

How to apply for an environmental permit Form RSR-B5 – New bespoke radioactive substances activity permit (burial of radioactive waste in a disposal facility or landfill)



Guidance notes

Please read these guidance notes carefully before you fill in the form.

Complete form RSR-B5 if you are applying for a new bespoke permit for a radioactive substances activity involving the burial of radioactive waste. You will also need to complete RSR-B3 (nuclear sites) or RSR-B4 (non-nuclear sites) if you wish to dispose of liquid or gaseous radioactive waste.

If you are the operator of a nuclear site and you want to apply to add the on-site disposal of solid radioactive waste to your permit, you should use this form if the proposed disposal is an engineered disposal facility. If your proposal involves in-situ disposal or disposal for a purpose, then you should use form RSR-C5 (in preparation). Consult your Environment Agency regulator if you are not sure which form to use.

Guidance on our information requirements for form RSR-B5 is provided in sections 1 to 8 below; section numbers correspond to the section numbers on the form.

We will also expect you to submit an environmental safety case (ESC) to support your application. Further information on the preparation of an appropriate ESC is provided in section 9.

Where you see the term ‘document reference’ on the form, give the document reference here and send the document with the application form when you’ve completed it. If you are making a joint submission to us and the Office for Nuclear Regulation (ONR), specify which part (for example, chapter and/or section number) of the submission is relevant to each question.

We have published guidance on the disposal of radioactive waste in near-surface facilities at <https://www.gov.uk/government/publications/near-surface-disposal-facilities-on-land-for-solid-radioactive-wastes>. We refer to this as the Guidance on Requirements for Authorisation (the near-surface GRA) for convenience. We have also issued supplementary guidance related to the implementation of the Groundwater Daughter Directive, available at the same link.

The GRA includes 5 principles for solid radioactive waste disposal and 14 requirements that we expect an operator to meet to allow us to permit a radioactive substances activity involving the burial of radioactive waste. We will apply this guidance in a way that is proportionate to the hazard presented by the waste. We include specific references to this in the guidance below.

We strongly advise you to read that guidance and the guidance to this form, and then to discuss your proposals with us before you make an application (see GRA Requirements R1 and R2).

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Terminology

‘Directive waste’ means waste as defined Waste Framework Directive (2009/98/EC) and includes the classes of inert, non-hazardous and hazardous waste. Directive waste is normally termed ‘waste’ but for clarity we use the term ‘directive waste’ here to avoid any confusion with ‘radioactive waste’. This is defined in schedule 23 of the Environmental Permitting Regulations 2016 (EPR16). Radioactive waste is excluded from the definition of ‘directive waste’ and is not subject to the provisions relating to directive waste

‘Standalone RSR facility’ means a facility which receives and buries only radioactive waste, and does not therefore have an EPR landfill permit.

1 Other applications

Tell us if you have recently made, or you intend to make, an application for an environmental permit to operate a regulated facility, other than a radioactive substances activity, on the premises. This will enable us to coordinate our determination work.

2 About the activities

2a What activities are you applying for?

Tell us which radioactive substances activities you are applying for.

If you are importing radioactive waste from off-site for burial, even if you only intend to do this as a result of your participation in the National Arrangements for Incidents involving Radioactivity (NAIR) or in the Radsafe scheme, you need to apply to receive radioactive waste as well as for its disposal. If you are only burying radioactive waste which is already on-site you do not need to apply to receive radioactive waste.

We expect prompt burial of radioactive waste, either on the day of receipt or the next working day if waste has been delivered to the site too late to allow burial on that day. We also expect prompt return of non-compliant waste to the consignor. You do not need to apply to accumulate radioactive waste if you are promptly disposing or returning non-compliant waste. Please discuss this matter and proposed timescales with your regulator before making an application.

If you are unable to ensure prompt disposal or return of radioactive waste, or wish to accumulate radioactive waste prior to its burial, then you will need to apply to accumulate radioactive waste. If you also hold a nuclear site licence issued by the ONR, you do not need to apply to accumulate radioactive waste because this is regulated by the ONR.

