



Qualification Manual

Qualification title: EAL Level 3 NVQ Diploma in
Composite Engineering (QCF)

Qualification code: 600/8086/3

Issue: A

EAL Level 3 NVQ Diploma in Composite Engineering (QCF) - Issue A

www.eal.org.uk

Copyright © 2013 EAL (Excellence, Achievement & Learning Limited). All Rights Reserved.

Contents

Contents	1
1.0 About EAL	3
1.1 Equality and diversity statement	3
1.2 Complaints	3
2.0 Achievement of the qualification	4
2.1 Qualification support materials	4
2.2 Funding for this qualification	4
3.0 Centre and qualification approval	5
4.0 Qualification specific information	6
5.0 Assessment strategy	8
5.1 Learners.....	8
5.2 Assessors	8
5.3 Verifier requirements (internal and external)	9
5.4 Assessment environment.....	11
5.5 Witness testimony	14
5.6 Quality control of assessment	14
6.0 About the NVQ units	16
Appendix 1: Qualification and Credit Framework (QCF)	17
Appendix 2: Functional Skills and Essential Skills Wales	18
Appendix 3: Learner registration and certification	19

1.0 About EAL

Since 1964, **EAL (Excellence, Achievement and Learning)** has been awarding superior vocational qualifications and apprenticeship components for engineering, building services and related sectors.

Developed to the highest technical standard, our qualifications are regularly updated to reflect regulatory and technical changes. We support the providers of our qualifications with an unparalleled level of service to ensure that learners are well prepared for the roles they plan to take on.

EAL recognise the value of skills in the work environment as one of the five key drivers of productivity; essential for economic growth and bringing a number of wider social benefits. Through its programme of continuous improvement EAL strives to meet the demand from employers for high performing, high quality products.

In 2012, EAL changed its name from EMTA Awards Limited to **Excellence, Achievement and Learning**, to better reflect its wide reaching position across industry – providing qualifications, not only in Engineering and Manufacturing, but also specialising in Building Services Engineering, Gas Utilisation, Environmental Technologies, Business Services and closely related sectors.

1.1 Equality and diversity statement

EAL expects its centres to enable individuals to have equal access to training and assessment for qualifications irrespective of their sex, marital status, age, religion, colour, race, nationality, ethnic origin or disability. In essence, centres must deliver our qualifications and units in accordance with relevant Equalities Legislation.

Centres are required to have in place a policy to ensure that such discrimination does not occur either directly, indirectly or as a result of pressure from other bodies. This policy should apply to all satellite centres and there should be arrangements in place to monitor its application and effectiveness.

1.2 Complaints

Customer service is a fundamental part of EAL's commitment to industry. Our long-term partnership with industry and recognised centres – which is underpinned by our unique external verification service and world class customer service – means our support is based on unrivalled understanding of our customers' needs.

EAL aims to ensure that all customers receive a high quality and efficient service and we continually monitor the levels of service provided. There may be times, however, when you may feel that we have not provided an adequate service. In these situations, please contact our customer services team:

EAL Customer Services
Tel: +44 (0)1923 652 400
Email: customercare@eal.org.uk

2.0 Achievement of the qualification

This qualification is achieved when all the necessary units have been completed. The centre will then be able to apply for the learner's NVQ certificate of achievement. The learner will also receive a certificate of unit credit, listing all the units they have achieved.

However if learners do not complete the full qualification they have been registered on they can still claim a certificate of unit credit for the units achieved. This will mean that learners will still have proof of their ability and could complete the full qualification at a later date.

Units can also be taken individually (stand alone units). This manual must be used in conjunction with the delivery and assessment of any individual units to ensure that assessment requirements and methodologies are consistently applied.

