

**Ordnance Munitions and
Explosives (OME)
Professional Integrated
Degree
Level 6 Apprenticeship
Standard
End-point Assessment Plan**

Introduction & Overview

This document sets out the requirements for end-point assessment (EPA) for the Ordnance, Munitions and Explosives (OME) Professional Integrated Degree Level 6 apprenticeship standard. It is written for end-point assessment organisations (EPAO) who need to know how end-point assessment (EPA) for this must be operated. It will also be of interest to OME apprentices, employers and training providers.

The OME apprenticeship standard defines the knowledge, skills and behaviours (KSBs) required of people working as OME professionals, across the industry. OME professionals have core KSBs and specialist knowledge and skills relating to ordnance, munitions and explosives environments. OME apprentices must develop the core KSBs along with knowledge and skills relating to one option dependent on their working environment.

The OME apprenticeship standard and EPA plan have been developed by the Ordnance, Explosives and Ordnance Employer Trailblazer Group (OMETG) made up of small, medium and large employers.

Full time apprentices will typically spend 60 months on-programme working towards the apprenticeship standard, with a minimum of 20% off-the-job training.

The EPA should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the standard, and apprentices must complete all gateway requirements as a pre-requisite to EPA, including completion of modules Year 1 to 5, a portfolio of evidence and apprentices without level 2 English and maths will need to achieve this level prior to taking the end-point assessment. For those with an education, health and care plan or a legacy statement the apprenticeships English and maths minimum requirement is Entry Level 3 and a British Sign Language qualification is an alternative to English qualifications for whom this is their primary language.

End-point assessment (EPA) must be conducted by an independent assessor from an EPA organisation (EPAO) approved to offer services against this standard, as selected by the employer, from the Education & Skills Funding Agency's Register of End Point Assessment Organisations (RoEPAO).

The EPA consists of 2 assessments methods:

- Work based project, followed by a presentation of the project with questions and answers
- Professional discussion supported by a portfolio of evidence

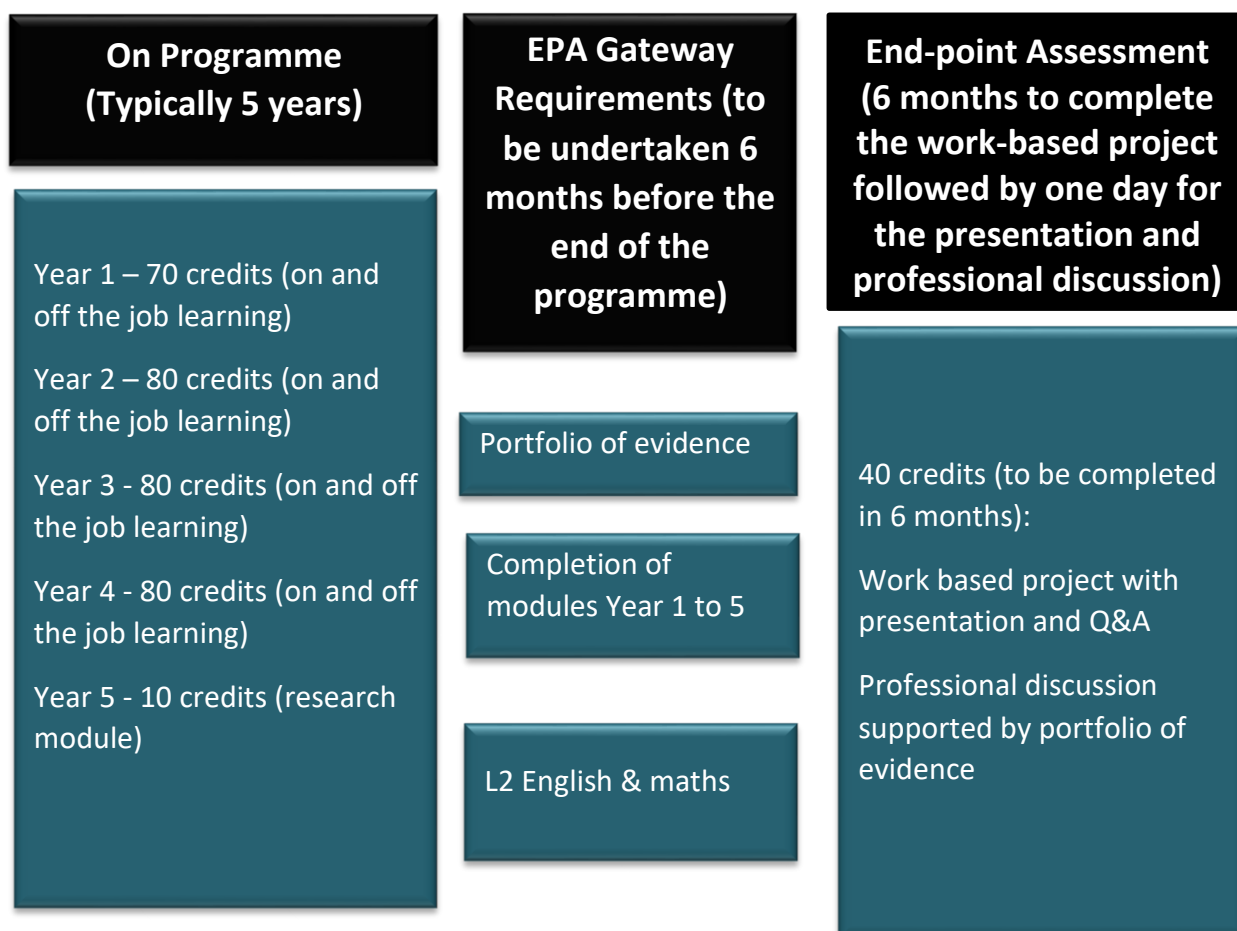
The assessment methods must test the core OME KSBs, along with knowledge and skills in relation to the apprentice's specialist option in an integrated way.

The EPA must be completed over a maximum total assessment time of 7 months, 6 months to complete the work-based project and one further month to complete the presentation and professional discussion.

Performance in the EPA will determine the apprenticeship grade of fail, pass or distinction

Below is a diagram showing the assessment methods, the order they need to be taken and the gateway requirements with timelines.

Diagram 1: Summary of OME End-point Assessment



End-point Assessment Gateway

The EPA should only start once the employer is satisfied that gateway requirements have been met and can be evidenced to an EPAO; and that the apprentice is consistently working at or above the level set out in the standard. Employers may wish to take advice from the apprentice's training provider.

Apprentices must complete the gateway requirements below as a pre-requisite to EPA:

Portfolio of evidence

A portfolio of evidence is a compulsory component that underpins the EPA professional discussion. Four pieces of evidence will be used to form the basis of the professional discussion, and questions must pull on themes and experiences described within the knowledge and skills aspects of the standard.

The portfolio of evidence must:

- document off-the-job training that the apprentice has completed; showing how a minimum of 20% of their employed time has been spent
- contain evidence demonstrating competence against the KSBs. Individual pieces of evidence can be used to demonstrate competence against one or more KSB. At least **two** pieces of evidence must be referenced to each KSB. Evidence sources may include: witness testimonies, individual learner reflection, employer/trainer feedback, training records, appraisal records, achievement including title of a unit from a related module. This list is not definitive, other evidence sources are permissible.

