Qualified Experts for Radioactive Waste Management

A Consultation by the UK environment agencies

NIEA Northern Ireland Environment Agency
www.ni-environment.gov.uk

SEPA Scottish Environment Protection Agency

Environment Agency
Asiantaeth yr Amgylchedd

Contents

Section 1 – This consultation

1.0 Introduction

1.0.1 This Section explains the consultation process and how you can respond to the proposed arrangements for the recognition of Qualified Experts.

1.1 What is this consultation about and who is carrying it out?

1.1.1 The consultation is being carried out by the Environment Agency (for England and Wales), the Scottish Environment Protection Agency (for Scotland) and the Northern Ireland Environment Agency (for Northern Ireland). Hereafter we will be collectively referred to as the environment agencies and wherever the term "we" is used it means "we the environment agencies"

1.1.2 To simplify the description of the different legislation that applies to radioactive waste management in England and Wales and in Scotland and Northern Ireland, throughout this document we use the term "Radioactive Waste Legislation" (RWL). This term refers to the Environmental Permitting Regulations 2010 (EPR 2010) (Ref. 1) and the Radioactive Substances Act 1993 (RSA93) (Ref. 2). Furthermore, any references to a "permit" means a permit issued under EPR 2010 for England and Wales, and/or a registration or authorisation issued under RSA93 in Scotland or Northern Ireland.

1.1.3 This consultation is about setting a common standard in the UK for the competences of a Qualified Expert who can advise employers about radioactive waste management and environmental radiation protection to meet the requirements of the Radioactive Waste Legislation.

1.1.4 This consultation proposes arrangements that will fulfil the requirements of Article 47(1) and Article 47(2) of the Basic Safety Standards Directive (BSSD) (Ref. 3). It is also concerned with setting up a mechanism for implementing a scheme for recognition of Qualified Experts which is a requirement of Article 38(3) of BSSD.

1.1.5 The environment agencies are not proposing any additional requirements on those who accumulate or dispose of radioactive waste; we see this as a formalisation of how Qualified Experts are currently working for the purposes of the Radioactive Waste Legislation. However, the environment agencies will review permit conditions and issue or vary permits as appropriate to ensure that the new arrangements are reflected.

1.1.6 The issue of this consultation follows the commissioning of a technical review of the competences required of a Qualified Expert (Ref. 4) by the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) on behalf of the environment agencies. As part of this review, extensive stakeholder engagement was carried out including several stakeholder workshops which were held to discuss issues relating to the competences of Qualified Experts and how a UK-wide scheme might be implemented. The outcome of these discussions has been used to shape these proposals.

1.1.7 The difference between a Qualified Expert and a "suitably qualified and experienced person (SQEP)" is not under discussion in this consultation. We expect all people who are employed to manage radioactive waste to be suitably qualified and experienced for the task. Having one or more Qualified Experts on a site does not remove the requirement to appoint SQEPs.

1.2 Who are the environment agencies consulting?

1.2.1 All those currently acting as Qualified Experts and all those having responsibility for the management of radioactive waste may be affected by the proposals set out in this consultation document. Regulators, training providers and professional societies representing those who might act as Qualified Experts as well as members of the public may also have an interest in the proposals. This consultation offers all these groups the opportunity to comment on the proposals.

1.3 What will happen next?

1.3.1 Following this consultation, the environment agencies will review the responses and agree the standard and mechanism for recognition of Qualified Experts. Further information on the implementation of the proposed arrangements is given in Section 5 of this consultation.

1.4 What is the deadline for comments?

1.4.1 Comments should be received by 14 January 2011.

1.5 What comments are requested?

1.5.1 We welcome any comments on our proposals. However, there are some specific propositions that we have made throughout Sections 2 to 5 that we are keen to obtain responses to. In order to help us assess responses we ask that you give your level of agreement or disagreement to each proposal using the scale given in the Consultation Response Form (Annex F) which ranges from "strongly agree" to "strongly disagree".

1.5.2 In addition to this quantitative response we also welcome any additional information that you can provide to support your response.

1.5.3 To assist in providing your response we have included a Consultation Response Form in Annex F. This form is also available in Microsoft Word format on the environment agencies' websites to enable electronic completion.

1.6 How do you respond to this consultation?

1.6.1 Responses can be sent by post or email using the Consultation Response Form included in Annex F to:

QEconsultation@sepa.org.uk

or

Qualified Expert Consultation
Radioactive Substances Policy Unit
Scottish Environment Protection Agency
Erskine Court
Castle Business Park
Stirling
FK9 4TR

1.6.2 When responding, please say clearly whether you are responding as an individual, or representing the views of an organisation. If responding on behalf of an organisation please make it clear who the organisation represents and, where applicable, how the views of members were collected.

1.6.3 Further copies of the consultation document and the Consultation Response Form can be obtained from the environment agencies' websites:

www.sepa.org.uk/about_us/consultations/qualified_expert.aspx

www.environment-agency.gov.uk

www.ni-environment.gov.uk

1.7 Confidentiality and Data Protection

1.7.1 Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Freedom of Information (Scotland) Act 2002 (FOISA), the Data Protection Act 1998 (DPA), the Environmental Information Regulations 2004 and the Environmental Information (Scotland) Regulations 2004).

1.7.2 If you want information that you provide to be treated as confidential, please be aware that, under the FOIA and FOISA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

1.7.3 In view of this, it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances.

1.7.4 An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the environment agencies.

1.7.5 The environment agencies will process your personal data in accordance with the DPA and this will mean that your personal data will not be disclosed to third parties.

Section 2 – Background to the consultation

2.0 Introduction

2.01 This Section describes why we need to consult on the proposed arrangements for the recognition of Qualified Experts and what we are aiming to achieve with these arrangements.

2.1 Why do we need Qualified Experts?

2.1.1 The Basic Safety Standards Directive (BSSD) requires employers to appoint "qualified experts" to advise them about work with radioactivity that may affect people and the environment. It is not likely that these requirements will change in any new Basic Safety Standards Directive.

2.1.2 Article 38 of the BSSD requires each Member State to make the necessary arrangements to recognise the capacity of qualified experts. The environment agencies are responsible for doing this as a result of the Basic Safety Standards Directions (Ref. 5, 6) issued to the Environment Agency and Scottish Environment Protection Agency by Government in 2000 and the Radioactive Substances (Basic Safety Standards) (Northern Ireland) Regulations 2003 (Ref. 7).

2.2 What does a Qualified Expert do?

2.2.1 The BSSD takes a very broad definition of what a qualified expert needs to be able to do. It describes qualified experts as:

> "Persons having the knowledge and training needed to carry out physical, technical or radiochemical tests enabling doses to be assessed, and to give advice in order to ensure effective protection of individuals and the correct operation of protective equipment, whose capacity to act as a qualified expert is recognized by the competent authorities. A qualified expert may be assigned the technical responsibility for the tasks of radiation protection of workers and members of the public".

2.2.2 In the United Kingdom the role of the qualified expert as defined in the BSSD is implemented by different roles specified in different legislation and regulated by different organisations. These include experts who can advise employers about personnel safety (Radiation Protection

Advisers), patient safety, instrument calibration and maintenance, radioactive waste management and transport of radioactive materials.

2.2.3 This concept is shown in the following diagram where the circle represents a Qualified Expert according to the BSSD definition and the different segments represent how this has been divided in the UK. The diagram is simplified as it does not show any overlapping of duties that exist in reality.

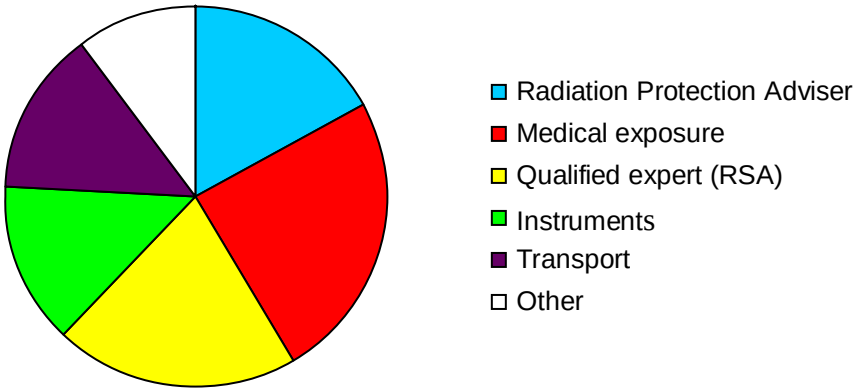


Figure 1: The concept of a qualified expert for the purposes of the BSSD

2.2.4 This consultation document is only about the part of the diagram described as "Qualified Expert (RSA)", meaning: the expert able to provide advice to employers relevant to radioactive waste management and environmental radiation protection. Hereafter in this consultation we refer to this as a "Qualified Expert". Section 5 discusses alternative titles and seeks views on what might be an appropriate title.

2.3 How is the requirement for recognition of Qualified Experts currently implemented by the environment agencies?

2.3.1 The environment agencies implement the requirement for qualified experts through appropriate conditions in permits issued under the Radioactive Waste Legislation.

2.3.2 Different conditions are used by the different environment agencies and the guidance and advice that is provided by the environment agencies varies as well.

2.3.3 A Qualified Expert is only recognised for an individual permit, there is no national scheme for the recognition of Qualified Experts.

2.3.4 The Environment Agency has accepted “suitable RPAs” as Qualified Experts. When this decision was made, the intention was that a suitable RPA equated to a “qualified expert”. However, no guidance was given on how this could be demonstrated.

2.3.5 The Ionising Radiations Regulations 1999 (Ref. 8) that are regulated by the Health and Safety Executive (HSE) require radiation employers to appoint and consult suitable Radiation Protection Advisers (RPA) to advise and assist them in complying with IRR99. However, although many of the competences for an RPA and a Qualified Expert are similar, the level of competence for different topics may vary. For example, an RPA will need a greater level of competence in designation of areas and classification of personnel, whereas a Qualified Expert will need a greater level of competence in radioactive waste management. This shows that not all RPAs will have the level of competence needed to be a Qualified Expert. A more detailed comparison of the competences of Qualified Experts and Radiation Protection Advisers is given in Section 3.