There are various other qualifications which this qualification could relate to. Details on these can be obtained from the [EAL website](http://www.eal.org.uk) or alternatively contact:

EAL Customer Services
Tel: +44 (0)1923 652 400
Email: customercare@eal.org.uk

2.1 Qualification support materials

The following assessment support materials are available for this qualification:

- **Assessment routes:**
These contain the details of the nationally recognised units. These documents allow both the learner and the assessor to record the progress through the qualification selected. The assessment routes contain the performance to be assessed, the knowledge to be assessed and the evidence required from the learner to demonstrate their competence.
- **Learner guide (including performance assessment plan and evidence record):**
This guide explains to the learner how they will be assessed, and also gives ideas for evidence. It can be given to the learner during induction to help them understand the qualification and assessment requirements.

EAL have also provided for centres a series of mini guides that will assist centres on all necessary documentation and advice.

2.2 Funding for this qualification

EAL accredits qualifications via regulatory bodies. The regulatory bodies then pass the information to the relevant funding agencies. Once funding is available, centres will be able to check and register against the learning aim to ensure funding is drawn down. If you are unsure whether funding is available, the first point of contact should be via your internal funding system, or alternatively contact EAL for information.

3.0 Centre and qualification approval

Centres wishing to run this qualification will need to comply with this qualification manual and EAL's centre approval criteria for this qualification. Centres must also put in place the appropriate physical and human resources and administration systems to deliver the qualification effectively.

For *existing* EAL centres to put this qualification on your centre remit:

Create and complete a qualification approval application form in Smarter Touch and submit to EAL.

For *non* EAL centres to gain centre approval to run this qualification:

EAL Customer Services will be pleased to help. Please contact them on:

EAL Customer Services

Tel: +44 (0)1923 652 400

Email: customercare@eal.org.uk

4.0 Qualification specific information

Learners are required to complete the mandatory assessment routes, followed by the required number of optional assessment routes.

EAL Level 3 NVQ Diploma in Composite Engineering (QCF)

Group A: mandatory assessment routes: *the learner must complete all three assessment routes*

EAL code	Assessment route title	Level	CV	GLH	Ofqual code
QCOM3-001N	Complying with statutory regulations and organisational safety requirements	2	5	35	A/601/5013
QCOM3-002N	Using and interpreting engineering data and documentation	2	5	25	Y/601/5102
QCOM3-003N	Working efficiently and effectively in engineering	3	5	25	K/601/5055

Group B: optional assessment routes: *the learner must complete two of the following assessment routes*

QCOM3-004N	Producing composite mouldings using wet lay up laminating techniques	3	86	210	F/503/8248
QCOM3-005N	Producing composite mouldings using spray lay up laminating techniques	3	86	210	J/503/8249
QCOM3-006N	Producing composite mouldings using resin flow infusion techniques	3	86	210	A/503/8250
QCOM3-007N	Producing composite mouldings using resin film infusion techniques	3	86	210	F/503/8251
QCOM3-008N	Producing composite mouldings using pre-preg laminating techniques	3	86	210	J/503/8252
QCOM3-009N	Producing composite mouldings using resin transfer moulding techniques	3	86	210	L/503/8253
QCOM3-010N	Producing composite mouldings using hot press moulding techniques	3	86	210	R/503/8254
QCOM3-011N	Producing composite mouldings using filament winding techniques	3	86	210	Y/503/8255
QCOM3-012N	Producing composite mouldings using pultrusion techniques	3	86	210	D/503/8256

Continued

QCOM3-013N	■	Producing Composite Mouldings using ATL/AFP Laminating Techniques	3	86	210	H/503/8257
QCOM3-014N	■	Using curing and consolidation equipment for composite mouldings	3	46	150	K/503/8258
QCOM3-015N	■	Trimming composite mouldings using hand tools	3	46	150	M/503/8259
QCOM3-016N	■	Bonding composite mouldings	3	30	91	H/503/8260
QCOM3-017N	■	Producing composite assemblies	3	86	210	K/503/8261
QCOM3-018N	■	Installing composite mouldings	3	30	91	M/503/8262
QCOM3-019N	■	Applying finishes to composite mouldings	3	46	150	T/503/8263
QCOM3-020N	■	Repairing composite mouldings	3	77	161	A/503/8264
QCOM3-021N	■	Identifying defects in composite mouldings	3	46	150	F/503/8265