The apprentice's employer is required to review all the evidence in the portfolio and confirm authenticity, thereby confirming the demonstration of competence against the KSBs across the standard and that the apprentice is ready to take the EPA. The portfolio will not be assessed during end-point assessment.

Apprentices without Level 2 English and maths will need to achieve this level prior to taking end-point assessment. For those with an education, health and care plan or a legacy statement the apprenticeships English and maths minimum requirement is Entry Level 3 and British Sign Language qualification is an alternative to English qualifications for those whom this is their primary language.

End-point Assessment Independent Assessors

EPA must be conducted by an independent assessor (IA) from an EPAO approved to offer services against this standard, as selected by the employer, from the Education & Skills Funding Agency's (ESFA) Register of End Point Assessment Organisations (RoEPAO). As an integrated apprenticeship the degree awarding HEI will be responsible for the EPA requirements of the apprenticeship. The independent assessor will not be involved in the delivery of the programme. HEIs must develop and deliver the EPA as defined in this plan, ensuring independence as described in the IfA processes.

EPAOs must appoint independent assessors that as a minimum have;

- Up to date, relevant in-depth and broad expertise and experience of the OME sector equivalent to or higher than Level 6 and/or relevant professional recognition at a Level 6 or higher
- undertake and record planned and relevant Continuous Professional Development. A minimum of 24 hours per annum is expected covering both vocational and assessment competence.
- hold a recognised workplace assessment qualification that addresses the assessment of both skills and knowledge. For example:

➤ Level 3 Certificate in Assessing Vocational Achievement (CAVA), or A1, or D32/33

Or meet one of the following

- Qualified Teacher Status (QTLS or QTS) plus at least 12 months' experience of responsibility for the workplace competence assessment of personal trainer
- Have 3 or more years' of assessment experience in OME
- Have sufficient resources to carry out the role of an independent assessor, i.e. time, budget

EPAOs must have a senior officer with oversight for the EPA - such as a Chief Moderator (CM), with responsibility for moderation, quality assurance and the performance review of the independent assessors.

All independent assessors involved in the EPA process will have an understanding of the apprenticeship standard and the EPA requirements.

To ensure the quality and validity of the assessment process, assessors will need to attend assessor training and attend standardisation events in line with the End Point Assessment Organisation quality assurance processes.

The independent assessor will be responsible for making the final decision of the EPA with the final grade being derived from all assessment methods leading to a balanced and accurate grade being awarded. The final grade is then submitted to an external independent examiner as per QAA guidance.

End-point Assessment Venues

EPAOs must ensure that EPA is undertaken at employers' premises or other suitable premises such as the HEI. When using employer's premises, EPAOs must have pre-inspection procedures in place, to ensure the facility is adequately equipped and prepared for the EPA. In addition, technology such as Skype can be used for presentation and professional discussion if this is a more suitable and cost-effective option.

End-point Assessment Methods, Timescales & Location

The end-point assessment consists of two distinct assessment methods:

- Work based project, followed by a presentation of the project with questions and answers

- Professional discussion supported by a portfolio of evidence

The EPA must be completed over a maximum period of 7 months, after the apprentice has met the EPA gateway requirements.

Apprentices must submit a project report to their EPAO within 6 months of the agreed project start date. This should be submitted two weeks before the presentation so that the independent assessor can grade it and prepare any questions prior to the presentation. The presentation and professional discussion should be completed on the same day with the presentation with question and answers being undertaken first and then followed by the professional discussion supported by a portfolio of evidence. The independent assessor should allow at least a 1-hour break between the two assessment methods.

EPAOs must ensure that the presentation and questioning elements and professional discussion are conducted in a suitable controlled environment i.e. quiet room free from distraction and influence, with the necessary equipment for each assessment method e.g. computer, power-point facilities (if required by the apprentice). It is anticipated that EPAOs will use the apprentice's employer's premises wherever possible to minimise costs. They may be conducted face-to-face or via an online platform e.g. video-conferencing. EPAOs must ensure appropriate methods to prevent misrepresentation are in place should an online option be used. For example, a 360-degree camera function with an administrator/invigator.

Requirements for each assessment method are detailed below and must take place in the following order.

Assessment Method 1: Work based project, presentation with questions and answers

Part 1 – Work based project

This is the first component of the EPA and will be a contextualised work-based project of 10,000 words (+/- 10%) excluding annexes. It will be started after the EPA gateway decision and developed over a period of 6 months in the final year of the programme. This allows one month for the presentation and professional discussion component of the EPA to take place (making 7 months in total).

The work-based project will be assessed for evidence that the knowledge, skills and behaviours required of an OME Professional are inherent in the apprentice's practice and the content of the project must enable the following to be demonstrated:

- The approach to planning and completion of the project, including what has to be delivered on completion of the project.
- The application of the knowledge and skills to meet the outcomes in the standard.
- The application of behaviours from the standard.
- Evidence of learning and reflection and of clear outcomes for the apprentice, their organisation and the customer.

The work-based project should cover the project context, the apprentice's responsibilities, action taken by the apprentice (planning and execution) and results. The evidence provided must be attributable to the apprentice.

During the final phase of the programme and before the gateway has concluded the End-point Assessment Organisation will liaise with the employer and apprentice to agree a suitable project topic and title and support arrangements for the work-based project to be undertaken. The apprentice will scope out what is required and present terms of reference and an initial plan for agreement by the employer, apprentice and independent assessor. The terms of reference and plan are not assessed components of the work-based project and EPA.

A typical structure for the work-based project may include:

- Objectives
- Business Context, covering both the employer and customer context including
 - Background
 - Aims and objectives
 - Outcome
 - Conclusion
 - Recommendations/future actions
- Customer Requirements
- Solution Options
- Business Case(s)
- Approach and Rationale
- Stakeholder Management
- Planning and Methodology
- Reflection on outcomes and group working
- Conclusion and Learning Outcomes

The apprentice will be required to document their assumptions and to highlight the consequences of those assumptions, enabling them to demonstrate their understanding of commercial pressures, and the application of their thinking and problem-solving skills.

Input from the employer and HEI will be limited to guidance in terms of project topic, scope, recommended reading.

Part 2: Presentation with questions and answers

A presentation with questions and answers will take place between the independent assessor and the apprentice. As the presentation is on the project as part of the degree, a copy of the completed project must be given to the assessor two weeks before the presentation so that it can be graded, and the independent assessor can prepare questions for the presentation.

- EPAOs must schedule the presentation and questioning elements to take place within the 7 months of the apprentice successfully going through the gateway process, giving the apprentice a minimum of 2-weeks' notice of the time, date and venue.

