ASSESSMENT PLAN

GAS NETWORK CRAFTSPERSON

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October 2015
Final

Contents

Overview

This assessment plan is to accompany the Gas Network's Craftsperson Level 3 apprenticeship standard, which has three specialisms: Network Maintenance Craftsperson (Electrical & Instrumentation), Network Maintenance Craftsperson (Pressure Management) and Emergency Response Craftsperson (Gas Emergencies). To successfully complete the apprenticeship and become a qualified Gas Network Craftsperson competence must be demonstrated in the standard's core and one of the specialism specific requirements.

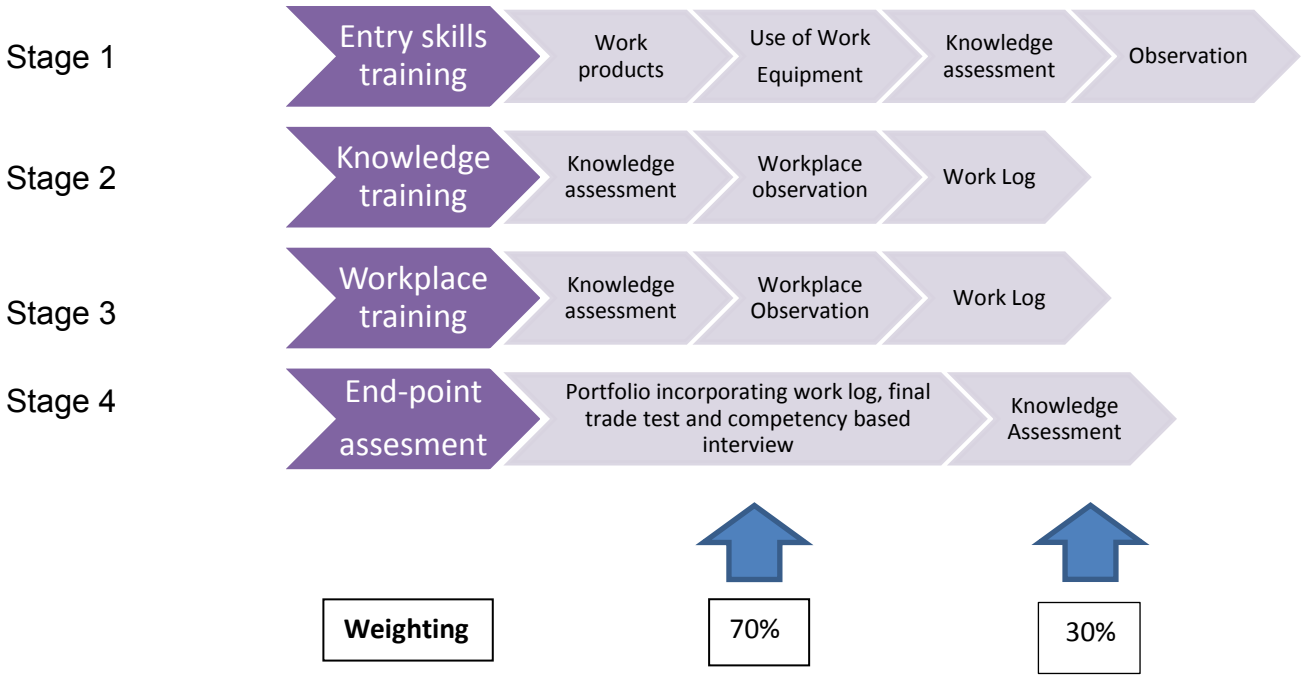
A Gas Network Craftsperson works to provide vital services is to safely build, maintain and repair components of the UK's gas network infrastructure to provide a reliable supply of gas to domestic, commercial and industrial users. This role involves the build, maintenance and emergency repairs to the UK's gas network infrastructure, pipelines, pressure control and meters, thereby providing a safe and reliable supply of gas to domestic, commercial and industrial users.

