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| ONR Technical Inspection Guide (TIG)  LC 32: Accumulation of radioactive waste |



ONR Technical Inspection Guide (TIG)

LC 32: Accumulation of radioactive waste

**Head of Profession** – Nuclear Liabilities, Chemistry and Chemical Engineering

**Authored by** – Nuclear Liabilities Regulation Inspector

**Approved by** – Head of Profession

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| Issue | Description of update(s) |
| 7 | Update to explain interactions between safety and safeguards inspections under the topics covered by this licence condition. |
| 8 | Restructure and removal of duplicated text to improve readability of the guidance captured in sections 1-5. Update to Article 37 aspects due to Brexit and updated UK radioactive substances and nuclear decommissioning policy. |

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# Introduction

1. Many of the licence conditions attached to the standard nuclear site licence require, or imply, that licensees should make arrangements to comply with regulatory obligations under the conditions. ONR inspects compliance with licence conditions, and also with the arrangements made under them, to judge the suitability of the arrangements made and the adequacy of their implementation. Most of the standard licence conditions are goal setting, and do not prescribe in detail what the licensee’s arrangements should contain; this is the responsibility of the duty-holder who remains responsible for safety. To support inspectors undertaking compliance inspection, ONR produces a suite of guides to assist inspectors in making regulatory judgements and decisions in relation to the adequacy of compliance, and the safety of activities on the site, of which this inspection guide is one.

## Purpose

1. This Technical Inspection Guide (TIG) has been prepared to assist ONR inspectors in their judgement of the adequacy of Licence Condition 32   
   (LC 32) compliance arrangements and their implementation. This is to facilitate a consistent approach to LC32 compliance inspections and is benchmarked against IAEA safety standards [1] [2] [3]. Further sources of guidance that inspectors may refer to before inspecting particular aspects of a licensee’s arrangements for complying with LC 32 are also identified within.
2. This TIG has five main elements:

* Wording of LC32.
* Purpose of LC32.
* Guidance on expectations of licensees’ LC 32 compliance arrangements.
* Guidance on inspection of licensees’ implementation of LC 32 compliance arrangements.
* Additional background guidance on relevant interfaces with the environment agencies and ONR’s Safeguard purpose.

## Scope and applicability

1. On nuclear licensed sites in England and Wales, “radioactive waste” has the meaning assigned in paragraph 3 of Part 2 of Schedule 23 to the Environmental Permitting (England and Wales) Regulations 2016 (EPR16) [4]. On nuclear licensed sites in Scotland, “radioactive waste” has the meaning assigned thereto in paragraph 5 of Part 1 of Schedule 8 to the Environmental Authorisation (Scotland) Regulations 2018 (EASR18) [5].   
   The definition in Licence Condition 1 (Interpretation) [6] is consistent with both the EPR16 and EASR18.
2. In general terms, radioactive waste may be summarised as any material that is either radioactive itself or is contaminated by radioactivity, for which no further use is envisaged by its owner. The definition, and therefore LC 32, does not distinguish between physical form and includes solid, liquid and gaseous radioactive waste. Government policy means that certain radioactive materials, such as uranium and plutonium, are considered as assets [7]. Spent fuel should not be categorised as waste whilst a future use can be foreseen by the owner. Any decisions related to these, including whether these should be declared as waste, is a matter for the owner of such materials. The organisation that owns radioactive material, and any radioactive waste arising from its use, accumulated on a nuclear licensed site may or may not be the licensee for the site concerned (for example, the owner may be the Nuclear Decommissioning Authority (NDA), Ministry of Defence, or another third party).
3. The licensee’s arrangements should identify the holder of financial liability for the costs of managing radioactive material and radioactive waste held on the licensed site. If two separate organisations are involved, interactions between the licensee and the owner of radioactive material or radioactive waste should include an efficient mechanism by which radioactive material can be declared to be a radioactive waste as soon as no further productive use for it is foreseen.
4. On matters affecting the management of radioactive waste on nuclear licensed sites, ONR takes account of the interests of the relevant environment regulator: the Environment Agency in England, the Scottish Environment Protection Agency (SEPA) in Scotland and Natural Resources Wales (NRW) in Wales (collectively referred to as the “environment agencies” in the remainder of this TIG).
5. Inspectors should familiarise themselves with ONR’s Memoranda of Understanding (MoU) with the Environment Agency [8], SEPA [9] and NRW [10], including associated guidance documents on working together on aspects of mutual interest [11, 12, 13].
6. The requirements of LC 32 outlined in this TIG, and ONR vires therein, apply to solid, liquid and gaseous radioactive waste on nuclear licensed sites, and apply to all the following categories of radioactive waste:

* High Level Waste (HLW) – waste that is sufficiently radioactive for its decay heat to significantly increase its temperature and the temperature of its surroundings, such that heat generation has to be taken into account in the design of storage and disposal facilities;
* Intermediate Level Waste (ILW) – waste that exceeds the radioactivity limits for Low Level Waste, but which does not require heat generation to be taken into account in the design of storage or disposal facilities;
* Low Level Waste (LLW) – waste having a radioactive content not exceeding 4 GBq per tonne of total alpha activity or 12 GBq per tonne of total beta/gamma activity;
* Very Low Level Waste (VLLW) – a sub-category of LLW with maximum radioactivity concentrations of 4 MBq per tonne, the activity limit for tritium being 40 MBq per tonne; and,
* Exempt and out of scope waste – waste that is outside the scope of, or can be exempted from some requirements of, the environmental legislation if the preconditions specified in that legislation can be satisfied [14].

1. “Higher Activity Waste” (HAW) comprises a number of categories of radioactive waste: HLW, ILW and LLW that currently has no disposal route available. Definitions of terms commonly used in the management of radioactive waste can be found in the joint guidance document “Basic Principles of Radioactive Waste Management” [15].
2. Inspectors of sites that produce or store HAW should familiarise themselves with the joint guidance document “The management of higher activity radioactive waste on nuclear licensed sites” [16], including the concept of Radioactive Waste Management Cases (RWMCs).

* An RWMC is not a requirement of the nuclear site licence but should be considered as Relevant Good Practice (RGP) for HAW as a means to demonstrate compliance with safety and environmental requirements.   
  The RWMC should indicate, in summary form, how the key elements of long-term[[1]](#footnote-2) safety and environmental performance will be delivered for the management of the waste stream or streams covered.
* The joint guidance aims to ensure the long-term risks associated with HAW are adequately identified and managed in a sustainable way.   
  The risks and any mitigations may span long timescales and multiple duty holders, with the RWMC being used to build confidence that the conditioned HAW packages will ultimately be disposable, incorporating both safety (reducing risks to As Low As Reasonably Practicable (ALARP)) and environmental protection (optimisation) considerations.   
  The joint guidance should be considered RGP in its entirety.

1. The environmental legislation (EASR18 in Scotland and EPR16 in England and Wales) requires a nuclear licensee to obtain a permit from the relevant environment agency whenever it intends to:

* Discharge radioactive gases to the environment;
* Discharge radioactive liquids to the environment;
* Transfer radioactive waste to another site for the purpose of waste treatment or waste storage;
* Consign radioactive waste to a final disposal facility, including in situ disposal such as an incinerator or solid waste repository, from which there is no intention to retrieve the waste; and
* In Scotland only, manage radioactive waste on site (including treatment and storage). On nuclear licensed sites in England and Wales, the requirement of EPR16 to obtain a permit for the accumulation of radioactive waste does not apply. Further guidance on the interface between NIA65 and environmental regulation is provided in [Appendix A](#_Appendix_A_–).

1. Inspectors should be aware that government policies for the long-term future management of HAW differ in Scotland (management in near-surface facilities, located as near to the site where the waste is produced as possible) [17] and England and Wales (disposal in a geological disposal facility or, for suitable ILW, in a near-surface disposal facility) [7].
2. Inspectors should also take account of relevant requirements in The Nuclear Safeguards (EU Exit) Regulations 2019 (NSR19) and the associated ONR Guidance for Nuclear Material Accountancy, Control and Safeguards (ONMACS) [18], noting that safeguards requirements are independent of whether a material is declared as a waste or not by the owner. These apply to qualifying nuclear material (QNM), as defined in the Nuclear Safeguards Act 2018, rather than nuclear matter more widely. The safeguards-relevant aspects of LC 32 are summarised in [Appendix B](#_Appendix_B_–). The section is aimed at ONR safeguards inspectors conducting an integrated inspection on LC 32 with an ONR nuclear safety inspector, but it provides a useful insight to all inspectors on aspects of an LC 32 inspection that may be relevant to safeguards.

