear Outcome Plan
115	R10_EA_REF06: Nuclear Outcome Delivery Plan
116	R10_EA_REF07: Environmental permitting of Sizewell C - consultation summary document
117	R10_EA_REF08: Environmental permitting of NNB Generation Company (Sizewell C) Limited - Decision document radioactive substances activities
118	R10_EA_REF09: LIT 55270 - Non-nuclear Sector Plan
119	R10_EA_REF10: Pilot Operating and Regulatory Experience (ORE) report
120	R10_EA_REF11: LIT 12427 Assessing environmental permit compliance for radioactive substances activities
121	R11_ONR_REF01: ONR-RP-GD-012 ONR process for granting consent
122	R11_ONR_REF02: Ionising Radiations Regulations 2017 - How to submit an application <a href="https://www.onr.org.uk/irr17/consent.htm">https://www.onr.org.uk/irr17/consent.htm</a>

123	R11_ONR_REF03: The Health and Safety and Nuclear (Fees) (Amendment) Regulations 2023
124	R11_ONR_REF04: Letter from the Society for Radiological Protection
125	R11_HSE_REF01: HSE Executive Committee EC/20/35 Implementing the Findings of the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS) Full Mission to the UK
126	R11_HSE_REF02: HSE Portfolio Board PB/20/ Business Case to Implement the International Atomic Energy Agency's Recommendations for Improving Ionising Radiation Protection in Great Britain
127	R11_HSE_REF03: HSE Portfolio Board PB/23/08 Ionising Radiation Project: Delivery Update
128	R11_HSE_REF04: HSE Portfolio Board PB/23/25 Ionising Radiation Project: Delivery Update
129	R11_HSE_REF05: Ionising Radiation Project Board write-round: 31 Mar 2023
130	R11_HSE_REF06: Ionising Radiation Project Board write-round: 24 Jul 2023
131	R11_HSE_REF07: HSE Operations and Regulation Committee ORCo/22/32 Ionising Radiation: Change to Consent Authorisation – Operational and Regulatory Considerations
132	R11_HSE_REF08: HSE Strategic Design Authority SDA/22/04 Ionising radiation: Delivery Expectations and Resource Requirements
133	R11_HSE_REF09: The Health and Safety and Nuclear (Fees) (Amendment) Regulations 2023
134	R11_HSE_REF10: Instructions for Legal Advisers – Fee Regulations 2023
135	R11_HSE_REF11: HSE Operations and Regulation Committee ORCo/22/59 Proposed Amendments to the Health and Safety and Nuclear (Fees) Regulations
136	R11_HSE_REF12: Health and Safety Executive Board Paper: HSE Fees Regulations and Proposed Hourly Rates for 2023/24
137	R11_HSE_REF13: Ministerial Submission 14 December 2022 the Health and Safety and Nuclear (Fees) Regulations 2023
138	R11_HSE_REF14: New Approach to Consent Authorisation: Delivering the International Atomic Energy Agency's Recommendations for Improving Ionising Radiation Protection in Great Britain - Informal Consultation
139	R11_HSE_REF15: Regulator Assessment: Qualifying Regulatory Provisions
140	R11_HSE_REF16: Work with Ionising Radiation Regulations 2017 and Consent
141	R11_HSE_REF17: Government Functional Standard GovS 002: Project Delivery portfolio, programme and project management
142	R11_HSE_REF18: OSD058 - Ionising Radiation Project Gate 5 Review – Entry to Operation
143	R11_HSENI_REF01: HSENI webpage on ionising radiation <a href="https://www.hseni.gov.uk/articles/ionising-radiation">https://www.hseni.gov.uk/articles/ionising-radiation</a>
144	R11_HSENI_REF02: HSE/HSENI Memorandum of Understanding
145	R12_EA_REF01: Process Document LIT 59982 “Nuclear Radioactive Substances Regulation (RSR) business planning and management process”
146	R13_HSE_REF01: Radiation Operational Team Inspection Plan
147	R13_HSE_REF02: Protecting people and places HSE strategy 2022 to 2032
148	R13_HSE_REF03: Field Operations Directorate Plan
149	R13_HSE_REF04: HSE51 Regulation of health and safety at work
150	R13_HSE_REF05: Ionising Radiation Regulations 2017: Consent Authorisation Consent Renewal
151	R13_HSE_REF06: The Content of Safety Assessments

