Level 3 NVQ Certificate/Diploma in Rail Engineering Telecoms Maintainer and Fault Finder (7597-09/15)

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City&
Guilds

Qualification at a glance

Subject area	Rail Engineering
City & Guilds number	7597
Age group approved	18+, 19+
Entry requirements	None
Assessment	Portfolio
Fast track	Automatic approval Available
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds number	Accreditation number
Level 3 NVQ Certificate in Rail Engineering Telecoms Maintainer and Fault Finder	7597-09	600/1497/0
Level 3 NVQ Diploma in Rail Engineering Telecoms Maintainer and Fault Finder	7597-15	600/1498/2

Contents

1   Introduction

This document tells you what you need to do to deliver the qualifications:

Area	Description
Who are the qualifications for?	They are for anyone working in railways engineering, including those preparing for a specialised role or management responsibility.
What does the qualification offer?	These qualifications prove competence of industrial performance, knowledge and understanding and recognise the ability of individuals working in telecoms maintenance and fault finding within the rail sector.
Are the qualifications part of a framework or initiative?	These qualifications are part of the Advanced Apprenticeship in Rail Infrastructure Engineering, telecoms pathway.
What opportunities for progression are there?	Candidates who are successful will be able to progress in employment or to a range of further education and professional body qualifications. For example: • Supervisory or team leader roles • Institute of Leadership and Management qualifications.

Structure

To achieve the **Level 3 Certificate in Rail Engineering Telecoms Maintainer and Fault Finder**, learners must achieve a total of **30** credits from the mandatory unit group.

Unit accreditation number	City & Guilds unit	Unit title	Credit value
Mandatory			
D/503/0545	236	Establish information for telecoms engineering maintenance or fault finding	2
Y/503/0558	238	Determine requirements for the safe access to work locations for telecoms engineering	3
R/503/0560	239	Reinstate the work area after telecoms engineering activities	2
D/503/0559	328	Allocate and monitor resources for telecoms engineering activities	2

Unit accreditation number	City & Guilds unit	Unit title	Credit value
K/503/0564	330	Maintenance of telecoms equipment using complex processes	4
M/503/0565	331	Adjust telecoms components and equipment to meet operational requirements	4
T/503/0566	332	Carry out removal of components from telecoms assets	3
A/503/0567	333	Carry out replacement of components from telecoms assets	4
R/503/0574	337	Diagnose faults in telecoms assets	6

To achieve the **Level 3 Diploma in Rail Engineering Telecoms Maintainer and Fault Finder**, learners must achieve a total of **46** credits from the mandatory unit group. Learners can undertake the elective unit, but any credit achieved will not count toward the required minimum.

Unit accreditation number	City & Guilds unit	Unit title	Credit value
Mandatory			
D/503/0545	236	Establish information for telecoms engineering maintenance or fault finding	2
Y/503/0558	238	Determine requirements for the safe access to work locations for telecoms engineering	3
R/503/0560	239	Reinstate the work area after telecoms engineering activities	2
K/601/7825	315	Plan for further professional development in the rail engineering industry	2
F/503/0554	327	Plan telecoms maintenance testing activities	3
D/503/0559	328	Allocate and monitor resources for telecoms engineering activities	2
K/503/0564	330	Maintenance of telecoms equipment using complex processes	4
M/503/0565	331	Adjust telecoms components and equipment to meet operational requirements	4
T/503/0566	332	Carry out removal of components from telecoms assets	3
A/503/0567	333	Carry out replacement of components from telecoms assets	4
J/503/0569	334	Establish compliance with specifications for maintained telecoms assets	5

Unit accreditation number	City & Guilds unit	Unit title	Credit value
R/503/0574	337	Diagnose faults in telecoms assets	6
H/503/0580	338	Transfer responsibility of telecoms assets	2
F/503/0733	339	Contribute to technical leadership of telecoms engineering activities	2
F/503/0585	340	Organise local telecoms engineering activities	2
Elective			
L/602/5934	243	Employment rights and 3 responsibilities in the passenger transport sector	-

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2   Centre requirements

Approval

This section outlines the approval processes for centres to offer these qualifications and any resources that centres will need in place to offer the qualifications including qualification-specific requirements for the staff delivering the qualifications.

Centres approved for the current (7588-10) Level 3 NVQ in Railway Engineering (Rail Telecommunications Maintenance) which have been active during the last two years have already been automatically approved for this qualification at the same level so they can start registering candidates under these new qualification immediately.

For any other cases, our general qualification approval process applies.

Resource requirements

Physical resources and site agreements

Centres can use specially designated areas within a centre to assess, for example, the installation of specialised electrical systems, alignment and setting up of electric motors and driven devices (pumps, compressors, generators). The equipment, systems and machinery must meet industrial standards and be capable of being used under normal working conditions, for example electric motors must have a method of applying sufficient power and not be connected up to show movement.

Centre staffing

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the areas for which they are delivering training and/or have experience of providing training. This knowledge must be to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and assessor or internal verifier, but cannot internally verify their own assessments.

Assessors and internal verifiers

Assessors' and internal verifiers' requirements have been specified by GoSkills in their assessment strategy. The full document is available from our website.

Centre staff may undertake more than one role, assessor and/or internal verifier, but must never internally verify their own assessments.

The primary responsibility of the assessor is to assess candidates to the required quality and consistency against the national occupational standard. It is important that an assessor can recognise occupational competence as specified by the national standard. Assessors therefore need to have a thorough understanding of assessment and quality assurance practices, as well as in depth technical understanding related to the qualifications for which they are assessing candidates.

It will be the responsibility of the approved centre to select and appoint assessors. Potential assessors should:
- hold (or be working towards) an appropriate qualification, as specified by the appropriate regulatory authority, confirming their competence to assess NVQ candidates,
- have the necessary and sufficient experience of the role for which they intend to undertake assessments and actual experience of the functions described by the occupational standards that comprise the qualification.

A primary responsibility of the internal verifier is to assure the quality and consistency of assessments carried out by the assessors for whom they are responsible. Internal verifiers therefore need to have a thorough understanding of quality assurance and assessment practices, as well as sufficient technical understanding related to the qualifications they are internally verifying.

It will be the responsibility of the approved centre to select and appoint internal verifiers. Potential internal verifiers should:
- hold (or be working towards) an appropriate qualification, as specified by the appropriate regulatory authority, confirming their competence to internally verify NVQ assessments,
- hold (or be working towards) an appropriate qualification, as specified by the appropriate regulatory authority, confirming their competence to verify NVQ candidates,
- have the necessary and sufficient experience of the role for which they intend to verify assessments. This experience will have provided potential verifiers with detailed knowledge of the functions described by the occupational standards that comprise the qualification.

Trainee assessors and internal verifiers must have a plan, which is overseen by the recognised assessment centre, to achieve the internal verifier qualification within an agreed timescale.

Continuing professional development (CPD)

Centres are expected to support their staff in ensuring that their knowledge remains current of the occupational area and of best practice in delivery, mentoring, training, assessment and verification, and that it takes account of any national or legislative developments.

Candidate entry requirements

Candidates should not be entered for a qualification of the same type, content and level as that of a qualification they already hold.