# Licence Condition 32: Accumulation of radioactive waste

32(1) The licensee shall make and implement adequate arrangements for minimising so far as is reasonably practicable the rate of production and total quantity of radioactive waste accumulated on the site at any time and for recording the waste so accumulated.

32(2) The licensee shall submit to ONR for approval such part or parts of the aforesaid arrangements as ONR may specify.

32(3) The licensee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless ONR has approved such alteration or amendment.

32(4) Without prejudice to paragraph (1) of this condition the licensee shall ensure that radioactive waste accumulated or stored on the site complies with such limitations as to quantity, type and form as may be specified by ONR.

32(5) The licensee shall, if so specified by ONR, not accumulate radioactive waste except in a place and in a manner approved by ONR.

# Purpose of the Licence Condition

1. The key purpose of LC 32(1) is to ensure that both the rate of production of radioactive waste, and the amount of radioactive waste, on nuclear licensed sites are minimised, and that radioactive is, at all times, adequately controlled.
2. Aspects of radioactive waste management that ONR might expect to be addressed as part of a licensee’s arrangements to comply with LC 32(1) include:

* prevention and minimising the quantity (volume and activity) of radioactive waste generated from any activities,
* characterisation, sort and segregation and conditioning of radioactive waste where there are documented benefits to further waste management steps, including minimising the quantity (volume and activity) which requires further storage on site and enabling removal of waste from the site (treatment or disposal),
* managing information and ensuring adequate records are available to support any future management activities.

1. Further technical guidance on these aspects can be found in;

* the joint ONR and environment agencies guidance documents “Basic principles of radioactive waste management” [15];
* “The management of higher activity radioactive waste on nuclear licensed sites” [16];
* ONRs Technical Assessment Guide (TAG) on the management of radioactive material and radioactive waste on nuclear licensed sites [19]; and,
* ONRs Safety Assessment Principles (SAPs) RW.1-7 [20].

1. Inspectors should note that storage of radioactive waste falls within the definition of “operations” in LC 1(1). Consequently, the requirements of all 36 licence conditions apply to the storage of radioactive waste. The licensee’s arrangements to demonstrate compliance with LC 32 may include cross-references to the arrangements made under other relevant licence conditions.
2. Inspectors are reminded that some of the requirements of The Ionising Radiations Regulations 2017 (IRR17), and it’s associated Approved Code of Practice (ACoP) are directly relevant to the management of radioactive waste [21].

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# Guidance on arrangements for Licence Condition 32