2b Provide a technical description of your activities

Your description should include: (see note 1)

- A description of the facility including:
 - the geology (superficial and solid);
 - hydrogeology and surface water hydrology (including distances to nearby surface water courses); and
 - local environment, such as human receptors and pathways to them around the site – such as distances, land use, population size and density, groundwater/aquifer use (including distance to nearest abstractions and use of abstractions), groundwater discharge to surface water courses, including whether any local areas or biota are protected or otherwise specially designated.

- The design of the facility including:
 - techniques for the containment of wastes, such as packaging, engineered or geological liner (or another barrier) type, and the thickness and permeability of the liner or barrier;
 - techniques for leachate management;
 - techniques for control of landfill gas or other emissions to air; and
 - techniques for the placement and covering of waste and type and performance of the cap.
- If the facility is (or is intended to be) permitted as a landfill site, the landfill classification (inert, non-hazardous or hazardous) of the cell or cells where it is proposed to dispose of radioactive waste.
- For co-disposal with directive waste, the proposed method of disposal (containment in small localised areas or spreading out across the site) – if necessary, describe separately for different radioactive waste types.
- The expected timeframes over which disposals of radioactive wastes to the facility may occur and the projected active lifetime of the facility (if different). Estimated total waste disposals during those timeframes (as m³), should be included to allow calculation of the average radioactivity while disposals are being made.

Note 1

If the facility has an EPR permit for the deposit of Directive waste (normally a Landfill Directive installation), or an application for such a permit has been made, and radioactive waste is to be deposited alongside directive waste, provide a short description with a reference to the relevant application that contains the detailed information.

3 Operating techniques

3a Describe how you manage the disposal of radioactive waste by burial to protect the environment and to optimise the protection of members of the public

You should:

- describe your optimisation process (see note 2); and
- identify and justify the techniques you are proposing as Best Available Techniques (BAT) (see notes 3 and 4).

Note 2

Solid radioactive waste shall be disposed of in such a way that the radiological risks to members of the public and the population as a whole shall be as low as reasonably achievable under the circumstances prevailing at the time of disposal, taking into account economic and societal factors and the need to manage radiological risks to other living organisms and any non-radiological hazards (GRA Principle 2). We outline our expectations for the demonstration of optimisation in the context of a near-surface disposal facility under GRA Requirement R8. We have also published general guidance on optimisation at [RSR: Principles of optimisation](#)

Note 3

In identifying techniques, you should address both the technology you use and the way your facility is designed, built, maintained, operated and closed (see GRA Requirement R12).

In justifying techniques as BAT you will need to ensure that the facility is optimised throughout its lifetime, and at all times after surrender of the permit, to ensure that the radiological impacts of disposals on members of the public and other species are as low as reasonably achievable (see GRA Requirements R5, R6, R7, R8, and R9). In order to demonstrate that the facility will meet the requirements of the Groundwater Daughter Directive, you will also need to demonstrate how you will take all necessary and reasonable measures to prevent the input of radionuclides to groundwater in line with our supplementary guidance on meeting Requirements R5 and R6.

Your response must be based on the radioactive waste you propose to dispose of, as described in question 4 of this document.

Note 4

Management arrangements and systems for the burial of radioactive waste are covered in application form RSR-A. Our requirements for the demonstration of a suitable environmental safety culture and a management system, organisational structure and resources are described under GRA Requirement R4.

3b Describe how you manage the disposal of radioactive waste by burial to protect members of the public and the environment from any non-radiological hazards of the radioactive waste

This question does not apply if radioactive waste is disposed of with directive waste in a facility permitted under EPR16 as a landfill installation or other directive waste operation.

Optimisation, as defined under GRA Principle 2 and discussed in 3(a), only applies to radiological risks. However, adequate protection against non-radiological hazards needs to be maintained when optimising for radiological risks. Solid radioactive waste shall be disposed of in such a way that the level of protection provided to the people and the environment against any non-radiological hazards of the waste both at the time of disposal and in the future is consistent with that provided by the national standard at the time of disposal for wastes that present a non-radiological but not a radiological hazard (GRA Principle 3).

You should explain how the facility provides a level of protection against the non-radiological properties of the waste consistent with that delivered by current standards for directive waste. This does not mean that these standards need necessarily be applied but that a level of protection is achieved that is no less stringent than the level of protection that would be provided if these standards were applied. You must do this based on a defined range of the non-radiological properties of the waste, as described in question 4.