152	R13_HSE_REF07: Ionising Radiations Regulations 2017 Reg 7 <a href="#">The Ionising Radiations Regulations 2017 (legislation.gov.uk)</a>
153	R13_HSENI_REF01: Health and Safety Executive for Northern Ireland OPERATING PLAN 2023-2024
154	R13_HSENI_REF02: HSENI Corporate Plan 2018-2023 <a href="https://www.hseni.gov.uk/publications/hseni-corporate-plan-2018-2023">https://www.hseni.gov.uk/publications/hseni-corporate-plan-2018-2023</a>
155	R13_HSENI_REF03: The Ionising Radiations Regulations (Northern Ireland) 2017 <a href="https://www.legislation.gov.uk/nisr/2017/229/made">https://www.legislation.gov.uk/nisr/2017/229/made</a>
156	R13_HSENI_REF04: Working with ionising radiation. Ionising Radiations Regulations 2017. Approved Code of Practice and guidance <a href="https://www.hse.gov.uk/pubns/books/1121.htm">https://www.hse.gov.uk/pubns/books/1121.htm</a>
157	R13_HSENI_REF05: Great Britain HSE/HSC codes of practice and other publications approved for use in Northern Ireland <a href="https://www.hseni.gov.uk/sites/hseni.gov.uk/files/GB%20ACOPS%20approved%20for%20use%20in%20NI%20%28Amended%2026.09.22%29.pdf">https://www.hseni.gov.uk/sites/hseni.gov.uk/files/GB%20ACOPS%20approved%20for%20use%20in%20NI%20%28Amended%2026.09.22%29.pdf</a>
158	R13_HSENI_REF06: Enforcement Guidelines for Health and Safety at Work in Northern Ireland <a href="https://www.hseni.gov.uk/sites/hseni.gov.uk/files/amendments%20revocation%20eu%20exit%20IA.PDF">https://www.hseni.gov.uk/sites/hseni.gov.uk/files/amendments%20revocation%20eu%20exit%20IA.PDF</a>
159	R13_HSENI_REF07: HSENI Register of Prosecutions <a href="https://www.hseni.gov.uk/hsenipublic-register-prosecutions">https://www.hseni.gov.uk/hsenipublic-register-prosecutions</a>
160	R13_ONR_REF01: NS-INSP-GD-054 - The Ionising Radiations Regulations 2017
161	R13_ONR_REF02: ONR-RP-GD-012 - ONR process for granting consent
162	R13_ONR_REF03: ONR-RP-GD-001 - Applying for IRR17 Consent - Guidance for applicants
163	R13_ONR_REF04: ONR-INSP-GD-059 - Guidance for Inspection Strategy Planning and Recording
164	R13_ONR_REF05: ONR-INSP-GD-064 - General Inspection Guide
165	R13_ONR_REF06: ONR-MS-PROC-001 - Control of management system documented information
166	R14_ONR_REF01: NS-INSP-GD-054 - The Ionising Radiations Regulations 2017
167	R14_ONR_REF02: NS-INSP-GD-064 - General Inspection Guide
168	R14_ONR_REF03: <a href="#">ONR - Agency Agreements, Memoranda of Understanding (MoUs) and working arrangements protocol</a> <a href="https://www.onr.org.uk/agency-agreements-mou.htm">https://www.onr.org.uk/agency-agreements-mou.htm</a>
169	R14_HSE_REF01: The Ionising Radiations Regulations 2017
170	R14_HSE_REF02: Guidance on Inspection under the Ionising Radiations Regulations 2017 (IRR17): IAEA Recommendation on Safety Aspects
171	R14_HSENI_REF01: Guidance on safety aspects under IRR(NI)17
172	R15_CQC_REF01: CQC IR(ME)R Graded approach model for regulating the safety of medical exposures
173	R15_CQC_REF02: IR(ME)R touchpoints
174	R15_CQC_REF03: IR(ME)R inspection handbook
175	R15_HIS_REF01: Agreement document between HIS and Scottish Government
176	R15_HIS_REF02: Extract from the HIS inspection methodology
177	R15_HIS_REF03: Competency framework in place for developing and maintaining competence of inspectors
178	R15_HIS_REF04: Details of HIS inspection programme
179	R15_HIW_REF01: HIW IR(ME)R Workbook Inspection Manager DoQ – 2023
180	R15_HIW_REF02: HIW IR(ME)R Workbook UKHSA DoQ - 2023



181	R16_UK_REF01: The UK Framework for Contributing to and Implementing IAEA Standards
182	R16_UK_REF02: IAEA draft standards status spreadsheet
183	R16_NIEA_REF01: QA 087 Issuing of external guidance relating to radioactive substances
184	R16_NRW_REF01: Organisational Guidance Note OGN001 - Developing Good Guidance