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- The presentation and questioning elements must take place on a one-to-one basis between an independent assessor and an apprentice.
- The presentation and questioning must take place concurrently.
- Two weeks prior to the presentation and questioning, the independent assessor must have reviewed the apprentice's project report (completed as part of the degree) and prepared questions for the questioning element. However, the questions may be modified to take account of the presentation evidence.
- Apprentices must give a presentation on an evaluation of their project i.e. what went well, lessons learnt and recommendations for future projects.
- The presentation must take 20 minutes (+/- 10%), followed by 20 minutes of questions and answers (+/- 10%).
- Apprentices can use presentation aides i.e. power-point, video clips, flip chart, work products, notes.
- EPAOs must ensure any reasonable presentational requirements are in place e.g. power-point facilities; apprentice's must make any requirement requests at least two weeks prior to the scheduled date for the presentation and questioning.
- Following the presentation, the independent assessor must ask the apprentice 8-10 open questions; follow up questions are allowed to seek clarification.
- EPAOs must develop 'test banks' of questions of sufficient size to mitigate predictability and review them regularly to ensure they are fit for purpose. It is recommended that EPAOs develop assessment tools in consultation with representative employers; where they do this, they must put measures in place to ensure question security.
- Questions must seek to assess KSBs not evidenced through the presentation and/or depth of understanding to assess performance against the distinction criteria.
- Apprentices may refer to their project report, evidence contained within the project report annex, presentation or presentation aides when answering the questions.
- Independent assessors must assess the report, presentation and questioning using the grading criteria in Annex A

Assessment Method 2: Professional discussion supported by a portfolio of evidence

A professional discussion supported by a portfolio of evidence will take place between the independent assessor and the apprentice. The portfolio is compiled on-programme during the learning journey and will be forwarded to the independent assessor once the apprentice completes the gateway process. The portfolio will not be assessed by the independent assessor. The portfolio will contain a minimum of 10 pieces of evidence and a maximum of 15. The professional discussion will be assessed against the standard criteria shown in Annex B. Evidence sources may include: witness testimonies, individual learner reflection, employer/trainer feedback, training records, appraisal records, achievement including title of a unit from a related module. This list is not definitive, other evidence sources are permissible.

- The independent assessor will select 4 pieces of evidence from the portfolio for the apprentice to discuss.

- The apprentice will be notified one week before the scheduled professional discussion on the 4 pieces of evidence from the portfolio to discuss. They will need to describe what they have done and the results of these actions to the independent assessor.
- The professional discussion will be for a duration of 60 minutes (+/- 10%).
- The discussion should be developed to pull on themes and experiences described within the knowledge and skills aspects of the standard.

EPAOs must ensure that professional discussions are conducted in a suitable controlled environment i.e. quiet room free from distraction and influence. It is anticipated that EPAOs will use the apprentice's employer's premises wherever possible to minimise costs. They may be conducted face-to-face or via an online platform e.g. video-conferencing. EPAOs must ensure appropriate methods to prevent misrepresentation are in place should an online option be used.

Apprenticeship Grading

Performance in the EPA will determine the apprenticeship grade of fail, pass, or distinction.

- A fail is where the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
- A pass apprentice will competently perform their role demonstrating application of all the knowledge, skills and behaviours in line with organisation and regulatory requirements. At a minimum they must meet all criteria.
- Distinction apprentices, in addition to meeting the pass criteria, will consistently perform above the required level for the role. They must meet all distinction criteria.

Independent assessors must individually grade each assessment method – fail, pass or distinction, according to the requirements set out in this plan. Restrictions on grading apply where apprentices re-sit/re-take an assessment method – see re-sit/re-take section below.

An independent assessor must combine the grades of all assessment methods to determine the EPA grade. To achieve an EPA pass, apprentices must achieve a pass or distinction in all assessment methods. To achieve an EPA distinction, apprentices must achieve a distinction in all assessment methods. See grading combinations table below.

Independent assessors' decisions must be subject to moderation by the EPAO. Decisions must not be confirmed until after moderation.

The apprentice must pass all assessment methods to gain a pass grade.

- If they fail any one element, then they will get a fail.
- They must gain a distinction in both assessment methods to gain a distinction grade.

Work based project, presentation with Q&As	Professional discussion supported by portfolio of evidence	Final Grade Awarded
Fail	Fail	Fail
Pass	Fail	Fail
Fail	Pass	Fail
Pass	Pass	Pass
Distinction	Pass	Pass
Pass	Distinction	Pass
Distinction	Distinction	Distinction

Re-sit and re-take information

The degree will be graded in accordance with the HEI academic regulations. The EPA will constitute at least 40 credits towards the final degree grade. Where an apprentice fails the EPA, they will not be awarded a degree.

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit/retake. If an apprentice fails any part of the EPA, the independent assessor will advise them whether a re-sit or a re-take is required.

A re-take requires the apprentice to undertake further learning and therefore would need to go through the gateway process again. A resit does not require further learning.

Re-sits or re-takes must be completed within 3 months from the last method otherwise the entire EPA must be re-sat/re-taken. If the apprentice fails, the work-based project element of the EPA they will be required to rework the project according to the feedback provided. They will not be expected to undertake a new work-based project.

There is no limit to the number of resits or retakes. This would be agreed by the employer.

An apprentice cannot choose to re-sit/re-take any part of the EPA to increase their grade from a pass to a distinction.

An apprentice requiring a re-sit, or a re-take can only achieve a pass (unless there are extenuating circumstances accounting for the original fail as confirmed by the EPAO, which must be taken into account).

Any appeals in relation to the outcome of the EPA will be managed by the apprentice's EPAO whose decision is final.

Professional Body Recognition

On completion the apprentice will be eligible to apply for Technical Membership of the Institute of Explosives Engineers.

End-point Assessment Organisations – Internal Quality Assurance

Employers must choose an independent EPAO approved to deliver the EPA for this apprenticeship from the Education & Skills Funding Agency's (ESFAs) Register of End Point Assessment Organisations (RoEPAO).

EPAOs for this standard must operate as a minimum the following:

- Operate moderation of assessment activity and decisions, through examination of documentation and observation of activity, with a minimum of 5% of each independent assessors' assessments moderated.
- Appoint independent assessors that meet the requirements as detailed in this plan.
- Produce assessment tools and supporting materials for EPA that follow best assessment practice.
- Provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading.
- Have quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation over time.
- Operate regular standardisation events that enable independent assessors to attend a minimum of one event per year.
- Have a robust appeals procedure in place.

To ensure consistency and ensure employer's confidence in the apprentice's assessment in different parts of the country, at different times, by different independent assessors, all EPAOs have a responsibility to ensure sufficient standardisation events are attended and Continuing Professional Development (CPD) requirements are met. Independent assessors involved in the assessment of this apprenticeship must be specialists in the field and occupationally competent. Independent assessors must be registered with an EPAO.

All assessment tools must be developed by the EPAO and updated as a minimum on an annual basis.

Internal quality assurance must be completed by an appropriately qualified person, and that person must not have been involved in any aspect of the delivery or assessment of the programme they are quality assuring.

Assessment tools and materials

EPA organisations must produce assessment tools and supporting materials for the EPA that follow best assessment practice, as follows:

- Sample questions for project report, presentation and questioning
- Documentation for recording assessment evidence and decisions

External Quality Assurance

The Institute for Apprenticeships is exploring whether QAA can undertake external quality assurance for this standard, arrangements will be confirmed by August 2018.

Implementation

It is anticipated that there will be approximately 50 starts in year 1 and 50 starts per year thereafter. The EPA will not represent more than 20% of the maximum funding band for this apprenticeship.

