IECEx OD 503

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IECEx
OPERATIONAL DOCUMENT

IEC System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEx System)

IECEx Scheme for Certification of Personnel Competencies for Explosive Atmospheres –

ExCB Procedures for issuing and maintaining IECEx Certificates of Personnel Competencies

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IECEx Operational Document 503 –

**IECEx Scheme for Certification of
Personnel Competencies for Explosive Atmospheres –**

**ExCB Procedures for issuing and maintaining IECEx Certificates
of Personnel Competencies**

This Operational Document, OD 503 sets out the requirements for Personnel to be certified to perform activities/functions according to an applicable IECEx Competency

Use of this OD 503 is necessary in order for the IECEx Scheme to adequately assign the relevant Personnel Competency assessed.

Document History

Date	Summary
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INTRODUCTION

This document is supplementary to the operational manuals and procedures operated by IECEx Certification Bodies (ExCBs), approved by the IECEx Management Committee to issue IECEx Certificates of Personnel Competencies (CoPCs).

The purpose of this Operational Document is to ensure that each ExCB, accepted by the ExMC for the purposes of issuing IECEx CoPCs, processes applications from individuals, or organisations nominating individuals, in a consistent harmonious manner.

This IECEx Operational Document comprises procedures for the issuing and maintenance of IECEx Certificates of Personnel Competencies (CoPCs).

The procedures are set out in flowchart and table form identifying:

- Step number showing the link between flowcharts and table
- Description of the activity
- Related documents
- Responsible person or party
- Additional comments and remarks where appropriate

The preparation of this document has been done so with the aim of alignment with various ISO/IEC International Standards and Guides, including but not limited to the following:

ISO/IEC 17024, *Conformity Assessment – General requirements for bodies operating certification of persons*

ExCB Procedures for issuing and maintaining IECEx Certificates of Personnel Competencies

1   Scope

This operational document specifies the requirements for the ExCB assessment procedures for the purposes of issuing and maintaining a CoPC for those involved in activities such as but not limited to:

- classification of a hazardous area (explosive atmosphere)

- the selection of equipment suitable for hazardous area application

- the installation of equipment including wiring systems

- maintenance of hazardous area equipment

- inspection of hazardous area equipment

- repair and overhaul of hazardous area equipment

- test electrical installations in hazardous areas

- design electrical installations in hazardous area

- audit inspections of electrical installations on hazardous areas

all for use in or associated with explosive atmospheres. (IECEx Certification of Personnel Competencies Scheme).

This Operational Document must be read in conjunction with the Basic Rules of the IECEx System, as given in Publication IECEx 01 and the Rules of Procedure of the IECEx Scheme for Certification of Personnel Competencies for Explosive Atmospheres, as given in Publication IECEx 05.

Certification to this Operational Document provides an attestation of the competence of a person to one or more Units of Competency. It does not represent an authorization to perform specific tasks since this remains the responsibility of the employer, and the certified employee may require additional specialized knowledge of parameters such as equipment, procedures, materials and products of the employer.

Where required by regulatory requirements and codes, the authorization to operate will be given in writing by employer in accordance with quality procedure.

NOTE   Where the gender- specific word 'his' or 'he' appears in this operational document, the feminine form 'her' or 'she' is equally applicable.

2   Normative References

The following publications contain provisions, which, through reference in this text, constitute provisions of this Operational Document. At the time of publication, the editions indicated were valid. The Ex Management Committee shall decide the timetable for the introduction of revised editions of the publications.

ISO/IEC 17024:2003, *Conformity Assessment – General requirements for bodies operating certification of persons*

IECEx 05, *IECEx Scheme for Certification of Personnel Competencies for Explosive Atmospheres – Rules of Procedure*

IECEx OD 502, *Application for an IECEx Certificate of Personnel Competencies (CoPC), documentation and information requirements*

IECEx OD 504, *Specification for Units of Competency Assessment Outcomes.*

3 Principles of the IECEx Certification of Personnel Competencies Scheme

3.1 Operational Document application

This Operational Document is to be applied by ExCBs when processing new applications for the issue of an IECEx CoPC and undertaking a review for maintaining an IECEx CoPC.