Employers in this sector are taking the opportunity afforded by the introduction of apprenticeship standards to radically re-model the approach to assessment. This capitalises on existing industry best practice while utilising end-point assessment aligned to Engineering Technician Registration requirements.

This plan outlines the end-point assessment that apprentices must successfully complete to achieve their apprenticeship. The apprenticeship will typically take from 24-36 months for the Network Maintenance pathways and 12 up to 18 months for the Emergency Response pathway. The end-point assessment will be taken in the last three months. Performance in the end-point assessment will determine the grade awarded: fail, pass or distinction.

The employer group has also developed a suggested training plan that employers and training providers may use to develop skills, competence and knowledge. This is summarised below.

Suggested training/assessment timescales and methods prior to the End-Point Assessment



Suggested On-programme Training and Assessment Plan

The suggested training and assessment plan of the apprenticeship can be divided into three distinct phases:

Induction and Core Skills Training (Stage 1)

The aim of this stage is to ensure all apprentices are trained to work safely at all times. It should provide insight on employer and co-worker expectations and how and where the apprentice can seek guidance and support. The acquisition of these key skills provides a vital foundation for the apprenticeship. Training modules may include Utility Safety Health and Environmental Awareness (Gas) Scheme (SHEA), which is externally tested and standardised.

Knowledge Training (Stage 2)

To ensure development of the full range of knowledge required for this apprenticeship, it is suggested that a technical knowledge solution is developed by employers. Training should include engineering and maths relevant to the industry and set in that context; and provide the range of underpinning knowledge required to accelerate skills development and successfully tackle the end-point assessment. There are various routes to knowledge attainment, such as pre-existing Level 3 Engineering qualifications. Further development work by the Gas Network's trailblazer group will respond to the employers' desire to develop an industry standard knowledge solution, which will become the industry's recognised qualification.

Suggested Technical Knowledge - Assessment activities may consist of:
• Assignments – written or practical work set, marked and graded against the specific module/options • Knowledge assessments – set, marked and graded against the specific core modules and specific requirements

Workplace Training (Stage 3)

Stage 3 should be when greater technical skill and knowledge is acquired. As the apprentice progresses through their training, it is suggested that they are assessed on particular tasks or procedures or items of equipment. This will enable apprentices to build up the full range of skills, knowledge and behaviours required to successfully complete the end-point assessment.

Suggested workplace training and development - Assessment activities may consist of:
• Work log – write-up of practical activities, of skills and competences (authorisation assessments) • Observation – practical observation of work activity in terms of quality and behaviour • Review meetings

English and mathematics

Apprentices who haven't already achieved English and mathematics at level 2 (or higher) must do so before being entered for the end-point assessment.