In addition, centres must ensure that candidates have the potential and opportunity to gain the qualifications successfully.

There are no formal entry requirements for candidates undertaking this qualification.

Age restrictions

These qualifications are **not** approved for use by learners under the age of 18 and City & Guilds cannot accept any registrations for candidates in this age group.

3   Delivering the qualification

Initial assessment and induction

Centres will need to make an initial assessment of each candidate prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

Support materials

The following resources are available for this qualification:

| Description	How to access
Candidate logbook	**www.cityandguilds.com**

Recording documents

Candidates and centres may decide to use a paper-based or electronic method of recording evidence.

To support the delivery of vocational qualifications we offer our own e-portfolio, Learning Assistant, an easy-to-use and secure online tool to support and evidence learners' progress towards achieving qualifications. Further details are available at: **www.cityandguilds.com/eportfolios**

City & Guilds has developed a set of *Recording forms* including examples of completed forms, for new and existing centres to use as appropriate. *Recording forms* are available on the City & Guilds website.

Although new centres are expected to use these forms, centres may devise or customise alternative forms, which must be approved for use by the external verifier, before they are used by candidates and assessors at the centre. Amendable (MS Word) versions of the forms are available on the City & Guilds website.
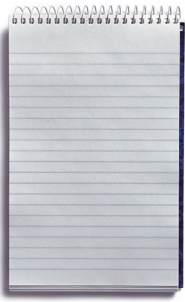
4   Assessment

Summary of assessment methods

Candidates will be required to complete a portfolio of evidence for **each** unit.

Evidence requirements

The evidence requirements have been specified by GoSkills in their assessment strategy. The full document is available from our website. The evidence requirements have been identified for each of the units in section 5 of this handbook.

Evidence of occupational competence must be generated and collected through performance under workplace conditions. The evidence collected under these conditions must also be as naturally occurring as possible.

The optimum method of collecting evidence of a candidate's competence is by direct observation of naturally occurring activity in the workplace. This observation must be carried out by a qualified assessor. Observation of naturally occurring activity in the workplace may not be practicable. In these cases the method of collecting evidence of a candidate's competence will be by simulation. This observation must be carried out by a qualified assessor.

Assessment in simulated conditions is only permissible with the express prior consent of the External Verifier. The External Verifier is likely to allow assessment to take place in simulated conditions due to reasons of:
- Health and Safety
- confidentiality
- operational constraints
- cost
- rarity of opportunity.

Witness testimony can be gathered from a candidate's colleagues, managers, customers, suppliers, etc. They should:
- be specific to the activities or product
- give a brief description of the circumstances of the observation
- give a brief description of the background of the witness and the observed activity
- identify the aspects of the competence demonstrated.

Product evidence must be assessed in order to ensure that:
- the evidence meets the required standard,

- the candidate has followed the correct processes to generate the product,
- the evidence is authentic.

In regards to the acceptability of knowledge evidence, the optimum method of collecting evidence of a candidate's knowledge is by oral questioning following direct observation in the workplace. This questioning must be carried out by a qualified assessor.

In this handbook we have listed all units and identified for each one of them:
- those performance statements for which evidence must be collected by direct observation of naturally occurring activity in the workplace,
- those performance statements for which evidence may be collected by a range of alternative assessment methods,
- when the use of simulation is allowed.

5 Units

Availability of units

Below is a list of the learning outcomes for all the units. If you want to download a complete set of units, go to **www.cityandguilds.com**

Structure of units

These units each have the following:
- City & Guilds reference number
- unit accreditation number (UAN)
- title
- level
- credit value
- unit aim
- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria
- notes for guidance.

Unit 236	Establish information for telecoms engineering maintenance and/or fault finding

UAN:	D/503/0545
Level:	2
Credit value:	2
GLH:	17
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in establishing information which is technical and detailed and could be from a variety of sources prior to undertaking maintenance and/or fault finding activities.

Learning outcome
The learner will:
1. be able to establish information for telecoms engineering and/or fault finding
Assessment criteria
The learner can:
1.1 identify and interpret the details required for the maintenance and/or fault finding activities
1.2 obtain and interpret relevant information on technical requirements
1.3 confirm that the information is current, authorised and contains all essential data
1.4 identify information which is inadequate, contradictory and/or ambiguous and deal with it promptly
1.5 identify any problems occurring with the requirements and their interpretation and deal promptly with the problems

Learning outcome
The learner will:
2. know how to establish information for telecoms engineering maintenance and/or fault finding
Assessment criteria
The learner can:
2.1 describe how to obtain and interpret sources of technical information

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2.2   describe organisational procedures for documentation care and control and the requirements for the retention of records

2.3   explain how documents are reviewed to ensure they are current and authorised and reflect the required level of detail

2.4   describe how to interpret site and equipment diagrams, engineering drawings and specifications including:

- relevant conventions
- symbols
- terminology
- abbreviations
- telecoms terminology

2.5   describe the relevant methods and techniques used covering maintenance and/or fault finding of telecoms equipment and how to interpret them

2.6   describe how to identify, evaluate and respond to problems occurring with the information and its interpretation

2.7   describe the organisational approved reporting lines and procedures

2.8   describe the limits of own authority and responsibility in relation to establishing information for telecoms engineering maintenance and fault finding

Unit 236   Establish information for telecoms engineering maintenance and/or fault finding

Supporting information

Assessment Requirements

1.1, 1.2, 1.3

Evidence must include observed natural performance for at least 2 of the examples of information as listed for maintenance or fault finding activities, however you need to convince your assessor that you can perform competently for all of the sources of information listed.

1.4, 1.5

Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts, or questioning are acceptable.

Learners will need to be able to obtain and interpret the information required to undertake the allocated maintenance and/or fault finding tasks in accordance with organisational procedures. For telecoms maintenance and/or fault finding, the complexity of detail will be that required for the maintenance and fault finding of telecoms equipment and its associated infrastructure. Examples may include the maintenance details for:

- Transmission systems
- Radio
- Bearer circuits
- Telecoms bearers carrying signalling circuits
- SCADA
- Operational telephones
- Switches and systems (Telephone Exchanges & Concentrators)
- Railway operational information systems
- PA and CCTV
- GSM-R

Examples of information may include:

- Drawings
- Defect history
- Fault reports (customer, monitoring centre)
- Handbooks
- Maintenance specifications
- Instructions
- Schedules

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 238   Determine requirements for the safe access to work locations for telecoms engineering

UAN:	Y/503/0558
Level:	2
Credit value:	3
GLH:	20
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in determining the requirements for safe access to a work location prior to undertaking a telecoms engineering activity.