1. This section provides guidance on the specific aspects of the arrangements which a licensee should have in place in order to satisfy the adequacy element within LC 32(1).
2. In order to provide evidence that the licensee understands where the LC 32 arrangements are relevant, a definition of radioactive waste that is consistent with applicable legislation and government policies should be identifiable.
3. The arrangements should recognise the waste hierarchy [22].   
   When effectively implemented, the waste hierarchy is considered as RGP to demonstrate that the licensee has minimised, so far as is reasonably practicable, the rate of production and total quantity of radioactive waste accumulated. The key principles of minimisation, re-use and recycling are fundamental aspects of the waste hierarchy and should be reflected in radioactive waste management procedures and decision-making.   
   This includes in design standards, modification procedures, decommissioning plans and planning of activities that use any radioactive material/nuclear matter (as defined in LC 1).
4. The arrangements should recognise that generation of radioactive waste by unnecessary spread of contamination should be prevented so far as is reasonably practicable. This links to compliance with LC 34 (Leakage and escape of radioactive material and radioactive waste).
5. The arrangements should demonstrate that the licensee has a process for optimising the management of radioactive waste, which ensures that risks to safety are reduced to ALARP over the lifecycle. Care should be taken to avoid optimising one aspect of the lifecycle in isolation in such a way that subsequent aspects are more onerous to manage. This should be consistent with the environmental protection requirements for application of Best Available Technique (BAT) in England and Wales, and Best Practicable Means (BPM) in Scottland.
6. The licensee should have a strategy for the management of radioactive waste. Established good practice is for licensees to develop an integrated waste strategy (IWS); licensees on Nuclear Decommissioning Authority (NDA) sites are expected to produce an integrated waste implementation plan, which may incorporate the IWS [23]. SAP RW.1 provides further guidance on the elements that should be considered within an adequate radioactive waste strategy [20].
7. LC 32(1) includes a requirement for the licensee to make records of the radioactive waste accumulated on the site as a means of inventory control. The arrangements should identify the systems by which these records will be generated and retained, with suitable cross references to the arrangements for LC 6 (documents, records, authorities and certificates) and LC 25 (Operational records). The records should include the means of identifying waste packages or waste items, the location, and the radiological, physical, chemical and biological characteristics of the waste, particularly those which may impact upon the performance of the waste package/item during storage. Due to uncertainties on the future management of HAW, the licensee should hold sufficient data to facilitate future safety and environmental assessments. For geological disposal (England and Wales), and near site, near surface facilities (Scotland), the Nuclear Waste Services (NWS, was Radioactive Waste Management (RWM)), disposability assessment process (including Letters of Compliance, LoCs) [16] is considered RGP for demonstrating adequate consideration of future safety and environmental assessments for HAW.
8. The arrangements should identify all the locations (including temporary locations) where radioactive waste may be stored safely, the amounts, durations, and form of storage for radioactive waste on the site.   
   Storage should be demonstrably safe and secure for the anticipated storage period.
9. During decommissioning of a nuclear facility, the licensee may need to review its LC 32 arrangements to ensure they remain fit-for-purpose to meet the decommissioning challenges.

## Licence Condition 32 regulatory powers

1. LC 32(2), (3) and (5) give ONR the power to approve selected parts of the arrangements, including the place and manner in which radioactive waste may be stored. The licensee’s management system should ensure any approved arrangements cannot be amended without prior knowledge and further approval from ONR. The person(s) responsible for ensuring compliance with these should be explicitly identified.
2. The arrangements should make provision for ONR to specify   
   (under LC 32(4)) that radioactive waste accumulated on the site should comply with limitations on quantity, type and form. The arrangements should identify the person responsible for responding to any such specification and the system by which any conditions imposed by ONR will be complied with.
3. Further guidance on regulatory powers can be found in ONR guidance document on Nuclear Safety Permissioning [24].

# Guidance on inspection of arrangements and their implementation

1. This part of the guidance is to assist inspectors in judging the adequacy of the licensee's arrangements. The following list is neither exclusive nor exhaustive, however it provides a list of aspects of LC 32 compliance elements that might be examined during routine inspections carried out on the basis of sampling.
2. This part of the guidance identifies ‘key elements’. The inspector should normally inspect against these elements, as being closely aligned to the wording of the licence condition, or as being important regulatory expectations to the goal setting aspects of the licence condition. This part of the guidance also identifies ‘supporting elements’, which the inspector may also choose to cover within the inspection scope depending on the status or type of facility being inspected.
3. To minimise the burden on the licensee, during the planning stage of a   
   LC 32 compliance inspection, inspectors should engage with the relevant environment agency (and the Defence Nuclear Safety Regulator (DNSR) on licensed sites that contribute to the MOD’s nuclear programme).

## Key elements

1. Clear definition of radioactive waste should be identifiable. This can be found within LC 1 (Interpretation) and links to the environmental permitting regulations. It is noted that since the Licence Condition Handbook [6] was last published there has been an update to the environmental regulations in Scotland. The correct reference can be found in paragraph ‎4 in this TIG. Advice is available from an ONR Nuclear Liabilities Regulation specialist inspector on this aspect if required.
2. Evidence of adequate application of the waste hierarchy. Key points to consider during the inspection, where appropriate, include:

* Unnecessary conservatisms in design, operating philosophy, process or modifications that might give rise to increased volumes of radioactive waste should be avoided.
* Control of onsite activities so that they do not unnecessarily give rise to radioactive waste which no feasible disposal route currently exists (often referred to as orphan or problematic waste).
* The extent of use of consumable engineered components and materials (such as filters and ion exchange resins). These should be selected and used in a way that minimises the need and/or frequency for routine replacement, while also delivering any relevant functional requirements for safety and/or environmental protection.
* Materials and surface finishes should be selected and maintained to be easily decontaminated. Decontamination may allow radioactive waste to be disposed of at a lower categorisation (for example, ILW decontaminated to become LLW, or LLW decontaminated to become out of scope or exempt). When assessing whether to carry out decontamination, the licensee should make a balanced decision that recognises any risks that might be associated with the process (such as doses to workers and creation of secondary waste).
* Reasonable consideration of applying waste processing measures, such as compaction and shredding, which may reduce the volumes of radioactive waste requiring accumulation and/or disposal.
* The plant layout, including the arrangements for containment and storage of radioactive material, ventilation and personnel access should minimise the potential for spread of contamination and unnecessary creation of radioactive waste. This includes temporary modifications to layouts (for example temporary laydown areas).
* Re-use and recycling of items should be considered in all process stages. Inspectors should consider whether re-use or recycling is feasible or if radioactive waste is being unnecessarily accumulated on the site.
* Unnecessary generation of secondary radioactive waste, such as packaging on any items being brought into a controlled area or from unnecessary personnel entry into controlled areas, should be avoided.
* The arrangements should include methods to segregate and characterise waste. Ideally, these steps should be carried out as close to the point of arising as practicable and generate a sufficient quality and range of data to facilitate all the subsequent waste management steps up to, and including, disposal. This minimises the risk of “double handling” of radioactive waste for the purpose of information gathering.

1. The arrangements should demonstrate that the licensee is aware of the disposal routes that are available for the radioactive waste it typically produces. The licensee should demonstrate it fully utilises available disposal routes to carry out disposals of radioactive waste in a timely manner.   
   Long-term on-site storage of radioactive waste for which a disposal route is available should be avoided but is not prohibited. Long-term storage of radioactive waste may be required as an intermediate step due to competing facility or site priorities. This should be justified within the licensee’s radioactive waste management strategy (refer to SAP RW.1 [20]).   
   The storage arrangements should be fit-for-purpose for the timescales and consider non-radiological aspects such as degradation of the radioactive waste, combustible material limits and the storage location relative to security boundaries. Degradation may impact upon the licensee’s ability to process the item following storage. Consideration should be given to the installation of adequate weather protection to reduce the risks of waste becoming irretrievable following storage.
2. On-site processes, including waste monitoring and packaging, should be compatible with the relevant conditions for acceptance and criteria for transport and disposal.
3. The arrangements should include a means of inventory control, so that the licensee is at all times aware of the amount, type and location of radioactive waste present on the site. This includes waste held in temporary storage locations. Labels or identifiers should be visible and linked to associated records. Custodianship of each waste area, including temporary storage areas, should be clear to operators within the facility. This aspect of the arrangements should cross-refer to the need to comply with other relevant licence conditions. Inspectors may wish to check the recorded inventory for storage areas and then carry out plant visits to ascertain whether the actual accumulations are as expected. Dates on bags or items of LLW may give an indication of whether timely processing and disposal is being consistently achieved. Some radioactive waste items may have Safeguard accountancy requirements, identification of these waste items/packages should be clear. Refer to [Appendix B](#_Appendix_B_–) for further detail on this interface.

