



The management of higher activity radioactive waste on nuclear licensed sites

Part I The regulatory process

Guidance from the Health and Safety Executive, the Environment Agency and the Scottish Environment Protection Agency to nuclear licensees

December 2007

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This guidance (together with Part II) replaces:

- *Conditioning of Intermediate Level Radioactive Waste on Nuclear Licensed Sites* March 2005; and
- *Improved Regulatory Arrangements for the Conditioning of Intermediate Level Radioactive Waste on Nuclear Licensed Sites: Regulators' Position Statement* December 2003;

both published by HSE, the Environment Agency and SEPA.

Part II of the joint guidance is yet to be produced. It will take the form of technical guidance relating to elements of the radioactive waste management case. Information on the form and content of Part II together with existing guidance to be followed until this is produced is found in the appendix to the introductory document *Fundamentals of the management of radioactive waste*.

Foreword

The Health and Safety Executive (HSE), the Environment Agency and the Scottish Environment Protection Agency (SEPA) (together referred to as the regulators) have issued this guidance jointly.

You are not required to follow this guidance, and you are free to take other action. However, if you do follow this guidance, you will normally be doing enough to comply with the law as interpreted by the regulators at the time of writing, and the regulators may refer to this guidance as illustrating good practice. However, compliance with this guidance does not automatically mean that we will approve an application for a nuclear site licence, a consent or agreement under the licence or an authorisation.

Given the long timescales involved in radioactive waste management, you should be aware that standards, legislation and national policy might change. While this guidance forms the best advice that the regulators can give at present, nothing in this guidance overrides, or is intended to pre-empt, the ability of the regulators to discharge their statutory powers and duties in accordance with legislation, standards and policy applicable at any time.

Policies for the disposal of higher-activity waste differ in Scotland and in England/Wales. We consider that packages conditioned in anticipation of deep geological disposal are also suitable for long-term storage, as required by the government policy in Scotland. On this basis the following guidance can be used equally in England, Scotland and Wales, but any references to geological disposal will mean long-term storage when applied to Scotland. We will keep the packaging advice being developed by the Nuclear Decommissioning Authority's (NDA's) Radioactive Waste Management Division (RWMD) under review and if any developments mean that this assertion is no longer valid, we will provide further guidance.

We will review this guidance periodically, to ensure that it continues to provide sound advice.

Freedom of Information – disclosure of information

The regulators are considered public authorities under the Freedom of Information Act 2000 (FOIA00) and the Environmental Information Regulations 2004 (EIR04) in England and Wales, and the Freedom of Information (Scotland) Act 2002 (FOISA02) and the Environmental Information (Scotland) Regulations 2004 (EISR04)

in Scotland. If we receive a request for information that we hold, we will have to consider that request in accordance with this legislation.

We consider that much of the information we hold is likely to be environmental information, which is broadly defined in regulation 2 of EIR04 or EISR04. Therefore, it is likely that the information will be considered for release under EIR04/EISR04 rather than under FOIA00 or FOISA02.

Public authorities are obliged to release environmental information that they hold unless an exception applies and in all circumstances where public interest in maintaining the exception outweighs public interest in disclosing the information. This means that we may be able to withhold environmental information that is sensitive or commercially confidential, but only where the information falls within an exception under EIR04 or EISR04 and the public interest test favours withholding it. When considering the public interest factors in relation to sensitive nuclear information, we will be guided by the advice of the Office for Civil Nuclear Security (OCNS) whose role is to ensure the security of civil nuclear installations and to protect the public interest arising from threats to that security.

If the licensee considers that any information should not be released, as it would fall within exceptions to EIR04 or EISR04, they should identify this information to the regulators and provide their reasons for considering a particular exception to apply and the public interest factors relevant to withholding or releasing the information. However, the decision about release is for the regulator receiving the request.

This document is available on the HSE, Environment Agency and SEPA websites, in accordance with our policies of openness and transparency.

Guidance

Introduction

Scope

The guidance covers the management of higher-activity radioactive wastes on licensed nuclear sites. In this context:

Management of radioactive waste means the whole process of managing waste from its generation to (but not including) its disposal.

Higher-activity radioactive waste means all radioactive waste other than:

- low-level radioactive waste that will be disposed of promptly at the Low Level Waste Repository near Drigg or to its successor facility; and
- very low-level radioactive waste that will be disposed of promptly at suitably authorised disposal facilities.

'Promptly' means as soon as is reasonably practicable after waste generation. Both categories require that there is no need for any treatment other than basic segregation, sorting and compaction to make it suitable for its intended disposal route. Advice about these two categories of waste can be obtained from the Environment Agency or SEPA.