Learning outcome
The learner will:
1. be able to determine requirements for the safe access to work locations for telecoms engineering
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 identify the location of the activity and determine the access arrangements
1.3 take action to ensure that the requirements for safe access meets organisational procedures
1.4 identify and analyse any necessary changes to safety requirements on arrival at site including the prompt reporting to relevant personnel within limits of own authority
1.5 take action to advise other people as required of the requirements for safe access
1.6 take action to ensure the requirements for safe access to work are implemented and remain in place for the duration of the activity
1.7 establish and maintain communication with relevant personnel
1.8 deal effectively with problems within limits of own authority and report those that cannot be resolved

Learning outcome
The learner will:
2. know how to determine requirements for the safe access to work locations for telecoms engineering
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 describe the different methods and techniques for conducting safety assessments, including assessment of risk
2.3 explain how to locate and safely access the work area/site
2.4 explain how to source and interpret information and document systems relating to the work area/site and activity
2.5 describe the relevant railway possession and protection arrangements for the work site and equipment to provide a safe system of work and how to check these are in place
2.6 explain how to secure the work area/system for maintenance/fault finding/installation/testing purposes
2.7 explain how to identify, agree and implement safe access requirements
2.8 describe the organisational approved reporting lines and procedures
2.9 describe the limits of own authority and responsibility in relation to establishing information for telecoms engineering maintenance and fault finding

Unit 238   Determine requirements for the safe access to work locations for telecoms engineering

Supporting information

Assessment Requirements

1.1, 1.2, 1.3, 1.4, 1.6, 1.7
Evidence must include observed natural performance.

1.5, 1.8
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts, or questioning are acceptable.

Learners will need to be able to identify, agree and implement within their level of authority the necessary safety requirements including protection and disconnection arrangements that need to be put in place and remain in place throughout the duration of the engineering activity. Examples may include:

- Protection and possession
- Isolation
- Traction supply OHLE and DC
- Establishment of a communication process

The safety requirements may include:

- Relevant local safety certificates
- The implementation of relevant documentation
- The implementation of a safe system of work
- The use of relevant personal protective equipment
- Establishment of a communication process

Example of a location/site of the telecoms engineering activity may include:

- External – trackside
- Internal – signal box, equipment room
- Areas to which the public have access
- Confined spaces
- Elevated structures
- Areas containing hazardous conditions

Learners must be able to take the relevant action within limits of own authority to ensure the safety of oneself, others and railway operations. The safety requirements include: relevant local certificates, the

implementation of relevant documentation, the implementation of a safe system of work, the use of relevant personal protective equipment.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 239	Reinstate the work area after telecoms engineering activities

UAN:	R/503/0560
Level:	2
Credit value:	2
GLH:	4
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in reinstating the work area after maintaining, rectifying, installing or testing telecoms equipment and systems. It includes the safe storage of reusable materials and equipment.

Learning outcome
The learner will:
1. be able to reinstate the work area after telecoms engineering activities
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 in line with organisational procedures withdraw all possession and protection measures
1.3 take the appropriate action to confirm that the work area is secured on completion of the work
1.4 restore the work areas to a safe condition in accordance with agreed requirements and schedules
1.5 take action to separate equipment, components and materials for re-use from waste items
1.6 take action to store reusable materials and equipment in an appropriate location
1.7 identify, mark and secure any waste items that cannot be removed immediately maintaining the safe operation of the railway at all times
1.8 identify all plant, tools and test equipment that cannot be removed and ensure that they are secured and stored where they do not interfere with the safe operation of the railway
1.9 dispose of waste materials in line with organisational procedures
1.10 deal promptly and effectively with problems within own control and report those that cannot be resolved

Learning outcome
The learner will:
2. know how to reinstate the work area after telecoms engineering activities
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 describe the relevant railway possession and protection arrangements for the work site and equipment to provide a safe system of work and how to check these have been withdrawn
2.3 explain the organisational procedures for restoring the work area
2.4 describe the work area security requirements
2.5 explain the organisational procedures for storing material and equipment
2.6 explain the different types of materials and equipment to be stored
2.7 explain how the planned use of resources could alter and the implications that may follow
2.8 describe the different types, methods and procedures for the disposal of waste and hazardous substances which have organisational approval
2.9 explain the relevant reporting lines and approved organisational procedures
2.10 describe the limits of own authority and responsibility and those of others involved in relation to reinstating the work area after telecoms engineering activities

Unit 239   Reinstate the work area after telecoms engineering activities

Supporting information

Assessment Requirements

1.1, 1.3, 1.4
Evidence must include observed natural performance.

1.2, 1.5, 1.6, 1.7, 1.8, 1.9 1.10
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts, or questioning are acceptable.

This unit is about reinstating the work area after maintaining or rectifying, installing or testing telecoms equipment and systems and includes the safe storage of reusable materials and equipment. Examples of work areas may include:

- External - trackside
- Internal – signal box, equipment room
- Areas to which the public have access
- Confined spaces
- Elevated structures
- Areas containing hazardous conditions

Examples of reusable tools and equipment may include:

- Tools and test equipment
- Materials
- Consumables
- Plant and communications equipment

Learners will ensure that the work areas are left in a condition that meets organisational procedures. This will include ensuring that any scrap material, plant, tools and test equipment that cannot be removed is marked for later collection and secured where it will not interfere with the safe operation of the railway.

Learners must be able to identify all the necessary safety requirements and take the relevant action to ensure the safety of oneself, others and railway operations. The safety requirements include: relevant local certificates, the implementation of relevant documentation, the implementation of a safe system of work, the use of personal protective equipment.

This unit should be assessed predominantly in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 243	**Employment rights and responsibilities in the passenger transport sector**

UAN:	L/602/5934
Level:	2
Credit value:	3
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate understanding of employer and employee statutory rights and responsibilities within own organisation and industry under Employment Law.

Learning outcome
The learner will:
1. know employment rights and responsibilities of the employee and employer
Assessment criteria
The learner can:
1.1 identify the main points of legislation affecting employers and employees and their purpose relevant to own role, organisation and within own industry
1.2 identify where to find information and advice on employment rights and responsibilities both internally in own organisation and externally
1.3 identify sources of information and advice on own industry, occupation, training and own career pathway
1.4 identify sources of information on the different types of representative bodies related to own industry and their main roles and responsibilities
1.5 identify any issues of public concern that may affect own organisation and own industry

Learning outcome
The learner will:
2. understand employment rights and responsibilities and how these affect organisations
Assessment criteria
The learner can:
2.1 describe organisational procedures, policies and codes of practice used by own organisation on employment rights and responsibilities
2.2 explain the purpose of following health, safety and other procedures and the effect on own organisation if they are not followed
2.3 describe employer and employee responsibilities for equality and diversity within own organisation
2.4 explain the benefits of making sure equality and diversity procedures are followed
2.5 describe the career pathways available within own organisation and own industry

Unit 315   Plan for further professional development in the rail industry

UAN:	K/601/7825
Level:	3
Credit value:	2
GLH:	4
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	This element is about evaluating your own performance against any goals or targets. These goals and/or targets may have been set by yourself or someone within your organisation and may be reviewed at any time. It is also about how you assess what standards of competency you need in your role and decide whether you need further training or development to meet or maintain those standards. You may also have to consider a role you could have in the near future. In identifying your professional development needs, you will have to balance your needs with those of your organisation and comply with any organisational, legal and licensing requirements.