Annex A – Knowledge, Skills and Behaviours to be assessed by each assessment method

Assessment method	Key
Work based project, presentation and Q&As	WBP
Professional discussion supported by portfolio of evidence	PD

Ref	Core knowledge to be assessed	Assessment Method	
K1.	The requirement to prevent fire or explosion, limit the extent of fire or explosion and protect persons from the effects of fire or explosion.		PD
K2.	Security provisions relating to explosives; including preventing the unauthorised access and acquisition of explosives		PD
K3.	The requirements for traceability, record keeping and reporting a loss of explosives.		PD
K4.	Environmental requirements associated with an OME lifecycle.		PD
K5.	How to develop and apply a theoretical and practical knowledge of the physics and chemistry of energetic materials, from the laboratory scale through to final item.	WBP	
K6.	Underlying engineering/material science to implement product lifecycle processes.		PD
K7.	How to apply mathematical methods and modelling to support technical design and analysis using principles of analysis and interpretation of experimental data.	WBP	
K8.	The evaluation of OME concepts and designs.		PD
K9.	The implications of change in design and/or manufacturing processes of both energetic materials and items to ensure product quality and safety.		PD
K10.	Emerging technologies and applications together with a broader view of how they can be used within the OME environment.	WBP	
K11.	Implement safety and environmental requirements to the OME industry lifecycle and all other tasks.		PD

K12.	The internal and external regulatory environment pertinent to the sector.		PD
K13.	The business environment in which their company operates including their role within the organisation, ethical practice and codes of conduct.		PD
K14.	Project management procedures and how to incorporate these into the OME work environment..	WBP	
K15.	The requirements of internal or external customers and how to recommend the appropriate workflows, improvements or OME solutions		PD

REF	Core Skills to be assessed	Assessment Method	
S1.	Implement measures to prevent unplanned fire or explosion, limit the extent of fire or explosion and protect people from the effects of a fire or explosion.		PD
S2.	Implement measures to prevent unauthorised people having access to locations where explosives are manufactured, stored or kept or to explosives themselves.		PD
S3.	Implement measures to protect the environment throughout the OME lifecycle.		PD
S4.	Identify and develop solutions to OME based problems and areas of improvement, proposing innovative ideas (e.g. Routes to lessening armour weight).	WBP	
S5.	Use scientific/engineering and commercial knowledge to take an OME idea from concept to implementation.		PD
S6.	Explore, develop and recommend initiatives that support and improve existing OME performance (e.g. obsolescence management or new technology introduction).	WBP	
S7.	Implement a safe system of work via interpretation of hazard data, identification of environmental effects and potentially dangerous events.	WBP	
S8.	Share acquired knowledge, including safety, technical aspects and mentorship.	WBP	
S9.	Interpret and implement industry standards, procedures and specifications (e.g. National Occupational Standards and NATO Standardisation Agreement).	WBP	
S10.	Contribute to longer term technical planning, customer requirements and participate in business case creation (e.g. Strategic Defence Review and Defence White Paper).	WBP	

S11.	Procure and operate OME according to explosives regulations.		PD
S12.	Develop and implement business directed plans and strategies to time, cost and quality requirements using the knowledge of relevant aspects of their company.		PD

REF	Core behaviour's to be assessed	Assessment Method	
B1.	Innovate and adapt within the boundaries of your responsibilities		PD
B2.	Act ethically and with integrity.		PD
B3.	Engage and take responsibility for your personal development		PD
B4.	Demonstrate commitment to learning and self-improvement and be open to feedback.	WBP	
B5.	Work autonomously and as part of a wider team.	WBP	
B6.	Take responsibility for the quality and safety of work.	WBP	
B7.	Environmentally responsible approach.		PD
B8.	Work within the limits of your experience and knowledge.	WBP	

REF	Research and Development Professional – knowledge and skills	Assessment Method	
K16.	OME based studies in Science or Engineering at an advanced level, (e.g. how propellants burn and ways of modifying them, or fracture mechanics of metal casings).		PD
K17.	The design and/or performance of OME through its lifecycle and an understanding of related specialisms		PD
K18.	The means of achieving the design function or purpose for an OME item, (e.g. matching an explosive to the correct casing material or how to safely detonate a system).		PD
K19.	Developments in new and existing technologies, (e.g. the rise of additive manufacturing and how this might affect OME production in the future).	WBP	
K20.	The need and application of a systems-based approach to design within specified parameters, (e.g. appreciating that an integrated OME device is not simply an assembly of separate components).		PD
K21.	A range of research methods applicable to this field, ranging from molecular modelling of energetic materials through to full OME field trials.	WBP	

S13.	Interpret and translate customer requirements into a deliverable solution for research benefits, (e.g. selecting the correct explosive for a new munition design).		PD
S14.	Specify performance of energetics tests and interpretation of data		PD
S15.	Apply the appropriate research method and analyse the resulting data, (e.g. choice of appropriate safety tests for new OME items and correctly interpreting the test data).		PD
S16.	Apply new and emerging technologies in the development of new and existing OME, such as nanomaterials and how to handle them.	WBP	
S17.	Respond rapidly to changing developments (e.g. issues such as a material becoming obsolete and is able to suggest a replacement).	WBP	
S18.	Report/communicate technical aspects to both technical and non-technical audiences (e.g. the ability to cooperate with customers or report to senior management).	WBP	

REF	Safety Professional – knowledge and skills	Method of assessment	
K22.	Mitigation and control of the hazards and effects associated with the OME life-cycle (e.g. safe manufacturing processes, fire and explosion during test and evaluation).		PD
K23.	Techniques for assessing the severity of events with regards to OME facilities (e.g. unexpected fire in an explosives storage facility, flood scenarios).		PD
K24.	Application and implementation of explosives regulations, legislation relating to OME and industry best practice (e.g. Explosives Regulations 2014).		PD
K25.	Facility infrastructure and operations and their associated hazards (e.g. manufacturing plant maintenance, competence of staff and training requirements).		PD
K26.	Explosives Licensing, and emergency planning (e.g. safeguarding and separation distances).	WBP	
K27.	The development and implementation of safety management systems using appropriate safety tools (e.g. Hazard Identification (Haz ID), Hazard Operations (Haz OP)).	WBP	

K28.	The influence of human factors on manufacturing and operational environments (e.g. in relation to past accidents or process design).	WBP	
S19.	Influence policy, standards & guidance, and provide advice on safety matters relating to the OME life-cycle (e.g. OME manufacture and transport).		PD
S20.	Develop safety management systems through the application of key risk control systems (e.g. management of change, permits to work, control of contractors).	WBP	
S21	Observe, monitor, inspect and report on OME processes and facilities.		PD
S22	Apply appropriate safety tools (e.g. Haz ID, Haz OP, risk assessments, safety cases & review lessons learnt to determine root causes and common factors).	WBP	
S23	Apply appropriate hierarchy of controls in order to continuously improve safety (e.g. use As Low As Reasonably Practicable (ALARP) principles).	WBP	
S24	Interpret explosives characterisation test results (e.g. sensitiveness, electrical, thermal, chemical reaction etc.) in order to identify the intrinsic properties of explosives.		PD
S25	Apply knowledge to process design and the selection of controls to prevent precursors of fire/explosion (e.g. ESD, friction, impact etc.) via the application of a hierarchal approach.	WBP	
S26	Determine whether the control measures render any risk associated with the OME life-cycle to be tolerable.		PD

