RPA 2000

THE COMPETENCE CERTIFICATION SCHEMES

Document RWA2
Instructions for the creation of the portfolio of evidence for RWA certification

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1. INTRODUCTION

1.1 All Portfolios of Evidence must comply with these instructions, since no other construction of a portfolio is acceptable to RPA 2000. Portfolios that do not closely adhere to these instructions will be returned to applicants. The objective of these instructions is to create a portfolio through which the assessors can easily navigate and obtain the necessary information to enable them to reach a decision with regards to certification**.**

1.2 You are required to provide sufficient evidence from education, training, knowledge and practical experience to meet the requirements of the scheme. Your portfolio of evidence should therefore contain details of your training and relevant examples of your work that together provide evidence to demonstrate your core competence to act as a Radioactive Waste Adviser (RWA).

2. IMPLEMENTATION OF ENVIRONMENT AGENCIES' STATEMENT

2.1 These portfolio instructions satisfy the requirements of the UK Environment Agencies (EAs) for the assessment of competence of persons seeking to gain recognition as Radioactive Waste Advisers (RWA), in support of radioactive materials and waste legislation for the protection of the environment. More information can be found in the most recent version of the 'Environment Agencies Statement on RWAs' at: https://www.sepa.org.uk/regulations/radioactive-substances/radioactive-waste-advisers/

2.2 The EAs have published a core syllabus for Radioactive Waste Advisers. The demonstration of competence depends on a combination of knowledge and experience. Applicants seeking to gain recognition as an RWA must provide adequate evidence to demonstrate the appropriate level of competence for each topic in the EAs' syllabus. This will consist of knowledge based evidence and experience based evidence. The EAs' syllabus specifies those topic areas for which experience must be demonstrated.

2.3 There is significant commonality between Sections 1 to 12 of the EA's syllabus for RWAs and the equivalent Sections of the syllabus used by the HSE in setting the competencies for the certification of Radiation Protection Advisers (RPA) under IRR17, As a consequence it has been agreed that currently certificated RPAs, who are applying for RWA certification, are exempted from providing knowledge based evidence for the majority of sub-section topics within the first 12 topic areas of the RWA syllabus. They **only need to provide evidence** in relation to nine sub-section topics within the first 12 topic areas, namely sub-sections 10(c), 10(d), 10(e), 10(f), 11(b), 11(d), 11(e), 11(f) and 12(a).

3. PRESENTATION OF THE PORTFOLIO

3.1 Construction

The preferred way to present the portfolio is to place the various items of evidence, suitably numbered and indexed, in an A4 ring folder. It often proves helpful to separate the various sections of the portfolio using a simple system such as numbered, tabbed dividers.

3.2 Length

(i). The exact length of the portfolio clearly depends on the amount and type of evidence being presented. However, as a guide, portfolios fitting into a one inch ring folder have provided more than sufficient evidence to convince the assessors that the applicant should be awarded certification.

(ii). The emphasis should be on the quality of the evidence rather than its quantity. Remember that the assessors will have to read carefully through each piece of evidence presented in the portfolio some two to three times.

(iii). In general, one 'significant' item of evidence should be supplied (and should normally be sufficient) to demonstrate any particular practical competence. Where an applicant has doubts about the value of an item of evidence, it is acceptable to supply not more than 3 additional items of supporting evidence.

(iv). The term 'significant' is related to both the nature of the evidence and the ease with which an Assessor can judge the relevant competence of the Applicant from that evidence.

3.3 Navigation

(i). Good navigation aids are essential, since aiding the assessors in their navigation through the portfolio is beneficial for all parties.

(ii). Essential items of evidence may be contained within a larger document to give context, in which case the relevant parts of the larger document should be clearly identified in Linking Notes attached to the item of evidence, or in the Contextual Note provided in the summary (see section 4).

(iii). The essential navigational elements of the portfolio are included in the list of portfolio contents that follows in section 4.

4. PORTFOLIO CONTENT

Listed below are the necessary contents of the Portfolio:

(i). A comprehensive **contents list**, detailing and indexing all your items of evidence.

(ii). A **summary section**, not exceeding 5-6 pages in length, in which each of the major items of your evidence is summarised into a **short contextual paragraph** that clearly identifies the competence(ies) and experience(s) that it supports.

(iii). **Either Cross Reference Table No. 1(a) or Cross Reference Table No. 1(b)** (see Appendix 1) linking the relevant pieces of your evidence to the topics of the ***basic knowledge syllabus*** for RWAs. Included with each Table is a section on which to list your relevant training courses.

(iv). **Cross Reference Table No. 2** (see Appendix 2), linking the relevant pieces of your evidence to the required practical competencies and workplace experience.

(v). All the documents that you are submitting as your items of evidence**,** the major ones having been summarised into a short contextual paragraph as described above. In some cases there may be a longer Linking Note attached to an item of evidence that explains and expands on what is being demonstrated.