Learning outcome
The learner will:
1.   be able to plan for further development
Assessment criteria
The learner can:
1.1   agree a personal development plan, for developing knowledge, understanding and skills to meet personal objectives
1.2   set objectives for further development of knowledge, understanding and skills
1.3   demonstrate current awareness of industry issues
1.4   recognise how changes in the industry affect them and the changes that need to be made to carry out their role
1.5   identify learning opportunities relevant to personal professional development
1.6   establish a system for recording training and development activities and show how the impact of any training will be evaluated
1.7   discuss and agree, where relevant, with the appropriate person(s) in the organisation how the development activities will be received and how to get feedback

Learning outcome
The learner will:
2. know how to plan for further development
Assessment criteria
The learner can:
2.1 describe how to agree a personal development plan to take account of the types of development opportunities that are available including formal and informal opportunities
2.2 describe how to set realistic objectives and priorities for the further development of knowledge, understanding and skills
2.3 list the relevant and current sources of information on the industry
2.4 describe the benefits of training and other forms of development and how to evaluate their impact
2.5 describe how to monitor progress against the development plan
2.6 outline organisational and legal requirements relevant to personal professional development

Unit 327   Plan telecoms maintenance testing activities

UAN:	F/503/0554
Level:	3
Credit value:	3
GLH:	25
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in planning maintenance testing activities as part of telecoms maintenance testing and failure investigation.

Learning outcome
The learner will:
1.   be able to plan telecoms maintenance testing activities
Assessment criteria
The learner can:
1.1   identify and source the information required for the activity and confirm that the work (immediate and/or pre defined) is suitable for maintenance testing
1.2   identify health and safety issues and safe working practices and procedures that must be followed
1.3   identify the protection arrangements that need to be put in place and agree and co-ordinate these with the relevant authorities
1.4   identify the activities which need to be carried out and determine their sequence
1.5   interpret the information available and establish the type and extent of the tests required
1.6   identify what resources are to be used
1.7   identify any special requirements and incorporate them in the plan
1.8   identify where technical documentation, resources, equipment, materials or tools are not available and deal with the deficiency in accordance with organisational procedures
1.9   identify the interfaces between the equipment to be tested and other operational equipment which may be affected and define the limits of testing
1.10 estimate the timescales required and incorporate them in the plan
1.11 take action to ensure that where suitable test plans are not available then arrangements are made for a new test plan to be developed in accordance with organisational testing standards
1.12 prepare and record the plan

1.13 take action to ensure that all required documentation is complete, accurate, formatted and processed in accordance with organisational procedures
1.14 take action to inform the appropriate person(s) when the plan is completed
1.15 deal effectively with problems within the limits of own authority and report those that cannot be resolved

Learning outcome
The learner will:
2. know how to plan telecoms maintenance testing activities
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures which are appropriate to the activity
2.2 describe the testing process relating to the telecoms equipment
2.3 explain what type of information is required and what planning needs to be completed before the work is undertaken
2.4 explain the requirements for safely securing the system for testing/investigation purposes without impacting on operational activities
2.5 explain what planning needs to be completed before the work is undertaken
2.6 explain what has to be done if no test plan is available, what a new test plan should contain and what authorisation procedures apply
2.7 explain how to source and interpret the types of information and the documents required, for example, documents detailing line speed and direction
2.8 describe the interfaces between the systems/equipment to be tested and other operational equipment which may be affected
2.9 describe how to establish whether there is a need for independent maintenance testing
2.10 explain how to identify, evaluate and respond to activities that cannot be achieved
2.11 describe the reporting lines and procedures approved by the organisation
2.12 describe the limits of own authority and responsibility and those of others involved

Unit 327   Plan telecoms maintenance testing activities

Supporting information

Assessment Requirements
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.9, 1.10, 1.12, 1.13, 1.14
Evidence must include observed natural performance

1.7, 1.8, 1.11, 1.15
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts, or questioning are acceptable.

Learners will need to plan telecoms maintenance testing which is normally required following the reinstatement of operational telecoms systems or equipment using pre-defined test plans. If this is not feasible due to safety, operational or other factors, then pre-planning is required. When the pre-defined test plans are inadequate or not available learners will have to make arrangements for one to be developed in line with organisational procedures. Where technical documentation, equipment, tools, materials, spare parts, or components are not available learners will need to be able to deal with the deficiency in accordance with organisational procedures.

Examples of the type of complexity of telecoms engineering activities associated with maintenance testing and failure investigation of telecoms equipment and its associated infrastructure may include:
* Transmission systems
* Radio
* Bearer circuits
* SCADA
* Operational telephones
* Switches and systems
* Telephone Exchanges & Concentrators
* Railway operational information systems
* PA and CCTV
* GSM-R

Learners will need to be able to identify the plans that are appropriate to the equipment and the type of work to be undertaken, and also ensure that they comply with organisational procedures. Learners will need to source information required for the activity such as that relating to the location, type of equipment, the tests/investigation to be carried out, and also the selection of any appropriate pre-defined plans.

Examples of resources that may be considered during planning may include:

- Documentation, (current and appropriate)
- Tools, plant and test equipment (calibrated and serviceable)
- Materials, replacement equipment and consumables
- Communications Equipment
- Personnel (total required and competence)

Learners must take into account the time the system will be available for the task when considering resources.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

City & Guilds Level 3 NVQ Certificate/Diploma in Rail Engineering Telecoms Maintainer and Fault Finder (7597-09/15)

| **Unit 328** | **Allocate and monitor resources for telecoms engineering activities** |

UAN:	D/503/0559
Level:	3
Credit value:	2
GLH:	10
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in allocating and monitoring resources for effective telecoms engineering activities.

Learning outcome
The learner will:
1. be able to allocate and monitor resources for telecoms engineering activities
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 identify and confirm the resources required and ensure sufficient resources are available
1.3 confirm information relating to resources is accurate and up to date
1.4 allocate and monitor the use of resources
1.5 identify when changes to the planned use of resources may occur
1.6 take prompt and effective action to deal with actual and predicted change to the planned use of resources
1.7 advise the appropriate personnel where changes to resources have occurred or are likely to occur and the implications involved
1.8 take action to ensure that those using resources are aware of their responsibilities for the care and use of the resources
1.9 accurately record details on the use of resources including where appropriate any changes that have occurred

Learning outcome
The learner will:
2. know how to allocate and monitor resources for telecoms engineering activities
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 describe the types of resources available
2.3 explain the different methods and techniques used for ensuring sufficient resources
2.4 explain the different methods and techniques for allocating resources
2.5 explain how to source and interpret information and document systems relating to the engineering activity and the resources required
2.6 explain the types of problems that can occur when allocating resources and how these problems can be overcome
2.7 explain how the planned use of resources could alter and the implications that may follow
2.8 describe the methods and techniques used for effective monitoring of resources
2.9 explain organisational procedures for the care and use of resources
2.10 explain organisational procedures for communicating a change to resource allocation
2.11 explain the relevant reporting lines and approved organisational procedures
2.12 describe the limits of own authority and responsibility in relation to establishing information for telecoms engineering maintenance and fault finding

Unit 328   Allocate and monitor resources for telecoms engineering activities

Supporting information

Assessment Requirements

1.1, 1.2, 1.3,
Evidence must include observed natural performance.

1.4, 1.5, 1.6, 1.7, 1.8, 1.9
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts, or questioning are acceptable.