Work log

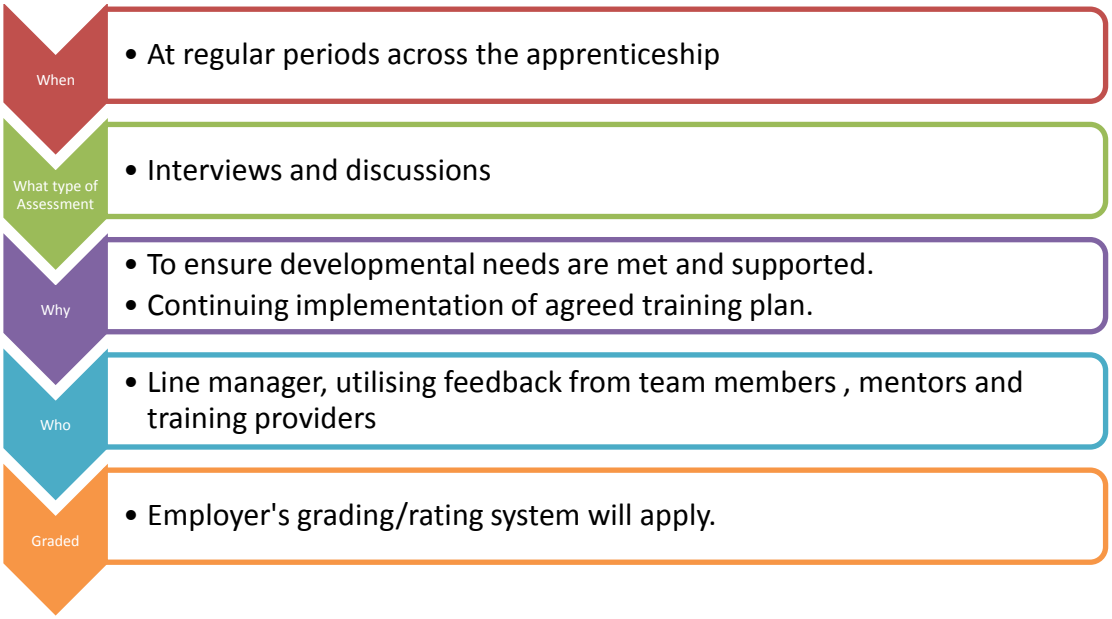
As the apprentice progresses through their training, they should build up evidence on the full range of skills, knowledge and behaviours required by the standard and be assessed on particular tasks or procedures or items of equipment. These are recorded in a work log. The work log must be sufficient to evidence the apprentice can apply skills, knowledge and behaviours required in a variety of tasks. Progress review documentation should also be included. The apprentice's supervisor will typically support the development of the work log in accordance with company policy and procedures, although the assessment organisation will provide guidance on the content of the work log. A summative assessment of the work log will form part of the end point assessment portfolio assessment – see below.

Suggested observation of behaviours and skills

Apprentices work in an environment where their safety, the safety of those around them and the equipment they work on are of paramount importance. Therefore, observation of behaviours and approach are an integral and developing part of the apprentice progression throughout the apprenticeship and should be assessed using existing supervisory practice and as part of the on-going assessment.

Suggested training/development review meetings

It is suggested that training and assessment is agreed and documented in a personal training/development plan. Regular review meetings should be programmed to ensure training/development needs are met and supported. This could include additional training, or ways of accelerating learning, as required by the apprentice. This will typically be an interview with their line manager, but may include colleagues from Human Resources. Feedback from mentors and team members may be included to contribute towards individual personalised training/development plans. Review documentation should be included in the apprentice's work log - see above.



End-point assessment (last three months)

Successful achievement of the end-point assessment will lead to final certification of the apprenticeship and demonstrate that the apprentice is a fully authorised competent worker, who can work safely and confidently to maintain or repair a range of systems. It uses the following assessment tools:

- Portfolio Assessment, incorporating work log summative assessment, trade test and competency based interview documentation; marked by technical experts usually sourced from the apprentice's employer (Weighting 70%)
- Knowledge Assessment; independently marked by an assessment organisation (Weighting 30%).

The end-point assessment may be typically completed over a three-month period to accommodate work scheduling and cost effective planning of resources.

Although the apprentice should only be recommended for end-point assessment when they are ready; employers should have a remediation process in place to support any candidate who fails to meet the conditions of the end-point assessment.

Further details on each assessment tool are provided below.

Portfolio Assessment

The apprentice will submit a portfolio consisting of a work log typically developed during the apprenticeship– see above, together with documentation from a trade test and competency based interview completed in the final three months. The portfolio provides the opportunity to demonstrate skills, knowledge and behaviours across the standard - core and specific requirements. The portfolio will be marked by a technical expert, using standardised criteria and documentation; recording coverage against the standard, highlighting any performance above or below and awarding a preliminary fail, pass or distinction. Further information on the technical experts, work log, trade test and competency based interview is provided below.