185	R16_SEPA_REF01: Radioactive Substances Regulatory and Policy Support Group (RASRAP) Terms of Reference
186	R16_SEPA_REF02: Example of a cover paper recently submitted to RASRAP on the topic of radioactive contaminated land
187	R17&18_EA-NRW-SEPA-NIEA_REF01: Early GRA consultation document
188	R20_NIEA_REF01: Guidance on decommissioning of non-nuclear facilities for radioactive substances activities
189	R21_ONR_REF01: ONR Corporate Plan 2023/24
190	R21_ONR_REF02: ONR PRC Steering Group meeting - 14 April 2023 – Summary. CM9 record 2023/23234
191	R21_ONR_REF03: PRC – Planning revision of documentation – Tentative timeline 20 March 2023 v1.0. CM9 record 2023/17168
192	R21_ONR_REF04: ONR Stakeholder Engagement Strategy 2020-25
193	R21_ONR_REF05: Communications handling plan – Proportionate Regulatory Control Project – June 2023 to March 2024. CM9 record 2023/33955
194	R21_ONR_REF06: Control of ONR Management System Documented Information (MSDI) ONR-MS-PROC-001. Issue 3.4. January 2023. CM9 record 2020/59032.
195	R23_DESNZ_REF01: UK EP&R Review of IRRS Recommendations R23 and R24
196	R23_DESNZ_REF02: REPIR 2019 Approved Code of Practice (ACOP) and guidance
197	R24_DESNZ_REF01: UK EP&R Review of IRRS Recommendations R23 and R24
198	R24_DESNZ_REF02: REPIR 2019 Approved Code of Practice (ACOP) and guidance
199	S01_DESNZ_REF01: Terms of Reference for Radiological Safety Group (RSG)
200	S01_DESNZ_REF02: Terms of reference for Radiological Safety Working Group (RSWG)
201	S01_DESNZ_REF03: The Regulators’ Code
202	S01_DESNZ_REF04: Stakeholder mapping of coordination groups
203	S01_DESNZ_REF05: email chain with EA and CQC concluding that there is no need for an MoU between their organisations
204	S01_DESNZ_REF06: How we regulate radiological and civil nuclear safety in the UK
205	S03_HSE_REF01: UK Government Regulator’s Code
206	S03_HSE_REF02: The Ionising Radiation Regulations 2017 Reg 24 and Reg 26
207	S03_HSE_REF03: HSE Statement on the Approval of Dosimetry Services
208	S05_HSE_REF01: “Plan to work healthily and safely by knowing our roles and responsibilities, when needing HSW Advice and Capability”
209	S05_HSE_REF02: HSW committees’ terms of reference
210	S06_HSE_REF01: Health and safety training guide
211	S06_HSE_REF02: Health and Safety at Work etc. Act 1974
212	S06_HSE_REF03: Management of Health and Safety at Work Regulations 1999
213	S06_HSE_REF04: Health and safety training
214	S06_HSE_REF05: Health and safety accreditation schemes
215	S06_HSE_REF06: <a href="#">Online Training Courses &amp; Qualifications   learndirect</a>
216	S07_HSE_REF01: <a href="#">UKAS Accreditation website</a>
217	S07_HSE_REF02: HSE Statement on the Approval of Dosimetry Services
218	S07_HSE_REF03: HSE Statement on Radiation Protection Advisers

219	S07_HSE_REF04: List of RPA bodies recognised by HSE under IRR17
220	S08_DHSC_REF01: Devolved Administration IR(ME)R Meeting Readout
221	S09_DESNZ_REF01: How we regulate radiological and civil nuclear safety in the UK
222	S09_DESNZ_REF02: 'Product safety for businesses: A to Z of industry guidance' <a href="https://www.gov.uk/guidance/product-safety-for-businesses-a-to-z-of-industry-guidance">https://www.gov.uk/guidance/product-safety-for-businesses-a-to-z-of-industry-guidance</a>
223	S09_DESNZ_REF03: 'Smarter regulation: UK product safety review' <a href="https://www.gov.uk/government/consultations/smarter-regulation-uk-product-safety-review">https://www.gov.uk/government/consultations/smarter-regulation-uk-product-safety-review</a>
224	S09_DESNZ_REF04: The General Product Safety Regulations 2005
225	S09_DESNZ_REF05: 'Consumer product safety: advice for staying safe' <a href="https://www.gov.uk/guidance/consumer-product-safety-advice-for-staying-safe">https://www.gov.uk/guidance/consumer-product-safety-advice-for-staying-safe</a>