REF	Manufacturing and Processing Professional – knowledge and skills	Method of assessment	
K29.	The importance, rationale and emphasis placed on OME product critical features and their effect on the overall system (e.g. the need to eliminate cavities in explosive shell filling or need to maintain a specified centre of gravity during a filling process).		PD
K30.	Process functional requirements and design choices available to achieve them. (e.g. selection of mixers for bulk explosive dry powders or wet mixing explosive slurries).	WBP	
K31.	How to ensure the correct design choice is made by assessing several solutions from a list of proposed options (e.g. use of multi-criteria analysis to compare OME manufacturing systems).	WBP	

K32.	The requirements of the end-to-end manufacturing process (e.g. design of process layout including explosives safety, logistics and facilities).		PD
K33.	The balance of workplace and product safety and the appropriate quality measures required to maintain safe operation throughout the OME life-cycle. (e.g. the effect of the input from Haz ID and Haz Op on the manufacturing process).		PD
S27.	Compare process design concepts and use appropriate tools and techniques to select the most viable option for OME manufacturing (e.g. Quality Function Deployment (QFD), Process Failure Mode and Effect Analysis (PFMEA)).		PD
S28.	Prepare OME manufacturing, commissioning and plant test plans, taking the process design from the production of OME prototypes through to bulk manufacture.	WBP	
S29.	Interpret failure modes and identify OME process improvements using the output from the PFMEA to improve process capability and safety.		PD
S30.	Compile and deliver an OME process control plan via the use of noises and controls analysis, reducing process variability.	WBP	
S31.	Demonstrate OME process capability and produce OME process capability reports, quality reports and preventative maintenance schedules.		PD
S32.	Demonstrate compliance with explosives legislative requirements via auditable processes, procedures and records. (e.g. the control and movement of explosives).		PD
S33.	Communicate effectively using a range of strategies to maintain OME process capability and troubleshoot potential problems. (e.g. OME factory visits, process audits).	WBP	

REF	Breakdown and Disposal Professional – knowledge and skills	Method of assessment	
K34.	OME design, initiation systems, safety and arming mechanisms and their operation to enable the ability to safely breakdown devices.		PD
K35.	Detailed breakdown and disposal techniques when applied to a range of OME systems (including sampling, x-ray, forensics).	WBP	

K36.	The hazards associated with the breakdown and disposal of OME and how to reduce the risk, such as bespoke and remote tooling.	WBP	
K37.	The risk control and safety requirements for the safe evaluation, breakdown or disposal of OME, including mitigation options.	WBP	
K38.	The decontamination techniques and the potential environmental impacts of breakdown and disposal of OME – (e.g. collection of fluids and contaminated products will need specialist disposal).	WBP	
S34.	Evaluate, select and implement the appropriate breakdown or disposal technique for specified OME items (e.g. non-destructive breakdown for in-service surveillance).		PD
S35.	Plan disposal routes, decommissioning and breakdown activities for OME items – (e.g. collection of contaminated water after jet washing).	WBP	
S36.	Apply suitable risk control and mitigation methods to ensure the safe breakdown and disposal of OME (e.g. knowing when to use remote methods or when it is safe to work on system or parts of systems).	WBP	
S37.	Generate and communicate decommissioning, breakdown and disposal instructions, including safety arrangements – (e.g. writing risk assessments and emergency plans).	WBP	
S38.	Apply best practice to protect the environment (e.g. solutions to reduce waste, recycle/reuse materials and reduce noise from demolitions).		PD

REF	Test and Evaluation Professional – knowledge and skills	Method of assessment	
K39.	The science of energetic materials/articles and how they behave under trial or test conditions. (e.g. temperature of ignition, friction).		PD
K40.	The technology, methods and scientific equipment used in the evaluation of OME including the calibration, accuracy, consistency and limitations of various instrumentation methods (e.g. imagery, diagnostics, radar etc.).	WBP	
K41.	The range of large scale tests and trials (e.g. climatic trials, vibration testing, flight trial).		PD

K42.	How to identify and mitigate risk in a trials/test environment to people, equipment and infrastructure. (e.g. safety procedures, exclusion zones).	WBP	
K43.	How to implement safe systems of work and the consequences of unsafe working practices. (e.g. electrostatics and necessity of earthed manufacturing equipment).	WBP	
K44.	The maintenance regimes of Test House and Range equipment and Facilities. (e.g. calibration of test systems, humidity control for x-ray systems).		PD
S39.	Apply the concepts of the one area / capability / technology to another by working from first principles to establish clear pathways to goals. (e.g. by identifying connections, sequences and common relationships).		PD
S40.	Select and set-up various instrumentation and scientific equipment to obtain the desired test/trial results.	WBP	
S41.	Select, plan and execute appropriate large-scale test methodologies (e.g. impact simulation trials and drop tests).	WBP	
S42.	Interpret customer requirements in order to formulate the appropriate trials and tests to meet their expectations.		PD
S43.	Interpret the association between hazards and risks and can apply sound judgement to manage appropriately.		PD
S44.	Safely and methodically conduct trials and tests in accordance with approved processes. (e.g. safety procedures and documentation)		PD
S45.	Effectively communicate using different ways of presenting results of trials and tests to the customer.	WBP	

Annex B – End-point Assessment Grading Criteria

1. Work-based project, presentation and Q&As Core Knowledge, Skills and Behaviours

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K5 K7 K10 S4 S6	<ul style="list-style-type: none"> Is able to detail all of the scientific knowledge and principles of OME and evaluates these to provide innovative solution to OME problems. Is able to link together OME techniques and technologies to creatively resolve complex issues and deliver robust OME design. Able to present scientific argument accurately and concisely and debate technical conclusions effectively. Provides evidence of where they have taken complex theories in order to apply them to their own situation. 	<ul style="list-style-type: none"> Demonstrates an understanding of the theoretical and practical knowledge of physics, chemistry mathematics and modelling principles, through a clear understanding of the principles of analysis of experimental data in applying current and emerging technologies. Clearly identifies and explains solutions that they have developed to resolve OME based problems including any areas of improvement. Ability to demonstrate how they would explore, using a systematic approach to develop and recommend initiatives or solutions to improve design performance and safety. Display a clear understanding of how to evaluate new initiatives in performance improvements 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

		<p>for the design process and how they can be used in an OME environment.</p> <ul style="list-style-type: none"> • Contributes to the process design and selection of controls to prevent what comes before fire/explosion through using a hierarchal approach to their work. 	
<p>S9 B4 B5 B6 B8</p>	<ul style="list-style-type: none"> • Uses skills and knowledge to effectively challenge potentially unsafe working practices and applies standards and procedures to implement process improvements. • Takes personal responsibility to identify and plan their own professional development to develop their own career pathway. (including limitations within the sector) • Provides evidence of their understanding of the strength and weaknesses within their peers and how these can be managed effectively and incorporated within team roles and activities. 	<ul style="list-style-type: none"> • Ability to show how they interpret and select appropriate industry standards, procedures and specifications in the application of their work. • Plan your continual professional development. Work with internal management processes to identify strengths and weaknesses to contribute to your development plan and accept feedback on performance. • Demonstrates how they work within their experience and knowledge to actively seek out development opportunities outside of formal learning. • Ability to work on their own and effectively contribute within a team environment. Understand their role within the team and how best they can contribute using their skills and knowledge. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