These steps follow the principles outlined in ISO/IEC 17024, *Conformity Assessment – General requirements for bodies operating certification of persons*, in addition to the requirements as laid down in the IECEx Scheme Rules of Procedure, IECEx 05.

3.2 Assessment process

In the assessment of an applicant for a Certificate of Personnel Competencies both Figure 1 – The pathway to IECEx CoPC Certification, and Table 1 – Procedures for the issuing of an IECEx Certificate of Personnel Competency shall be applied.

1.
Receive Application for Competency Certificate OD502

2.
Conduct Contract Review

3.
Assess Experience and training evidence for NON Hazardous and Hazardous Area Documents preview OD502

Successful — Yes / Yes

3.
Refer back to applicant

No

8
Prepare examination to Application level according to OD504

Compile report

Conduct Examination

6
Report to applicant that procedure is stopped

Corrective actions by applicant for re-examination

13.
Assess result with OD504

12
Ensure compliance with practical test OD504

8.
Compliance with OD504 established

No

Yes

No — Successful

Yes

Documentation review completed

15.
Compile Competency Examiner Report

Certification Review by ExCB Issue PCAR

Refer to IECEX CB personnel or applicant as appropriate

Successful

No

Yes

Compile IECEx Competency Certificate

Review Certificate for errors

Successful

No

Yes

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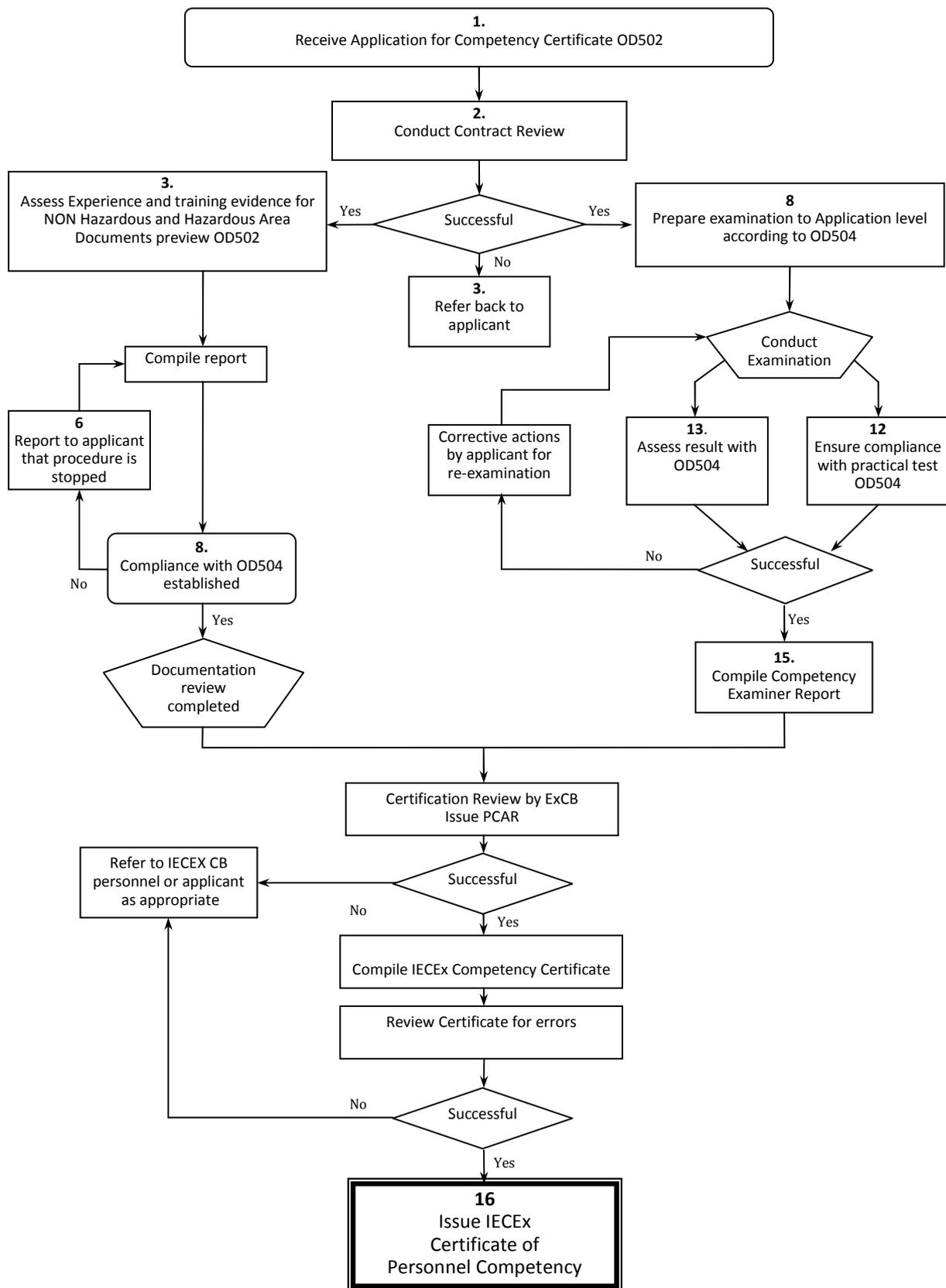Issue IECEx Certificate of Personnel Competency