2.4 Why are we proposing new arrangements for the recognition of Qualified Experts?

2.4.1 The current system for the recognition of Qualified Experts is not working as well as it could and we believe that new arrangements are needed to improve the system in the UK.

2.4.2 We believe that the proposed new arrangements will:

- improve regulatory consistency;
- improve regulatory independence;
- provide clarity of requirements;
- provide transparency;
- make it easier for an individual to become a Qualified Expert;
- reduce the regulatory burden on industry; and
- improve the ability of permit holders to comply with the requirements put on them by the environment agencies.

Each of these will be discussed in more detail in the following paragraphs.

2.4.3 The environment agencies were directed by Government to recognise the capacity of Qualified Experts in 2000 but no guidance was issued on how this should be done. As a consequence the different environment agencies developed different methodologies for recognising Qualified Experts. This can make it difficult for operators who have sites in different parts of the UK to understand what is required of them and can lead to inconsistency of regulation within the environment agencies as well as in different parts of the UK. The new arrangements propose that the recognition of an individual's capacity to act as a Qualified Expert should be based on the assessment of competence made by Assessing Bodies that are approved by, but independent of, the environment agencies and that these Assessing Bodies will be UK-wide and therefore introduce regulatory consistency.

2.4.4 The environment agencies have so far been recognising the capacity of individuals to act as Qualified Experts using their own internal procedures implemented by site inspectors. This means that there is no separation between the recognition process and the regulatory process which could lead to a conflict of regulatory interest if one of the environment agencies had recognised an individual's capacity to act as a Qualified Expert and then found that the individual was not discharging their responsibilities as a Qualified Expert adequately and enforcement action was needed. The new arrangements propose that we will recognise an individual's capacity to act as a Qualified Expert where they have been assessed as competent by an Assessing Body that is approved by the environment agencies but operate their assessment processes independently of the environment agencies.

2.4.5 There has been very little information published by the environment agencies on what is required of a Qualified Expert and this can make it difficult for employers to determine who is suitable to advise them on radioactive waste management and environmental radiation protection and difficult for those individuals wanting to become recognised as Qualified Experts to know what knowledge and experience they need to demonstrate to achieve this. The new arrangements propose that the environment agencies will publish their expectations of a Qualified Expert and provide guidance to employers on the suitability of Qualified Experts. These expectations will be taken account of by the Assessing

Bodies when developing schemes for the assessment of Qualified Experts.

2.4.6 The processes currently used by the environment agencies for recognition of Qualified Experts have generally required permit holders to submit information on their proposed Qualified Experts to the appropriate environment agency. The process that the environment agencies follow to determine whether the proposed Qualified Expert is acceptable has not been widely published and is therefore not transparent. The new arrangements propose that the recognition of Qualified Experts is based on an assessment of competence that will be carried out by an Assessing Body that will publish its requirements and methodology thus making the assessment process more transparent.

2.4.7 The current arrangements mean that a Qualified Expert is only recognised for one or more specific permits granted under the RWL where the environment agencies' process has been followed. There is no process for recognising an individual as a Qualified Expert generally. The new arrangements propose Core Competences that any individual wanting to be recognised as a Qualified Expert will need to demonstrate and once these competences have been demonstrated that individual will be recognised as a Qualified Expert for any permit that the employer deems the individual is suitable for. This should make the process easier for Qualified Experts as they will no longer need to make multiple submissions to the environment agencies to demonstrate their competence for individual permits.

2.4.8 Overall, the new arrangements should reduce the regulatory burden on industry and make it easier for permit holders to comply with the requirements put on them by the environment agencies in relation to Qualified Experts.

Proposition 1

There are benefits in clarifying the expectations of the environment agencies on Qualified Experts.

2.5 Are there any other benefits in the proposed new arrangements?

2.5.1 During stakeholder engagement, additional benefits of the proposed new arrangements were raised, including:

- Improved identification of training needs of staff in premises working with radioactive substances;
- Demonstrable arrangements for training of relevant Qualified Experts for the purpose of compliance with Article 38(3) of the BSSD;
- Improved management of Continuing Professional Development (CPD) by employers and the radiation protection profession in the UK;
- Improved workforce mobility; and
- A basis for proactive engagement with European initiatives on training and related topics.

2.6 How have we developed the proposals?

2.6.1 The environment agencies created a Project Board which agreed that we should work towards an independent UK-wide scheme for the recognition of Qualified Experts. The Project Board formed an initial view about how the competences of a Qualified Expert for the purposes of radioactive waste management and environmental radiation protection might be derived, and let a contract through the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) to further develop how this might be achieved.

2.6.2 An important part of the SNIFFER project was stakeholder engagement. This included seeking the views of people who currently have to comply with the requirement to have a Qualified Expert: these include the nuclear industry and the wide range of other industries that use radioactive substances (known as “non-nuclear industries” or “Small Users”). Four stakeholder workshops were held in different parts of the country to enable as many representatives as possible to attend and make their views known.

2.6.3 We also sought the views of representatives of the field regulators/inspectors from the three environment agencies and a workshop was held to elicit their views on the requirements of a Qualified Expert and how a scheme might be implemented.

2.6.4 The outcome of the project was a report titled “Radioactive Substances Act 1993 and Qualified Experts” (Ref. 4) that was published in September 2007.

2.6.5 During the project and subsequently during the development of these proposals, briefings were made to the Nuclear Industry Liaison Group (NILG), the Small Users Liaison Group (SULG) and the Scottish Non-nuclear Industries Liaison Group (SNNILG) to keep them informed of developments.

2.6.6 The environment agencies have developed the proposed arrangements taking account of the findings of the SNIFFER report and input from stakeholders.

2.7 What are we proposing?

2.7.1 In outline our proposals are as follows:

- That the competences expected of a Qualified Expert able to advise an employer on compliance with the RWL are identified and published as a framework. The framework will include a knowledge component and a relevant experience component which taken together describe competence;
- That the concept of suitability is central to the proposals;
- That an appropriate mechanism is established to enable the framework to be implemented and maintained by the radiation protection profession rather than the environment agencies; and
- That the broad principles can be applied to the nuclear industry, non-nuclear industry and consultants.

2.7.2 The details of our proposals are described in the following Sections.

Section 3 – Proposed competence framework

3.0 Introduction

3.01 This Section describes the framework that the environment agencies are proposing for demonstrating competence of a Qualified Expert and how this compares to the existing scheme for Radiation Protection Advisers.

3.1 What is the proposed competence framework?

3.1.1 We are proposing that the competence framework for a Qualified Expert has two components: Core Competence and Suitability.

3.1.2 Core Competence is based upon a syllabus defined by the environment agencies and assessed by an independent Assessing Body. Core Competence requires **knowledge** and **experience** to be demonstrated, i.e.

Competence = Knowledge + Experience

3.1.3 Suitability: it is the responsibility of the employer to determine whether a Qualified Expert who has demonstrated Core Competence is suitable to advise on the employer's business. Suitability is discussed further in Section 3.6

3.2 What is the proposed syllabus?

3.2.1 We have based the topics in the syllabus for Core Competence on the basic syllabus published in "EC Communication 98/C133/03 for the qualified expert in radiation protection" (Ref. 9) with a few additional items from the "additional material" list in the same document to make it applicable for a Qualified Expert in radioactive waste management and environmental radiation protection.

3.2.2 The proposed syllabus is given in Annex A of this consultation and a description of the table is given in the following paragraphs.

3.2.3 The **first column** lists the topics given in the EC communication, with the addition of "Security of radioactive materials" which we felt warranted its own entry as this is a new topic since the EC syllabus was published.

3.2.4 The **second column** provides further detail on what we believe should be included in the topic.

3.2.5 The **third column** gives the overall level of competence required and is based on a combination of knowledge and experience. A description of the competence levels is given in Section 3.4.

3.2.6 The **fourth column** gives the level of experience required for the topic. A description of the levels of experience is given in Section 3.4.

Proposition 2

Experience is a key component of competence.

Proposition 3

The proposed scope of the competence framework (Annex A) is appropriate to the role of an adviser to employers on radioactive waste management and environmental radiation protection.

Proposition 4

The syllabus fully describes the knowledge and experience requirements of a Qualified Expert.

3.3 What is "Competence"?

3.3.1 Competence is a term that is used in various ways in different disciplines. In order to align as closely as possible with other relevant uses of the term in radiation protection, we have defined this term as follows:

> "The combination of knowledge and experience that equips an individual or group of individuals to provide expert advice on radioactive waste management and environmental radiation protection."

3.3.2 During some of the workshops run during the SNIFFER project, the point was made that some of the knowledge proposed as part of the

competence framework is not currently available via commercial training courses. We recognise this and it is part of our motivation for undertaking this work. We believe that by the publication of a shared framework of competences and by allowing sufficient time for its managed introduction, training providers will be able to identify, produce and deliver training courses to meet any needs that are not currently provided for. We also recognise that in the event that suitable training courses do not become available it may be appropriate for the environment agencies to deliver some training courses. We consider that this would be in keeping with our wider duties of helping businesses to comply with their permit conditions and promoting the use of best practice.

3.4 What is "Core Competence"?

3.4.1 The environment agencies have developed a syllabus comprising knowledge and experience that we are proposing to use as the basis for demonstrating Core Competence.

3.4.2 The syllabus comprises a list of topics relevant to radioactive waste management and environmental radiation protection together with the level of competence required for each topic; this competence includes a level of experience that is required.

3.4.3 We have compiled the content associated with each of the topics by taking into account our regulatory expectations, the output of the SNIFFER project and other relevant documents. It is important to note that the syllabus requires knowledge of a range of legislation related to radioactive substances and not simply that associated with radioactive waste management. This is particularly important because as specified by Article 47 of the BSSD, Qualified Experts should be concerned with "achieving and maintaining an optimal level of protection of the environment and the population". We do not believe that it is possible to provide good advice on what is an "optimal level of protection" without understanding all regulatory requirements that apply to radioactive substances. In particular, we wish to ensure that advice provided by a qualified expert does not cause a breach of other legislation.

