



**ECITB SCQF Assessment Strategy
for
Craft, Technician, Technical, and
Project Control Suite
Vocational Qualifications RV2-0**

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Introduction

1. As part of its responsibilities as a standards setting body, ECITB has prepared this assessment strategy for the its suite of qualifications as listed in Annex 1 in the Scottish Credit and Qualifications Framework (SCQF) for craft, technician and technical occupations within the engineering construction industry, and project control specialist occupations within the engineering construction and wider engineering community as relevant. Throughout this document the term Vocational Qualification refers to VQs, and all ECITB qualifications placed in the SCQF.
2. The strategy is based on information and feedback from a range of contacts among employers, practitioners, training and development staff and assessors/Quality Assurers with experience of implementing Vocational Qualifications within industry. Their views on the most appropriate means of ensuring the effective quality control of the revised Vocational Qualifications have been actively sought and used to construct the proposals made with respect of the following components of the assessment process:
 - external quality control
 - requirements for mandatory workplace performance evidence
 - the use and design of simulations
 - the occupational competence requirements of Assessors and Quality Assurers.
3. Discussions within sector working parties identified that the introduction of independent assessment methods with regards to Craft, Technician and Technical Vocational Qualifications covered by this Strategy would be impractical and costly to implement within the engineering construction industry and would not be welcomed by employers as offering any added value.¹ Consequently, the Assessment Strategy concentrates upon ensuring that the external quality control procedures are of the highest possible calibre through influence upon External Quality Assurance activities and Centre systems and procedures.
4. The Project Control suite of specialisms have relevance across many sectors of business and industry with projects and work scope varying considerably in duration, size and cost. Candidates can therefore be operating domestically, nationally or internationally and can be operating within their own company or within a partnered or third-party organisation. It is therefore essential that the assessment process is relevant to the business and the sector and organisational arrangements in which the candidate is operating.
5. The different occupations covered by the Vocational Qualifications addressed by this Strategy are found widely across different companies and in relation to a range of different projects. A critical feature of employment in the industry is the prevalence of fixed term contracts while a particular project is in place, be that to do with new constructions or maintenance. Although some of these contracts may be of several years in length, others are short term. Practitioners need to be flexible and may expect to work for several different contractor organisations, on the premises of a range of clients, over their working life. From the perspective of assessment, Centres need to be able to cater for practitioners transferring in on new contracts, perhaps bringing with them partially completed portfolios of evidence. It is critical, therefore, that the assessment system in operation provides employers, Candidates

¹ See Annex 1 for further details.

and Assessors/Quality Assurers, with the confidence to accept that the assessment decisions taken by any Centre are of the highest quality. The Assessment Strategy provides principles for the Awarding Organisation to follow to ensure that intra and inter-centre assessment practice is of a consistently high calibre.

6. The Assessment Strategy has the support of the ECITB Awarding Organisation, which at the time of approval was the sole Awarding Organisation intending to offer the Vocational Qualifications which the strategy addresses.

Recommendations with regard to External Quality Control

7. Awarding Organisations through the quality control mechanisms, specified within the current SQA Accreditation's Regulatory Principles must ensure rigorous and effective control of centres and the assessment processes so that judgement of what is valid, authentic, current, reliable and sufficient evidence is maintained across all assessment contexts. The recommendations in this section of the Strategy support that requirement.
8. The Standards Setting Body's recommendations with regard to external quality control fall into three broad areas, each of which is discussed in turn below. They are:
 - External Quality Assurance processes and practices
 - Centre support systems
 - Introduction of independent assessment processes.

External Quality Assurance processes and practices

9. It is recommended that the Awarding Organisation devise and implement a centre visit and sampling plan which should be followed closely by all External Quality Assurers (EQA). This would have the following requirements:
 - that all Centres receive a minimum of one External Quality Assurance (EQA) visit in any 12-month period
 - that the EQA carry out 100% QA of two of the mandatory units for each Vocational Qualification offered by the Centre, the choice of units to be varied on an annual basis
 - that the sampling plan arranged for the remaining units ensures that the EQA reviews sufficient assessment decisions by each Assessor and for each Candidate in any one year to be confident that those decisions not sampled are based on evidence which is valid, reliable, current and sufficient in relation to the National Occupational Standards (NOS). This requirement applies to evidence both of performance and of knowledge
 - that an interview plan be arranged with each centre and based upon a risk analysis conducted of the Centre, to ensure that the EQA is able to interview an appropriate proportion of the Assessors and Internal Quality Assurers (IQA) attached to the centre within each 12-month period. The aim of the interviews should be to discuss and confirm Assessor and IQA understanding and application of good assessment practices. To that end, it is recommended that all new appointments be interviewed within their first year of practice and all others interviewed at least once within every five years
 - that centres submit details of assessment planning arrangements and assessment