Figure 1 – The pathway to IECEx CoPC Certification

Table 1 – Procedures for the issuing of an IECEx Certificate of Personnel Competency

Step	Procedures for the issuing of an IECEx Certificate of Personnel Competency Description of activity	Related Documents	By whom	Notes/Comments
INITIAL ASSESSMENT				
1.	Application in accordance with OD 502 submitted by an individual to an ExCB that has been accepted by the IECEx Management Committee under the IECEx Certification of Personnel Competencies Scheme.	IECEx 05	The individual applicant.	In the application for an IECEx CoPC the applicant will provide the initial evidence of compliance with the requirements of this IECEx Scheme and relevant Operational Documents.
2.	Contract review to be conducted by the ExCB receiving the application and shall include: • A review to ensure that the application is within the scope of acceptance of the ExCB • Confirming receipt of the applicants experience log • Confirming receipt evidence of applicants training record and qualifications • Determining whether a surcharge applies for applicant from non IECEx member countries • Estimation of time and costs to complete project • Establishing if there are any special requirements, e.g. travel, translation of documentation etc. • Agreement on method and system of payment by applicant, in accordance with ExCB's own policy and quality system.	ExCBs own Certification procedures as included in their Quality System and ISO/IEC 17024	ExCB	The results of the contract review shall be documented and recorded. Both the experience/training and examination elements are compulsory for a complete assessment.
3.	ExCB shall communicate in writing to the applicant whether the application is unsuccessful and the applicant is free to amend the application. ExCB shall only proceed where the contract review has been successfully completed.		ExCB	
4.	The ExCB receiving the application shall conduct an evaluation of the pre-requisite requirements, for the competency being assessed, as detailed in OD 502, Application for a CoPC. The ExCB shall ensure that evidence of the pre-requisites (e.g. qualifications/training/experience etc.) is available and that all work experience to be considered is verified by qualified individuals.	OD 504	ExCB that received the application	The assessment is conducted by the ExCB. The ExCB shall have procedures covering new applications & extension of scope. Where the pre-requisite evidence is provided by the applicant it is to be validated by a third party.
5.	Given that the evaluation of the documentation is satisfactory then the individual applicant is approved for the Ex assessment of competency.		ExCB	Any discrepancies or shortcomings in the documentation must be resolved before proceeding.
6.	Incomplete or lack of documentation shall result in the applicant being notified in writing that the assessment cannot proceed.		ExCB and Applicant	