3.4.4 The competence required for each topic is based on three levels: General Awareness (GA), Basic Understanding (BU) and Detailed Understanding (DU) and these levels are defined as:

3.4.5 General Awareness: knows that the topic exists and is aware of its significance to work activities in context. Also knows how and where to obtain help on the topic if needed.

3.4.6 Basic Understanding: has a basic understanding of the topic with a level of detail that allows the Qualified Expert to apply it to familiar work activities in context. If necessary, can research further knowledge using readily available sources and apply it in less familiar circumstances.

3.4.7 Detailed Understanding: has a good understanding of the topic and the underlying principles and can apply the knowledge in appropriate contexts. Can apply the knowledge working from basic principles to deal with situations in new or unfamiliar areas and can identify and influence the peripheral and long term issues arising from its application.

Proposition 5

The adoption of the GA, BU, DU approach is appropriate.

3.4.8 The level of experience that forms part of the overall competence is also based on three levels: Level 0, Level 1 and Level 2. These levels are defined as:

3.4.9 Level 0: no experience required. This is either because experience is impractical, e.g. basic physics, or because it is not a requirement for being a Qualified Expert for the purposes of radioactive waste management or environmental radiation protection, e.g. personal dosimetry.

3.4.10 Level 1: some experience required. This is where an individual has attained a level of experience that allows him to provide advice on routine/standard issues. The level is based on the quality of experience rather than the quantity of advice given.

3.4.11 Level 2: significant experience required. This is where an individual has attained a high level of experience that allows him to provide

advice in unusual and non-standard circumstances. The level is based on the quality of experience rather than the quantity of advice given.

Proposition 6

The three levels of experience proposed are appropriate.

3.5 How do the proposed Core Competences for Qualified Experts compare to the RPA scheme?

3.5.1 We have deliberately developed the Core Competences for Qualified Experts so that it is similar to the RPA scheme where this was appropriate. This has been done because the RPA scheme is familiar to the radiation protection profession and it should minimise any burden associated with the transition to the new system. However, as described in this section and 3.8, there are distinct difference between a Qualified Expert and an RPA; they should not be regarded as being the same.

3.5.2 We have based the topics in the syllabus for Core Competence on the basic syllabus published in "EC Communication 98/C133/03". This allows us to clearly demonstrate compliance with European requirements and has the added advantage of being the same syllabus used by the HSE for its Core Competence for Radiation Protection Advisers and so our proposal looks similar to the RPA scheme.

3.5.3 We are proposing to use the same three levels of competence as the RPA scheme: General Awareness, Basic Understanding and Detailed Understanding. Therefore this will appear familiar to those involved in the RPA scheme.

3.5.4 The main difference, other than content, between our proposed syllabus and that provided by the HSE is that our syllabus specifies the **overall competence** required and a **level of experience**. The level of experience forms part of the overall competence required to demonstrate Core Competence. The RPA syllabus only includes competence which it describes as "depth of knowledge".

3.5.5 Many of the topics on the Qualified Expert syllabus and Radiation Protection Adviser syllabus require the same level of competence, but

as expected there are differences for topics that are key to the areas of work of a Qualified Expert or a Radiation Protection Adviser.

3.5.6 A comparison of the two syllabuses is given in Annex B of this consultation, but in summary the main differences are:

3.5.7 Higher level of competence required for Qualified Expert:

- Radioactive Waste Legislation (i.e. EPR2010 and RSA93)
- Radioactive waste management
- Radioactive waste disposal
- Radioactive waste assay
- Optimisation, i.e. BAT / BPM
- Environmental monitoring
- Environmental radiological assessment
- Security of radioactive materials

3.5.8 Higher level of competence required for Radiation Protection Adviser:

- Practices and interventions
- IRR99
- Minimisation of risk (including ALARP)
- Monitoring: area, personal dosimetry, biological
- Designation of areas and classification of workers

Proposition 7

There is a high degree of alignment between the RPA and QE syllabuses and so the effort required to "extend" an RPA to a QE is likely to be tolerable.

3.5.9 This overlap of competences is shown diagrammatically in Figures 2 and 3. Annex B shows the real overlap of competences based on the proposed syllabus.

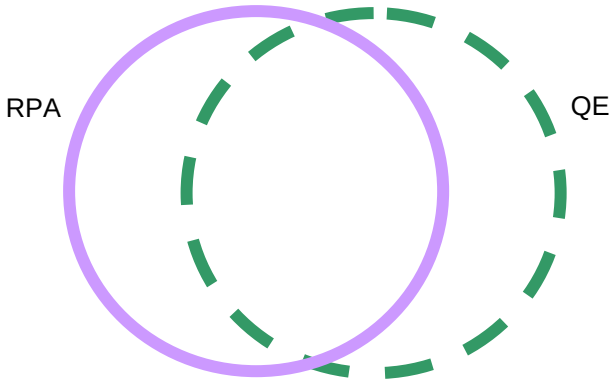


Figure 2: Overlap of competences for RPA and QE

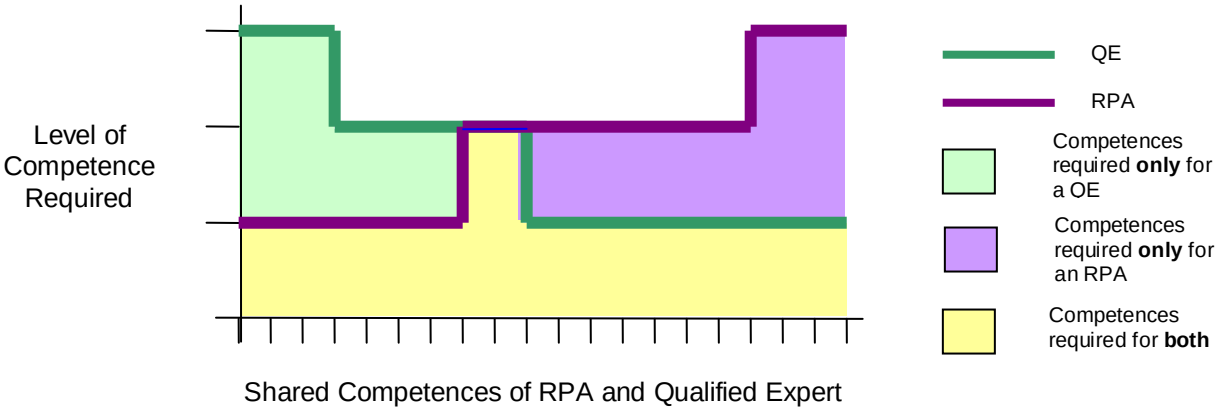


Figure 3: Overlapping profiles of competence sets for RPA and Qualified Expert showing different levels of overlapping competences

3.6 What is "Suitability"?

3.6.1 An individual who has demonstrated Core Competence may be recognised as a Qualified Expert but it is an employer's responsibility to select a Qualified Expert who has the necessary knowledge and experience to make them **suitable** to give advice on radioactive waste management and environmental radiation protection in relation to the employer's business.

3.6.2 The environment agencies propose that a suitable Qualified Expert is described as:

> A **suitable** Qualified Expert is a Qualified Expert who has "the specific knowledge, experience and competence required for giving advice on the particular radioactive waste management and environmental radiation protection issues for which the employer is making the appointment".

3.6.3 This concept is similar to that used by the HSE for RPAs, and the Society for Radiological Protection (SRP) has published guidance for employers on Suitable Radiation Protection Advisers. The environment agencies are proposing to adopt a similar concept and proposed guidance is given in Annex C of this consultation.

3.6.4 In summary:

Suitable QE = QE(Core Competence) + Specific knowledge, experience and competence

3.6.5 In order to ensure consistency between environment agencies, we will issue joint guidance on what suitability is and how it can be assessed by an employer to assist in deciding who to appoint as a Qualified Expert to advise on radioactive waste management and environmental radiation protection for the employer's business.

3.6.6 Note that under these proposals it will continue to be the duty of the employer to make a case to their regulator on the suitability of their appointed Qualified Experts. The regulator will then assess whether suitability has been proven. If it has, the proposition that the Qualified Experts are suitable will be accepted; if not, then the proposition will be rejected.

Proposition 8

The clarification of the competences of a Qualified Expert and the proposal to leave the decision about suitability with the employer will result in increased clarity and improved consistency.

Proposition 9

It will be beneficial if all three environment agencies take a similar approach to assessing suitability.

3.7 Maintaining competence

3.7.1 In addition to demonstrating Core Competence before an individual can be recognised as a Qualified Expert, the environment agencies expect Qualified Experts to maintain and develop their knowledge and experience through continuing professional development.

3.7.2 We expect that this will be reflected in any scheme set up by an Assessing Body and that a maximum period for validity of recognition of an individual's Core Competence to act as a Qualified Expert will be set at a period not exceeding five years.

3.7.3 The environment agencies believe that the process for re-assessment should be developed by the Assessing Bodies.

Proposition 10

It is not appropriate for the environment agencies to prescribe a re-assessment process - that should be left to approved Assessing Bodies.

3.8 How is a Qualified Expert different from a Radiation Protection Adviser?

3.8.1 The Ionising Radiations Regulations 1999 (IRR99) that are regulated by the Health and Safety Executive (HSE) require radiation employers to appoint and consult suitable Radiation Protection Advisers (RPA) to advise and assist them in complying with IRR99.

3.8.2 To be an RPA an individual must either hold a valid certificate of competence from an assessing body recognised by the HSE or a National or Scottish Vocational Qualification at Level 4 with the N/SVQ issued not more than five years previously.

3.8.3 To obtain a certificate of competence or N/SVQ an individual has to demonstrate that he or she meets the Criteria for Core Competence to

act as an RPA as set out by the HSE. The Core Competences include radiation physics, biological effects of radiation, detection methods, radiation protection standards, the legal and regulatory basis and operational radiation protection. The HSE has issued "Guidance on the Criteria of Core Competence" contained in HSE's "Statement on Radiation Protection Advisers" (issued February 2007) (Ref. 10).