Different policies currently apply for the disposal of higher-activity waste in Scotland and in England/Wales. We take the view that packages conditioned in anticipation of deep geological disposal are also suitable for long-term storage as required by government policy in Scotland. Therefore the following guidance is equally

applicable in England, Scotland and Wales, but any references to geological disposal will mean long-term storage in Scotland. We will keep the packaging advice being developed by NDA's Radioactive Waste Management Division under review and if any developments mean that this assertion is no longer valid, we will provide further guidance.

For existing waste management activities where no appropriate radioactive waste management case (RWMC – see 'Safety cases, radioactive waste management cases and disposability') exists, the guidance should be applied during a periodic review of the safety case when a RWMC should be produced. In certain cases the regulators may advise licensees to prepare a RWMC at an earlier stage.

Licensees should make early contact with the regulators to discuss whether or how their specific radioactive waste management proposals fall within the scope of this guidance.

Licensees are reminded that the same general safety and environmental standards apply to all activities whether or not the material involved is declared as radioactive waste.

Objective and aims

The objective of Part I of this guidance is to explain the regulatory process associated with the management of higher-activity radioactive waste on nuclear licensed sites in the UK.

The main aims of the guidance are to:

- provide a comprehensive source of information that can be used by nuclear site licensees and the regulators' staff, and referred to by other stakeholders; and
- advise licensees on how to obtain regulatory acceptance of their proposals for radioactive waste management.

This guidance should assist licensees by providing:

- a clear and transparent regulatory process involving early dialogue between the nuclear industry, the regulators, NDA and other stakeholders;
- much greater business certainty at a time when the nuclear industry is committing significant resources to radioactive waste management;
- a clear, auditable document trail of the basis for current regulatory decisions.

This guidance complements HSE's existing guidance to inspectors on nuclear safety cases and radioactive waste management.^{1,2}

Regulatory process

The regulatory process is designed to be flexible and efficient, and to avoid undue delay. It assumes there will be early and continuing interaction with the regulators during the development of proposals. Our role is to challenge and to provide constructive criticism to make sure that a licensee's proposal satisfies our requirements.

The initial point of contact will be HSE's site inspector. Licensees should discuss proposals with the inspector and agree a way forward, including the future point of contact within each relevant organisation.

In their arrangements for submission of radioactive waste management project documentation to HSE, licensees should take account of the regulatory priorities described in Appendix 1.

Prioritisation of projects for regulatory scrutiny

It is not necessary for all radioactive waste management cases to be formally scrutinised by regulators. We will prioritise proposals for scrutiny, taking into account the factors listed in Appendix 1. If we decide not to scrutinise a proposal, the licensee still has a duty to prepare an adequate safety case.

Licensees should bear these priorities in mind when preparing documentation for radioactive waste management projects. We will review how this system is working approximately one year after this guidance is issued, to consider whether a more formal categorisation scheme is necessary.

Joint working and early interactions between licensees and regulators

Early interaction and joint working are important for efficiently regulating radioactive waste management on licensed nuclear sites.

Interaction is especially important at the strategy development, options assessment and concept stages, where licensees can seek the regulators' views about:

Licensees are encouraged to involve the regulators from the earliest stages of projects.

- improving safety and environmental protection;
- reducing business risk and the potential for unnecessary expenditure by identifying, and if possible resolving, any significant regulatory issues at this early stage;
- enabling the regulators to plan their resource commitments.

Licensees should communicate to regulators, as soon as possible:

A combination of joint working and early identification and resolution of issues is essential to delivering effective regulation.

- any issues* known or considered likely to be significant to the regulators;
- reasons for their actions or intentions, including any third-party requirements;
- the options being considered, their merits and the reasons for preferring the selected option;
- any dependencies on future actions by third parties. Licensees should not await the outcomes of third-party action before revealing proposals that are conditional on third parties;
- who is empowered to represent the licensee on the issues;
- any changes to the above;
- any initial suggestions for regulatory 'hold points'.

Regulators will notify licensees, as soon as practicable:

- which issues are of interest to them;
- which issues they regard as 'key issues';
- the planned regulatory processes;
- the implications for the involvement of statutory consultees and views on the involvement of other stakeholders;
- the intended 'end points' of the regulatory processes;
- any changes to the above.

We will strive to avoid unnecessary delays, conflicts or duplication of activities in nuclear safety and environmental requirements. If a significant problem arises, we will inform the licensee of the relevant issues, together with the process and schedule for resolution.