recording forms and systems they intend to use. The submitted information must include details of the planned use and design of simulations. EQA must be satisfied that these arrangements, forms and systems accord with good practice requirements and the Assessment Strategy stipulations with regard to simulation design and use. In particular, recording forms and systems must be such as to provide accurate and complete information on which to audit assessment and Internal Quality Assurance decision-making.

10. In addition, it is strongly recommended that Awarding Organisations implement a Risk rating system to ensure that QA interventions can be appropriately targeted to address potential and actual problems in a proactive and effective manner. In support of this, it is also highly recommended that the EQA reports to the Awarding Organisation are monitored in a systematic manner to enable potential difficulties quickly to be identified and addressed.

Centre support systems

11. It is strongly recommended that the Awarding Organisation ensures that high quality systems are in place to enable Centres to develop and maintain good practice in the processes of assessment and internal QA. These could include some or all of the following:
 - Illustrative and guidance materials based on known good practice
 - flexible access to facilities for Assessors and Internal Quality Assurers (IQAs) to network for the purpose of sharing and extending their understanding of good practice
 - a systematic and responsive approach to collecting and relaying centre comments and criticisms and ensuring that all centres are advised of Awarding Organisation recommendations on dealing with frequently met problems.
12. It is strongly recommended that the Awarding Organisation drafts and maintains guidance to Assessors and IQAs on the assessment of the knowledge requirements specified in the National Occupational Standards. This could take the form of a set of standardised knowledge base questions per qualification, along with guidelines on acceptable responses, to be applied by Assessors in the course of the assessment process.

Requirements for the mandatory assessment of performance in the workplace

13. Unless the use of evidence from simulations is permitted in respect of a given unit, ECITB requires that evidence of competence must be drawn from and reflect activity undertaken by the candidate in the workplace. For the purpose of this Assessment Strategy the workplace is defined as the Candidate's normal place of work for their occupation. This may be in an office, on site or in a production/fabrication workshop characterised by features such as noise, heat, contiguous plant and equipment, inclement weather conditions, time constraints etc.
14. Within the constraints and commercial pressures of the workplace, Candidates and Assessors should be encouraged to make effective use of all available opportunities for evidence collection in line with the following principles:

- the evidence must be valid, in that it meets the requirements of the standard
 - the evidence must be capable of being authenticated as the Candidate's own work
 - evidence from a range of different sources, work activities and contexts is preferable to multiple instances of evidence of the same type
 - Assessors should pay due regard to the cost-effectiveness of using varied sources of evidence when planning assessments with a Candidate.
15. The evidence must be such as to demonstrate that the Candidate is competent across the entire scope of the unit. Where this scope is extensive, a statement within the unit details those aspects of the scope which **must** be assessed using evidence from candidate performance at work. All other aspects of the scope can be evidenced using information drawn from candidate performance under simulated conditions (if permitted for that unit) and/or by inference from the Candidate's response to 'what if' style questions across the knowledge base for the standard. Where evidence from simulation is not permitted, the whole of the Candidate performance evidence must be taken from his/her practice at work.
16. As a 'guide' the terms 'project, work scope or business' in the context of these qualifications and the units within it, are likely to have most if not all of the following attributes:
- it will have individual, original and unique features that are novel to its management and is unlikely to be of a repetitive nature
 - it will involve risk and uncertainty and may be influenced by external events outside the manager's direct control
 - it will be approved against commitments to deliver specified, qualified and quantified results within stated quality and technical parameters
 - authorisation will require results to be delivered within a specified time frame (stated start–end dates), resource and cost constraints
 - the work scope delivery will usually involve a team nominated from across a range of disciplines and work scope life cycle, which may be subject to change during the work scope's development and implementation. Some organisations may assemble a team specifically for the duration of the work scope delivery.