3.8.4 The risk assessment of environmental impacts of radiation is specifically excluded from the required competences of an RPA and the level of knowledge of radioactive waste management is the lowest level required, i.e. General Awareness. This is sufficient for the purposes of a specialist in the radiation protection of workers and the public, but is not considered by the environment agencies to be adequate to meet the needs of a Qualified Expert for the purposes of environmental radiation protection and radioactive waste management.

3.8.5 However, because the work of many RPAs is wider than just implementation of IRR99, many have acquired knowledge and experience of environmental radiation protection and radioactive waste management in addition to the knowledge and experience needed to become a certified RPA.

3.8.6 Many of the core competences for an RPA and a Qualified Expert are similar, but the depth of knowledge for the different competences might vary. For example an RPA may only need a General Awareness of radioactive waste management but a Qualified Expert would be expected to have a Detailed Understanding of radioactive waste management. Conversely an RPA would need to have a Detailed Understanding of designation of areas and classification of workers whereas a Qualified Expert would only need to have a General Awareness of the same topic.

3.8.7 Therefore, although many of the core competences will be the same for RPAs and Qualified Experts the level of knowledge and experience for each competence may be different.

3.8.8 A comparison of the basic syllabus for an RPA and the basic syllabus proposed for a Qualified Expert is given in Appendix B of this consultation document.

Section 4 – What administrative arrangements will the environment agencies put in place to recognise Qualified Experts?

4.0 Introduction

4.01 This Section describes how the environment agencies propose bringing in the new arrangements and what the different bodies involved will need to do to ensure successful implementation.

4.1 What are the proposed arrangements for the recognition of Qualified Experts?

4.1.1 The environment agencies are planning to put arrangements in place for the approval of independent Assessing Bodies to recognise the Core Competence of individuals to act as Qualified Experts. We are also planning to put arrangements in place for the approval of Corporate Qualified Experts. A diagram summarising the two processes is given in Figure 4.

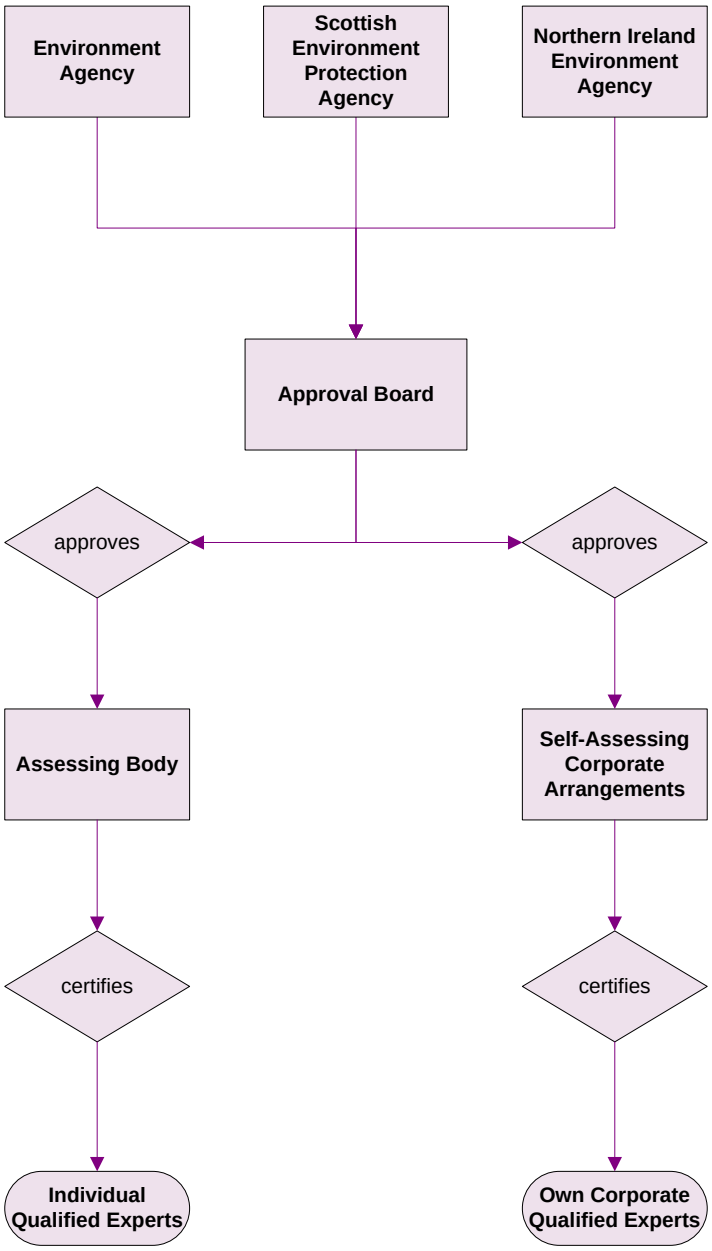


Figure 4: Diagram summarising approval and assessment process

4.2 How will the Approval Board work?

4.2.1 We are proposing to set up an Approval Board consisting of a minimum of one representative from each of the environment agencies. We would not preclude the involvement of representatives from outwith the environment agencies as long as there is no conflict of interest.

4.2.2 The purpose of the Approval Board will be to decide if applicant Assessing Bodies are suitable for assessing the competence of individuals wanting to act as Qualified Experts or for Self-Assessing Corporate Arrangements to certify their own Corporate Qualified Experts.

4.2.3 The Approval Board will develop and publish procedures and information for applicant Assessing Bodies and Self-Assessing Corporate Arrangements that will include:

- What is expected of an Assessing Body or Self-Assessing Corporate Arrangements;
- What information needs to be submitted as part of the application for approval;
- How the approval process will work; and
- What process will be put in place for appeals.

4.2.4 The Approval Board will maintain a publicly available list of all organisations it recognises as Assessing Bodies together with contact details for the Assessing Bodies.

Proposition 11

The proposed level of prescriptiveness for the environment agencies Approval Board for Assessing Bodies is appropriate.

Proposition 12

The proposed scope of interest of the Approval Board is appropriate.

4.3 What will Assessing Bodies do?

4.3.1 The purpose of an Assessing Body is to recognise the Core Competence of **individuals** to act as Qualified Experts for the purposes of the Radioactive Waste Legislation in relation to radioactive waste management and environmental radiation protection.

4.3.2 An applicant Assessing Body must be able to demonstrate to the Approval Board that it:

- is constituted as, or comprises an identifiable part of, a legal entity or partnership or other grouping that is capable of being recognised;
- has in place formal schemes which meet the requirements set out by the Approval Board; and
- has an organisational structure and management arrangements to ensure that these formal schemes are (i) subject to review and continuous improvement and in particular are not open to arbitrary change and will continue to meet those requirements (e.g. changes to the schemes have to be agreed by a Board, Governing Body or equivalent); and (ii) reflect the principles of the Approval Board's Policy Statement.

4.3.3 An organisation wanting to be recognised as an Assessing Body for the purpose of recognising the Core Competence of individuals to act as Qualified Experts should apply to the Approval Body with sufficient information to show that it satisfies the requirements published by the Approval Board.

4.3.4 The Approval Board requires those applying for recognition as an Assessing Body to have and supply, as a minimum, the following documentation:

- The procedures for assessing applicants;
- Any guidance on making applications;
- Any guidance given to assessors;
- The procedures for dealing with appeals and complaints; and
- Details of the management and administration of the organisation.

4.3.5 Assessing Bodies will be required to provide annual reports to the Approval Board including information on:

- The number of applicants successfully recognised as Qualified Experts;
- The number of unsuccessful applications;
- The number of certificates withdrawn;
- The number of certificates not renewed;
- The number of appeals processed; and
- The number of applications and appeals outstanding at the end of the reporting period.

Proposition 13

The proposed function of an Assessing Body is appropriate.

4.4 What are the proposed arrangements for the recognition of Corporate Qualified Experts?

4.4.1 The environment agencies recognise that there are some circumstances in which nuclear organisations might want to implement their obligation for appointing Qualified Experts by sharing the required duties amongst more than one individual. Under these circumstances the group of individuals providing the Qualified Expert function will be known as a "Corporate Qualified Expert".

4.4.2 It is anticipated that the recognition of Corporate Qualified Experts will only occur for a few organisations and that the default position is that individuals should be encouraged to apply for recognition as Qualified Experts.

4.4.3 The environment agencies propose that the process for recognising Corporate Qualified Experts will be similar to that for approving Assessing Bodies except an organisation will be designated as having "Self-Assessing Corporate Arrangements".

4.4.4 We propose that in order to be recognised as a Corporate Qualified Expert the organisation must have sufficient infrastructure to identify, develop and maintain the knowledge and experience of individuals within their organisation so that they can collectively fulfil all the requirements of an individual Qualified Expert.

4.4.5 We envisage that the requirements for approval of Self-Assessing Corporate Arrangements could be met by existing management arrangements already required by permit conditions for the nuclear industry as will be described in Approval Board guidance.

4.4.6 An organisation recognised as a Corporate Qualified Expert will only be allowed to advise its own business, that is, it cannot contract out its Qualified Expert services.

Proposition 14

The proposals for Corporate Qualified Experts and the arrangements for approving them are appropriate.

Section 5 – How will the environment agencies implement the proposed arrangements for the recognition of Qualified Experts?

5.0 Introduction

5.0.1 The environment agencies believe that a clear plan for implementation is essential if the proposed arrangements for the recognition of Qualified Experts are to be successful. This Section outlines the plan for implementation.

5.1 What will happen after this consultation?

5.1.1 The environment agencies will review the comments received and take account of them in reviewing and revising, as necessary, the proposed arrangements for the recognition of Qualified Experts.

5.1.2 The environment agencies will publish the responses received and how they have been taken account of.

5.1.3 The environment agencies will publish a joint "Statement on Qualified Experts for the purpose of environmental radiation protection and radioactive waste management". This policy statement will list the environment agencies' expectations with regards to Core Competence, Assessing Bodies, Self-Assessing Corporate Arrangements and any other relevant matters.