Technical experts

Technical experts will be appointed by assessment organisations. They may be nominated from within the apprentice's own organisation or external if required, to respond to the needs of smaller employers. They will not have directly worked with the apprentice or participated in their learning and training; must be able to demonstrate an appropriate level of competence i.e. training and experience to undertake the role and hold an assessor qualification to be approved by the assessment organisation for the purposes of conducting elements of the end-point assessment. This sector is sensitive from a safety and regulatory perspective. This means decisions on competence have implications not only for individual safety, but also reputation and litigation. As a result judgements of competence and moderation are required to be by necessity reliable, rigorous and robust.

Work log

A technical expert will review the apprentice's work log and undertake a summative assessment of competence against the standard's skills, knowledge and behaviours:

Emergency Response Craftsperson will need to demonstrate they can

- Respond to public reported upstream gas emergencies
- Respond to public reported downstream gas emergencies
- Install gas meters and regulators
- Tightness test, purge, commission and de-commission gas pipework
- Locate and avoid underground plant and equipment
- Replace emergency control valves
- Carry out investigations in relation to gas escapes, in line with company procedures
- Liaise with emergency services and other statutory authorities as necessary
- Organise additional resources to facilitate repairs as required.
- Achieve Gas Safe Registration in Emergency Services categories

Network Maintenance Craftsperson (Electrical & Instrumentation) will need to demonstrate they can

- Apply theories and principles of electronics to use equipment to carry out diagnostic fault finding procedures
- Maintain instrumentation and control equipment and circuits
- Repair and overhaul instrumentation and control equipment
- Maintain site lighting, fixed and portable equipment
- Inspect, Test and Calibrate Instrumentation and control equipment and circuits in line with electrical regulations
- Carry out cable testing across a range of voltages
- Assist in installing instrumentation and control equipment
- Use Instrumentation and Control Systems knowledge and skills to install, maintain and dismantle instruments, controllers, probes, attachments, cabling, meters and display units.
- Carry out telemetry outstation and internal system configuration
- Identify and resolve data quality and calibration issues
- Test, calibrate and validate fixed and portable analogue and digital instrumentation using approved procedures and standards.
- Repair, maintain, configure and calibrate field instrumentation, communication devices and associated equipment used in system and process control
- Use standards and specifications to improve the information gathered by telemetry data
- Inspect and maintain security equipment, telecommunication devices and alarm systems
- Carry out isolation procedures to ensure process or system stability and safety of personnel when carrying out operations
- Provide support to day-to-day users of instrumentation and control systems
- Complete data cleansing to ensure consistent and valid data is available for business and regulation purposes
- Apply electrical knowledge and skills to install, maintain and dismantle a wide range of complex plant, machinery and components

Network Maintenance Craftsperson (Pressure Management) will need to demonstrate they can

- Apply mechanical theories and principles in order to carry out diagnostic fault finding procedures
- Carry out Pressure Monitoring & Control (PMAC)
- Inspect and monitor mechanical systems and equipment
- Maintain, dismantle and repair mechanical equipment and components
- Test mechanical equipment and systems

- Assist in installing mechanical systems and equipment
- Use mechanical knowledge and skills to install, maintain and dismantle a wide range of complex plant, machinery and components
- Consult design specifications to analyse and calculate mechanical system parameters and rectification procedures.
- Interpret plans and drawings to install, position or re-locate mechanical equipment and components.
- Test, service and repair mechanical equipment as part of planned preventative maintenance and/or reactive maintenance programmes
- Install and maintain mechanical components including regulators, filters, valves, and compressor equipment.
- Inspect and maintain high pressure storage, and condition monitoring equipment

Trade Test

Apprentices will complete a final practical assessment known as 'trade test' in the last three months, providing the opportunity to synoptically demonstrate core and specific skills, knowledge and behaviours, for example, the apprentice could be assigned a task to diagnose and rectify fault(s). The apprentice will need to apply the appropriate principles, procedures and knowledge and explain what and why they are undertaking a particular approach. They will be expected to select and use the appropriate equipment and tools, protect themselves and others from potential harm that can arise from their work, while ensuring other processes on site continue to function; effectively and efficiently maintaining production. The test will be awarded a pass or fail.