## Supporting elements

1. For facilities that process or store radioactive waste, inspectors may wish to seek evidence to confirm whether the facility is being operated in accordance with the defined arrangements within the safety case.   
   For facilities which receive waste it is good practice to have in place Waste Acceptance Criteria (WAC) or Conditions for Acceptance (CfA) for the facility. This is a means of communicating key safety case requirements to donor facilities and should be consistent with the safety case. Donor facilities should be aware of the importance of the WAC/CfA of the facilities they send waste to, including its restrictions.
2. Inspectors may wish to check that the licensee has sufficient facilities and capacity (including resources) to carry out radioactive waste management activities.
3. Given the wider number of operators which may undertake tasks that give rise to radioactive waste, an adequate programme of staff training to ensure the key elements of the LC 32 arrangements are understood should be in place.
4. Inspectors may wish to check that, for any ongoing or planned operational activity or modification, the licensee has a plan to manage all the radioactive waste expected to arise during the course of the activity and any associated decommissioning. If a licensee fails to recognise the waste management implications associated with an activity, its ability to comply with the requirements of LC 32 may be compromised by the creation of “problematic” waste (for example, waste that has no obvious disposal route or are difficult to convert to a passively safe form for storage).
5. Radioactive waste management arrangements may interface with a number of facilities and therefore may be controlled via a series of management systems. In such situations, inspectors may wish to check whether custodianship of the radioactive waste is clear, logical, continuous, and effective at every stage. The history (including origin) of a waste should be clear within the record. The inspector may wish to consider whether the overall process (including capacity for treatment and storage) is adequately integrated and optimised (removal of duplication or tasks) to ensure that the risks at each stage remain ALARP and double handling is avoided so far as is reasonably practicable.
6. Adequate contingency arrangements should be in place to recognise the risk that a radioactive waste item may not meet pre-existing waste processing or disposal criteria. These should enable continued safe storage while investigations and assessments are carried out to define a suitable waste management route.
7. Contractors often provide aspects of a site’s radioactive waste management processes; the licensee should demonstrate an adequate intelligent customer capability and ensure that contractual relationships do not create any adverse effects on the overall waste management process.
8. Inspectors may wish to examine whether the radioactive waste is being stored in a way which is consistent with the future waste management steps. This may be high level to ensure consistency with the strategy, but it may include a need to consider whether arrangements ensure that waste packaging and containers are being used as intended. For example, weight limits on flexible intermediate bulk containers (FIBCs, also known as soft sided packages) are being met or sharps are being avoided, and the licensee has in place adequate arrangements to verify these elements and enable safe onward management.
9. Inspectors may wish to check that the Examination, Inspection, Maintenance and Testing (EIMT) arrangements for waste storage facilities include an inspection and monitoring regime for the whole storage system, including the waste packages and store environment. The inspection and monitoring regime should be adequate to ensure the waste package condition is understood, remains within the bounds of the safety case, and remains compatible with future management steps throughout the storage duration.
10. When assessing the adequacy of storage arrangements for radioactive waste, inspectors should also consider non-radiological aspects of safety such as fire prevention and control of toxic or flammable substances (such as storage of batteries, or gases) that may be generated during storage as a result of chemical, radiological or biological processes within waste.
11. Inspectors may wish to check that an adequate level of priority being given to the development of a disposal route and/or treatment to improve passivity, security and/or immobilisation (conditioning) of an un-passivated or “raw” waste.
12. Licensees face particular challenges when management of radioactive waste needs to take place over long durations. In such circumstances, inspectors may wish to check that the licensee’s arrangements give appropriate consideration to the anticipated time period. For example, ensuring continued availability of sufficient Suitably Qualified and Experienced Persons (SQEP), ensuring EIMT arrangements take into consideration extended timescales and that record management system will remain available and accessible to support future management activities.
13. Inspectors may wish to check for evidence that monitors being used to assay radioactive waste are appropriate for the waste package and are being adequately maintained and properly calibrated.
14. Inspectors may wish to check whether the licensee collects data to demonstrate trends in its radioactive waste management performance over time. This data should enable the licensee to measure the impact of any new work, new processes or initiatives on factors such as the volume of waste recycled, re-used or disposed, the timeliness of disposals, the levels of accumulation on site, and doses to workers. The licensee should carry out periodic reviews of its data and, where practicable, benchmark against industry, RGP and/or set targets for continuous improvement. Any adverse trends should be investigated to establish the root cause and implement corrective actions, if appropriate. The licensee should seek to learn from its operational experience, including any good practice or adverse events that are relevant to LC 32 compliance.
15. Mixing of incompatible wastes or diluting waste with a relatively high radioactive content with other waste of lower radioactive content solely to achieve an overall lower categorisation of radioactive waste should be avoided. If identified, inspectors should seek advice from the Nuclear Liabilities Regulation specialism and the relevant environment agency inspector should be consulted to ensure the overall approach is acceptable for disposal.