Specifications with regard to the use and design of simulations

17. The use of simulation as a means of assessing competence is only acceptable in relation to those few instances where one or more of the following characteristics apply:
 - health and safety could be compromised by seeking workplace evidence
 - the behaviour or situation under which assessment occurs happens infrequently in the workplace
 - the responsibility for the work rests with the Candidate, but it is typically either delegated or carried out jointly with another and the Candidate has limited opportunity to demonstrate it directly and individually
 - there would be unacceptable commercial or operational risk in securing workplace assessment
 - facilities would need to be placed in an unacceptable operating state to allow for assessment to take place.
18. A statement within each unit clearly identifies whether or not simulation is permitted within the assessment for that unit.
19. Where simulation is permitted, the simulated activity must be designed to reflect the activity as it would be carried out in a typical workplace environment, including:
 - the presence, actions and capabilities of other interacting personnel
 - the urgency with which the activity must be carried out and the time needed to complete it;
 - the number and sequence of actions needed to complete the activity
 - the number and complexity of the factors affecting the activity
 - the skills and knowledge needed to carry out the activity
 - the nature and availability of resources needed to carry out the activity
 - access to references and sources of advice and assistance that could be needed if problems arise
 - the type of documentation to be completed
 - the standards to which the activity must be carried out, including any practices and procedures which must be followed
 - the outcomes which the activity will produce
 - access to normal/usual workplace instructions.
20. It is strongly recommended that the Awarding Organisation issues illustrative guidance on the application of these principles within each of the Vocational Qualifications covered by this Assessment Strategy.

21. Centre proposals for the use of simulation should be approved by the Awarding Organisation in advance of being used and may be rejected if they fail to comply with the characteristics listed above.

The occupational competence requirements for Assessors and Quality Assurers

Assessors

22. Assessors are responsible for assessing candidates' performance against the relevant occupational standards. Therefore, they must have a thorough technical knowledge of what constitutes effective performance and good working practices in the occupational context addressed by the Vocational Qualification. For Vocational Qualifications which include assessment of the Candidate's management and team leading competence, Assessors must have some current practical experience in a management/team leading position.
23. The following characteristics have been highlighted as being those on which the selection of suitable Assessors should be based. It is unlikely, although not impossible, that an individual who does not possess a reasonable balance across these characteristics would be effective as an Assessor:
 - verifiable relevant and sustained recent experience in the relevant sector in a role which calls for the demonstration and/or supervision of the competences contained within the standards to be assessed
 - Assessors must have achieved an Assessor qualification that is recognised by the Awarding Organisation. Further information on these qualifications is available from the Awarding Organisation
 - certification in the relevant Vocational Qualification or industry accepted equivalent discipline qualification
 - the interpersonal skills needed to support and encourage candidates in the planning and collection of suitable evidence
 - the communication skills needed to maintain clear and appropriate records of the assessment process and to explain assessment requirements to candidates
 - sufficient understanding of the different working contexts from which evidence may be gained, to enable the cost-effective use of diverse sources of evidence in forming assessment decisions
 - for Vocational Qualifications requiring management and team leading assessment: certification in a management and leadership qualification at the requisite or equivalent level would be advantageous although this is not essential provided relevant and sustained recent experience as described above can be demonstrated in a management or leadership role.
24. There may be a requirement to use more than one Assessor per Candidate to cover the full award. Awarding Organisations must have mechanisms in place to ensure the co-ordination and cohesion of assessment processes in such situations.

Internal Quality Assurers

25. Internal Quality Assurers (IQAs) should have direct experience or substantial knowledge of the occupational area for which they are responsible for verifying assessment procedures and decisions. They should also have similar communication and interpersonal skills to those of an Assessor. Internal Quality Assurers must have achieved a verifier qualification that is recognised by the Awarding Organisation. Further information on these qualifications is available from the Awarding Organisation.
26. It is unlikely, although not impossible, that an individual who does not have the verifiable relevant and sustained recent experience in a role which calls for the demonstration and/or supervision of the competences contained within the standards to be assessed, would have the necessary occupational, communication or interpersonal skills to be fully effective as an Internal Quality Assurers.

External Quality Assurers

27. External Quality Assurers (EQAs) are a crucial component of the quality control system applied by the Awarding Organisation. Their role calls for them to be able to pass on and explain technical and other aspects of good practice to centres and to evaluate centre and assessment practices in terms of procedural relevance and occupational validity. Consequently, they must not only possess well developed communication and interpersonal skills, but also have sufficient breadth of expertise and understanding of the engineering construction industry to be able to perform this role across the Vocational Qualifications covered by this Assessment Strategy. External Quality Assurers must have achieved, or be working towards gaining within the required timeframe, an External Quality Assurance qualification that is recognised by the Awarding Organisation. Further information on these qualifications is available from the Awarding Organisation. It is preferable that they also have Assessor /Internal Quality Assurance qualifications.
28. It is therefore unlikely, although not impossible, that an individual who does not have significant knowledge and understanding gained in a supervisory or promoted role within an engineering industry would have the necessary occupational, communication or interpersonal skills to be fully effective as an External Quality Assurer.