S10	<ul style="list-style-type: none"> • Is able to demonstrate that they have identified, selected, recognised and communicated the impact of inserting new technologies on overall system safety and performance to meet customer requirements. • Is able to detail the required technical information in order to communicate, engage and influence key stakeholders. 	<ul style="list-style-type: none"> • Demonstrate the steps they take to proactively contribute to meeting customer requirements and participation in creation of business cases. • Able to provide examples of how they have promoted new applications where appropriate. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K14 S8	<ul style="list-style-type: none"> • Able to constantly adapt their communication style, language and techniques across a range of audiences in order to meet their needs. • Able to demonstrate they have received, analysed, interpreted and applied technical information correctly and applied this within their role and made recommendations for changes within the team. 	<ul style="list-style-type: none"> • Demonstrates an understanding of project management procedures and can give examples of how these are incorporated into their work environment. • Provides evidence of how they have shared their knowledge, through mentorship, of best practice in technical and safety achievements. • Able to adapt their communication styles when presenting results to the customer. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S7	<ul style="list-style-type: none"> • Ability to demonstrate how they identify and managed the hazards of OME processes and their effects, including the impact of threats and insults to OME and the effects of realisation of OME hazards. • Provides evidence of where they make extensive use of the analysis of health and safety tools and techniques to identify root causes of safety failure in order to prevent OME incidents. 	<ul style="list-style-type: none"> • Demonstrates where they consistently analyse the relevance and value of hazard and threats of OME and how these need to be managed. • Provide evidence of their understanding of risk assessment tools and techniques. • Is able to demonstrate their understanding of the implications and consequences of unsafe working practices. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

	<ul style="list-style-type: none"> • Able to provide evidence where they have led and evaluated an OME process such as the production of a prototype through to bulk manufacture. • Demonstrates clear understanding of how the OME process impacts on the operational chain throughout the product lifecycle both within the sector and externally. 	<ul style="list-style-type: none"> • Ability to apply suitable risk control and methods to ensure the safe breakdown and disposal of OME. 	
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Option 1 Research and Development Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K19 K21	<ul style="list-style-type: none"> • Is able to demonstrate where they have undertaken in-depth research in order to understand, evaluate, promote and select from a range of research methods when applying new and emerging technologies within their field. 	<ul style="list-style-type: none"> • Ability to demonstrate how they applied new and existing technologies within OME, including longer term planning. • Evidences knowledge of a range of research methods applicable to their field for full OME trials. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

S16 S17	<ul style="list-style-type: none"> • Is able to demonstrate that they have proactively identified and effectively respond to implications of changes in developments and requirement of new and existing OME making recommendations for the organisation. • Demonstrates and outlines details of the organisations procedures and able to explain the understanding and reasoning behind them when introducing or developing new technologies. 	<ul style="list-style-type: none"> • Ability to show they can as directed safely apply technologies whilst developing new and existing OME materials. • Provides evidence to show how they process changes and obsolescence and why it is critical to select the correct equipment and/or materials for the task. • Displays the ability to actively respond to changes in developments such as materials becoming obsolete, and the skill to suggest replacements for these. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S18	<ul style="list-style-type: none"> • Demonstrates an ability to create detailed technical reports in order to communicate to internal and external customers, including taking into account differing levels of understanding of the audiences 'using appropriate media. 	<ul style="list-style-type: none"> • Contribute to the reporting/communication of technical aspects of OME to both internal and external customers, 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

Option 2 Safety Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
S20 S22 S23 S25	<ul style="list-style-type: none"> Demonstrate where they undertaken a safety review and explored, proposed, developed/improved and implemented a safety management system to assure design performance and safety 	<ul style="list-style-type: none"> Ability to demonstrate how they would apply, safety processes, initiatives or solutions to assure design performance and safety. Provides evidence of where they have continuously applied the correct hierarchy of controls in order to improve safety eg; as low as reasonably practicable (ALARP) principles. This should include any process design and their selection of controls used. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K26	<ul style="list-style-type: none"> Is able to understand the details of explosives licencing, environmental and safety procedures and is able to explain the understanding and reasoning behind them when introducing or developing new technologies. 	<ul style="list-style-type: none"> Demonstrates a clear understanding of compliance for both explosives licencing and emergency planning for OME. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

K27 K28	<ul style="list-style-type: none"> Provides evidence of where they make extensive use of the analysis of health and safety tools and techniques to identify root causes of safety failure in order to prevent OME incidents. 	<ul style="list-style-type: none"> Provides evidence of where they have developed safety management systems using key risk control systems. This should include the use of safety tools such as Haz ID, Haz OP etc. Ability to demonstrate an understanding of how human factors will influence manufacturing and operational environments. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
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Option 3 Manufacturing and Processing Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K30 K31	<ul style="list-style-type: none"> Demonstrates they are able to utilise their knowledge of functional models to select and utilise an appropriate functional model to promote alternative design choices to achieve required results within the OME process. 	<ul style="list-style-type: none"> Provides evidence of their knowledge of functional requirements and design choices available to achieve required results such as mixers for bulk explosives. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

S33	<ul style="list-style-type: none"> • Able to demonstrate where they have appropriately adapted their communication approach, style, language and techniques to a technical and/or non-technical stakeholder audience to maintain and resolve potential problems before or as they arise. 	<ul style="list-style-type: none"> • Ability to communicate effectively using a range of strategies when maintaining OME capability and resolving potential problems. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S28 S30	<ul style="list-style-type: none"> • Demonstrates their ability to prepare OME manufacturing, commissioning and plant test plans that include taking the process design from production of prototypes through to bulk manufacture. • Demonstrates where they use their knowledge and experience of process control planning to undertake a process review and use this to compile and deliver an OME process control plan to ensure quality and reduce process variability. 	<ul style="list-style-type: none"> • Provides evidence of their ability to contribute to OME manufacturing, commissioning or plant test plans. • Provides evidence of where they have contributed to and implemented an OME process control plan. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

Option 4 Breakdown and Disposal Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
S37	<ul style="list-style-type: none"> • Demonstrates an ability to develop and communicate clear instructions for the breakdown, decommissioning and disposal of OME, such as written risk assessments. 	<ul style="list-style-type: none"> • Provides evidence of where they have contributed to and followed instructions for the breakdown, decommissioning and disposal of OME. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K38 K35	<ul style="list-style-type: none"> • Is able to demonstrate a detailed knowledge of the disposal techniques available and is able to appraise the safety and environmental impact of these for the breakdown and disposal of a range of OME, making any recommendations for improved techniques for the organisation. 	<ul style="list-style-type: none"> • Able to understand the breakdown and disposal techniques within your field of OME including safety and environmental impacts. • Is able to describe the decontamination techniques and what the potential environmental impacts are of the breakdown and disposal of OME. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

S35	<ul style="list-style-type: none"> Is able to produce and implement disposal, decommissioning and breakdown plans. 	<ul style="list-style-type: none"> Ability to follow disposal, decommissioning and breakdown plans safely within their area of OME. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K36 K37	<ul style="list-style-type: none"> Is able to demonstrate a detailed knowledge of the hazards associated with the disposal of OME and apply this knowledge to analyse, select and ensure the selection of appropriate controls to mitigate and reduce risk. 	<ul style="list-style-type: none"> Provide evidence of their knowledge of hazards associated with disposal of OME and the reduction of any associated risks. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S36	<ul style="list-style-type: none"> Is able to develop, select and implement risk control and mitigation methods to ensure the safe breakdown and disposal of OME. 	<ul style="list-style-type: none"> Is able to demonstrate the use of suitable risk controls and safe methods for the breakdown and disposal of OME. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