5.0 Assessment strategy

5.1 Learners

If applicable – learners undertaking qualifications must meet any applicable entry requirements including, entry qualifications, legal requirements of the process or the environment, or any other specific restrictions. Where these exist, assessment will be open to any learner who has met entry requirements) and has the potential to achieve the assessment criteria set out in the units.

Aids or appliances, which are designed to alleviate disability, may be used during assessment, providing they do not compromise the standard required.

5.2 Assessors

Assessor requirements to demonstrate effective assessment practice

Assessment must be carried out by competent assessors that as a minimum must hold the QCF Level 3 Award in Assessing Competence in the Work Environment. Current and operational assessors that hold units D32 and/or D33 or A1 and/or A2 as appropriate to the assessment being carried out, will not be required to achieve the QCF Level 3 Award as they are still appropriate for the assessment requirements set out in this unit assessment strategy. However, they will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace assessment to the most up to date national occupational standards (NOS).

Assessor technical requirements

Assessors must be able to demonstrate that they have verifiable, relevant and sufficient technical competence to evaluate and judge performance and knowledge evidence requirements as set out in the relevant QCF unit learning outcomes and associated assessment criteria.

This will be demonstrated either by holding a relevant technical qualification or by proven industrial experience of the technical areas to be assessed. The assessor's competence must, at the very least, be at the same level as that required of the learner(s) in the units being assessed.

Assessors must also be:

Fully conversant with the EAL's assessment recording documentation used for the QCF NVQ units against which the assessments and verification are to be carried out, other relevant documentation and system and procedures to support the quality assurance process.

5.3 Verifier requirements (internal and external)

Internal quality assurance (internal verification) must be carried out by competent verifiers that as a minimum must hold the QCF Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practices. Current and operational internal verifiers that hold internal verification units V1 or D34 will not be required to achieve the QCF Level 4 Award as they are still appropriate for the verification requirements set out in this unit assessment strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised assessor units D32 and/or D33 or A1 and/or A2 or the QCF Level 3 Award in Assessing Competence in the Work Environment.

External quality assurance (external verification) must be carried out by competent external verifiers that as a minimum must hold the QCF Level 4 Award in the External Quality Assurance of Assessment Processes and Practices. Current and operational external verifiers that hold external verification units V2 or D35 will not be required to achieve the QCF Level 4 Award as they are still appropriate for the verification requirements set out in this unit assessment strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised assessor units D32 and/or D33 or A1 and/or A2 or the QCF Level 3 Award in Assessing Competence in the Work Environment.

External and internal verifiers will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace quality assurance (verification) of assessment processes and practices to the most up to date national occupational standards.

Verifiers, both internal and external, will also be expected to be fully conversant with the terminology used in the QCF NVQ units against which the assessments and verification are to be carried out, the appropriate regulatory body's systems and procedures and EAL's documentation, systems and procedures within which the assessment and verification is taking place.

Specific technical requirements for internal and external verifiers

Internal and external verifiers of this qualification must be able to demonstrate that have verifiable, sufficient and relevant industrial experience, and must have a working knowledge of the processes, techniques and procedures that are used in the relevant sector/occupation.

The tables on the following page show the recommended levels of technical competence for assessors, internal verifiers, and external verifiers.

Technical requirements for assessors and verifiers

Position	Prime activity requirements	Support activity requirements	Technical requirements (see notes)
Assessor	Assessment skills	Internal verification systems	Technical competence of the areas covered by the QCF units being assessed
Internal verifier	Verification skills	Assessment knowledge	Technical understanding of the areas covered by the qualifications
External verifier	Verification skills	Assessment understanding	Technical awareness of the areas covered by the qualifications

Notes

1. Technical **competence** is defined here as a combination of practical skills, knowledge, and the ability to apply both of these, in familiar and new situations, within a real working environment.