Confirmation of Competence

29. Awarding Organisations need to have in place effective systems for confirming the occupational competence of Assessors and Quality Assurers. The systems for recruitment and monitoring must be capable of balanced and objective decisions, using evidence from academic and Vocational Qualifications, where presented, as well as consideration of the breadth and length of experience from the workplace.

Rationale for the Assessment Strategy for ECITB Craft, Technician, Technical, and Project Control Suite Vocational Qualifications

The Assessment Strategy for the ECITB Craft, Technician, Technical, and Project Control Suite Vocational Qualifications is based on information from the following sources:

- discussions with Awarding Organisation staff, including External Quality Assurers
- discussions with trainers and Assessors familiar with the delivery of Vocational Qualifications within the ECITB sector
- discussions with practitioners, trainers and managers in relation to the revision of the ECITB suite of Vocational Qualifications and related assessment arrangements.

The discussions were based around current practices and expectations with regard to assessment of Vocational Qualification Candidates. This took account of the context in which assessment takes place, the assessment methods in use in the sector, the occupational competence and other characteristics of Assessors, Internal Quality Assurers and External Quality Assurers, the approach to external quality control currently in use, the prevalence and required characteristics of simulation as an assessment method and the extent to which evidence of performance would require to be drawn from working activities.

With regard to the current assessment system in place within the ECITB arena, the following conclusions were drawn:

- there is a dependence on workplace performance evidence and an expectation that this will continue to be the case, especially as the drive to ensure that all relevant practitioners achieve the appropriate Vocational Qualification takes hold
- the use of peripatetic Assessors or Assessment Centres would have some, albeit limited, applicability but should not be expected for every Candidate. Employers would be unwilling to allow external staff on site, or permit staff off site, in most cases because of (a) the pressures of meeting contractual deadlines and/or (b) health and safety implications. The contractual nature of the industry is an influencing factor in this
- improved use could be made of standardised approaches to assessing Candidate knowledge and understanding
- set tests would be seen as too remote from workplace practice to have much credibility for employers and would not be seen as cost-effective given that workplace evidence is generally readily available
- most simulations used tend to be fairly realistic in the extent to which they mimic real, commercial workplaces
- there is room for improvement in the manner and consistency with which External Quality Assurance is carried out
- Assessors need to have strong expertise and experience in the occupational role they assess, but the demand is less critical for Quality Assurers, so long as they have an

engineering background, and can demonstrate the ability to QA assessment decisions in management and team leading competences if required.

- The outcome of these discussions was a series of five broad principles that were confirmed through consultation with the sector and the Awarding Organisation and expressed through the Assessment Strategy. The principles, and the rationales behind them, follow.

Principle 1: The assessment of Candidates for each unit of the Vocational Qualification should depend primarily on evidence from their performance at work. This includes evidence from Assessor observations, Witness Testimony and the review of outcomes produced by the Candidate.

Workplace performance evidence is used as the primary source of evidence for the majority of candidates and is held to be crucial to the determination of competence by candidates, employers and assessment staff alike. There are certain circumstances in which such evidence is, however, less widely used. For example, most candidates for the level 7 SCQF award spend a considerable amount of time in training establishments which have facilities and an environment which mimics, but does not function as, a commercial workplace.

The revised standards detail the scope of each standard in terms of a series of features of the work context that can vary. Under each scope heading is then detailed an illustration of the sorts of applications to which that heading applies. In the vast majority of situations, candidates will have the ability to provide performance evidence from the workplace across many of the range of applications detailed under the scope headings. Consequently, the expectation that workplace performance evidence be required to provide some evidence across the full scope of the standard is seen as achievable and appropriate.

Principle 2: The use of simulations should be generally restricted to situations which are rare in occurrence and/or which have health and safety implications e.g. responses to emergencies.

Generally, performance evidence from the workplace is readily available for the majority of Candidates and applications. Simulation is, however, of value in some contexts and for some types of Candidates, where there is a need to gather direct performance evidence rather than inferring performance ability from knowledge, but access to real workplace evidence may be limited – e.g. rare types of event or unusual materials. While there is no need for it to be used globally across the level 6 or 7 SCQF Vocational Qualifications, it is considered to be of benefit more widely within the level 5 SCQF context and accepted therein by employers.