*The matters to be addressed during regulatory interactions are generally described in this document as 'issues'. This term should be interpreted very broadly. It may for example include an operator's proposed courses of action, new projects or activities, events and investigations of interest to regulators, including responses to regulatory requirements. Similarly, on a regulator's part, it may for example include any particular regulatory concerns, investigations and audits and their outcomes, and changes to regulatory processes.

For projects that could result in long or multi-staged regulatory processes, we will try to identify possible issues or technical problems early in the process through effective joint management, so that there is less risk that the proposal will be rejected or subject to unexpected requirements at a later date. It may be necessary to hold early consultations with other stakeholders, including the public, through the best practicable environmental options (BPEOs) to achieve this.

Appendix 2 describes the typical interactions between licensees and the regulators as a project progresses.

The formal regulatory process

The formal regulatory process is shown in Figure 1.

If required by the licensee's arrangements or HSE (in consultation with the appropriate environment agency),* a project will be subject to formal regulatory submission. In most cases involving formal submission, the process will be staged. There will be arrangements for continuing dialogue and identified hold points beyond which a licensee cannot proceed without regulatory agreement. These formal hold points and the associated timescales are a matter for discussion and agreement between the licensee and HSE, in conjunction with the appropriate environment agency, on a case-by-case basis. At each hold point, HSE will provide a clearly documented decision.

The system of agreed hold points aims to provide a staged approach to formal permission, rather than a timetable for interaction with the regulators. Hold points would normally apply prior to important stages such as the start of construction, commissioning, modification or operation.

The nuclear site licence and safety cases

HSE regulates radioactive waste management on nuclear licensed sites through the nuclear site licence. One of the conditions³ of a nuclear site licence is that the operator must have a detailed safety case justifying the safety of the plant throughout its life. Any subsequent alteration to the site facilities or operations, such as the modification of existing plant/processes or the construction of new plant, requires the licensee to review and amend the safety case and for HSE to grant permission where appropriate. Conditioning of radioactive waste that has not previously been authorised for treatment either constitutes a modification to existing plant, regulated by Licence Condition 22, or the construction or installation of new plant, regulated by Licence Condition 19 or 20. Application for permission is made using the licensee's arrangements under the appropriate licence condition or as a result of HSE specifying the need for such an application.

Safety cases, radioactive waste management cases and disposability

Safety cases are a well-established concept for the nuclear safety community. However, their application in a radioactive waste management context may be less familiar.

The major difference is that a conventional nuclear safety case will focus on a plant, be it a reactor or chemical plant, whereas in radioactive waste management the focus is on the waste, from its generation to its conditioning into the form in which it will be suitable for storage and (in England and Wales) eventual disposal.

Licensees must have in place a safety case for each plant justifying its safety throughout its life.

* See 'Prioritisation of projects for regulatory scrutiny' and Appendix 1.

In this guidance, we refer to a safety case for the management of particular radioactive waste as a radioactive waste management case (RWMC). It may deal with a single waste stream or several similar waste streams, but all wastes will be covered by a RWMC. By definition, a RWMC addresses the longer-term safety and environmental issues* associated with a particular waste, whereas a conventional nuclear safety case justifies the safety of a particular plant over its lifetime. A single RWMC may deal with many similar waste streams.

On the way to its final disposal or storage destination, radioactive waste will be accommodated in various plant. Each of these plants will have a conventional nuclear safety case justifying its safe operation. These will need to take account of the presence of any wastes by acknowledging and factoring in the RWMC of any wastes stored therein.

Figure 2 shows how radioactive waste management cases and safety cases (as conventionally understood) may interact and overlap. Figure 2 also indicates which of the modules of Part II of this guidance will give more detailed guidance on specific aspects.

The term radioactive waste management case is used here as a construct to explain how information should be organised. In terms of licence conditions terminology it is still part of the safety case.

An important component of the RWMC relates to the conditioning of the radioactive waste. This is addressed through:

Radioactive waste management cases must address disposability.

- studies, such as BPEO, to show how the conditioning option was selected and how it fits within an integrated waste strategy (IWS);
- a description of what conditioning will be carried out on the waste, or the justification for storing the waste without conditioning;
- considering disposability. A reasoned judgement must be provided on whether the conditioned waste meets the anticipated requirements for acceptance from a potential disposal site operator. Where a proposal is for storage of waste in an unconditioned form, a suitable outline of a proposed conditioning strategy for the waste should be included (this forms the basis for a suitable 'exit strategy' for producing a disposable package). Unless and until more specific standards become available, this standard should be used for packages destined for interim storage in Scotland.