2. Technical **understanding** is defined here as having a good understanding of the technical activities being assessed, together with knowledge of relevant health and safety implications and requirements of the assessments.

3. Technical **awareness** is defined here as a general overview of the subject area, sufficient to ensure that assessment and portfolio evidence are reliable, and that relevant health and safety requirements have been complied with.

4. The competence required by the assessor, internal verifier and external verifier, in the occupational area being assessed, is likely to exist at three levels as indicated by the shaded zones in the following table.

Technical competence:	An ability to discuss the general principles of the competences being assessed	An ability to describe the practical aspects of the competence being assessed	An ability to demonstrate the practical competences being assessed
Job role:			
Assessor			
Internal verifier			
External verifier			

5.4 Assessment environment

The evidence put forward for this qualification can only be regarded valid, reliable, sufficient and authentic if it achieved and obtained in the working environment and be clearly attributable to the learner. However, in certain circumstances, simulation/replication of work activities may be acceptable.

The use of high quality, realistic simulations/replication, which imposes pressures which are consistent with workplace expectations, should only be used in relation to the assessment of the following:

- rare or dangerous occurrences, such as those associated with health, safety and the environment issues, emergency scenarios and rare operations at work
- the response to faults and problems for which no opportunity has presented for the use of naturally occurring workplace evidence of learners competence
- aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of learners competence

Simulations/replications will require prior approval from EAL and should be designed in relation to the following parameters:

- the environment in which simulations take place must be designed to match the characteristics of the working environment
- competencies achieved via simulation/replication must be transferable to the working environment
- simulations which are designed to assess competence in dealing with emergencies, accidents and incidents must be verified as complying with relevant health, safety and environmental legislation by a competent health and safety/environmental control officer before being used
- simulated activities should place learners under the same pressures of time, access to resources and access to information as would be expected if the activity was real
- simulated activities should require learners to demonstrate their competence using plant and/or equipment used in the working environment
- simulated activities which require interaction with colleagues and contacts should require the learner to use the communication media that would be expected at the workplace
- for health and safety reason simulations need not involve the use of genuine substances/materials. Any simulations which require the learner to handle or otherwise deal with materials substances/should ensure that the substitute takes the same form as in the workplace

Access to assessment

There are no entry qualifications or age limits required by learners to undertake the NVQ units unless this is a legal requirement of the process or the environment. Assessment is open to any learner who has the potential to achieve the assessment criteria set out in the units.

Aids or appliances, which are designed to alleviate disability, may be used during assessment, providing they do not compromise the standard required.

Carrying out assessment

The NVQ units were specifically developed to cover a wide range of activities. The evidence produced for the units will, therefore, depend on the learners choice of 'bulleted items' listed in the unit assessment criteria.

Where the assessment criteria gives a choice of bulleted items (for example 'any three from five'), assessors should note that learners do not need to provide evidence of the other items to complete the unit (in this example, two) items, particularly where these additional items may relate to other activities or methods that are not part of the learners normal workplace activity or area of expertise.

Minimum performance evidence requirements

Performance evidence must be the main form of evidence gathered. In order to demonstrate consistent, competent performance for a unit, a minimum of three different examples of performance must be provided, and must be sufficient to show that the assessment criteria have been achieved to the prescribed standards. It is possible that some of the bulleted items in the assessment criteria may be covered more than once. The assessor and learner need to devise an assessment plan to ensure that performance evidence is sufficient to cover all the specified assessment criteria and which maximises the opportunities to gather evidence. Where applicable, performance evidence maybe used for more than one unit.

The most effective way of assessing competence, is through direct observation of the learner.

Assessors must make sure that the evidence provided reflects the learner's competence and not just the achievement of a training programme.