Option 5 Test and Evaluation Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K40 S40	<ul style="list-style-type: none"> • Demonstrates detailed knowledge and understanding of OME, test and evaluation methods, including limitations, for the evaluation of OME and is able to critically review these methods to propose/select the most effective method for the particular OME item. • Is able to demonstrate that they have reviewed available instrumentation and scientific equipment for a specific test(s) and selected and deployed the appropriate instrumentation and equipment to be able to obtain and interpret the required data outputs. 	<ul style="list-style-type: none"> • Demonstrates their understanding of the technology, methods and equipment used to evaluate OME including the limitations of these within their field • Is able to deploy given instrumentation and scientific equipment to attain the required data. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S45	<ul style="list-style-type: none"> • Is able to critically analyse trials and test results and select the appropriate communication tools to prepare and present test technical data in a clearly and concisely to the required audience. 	<ul style="list-style-type: none"> • Is able to communicate the results of the trials and tests to the customer by using the appropriate media. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

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S41	<ul style="list-style-type: none"> Is able to demonstrate the ability to evaluate the design of large scale test methodologies in order to select and recommend an appropriate approach for the required OME test. 	<ul style="list-style-type: none"> Ability to undertake large-scale test methodologies such as impact simulation trials and drop tests. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K42 K43	<ul style="list-style-type: none"> Is able to demonstrate where they have identified and implemented risk mitigation strategies and how they have been adopted across the sector. 	<ul style="list-style-type: none"> Is able to demonstrate an understanding of how to identify and mitigate risks in a trials/test environment and how to implement safe systems of work. Provides evidence of where they have implemented a safe system of work following a review of potential hazards and potentially dangerous events in the work environment. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

2. Professional discussion supported by portfolio of evidence

Core Knowledge, Skills and Behaviours

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K1 K2 K3 K4 K11 S1 S2 S3 B7	<ul style="list-style-type: none"> Is able to demonstrate with at least XX examples of where they have led and taken responsibility for process safety such as the development of a formal basis of safety for OME. Able to effectively manage (both independently and as part of a team) processes to ensure ongoing compliance with changing legislation and work practices. Outlines where they consistently analyse the relevance and value of hazard and threats and rationalise the balance between hazard and performance. Is able to provide the evidence where they have undertaken process improvement within an OME 	<ul style="list-style-type: none"> Ability to demonstrate the knowledge required to identify and assess the hazards of OME processes and their effects. Is able to describe where they have implemented safe systems of work and any consequences of unsafe working practices. Able to outline how to prevent or limit the effects of fire or explosion including security provisions and preventing unauthorised access and acquisition of explosives. Ability to list the requirements for traceability, record keeping and reporting the loss of explosives. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

	<p>process and how these have been adopted across the organisation.</p> <ul style="list-style-type: none"> • Demonstrate where they have designed and implemented risk mitigation strategies and how they have been adopted. 	<ul style="list-style-type: none"> • Clearly describes and understands the requirements associated with an OME lifecycle, including how they would implement safety and environmental requirements for them. • Provide evidence of where they have implemented measures to prevent unplanned fire or explosion, and where individuals have been protected from this. • Demonstrate the steps they have taken to prevent unauthorised people having access to restricted locations. • Ability to demonstrate their understanding of decontamination techniques including the potential impact of breakdown and disposal of OME. • Ability to implement a safe system of work. 	
K6 S5	<ul style="list-style-type: none"> • Demonstrates a strong understanding of the scientific knowledge and principles of OME and how focused investigations can provide benefits within the OME sector. • Is able to link together OME techniques and technologies to creatively resolve complex issues and deliver robust OME design. • Is able to effectively respond to challenges of complex science/engineering to implement 	<ul style="list-style-type: none"> • Ability to explain the science and engineering underpinning the OME life cycle. • Ability to demonstrate an understanding of the tools and techniques utilised to undertake a range of OME processes in your field. • Describe when they have used their scientific/engineering and commercial knowledge in order to take an OME idea from concept to implementation. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

	innovative solutions for existing and new concepts.		
K12 K13 K15 S12 B1 B2 B3	<ul style="list-style-type: none"> • Able to demonstrate where a complete requirements capture has been performed and the interaction of external stakeholders have been determined. • Provides evidence where they have responsibly and ethically led the development and implementation of business plans/strategies for the OME sector. • Able to take personal responsibility to identify and plan their own professional development to develop their own career pathway. (including limitations within the sector) 	<ul style="list-style-type: none"> • Clearly demonstrates an understanding of the internal and external regulatory environment specific to the sector, including the environment in which both themselves and their company operates. • Provide evidence on where they have implemented business plans/strategies using their full knowledge of their organisation. • Demonstrate the ability to work within their boundaries of responsibility acting ethically and with integrity. • Actively seek out development opportunities outside of formal learning. Consider where these could be and how to access them. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S11	<ul style="list-style-type: none"> • Provides evidence of where they have led the derivation of a specific process specification, which correctly balances design quality safety and cost. (such as a procurement specification) • Demonstrates where they have lead the effective structured risk management to evaluate designed and implement risk mitigation strategies such as PFMEA analyses. 	<ul style="list-style-type: none"> • Ability to demonstrate an understanding of the concept designs and what is required to take them through staged design reviews. • Provides evidence of where they have procured and operated OME according to explosives regulations. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

K8 K9	<ul style="list-style-type: none"> • Demonstrates an understanding of the relationship between each of the key design features and product safety. • Is able to apply advanced system thinking to the design of OME processes, paying particular attention to purpose, context and interaction. • Demonstrates where they have utilised a wide range of techniques and tools to interpret information and analyses their benefits to improve or develop OME processes. 	<ul style="list-style-type: none"> • Ability to identify the requirements of the end-to-end processing (OME life cycle including Process layout, Facility infrastructure and logistics). • Ability to apply the concepts of one area/capability/technology to another by working from first principles to establish clear pathways to goals. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
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Option 1 Research and Development Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K16	Able to provide evidence where they have demonstrated an understanding of the analysis, and interpretation of scientific data to specify performance criteria.	<ul style="list-style-type: none"> • Ability to review and identify different methods of investigation for OME based studies. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for

			each EPA assessment component.
S14 S15	<ul style="list-style-type: none"> Is able to demonstrate that they have selected and applied the correct research methods for the specific test undertaken and then used the outputs to critically analyse and interpret resulting data and including this in their production of a test report. 	<ul style="list-style-type: none"> Is able to apply specific research methods and obtain meaningful test data for inclusion in any organisation reports. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S13	<ul style="list-style-type: none"> Is able to provide evidence where they have incorporated the requirements of the wider stakeholder community to recommend and deliver workflow solution and research benefits. 	<ul style="list-style-type: none"> Demonstrates an understanding of both internal and external customer requirements and the recommendations they would need to make on workflows, solutions and improvements. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K17 K18 K20	<ul style="list-style-type: none"> Able to provide evidence where they have led, planned and carried out design review assessment of a product or process appropriate to OME life cycle maturity phase/gate. 	<ul style="list-style-type: none"> Is able to describe how they would achieve the design function or purpose for an OME item. Demonstrate an ability to compare design concepts and use the appropriate tools and techniques to select the most viable for OME manufacturing. <p>Provides evidence of identifying and working with specialists to understand what is required when undertaking a system-based approach to change control and designing a review process.</p>	<ul style="list-style-type: none">