Guidance on our requirements is provided under GRA Requirement R10.

In order to demonstrate that the facility will meet the requirements of the Groundwater Daughter Directive, you will need to demonstrate you will take all necessary and reasonable measures to:

- prevent the input of hazardous substances to groundwater: and
- limit the input of non-hazardous pollutants to groundwater to ensure that such inputs don't pollute groundwater.

The Government has published guidance in relation to groundwater activities at: [Environmental permitting guidance: Groundwater activities](#). Further Environment Agency guidance about groundwater protection is available at [Groundwater protection](#)

Some additional measures may be necessary to address issues such as odour, noise, and mud on roads.

In answering this, you do not need to adopt the landfill classifications (inert, non-hazardous, hazardous) or meet other specific Landfill Directive provisions.

4 Disposal of radioactive waste

4a Provide a description and quantitative estimates of the radioactive waste to be disposed of by burial

Describe the radioactive waste you are proposing to dispose of in the facility. Note that your waste acceptance criteria and procedures for waste receipt and disposal (question 8) must be consistent with the wastes you are proposing to dispose of by burial. Tell us:

- where the waste will come from (you may only be able to do this in general terms, for example, ‘from decommissioning nuclear power stations’);
- its category (for example, Low Level Waste (LLW), High Volume Very Low Level Waste (HV-VLLW) etc);
- how much of it (mass or volume and radioactivity content) you will receive and over what period – you should specify the maximum amount (mass or volume and radioactivity content) you want to dispose of;
- its nature and form (for example, packaged, bagged, loose etc);
- how you will treat or store it, if carrying out pre-treatment or storage (and therefore also applying to accumulate radioactive waste on the premises);
- the radionuclides present in the wastes and the total activity (in becquerels) and activity concentrations of each radionuclide (or group of radionuclides) over the lifetime of the site (see note 5). Where your figures relate to groups of radionuclides, a statement should be provided justifying the grouping as appropriate to use in the dose assessment;
- which radionuclides are likely to contribute significantly to the outcome of the radiological impact assessment (note – these are likely to vary depending upon the pathway); and
- the conventional properties of the radioactive waste (for example, its physical and chemical properties and any non-radiological hazards presented by the waste). Where relevant, provide details of any relevant limitations imposed by the landfill facility’s existing Waste Acceptance Criteria.

Note 5

If you are proposing limits based on ‘sum of fractions’ (see 4b) then you should provide a best estimate of the arisings of individual radionuclides.

4b Provide your proposed limits for the disposal of radioactive waste

There are a number of different approaches to limits, including limits based on a ‘sum of fractions’ approach. Please discuss the issue of limits with the Environment Agency’s Nuclear Regulation Group before making an application.

Your limits need to be consistent with the type, volume, properties and activity of the radioactive waste you are proposing to dispose of and the techniques described in question 3. Your proposals should be proportionate, simple and robust. If certain radionuclides dominate the assessed dose, you may consider proposing limits on those, together with a limit or limits on other groups of radionuclides.

5 Monitoring

5a Provide a description of the sampling arrangements, techniques and systems for the measurement and assessment of emissions of radioactivity and other emissions from the facility

Your description of your monitoring arrangements should:

- include details of your sampling arrangements, techniques and systems for the measurement and assessment of emissions of radioactivity and, for a standalone RSR facility, for other non-radioactive emissions from the facility, for example, via leachate and gas;
- include details of any sampling and monitoring of the performance of the facility, for example, settlement, landfill gas, leachate levels (see note 6); and

- demonstrate your proposals represent BAT for monitoring and are proportionate to the potential impact.

Note 6

If the facility has an EPR permit for the deposit of directive waste (normally a Landfill Directive installation), or an application for such a permit has been made, and radioactive waste is to be deposited alongside directive waste, you may provide a short description with a reference to the relevant application, containing the detailed information.

We describe our requirements for monitoring for changes caused by construction, operation and closure of a waste disposal facility for solid radioactive waste under GRA Requirement R14.