Evidence that has been produced from team activities, for example, maintenance or installation activities is only valid when it clearly relates to the learners specific and individual contribution to the activity, and not to the general outcome(s).

Each example of performance evidence will often contain features that apply to more than one unit, and can be used as evidence in any unit where appropriate.

Performance evidence must be a combination of:

- outputs of the learner's work, such as items that have been manufactured, installed, maintained, designed, planned or quality assured, and documents produced as part of a work activity

together with:

- evidence of the way the learner carried out the activities such as witness testimonies, assessor observations or authenticated learner reports, records or photographs of the work/activity carried out, etc.

Competent performance is more than just carrying out a series of individual set tasks. Many of the units contain statements that require the learner to provide evidence that proves they are capable of combining the various features and techniques. Where this is the case, separate fragments of evidence would not provide this combination of features and techniques and will not, therefore, be acceptable as demonstrating competent performance.

If there is any doubt as to what constitutes valid, authentic and reliable evidence, the internal and/or external verifier should be consulted.

Assessing knowledge and understanding

Knowledge and understanding are key components of competent performance, but it is unlikely that performance evidence alone will provide enough evidence in this area. Where the learner's knowledge and understanding (and the handling of contingency situations) is not apparent from performance evidence, it must be assessed by other means and be supported by suitable evidence.

Knowledge and understanding can be demonstrated in a number of different ways. The Sector Skills Council Semta expects oral questioning and practical demonstrations to be used, as these are considered the most appropriate for these units. Assessors should ask enough questions to make sure that the learner has an appropriate level of knowledge and understanding, as required by the unit. Semta allows awarding organisations to choose other methods, which must be supported by a suitable rationale. Evidence of knowledge and understanding will not be required for those bulleted items in the assessment criteria that have not been selected by the learner.

The achievement of the specific knowledge and understanding requirements of the units cannot simply be inferred by the results of tests or assignments from other units, qualifications or training programmes. Where evidence is submitted from these sources, the assessor must, as with any assessment, make sure the evidence is valid, reliable, authentic, directly attributable to the learner, and meets the full knowledge and understanding requirements of the unit.

Where oral questioning is used the assessor must retain a record of the questions asked, together with the learner's answers.

5.5 Witness testimony

Where observation is used to obtain performance evidence, this must be carried out against the unit assessment criteria. Best practice would require that such observation is carried out by a qualified assessor. If this is not practicable, then alternative sources of evidence may be used.

For example, the observation may be carried out against the assessment criteria by someone else that is in close contact with the learner. This could be a team leader, supervisor, mentor or line manager who may be regarded as a suitable witness to the learner's competency. However, the witness must be technically competent in the process or skills that they are providing testimony for, to at least the same level of expertise as that required of the learner. It will be the responsibility of the assessor to make sure that any witness testimonies accepted as evidence of the learner's competency are reliable, auditable and technically valid.

5.6 Quality control of assessment

General

There are two major points where EAL interacts with the centre in relation to the external quality control of assessment for a qualification and these are:

- Approval - when a centre take on new qualifications, EAL, normally through an external verifier ensures that the centre is suitably equipped and prepared to deliver the new qualification
- Monitoring - throughout the ongoing delivery of the qualification EAL, through external verification monitoring and other mechanisms must maintain and the quality and consistency of assessment of the qualification

Approval

In granting approval, EAL, normally through its external verifiers must ensure that the prospective centre:

- meets any procedural requirements specified by EAL
- has sufficient and appropriate physical and staff resources
- meets relevant health and safety and/or equality and access requirements
- has a robust plan for the delivery, assessment and quality assurance for the qualifications

EAL may decide to visit the centre to view the evidence provided and there must be a clear rationale for the method(s) deployed.