(vi). **Authentication,** by a Referee, that the contents truly reflect the extent and nature of your own work.

5. GENERAL GUIDANCE

5.1 To determine the suitability of a potential piece of evidence, examine it and ask yourself 'How does this evidence show that I have the basic knowledge/competence/experience?' This will help in deciding what material to include to ensure adequate coverage of all the requirements. Evidence can be generated specifically to demonstrate knowledge, understanding and competence.

5.2 Evidence must be from your own work, dated and predominantly taken from work carried out over the last five years. Evidence of training and education may precede the five years, as may some unique pieces of evidence of practical competency and workplace experience. However, in such situations you should submit additional evidence that knowledge and skills have not been lost, for example by having been kept up to date through professional development and practical application.

5.3 An item of evidence consisting of workplace documentation alone is unlikely to provide an adequate demonstration of performance. It will usually need some "linking notes" written by you, which will explain the intellectual process you went through at the time and perhaps the background and details of the situation involved. Include details of numerical calculations, logical reasoning behind decisions and reference to legislation, where appropriate.

5.4 Items of evidence that include contributions by other people should be annotated to clearly show the extent of your contribution to the work and your relationship to the others (e.g. if you are the Department Head).

5.5 The portfolio must be authenticated by a suitable Referee, who has agreed that the contents truly reflect the extent and nature of your own work.

5.6 Where the portfolio covers work for more than one client (e.g. consultancy), the separate parts could be authenticated by different people, as appropriate.

5.7 Evidence should not normally be security classified, although some Assessors have been OCNS vetted and are able to examine any such evidence. Applicants are responsible for minimising the security classifications of their portfolio using their own security clearance arrangements. Commercially sensitive information should not be a problem because all Assessors examine portfolios within their own sector and do not discuss commercially sensitive information. Information should, where practicable, be limited to 'Protect-Commercial' or equivalent. Should applicants have concerns on such matters, they should blank out names that they do not wish to disclose.

5.8 Documents with higher classifications than 'Protect-Commercial', or equivalent, should be redacted to reduce the security classification of the content. If this limits the value of the document as evidence and no alternative evidence can be provided, RPA 2000 must be consulted to agree suitable security arrangements before the portfolio is submitted. RPA 2000 reserves the right to levy additional charges to cover the cost of additional security requirements for documents with higher security requirements.

5.9 **Portfolios should never contain information that could compromise the security of radioactive materials.** Details of source strengths, quantities of radioactive materials, storage facilities and source security should always be omitted. Should an applicant regard any such information to be essential to the application, it should be passed verbally to RPA 2000.

6. BASIC UNDERPINNING KNOWLEDGE FOR RWAs (see Appendix 1)

6.1 This area of the portfolio has frequently been neglected by applicants for other schemes, often causing unnecessary and long delays in completing the assessment. Points that are relevant are listed below.

6.2 The basic syllabus specifies the topics of the underpinning knowledge and also the depth of knowledge required for each topic of the syllabus, namely: GA (general awareness), BU (basic understanding) or DU (detailed understanding).

6.3 Sufficient evidence is required to demonstrate that each topic and sub-topic of the basic syllabus has been covered, to the required depth of knowledge, either:

(i) in the applicant's degree, postgraduate study, professional training courses, certificated study or other local training events; and/or

(ii) as part of the applicant's work experience. This evidence should be in the form of a resume of the applicant's work history and should detail the positions held and relevant work experience, clearly highlighting those aspects that demonstrate the necessary knowledge for each relevant topic.

6.4 Course outlines, syllabus information, meeting programmes attended or similar items would usually suffice for the evidence in those areas where general awareness or basic understanding is required, provided the evidence is sufficient to demonstrate the necessary knowledge.

6.5 It is likely that some training course providers will be able to demonstrate that their course meets the knowledge requirements for many of the topics of the basic syllabus. Demonstration

of attending and passing (if course was assessed) that course is sufficient evidence for those topics. The course provider should be able to provide appropriate information.

6.6 Information should be provided as to whether or not performance on the training course(s) was formally assessed. If it was, a brief description of the method(s) of assessment should be provided together with the result(s) achieved by the applicant.

6.7 In addition to course based knowledge, evidence of practical competence and workplace experience is necessary for seven specified topics of the basic syllabus. Such evidence should normally be from a workplace environment (but also see Sections 7 and 8 below).

6.8 The tables in Appendix 1 have been specifically designed to identify all the evidence that the applicant needs to supply and to provide a convenient format for:

- the applicant to provide the evidence;
- the assessors to record the outcome of the assessment; and
- RPA2000 to automatically request further evidence, where judged necessary.

7. DEMONSTRATION OF PRACTICAL COMPETENCE AND WORKPLACE EXPERIENCE

7.1 Provision of evidence

Applicants must provide evidence to demonstrate practical competence and workplace experience in seven topic areas of the Basic Syllabus namely those numbered 10c, 11b, 11d, 12d, 13a, 13c, & 15.