5b Provide a description of your environmental monitoring programme

See GRA Requirement R14, including the additional guidance on R14 provided in the supplementary guidance on the Groundwater Daughter Directive relating to monitoring for non-radioactive pollution.

You should provide your proposed environmental monitoring programme for:

- establishing a pre-operational baseline (or provide the results of this if already completed);
- the operational phase of your facility; and
- the post-closure phase.

Your operational programme should take account of the guidance in ‘Environmental radiological monitoring’ at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296529/geho0811btvy-e-e.pdf

6 Radiological assessment

6a Provide a prospective dose assessment at the proposed limits for the burial of radioactive waste

For any application to dispose of radioactive waste by burial (including HV-VLLW) you need to provide a radiological assessment demonstrating that radiation exposure to members of the public around the site as result of the disposal will be acceptable. The assessment should address all the key exposure situations likely to arise from disposal of radioactive waste.

The near-surface GRA provides dose and risk criteria that need to be satisfied at the time of disposal and in the future. It divides the disposal facility lifetime into ‘the period of authorisation’ (permitting) and ‘after the period of authorisation’. The following radiological requirements apply for the protection of human health:

- **Requirement R5:** Dose constraints during the period of authorisation. During the period of authorisation the effective dose from the facility to a representative member of the public should not exceed a source-related dose constraint of 0.3 mSv y^{-1} and a site-related dose constraint of 0.5 mSv y^{-1} .
- **Requirement R6:** Risk guidance level after the period of authorisation. After the period of authorisation, the assessed radiological risk from a disposal facility to a person representative of those at greatest risk should be consistent with a risk guidance level of 10^{-6} y^{-1} (this equates to a dose criterion of around 0.02 mSv y^{-1} for situations in which the likelihood of receiving the dose is close to 1).
- **Requirement R7:** Human intrusion after the period of authorisation. The potential consequences of human intrusion into the facility after the period of authorisation should be assessed assuming the intrusion is likely to occur. The assessed effective dose to any person during and after the assumed intrusion should not exceed a dose guidance level in the range of 3 mSv y^{-1} to 20 mSv y^{-1} . Values towards the lower end of this range are applicable to assessed exposures continuing over a period of years (prolonged exposures), while values towards the upper end of the range are applicable to assessed exposures that are only short-term (transitory exposures).

In 2013 we issued supplementary guidance to the near-surface GRA related to the implementation of the Groundwater Daughter Directive. This includes additional guidance on meeting Requirements R5 and R6 to demonstrate compliance with the Groundwater Daughter Directive as enacted via the groundwater activity provisions of EPR16. The supplementary guidance to the near-surface GRA is available at: <https://www.gov.uk/government/publications/near-surface-disposal-facilities-on-land-for-solid-radioactive-wastes>. The supplementary guidance includes the following additional requirements:

- **Requirement R5:** We shall require the developer or operator of a radioactive waste disposal facility in all cases to show that the radiation dose to members of the public through the groundwater pathway during the period of authorisation of the facility is consistent with, or lower than, a dose guidance level of 0.02 mSv y^{-1} .
- **Requirement R6:** We shall require the developer or operator of a radioactive waste disposal facility in all cases to show that the radiological risk to members of the public through the groundwater pathway after the period of authorisation of the facility is consistent with, or lower than, a risk guidance level of 10^{-6} y^{-1} .

The following text describes the minimum information that an applicant will need to provide in an assessment of the impacts associated with the disposal of radioactive waste by burial.

The radiological assessment must include radionuclide-specific doses for the main/key radionuclides, for the scenarios below and for any additional future scenarios that we have requested, or are relevant to the site.

For convenience we have split the scenarios that we expect to be considered into those relevant for the operational period and the post-closure period. We have also split them according to whether these scenarios may be considered likely to occur or whether they should be treated as less likely ('what if') scenarios. These scenarios are specific to radioactive waste disposals.

Operational phase – likely to occur

- the impact on members of the public if wastes are stored on site prior to disposal;
- the impact on members of the public from gas and aerosols, gas flaring and re-suspension of radionuclides with dusts;
- the impact on members of the public from leachate (this should consider discharge of leachate into groundwater and water courses, active leachate management via the sewer system where this occurs and use of leachate in dust suppression where this occurs).