Other aspects that should be covered in RWMCs are:

- possible deterioration of the waste during storage;
- key constraints on how the waste will be managed in the future, such as storage conditions and monitoring requirements;
- arrangements for preserving information that might be needed to ensure safety and environmental protection during the future management of the waste stream and to make sure the wastes can be accepted in a future long-term storage or disposal facility;
- management, including disposal, of secondary radioactive waste arisings, especially those from the waste conditioning storage.

We will find it helpful if these documents are summarised together within a short summary document.

* By 'long term' we generally mean issues that might occur over tens of years or as wastes are moved from plant to plant for treatment/storage. Short-term environmental issues are in general covered under separate environmental legislation enforced by the environment agencies, eg radioactive discharges are enforced via the Radioactive Substances Act 1993. However, the regulators' interests inevitably overlap, particularly at the options selection stage.

Regulatory assessment

When assessing proposals, we use the following documents:

- legislative requirements;
- Part II of this guidance;
- HSE's Safety Assessment Principles;⁴
- the Environment Agency's Radioactive Substances Regulation Environmental Principles;⁵
- *Guidance for the Environment Agencies' Assessment of BPEO studies at Nuclear Sites*;⁶
- NDA's integrated waste strategy specification.^{7,8}

For disposability issues in particular, HSE will ask the Environment Agency or SEPA to assess the proposals and provide advice, for a fee, under the provisions of the Environment Act 1995. This fee will be recharged to licensees by HSE.

Involvement of third parties

Although the prime responsibility for safety and environmental protection lies with the licensee, and the responsibility for regulation lies with the regulators, other bodies should be involved in radioactive waste management. The following bodies should be involved in the collaborative working process, where appropriate:

The involvement of third parties can aid the regulatory process.

- NDA, which has a statutory duty to define a strategy for the decommissioning of nuclear sites for which it is responsible and fund the work done by the licensees on these sites;
- the Ministry of Defence, which defines the overall strategy for the sites that it owns and funds the work done there;
- the operators of radioactive waste disposal facilities, who define the acceptance criteria for waste. These include both the operators of current low-level waste (LLW) facilities and NDA(RWMD) as the current representative of the intermediate/high-level waste (ILW/HLW) repository operator;
- other parties who may receive radioactive material from or send it to the site.

We will work with these organisations to achieve high-quality radioactive waste management outcomes.

Stakeholder engagement

Stakeholder engagement at appropriate times is good practice.

Other stakeholders such as local authorities, trade unions, non-governmental organisations and the general public have an interest in how radioactive waste on a nuclear site is managed. Licensees should engage with such stakeholders when developing their radioactive waste management strategies, options and plans. Among other things, this may improve the quality of licensees' proposals and achieve broader acceptance or support.

Regulatory scrutiny during ILW conditioning and storage

We will periodically inspect conditioning and storage operations to make sure waste is being managed in accordance with the safety case and the individual RWMCs for each waste stream. We will do this by conducting periodic inspections of plant used to manage, package, condition and store the waste. HSE, the appropriate environment agency, or both may undertake these inspections as part of normal regulatory activities and this may lead to enforcement action under existing regulatory powers. We will focus on the issues described in the remainder of this section relating to waste that has been conditioned. We will carry out similar inspections where waste is stored in an unconditioned form and in these cases we will look for evidence that the waste is being managed in accordance with the requirements of the safety case.

Operation of appropriate quality management systems

We will look for evidence that appropriate management systems are in place to control the production and storage of packages to the required specification, and that this system is adhered to in practice.

Characterisation of the wastes in each package

We will look for evidence that licensees characterise their waste with adequate information on the radioactive and non-radioactive inventories in each package, to allow us to assess whether they are acceptable for final disposal (and, in Scotland, for long-term storage). We will also look for evidence that controls are in place, and working, to ensure that no unacceptable items or materials are contained within the packages produced.

Compliance of packages with specifications

We will look for evidence that packaged wastes meet the specifications defined in the safety case. For packages that do not meet the specifications, we will look for evidence that:

- appropriate actions have been taken to ensure their continuing safe management;
- a strategy has been developed to ensure that the wastes can be disposed to an appropriate facility.

We also expect appropriate action to have been taken, or planned, to reduce or eliminate the causes of non-compliant packages.

Facility maintenance and monitoring

We will look for evidence that:

- waste is being stored in appropriate conditions to ensure that the acceptability of either the waste for conditioning or the conditioned waste form for disposal or long-term storage, is not compromised;
- the necessary maintenance of processing and storage facilities, as identified in the safety case, is being carried out to ensure that waste packages are being produced to specification and that appropriate storage conditions are maintained for the envisaged storage period.