- **Network Maintenance Craftsperson (Electrical & Instrumentation)** should expect to be assessed on the probes, sensors, cabling, monitors, electronic controllers, telemetry, software or programmes that provide the control, communication and automation functions for the Gas Network
- **Network Maintenance Craftsperson (Pressure Control)** should expect to be assessed on the installation, commissioning and maintenance of mechanical components including regulators, safety devices, filters, pipework and valves used to provide the safe operation of the gas network.
- **Emergency Response Craftsperson** should expect to be assessed on dealing with reported gas emergencies, responding to reports of carbon monoxide leakage, the installation of domestic gas meters, regulators and pipework and the tightness testing, commissioning and de-commissioning of gas pipework

The assessment organisation will develop and hold a bank of trade tests covering core and specific requirements. Standardised documentation will be used to outline the test requirements, assessment criteria and to record decisions. An approved test will be released to the apprentice's employer on application, to be completed in the specified end-point period. Trade tests will be administered and marked by a technical expert, which may or may not be the same person as the technical expert who undertakes the portfolio review. The assessment report on the trade test must be included in the apprentice's portfolio.

Competency based interview

As part of the end-point assessment a competency-based interview be held that will question the apprentice in relation to their skills, knowledge and behaviours, based on their work log and trade test evidence. Questions will be standardised, so that essential knowledge such as current health and safety legislations and regulations can be demonstrated consistently by all apprentices. The interview will typically last one hour. This interview will be conducted by a technical expert, using standardised assessment criteria and documentation to ensure objectivity and consistency throughout. The format of this interview will be aligned to the United Kingdom Standard for Professional Engineering Competence (UK-SPEC) and engineering technician registration (EngTech). The interview will be awarded a fail, pass or distinction.

Knowledge Assessment

Apprentices will be required to complete a standardised knowledge assessment in the last three months that will be administered and marked by an independent assessment organisation. The assessment will enable apprentices to demonstrate knowledge across the Gas Network Craftsperson Standard - core and specific requirements, as appropriate i.e. Network Maintenance Craftsperson (Electrical & Instrumentation), Network Maintenance Craftsperson (Pressure Management) and Emergency Response Craftsperson (Gas Emergencies). The assessment will be a combination of short answer questions and multiple choice and taken by the apprentice under examination conditions. A pass will be a minimum of 70 per cent with a distinction for this element awarded to those with 90% or above. The outcome of the knowledge assessment will be submitted to the final decision panel. Some questions will be safety critical and will necessitate a correct answer. These will be determined and standardised by the assessment organisation in conjunction with employers.

Final Decision Panel

The Assessment Organisation will appoint and be responsible for the operation of the final decision panel. Decision panels will consist of three people:

- Technical expert from apprentice's employer
- Technical expert from another employer who is therefore independent of the apprentice, their employer and training provider
- Another technical expert from another employer or from a relevant professional body, who is independent of the apprentice, their employer and training provider.

One of the independent panel members will act as chair of the panel. The decision panel will check all available evidence and discuss to enable the independent chair to make the final decision of whether to award a fail, pass or distinction. Therefore, someone independent of the apprentice and their employer will always determine the grade awarded. The assessment organisation will co-ordinate the final decision panels and observe and intervene where necessary to ensure they are operated in accordance with the guidance, ensuring comparable decisions consistently and comparably across panels and over-time.

Grading

Grading will be standardised to ensure consistency across the sector. The apprenticeship will be graded fail, pass and distinction. The final grade will be determined by collective performance in the end-point assessment's two assessment tools. The **weighting** of the apprenticeship is 70% on the portfolio, which incorporates the work log, final trade test and competency based interview and 30% to the independent knowledge assessment. A points system will determine if the apprentice has achieved a pass or distinction and is described below. A pass grade (or higher) must be achieved in the portfolio and knowledge assessment for the apprentice to receive a pass overall. A final distinction grade will only be awarded if this has been achieved in both end point assessment tools.