For each of the seven topic areas in Cross Reference Table No.2, you need to provide evidence to convince the assessors that you have sufficient practical competence and workplace experience to satisfy the requirements for an RWA. Preferably the practical evidence should come from your workplace, but simulation and/or mentored practical exercises can be used where such practical experience has not been available to you (see Section 8 of this document for guidance on the use of simulation and mentored practical exercises).

7.2 Guidance on the provision of evidence to demonstrate practical competence/ workplace experience

(i). The guidance included in this document is designed to assist applicants to adopt a pragmatic approach towards the evidence that they should submit. Your evidence should be sufficiently wide-ranging to indicate familiarity with the breadth of situations implied by the topic area and should concentrate on quality rather than quantity. Reasonably detailed evidence (or simulation) covering at least half of the associated sub-topic areas would normally be expected to satisfy your assessor. However, should you feel that your strength lies in the breadth of your practical competence, as opposed to the detail, you may prefer to cover more than half of the sub-topic areas but with less detailed evidence.

(ii). As a general principle, and where appropriate, it is acceptable for one significant item of evidence to be used to demonstrate more than one competence. If doing so, the applicant must be careful to maintain clarity in the presentation of the evidence.

(iii). Items of evidence might include operating data or documentation produced in the workplace, reports, minutes or notes on meetings, schedules, programmes, objectives/goals achieved, details of work on special projects, photographs, plans, drawings, etc.

(iv). Items of evidence may also include lectures or presentations, which should be clearly annotated to identify those elements of the presentation that are dependent on the applicant's practical competence.

(v). When using minutes or notes of meetings as evidence, you should ensure that they are from meetings where you made a significant contribution and are detailed enough to clearly identify that contribution.

(vi). Linking Notes are recommended as a means for enabling Applicants to identify the extent to which they contributed towards an item of evidence or to provide additional background in support of what might otherwise appear as a less significant item of evidence.

7.3 Presentation of evidence

The table in the Appendix 2 has been specifically designed as a convenient format for:

- the applicant to cross-reference all items of portfolio evidence to the appropriate practical experience;
- the assessors to record the outcome of the assessment; and
- RPA 2000 to automatically request further evidence, where judged necessary.

8. SIMULATION AND MENTORED PRACTICAL EXERCISES

8.1 The EAs' Statement requires prospective RWAs to demonstrate that they have adequate practical workplace experience in each of seven specified topics of the Basic Syllabus. The Statement also recognises that applicants may have difficulty in obtaining practical experience in some areas of radiation and environmental protection and encourages the use of simulation in place of, or to supplement, workplace evidence.

8.2 Simulation involves the creation of a realistic workplace scenario incorporating relevant radiation and environmental protection issues that an RWA would be expected to address. The applicant submits evidence to demonstrate the necessary practical competence to resolve those radiation protection issues. Such simulation is the basis for the 'mentored practical exercises', which are undertaken by students on some training courses in Radiation Protection.

8.3 The RPA 2000 Board is clear in its view that RWA Certification can only be awarded to applicants who have accrued significant levels of practical competence in workplace situations. Even high levels of knowledge are not considered to be sufficient, without an appropriate level of actual workplace experience. The Board recognises the importance of simulation, as an aid to meeting RWA certification requirements, and offers the following guidance regarding the use of simulation:

- Evidence from simulation should only be used when the applicant's workplace is unable to provide the opportunity to demonstrate the competency. In all cases, the reason for submitting this type of evidence should be fully explained.
- There should not be a problem awarding certification if a 'good portfolio' includes no more than one third of the competencies being demonstrated by evidence from simulation (i.e. at least two thirds are from direct work experience).
- It is unlikely that certification would be awarded if more than two thirds of the competencies are demonstrated by evidence from simulation (i.e. less than one third are from direct work experience).
- In all situations, the award of certification will be greatly influenced by the quality of both the practical evidence and the evidence from the simulation, together with the reasons for having to use simulation.

9. APPLICANTS FROM OUTSIDE THE UK

9.1 Any person may apply for a Certificate of Competence to act as an RWA, irrespective of where they live or work. All evidence submitted must be in English. A translation from an original document is acceptable.

9.2 Applicants for RWA certification must be able to satisfy the Assessors that they have a Detailed Understanding of relevant UK Legislation. If necessary, such a demonstration may be achieved by providing Portfolio evidence of legislative knowledge in their own country of work, with contextual statements showing how that Country's legislation relates to or differs from the requirements of UK Legislation.

9.3 Such persons must demonstrate the ability to give adequate advice to duty holders and employers.

10. THE ASSESSMENT PROCESS

10.1. The full assessment process is described elsewhere in RPA2000 Operating Procedures. Of relevance to the portfolio assessment is that:

- the **full portfolio** is sent to the lead assessor; and
- the **summary section** is sent to the two supporting assessors.