Your assessment should take account of the principles and guidance in: 'Principles for the Assessment of Prospective Public Doses arising from Authorised Discharges of Radioactive Waste to the Environment', August 2012, [Assessment of prospective public doses from authorised discharges](#)

Operational phase – unlikely to occur

- consequences of leachate spillage or barrier failure with quick discharge to water courses;
- waste fire and release of radioactivity to air.

Post-closure – likely to occur

- gas release, H-3, C-14 and Rn-222 (from Ra-226);
- ongoing leachate release into surface water courses or coastal waters;
- ongoing leakage of leachate into groundwater;
- external dose from the residual inventory.

Post-closure – unlikely to occur

- overtopping of the containment system (doses should be assessed, assuming overtopping occurs).

Post-closure – future human intrusion

- intrusion into the waste (doses should be assessed assuming intrusion occurs for reasonably foreseeable scenarios taking into account the expected end state of the site).

You should also assess impacts associated with erosion of the burial site, for example, caused by denudation, flooding and/or sea level rise or other events, including those that may be associated with climate change, using the residual source at the time the scenarios might reasonably be expected to occur. Such scenarios will be site-specific and their conceptualisation and assessment should be fully justified. We expect you to demonstrate to our satisfaction your assessment of potential erosion events and whether they are likely to occur.

We also expect you to assess the impacts associated with significant heterogeneity of radioactivity, for example, associated with the presence of radioactive particles or discrete items that may in future be recognisable as unusual or not of natural origin and so could be a focus of curiosity or interest and potentially recovered, recycled or re-used by persons. We expect you to demonstrate to our satisfaction that impacts associated with the disposal of such items is consistent with our dose and risk criteria and appropriate for burial.

A summary of relevant dose and risk criteria for the assessment of the disposal of radioactive waste by burial is provided in Table 1.

Table 1 Dose and risk criteria for the assessment of the disposal of radioactive waste by burial

Phase	Scenario	Criterion
Operational	Likely to occur	Dose of 0.3 mSv y ⁻¹ (see note 7)
	Unlikely to occur	Dose of 0.3 mSv y ⁻¹ (see note 7)
	Exposure via groundwater pathway	Dose of 0.02 mSv y ⁻¹
Post closure	Likely to occur	Risk of 1 x 10 ⁻⁶ y ⁻¹ (see note 8)
	Unlikely to occur	Risk of 1 x 10 ⁻⁶ y ⁻¹ (see note 8)
	Human intrusion	Dose of 3-20 mSv y ⁻¹ (see note 9)

Note 7

The source-related dose constraint.

Note 8

A risk of 1 x 10⁻⁶ y⁻¹ may be considered approximately equivalent to a dose of 0.02 mSv y⁻¹ for situations in which the likelihood of receiving the dose is close to 1 and assuming a dose-risk coefficient of 0.06 per Sv.

Note 9

Values towards the lower end of this range are applicable to assessed exposures continuing over a period of years, while values towards the upper end of the range are applicable to assessed exposures that are only short-term.

Environmental concentrations of radionuclides

For scenarios that are likely to result in the highest radiological impact we expect you to assess the concentrations of radionuclides that give rise to these impacts. These assessments may include predicted values of concentrations of radionuclides in: leachate on-site during the operational phase and in the post-closure phase; groundwater in the post-closure phase; and the waste remaining on-site post-closure or, if it were disturbed, in environmental material containing waste from the site.

We expect the radiological assessment to be reported as follows:

- describe dose calculations and scenarios fully, in a transparent and coherent way which will allow us to review them and place them on our public register;
- describe explicitly all relevant assumptions and the key parameters for the landfill and wastes;
- present doses for each scenario by radionuclide and identify the limiting scenario;
- identify the radionuclides that make the major contribution to doses and identify the waste streams in which they are present; and
- compare the results of the assessment with the relevant dose and risk criteria.

In your application, you should provide as a minimum the information relevant to the selected model used for the radiological assessment, and if the application is for a stand-alone RSR facility, the information relevant to the assessments undertaken in relation to the non-radiological properties of the waste (see section 7).