Pass – 5 Points (3.5 Points Portfolio + 1.5 Points Knowledge Assessment)

Distinction – 10 Points (7.0 Points portfolio + 3 Points Knowledge Assessment)

Portfolio %	Points	Grade	Knowledge Assessment %	Points	Grade
<69	0	Fail	<69	0	Fail
70 - 84	3.5	Pass	70 - 89	1.5	Pass
85-100	7.0	Distinction	90 - 100	3.0	Distinction

To achieve a 'pass' the apprentice will be demonstrating competence across the standard. To achieve 'Distinction' the apprentice will be demonstrating performance over and above the standard. The following table outlines the scoring criteria that must be applied; detailed guidance will be developed by the assessment organisations.

End Point Element	Fail Criteria	Pass Criteria	Distinction Criteria
Portfolio	**Fail <69%** • Portfolio lacks sufficient evidence and structure to demonstrate knowledge, skills and competency through the work log and progress reviews • Portfolio records a fail in the final trade test • Portfolio records a	**Pass (70%-84%)** • Portfolio well-structured and contains sufficient and robust evidence to demonstrate knowledge, skills and competency across the standard through the work log and progress reviews. • Portfolio records a pass in the final trade test • Portfolio records a	**Distinction (85%-100%)** • The portfolio demonstrates evidence which is over and above the requirements of the standard through the work log and progress reviews. • Portfolio records a pass in the final trade test • Portfolio records a

	fail in the competency based interview • Portfolio records a fail in Gas Safe® Registration (emergency services pathway only) • Poor application of knowledge in the work place • Poor reasoning skills displayed on practical tasks • Negative team working and interpersonal skills • Subject to a company disciplinary procedure	pass in the competency based interview • Portfolio records achievement in Gas Safe® Registration (emergency services pathway only) • Good application of knowledge in the work place • Good critical reasoning skills displayed on practical tasks • Good team working and interpersonal skills and ability to respect the opinion of others	distinction based upon outstanding rationale for decisions within the competency based interview • Portfolio records achievement in Gas Safe® Registration (emergency services pathway only) • Outstanding application of knowledge in the work place • High level of critical reasoning skills displayed on practical tasks • Outstanding team and interpersonal skills and the ability to respect the opinion of others
Knowledge Assessment	Score <69%	Score 70-89%	Score 90% and Above

Assessment organisations

The model involves greater employer leadership in the apprenticeship development, implementation and operation, whilst maintaining a high level of scrutiny and assurance with a Quality Framework.

The assessment organisation's primary role will be to ensure that all decisions are consistent, credible and undertaken with integrity, it will:

- provide documentation and guidance in relation to the requirements of the apprenticeship, log book, trade tests, competency interview, marking of the portfolio, employer standardisation meetings and final decision panels
- monitor technical experts and provide remedial support to ensure consistency and reliability of judgements on a risk based basis, for example, those newly qualified
- develop a range of trade tests for the specialised role. Assessment organisations must consult with representative technical experts when developing trade tests. The assessment organisation must ensure that there is consistency and comparability in terms of the breadth and depth of each trade test assessment, to ensure assessments are reliable, robust and valid and ensure competency accord across the industry
- develop knowledge assessments to meet the needs of each specialised role. Assessment organisations must consult with representative technical experts when developing the knowledge assessment. The assessment organisation must ensure that there is consistency and comparability in terms of the breadth and depth of each knowledge assessment, to

ensure assessments are reliable, robust and valid and ensure competency accord across the industry