10.2 The supporting assessors can ask to see the full portfolio, or the lead assessor can send the full portfolio to another (or both) assessor(s) for a second opinion. Most often, the lead assessor reaches a conclusion and puts this to the supporting assessors for their confirmation.

Appendix 1 - CROSS REFERENCE TABLES Nos. 1(a) and (b)
Basic Underpinning Knowledge (Basic Syllabus) for Radioactive Waste Advisers

A1.1 Introduction

The topics of the basic syllabus detail the extent and depth of the knowledge and training required by an RWA. The syllabus can be found at https://www.sepa.org.uk/media/36075/rwa-syllabus.pdf . The three levels of the depth of knowledge are defined as follows:

Depth of knowledge	Definition
GA	**General Awareness**. Knows that the topic exists and aware of its significance to work activities in context. Also knows how and where to obtain help on the topic if needed.
BU	**Basic Understanding**. Has a basic understanding of the topic with a level of detail that allows the RWA 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.
DU	**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.

A1.2 Instructions for completion of Cross Reference Tables

1. For each topic of the Basic Syllabus, suitable evidence is required to demonstrate that you have the necessary knowledge at the appropriate depth of knowledge.
2. In the 'evidence' column of the Table, provide a clear cross-reference to the relevant item(s) of your portfolio evidence, possibly using information from a course provider who may be able to provide information directly relating their course syllabus to the Basic Syllabus for RWAs.
3. Leave the 'assessment' columns blank, for use by the assessor.
4. Cross Reference Tables No.1 (a) contains all elements of the basic knowledge syllabus for RWAs and must be completed by **applicants who DO NOT HOLD a current Certificate of Competence to act as a Radiation Protection Adviser**.
5. Cross Reference Tables No.1 (b) contains those elements of the basic knowledge syllabus for RWAs from which RPAs have not been exempted. It must be completed by **applicants who ALREADY HOLD a current Certificate of Competence to act as a Radiation Protection Adviser**.
6. Further evidence of adequate practical competence and workplace experience is required from **ALL APPLICANTS** for those topic areas that appear in Cross Reference Table No.2 (see Appendix 2).

If either Table is subsequently returned to you**,** it means that you are deemed to have provided insufficient (or unsuitable) evidence in respect of one or more of the topics of the basic syllabus. Please then provide additional evidence for each of the topics for which your initial evidence has been deemed to be insufficient.

A1.3 Cross Reference Table No. 1(a)
All elements of the Basic Underpinning Knowledge (Basic Syllabus) for Radioactive Waste Advisers
[*Must be completed* by those applicants who are NOT current holders of an RPA certificate]

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
1.	**Basic atomic and nuclear physics**	BU	- Atomic structure and composition of the nucleus - Stable and unstable isotopes, activity - Types of radioactive decay - Nuclear fission - Half life and decay constants - Radioactive equilibria - The effects of time, distance and shielding			
2.	**Basic biology**	BU	- Basic radiation chemistry - Effects of radiation on cells and tissue			
3.	**Interaction of radiation with matter**	BU	- Charged particles, photons and neutrons - Types of nuclear reactions - Induced radioactivity			
4.	**Biological effects of radiation**	BU	- Deterministic biological effects of ionising radiation - Stochastic biological effects of ionising radiation - The dose–response relationship - Effects of whole body irradiation - Effects of partial body irradiation			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
5.	**Detection and measurement methods for radioactive waste assessment and environmental monitoring** (including uncertainties and limits of detection)	BU	▪ Principles and theory of detection and measurement (e.g. efficiency, background, geometry, statistics) ▪ Types of detection instruments (e.g. gas filled, ionisation chambers, scintillators, thermoluminescence, neutron detectors) ▪ Choice of detection instruments ▪ Interpretation of instrument measurements			
6.	**Quantities and units** (including dosimetry underlying regulatory quantities)	BU	▪ Units ▪ Dose terms (absorbed dose, equivalent dose, effective dose, committed dose) ▪ Dose limits and constraints ▪ Dosimetric calculations			
7.	**Basis of radiation protection standards**	BU	▪ Linear hypothesis for stochastic effects ▪ Threshold for deterministic effects ▪ Epidemiological studies			
8. 8a.	**ICRP principles:** • Justification	BU	▪ Justification of practices			
8b.	• Optimisation	BU	▪ Optimisation of protection from radioactive substances			
8c.	• Dose limitation	BU	▪ Dose Limits			
9.	**Practices and interventions** (including natural radiation sources)	GA				