6b Provide a prospective dose assessment for the most exposed members of the public in Member States of the European Union and/or Norway

This question refers to the Transboundary Radioactive Contamination (England) Direction 2020.

Only respond to this question if:

- the activity you are applying for is specified in paragraph 2(j) of the Direction, “emplacement of radioactive waste above or under the ground without the intention of retrieval”, and the assessment completed in response to question 6a of this form indicates that:
 - the effective dose from the disposal to a local representative person during the period of operation is $\geq 10 \mu\text{Sv}/\text{year}$, or
 - the assessed radiological risk to the local representative person after the period of authorisation is $\geq 6 \times 10^{-5}$ per year, or
 - there are exceptional pathways of exposure to EU Member States and/or Norway either during or after the period of authorisation.

Do not respond to this question if your application is for a military site or an activity that uses radioactive substances for military purposes.

If required, your assessment should include:

Airborne effluents

Models, including where appropriate generic models, and parameter values used to calculate the consequences of the releases in the vicinity of the plant and for other affected Member States and/or Norway:

- atmospheric dispersion of the effluents
- ground deposition and re-suspension
- food chains, inhalation, external exposure etc
- living habits (diet, exposure time etc.)
- other parameter values used in the calculations

Evaluation of concentration and exposure levels associated with the envisaged discharge limits:

- annual average concentrations of activity in the atmosphere near the ground and surface contamination levels, for the most exposed areas in the vicinity of the plant and in affected EU Member States and/or Norway
- for the reference group(s) in the vicinity of the plant and in affected EU Member States and/or Norway, corresponding annual exposure levels: effective dose to adults, children and infants, taking account of all significant exposure pathways

Liquid effluents

Models, including where appropriate generic models, and parameter values used to calculate the consequences of the releases in the vicinity of the plant and for other affected EU Member States and/or Norway:

- aquatic dispersion of the effluents
- their transfer by sedimentation and ion exchange
- food chains, inhalation of sea spray, external exposure etc.
- living habits (diet, exposure time etc.)
- other parameter values used in the calculations

Evaluation of concentration and exposure levels associated with the envisaged discharge limits:

- annual average concentrations of activity in surface waters, at the points where such concentrations are highest, in the vicinity of the plant and in affected EU Member States and/or Norway
- for the reference group(s) in the vicinity of the plant and in affected EU Member States and/or Norway: effective dose to adults, children and infants, taking account of all significant exposure pathways

Radiological Impact During Post-Closure Period

- redundancy and performance of barriers (if relevant)
- time periods considered
- analysed features, events and processes, description of scenarios assumed (brief descriptions of the normal evolution scenario, most relevant degraded evolution scenarios and human intrusion scenarios)
- methods and techniques used for assessment of radiological impact
- parameters and assumptions
- main exposure pathways in vicinity of repository and other affected Member States and/or Norway resulting from normal evolution and for early degradation of barriers
- activity and timing of radionuclide release
- corresponding maximum exposure levels: effective doses and/or estimated risks to adults, children and infants living in the vicinity of the plant and in relevant areas of other affected Member States and/or Norway taking account of all significant exposure pathways
- evaluation of the uncertainties

6c Provide an assessment of the impact on non-human species at the proposed limits for burial

You should demonstrate that all aspects of the accessible environment are adequately protected from radiological and non-radiological hazards both during the operational period and after (see GRA Requirement R9). You should assess the dose-rates to reference organisms that result from your proposed disposal of radioactive waste (including any indirect input to groundwater you propose). An appropriate range of reference organisms for freshwater, marine and terrestrial ecosystems is included in the ERICA tool (see below).

You should calculate worst-case dose-rates by assuming the presence of the reference organisms for the relevant ecosystem at the position of maximum environmental concentration.

We expect you to draw conclusions about the effects of the disposal facility on non-human biota using the best available information at the time of the assessment. You should tell us which model you used to calculate these dose-rates and why it is appropriate, and set out all the data and assumptions (with reasoning) you used as input into the model, where not already covered in 6a. You should identify the designated wildlife sites (Natura 2000 sites) likely to be impacted by the disposal facility and explain your selection of the ERICA reference organisms and how they represent species of interest around the site.