This unit is about allocating and monitoring resources for telecoms engineering activities which may include maintenance, fault finding, testing and/or installation work on telecoms equipment. Examples of the types of resources may include:

- Documentation – current and appropriate
- Tools, plan and test equipment – calibrated and serviceable
- Materials, replacement equipment and consumables
- Communications equipment
- Personnel – total required and competence

Learners will be able to work to a plan, identify and allocate the resources required and source information regarding those resources. Learners will monitor the use of resources and ensure that there are sufficient resources available for the activities to be undertaken and that the resources are used safely and in an appropriate and timely manner. Where changes in resources or activities occur the learner must be able to challenge when a plan or resource allocation may need amending.

Learners will be aware of own responsibility for the care and use of resources and will be able to advise team members of their responsibilities for the care and use of resources. They will need to take into account the time the system will be available for the task when considering resources and also any influencing factors such as, environmental, site conditions and the additional requirements for working on operational railway equipment. Identifying inaccuracies and the non-availability of resources and being able to take appropriate remedial action are key to this unit.

Learners must ensure that organisational procedures are met and followed by own self and those they are responsible for.

Learners must be able to identify all the necessary safety requirements and take action to ensure their own safety and the safety of others and railway operations. The safety requirements include relevant local safety

certificates, the implementation of relevant documentation, the implementation of a safe system of work, the use of relevant personal protective equipment. Learners must ensure that protection and disconnection arrangements are implemented to ensure operational safety.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 330	**Maintenance of telecoms equipment using complex processes**

UAN:	K/503/0564
Level:	3
Credit value:	4
GLH:	25
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in carrying out planned maintenance of telecoms assets, equipment, systems and associated infrastructure.

Learning outcome
The learner will:
1. be able to carry out maintenance of telecoms equipment using complex processes
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 identify and analyse any necessary changes to safety requirements on arriving at site, including prompt reporting to the relevant personnel
1.3 identify the area of work and the asset to be maintained
1.4 take action to source and interpret the relevant maintenance schedules to carry out the required work
1.5 identify and analyse discrepancies in information and take appropriate remedial action
1.6 identify and use authorised maintenance methods where existing instructions are insufficient
1.7 within limits of own authority take action to carry out the maintenance activities in the specified sequence and in an agreed time scale ensuring that the work does not interfere with the operational railway
1.8 identify and use the correct measuring instruments and other tools and equipment
1.9 correctly interpret relevant system documentation, diagnostics, indications and alarms
1.10 identify, evaluate and report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule

| 1.11 | take action to complete the relevant maintenance records, process them in accordance with requirements and pass them on to the appropriate personnel |
| 1.12 | observe sufficient operations of the equipment to confirm it is functioning correctly |

Learning outcome
The learner will:
2. know how to carry out maintenance of telecoms equipment using complex processes
Assessment criteria
The learner can:

2.1	list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2	explain how to locate and safely access the asset where the planned maintenance will be undertaken
2.3	explain how to check authorisation is in place for maintenance activities
2.4	describe how to secure the system for maintenance purposes
2.5	describe how to protect operational assets from the maintenance activity
2.6	explain the different methods, techniques and procedures for the maintenance of telecoms assets
2.7	describe the correct mode of operation of telecoms assets to be maintained
2.8	describe what constitutes a telecoms asset defect and the implication on safety and performance
2.9	explain the types of activities which may compromise system functionality and integrity
2.10	describe how to identify, evaluate and deal with influencing factors whilst carrying out the maintenance tasks, including environmental factors
2.11	explain how to source, interpret and apply relevant maintenance schedules, instructions specifications, site and equipment diagrams
2.12	explain organisational procedures for recording maintenance details
2.13	describe organisational procedures for the use, care and control of tools and equipment including calibration
2.14	explain when independent testing is required
2.15	explain how to check the maintenance activity to ensure compliance with the original specification
2.16	explain the importance of integrity checks, including how and when they should be carried out
2.17	explain the relevant reporting lines and approved organisational procedures
2.18	describe the limits of own authority and responsibility and those of others involved in relation to maintenance of telecoms equipment

Unit 330   Maintenance of telecoms equipment using complex processes

Supporting information

Assessment Requirements

1.1, 1.2, 1.3, 1.4, .7, 1.8, 1.9, 1.11, 1.12
Evidence must include observed natural performance

1.5, 1.6, 1.10
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts or questioning are acceptable.

This unit is about carrying out planned maintenance on telecoms assets, equipment and systems, including correctly interpreting diagnostic indications and alarms, completing integrity checks on own work and initiating testing as appropriate. The learner will be using complex technology whilst performing multi-stage processes.

Examples of areas to be worked on may include:
- Transmission systems
- Radio
- Bearer circuits
- Telecoms bearers carrying signalling circuits
- SCADA
- Operational telephones
- Switches and systems
- Railway operational information systems
- PA and CCTV
- GSM-R

Examples of maintenance activities may include:
- Visual and aural checks
- Electrical Measurements and adjustments
- Mechanical Measurements and adjustments
- Routine servicing
- Cleaning
- Painting

Examples of documentation may include:
- Maintenance records
- Task authorisations

- Protection arrangements
- Failure and repair records

Prior to undertaking the maintenance activity, learners must be able to identify all the necessary safety requirements and take relevant action to ensure their own safety and that of others and railway operations. Learners must be able to confirm that protection and disconnection arrangements are implemented to ensure operational safety.

The safety requirements include: relevant local safety certificates, the implementation of relevant documentation, the implementation of a safe system of work, the use of relevant personal protective equipment.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 331	Adjust telecoms components and equipment to meet operational requirements

UAN:	M/503/0565
Level:	3
Credit value:	4
GLH:	34
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in adjusting telecoms components and equipment to ensure telecoms assets meet operational requirements.

Learning outcome
The learner will:
1. be able to adjust telecoms components and equipment to meet operational requirements
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 identify and analyse any necessary changes to safety requirements on arriving at site, including prompt reporting to the relevant personnel
1.3 identify the area of work and the components/equipment to be adjusted
1.4 take action to source and interpret the appropriate documentation and operating specifications for the equipment being adjusted
1.5 identify and correctly use the relevant tools, test equipment and measuring instruments
1.6 within limits of you own authority take action to carry out the required adjustments in the specified sequence and in the agreed time scale
1.7 identify and confirm that the adjusted components/equipment meet the required operating specification
1.8 identify, evaluate and report any instances where the equipment fails to meet the required performance after adjustments or where there are identified defects outside the required adjustments
1.9 in line with organisational procedures complete the relevant integrity checks
1.10 identify, evaluate and report any instances where the equipment fails to meet the required performance after adjustments or where

there are identified defects outside the required adjustments
1.11 identify relevant authorisation changes, where urgent action may be required. These may include the extension of possessions or the setting up of additional protection arrangements
1.12 take action to use alternative authorised adjustment practices where existing instructions are insufficient
1.13 observe sufficient operations of the equipment to confirm it is functioning correctly
1.14 take action to maintain documentation in accordance with organisational procedures and submit all reports and communications to the appropriate authorities at the relevant times