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
10. 10a.	**Legal and regulatory basis:** • International recommendations/conventions	GA	▪ Conceptual framework (ICRP basic framework, justification/optimisation/dose limits, system of protection for intervention) ▪ International organisations (IAEA, ICRP, ICRU, UNSCEAR, OECD)			
10b.	• European Union legislation	GA	▪ The EURATOM Basic Safety Standards Directive ▪ Council Regulation (EURATOM) 1493/93 The shipment of radioactive substances between Member States			
10c.	• Key national legislation and regulations (including competent authorities)	DU	▪ Legislative framework in the UK ▪ UK Regulatory bodies and regulatory system ▪ Knowledge of the main requirements of the following legislation and principles and guidance: - The Environmental Permitting Regulations 2016 (EPR16)/The Radioactive Substances Act 1993 (RSA93)/The Environmental Authorisations (Scotland) Regulations 2018 (EASR) - Exemption orders made under EPR16/RSA93 - Published policies and guidance from the environment agencies - Limitations and conditions included in environment agencies' permits			
10d.	• National legislation and regulations affecting radioactive sources and radioactive waste	BU	▪ The HASS and Orphan Sources Regulations 2005 ▪ The Ionising Radiations Regulations 2017 ▪ Directions made under Radioactive Waste Legislation **Include any replacement legislation, if appropriate.**			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
10e.	• Other relevant Radioactive Substances Legislation	GA	- The Justification of Practices Involving Ionising Radiations Regulations 2004 (as amended) - The Radiation (Emergency Preparedness and Public Information) Regulations 2019 - The Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008 - Radioactive Contaminated Land legislation			
10f.	• Other relevant waste legislation	GA	Nothing suggested, but indicate your awareness of the topic			
11. 11a.	**Operational radiation protection:** • Types of sources (sealed, unsealed sources, and accelerators excluding X-ray units)	BU	- Types of sources – sealed and unsealed - Sources of radioactivity – natural and man-made - Uses of radioactive sources (e.g. medical, research, industrial radiography, irradiators and accelerators, gauges, radiotracers, well logging, radioisotope production, nuclear medicine, radiotherapy, nuclear installations, mining and processing of raw materials)			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
11b.	• Hazard and risk assessment (including environmental impact)	DU	▪ Selection and implementation of suitable 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			
		BU	▪ Impacts of radiation on non-human species			
11c.	• Minimisation of risk	GA	▪ Containment and control of radioactive waste			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
11d.	• Control of releases - Quality and environmental management systems	BU	▪ 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 ▪ Understanding the reporting requirements and systems for radioactive sources and discharges			
	- Abatement technology	GA	▪ Abatement technologies available ▪ Maintenance needs of abatement technologies			
11e.	• Monitoring • Area monitoring	GA	▪ Monitoring of operations – instrumentation and control methods ▪ Knowledge of instrument calibration procedures			
11f.	• Reference person concept/dose calculation for reference person	BU	▪ How to determine the collective dose ▪ How to assess reference person dose			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
11g.	• Ergonomics	GA	• User friendly design and layout of instrumentation			
11h.	• Operating rules and contingency planning	BU	- Relevant aspects of work procedures written for radioactive waste management purposes including management procedures, work instructions, local rules etc.			
11i.	• Emergency procedures	BU	- Relevant aspects of emergency response planning and contingency planning - Reporting requirements - Investigation of incidents - Environmental monitoring requirements in the event of an emergency			
11j.	• Remedial action/decontamination	BU	- Monitoring after an incident - Remediation methods - Public and employee protection measures after an incident - Availability of equipment and methods for dealing with spillages and other incidents			
11k.	• Analysis of past incidents including experience feedback	GA				
12 12a.	**Organisation of radiation protection:** Role of qualified experts:	 DU BU	 - The role of the Radioactive Waste Adviser - The role of other experts employed to advise on radiological protection.			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
12b.	• Safety culture (importance of human behaviour)	BU				
12c.	• Communication skills (skills and ability to instil safety culture into others)	BU	- Effective communication			
12d.	• Record keeping (sources, doses, unusual occurrences etc)	BU	- Record keeping to comply with legislative requirements - Content, format and maintenance of records			
12g.	• Quality control/auditing	BU	- Role of RWA in quality control/auditing - Role of 3rd party auditors - Dealing with inspections			
12h.	• Dealing with contractors	GA	- Advising the permit holder on appropriate procedures for ensuring that any contractors (including visitors) comply with the requirements of permits in relation to radioactive waste management and environmental radiation protection.			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
13. 13a.	**Waste management:** • Radioactive waste management	DU	▪ Sources of radioactive waste, waste types, waste classification and waste characterisation ▪ Principles of radioactive waste management: dilute and disperse, concentrate and contain, storage for decay and clearance from control ▪ The waste hierarchy: - avoidance - minimisation - reuse - recycle - disposal ▪ Storage options for radioactive waste ▪ Treatment options for radioactive waste ▪ Management of disused sealed sources: technical options and safety aspects			
13b.	• Radioactive waste assay	BU	▪ Sampling methodologies and minimisation of secondary waste ▪ Assay methodologies - Uncertainties and limitations in assay data - Assay recording methods			
13c.	• Radioactive waste disposal	DU	▪ Disposal options for radioactive waste.			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
14.	**Transport**	GA	▪ Transport of radioactive materials - Packaging of radioactive materials and waste for transport - Security of radioactive materials during transport ▪ Transport documentation – dispatch and receipt			
15.	**Optimisation techniques** • BAT/BPM	DU	▪ How to apply the BAT/BPM condition, and audit against BAT/BPM requirements, in relation to: - Facility design - Facility operation, including abatement of discharges - Minimisation of risk - Radioactive waste management - Facility decommissioning - Identification of critical assets for facility operation and maintenance. • Appropriate balance between employee dose and public dose			
16.	**Environmental monitoring**	BU	▪ Environmental monitoring: atmosphere, water bodies, foodstuffs, other environmental indicators, verification of compliance with derived environmental reference levels, survey techniques. ▪ Tools available for environmental radiation monitoring ▪ Sampling and analysis methods for environmental measurements ▪ Mapping and data presentation for environmental data ▪ Monitoring at source: external radiation and liquid and gaseous effluents, verification of compliance with			