# Appendix A – Interfaces with the environment agencies relevant to the regulation of LC 32

1. Management of radioactive waste on nuclear licensed sites requires close liaison between ONR and the environment agencies, due to common interests and the need to regulate in a coordinated manner that avoids imposition of conflicting requirements on licensees. The legislative means by which the management of radioactive materials is regulated by the environment agencies differs between the UK’s various devolved administrations.
2. Previously, the Radioactive Substances Act 1993 (RSA93) applied across the whole UK. RSA93 concerned the control and security of radioactive materials, including radioactive waste, to ensure that accumulation and disposals occur with minimum radiological impacts on members of the public and the environment.
3. RSA93 has since been superseded by the Environmental Permitting Regulations 2016 (EPR16) in England and Wales, where the enforcing authority is the Environment Agency in England and NRW in Wales.   
   In Scotland, RSA93 was replaced by the Environmental Authorisations (Scotland) Regulations 2018, where the enforcing authority is SEPA.   
   Both EASR18 and EPR16 use the term “permitting” to describe the authorisation of radioactive substances activities by the environmental regulator.
4. The Department of the Environment, Food and Rural Affairs (DEFRA) has produced specific guidance on Environmental Permitting for Radioactive Substances Regulation, which explains the role of ONR and NIA65 for licensed nuclear sites.
5. Nuclear licensees in England and Wales are exempt from the EPR16 requirement to obtain a permit from the relevant environmental regulator to accumulate radioactive waste and/or keep and use radioactive material (EPR16 Schedule 23). However, tenant organisations on nuclear licensed sites are required to obtain a permit to keep and use radioactive material.
6. Nuclear licensees in Scotland are exempt from the requirement for a permit from SEPA to keep and use radioactive material on nuclear licensed sites; however, the change in legislation means that they now require a permit from SEPA for the management of radioactive waste on site, and for the long term storage of radioactive waste prior to disposal (EASR18, Schedule 8).
7. Section 68(1)(c) of the Energy Act 2013 and section 4 of the NIA65 provide ONR with the power to regulate the storage and use of nuclear matter on GB nuclear licensed sites (which includes the accumulation of radioactive waste). ONR regulates the safety aspect of the handling, treatment and disposal of nuclear matter, and the discharge of any substance on or from the site, through LCs 32 to 34 together with other relevant LCs such as LC 4 (Restrictions on nuclear matter on the site). ONR works closely with the environment agencies under Memoranda of Understanding (MoUs) to ensure that nuclear safety and environmental regulation is delivered efficiently.
8. Nuclear licensees require a permit from the relevant environmental regulator for the disposal or transfer off-site of radioactive waste and for the keeping or use of mobile radioactive sources.
9. Radioactive waste can be exempted from specific regulatory control if its activity does not exceed thresholds of quantity and concentration laid down in the current regulations. In England and Wales, the levels are described in EPR16. In Scotland, the requirements are set within EASR18. The non-radiological characteristics of the waste (for example, chemical content) may still invoke the need to comply with other legislation (for example, COSHH Regulations).
10. On sites that are not licensed under NIA65, the powers granted to the environment agencies extend to the storage of radioactive waste as well as disposals in England and Wales (EPR16), and for all radioactive substances activities in Scotland (EASR18).
11. NIA65 places a requirement on ONR to consult the environment agencies on issues which affect the creation, accumulation or disposal of radioactive waste before issuing, amending or varying nuclear site licences, or attaching conditions to them. In addition to these statutory consultation requirements, ONR has entered into MoUs with the Environment Agency, NRW and SEPA to ensure coordinated regulation on nuclear licensed sites. Inspectors are reminded that an assessment or review that considers a Licensee’s management of radioactive waste should include consultation with the applicable environmental regulator as appropriate under the applicable MoU. Inspectors should meet the standards of co-operation expected in the MoUs when undertaking any intervention on a nuclear licensed site that has a focus on management of radioactive waste. This is particularly pertinent in Scotland, where SEPA’s duties for environmental and public protection explicitly include the management of radioactive waste on nuclear licensed sites.
12. When a licensee proposes to condition HAW into a form suitable for long term storage or disposal, ONR seeks advice from the appropriate environment agency on the long-term disposability of the proposed product. This advice should inform ONR’s expectations for the safety-related aspects of processing, interim storage and transport of the packaged waste, and address the environment agencies’ regulatory expectations with respect to protection of the public and the environment over the longer-term.
13. From 1 January 2021, the requirement for the UK to submit information to the European Commission on plans for the disposal of radioactive waste no longer applies (referred to as Article 37). The updated process has been defined by the Department for Energy Security and Net Zero (DESNZ) [25] and is delivered via the environmental permit application processes by the relevant environmental agency, which ONR is a statutory consultee.   
    More specifically, the UK and Scottish Governments have introduced requirements through The Transboundary Radioactive Contamination (England) Direction 2020 and The Transboundary Radioactive Contamination (Scotland) Direction 2021, respectively. Views are invited on this through public consultation and DESNZ/Scottish Ministers will provide information to notifiable countries in such instances so that they can participate in the public consultation.
14. The Transfrontier Shipment of Radioactive Waste and Spent Nuclear Fuel Regulations 2008 set out the circumstances under which radioactive waste and spent nuclear fuel may be imported and exported from the UK.   
    These regulations complement the environment agencies’ powers and duties under EPR16 and EASR18. The relevant environment agency should consult with ONR prior to granting consent for a Transfrontier Shipment from a UK nuclear licensed site.