An appropriate tool for assessing impacts on non-human species is available on the ERICA website: <http://www.ERICA-tool.com/>. (ERICA was a research project under the EC Euratom 6th Framework programme).

You should demonstrate that the disposal facility will not cause impacts on species inhabiting relevant ecosystems. There are no internationally established criteria for determining radiological protection of the environment. The Euratom 6th Framework project on Protection of the Environment from Ionising Radiation in a Regulatory Context (PROTECT) recommended a generic screening criterion of $10 \mu\text{Gy h}^{-1}$ (<https://wiki.ceb.ac.uk/display/rpemain/PROTECT>).

In addition, the Environment Agency, Natural England and the Countryside Council for Wales has agreed a threshold of $40 \mu\text{Gy h}^{-1}$ below which there would be no adverse effect to the integrity of a Natura 2000 site. The $40 \mu\text{Gy h}^{-1}$ criterion is an action level relating to total impacts from all permitted discharges (aerial and liquid discharges) that may affect a Natura 2000 site. Where a Natura 2000 site(s) may be potentially affected, we will:

- assess the combined impact of emissions, from your and all other relevant permitted sites, on each potentially affected Natura 2000 site; and
- compare those combined impacts with the $40 \mu\text{Gy h}^{-1}$ action level.

If the dose rates predicted to wildlife inhabiting a particular nature conservation site exceed $40 \mu\text{Gy h}^{-1}$, then we must consider possible action, which may include reducing permitted discharges and regulatory limits, or carrying out further assessment to reduce conservatism in assessments.

7 Non-radiological assessments

This question applies to a standalone RSR facility only (see question 3b). You should assess the non radiological impact of the wastes being disposed of in line with our requirements described under GRA Requirement R10. You may choose to use the various assessment tools set out in our landfill guidance to assess and justify the risk arising from the non-radiological properties of the waste. You may also use alternative approaches with appropriate justification. However, we expect assessment criteria and compliance points to be consistent with our expectations for a landfill site for directive waste in order to meet the requirements of the Groundwater Daughter Directive. You will find guidance on the tools and assessments for landfill sites at [Risk assessments for your environmental permit](#).

Your response must be based on the non-radiological radioactive waste you propose to dispose of, as described in question 4.

8 Radioactive waste acceptance criteria

Provide details of your waste acceptance criteria and procedures for the receipt and burial of radioactive waste

This applies to all radioactive waste, whether imported onto site or arising from other on-site operations. Describe the waste acceptance criteria and procedures to ensure that:

- where radioactive waste is imported onto site, it is accepted only where its burial would be consistent with the proposed operating techniques (question 3), the associated description of waste (question 4) and the proposed limits in question 4b; and
- where radioactive waste is generated on site, it is buried only where this is consistent with the proposed operating techniques (question 3), the associated description of waste (question 4) and the proposed limits in question 4b.

The waste acceptance criteria should be consistent with the ESC. These criteria and procedures must cover the radiological and the non-radiological properties of the radioactive waste. They should also cover the chemical and physical form and durability, the susceptibility to microbial activity, the thermal and radiation stability, and the mechanical stability. If you are disposing of radioactive waste at a landfill site you must consider how these criteria and procedures relate to the relevant directive waste acceptance criteria and procedures. We describe our requirements for waste acceptance criteria under GRA Requirement R13.

9 Environmental Safety Case

An application under EPR16 relating to the disposal of solid radioactive waste should be supported by an Environmental Safety Case (ESC).

An ESC is a set of claims concerning the environmental safety of disposal of solid radioactive waste, substantiated by a structured collection of arguments and evidence, that demonstrates that the health of the public and the integrity of the environment are adequately protected during the period of operation and in the future.

Guidance on our expectations for an ESC is provided under Requirement R3 and section 7 of the near surface GRA. The level of detail provided by the ESC should be proportionate to the radiological and non radiological hazard presented by the waste. Information requirements are discussed in sections 1 to 8 above.

The ESC should demonstrate a clear link between the results of the radiological assessment calculations, the waste acceptance criteria and the permit limits applied for. The waste acceptance criteria should be consistent with the assumptions of the ESC.