			discharge limits - Application to different sources.			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence Reference	Assessment	
					Sufficient	Insufficient
17.	**Security of radioactive materials**	BU	- Understanding of where to get advice. - Security requirements for radioactive sources (e.g. from CPNI/NaCTSO or OCNS). - Understanding the purpose and use of a security plan. - Understanding of protecting information.			

Training courses attended

Use the following table to list the training course(s) that you attended to cover the knowledge required by the Basic Syllabus, and please also specify:

- whether or not your performance was formally assessed;
- if so, the method of assessment (brief description only); and
- the result that you achieved.

Title of course	Date(s) attended	Whether assessed?	Method of assessment	The result you achieved
		Yes/No		
		Yes/No		
		Yes/No		

		~~Yes/No~~		

A1.3 Cross Reference Table No.1 (b)
Those Sections of the Basic Syllabus for Radioactive Waste Advisers from which RPAs are not exempted.
[Must be completed by current holders of an RPA Certificate].

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
10c.	• Key national legislation and regulations (including competent authorities)	DU	▪ Legislative framework in the UK ▪ UK Regulatory bodies and regulatory system ▪ Knowledge of the main requirements of the following legislation and principles and guidance: - The Environmental Permitting Regulations 2016 (EPR16)/The Radioactive Substances Act 1993 (RSA93)/The Environmental Authorisations (Scotland) Regulations 2018 (EASR) - Exemption orders made under EPR16/RSA93 - Published policies and guidance from the environment agencies - Limitations and conditions included in environment agencies' permits			
10d.	• National legislation and regulations affecting radioactive sources and radioactive waste	BU	▪ The HASS and Orphan Sources Regulations 2005 ▪ The Ionising Radiations Regulations 2017 ▪ Directions made under Radioactive Waste Legislation			
10e.	• Other relevant Radioactive Substances Legislation	GA	▪ The Justification of Practices Involving Ionising Radiations Regulations 2004 (as amended) ▪ The Radiation (Emergency Preparedness and Public Information) Regulations 2019 ▪ The Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008 ▪ Radioactive Contaminated Land legislation			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
10f.	• Other relevant waste legislation	GA	Nothing suggested but indicate your awareness of the topic			
11. 11b.	**Operational Radiation Protection** • Hazard and risk assessment (including environmental impact)	DU DU DU	▪ Selection and implementation of suitable 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			
		BU	▪ Impacts of radiation on non-human species			
11d.	• Control of releases - Quality and environmental management systems	BU	▪ 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 ▪ Understanding the reporting requirements and systems for radioactive sources and discharges			
	- Abatement technology	GA	▪ Abatement technologies available ▪ Maintenance needs of abatement technologies			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
11e.	• Monitoring • Area monitoring	GA	- Monitoring of operations – instrumentation and control methods - Knowledge of instrument calibration procedures			
11f.	Reference person concept/dose calculation for reference person	BU	- How to determine the collective dose - How to assess reference person dose			
12. 12a.	**Organisation of radiation protection:** • Role of qualified experts:	DU BU	- The role of the Radioactive Waste Adviser - The role of other experts employed to advise on radiological protection.			
13. 13a.	**Waste management:** • Radioactive waste management	DU	- Sources of radioactive waste, waste types, waste classification and waste characterisation - Principles of radioactive waste management: dilute and disperse, concentrate and contain, storage for decay and clearance from control - The waste hierarchy : avoidance, minimization, reuse, recycle and disposal - Storage options for radioactive waste - Treatment options for radioactive waste - Management of disused sealed sources: technical options and safety aspects			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
13b.	• Radioactive waste assay	BU	- Sampling methodologies and minimisation of secondary			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
			waste ▪ Assay methodologies - Uncertainties and limitations in assay data - Assay recording methods			
13c.	• Radioactive waste disposal	DU	▪ Disposal options for radioactive waste including waste acceptance criteria.			
14.	**Transport**	GA	▪ Transport of radioactive materials - Packaging of radioactive materials and waste for transport - Security of radioactive materials during transport ▪ Transport documentation – dispatch and receipt			
15.	**Optimisation techniques** • BAT/BPM	DU	▪ How to apply the BAT/BPM condition, and audit against BAT/BPM requirements, in relation to: - Facility design - Facility operation, including abatement of discharges - Minimisation of risk - Radioactive waste management - Facility decommissioning - Identification of critical assets for facility operation and maintenance • Appropriate balance between employee dose and public dose.			