Waste package monitoring

We will look for evidence that the condition of waste packages is being monitored to make sure that no significant degradation of the packaged waste is occurring. Where degradation has been identified, we will look for evidence that appropriate actions have been taken to remedy the situation.

Production and maintenance of records

We will look for evidence that sufficient data on each package (and the component raw waste) are being recorded and stored so that future safety and environmental assessments can be carried out and so that the wastes can be accepted at any repository or long-term store.

We will also look for evidence that data are recorded in a way that allows them to be accessed and retrieved over the long time periods that may be associated with the storage of radioactive waste.

Integrated waste strategy

We will look for evidence that licensees are optimising their approach to waste management. We consider it good practice to develop and use an integrated waste strategy (IWS). Where an IWS has been developed (this is a contractual requirement for NDA sites), the RWMC should describe how the management of the waste stream(s) under consideration is consistent with the IWS, or reasons for any deviation.

Oversight of packaging advice for future disposal

The regulators will oversee developments in the approach used to provide packaging advice.

We recognise the Radioactive Waste Management Directorate of NDA (NDA(RWMD)) as the appropriate body to advise licensees on the packaging and conditioning of radioactive wastes. Such advice will continue to be provided through NDA(RWMD)'s Letter of Compliance (LoC) process. LoC is a term used by NDA to describe a written assessment of whether a proposed waste package would be suitable for geological disposal. We will update this guidance if we agree any new process.

The LoC process provides advice on the suitability of proposals for conditioning higher-activity waste for future disposal. The advice is based on standards derived from NDA(RWMD)'s geological disposal concept, but it is also compatible with a range of other possible long-term management options. For waste that arises at sites in Scotland and which will require an authorisation for eventual disposal from SEPA, we recognise that this advice is also suitable for long-term storage of the waste, in accordance with the June 2007 announcement of government policy in Scotland.

We will continue to scrutinise proposed developments of the LoC process under our agreements with the NDA(RWMD) to ensure that the advice provided to licensees from the NDA(RWMD) is fit for purpose. This enables us to:

- develop our understanding and confidence in the basis for packaging advice;
- provide opportunities to influence developments;
- maintain and develop regulatory expertise; and
- understand and scrutinise modifications to the assessment methodology for particular wastes.