Step	Procedures for the issuing of an IECEx Certificate of Personnel Competency Description of activity	Related Documents	By whom	Notes/Comments
7.	Where the ExCB has conducted a competence assessment of a person prior to an application being lodged, the ExCB may use all or part of the results from that assessment provided this information is no more than 3 years old and only if it is shown that the assessment was carried out in accordance with the requirements of this Scheme,		ExCB	Where results from a scheme operated by the ExCB other than the IECEx CoPC are to be used then the ExCB must have procedures in place to verify equivalence which are then verified by the IECEx Assessors appointed by the ExMC.
8.	The ExCB shall use the appropriate assessment methods suitable for the competency sought as detailed in OD 504 Competency Outcomes. This may include written examinations, witnessing practical skills, oral examination etc. under controlled conditions.		ExCB and Applicant	
9.	Examination content shall be as given in OD 504 Competency Outcomes. Where required by Clause 4 the ExCB shall have procedures to ensure that choice of examination questions and/or practical exercise is made independently and impartially. The requirements of ISO/IEC 17024 must be followed by the ExCB, particularly with variation of multiple choice questions etc.		ExCB	WG12 is developing a database of questions and practical exercises for each module of competency which are to contain both mandatory questions and a selection of questions which may be used. It is not expected that the ExCB will use the same set examination make up on a regular basis but vary them according to need.
10.	The assessment content must be selected and conducted independent of any training or training provider.		ExCB	
11.	The ExCB shall have procedures to confirm the identity of the candidate to ensure that an individual receiving a CoPC can be shown to be the same person who was assessed for that competency unit.		ExCB	
12.	The ExCB shall observe any criteria given in OD 504, Competency Outcomes against which to assess if competency has been achieved.	Industry standard/ professional guidance	ExCB	
13.	The ExCB shall arrange for an independent review of the completed assessment/s. This review shall be conducted by a qualified person not involved in the original assessment.		ExCB	
14.	Where the independent review raises questions that need to be resolved, these shall be referred to the original assessor for clarification, correction or further action.		ExCB	
15.	The results of the assessment shall be recorded in the PCAR. The PCAR is then issued in accordance with IECEx 05.		ExCB	
16.	Based on a satisfactory conforming PCAR the Certificate/ID Card is then issued in accordance with IECEx 05.		ExCB	ID Card is issued by the IECEx Secretary following advice from the ExCB

Step	Procedures for the issuing of an IECEx Certificate of Personnel Competency Description of activity	Related Documents	By whom	Notes/Comments
17.	The ExCB shall have procedures covering complaints and appeals, and also withdrawal, cancellation and suspension of a certificate. Where such complaints and appeals cannot be resolved between the applicant and the ExCB either party has the option to refer the matter to the ExMC Board of Appeal, according to IECEx 01		ExCB	
18.	The ExCB shall retain records of assessments, recommendations and certification decisions for individuals for at least 3 years from the date of the certificate no longer being valid.		ExCB	
19.	The ExCB shall also periodically review assessment content to ensure consistency and understanding of tasks and questions set. Where appropriate the ExCB shall address any known issues that arise (i.e. rewriting questions that can be misconstrued) and where appropriate provide feedback to the Scheme.		ExCB	
SURVEILLANCE				
20.	The EXCB shall carry out periodic surveillance according to IECEx 05 of individuals to ensure that certification remains valid & that those individuals continue to work within the scope of their certified competency.		ExCB	
21.	The ExCB shall take into account any feedback from the employer or other parties, make appropriate investigations, and if necessary take steps to correct, withdraw or cancel certification.		ExCB	
22.	The ExCB shall have procedures for use and misuse of certificates.		ExCB	Notify IECEx Secretariat

4 Assessment

4.1 General

4.1.1 Attributing competency

Competencies shall be attributed on evidence showing that the person, so deemed competent, is able to undertake the responsibilities for all safety measures, care of plant and equipment, and care of the environment, directly related to the work function for which such competencies are required.