EA No.	Topic	Depth	More detailed content (sub-topics) [Those with a grey background require the demonstration of practical competence and workplace experience in Cross Reference Table No. 2]	Evidence reference	Assessment	
					Sufficient	Insufficient
16.	**Environmental monitoring**	BU	- Environmental monitoring: atmosphere, water bodies, foodstuffs, other environmental indicators, verification of compliance with derived environmental reference levels, survey techniques. - Tools available for environmental radiation monitoring - Sampling and analysis methods for environmental measurements - Mapping and data presentation for environmental data - Monitoring at source: external radiation and liquid and gaseous effluents, verification of compliance with discharge limits - Application to different sources.			
17.	**Security of radioactive materials**	BU	- Understanding of where to get advice. - Security requirements for radioactive sources (e.g. from CPNI/NaCTSO or OCNS). - Understanding the purpose and use of a security plan. - Understanding of protecting information.			

Training courses attended

Use the following table to list the training course(s) that you attended to cover the knowledge required by the Basic Syllabus, and please also specify:

- whether or not your performance was formally assessed;
- if so, the method of assessment (brief description only); and
- the result that you achieved.

Title of course	Date(s) attended	Whether assessed?	Method of assessment	The result you achieved
		Yes/No		
		Yes/No		
		Yes/No		
		Yes/No		

Appendix 2 - CROSS REFERENCE TABLE No. 2
Evidence to demonstrate practical competence and workplace experience

A2.1 Instructions for completion of Cross Reference Table No.2

1. For each of the seven topic areas in Cross Reference Table 2 provide suitable evidence from your workplace experience or, if necessary, from simulation (see Section 8 of the main text), to demonstrate the corresponding elements of practical competence and workplace experience.

2. The 'Guidance for the Applicant' column in the Table should provide a clearly defined route as to specific evidence situations that are likely to demonstrate competence to the assessors. RPA 2000 hopes that most applicants will follow these defined examples although applicants are free to submit whatever evidence they deem to be most appropriate to demonstrate their competence. Sections are provided within the Table for applicants to record this additional/alternative evidence. You are not required to provide evidence of experience or simulated experience for every bulleted sub-topic listed in the 'more detailed content' column. However applicants must provide evidence for at least the number of elements specified in the 'Guidance for the applicant' column of the Table.

3. In the 'Evidence reference' column of the Table, provide a clear cross-reference to the relevant item(s) of your portfolio evidence.

4. Leave the 'Assessor Decision' column blank, for use by the assessor.

5. If this Table is subsequently returned to you, it means that you are deemed to have provided insufficient (or unsuitable) evidence in respect of one or more of the chosen competencies. Please then provide additional evidence for each of the competencies for which your initial evidence has been deemed to be insufficient.

A2.2 Cross Reference Table No.2 - Practical competence and workplace experience

EA No.	Topic	More detailed content (sub-topics)	Guidance for the Applicant	Evidence reference	Assessor Decision
10c.	Legal and Regulatory Basis- Key national legislation and regulations (including competent authorities)	▪ Legislative framework in the UK* ▪ UK Regulatory bodies and regulatory system* ▪ Knowledge of the main requirements of the following legislation and principles and guidance: - The Environmental Permitting (England and Wales) Regulations 2016 (EPR16)/The Radioactive Substances Act 1993 Amendment (Scotland)Regulations (RSA)*/ The Environmental Authorisations (Scotland) Regulations 2018 (EASR) - Exemption orders made under EPR16/RSA93* - Published policies and guidance from the environment agencies* - Limitations and conditions included in environment agencies' permits*	**See Section 7 of the main text for detailed guidance on the extent of your evidence.** Normally evidence should be provided for at least 3 of the 6 asterisked (*) items in the 'More detailed content' column. Suitable evidence may include: • presentations, which should be clearly annotated to identify the practical competence elements of the presentation; • advice to an employer; • applications or variations to permits, registrations or authorisations; • contributions to, or co-authorship of, policies or guidance or publications in newsletters or peer reviewed journals; • examples of correspondence with regulators on relevant aspects; • production of guidance, instructions, COPs on compliance for users; ***If you decide to submit evidence that is additional to or in place of any of the above examples, list that evidence below:***		