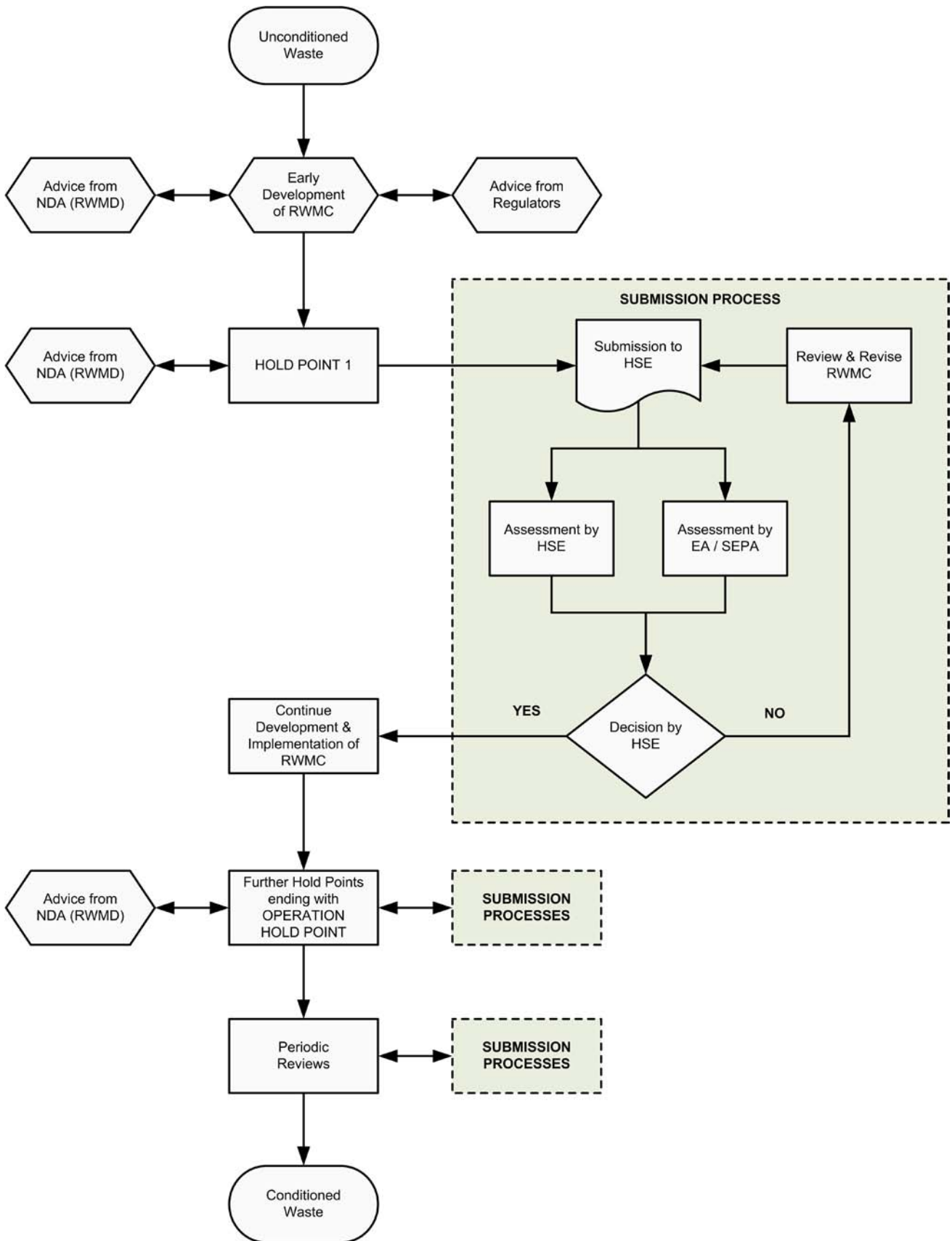


Figure 1 Development of radioactive waste management case and regulatory process

Note: This diagram shows some of the key interactions and is not intended to be comprehensive.