226	S09_HSE_REF01: National Market Surveillance Programme 2021/22
227	S09_HSE_REF02: HSE's role as a market surveillance authority
228	S10_ONR_REF01: The Decommissioning of the UK Nuclear Industry's Facilities, September 2004
229	S10_ONR_REF02: UK policy proposals for managing radioactive substances and nuclear decommissioning. March 2023
230	S10_ONR_REF03: ONR Enforcement Policy Statement. December 2020
231	S10_ONR_REF04: ONR approach to periodic review of licensee decommissioning strategies and plans. July 2023. CM9 record 2023/34495
232	S10_ONR_REF04: ONR approach to periodic review of licensee decommissioning strategies and plans. July 2023. CM9 record 2023/34495
233	S10_ONR_REF05: Decommissioning. Nuclear Safety Technical Assessment Guide NSTAST-GD-026. Issue 5.2. December 2022
234	S10_ONR_REF06: NLR TAG Review – April 2023. CM9 record 2023/28414
235	S10_ONR_REF07: NLR specialism capability statement – 2021. CM9 record 2021/66659
236	S10_ONR_REF08: Control of ONR Management System Documented Information (MSDI). ONR-MS-PROC-001. Issue 3.4. January 2023. CM9 record 2020/59032
237	S11_HSE_REF01: L121 Work with ionising radiation: Approved Code of Practice and guidance
238	S13_ONR_REF01: ONR Guidance Document ONR-INSP-GD-059: Guidance for Inspection Strategy Planning and Recording, Issue 8.2
239	S13_ONR_REF02: ONR Guidance Document ONR-INSP-GD-064: General Inspection Guide, Issue 5.3
240	S13_ONR_REF03: Control of ONR Management System Documented Information (MSDI) ONR-MS-PROC-001, Issue 3.4, January 2023
241	S14_ONR_REF01: ONR Guidance Document: ONR-ENF-GD-006: Enforcement, Revision 5.1
242	S14_ONR_REF02: The Regulators' Code 2014
243	S14_ONR_REF03: Control of ONR Management System Documented Information (MSDI) ONR-MS-PROC-001, Issue 3.4, January 2023
244	S15_NIEA_REF01: Certificate of authorisation template
245	S15_NIEA_REF02: Example Certificate of authorisation with condition included
246	S16_HSE_REF01: HSE Policy Process Outline
247	S16_HSE_REF02: L121 Work with ionising radiation: Approved Code of Practice and guidance
248	S16_HSE_REF03: HSE Operations and Regulation Committee Paper ORCo/21 Revision to HSE's Radiation Protection Adviser Statement

249	S16_HSENI_REF01: HSENI webpage on ionising radiation <a href="https://www.hseni.gov.uk/articles/ionising-radiation">https://www.hseni.gov.uk/articles/ionising-radiation</a>
250	S17_DAERA_REF01: Radioactive Contaminated Land Regulations (Northern Ireland) 2006 Guidance
251	S18_ONR_REF01: Licence Condition Handbook, ONR, Feb 2017
252	S18_ONR_REF02: 2022 53296 ONR-IMF-FW-001 - Incident Response and Recovery Framework
253	S18_ONR_REF03: ONR-EP-PROC-037, ONR Emergency Response Framework, Issue 1, November 2020. CM9: 2020/0314142
254	S18_ONR_REF04: ONR-EP-GD-002, ONR Emergency Response - Operational Guides (Handbook), Draft, September 2023. CM9: 2023/518
255	S18_ONR_REF05: ONR-EP-GD-001, ONR Emergency Response Role Guides, ONR, June 2023. CM9: 2023/519
256	S18_ONR_REF06: ONR INSPECTORS CALL BACK CHECK SHEET Form EP/8.4/1, Revision 000
257	S18_ONR_REF07: Pre-Defined Data Sets for delivery of plant information by Operators to ONR during emergencies – gap analysis, Rev 2, 13/04/2023. CM9: 2023/14138
258	S18_ONR_REF08: PDDS State & Plan, April 23. CM9: 2023/22253
259	S19_ONR_REF01: ONR Emergency Preparedness & Response Internal “Nucleus” webpage
260	S19_ONR_REF02: ONR-EP-PROC-037, ONR Emergency Response Framework, Issue 1, November 2020. CM9: 2020/0314142
261	S19_ONR_REF03: ONR-EP-GD-002, ONR Emergency Response Handbook, Draft, September 2023. CM9: 2023/518
262	S19_ONR_REF04: ONR-EP-GD-001, ONR Emergency Response Role Guides, ONR, June 2023. CM9: 2023/519
263	S19_ONR_REF05: EP&R Training Strategy 2023 – 2025
264	S19_ONR_REF06: ONR-IMF-FW-001 – Incident Response and Recovery Framework, Aug 2022. CM9: 2022/5326