EA No.	Topic	More detailed content (sub-topics)	Guidance for the Applicant	Evidence reference	Assessor Decision
11b.	Operational Radiation Protection- Hazard and risk assessment (including environmental impact).	▪ Selection and implementation of 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* ***In respect of the 7 pathways listed above, it is important that any submitted evidence demonstrates that you have an <u>understanding</u> of those pathways and not simply the use of proprietary software.***	**See Section 7 of the main text for detailed guidance on the extent of your evidence.** Normally evidence should be provided for at least 5 of the 9 asterisked (*) items in the 'More detailed content' column. Suitable evidence may include: ▪ presentations, which should be clearly annotated to identify the practical competence elements of the presentation; • environmental impact assessment(s); • use of software tools to simulate the environmental impact of various discharge scenarios; • radiological assessment identifying routes of exposure for BAT/BPM; • assessment of exposure for REPPIR; • environmental monitoring and / or decommissioning reports; • advice on environmental monitoring, detailing environmental impact. ***If you decide to submit evidence that is additional to or in place of any of the above examples, list that evidence below:***		

EA No.	Topic	More detailed content (sub-topics)	Guidance for the Applicant	Evidence reference	Assessor Decision
11d.	Operational Radiation Protection - Control of releases Quality and environmental management systems	- 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 - Understanding the reporting requirements and systems for radioactive sources and discharges.	**See Section 7 of the main text for detailed guidance on the extent of your evidence.** Normally evidence should be provided for at least 4 of the 7 bulleted items in the 'More detailed content' column. Suitable evidence may include: • audits against Permit conditions; • preparation of a Compliance Roadmap; • follow up on RASCAR or other regulator reports; • preparing contingency plans for waste events; • investigation into permit breaches; • records of periodic inspections of waste facilities. ***If you decide to submit evidence that is additional to or in place of any of the above examples, list that evidence below:***		

EA No.	Topic	More detailed content (sub-topics)	Guidance for the Applicant	Evidence reference	Assessor Decision
12d.	Organisation of Radiation Protection- Record keeping (sources, doses, unusual occurrences etc)	- Record keeping to comply with legislative requirements - Content, format and maintenance of records	Evidence must be provided for both bulleted items in the 'More detailed content' column, and may include: • advice or audit report on radioactive material stock or waste accumulation inventories; • summary reports to the employer on annual discharges; • pollution inventory reports to the regulator; • instructions for users on waste accountancy; • demonstration of system for source control. ***If you decide to submit evidence that is additional to or in place of any of the above examples, list that evidence below:***		

13a.	Waste management - Radioactive waste management	- Sources of radioactive waste, waste types, waste classification and waste characterisation - Principles of radioactive waste management: dilute and disperse, concentrate and contain, storage for decay and clearance from control - The waste hierarchy : avoidance, minimization, reuse, recycle and disposal - Storage options for radioactive waste - Treatment options for radioactive waste - Management of disused sealed sources: technical options and safety aspects	**See Section 7 of the main text for detailed guidance on the extent of your evidence.** Normally evidence should be provided for at least 4 of the 6 bulleted items in the 'More detailed content' column. Suitable evidence may include: • advice to employer on waste management and waste disposal; • correspondence with employer, waste disposal company, regulators, etc on disposal of sources, HASS; • instructions to users on minimisation of waste; • policy on waste; • training programme for users, which should be clearly annotated to identify the practical competence elements of the presentation; • presentations, which should be clearly annotated to identify the practical competence elements of the presentation; ***If you decide to submit evidence that is additional to or in place of any of the above examples, list that evidence below:***		

EA No.	Topic	More detailed content (sub-topics)	Guidance for the Applicant	Evidence reference	Assessor Decision
13c.	Waste management - Radioactive waste disposal	▪ Disposal options for radioactive waste.	**See Section 7 of the main text for detailed guidance on the extent of your evidence.** Suitable evidence may include: • a presentation on your waste disposal options, clearly annotated to identify the practical competence elements of the presentation; • a review of radioactive waste options; • a BPM review (or part review). ***If you decide to submit evidence that is additional to or in place of any of the above examples, list that evidence below:***		

EA No.	Topic	More detailed content (sub-topics)	Guidance for the Applicant	Evidence reference	Assessor Decision
15.	Optimisation techniques - BAT/BPM	▪ How to apply the BAT/BPM condition, and audit against BAT/BPM requirements, in relation to: - Facility design* - Facility operation, including abatement of discharges* - Minimisation of risk* - Radioactive waste management* - Facility decommissioning* - Identification of critical assets for facility operation and maintenance Appropriate balance between employee dose and public dose.	**See Section 7 of the main text for detailed guidance on the extent of your evidence.** Normally evidence should be provided for at least 3 of the 5 asterisked (*) items in the 'More detailed content' column. This competence can most likely be satisfied with a BAT/BPM Statement/document. ***If you decide to submit evidence that is additional to or in place of any of the above examples, list that evidence below:***		