5.2 Who will implement the arrangements?

5.2.1 Implementation will be driven by the environment agencies, but will also need input from potential Assessing Bodies. Their input to the implementation is discussed in the following sections.

5.2.2 The environment agencies will:

- Constitute an Approval Board with an appropriate terms of reference and membership;
- Publish a joint statement as described in 5.1.3;

- Work with potential Assessing Bodies and Self-Assessing Bodies to enable them to make applications to the Approval Board; and

- Work with training providers to enable them to develop suitable training courses that will help potential Qualified Experts to acquire the required knowledge needed to be recognised as a Qualified Expert.

5.2.3 Assessing Bodies: The success of the proposed arrangements for recognising Qualified Experts depends on one or more Assessing Bodies wanting to provide a scheme for the recognition of individual Qualified Experts. Throughout the development of these proposals, the environment agencies have been in discussion with the professional societies associated with radiological protection and with organisations that are Assessing Bodies for the purposes of the HSE's RPA certification scheme.

5.3 What is the timescale for implementation?

5.3.1 The timescale for implementation is one of the things that we are seeking your views on in this consultation. Therefore it is difficult at this stage to put a definite timescale on implementation; however, we believe that time needs to be allowed for:

- The identification of an Assessing Body or Bodies;

- The provision of assistance by the environment agencies to candidate Assessing Bodies;

- The Assessing Bodies to develop procedures;

- The Assessing Bodies to identify assessors, train them and develop them;

- Training providers to understand the competence framework, design any new training courses or improve existing ones, publicise and recruit trainees; and

- People who are currently working as Qualified Experts to be identified, recognised and granted "grandfather rights" to

Qualified Expert status. Further information on proposed grandfather rights is given in 5.4.

5.3.2 We recognise that sufficient time must be allowed to enable the proposed arrangements to be implemented in a workable manner.

5.3.3 A proposed timeline for implementation assuming that the decision is made to implement proposals based on this consultation is given in Figure 5. We propose that there is a start date when a window for application for Qualified Expert status opens. We envisage it would remain open long enough to enable individuals currently working as Qualified Experts to register with the Assessing Body so that they may be granted "grandfather rights".

Proposition 15

There are no other key organisations that need to input to the implementation of the proposed arrangements

Table 1: Proposed timeline for implementation of QE competence framework

	2010	2011	2012	2013	2014
Environment agencies	Undertake consultation	Consultation Report of consultation Dissemination of results Decision on implementation by the environment agencies Publish a statement on QEs Agreement on relationship with Assessing Bodies achieved Assessing Bodies identified			

	2010	2011	2012	2013	2014
Assessing Bodies / Self-Assessing Corporate Arrangements		Agreement on relationship with environment agencies Process for registering for granting of grandfather rights developed Start of identification and training of assessors of QEs Process for granting of grandfather rights initiated Process for registering for granting of grandfather rights closed Grandfather rights granted to registered applicants	Identification and training of assessors of QEs continues Publish CPD arrangements	Identification and training of assessors of QEs Potential end of period of grandfather rights being valid First assessments of new candidate QEs	Potential end of period of grandfather rights being valid
Candidate Qualified Experts		Review report on consultation Register for grandfather rights			New QEs required to go through recognition process
Users / operators	Engage in consultation	Review report on consultation			
Training providers	Engage in consultation	Review report on consultation and identification of training opportunities that may usefully / profitably be developed	Development of any new training they wish to provide		

Proposition 16

The proposed timescale for implementation of the proposals is appropriate.

5.4 "Grandfather rights"

5.4.1 The environment agencies envisage that the arrangements for the recognition of Qualified Experts will include arrangements for those individuals currently working as Qualified Experts to have this recognised in the form of "grandfather rights". Grandfather rights means that an individual will have a period of time after the new scheme is implemented before he or she needs to go through the recognition process.

5.4.2 In order to implement grandfather rights we are proposing that those individuals currently working as Qualified Experts will need to register this status along with some evidence that they are currently working as a Qualified Expert.

5.4.3 Grandfather rights will exist for a specific period of time after which any individual wanting recognition as a Qualified Expert will need to go through the standard recognition process.

5.4.4 Those individuals who are not currently working as Qualified Experts will need to go through the recognition process before they can provide advice as a Qualified Expert.

Proposition 17

The proposals for "grandfather rights" are suitable and reasonable.

5.5 How will the environment agencies require permit holders to implement the new arrangements?

5.5.1 The environment agencies already include conditions in permits relating to radioactive waste disposals requiring permit holders to appoint Qualified Experts.

5.5.2 The environment agencies will review these conditions and vary permits as appropriate to ensure that the proposed new arrangements are implemented.

5.5.3 The environment agencies do not currently include conditions requiring the appointment of Qualified Experts in permits that relate solely to the keeping and use of sealed radioactive sources. We do not propose to change this approach. However we would reiterate that those permits require that the Permit Holder shall at all times ensure that adequate arrangements have been made and implemented, and continue to be made and implemented, for the safe management of Permitted Sources, including when they become disused sources. A Qualified Expert would be able to provide advice to the Permit Holder to ensure that this requirement is complied with.

5.6 Will credit be given for existing Core Competence as a Radiation Protection Adviser?

5.6.1 As described in 3.5, there are many similarities in the Core Competences proposed for Qualified Experts and those required for Radiation Protection Advisers. Therefore, the environment agencies believe that any scheme for the recognition of Qualified Experts could allow an individual who has gained Core Competence in one discipline to be credited against an application for Core Competence in another discipline.

5.6.2 The mechanism for how this credit might be achieved will be up to individual Assessing Bodies and should not be dictated by the environment agencies.

Proposition 18

It is appropriate that a certified RPA should be given a credit for their RPA competences when they are considered for Qualified Expert Status

Proposition 19

How credit for existing RPA competences is given is an issue for the Assessing Bodies not the environment agencies.

5.7 What will the Qualified Expert be called?

5.7.1 The environment agencies do not have a fixed view about what the most suitable title for a person fulfilling the role of a Qualified Expert (or Corporate Qualified Expert) for the purposes of environmental radiation protection and radioactive waste management should be.

5.7.2 During the development of these proposed arrangements several titles have been suggested such as QE (RSA), Radioactive Waste Adviser (RWA), Radioactive Materials Adviser (RMA) and Radioactive Substances Adviser (RSA).

5.7.3 The title QE (RSA) was previously proposed because at the time the requirement to have a QE would have been imposed through RSA permits. This title is now unsuitable because the introduction of the Environmental Permitting Regulations in England and Wales means that use of the abbreviation “RSA” for Radioactive Substances Act will no longer be appropriate.

5.7.4 Radioactive Waste Adviser (RWA) and Radioactive Materials Adviser (RMA) were proposed during the SNIFFER workshops but comments were made by workshop participants that the former implies that sources are not included (as they are not waste) and the latter implies that waste is not included and therefore these proposals may not be suitable.

5.7.5 The suggestion of Radioactive Substances Adviser (RSA) was criticised as potentially being confused with the title of the Act (RSA93), although this may be less ambiguous with the new Environmental Permitting Regulations in England and Wales.

5.7.6 On balance, the preferred option of the environment agencies is Radioactive Waste Adviser (RWA). Our reasoning for this is that the purpose of RWL is to ensure the regulated management of radioactive wastes. Even new sources are within its scope as they will one day

become radioactive waste. Therefore the term Radioactive Waste Adviser covers the whole scope of the role.

Proposition 20

The proposed term "Radioactive Waste Adviser (RWA)" is a suitable title for a person fulfilling the role of a Qualified Expert for the purposes of environmental radiation protection and radioactive waste management.

References

1. The Environmental Permitting Regulations 2010
2. The Radioactive Substances Act 1993
3. Council Directive 96/29/EURATOM laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation
4. SNIFFER report UKRSR10 “Radioactive Substances Act 1993 and Qualified Experts”
5. The Radioactive Substances (Basic Safety Standards) (England and Wales) Direction. 2000
6. The Radioactive Substances (Basic Safety Standards) (Scotland) Direction 2000
7. The Radioactive Substances (Basic Safety Standards) Regulations (Northern Ireland 2003)
8. The Ionising Radiations Regulations 1999 (SI 1999 No 3232)
9. Communication from the Commission concerning the implementation of Council Directive 96/29/Euratom laying down basic safety standards for the protection of the health of the workers and the general public against the dangers arising from ionising radiation (98/C133/03)
10. HSE’s statement on Radiation Protection Advisers - (http://www.hse.gov.uk/radiation/rpnews/statementrpa.htm)

Annex A – Proposed competence framework

This table is based on the basic syllabus for the qualified expert in radiation protection with a few additional items from the “additional material” list as published in EC Communication 98/C133/03.

The table is set out as follows:

The first column lists the topics given in the EC communication, with the addition of “Security of radioactive materials” which we felt warranted its own entry as this is a new topic since the EC syllabus was proposed.

The second column lists the content taken from the table forming Annex A of the last draft of our consultation document.

The third column gives the overall level of competence required and is based on a combination of knowledge and experience.

The competence required for each topic is based on three levels: General Awareness (GA), Basic Understanding (BU) and Detailed Understanding (DU) and these levels are defined as:

General Awareness: knows that the topic exists and is aware of its significance to work activities in context. Also knows how and where to obtain help on the topic if needed.

Basic Understanding: has a basic understanding of the topic with a level of detail that allows the Qualified Expert to apply it to familiar work activities in context. If necessary, can research further knowledge using readily available sources and apply it in less familiar circumstances.

Detailed Understanding: has a good understanding of the topic and the underlying principles and can apply the knowledge in appropriate contexts. Can apply the knowledge working from basic principles to deal with situations in new or unfamiliar areas and can identify and influence the peripheral and long term issues arising from its application.

The fourth column gives the level of experience required for the topic. We are proposing three levels of experience:

0 – no experience required. This is either because experience is impractical, e.g. basic physics, or because it is not a requirement for being a Qualified Expert for the purposes of radioactive waste management, e.g. personal dosimetry.