Option 2 Safety Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K24 S19	<ul style="list-style-type: none"> Is able to demonstrate how they have used their wider knowledge of explosives regulations to influence wider policy across their organisation and/or setting industry best practice 	<ul style="list-style-type: none"> Demonstrates an understanding of the application and implementation of explosives regulations and legislation. Provide evidence on when they have influenced local policy or provided advice on safety matters relating to the OME lifecycle. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S24	<ul style="list-style-type: none"> Is able to demonstrate where they have interpreted explosives characterisation test results and advised on safe handling and use of OME. 	<ul style="list-style-type: none"> Demonstrate the ability to interpret explosives characterisation test results. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K22 K23 K25	<ul style="list-style-type: none"> Is able to demonstrate their knowledge and understanding of OME mitigation and controls, 	<ul style="list-style-type: none"> Is able to describe how they would identify potential threats and hazards to OME and the severity of their effects on OME facilities. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as

S21 S26	<p>based on first principles to minimise hazards and threats to OME items and facilities.</p> <ul style="list-style-type: none"> Is able to demonstrate where they have undertaken a safety review and reported back to improve the safety of an OME processes and facilities. 	<ul style="list-style-type: none"> Ability to describe the techniques used for assessing severity of events in relation to OME facilities and why they would use them. Provides evidence where they have either observed and monitored or inspected and reported OME processes and facilities within their area of responsibility. Provide evidence of where they have undertaken a risk assessment on OME materials or processes. 	<p>contained in Annex A and across the KSBs listed for each EPA assessment component.</p>
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Option 3 Manufacturing and Processing Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K33 S32	<ul style="list-style-type: none"> Able to effectively manage (both independently and as part of a team) processes to ensure ongoing compliance with changing legislation and work practices. 	<ul style="list-style-type: none"> Describe how they deliver the balance of workplace and product safety including quality measures required to maintain safe operation throughout the OME lifecycle. 	<p>Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for</p>

		<ul style="list-style-type: none"> • Provide evidence on their compliance with explosives legislation via auditable processes or records. 	each EPA assessment component.
S27 S29	<ul style="list-style-type: none"> • Ability to demonstrate where they have used the appropriate tools and techniques to lead a comparison of design concepts and used this to recommend the most viable option for OME manufacturing. • Is able to demonstrate where they have constructed a Process Failure Mode Effects Analysis (PFMEA), and interpreted failure modes. and recommend OME process improvements for capability and safety. 	<ul style="list-style-type: none"> • Provides evidence of where they have contributed to the comparison of design concepts and uses the appropriate tools and techniques to select from a list of manufacturing options. • Provides evidence of where they have used the output from a completed Process Failure Mode Effects Analysis (PFMEA) and explain how they would interpret failure modes and identify OME process improvements for capability and safety. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S31	<ul style="list-style-type: none"> • Ability to lead on the analysis of process capability plans and structured risk management exercises to develop a reliability and maintenance schedule. 	<ul style="list-style-type: none"> • Provide evidence of where they have undertaken OME process capability and the reports they have produced because of this. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K29 K32	<ul style="list-style-type: none"> • Provides evidence of where they have predicted the consequence of process change on design on OME critical features. • Provides evidence of where they have extended their understanding of complex OME concepts 	<ul style="list-style-type: none"> • Able to demonstrate an understanding of the implication of design changes and OME product critical features plus the impact they have on manufacturing processes. 	<ul style="list-style-type: none"> • Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for

	and designs and made recommendations to mitigate against the implications of design changes and their impact on the manufacturing process.	<ul style="list-style-type: none"> Ability to demonstrate their understanding of how to implement OME concepts and designs. including the implications of design changes and the impact on manufacturing processes. 	each EPA assessment component.
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Option 4 Breakdown and Disposal Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
S38	<ul style="list-style-type: none"> Is able to demonstrate where they have implemented industry best practice or improved existing processes to reduce environmental harm. 	<ul style="list-style-type: none"> Demonstrate the steps they have taken to protect the environment throughout the OME lifecycle. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K34 S34	<ul style="list-style-type: none"> Is able to demonstrate their knowledge of the full range of OME design, initiation systems, safety and arming mechanisms and their operation to enable them to be safely broken down. 	<ul style="list-style-type: none"> Demonstrate why there is a need to safely break down OME devices in their field. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for

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	<ul style="list-style-type: none"> Provides evidence of when they have evaluated, selected or developed and implemented appropriate breakdown and disposal techniques for OME items 	<ul style="list-style-type: none"> Provide evidence of when they have evaluated and implemented the appropriate breakdown or disposal technique for specific OME items. 	each EPA assessment component.
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Option 5 Test and Evaluation Professional – Knowledge and Skills

KSBs to be assessed as shown in Annex A:			
KSB	Distinction Criteria: the apprentice must display all of the pass criteria and all of the following:	Pass Criteria: the apprentice must display all of the following:	Fail Criteria: the apprentice does not provide sufficient evidence to demonstrate that their performance meets the requirements of the pass criteria.
K39 K41	<ul style="list-style-type: none"> Able to use their knowledge to provide a detailed analysis to recognise and explain how and why energetic materials and articles have behaved under trial or test and their interpretation of the data to make recommendations. 	<ul style="list-style-type: none"> An ability to demonstrate a basic understanding of how energetic materials behave under trial or test conditions and the range of tests that can be used. Provide evidence of where they have undertaken a specified performance test of OME. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.

S42	<ul style="list-style-type: none"> Provides evidence of where they have reviewed and appraised customer requirements and made recommendations for selection, formulation and delivery of specific trial or test solution to meet customer requirements and expectations. 	<ul style="list-style-type: none"> Provide an example of when they have used customer requirements to deliver appropriately OME test and trials. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S44	<ul style="list-style-type: none"> Is able to evaluate and develop test and trials processes to improve and safely meet a change in customer requirements. 	<ul style="list-style-type: none"> Show an ability to safely and methodically conduct trials and tests adhering to approved processes. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
K44 S43	<ul style="list-style-type: none"> Provides evidence of their leadership in safe working and takes a disciplined and responsible approach to manage hazard through application of technical skill, exercises management and mitigation strategies. 	<ul style="list-style-type: none"> Ability to demonstrate an understanding of the maintenance regimes of Test House and Range equipment and Facilities. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.
S39	<ul style="list-style-type: none"> Demonstrates an ability to develop and apply an innovative system thinking approach towards OME processes to benefit other OME domains 	<ul style="list-style-type: none"> Ability to apply the concepts of one area/capability/technology to another by working from first principles to establish clear pathways to goals. 	<ul style="list-style-type: none"> Fails to provide evidence to meet knowledge, skills and behavioural requirements as contained in Annex A and across the KSBs listed for each EPA assessment component.