# Appendix B – Interfaces with the Nuclear Safeguards (EU Exit) Regulations 2019

1. Many of the expectations for LC 32 arrangements in this guidance are applicable to compliance with NSR19 and expectations within ONMACS [18]. Much of the commonality centres on the records made and adequacy of procedures for tracking material. Inspectors should note the different definitions of “nuclear matter” above, and “qualifying nuclear material” (QNM). QNM is defined in the Nuclear Safeguards Act 2018 and Nuclear Safeguards (Fissionable Material and Relevant International Agreements) (EU Exit) Regulations 2019 as natural uranium, depleted uranium, uranium enriched to less than 20%, uranium enriched to 20% or above, thorium and plutonium.
2. There are a number of inspection types carried out by ONR Safeguards that may provide opportunity for joint inspections if scoped correctly. Please refer to the ONRs TIG on safeguards [26] for further guidance on safeguards inspection types.
3. Specific parts of this TIG that are safeguards-relevant are:

* Paragraph ‎26 of this TIG refers to arrangements for records of the radioactive waste accumulated on the site for the purpose of tracking accumulations of radioactive waste. Where this waste is also QNM which has been declared as retained or conditioned waste, the requirements of regulations 29 and 30 of NSR19 apply. Regulation 29 is most relevant here and requires operators to maintain a stock list and accounting records, in line with the “inventory control” expectations for LC 32.   
  ONR Safeguards expectations for records is provided in Material Accountancy and Control Expectation (MACE) 8.35.1 [18]. It also expects that arrangements provide a means of inventory control. Reference is made to LC 4 arrangements but the inventory control requirements for safeguards should also be considered relevant to this. Regulation 6 and Schedule 2 (6), (8), and (12) of NSR19 in particular refer to safeguard requirements for inventory control.   
  Additionally, Regulation 29 refers to inventory control for material declared as waste. Expectations for Nuclear Material Accountancy and Control set out in MACE 7.1 should be considered relevant here [18].
* Paragraph ‎39 states that the inspector may carry out carry out plant visits to ascertain whether the actual accumulations of waste items are as expected. This is an inspection activity also undertaken by ONR Safeguards. A Physical Inventory Verification (PIV) inspection is normally done after an operator’s Physical Inventory Taking (PIT).   
  If planning physical verification during an LC 32 inspection, it may be efficient to coordinate with ONR Safeguards and carry out PIV for both purposes. For further guidance on PIV inspections, refer to [26]. This paragraph also relates closely to the requirements of regulation 6(2) in NSR19 regarding QNM inventory control. There are safeguards expectations for tracking QNM in MACE 7.2 [18], which is specifically about identification of material. Refer also to the safeguards appendix in the TIG on LC 4 [27].

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1. By ‘long-term’ we generally mean issues that might occur over decades or as waste is moved from plant to plant for treatment/conditioning/storage. [↑](#footnote-ref-2)