1 – some experience required. This is where an individual has attained a level of experience that allows him to provide advice on routine/standard issues. The level is based on the quality of experience rather than the quantity of advice given.

2 – significant experience required. This is where an individual has attained a high level of experience that allows him to provide advice in unusual and non-standard circumstances. The level is based on the quality of experience rather than the quantity of advice given.

Table 2: Proposed competence framework

Number	Topic	Content	Competence	Experience
1.	Basic atomic and nuclear physics	• Atomic structure and composition of the nucleus • Activity • Stable and unstable isotopes • Alpha, beta and positron decay modes • Gamma radiation • Nuclear Fission • Neutrons and the neutron activation mechanism • Typical values (specific activities) for common radionuclides • Half life and decay constants • Equilibrium • The effects of time / distance / shielding	BU	0
2.	Basic biology	• Basic radiation chemistry • Effects of radiation on cells	BU	0
3.	Interaction of radiation with matter	• Types of nuclear reactions • Induced radioactivity • Fission	BU	0
4.	Biological effects of radiation	• Deterministic biological effects of ionising radiation (cellular disruption, symptoms etc)	BU	0

Number	Topic	Content	Competence	Experience
		• Stochastic biological effects of ionising radiation (induction of cancers etc) • The dose–response relationship • Effects of whole body irradiation • Effects of partial body irradiation		
5.	Detection and measurement methods (including uncertainties and limits of detection)	• Types of detection instruments (gas filled, ionisation, scintillators, thermoluminescent, neutron) • Measurement techniques (efficiency, background, geometry, statistics etc)	BU	1
6.	Quantities and units (including dosimetry underlying regulatory quantities)	• Units • Dose terms (absorbed dose, equivalent does, effective dose, committed dose) • Dose limits and constraints • Dosimetric quantities • Radiation protection quantities • Dosimetric calculations	BU	0
7.	Basis of radiation protection standards (e.g. epidemiology, linear hypothesis for stochastic effects, deterministic effects)	• Stochastic effects • Deterministic effects • Epidemiological studies	BU	0

Number	Topic	Content	Competence	Experience
8.	ICRP principles:	• Principles (justification, optimisation, limitation)		
8a.	- Justification	• Justification of practices	BU	1
8b.	- Optimisation	• Optimisation of protection from radioactive substances	BU	1
8c.	- Dose limitation	• Dose limits	BU	1
9.	Practices and interventions (including natural radiation sources)	• Practices and Interventions	GA	0
10.	Legal and regulatory basis:			
10a.	- International recommendations/conventions	• Conceptual framework (ICRP basic framework, justification/optimisation/dose limits, system of protection for intervention) • International organisations (IAEA, ICRP, ICRU, UNSCEAR, OECD)	GA	0
10b.	- European Union legislation	• Council Regulation (EURATOM) 1493/93 The shipment of radioactive substances between Member States • The EURATOM Basic Safety Standards Directive	GA	0

Number	Topic	Content	Competence	Experience

10c.	- National legislation and regulations (including competent authorities)	• Legislative framework
		• Regulatory bodies
		• Regulatory system
		• Knowledge of the main requirements of the following legislation and principles and guidance:
		  ○ The Environmental Permitting Regulations 2010 (EPR10)/The Radioactive Substances Act 1993 (RSA93)
		  ○ The exemptions made under EPR10/RSA93
		  ○ Published policies and guidance of the environment agencies
		  ○ Limitations and conditions included in environment agencies' permits
			DU	2

10d.		• Secretary of State Directions (and equivalents for Devolved Administrations) under RWL • The Transfrontier Shipment of Radioactive Waste Regulations 1993 (under review). • The HASS and Orphan Sources Regulations 2005 • The Radioactive Contaminated Land Regulations 2007	BU	1

Number	Topic	Content	Competence	Experience
		• The Justification of Practices Involving Ionising Radiations Regulations 2004. • The Ionising Radiations Regulations 1999 • The UK Competent Authorities		
11.	Operational radiation protection:			
11a.	- Types of sources (sealed, unsealed sources, and accelerators excluding X-ray units)	• Types of sources – sealed and unsealed • Sources of radioactivity – natural and man-made • Uses of radioactive sources (medical, research, industrial radiography, irradiators and accelerators, gauges, radiotracers, well logging, radioisotope production, nuclear medicine, radiotherapy, nuclear installations, mining and processing of raw materials) • Natural radionuclides in the environment and their concentrations • Background radiation and its measurement • Weapons fallout and other sources of non-natural environmental radioactivity • Historical discharges from anthropogenic sources • Radioactively contaminated land	BU	0

Number	Topic	Content	Competence	Experience

11b.	- Hazard and risk assessment (including environmental impact)	• Radiological impact assessment methods
		• Pathways by which radioactive discharges may lead to a public dose:
		  ○ External
		  ○ Airborne – direct ingestion
		  ○ Airborne – deposition, followed by ingestion via food pathway
		  ○ Airborne – inhalation
		  ○ Liquid – direct ingestion (drinking water)
		  ○ Liquid - ingestion via food pathway
		  ○ Contact
		• Bio-accumulation effects
		• Impacts of radiation on non-human species
			DU	2

11c.	- Minimisation of risk	• Contamination of workers – avoidance / minimisation / emergency measures • Appropriate balance between employee dose and public dose • Exposure control	GA	0

Number	Topic	Content	Competence	Experience

11d.	- Control of releases
	
	Quality and environmental management systems
		• Understanding of Permit requirements
		• Record keeping requirements and systems for radioactive materials
		• Suitably Qualified and Experienced Persons
		• Investigation requirements for radiological incidents
		• Understanding of operating instructions relevant to RWL permits
		• Understanding of maintenance instructions relevant to RWL permits
		• Understanding of emergency instructions relevant to RWL permits
		• Reporting requirements and systems for radioactive sources and discharges:
		  ○ de-minimus values for reporting discharges;
		  ○ routine discharge reports and the pollution inventory;
		  ○ loss;
		  ○ theft;
		  ○ accidental discharge.
			BU	1

Number	Topic	Content	Competence	Experience

	Abatement technology	• Available abatement methodologies, including (but not limited to):
		  ○ filtration;
		  ○ scrubbers;
		  ○ cyclone separation
		  ○ precipitation methods;
		  ○ ventilation and stacks.
		  ○ delay tanks
		• Relevant chemistry of operations
		• Monitoring of operations – instrumentation and control methods
		• Knowledge of instrument calibration procedures
		• Maintenance needs of facilities
		• Availability of equipment and methods for dealing with spillages and other incidents		

Number	Topic	Content	Competence	Experience
11e.	- Monitoring - Area monitoring - Personal dosimetry (external, real time and internal) - Biological monitoring	• Personal monitoring methods • Measurement techniques • Detectors	GA	0
11f.	- Critical group concept/dose calculation for critical group	• How to determine the critical group • How to asses critical group dose	BU	1
11g.	- Ergonomics (e.g. user-friendly design and layout of instrumentation)		GA	0
11h.	- Operating rules and contingency planning	• Relevant aspects of emergency response planning and contingency planning	BU	1

Number	Topic	Content	Competence	Experience
11i.	- Emergency procedures	• Relevant aspects of emergency response planning and contingency planning • Reporting requirements • Investigation of incidents • Environmental monitoring requirements in the event of an emergency	BU	1
11j.	- Remedial action/decontamination	• Monitoring post-incident • Remediation methods • Public and employee protection measures post-incident • Personal decontamination methods	BU	1
11k.	- Analysis of past incidents including experience feedback		GA	0
12.	Organisation of radiation protection:			
12a.	- Role of qualified experts	• The role of the Qualified Expert • Radiation Protection Supervisors and Radiation Protection Advisers	BU	0

Number	Topic	Content	Competence	Experience
12b.	- Safety culture (importance of human behaviour		BU	1
12c.	- Communication skills (skills and ability to instil safety culture into others)	• Effective communication	BU	1
12d.	- Record keeping (sources, doses, unusual occurrences etc)	• Record keeping to comply with legislative requirements • Content, format and maintenance of records	BU	1
12e.	- Permits to work and other authorisations		GA	0
12f.	- Designation of areas and classification of workers	• Controlled and supervised areas	GA	0
12g.	- Quality control/auditing		BU	1
12h.	- Dealing with contractors	• Dealing with contractors	GA	0
13.	Waste management			

Number	Topic	Content	Competence	Experience

13a.	- Radioactive waste management	• Classification of radioactive waste in the UK
		• The waste hierarchy:
		  ○ avoidance;
		  ○ minimisation;
		  ○ reuse;
		  ○ recycle;
		  ○ disposal.
		• Safe (passive and non-passive) storage methods
		• Sources of radioactive waste, waste types, waste classification, waste characterisation
		• Principles of radioactive waste management, dilute and disperse, concentrate and contain, storage for decay and clearance from control
		• Waste minimisation
		• Pre-disposal waste management: collection, segregation, treatment, conditioning, secure storage
		• Control of effluents: approach to regulatory control, establishing authorised discharge levels
		• Management of disused sealed sources: technical options and safety aspects
		• Solid waste disposal: disposal options for different
			DU	2

Number	Topic	Content	Competence	Experience
		waste types, safety principles and technologies for assuring long term safety, safety assessment methods • Management of waste from uranium and thorium mining and milling • Management of NORM waste • Cleanup of contaminated areas • The UK National Discharge Strategy		

13b.	- Radioactive waste assay	• Sampling methodologies and minimisation of secondary waste
		• Assay methodologies
		  ○ Uncertainties and limitations in assay data
		  ○ Assay recording methods
		  ○ Accredited laboratories and methods
			BU	1

Number	Topic	Content	Competence	Experience
13c.	- Radioactive waste disposal	• Disposal routes for Low Level Radioactive Waste (LLW): ○ national repository; ○ landfill Very Low Level Radioactive Waste (VLLW); ○ controlled burial; ○ incineration; ○ materials recovery and recycle (e.g. by metal smelting); ○ in-situ disposal. • Disposal direct to the environment: ○ disposal and dispersion in surface waters ○ disposal and dispersion in sewerage systems ○ disposal and dispersion in the atmosphere	DU	2
14.	Transport	• Transport of radioactive materials ○ Packaging of radioactive materials and waste for transport ○ Security of radioactive materials during transport • Transport documentation – dispatch and receipt	GA	0