NOTE Sufficient sources of evidence of competency will be required where the consequences of unjustifiably or mistakenly deeming a person competent carries a risk of injury to persons, or damage to property and/or the Environment.

4.1.2 Sufficiency of evidence

In all instances competency shall be attributed on evidence sufficient to show that a person

a) has the necessary skills required for the scope of work;

b) can act competently across the specified range of activities; and

c) has the knowledge and understanding underpinning competency.

4.1.3 Currency of evidence

Evidence shall be appropriate and recent being suitable for making decisions about what a person knows and can do now and in the immediate future.

NOTE The deeming of competence at a point in time does not mean that competence exists for all time; competency must be maintained.

4.1.4   Authenticity

Evidence shall be capable of being validated as relating to the person being assessed, and no one else.

4.2   Sources of evidence relating to pre-requisites

4.2.1   General

Competency shall be judged on evidence of essential knowledge underpinning performance and from evidence gathered across the whole range of performance activities relevant to the Unit of Competency that is to be attributed.

4.2.2   Evidence of essential knowledge

4.2.2.1   Assessment methods

Structured assessment methods, such as written, practical and oral tests/technical interviews shall be used to gather evidence that a person has the knowledge necessary to support competent performance.

4.2.2.2   Assessment criteria

Assessment shall be based on the extent of essential knowledge specified for each Unit of Competency as detailed in OD 504, *Specifications for Units of Competency Assessments Outcomes*.

4.2.3   Evidence of competent performance

Evidence of competent performance shall be gathered by one or more of the methods described in Clauses 4.2.3.1 to 4.2.3.3. The criterion against which the work performance shall be assessed is given in OD 504, *Specifications for Units of Competency Assessments Outcomes*.

4.2.3.1   Gathering evidence of performance in a simulated work environment

In this method the simulated work environment shall include equipment relevant to the competencies to be assessed and arrangement in a manner similar to a real work place. Assessment activities shall be as close as practicable to real work situations and include real work decisions by the person being assessed.

4.2.3.2   Gathering evidence of performance directly in the workplace

In this method a qualified assessor shall gather the evidence through direct observation of relevant work activities on multiple occasions and situations.

NOTE   Direct assessment of work activities may not be acceptable in some work places as it is disruptive to productivity and may require further safety measures.

4.2.3.3   Gathering evidence of performance, from indicators in relevant work experience

In this method evidence shall be gathered through a daily or weekly log of work experience indicators, relevant to the Unit(s) of Competency being assessed; this shall be verified by a qualified responsible person. Such evidence shall be used to form a profile of competency development showing sufficient exposure to work activities and indicating when a final decision about competency can be made.

NOTE   Assessors will need to analyse log entries to evaluate the evidence when making assessment decisions. Computerized log systems provide automated analysis of entries that assists assessors in making consistent assessment decisions. In addition computerized log systems can provide progress reports that assist in managing the work experience to which the person seeking competency should be exposed.

4.3   Assessment processes

4.3.1   Knowledge assessment instruments

4.3.1.1   IECEx Question Bank

Knowledge tests shall be selected from the IECEx Certification of Personnel Competency Question Bank relevant to the Unit or Units of Competency being assessed.

4.3.1.2   Alternative to the IECEx Question Bank

Where the IECEx Question Bank does not cover the specific Units under assessment, the requirements of this Clause shall apply.

Knowledge tests shall be made up of items that sample all the essential knowledge specified for each Unit of Competency OD 504, *Specification for Units of Competency Assessment Outcomes*.

The following provides a guide to the minimum number and types of items in a knowledge test for each Unit of Competency. Actual number of questions may vary in case where limitations of competency apply.