Learning outcome
The learner will:
2. know how to adjust telecoms components and equipment to meet operational requirements
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 explain how to locate and safely access the site where the planned adjustments of telecoms components and equipment needs to take place
2.3 explain how to secure the system in preparation for the activity
2.4 describe how to protect operational equipment from the adjustment activity
2.5 explain the different methods, techniques and procedures for the adjustment of telecoms components and equipment
2.6 describe the types of operational constraints that could occur when carrying out the adjustments
2.7 describe the activities which may compromise system functionality and integrity, including disturbing other equipment and systems without authority
2.8 describe the correct mode of operation of telecoms assets to be adjusted
2.9 describe what constitutes a component/equipment defect and the implication on safety and performance
2.10 describe how to identify, evaluate and deal with influencing factors whilst carrying out the adjustment, including environmental factors
2.11 explain how to source, interpret and apply relevant technical information, standards, diagrams, instructions, specifications and schedules for the adjustment of telecoms equipment
2.12 explain how to check the adjustment activity to ensure compliance with the original specification
2.13 explain why integrity checks are important and how and when they should be carried out
2.14 explain when independent testing is required
2.15 explain organisational procedures for recording adjustment details
2.16 describe organisational procedures for the use, care and control

of tools and equipment including calibration

2.17 explain the relevant reporting lines and approved organisational procedures

2.18 describe the limits of own authority and responsibility and those of others involved in relation to adjusting telecoms components and equipment

Unit 331   Adjust telecoms components and equipment to meet operational requirements

Supporting information

Assessment Requirements

1.1, 1.2, 1.3,
Evidence must include observed natural performance

1.4, 1.5, 1.6, 1.7, 1.9, 1.12, 1.13
Evidence must include observed performance on actual or simulated adjustments supplemented by questioning on various scenarios. Where the assessment is by simulation, the details shall be recorded.

1.8, 1.10, 1.11:
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts or questioning are acceptable.

This unit is about adjusting telecoms components and equipment to ensure telecoms assets meet operational requirements.

Examples of areas to be worked on may include:
- Transmission systems
- Radio
- Bearer circuits
- Telecoms bearers carrying signalling circuits
- SCADA
- Operational telephones
- Switches and systems
- Railway operational information systems
- PA and CCTV
- GSM-R

Learners must be able to identify all the necessary safety requirements and take the relevant action to ensure own safety, others and railway operations.

Learners must be able to identify the area of work and the equipment that is to be maintained, faulted or installed and if required adjusted using the correct measuring instruments and other tools and equipment, whilst not disturbing other equipment and systems without authority.

Learners must be able to correctly interpret system documentation, diagnostic indications and alarms. Where existing instructions are insufficient learners must use authorised adjustment practices and if

required comply with electrostatic precautions to complete the activity. Completion of the relevant integrity checks in accordance with organisational procedures is also required as well as being able to report identified deficiencies promptly, and agree a suitable course of action.

Where urgent action is required learners must identify relevant authorisation changes, which may include the extension of possessions or the setting up of additional protection arrangements. Learners must submit all reports and communications to the relevant personnel within agreed timescales.

The safety requirements include: relevant local safety certificates, the implementation of relevant documentation, the implementation of a safe system of work, the use of relevant personal protective equipment.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 332	**Carry out removal of components from telecoms assets**

UAN:	T/503/0566
Level:	3
Credit value:	3
GLH:	22
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in carrying out the removal of components from telecoms assets whilst meeting operational requirements as part of the maintenance or fault finding task.

Learning outcome
The learner will:
1. be able to carry out removal of components from telecoms assets
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 identify and analyse any necessary changes to safety requirements on arriving at site, including prompt reporting to the relevant personnel
1.3 identify and locate the component(s) to be removed
1.4 take action to follow all relevant diagrams and specifications
1.5 identify and mark components orientation for re-assembly
1.6 take action to ensure that any stored energy or substances are released safely and correctly
1.7 take action to label relevant wiring and components and note the configuration settings
1.8 take action to isolate the working area from other systems following the required procedure for disconnection
1.9 in accordance with organisational procedures and using the approved tools and techniques remove the required component(s) in a way that does not interfere with any operational railway systems
1.10 identify and use authorised practices where existing instructions are insufficient
1.11 take precautions to prevent damage to component(s) during removal

1.12 assess the condition of the removed component(s) and record those that will require replacing

1.13 take action to provide electrostatic protection for electronic equipment

1.14 in accordance with organisational procedures store or discard the removed component(s)

1.15 take action to ensure that the interference with other systems is minimised, and equipment and systems other than those being worked on are not disturbed without authority

1.16 deal promptly and effectively with problems within own control and report those that cannot be resolved

1.17 complete all relevant documentation accurately and in line with organisational procedures

Learning outcome

The learner will:

2. know how to carry out removal of components from telecoms assets

Assessment criteria

The learner can:

2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity

2.2 explain how to locate and safely access the site where the planned removal of telecoms components and equipment needs to take place

2.3 describe how to source and follow the relevant technical information, standards, diagrams, instructions, schedules and related specifications

2.4 explain how to locate and identify the component(s) that needs to be removed

2.5 explain the importance of marking the component(s) orientation for re-assembly and how this should be undertaken

2.6 describe the types of component defects that could occur

2.7 describe the different methods and techniques for component handling and removal including electrostatic protection

2.8 explain the implications of not following the methods and techniques for component handling

2.9 describe the safe working practices for the release of stored energy (including electrical, pneumatic, hydraulic, mechanical)

2.10 describe organisational procedures for the use, care and control of tools and equipment including calibration

2.11 explain the organisational procedure for recording the removal activity

2.12 explain how to label and store component(s) for re-use, disposal or repair

2.13 describe how to respond to influencing factors whilst carrying out the removal tasks, including environmental factors

2.14 explain the relevant reporting lines and approved organisational procedures

2.15 describe the limits of own authority and responsibility and those of others involved in relation to removal of telecoms equipment

Unit 332 Carry out removal of components from telecoms assets

Supporting information

Assessment requirements

1.1, 1.2, 1.3
Evidence must include observed natural performance.

1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.11, 1.12, 1.13, 1.14, 1.15, 1.17
Evidence must include observed performance on actual or simulated failures supplemented by questioning on various fault scenarios. Where the assessment is by simulation, the details shall be recorded.

1.10, 1.16
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts or questioning are acceptable.

This unit is about removing components from telecoms assets as part of the maintenance or fault finding task. Learners will be using complex technology whilst performing multistage processes and any interference with other systems must be minimised and systems are not to be disturbed without authority. Learners must ensure that authorised practices are used where existing instructions are insufficient.

Examples of areas to be worked on may include:
* Transmission systems
* Radio
* Bearer circuits
* Telecoms bearers carrying signalling circuits
* SCADA
* Operational telephones
* Switches and systems
* Railway operational information systems
* PA and CCTV
* GSM-R

Examples of removal techniques may include:
* Disconnecting
* Dismantling
* Unfastening
* Releasing
* Unsoldering

Examples of the types of equipment to be removed may include:
- Mechanical
- Electrical
- Electronic

Learners must be able to identify all the necessary safety requirements and take the relevant action to ensure own safety, others and railway operations including ensuring the safe release of any stored energy from a variety of systems such as, pneumatic, hydraulic, electrical or mechanical.

The safety requirements include: relevant local safety certificates, the implementation of relevant documentation, the implementation of a safe system of work, the use of relevant personal protective equipment.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 333	Carry out replacement of components from telecoms assets

UAN:	A/503/0567
Level:	3
Credit value:	4
GLH:	17
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in carrying out replacement of components from telecoms assets whilst meeting operational requirements as part of the maintenance or fault finding task.