Number	Topic	Content	Competence	Experience
15.	Optimisation techniques			
15a.	- BPEO	• The BPEO principle • The BPEO methodology • Application of the BPEO principle to the full lifecycle of a facility, including design, construction, operation and decommissioning, and the management of radioactive wastes for each of these lifecycle stages •	BU	0
15b.	- BPM	• How to apply the BPM condition, and audit against BPM requirements, in relation to: ○ Facility design ○ Facility operation, including abatement of discharges ○ Minimisation of risk ○ Radioactive waste management ○ Facility decommissioning	DU	2

Number	Topic	Content	Competence	Experience
16.	Environmental monitoring	• Tools available for environmental radiation monitoring • Sampling and analysis methods for environmental measurements • Mapping and data presentation for environmental data • Control of releases • Monitoring off discharges • Monitoring at source: external radiation and liquid and gaseous effluents, verification of compliance with discharge limits • Environmental monitoring: atmosphere, water bodies, foodstuffs, other environmental indicators, verification of compliance with derived environmental reference levels, survey techniques • Application to different sources: nuclear power plants, waste facilities, including repositories, mining and milling, tailings, contaminated land	BU	1

Number	Topic	Content	Competence	Experience
17.	Security of radioactive materials	• Security requirements for radioactive sources (from CPNI/NaCTSO) • General understanding of security threats • Security culture • Understanding of countermeasures • Understanding of where to get advice • Understanding the purpose and use of a security plan • Understanding of protecting information	BU	1

Annex B – Comparison of Qualified Expert and RPA syllabus for Core Competences

The following table shows a comparison of the competence required for a Qualified Expert (QE) and the depth of knowledge required for a Radiation Protection Adviser (RPA). This information is also presented graphically in the histogram following the table.

The competence required for each topic is based on three levels: General Awareness (GA), Basic Understanding (BU) and Detailed Understanding (DU) and these levels are defined as:

General Awareness: knows that the topic exists and is aware of its significance to work activities in context. Also knows how and where to obtain help on the topic if needed.

Basic Understanding: has a basic understanding of the topic with a level of detail that allows the Qualified Expert or Radiation Protection Adviser to apply it to familiar work activities in context. If necessary, can research further knowledge using readily available sources and apply it in less familiar circumstances.

Detailed Understanding: has a good understanding of the topic and the underlying principles and can apply the knowledge in appropriate contexts. Can apply the knowledge working from basic principles to deal with situations in new or unfamiliar areas and can identify and influence the peripheral and long term issues arising from its application.

Table 3: Comparison of the competence required for a QE and the depth of knowledge required for a RPA

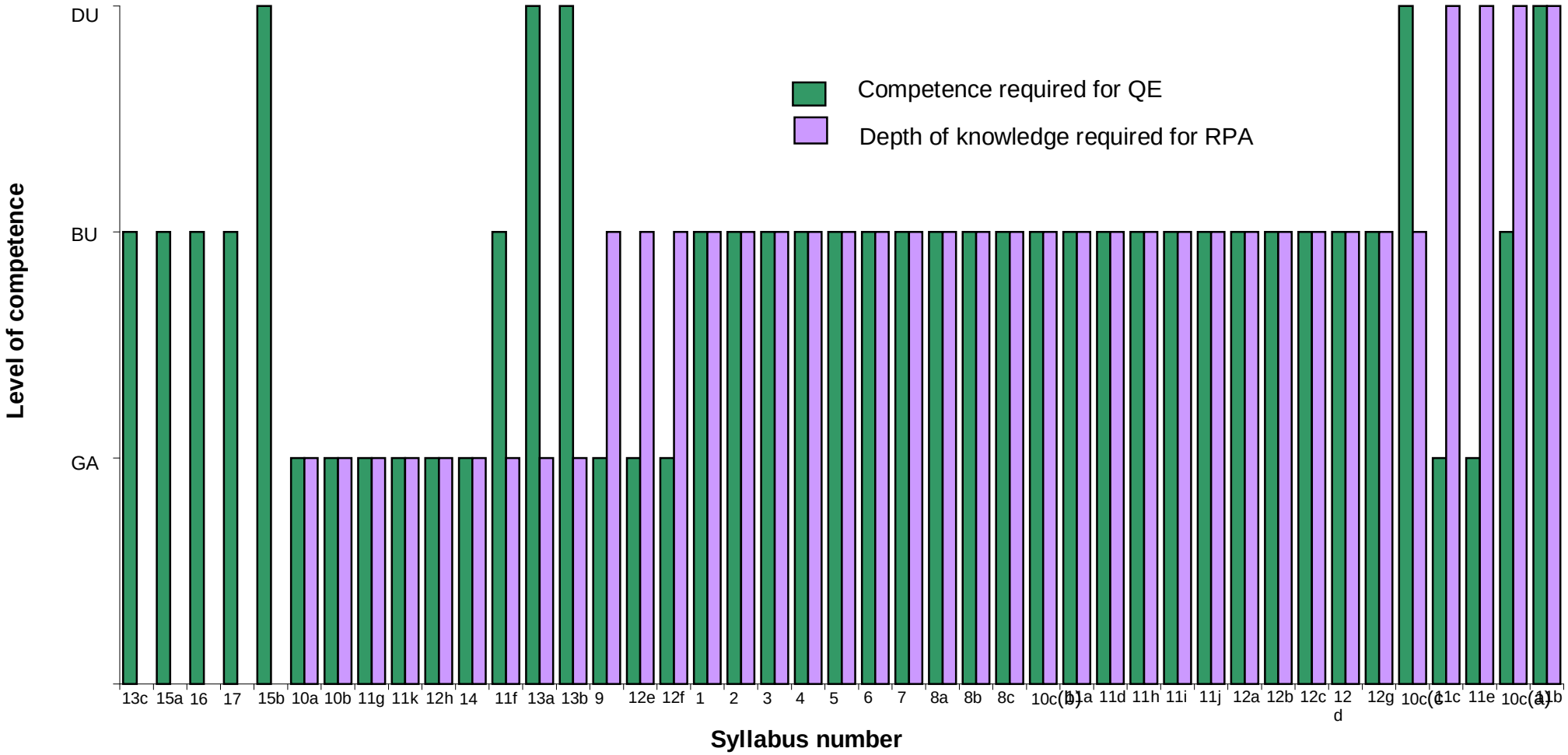
No.	Syllabus	Competence required for QE	Depth of knowledge required for RPA
1	**Basic atomic and nuclear physics**	**BU**	**BU**
2	**Basic biology**	**BU**	**BU**
3	**Interaction of radiation with matter**	**BU**	**BU**
4	**Biological effects of radiation**	**BU**	**BU**
5	**Detection and measurement methods** (including uncertainties and limits of detection)	**BU**	**BU**
6	**Quantities and units** (including dosimetry underlying regulatory quantities	**BU**	**BU**
7	**Basis of radiation protection standards** (e.g. epidemiology, linear hypothesis for stochastic effects, deterministic effects)	**BU**	**BU**
8	**ICRP principles:**		
8a	justification	**BU**	**BU**
8b	optimisation	**BU**	**BU**
8c	dose limitation	**BU**	**BU**

No.	Syllabus	Competence required for QE	Depth of knowledge required for RPA
9	**Practices and interventions** (including natural radiation especially radon)	**GA**	**BU**
10	**Legal and regulatory basis:**		
10a	international recommendations/conventions	**GA**	**GA**
10b	European Union legislation	**GA**	**GA**
10c	national legislation (including competent authorities):-		
	(a) IRR99	**BU**	**DU**
	(b) other relevant legislation	**BU**	**BU**
	(c) RSA93/EPR2010	**DU**	**BU**
11	**Operational radiation protection:**		
11a	types of sources (sealed, unsealed, x-ray units, accelerators)	**BU**	**BU**
11b	hazard and risk assessment	**DU**	**DU**
11c	minimisation of risk (including ALARP)	**GA**	**DU**
11d	control of releases	**BU**	**BU**
11e	monitoring: area, personal dosimetry (external, real time and internal), biological	**GA**	**DU**

No.	Syllabus	Competence required for QE	Depth of knowledge required for RPA
11f	critical dose concept/dose calculation for critical group	**BU**	**GA**
11g	ergonomics (e.g. user-friendly design and layout of instrumentation)	**GA**	**GA**
11h	operating rules and contingency planning	**BU**	**BU**
11i	emergency procedures	**BU**	**BU**
11j	remedial action/decontamination	**BU**	**BU**
11k	analysis of past incidents including experience feedback	**GA**	**GA**
12	**Organisation of radiation protection:**		
12a	role of qualified experts	**BU**	**BU**
12b	safety culture (importance of human behaviour)	**BU**	**BU**
12c	communication skills (skills and ability to instil safety culture into others)	**BU**	**BU**
12d	record keeping (sources, doses, unusual occurrences, etc.)	**BU**	**BU**
12e	permits to work and other authorisations	**GA**	**BU**
12f	designation of areas and classification of workers	**GA**	**DU**
12g	quality control/auditing	**BU**	**BU**
12h	dealing with contractors	**GA**	**GA**
13	**Waste management:**		
13a	principles of management	**DU**	**GA**

No.	Syllabus	Competence required for QE	Depth of knowledge required for RPA
13b	principles of disposal	**DU**	**GA**
13c	Radioactive waste assay	**BU**	**Not included**
14	**Transport**	**GA**	**GA**
15	**Optimisation techniques**		
15a	BPEO	**BU**	**Not included**
15b	BPM	**DU**	**Not included**
16	**Environmental monitoring**	**BU**	**Not included**
17	**Security of radioactive materials**	**BU**	**Not included**

Figure 5: Histogram showing a comparison of the competence required for a Qualified Expert (QE) and the depth of knowledge required for a Radiation Protection Adviser (RPA).