Monitoring

EAL, through external monitoring and other mechanisms will ensure:

- that a strategy is developed and deployed for the ongoing EAL monitoring of the centre. This strategy must be based on an active risk assessment of the centre. In particular the strategy must identify the learner, assessor and internal verifier sampling strategy to be deployed and the rationale behind this
- that the centre's internal quality assurance processes are effective in candidate assessment
- that sanctions are applied to a centre where necessary and that corrective actions are taken by the centre and monitored by the EAL external verifier
- that reviews of EAL's external auditing arrangements are undertaken

6.0 About the NVQ units

This qualification is made up of a number of nationally recognised units which EAL has converted into assessment material called 'assessment routes'. These documents allow both the learner and the assessor to record the progress through the qualification. The units contain the performance to be assessed, the knowledge to be assessed and the evidence required from the learner to demonstrate their competence.

All units in this qualification contain the following information:

- qualification and unit title
- unit level
- credit value
- guided learning hours (GLH)
- unit summary
- performance to be assessed and evidenced (assessment criteria)
- knowledge to be assessed and evidenced (knowledge requirements)

6.1 Learner's portfolio building and referencing

For guidance to assessment and exemplars on completing documentation including completed assessment routes, and assessment planning documentation refer to EAL centre guidance.

For further information please contact:

EAL Customer Services

Tel: +44 (0)1923 652 400

Email: customercare@eal.org.uk

Appendix 1: Qualification and Credit Framework (QCF)

This is the framework for creating and accrediting qualifications in England, Wales and Northern Ireland. Units within this qualification have a level and credit. The level is indicative of the challenge. The credit value specifies the number of credits that will be awarded to a learner who successfully achieves the unit.

One credit is equal to 10 hours of learning time. Learning time is defined as the total time taken by the average learner at this level to fully complete the learning outcomes and assessment requirements of a unit. This includes the guided learning hours (GLH) in the classroom/workshop as well as any direct study, homework, practice, preparation and assessment.

QCF requirements for centres

The QCF has requirements for centres in relation to the information provided to the relevant funding bodies. Centres will need to:

- register the centre with the UK Register of Learning Providers (UKRLP) to obtain a UK Provider Reference Number (UKPRN)
- become a Learner Registering Body (LRB). This will ensure that every individual 'centre reference number' or UKPRN will be identifiable on one system which is the UKRLP
- obtain or confirm Unique Learner Numbers (ULNs) for learners through the Learner Registration Service (LRS)

The ULN will be issued from and held on the Learner Registration Service (LRS). This number will enable credit accumulation and transfer of learner achievement, and will create a learner record. The use of the ULN is mandated by government funding bodies. The ULN may not be applicable for all learners, for example if the learner is not a UK national. The ULN relates to England, Wales and Northern Ireland only. Scotland has a similar number, the Scottish Candidate Number (SCN).

Further details of the ULN and LRS can be obtained from the Learner Records Service.

Appendix 2: Functional Skills and Essential Skills Wales

Functional Skills

If individuals don't achieve a level two functionality while at school; they will have other opportunities to do so at college, within an apprenticeship, or in an adult course on day release from work, whatever their age.

Functional skills qualifications have replaced existing key skills qualifications.

Functional skills qualifications will be:

- a constituent of new diplomas at every level,
- a replacement for communication, AoN and ICT key skills qualifications part of apprenticeship frameworks
- part of foundation learning.

Essential Skills Wales (ESW)

Essential Skills Wales are a suite of qualifications to replace key skills in Wales. There are currently three ESW qualifications:

- Application of Number (AoN),
- communication,
- Information Communication Technology (ICT).

EAL offer these qualifications at levels one to three. These qualifications are 'stand alone' and are portfolio based; however these can be embedded into other qualifications but must remain a transferable skill.

Appendix 3: Learner registration and certification

Learners must be registered on the qualification using a specific qualification code. Using this code will ensure that you receive the correct materials for the learner.

The registration code for this qualification is as follows:

Qualification Title

EAL Level 3 NVQ Diploma in Composite Engineering (QCF)

Qualification Number

600/8086/3