Learning outcome
The learner will:
1. be able to carry out replacement of components
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 identify and analyse any necessary changes to safety requirements on arriving at site, including prompt reporting to the relevant personnel
1.3 identify and locate the required equipment and ensure that it is in a suitable condition for replacement and fit for purpose
1.4 take action to source and follow all relevant diagrams and specifications
1.5 assess the replacement component(s) to ensure compliance with the required specification including confirming that the replacement component is compatible with the equipment/ system
1.6 using appropriate tools and techniques replace the component(s) in the correct sequence
1.7 take precautions to prevent damage to component(s) during the replacement activity
1.8 ensure that authorised practices are used where existing instructions are insufficient
1.9 complete the replacement ensuring that all components are free from damage including checking that all necessary connections to the equipment are complete making any necessary adjustments to the component(s) to ensure they function correctly

1.10 complete the replacement integrity checks in accordance with appropriate standards and ensure that the completed work is to specification
1.11 observe sufficient operations of the asset to confirm it is functioning correctly
1.12 deal promptly and effectively with problems within own control and report those that cannot be resolved
1.13 complete all relevant documentation accurately and in accordance with organisational procedures

Learning outcome
The learner will:
2. know how to carry out replacement of components

Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 explain how to locate and safely access the site where the planned replacement of telecoms component(s) needs to take place
2.3 describe how to obtain and assess the required component(s) and ensure that they are fit for purpose, including assessing the compatibility of like-for-like components
2.4 explain how to protect operational equipment from the replacement activity
2.5 explain the different methods and techniques to replace components and ensure they are fit for purpose
2.6 describe how to select and use the correct tools and confirm that they are calibrated
2.7 describe organisational procedures for the care and control of relevant tools and test equipment
2.8 explain the correct mode of operation of the asset following replacement activities
2.9 explain when independent testing is required
2.10 explain how and when to carry out integrity checks and why these are important
2.11 explain how to identify, analyse and deal with influencing factors including environmental factors
2.12 explain the importance of completing the replacement activities
2.13 explain the relevant reporting lines and organisational procedures relevant to replacement of telecoms components
2.14 describe the limits of own authority and responsibility and those of others involved in relation to removal of telecoms components

Unit 333   Carry out replacement of components from telecoms assets

Supporting information

Assessment Requirements

1.1, 1.2

Evidence must include observed natural performance.

1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.13

Evidence must include observed performance on actual or simulated failures supplemented by questioning on various fault scenarios. Where the assessment is by simulation, the details shall be recorded.

1.12

Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts or questioning are acceptable.

This unit is about replacing components from telecoms assets as part of the maintenance and fault finding task. Learners will be using complex technology whilst performing multistage processes and any interference with other systems must be minimised and systems are not disturbed without authority. Where interference with other systems has to take place, learners must be able to ensure the correct approvals are obtained prior to this occurring. Learners must ensure that any replacement components and materials are fit for purpose. This may include identifying and assessing the difference in like-for-like replacement parts and may range from superseded part numbers or descriptions, through modification stages, to functionally equivalent parts, which are sourced from different manufacturers.

Examples of areas to be worked on may include:
* Transmission systems
* Radio
* Bearer circuits
* Telecoms bearers carrying signalling circuits
* SCADA
* Operational telephones
* Switches and systems
* Railway operational information systems
* PA and CCTV
* GSM-R

Examples of replacement techniques may include:
* Soldering

- Crimping
- Use of IDC connectors
- Fastening
- Wire wrapping

Examples of the types of equipment to be replaced may include:
- Mechanical
- Electrical
- Electronic

Learners must be able to identify all the necessary safety requirements and take the relevant action to ensure own safety, others and railway operations including ensuring the safe release of any stored energy from a variety of systems such as, pneumatic, hydraulic, electrical or mechanical.

The safety requirements include: relevant local safety certificates, the implementation of relevant documentation, the implementation of a safe system of work, the use of relevant personal protective equipment.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 334	Establish compliance with specifications for maintained telecoms assets

UAN:	J/503/0569
Level:	3
Credit value:	5
GLH:	20
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners to demonstrate occupational competency in establishing compliance with specifications for maintained telecoms assets ensuring that the equipment and materials are fit for purpose (including software and hardware configurations) following maintenance testing and that they comply with specifications prior to returning to service.

Learning outcome
The learner will:
1. be able to establish compliance with specifications for maintained telecoms assets
Assessment criteria
The learner can:
1.1 comply with organisational procedures working safely at all times
1.2 identify and analyse any necessary changes to safety requirements on arriving at site, including prompt reporting to the relevant personnel
1.3 take action to source and interpret the relevant specifications for the asset being checked or tested, including any previous compliance information and maintenance records
1.4 select and analyse the tests or checks to be carried out, the sequence in which they are to be performed and the methods and equipment to be used
1.5 select the correct tools and test equipment and check that they are in a useable condition
1.6 carry out the checks and tests in the correct sequence within the appropriate timescales and using approved methods and procedures in line with operational requirements
1.7 carry out tests and checks in a way that minimises the interference with other systems and assets and is within the limits of own authority

1.8	observe sufficient operations of the asset to confirm it is functioning correctly for the type of equipment being checked or tested
1.9	identify and assess any defects or variations from the specification and take the appropriate action
1.10	report completion of compliance activities in line with organisational procedures
1.11	report any instances where the tests or checks cannot be fully met or where there are identified defects outside the planned testing activities
1.12	accurately complete the relevant records and documentation and pass them on to the appropriate personnel

Learning outcome
The learner will:
2. know how to establish compliance with specifications for maintained telecoms assets

Assessment criteria
The learner can:

2.1	list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2	explain how to locate and safely access the site where the planned replacement of telecoms component(s) needs to take place
2.3	describe the activities which may compromise system functionality and integrity including the operational constraints to carrying out testing and checking activities
2.4	explain how to identify, analyse and deal with influencing factors including environmental factors
2.5	explain how to source and follow engineering diagrams and specifications, approved manuals and other related information
2.6	explain the correct mode of operation of the asset being tested or checked including acceptable operational variances
2.7	explain the methods used for selecting and using the correct tools and test equipment and confirm they are suitable for use and calibrated
2.8	describe the different methods and techniques for compliance testing and checking
2.9	explain the different types of analytical methods and techniques in testing and checking
2.10	explain how to interpret information from measuring instruments including performing calculations
2.11	explain how to use test equipment so as to ensure accurate measurements are taken
2.12	explain what could constitute as a defect or variation in telecoms assets
2.13	describe the types of defects or variations that could occur in maintained telecoms assets and how these could affect the safety and performance of telecoms assets
2.14	describe the procedures for the control of a non-conforming component or asset
2.15	explain when independent testing is required
2.16	explain how to verify that the testing has been completed

2.17 explain organisational procedures for the control of testing

2.18 explain the relevant reporting lines and organisational procedures relevant to establishing compliance with specifications for maintained telecoms assets

2.19 describe the limits of own authority and responsibility and those of others involved in relation to establishing compliance with specifications for maintained telecoms assets

Unit 334   Establish compliance with specifications for maintained telecoms assets

Supporting information

Assessment Requirements

1.1, 1.2
Evidence must include observed natural performance.