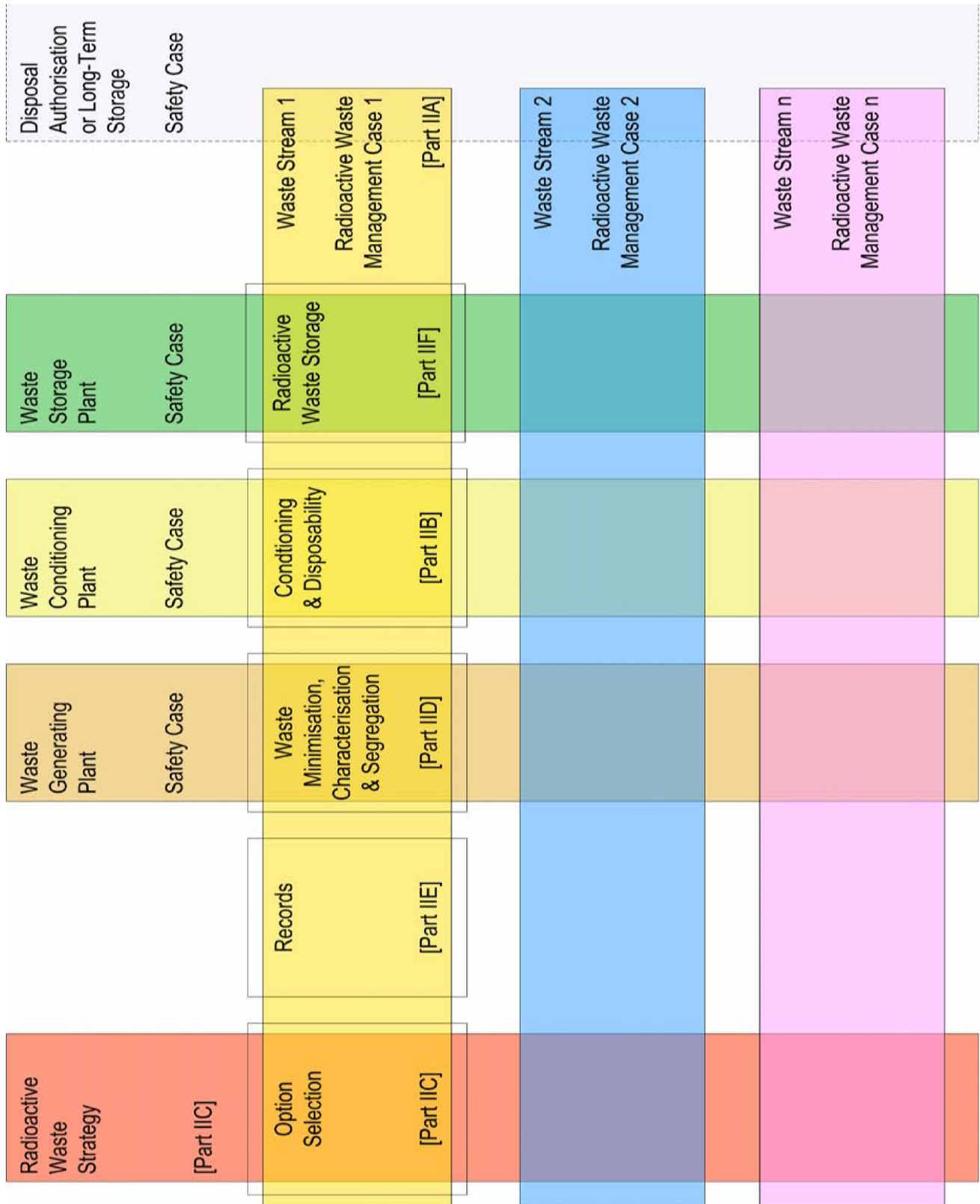


Figure 2 Relationship between specific safety cases and a radioactive waste management case (RWMC)

Notes: Every waste stream should be covered by a RWMC. A single RWMC may deal with a number of similar waste streams.

References to Part IIA etc are to the modules of Part II Guidance that deal with this section of the RWMC.

Appendix 1 Regulatory prioritisation

We will apply a proportionate and non-prescriptive regime. To do this, the regulators will be selective about which projects they will get involved with.

This appendix provides some guidance on how we will prioritise projects when managing higher-activity radioactive wastes. Licensees should be aware of this in deciding which projects they bring to the attention of the regulators and at what stage.

The licensees do not need to produce complex or bureaucratic procedures, provided that they make us aware of the more significant projects at an early stage, and arrangements are in place to submit safety cases where appropriate. There is no need for automatic submission of proposals where this does not already exist – we will inform licensees of those projects that they wish to be submitted. In this context 'projects' is used in its broadest form to cover major new work, modifications, or any other work that may have a detrimental effect on safety or the environment.

In deciding how to apply this, licensees should consider the risks to their business of a negative reaction by regulators to a project on which they had already committed substantial effort.

We will highlight proposals that merit regulatory scrutiny by assigning one of the following broad priorities:

HIGH: Projects that regulators will wish to consider and assess in most cases.

MEDIUM: Projects that the regulators will wish to be aware of, and may wish to consider for assessment.

LOW: Projects that the regulators will not wish to assess, other than on a sampling basis.

In assigning projects to a category, the following factors are taken into account.

Whether the project deals with wastes that constitute a hazard or environmental risk prior to conversion into a passively safe form:

HIGH: in the event of the project being ill-conceived or implemented, the potential of significant off-site effects such as exposing a member of the public in excess of the annual dose limit (1 mSv), breaching the annual discharge limit in a discharge authorisation, or having to restrict access to members of the public off site as a result of radiation or contamination levels.

MEDIUM: no reasonably foreseeable circumstances where the consequences referred to above may occur, but in the event of the project being ill-conceived or implemented, the potential for significant on-site effects such as exposing a worker in excess of the annual dose limit (20 mSv) or having to restrict access to areas outside existing or planned controlled areas as a result of radiation or contamination levels.

LOW: no reasonably foreseeable circumstances where the consequences referred to above may occur.

Whether the project deals with a significant amount of waste. The concern is the possible effect on the operability of a repository or on its ability to accept waste:

HIGH: where the volume or inventory comprises more than 10% of the capacity of the anticipated repository for the waste.

MEDIUM: where the volume or inventory comprises more than 1% of the capacity of the anticipated repository for the waste.

LOW: where the volume or inventory comprises less than 1% of the capacity of the anticipated repository for the waste.

Appropriate inventories can be obtained from NDA, or the operator of the repository if this is not NDA.

Whether there are criticality considerations:

HIGH: where criticality aspects may jeopardise the operability of the anticipated repository or its ability to accept the waste.

MEDIUM: where safety mechanisms or administrative controls are necessary to prevent a criticality, either in storage on site or in the repository.

LOW: where there are no reasonably foreseeable circumstances under which a criticality could occur.

Whether there are challenging wastes, materials or processes.