- develop compensatory assessment for learners with special requirements to allow reasonable adjustments to be made to assess the knowledge, skills and competence of the apprentice through alternative assessment techniques. Whilst, these will remove barriers to participation, they must be designed to ensure judgements are not compromised to health and safety and legal requirements. appoint and co-ordinate the final decision panels and observe and intervene where necessary to ensure they are operated in accordance with the guidance
- approve technical experts for the purposes of conducting log book review, trade test assessments, competency based interview, portfolio review, internal standardisation and moderation panels based on checks upon knowledge, experience, assessment qualifications and independence
- provide training for technical experts in terms of the requirements of the apprenticeship and operation and marking of the assessment tools and initial grading
- provide training for technical experts in undertaking fair and impartial assessment and making judgements about performance and the application of knowledge and behaviours within a workplace setting
- provide training for final decision panel members, in terms of the panel operation and grading; and how to communicate the decisions
- hold regular standardisation events for technical experts and panel members to ensure consistent application of the guidance
- ensure assessment organisation staff are trained in assessment and moderation processes and undertake regular continuing professional development
- develop and manage a complaints and appeals procedure.

All assessment organisations must be on the Skills Funding Agency's Register of Apprentice Assessment Organisations (RoAAO). Assessment organisations must work collaboratively to ensure standardisation in delivery of assessment services for the standard e.g. hold cross-organisation standardisation events.

Professional Body Recognition

The Institution of Gas Engineers and Managers (IGEM) has supported the development of the apprenticeship standard and assessment plan. The UK Standard for Professional Engineering Competence (third edition) has been used as a guide throughout. The continuing support and guidance of this and other relevant Professional Bodies will ensure the apprentices who qualify as craftsperson, hold eligibility for registration as Engineering Technicians.

Recognition at the professional grade of Engineering Technician will follow successful completion of the apprenticeship, through a standard administrative process established with the relevant professional institution.

Employers in the sector recognise the greater opportunity of continuing career development post-apprenticeship that Professional Registration offers. They are confident that retention and development of highly skilled apprentices will be enhanced by Engineering Technician Registration as it will encourage the employee to identify opportunities for career progression and take responsibility for their own professional development. In terms of building a competent, professional workforce this requirement to demonstrate Continuing Professional Development and the progression routes onwards.

Implementation

Affordability

The initial, indicative **end-point assessment costs** is expected to be in the region of £3958, approximately 7 percent of the total external apprenticeship costs. In addition, the skills and knowledge of the apprentices tested at the end-point assessment will be in a realistic environment using expensive, plant and materials that may be scrapped post assessment. This approach adds significant costs, not included above, to the process but is seen as essential to ensure authentic competence. The development work required would allow the best market solutions to emerge that satisfy employer requirements within the developing co-investment apprenticeship model.

The final decision panel will conform to a standardised process, which will be independently assured with independent third party representation beyond the employer. This will ensure fairness and equality for all, while consistently delivering a holistic test of the accumulated knowledge of the apprentice. The standardised approach will ensure affordability.

Manageability/ Feasibility

There are sufficient technical experts/assessors both geographically and within the sector to meet the needs of end point assessment. These are mainly located in the work place and at the cutting edge of new technical developments within the sector. It is expected that there would be in the region of 110 new starts annually when established, supported by a final decision panel, which will meet four times per year to meet demand. Employers want to supply the technical experts who will make the final judgements on grading of the apprentice to raise the standards and quality across the sector. While we envisage a three-year 'accreditation' cycle (extending to five if no change looks to be required), we also acknowledge that we need to be prepared to monitor and evaluate early adopters reactions and performance to ensure manageability/feasibility.

To help with manageability, and afforded by the existence of knowledge specifications, a number of existing qualifications and training programmes can be mapped to the Gas Network Craftsperson Trailblazer requirements and approved as able to deliver the knowledge requirements for this apprenticeship. This also allows knowledge to be delivered via knowledge 'solutions' (including training programmes) rather than just qualifications. Approved assessment organisations will need to undertake work to develop the end-point assessment.

Employers have some internal capability and links to external partners capable of delivering the required number of apprentices. Employers are expecting to increase the numbers of apprentices and are looking at ways to stagger intakes and make effective use of their internal resources. Employers across the sector work collaboratively to share best practice and training and assessment resources. Employers are planning to build their internal capacity and capability for assessment.

Approved assessment organisations will need to be undertake work to develop the end-point assessment.