## APPENDIX VII – IAEA REFERENCE MATERIAL USED FOR THE REVIEW

1. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Fundamental Safety Principles, No SF-1, IAEA, Vienna (2006)
2. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements Part 1, No GSR Part 1 (Rev. 1), IAEA, Vienna (2016)
3. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> – Leadership and Management for Safety, General Safety Requirements Part 2, No GSR Part 2, IAEA, Vienna (2016)
4. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, General Safety Requirements Part 3, No GSR Part 3, IAEA, Vienna (2014).
5. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Safety assessment for facilities and activities, General Safety Requirements Part 4, No GSR Part 4 (Rev. 1), IAEA, Vienna (2016)
6. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Predisposal Management of Radioactive Waste, General Safety Requirements Part 5, No GSR Part 5, IAEA, Vienna (2009)
7. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Decommissioning of Facilities, General Safety Requirements No GSR Part 6, IAEA, Vienna (2014)
8. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Preparedness and Response for Nuclear or Radiological Emergency, General Safety Requirements No GSR Part 7, IAEA, Vienna (2015)
9. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Site Evaluation for Nuclear Installations, Specific Safety Requirements No SSR-1, IAEA, Vienna (2003)
10. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Safety of Nuclear Power Plants: Design, Specific Safety Requirements No SSR-2/1 (Rev. 1), IAEA, Vienna (2016)
11. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Safety of Nuclear Power Plants: Commissioning and Operation, Specific Safety Requirements No SSR-2/2 (Rev. 1), IAEA, Vienna (2016)
12. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Safety of Research Reactors, Specific Safety Requirements No SSR-3, IAEA, Vienna (2016)
13. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Safety of Nuclear Fuel Cycle Facilities, Specific Safety Requirements No SSR-4, IAEA, Vienna (2017)
14. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Disposal of Radioactive Waste, Specific Safety Requirements No SSR-5, IAEA, Vienna (2011)
15. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Regulations for the Safe Transport of Radioactive Material, 2018 Edition, Specific Safety Requirements No SSR-6 (Rev. 1), IAEA, Vienna (2018)
16. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Classification of Radioactive Waste, General Safety Guide No GSG-1, IAEA, Vienna (2009)
17. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Criteria for use in Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Guide No GSG-2, IAEA, Vienna 2011)
18. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Communication and Consultation with Interested Parties by the Regulatory Body, General Safety Guide No GSG-6, IAEA, Vienna (2017)
19. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Occupational Radiation Protection, Safety Guide No GSG-7, IAEA, Vienna (2018)
20. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Regulatory Control of Radioactive Discharges to the Environment, Safety Guide No GSG-9, IAEA, Vienna (2018)
21. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Organization, Management and Staffing of the Regulatory Body for Safety, General Safety Guide No GSG-12, IAEA, Vienna (2018)
22. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> - Functions and Processes of the Regulatory Body for Safety, General Safety Guide No GSG-13, IAEA, Vienna (2018)
23. <b>INTERNATIONAL ATOMIC ENERGY AGENCY</b> Leadership, Management and Culture for Safety in Radioactive Waste Management, Safety Guide No GSG-16, IAEA, Vienna (2022)

<b>24. INTERNATIONAL ATOMIC ENERGY AGENCY - Arrangements for Preparedness for a Nuclear or Radiological Emergency, Safety Guide No GS-G-2.1, IAEA, Vienna (2007)</b>