HIGH: where the nature, content, and/or technology, falls outside previous experience, and significant new issues may be raised concerning waste transport, handling, storage, disposal or uncertainties in the process, eg:

- a novel package, wasteform, or encapsulant;
- significant technical issues, eg:
 - reactive metals, filter disposal or ion exchange resins;
 - management of uranium, plutonium, or spent fuel;
 - significant chemical challenges (eg presence of acids, organics, PVC or superplasticisers);
 - Wigner Energy;
 - characterisation uncertainty;
 - risk that packages will not be sufficiently long-lasting.

MEDIUM: not included above but nature, content, or treatment technology falls outside previous experience.

LOW: substantially similar to existing radioactive waste practices.

New stores or processing facilities, and proposals to defer or avoid conditioning will be MEDIUM unless prioritised HIGH because of any of the considerations given above.

Appendix 2 Engagement with the regulators

This appendix describes the prime interests* of HSE and the environment agencies for each of the potential stages of a radioactive waste management project. It also explains the anticipated timings of the interactions between the licensees and the regulators. In practice, projects may not be developed or implemented in such discrete stages.

We consider it essential that the licensee interacts with us at an early stage to produce a radioactive waste management case, which may be reviewed, revised or refined as the project progresses.

Site waste management strategies and plans

We expect interaction with licensees to discuss site waste management strategies and plans as they develop or change to:

- understand the intent of these strategies and plans;
- identify issues at an early stage; and
- understand the implications for their work planning.

For public sector sites, we expect a licensee's site waste management strategies and plans to be consistent with the national waste management strategy developed by NDA. The regulators expect the options for any radioactive waste management project to be consistent with the site waste management plans and strategy.

Options assessment process

We expect licensees to maintain a dialogue with us during the options assessment process, with the aim of identifying the most appropriate waste management strategy to adopt.

We expect that licensees will undertake BPEO studies for any significant proposals. These studies should reflect all relevant issues, including the requirement to reduce health and safety consequences to levels that are as low as reasonably practicable, and to minimise the short- and long-term environmental impacts. These studies should be made available to us, together with any supporting arguments that justify the choice of option (or options) that the licensee is taking forward for further development or implementation. We will wish to be satisfied that appropriate studies have been carried out, and will express a view on their adequacy in relation to each regulator's responsibilities.

The interests of the environment agencies will include the disposability of the final waste form and the type and quantity of secondary wastes, including discharges to the environment. HSE's interests will be concentrated on safety, radiological and on-site radioactive waste management aspects, with particular interest in any conditioning processes, stores and other plant involved.

*For the purposes of this document, only those regulatory interests of direct relevance to waste conditioning and storage are covered. In particular, HSE will have wider interests in respect of nuclear safety that will be regulated under the nuclear site licence conditions. Any discharges to the environment will be regulated by the environment agencies under the Radioactive Substances Act 1993.

Conceptual design

The licensee should inform us at the conceptual stages of any ILW management project. The formal point of contact is the appropriate HSE site inspector. At this stage, we will form an initial view as to the level of regulatory scrutiny required. The regulators will prioritise their efforts on more difficult and/or contentious proposals.

Detailed design and construction

Our interests are likely to involve a watching brief on progress and emerging problems, plus an interest in ensuring that the issues or concerns identified during the earlier phases of work are being addressed and closed out. The licensee should complete the majority of the RWMC before construction commences. The start of construction is likely to be one of the hold points in the regulatory process beyond which the licensee may not proceed without HSE's permission.

Commissioning

Our main interest will be confirming that the plant produces waste packages to the specification agreed at the detailed design and construction stage.

Operation

Our interest will be confirming that the plant continues to produce waste packages to specification and understanding the fate of any non-complying packages that are produced.

Storage

We will be interested in the state of the packages and the integrity of the store throughout its lifetime until removal of the waste to a final disposal facility or further store.

Figure 1 shows the formal procedural stages that are envisaged. Early dialogue with the regulators is a key component of the regulatory arrangements but is not represented in the figure for simplicity. The arrangements are designed to be flexible and efficient to avoid undue delay. In practice, continual dialogue between all the parties concerned will ensure that actions are carried out in parallel, as far as possible.

References

(References to websites were current in October 2007)

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2 *Guidance for inspectors on the management of radioactive materials and radioactive waste on nuclear licensed sites* NSD, HSE March 2001
www.hse.gov.uk/nuclear/waste1.pdf

3 *Nuclear site licence conditions* HSE www.hse.gov.uk/nuclear/silicon.pdf

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Environment Agency
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8 *Companion Document to Integrated Waste Strategy Specification* ENG02 NDA
www.nda.gov.uk/documents/upload/eng02_companion_document_to_integrated_waste_strategy_specification_revision_2.pdf

Contacts

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