The updating of the standards has all but eliminated the need to use simulation widely in support of the range of applications covered by some standards so it can be applied more sparingly.

It will be important to ensure that any simulations are of a very high calibre.

Principle 3: Simulations should be designed to be a close approximation of the workplace in terms of the physical environment and context in which work normally takes place.

This follows on from principle 2 in that, for simulations to have value in the eyes of Candidates, practitioners and employers they need to mimic the workplace context as closely as possible.

Principle 4: Vocational Qualification Assessors and Internal Quality Assurers should have sufficient technical skill and knowledge of the occupational area, including where required management and team leading skill and knowledge, to be able to make effective judgements about evidence and support the Candidate in planning and collecting that evidence.

Assessors are responsible for assessing candidates' performance against the relevant occupational standards. Therefore, they must have a thorough knowledge of what constitutes effective performance and good working practices in the occupational context addressed by the Vocational Qualification and in which the assessment is to take place. For credibility and to ensure that the assessment process can continue to be effectively carried out in the workplace, drawing on workplace evidence, it will be important that the Assessors are themselves competent practitioners. Use of generalist assessors, or assessors who have no, or little, practical experience of the discipline(s) they are assessing would tend to devalue the qualification in the eyes of the sector.

For internal Quality Assurers and external Quality Assurers, it is important that they understand the requirements of the sector and the technicalities of the work being carried out, but they also need to be in roles which give them the kind of standing needed to command respect for the advice they offer and judgements they make.

For all types of role, the discussions concluded that it would be better to give a list of probable characteristics that the Centres/AO, recruiting personnel could draw from, rather than give a prescriptive list of mandatory characteristics. This would allow flexibility without reducing rigour.

Principle 5: Improvements to the external quality control of assessments should focus on improving the consistency with which quality matters are monitored, investigated and dealt with both within and across centres.

From the evaluation of the current assessment system, the primary areas for improvement of external quality control were identified as follows:

- increasing the flow of information and advice to Assessors and IQA staff to help improve the planning, conduct and evaluation of assessment evidence (*e.g. through events or IT based materials or documentation/updates*);
- increasing the sampling which is carried out by the IQA to check on quality within the assessment sites and organisations;
- increasing the sampling which is carried out by the EQA to check on quality and consistency between different assessment sites and organisations;
- improving the proactive evaluation of centres;
- introduction of standardised approaches to the assessment of knowledge.

Discussions on the opportunities for bringing in any additional externality to the assessment process, as a means of supporting external quality control, identified that external assessment via peripatetic Assessors or Assessment Centres would be seen as intrusive and commercially difficult to accept by employers if employed widely, but could be useful for certain Candidate types. There was no added value perceived. The use of standardised approaches to the assessment of knowledge was, however, seen by contacts and the Awarding Organisation as having potential, both as a mechanism to address assessor inconsistency and to enable improved monitoring of Centres and Assessors.

The discussions also led to the view that it would provide a consistent, strong vehicle for monitoring



Centre and Assessor/IQA activity over time if External Quality Assurance was particularly focussed on aspects of the mandatory units. Rather than specify which units this needed to be, however, it was felt appropriate that the Awarding Organisation could change the units covered in this enhanced QA process on an annual basis. This would prevent centres and assessors potentially concentrating on these units to the exclusion of others in the award.

Annex 1 The Vocational Qualifications covered by this Assessment Strategy are as follows:

SCQF Qualifications

Certificate in Supporting Engineering Construction Activities at SCQF Level 5

Diploma in Supporting the Installation of Engineering Construction Plant and Systems - Pipefitting at SCQF level 5

Diploma in Installing Engineering Construction Plant and Systems – Pipefitting at SCQF Level 6

Diploma in Moving Engineering Construction Loads at SCQF Level 6

Diploma in Engineering Construction Non-Destructive Testing at SCQF Level 6

Diploma in Engineering Construction Design and Draughting at SCQF Level 6

Diploma in Welding Engineering Construction Pipework at SCQF Level 7

Diploma in Welding Engineering Construction Plate at SCQF Level 7

Diploma in Maintaining Engineering Construction Plant and Systems – Mechanical at SCQF Level 7

Diploma in Maintaining Engineering Construction Plant and Systems – Electrical at SCQF Level 7

Diploma in Maintaining Engineering Construction Plant and Systems – Instrument and Controls at SCQF Level 7