Annex C – Proposed Guidance on Suitability in relation to Qualified Experts for radioactive waste management and environmental radiation protection

What is a suitable Qualified Expert (QE)?

A suitable Qualified Expert is a Qualified Expert who has "the specific knowledge, experience and competence required for giving advice on the particular radioactive waste management and environmental radiation protection issues for which the employer is making an appointment."

Suitable QE =	**QE (Core Competence)** +	**Specific knowledge, experience and competence**
What is required?	The QE has demonstrated to an Assessing Body that he or she meets the environment agencies' competence framework	The QE has demonstrated to the employer that he or she has sufficient understanding, based on knowledge, experience and competence to give advice on that employer's business
Who sets the standard?	The environment agencies	The employer
Who has to be satisfied?	The Assessing Body	The employer
Proof?	Valid Certificate of Competence awarded in the last 5 years	The QE's work history

To gain suitability for an employer, a QE may attend various internal or external training courses, or carry out work to gain experience specifically arranged to make the QE suitable for the particular kind of work. This is especially relevant to the larger employers who employ their Qualified Experts and will have personal development plans designed specifically to make their employees suitable for them, or to make a Qualified Expert already suitable in one part of their business suitable for some other part. For small employers (i.e. those using radioactivity to a small degree), a Qualified Expert might usefully identify to the employer the additional training that Qualified Expert would require before the formal appointment as a suitable Qualified Expert.

It follows that a Qualified Expert who is suitable for one employer may not be suitable for another employer. This is no different to an employer choosing any other consultant to help his business based on the consultant's qualifications and CV, i.e. proven competence plus relevant history and experience.

Some points to note

- The Qualified Expert can either be an employee of the employer or an external consultant.
- Radioactive Waste Legislation and associated permits do not impose any duties specifically on the Qualified Expert; the employer has the legal duty to comply with the legislation and permit conditions.

Annex D – Glossary and Acronyms

Approval Board	A Board consisting of representatives from the environment agencies for the purpose of approval of Assessing and Self-Assessing Bodies.
Assessing Body	An organisation independent from the environmental regulators that has been approved by the Approval Board to assess the competence of individuals to act as Qualified Experts.
Competence	The combination of knowledge and experience that equips an individual or group of individuals to provide expert advice on radioactive waste management and environmental radiation protection.
Core Competence	A combination of knowledge and experience that satisfies the competence framework published by the environment agencies.
Corporate Qualified Expert	A group of individuals who collectively provide the Qualified Expert function for provision of advice to its own business only.
Environment agencies	The collective term for the Environment Agency, the Scottish Environment Protection Agency and the Northern Ireland Environment Agency.
Permit	A permit issued under the Environmental Permitting Regulations 2010 and/or a registration or authorisation issued under the Radioactive Substances Act 1993.

Qualified Expert	Defined by the BSSD as persons having the knowledge and training needed to carry out physical, technical or radiochemical tests enabling doses to be assessed, and to give advice in order to ensure effective protection of individuals and the correct operation of protective equipment, whose capacity to act as a qualified expert is recognized by the competent authorities. A qualified expert may be assigned the technical responsibility for the tasks of radiation protection of workers and members of the public.
Radiation Protection Adviser	A person who has a valid certificate of competence from an assessing body recognised by the HSE and whose function is to advise and assist radiation employers in complying with IRR99.
Radioactive Waste Legislation	The Environmental Permitting Regulations 2010 and the Radioactive Substances Act 1993.
Self-Assessing Corporate Arrangements	Arrangements made by an organisation that has been approved by the Approval Board to assess the Core Competence of individuals, or a group of individuals, to act as a Corporate Qualified Expert for provision of advice to its own business only.
Suitable Qualified Expert	A Qualified Expert who has “the specific knowledge, experience and competence required for giving advice on the particular radioactive waste management and environmental radiation protection issues for which the employer is making the appointment”.

ALARP	As low as reasonably practicable
BSSD	Basic Safety Standards Directive
BU	Basic Understanding
CPD	Continuing Professional Development
CPNI	Centre for the Protection of National Infrastructure
DPA	Data Protection Act
DU	Detailed Understanding
EPR 2010	Environmental Permitting Regulations 2010
FOIA	Freedom of Information Act 2000
FOISA	Freedom of Information (Scotland) Act 2002
GA	General Awareness
HSE	Health and Safety Executive
IRR99	Ionising Radiations Regulations 1999
LLW	Low level radioactive waste
N/SVQ	National/Scottish Vocational Qualification
NaCTSO	National Counter Terrorism Security Office
NILG	Nuclear Industries Liaison Group
NORM	Naturally Occurring Radioactive Material
QE	Qualified Expert
RPA	Radiation Protection Adviser
RSA93	Radioactive Substances Act 1993
RWL	Radioactive Waste Legislation
SNIFFER	Scotland and Northern Ireland Forum for Environmental Research
SNNILG	Scottish Non-Nuclear Industries Liaison Group
SQEP	Suitably qualified and experienced person
SRP	Society for Radiological Protection
SULG	Small Users Liaison Group
VLLW	Very low level radioactive waste

Annex E – List of organisations directly consulted

The following organisations have been formally made aware of this consultation. In addition, the Consultation Document has been made available to any other interested parties via the websites of the three environment agencies.

Association of University Radiation Protection Officers (AURPO)
AWE
Babcock International Group
BNG
British Energy
DECC
DSRL
DSTL
Health and Safety Executive (HSE)
Health Protection Agency (HPA-RPD)
Institute of Physics and Engineering in Medicine (IPEM)
Magnox North
Magnox South
Ministry of Defence (MOD)
National Skills Academy for Nuclear
Nuclear Industries Liaison Group (NILG)
Rolls Royce and Associates
RPA2000
Scottish Government
Scottish Non-Nuclear Industries Liaison Group (SNNILG)
Small Users Liaison Group (SULG)
Society for Radiological Protection (SRP)
UK Borders Agency (UKBA)
UKAEA
UKAS
Welsh Assembly Government

Annex F – Consultation Response Form

The UK Environment Agencies are inviting written (preferably by email) responses to this consultation by Friday 14 January 2011. To aid analysis of responses, it would be helpful if you could submit your response using the form below. Please provide details and evidence, as appropriate, to support your response in the space provided, continuing onto a separate sheet of paper if necessary.

Please send your completed Consultation Response Form, including any supplementary information you may wish to include, to:

QEconsultation@sepa.org.uk

Or

QE Consultation
Radioactive Substances Policy Unit
Scottish Environment Protection Agency
Erskine Court
Castle Business Park
Stirling
FK9 4TR

Name of contact:		
Name of Organisation (if applicable):		
Address:		
Telephone number:		
Email address:		
Please cross one box from the following list that best describes you:	☐ Individual ☐ Small to Medium Enterprise ☐ Large Enterprise ☐ Professional Society ☐ Legal Representative ☐ Interest Group	☐ Regional Organisation ☐ Devolved Administration ☐ Local Government ☐ Central Government ☐ Other (Please specify):

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1	There are benefits in clarifying the expectations of the environment agencies on QEs.	☐	☐	☐	☐	☐
	Supporting information:					
2	Experience is a key component of competence.	☐	☐	☐	☐	☐
	Supporting information:					

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
3	The proposed scope of the competence framework (Annex A) is appropriate to the role of an adviser to employers on radioactive waste management and environmental radiation protection.	☐	☐	☐	☐	☐
	Supporting information:					
4	The syllabus fully describes the knowledge and experience requirements of a Qualified Expert.	☐	☐	☐	☐	☐
	Supporting information:					

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
5	The adoption of the GA, BU, DU approach is appropriate.	☐	☐	☐	☐	☐
	Supporting information:					
6	The three levels of experience proposed are appropriate.	☐	☐	☐	☐	☐
	Supporting information:					

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
7	There is a high degree of alignment between the RPA and QE syllabuses and so the effort required to "extend" an RPA to a QE is likely to be tolerable.	☐	☐	☐	☐	☐
	Supporting information:					
8	The clarification of the competences of a Qualified Expert and the proposal to leave the decision about suitability with the employer will result in increased clarity and improved consistency.	☐	☐	☐	☐	☐
	Supporting information:					

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
9	It will be beneficial if all three environment agencies take a similar approach to assessing suitability.	☐	☐	☐	☐	☐
	Supporting information:					
10	It is not appropriate for the environment agencies to prescribe a re-assessment process - that should be left to approved Assessing Bodies.	☐	☐	☐	☐	☐
	Supporting information:					

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
11	The proposed level of prescriptiveness for the environment agencies Approval Board for Assessing Bodies is appropriate.	☐	☐	☐	☐	☐
	Supporting information:					
12	The proposed scope of interest of the Approval Board is appropriate.	☐	☐	☐	☐	☐
	Supporting information:					

13	The proposed function of an Assessing Body is appropriate.	☐	☐	☐	☐	☐
	Supporting information:					
14	The proposals for Corporate Qualified Experts and the arrangements for approving them are appropriate.	☐	☐	☐	☐	☐
	Supporting information:					

15	There are no other key organisations that need to input to the implementation of the proposed arrangements.	☐	☐	☐	☐	☐
	Supporting information:					
16	The proposed timescale for implementation of the proposals is appropriate.	☐	☐	☐	☐	☐
	Supporting information:					

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
17	The proposals for "grandfather rights" are suitable and reasonable.	☐	☐	☐	☐	☐
	Supporting information:					
18	It is appropriate that a certified RPA should be given a credit for their RPA competences when they are considered for Qualified Expert status.	☐	☐	☐	☐	☐
	Supporting information:					

No	Proposition	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
19	How credit for RPA competences is given is an issue for the Assessing Bodies not the environment agencies.	☐	☐	☐	☐	☐
	Supporting information:					
20	The proposed term “Radioactive Waste Adviser (RWA)” is a suitable title for a person fulfilling the role of a Qualified Expert for the purposes of environmental radiation protection and radioactive waste management.	☐	☐	☐	☐	☐
	Supporting information:					