Units of Competency	Item types		Total number of items
	Selected response	Constructed response	
Unit Ex 001 – Apply basic principles of protection in explosive atmospheres	30	10	40
Unit Ex 002 – Perform Classification of Hazardous Areas	35	25	60
Unit Ex 003 – Install explosion-protected equipment and wiring systems	55	25	80
Unit Ex 004 – Maintain equipment in explosive atmospheres	60	20	80
Unit Ex 005 – Overhaul and repair of explosion-protected equipment	50	30	80
Unit Ex 006 – Test electrical installations in or associated with explosive atmospheres	60	20	80
Unit Ex 007 – Perform Visual & Close Inspection of electrical installations in or associated with explosive atmospheres	40	20	60
Unit Ex 008 – Perform Detailed Inspection of electrical installations in or associated with explosive atmospheres	50	30	80
Unit Ex 009 – Design electrical installations in or associated with explosive atmospheres	40	40	80
Unit Ex 010 – Perform audit inspection of electrical installations in or associated with explosive atmospheres	50	30	80

4.3.2   Duration of knowledge tests

The duration of a knowledge test shall be based on the following:

Selected response items:

- Multiple choice 2 minutes per item

Constructed response items:

- Short answer; 3 minutes per item
- Extended short answer; 5 minutes per item
- Calculations; 3 minutes per item

There shall be a reading time of 10 minutes for the applicant prior to the commencement of each test.

4.3.3   Performance assessment instruments

Practical assessments shall be made up of items for each Critical Aspects of Evidence as they align with the performance criteria specified for each Unit of Competency OD 504, *Specification for Units of Competency Assessment Outcomes*.

The minimum number and types of items in a practical assessment test will depend on the actions and skills to be demonstrated.

4.3.4   Assessment results

In deeming a candidate competent an assessor will consider the following assessment results as a minimum requirement:

- Knowledge assessment: All items in a knowledge test designated as absolute shall be answered correctly and 70 % of the remaining items answered correctly.

- Practical assessment: All items shall be correctly demonstrated.

4.3.5   Conducting and managing assessment

4.3.5.1   Location and supervision

All knowledge tests and practical assessments shall be conducted in an appropriate facility.

The knowledge test shall be supervised by an assessor or examination monitors placed under the examiner's responsibility.

Practical assessments shall be supervised by an assessor who may also request assistance by a person competent in the unit for which the candidate is being assessed.

4.3.5.2   Candidate identification and conduct

Before commencement of an assessment, the candidate shall present to the assessor or examination monitor valid proof of identification.

A candidate who, during the course of an assessment who perpetrates, or is an accessory to, fraudulent conduct shall be excluded from further examinations for a period of one year.

4.3.5.3   Resources

The ExCB is to ensure that all resources needed to conduct a fair assessment are available to each candidate.

During an assessment each candidate may use unmarked copies of IEC Standards relevant to the unit for which they are being assessed. Such copies may be provided by the ExCB for each candidate. Alternatively a candidate may use their own clean copies which shall be checked by the assessor or examination monitor before the assessment to satisfy that they are unmarked.

4.3.5.4   Setting and evaluating assessment instruments

Assessment instrument shall be set independently. The assessor shall evaluate the assessment instrument before it is used to ensure that it meets the requirements of Clauses 4.3.1 and 4.3.3 relevant to the unit for which the candidate is being assessed.

4.3.5.5   Assessment outcome

The assessor shall make the judgement that a candidate has clearly demonstrated competency based on the minimum requirement of both the knowledge and practical assessments specified by Clause 4.3.4.

4.3.5.6   Reporting assessment results

An unsuccessful candidate shall be informed of the criteria in which they failed to demonstrate competency so that they may prepare for a subsequent assessment they may wish to take.

4.4   Qualification of assessors

- Tertiary qualification or equivalent and encompassing technical evaluation, or

- Extensive experience in compliance assessment, and

- Essential knowledge and understanding of the application specified in the Units of Competency for which the assessor is designated.