<b>25. INTERNATIONAL ATOMIC ENERGY AGENCY - Modifications to Nuclear Power Plants, Safety Guide No SSG-71, IAEA, Vienna (2022)</b>
<b>26. INTERNATIONAL ATOMIC ENERGY AGENCY - Recruitment, Qualification and Training of Personnel for Nuclear Power Plants, Safety Guide No NS-G-2.8, IAEA, Vienna (2002)</b>
<b>27. INTERNATIONAL ATOMIC ENERGY AGENCY - Environmental and Source Monitoring for Purposes of Radiation Protection, Safety Guide No RS-G-1.8, IAEA, Vienna (2005)</b>
<b>28. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Radiation Generators and Sealed Radioactive Sources, Safety Guide No RS-G-1.10, IAEA, Vienna (2008)</b>
<b>29. INTERNATIONAL ATOMIC ENERGY AGENCY - Borehole Disposal Facilities for Radioactive Waste, Safety Guide No SSG-1, IAEA, Vienna (2009)</b>
<b>30. INTERNATIONAL ATOMIC ENERGY AGENCY - Deterministic Safety Analysis for Nuclear Power Plants, Specific Safety Guides No SSG-2, IAEA, Vienna (2010)</b>
<b>31. INTERNATIONAL ATOMIC ENERGY AGENCY - Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide No SSG-3, IAEA, Vienna (2010)</b>
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<b>34. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Uranium Fuel Fabrication Facilities Specific Safety Guide No SSG-6, IAEA, Vienna (2010)</b>
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<b>36. INTERNATIONAL ATOMIC ENERGY AGENCY - Licensing Process for Nuclear Installations, Specific Safety Guide No SSG-12, IAEA, Vienna (2010)</b>
<b>37. INTERNATIONAL ATOMIC ENERGY AGENCY - Geological Disposal Facilities for Radioactive Waste Specific Safety Guide No SSG-14, IAEA, Vienna (2011)</b>
<b>38. INTERNATIONAL ATOMIC ENERGY AGENCY - Storage of Spent Nuclear Fuel, Safety Guide No SSG-15 (Rev. 1), IAEA, Vienna (2020)</b>
<b>39. INTERNATIONAL ATOMIC ENERGY AGENCY - Periodic Safety Review for Nuclear Power Plants, Safety Guide No SSG-25, IAEA, Vienna (2013)</b>
<b>40. INTERNATIONAL ATOMIC ENERGY AGENCY - Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material Specific Safety Guide (2018 Edition) No SSG-26 (Rev.1), IAEA, Vienna (2022)</b>
<b>41. INTERNATIONAL ATOMIC ENERGY AGENCY - Commissioning for Nuclear Power Plants, Safety Guide No SSG-28, IAEA, Vienna (2014)</b>
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<b>43. INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of Radioactive Waste from Nuclear Fuel Cycle Facilities, Safety Guide No SSG-41, IAEA, Vienna (2016)</b>
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<b>45. INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection and Safety in Medical Uses of Ionizing Radiation, Safety Guide No SSG-46, IAEA, Vienna (2018)</b>
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<b>47. INTERNATIONAL ATOMIC ENERGY AGENCY – Ageing Management and Development of a Programme for Long Term Operation of Nuclear Power Plants, Safety Guide No SSG-48, IAEA, Vienna (2018)</b>
<b>48. INTERNATIONAL ATOMIC ENERGY AGENCY –Decommissioning of Medical, Industrial and Research Facilities, Safety Guide No SSG-49, IAEA, Vienna (2019)</b>
<b>49. INTERNATIONAL ATOMIC ENERGY AGENCY – Operating Experience Feedback for Nuclear Installations, Safety Guide No SSG-50, IAEA, Vienna (2018)</b>
<b>50. INTERNATIONAL ATOMIC ENERGY AGENCY - Accident Management Programmes for Nuclear Power Plants, Safety Guide No SSG-54, IAEA, Vienna (2019)</b>
<b>51. INTERNATIONAL ATOMIC ENERGY AGENCY - Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material, Safety Guide No SSG-65, IAEA, Vienna (2022)</b>
<b>52. INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection Programmes for the Transport of Radioactive Material, Safety Guide No TS-G-1.3, IAEA, Vienna, (2007)</b>
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