1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.12
Evidence must include observed performance on actual or simulated failures supplemented by questioning on various fault scenarios. Where the assessment is by simulation, the details shall be recorded.

1.9, 1.11
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts or questioning are acceptable.

This unit is about confirming that telecoms systems, equipment and materials are fit for purpose (including correct software and hardware configurations) following maintenance or fault finding activity. You must ensure they comply with specifications by carrying out integrity checks and tests prior to the telecoms system entering or returning to service.

Examples of areas to be worked on may include:
- Transmission systems
- Radio
- Bearer circuits
- Telecoms bearers carrying signalling circuits
- SCADA
- Operational telephones
- Switches and systems
- Railway operational information systems
- PA and CCTV
- GSM-R

Learners must be able to identify all the necessary safety requirements and take the relevant action to ensure own safety, others and railway operations.

Where necessary, operational safety learners will need to confirm that protection and disconnection arrangements are implemented. They will carry out all testing in accordance with the relevant procedures, instructions, specifications and operational requirements. Where 'test'

plans are used, learners will carry out the test or checks in accordance with the 'plan'.

The safety requirements include: relevant local safety certificates, the implementation of relevant documentation, the implementation of a safe system of work, the use of relevant personal protective equipment.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 337   Diagnose faults in telecoms assets

UAN:	R/503/0574
Level:	3
Credit value:	6
GLH:	35
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners demonstrate occupational competency in diagnosing faults in telecoms assets. Learners will need to use the correct tools, test equipment and analyse the results of tests to determine the root cause of the fault.

Learning outcome
The learner will:
1. be able to diagnose faults in telecoms assets
Assessment criteria
The learner can:
1.1   comply with organisational procedures working safely at all times
1.2   identify and analyse any necessary changes to safety requirements on arriving at the site, including prompt reporting to the relevant personnel
1.3   review and analyse all relevant information on the symptoms and problems associated with the equipment including fault history to accurately establish the location and nature of the fault
1.4   take action to prevent the system functionality being compromised before starting any intrusive activities and that protection and disconnection arrangements are implemented to ensure operational safety
1.5   undertake an investigation to determine the most likely causes of the faults, including selecting and following the appropriate fault investigation guide
1.6   within limits of own authority carry out diagnostic techniques in a way that minimises the interference with other systems and equipment
1.7   select, use and apply diagnostic techniques, tools and test equipment to symptoms of the fault to accurately locate the fault
1.8   investigate and confirm the fault diagnosis within the agreed time and inform the appropriate personnel when this cannot be achieved
1.9   identify and analyse the implications of the fault for other work and

for safety considerations and report the implication of the fault to the relevant personnel
1.10 analyse the evidence and draw a valid conclusion about the nature and probable cause of the fault including re-occurring faults
1.11 take action to record details on the extent and location of the faults in an appropriate format including giving options for rectifying the fault and the changes required to possession and protection arrangements
1.12 deal promptly with problems within own control and report those that cannot be resolved

Learning outcome
The learner will:
2. know how to diagnose faults in telecoms assets
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 explain the relevant railway possession and protection arrangements for the work site and equipment to provide a safe system of work and how to check these have been implemented
2.3 explain how to locate and safely access the site where the planned work needs to be carried out
2.4 describe how to secure the system prior to fault finding activities taking place
2.5 describe the activities which may compromise system functionality and integrity including the operational constraints to carrying out diagnostic activities
2.6 explain how to identify, evaluate and respond to influencing factors whilst carrying out the tests, including environmental factors, site conditions and working on an operational railway
2.7 explain how to source and interpret engineering diagrams, related specification approved manuals and other related information, including previous diagnostic information
2.8 explain how to source and evaluate information relating to the fault, including eye witness accounts and re-occurring faults
2.9 describe the types of fault diagnostic aids available and how to use them
2.10 describe the different methods and techniques for fault finding
2.11 describe organisational procedures for failure investigation
2.12 explain what constitutes a fault or defect to telecoms assets
2.13 explain how to assess the likely risks arising from faults and defects and the implications involved
2.14 explain what operational constraints could occur whilst carrying out fault finding activities
2.15 explain what activities could compromise the system functionality and integrity
2.16 explain the different methods and techniques for data analysis relevant to the activity
2.17 explain the methods used for selecting and using the correct tools and test equipment and confirm they are suitable for use and calibrated

2.18	explain organisational procedures for the control of faults and modifications
2.19	explain the relevant reporting lines and organisational procedures relevant to diagnosing faults of telecoms systems
2.20	describe the limits of own authority and responsibility and those of others involved in relation to diagnosing faults of telecoms systems

Unit 337　　　Diagnose faults in telecoms assets

Supporting information

Assessment Requirements

1.1, 1.2
Evidence must include observed natural performance.

1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11
Evidence must include observed performance on actual or simulated failures supplemented by questioning on various fault scenarios. Where the assessment is by simulation, the details shall be recorded.

1.12
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts or questioning are acceptable.

This unit is about locating and diagnosing faults in telecoms products, systems or assets.

Examples of areas to be worked on may include:
- Transmission systems
- Radio
- Bearer circuits
- Telecoms bearers carrying signalling circuits
- SCADA
- Operational telephones
- Switches and systems
- Railway operational information systems
- PA and CCTV
- GSM-R

Learners must be able to effectively apply the appropriate diagnostic techniques and use tools and test equipment in accordance with the symptoms of the fault. Learners must be able to select and follow the appropriate fault investigation guide and correctly identify the options for rectifying the system (the option selected may be restricted by operational constraints or the availability of spare parts). Learners must ensure that all tools are serviceable and test equipment is correctly calibrated.

Before starting any intrusive activities learners must ensure that appropriate action is taken to prevent the system (or other linked/related systems) functionality or integrity being compromised. Where interference with other systems has to take place, the learner must be able to ensure the correct approvals are obtained prior to

commencement of work. The learner will investigate and report the root cause of a fault where the depth of investigation must not exceed the limit of own authority.

Learners must ensure that the process and the nature of the diagnostic tests undertaken are relevant to the equipment and are in accordance with any relevant documentation and best practice. Where the diagnosis of the fault is inconclusive, the learner must be able to take further action in accordance with organisational procedures and within limits of own authority.

Further actions may include obtaining assistance, conducting further investigations, restoring systems to full or 'degraded' operational use or escalating to a higher authority. Learners must be able to select an effective option and make the appropriate changes to possessions and protection arrangements. Where a selected option is outside the limit of own authority, the course of action must be agreed and the required protection arrangements with the appropriate authorities prior to implementation.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 338   Transfer responsibility of telecoms assets

UAN:	H/503/0580
Level:	3
Credit value:	2
GLH:	4
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners demonstrate occupational competency in transferring responsibility of telecoms assets following maintenance, faultfinding. Installation or testing work to the control of others.

Learning outcome
The learner will:
1.   be able to transfer responsibility of telecoms assets
Assessment criteria
The learner can:
1.1   comply with organisational procedures working safely at all times
1.2   confirm and define the condition of the engineering products or equipment in accordance with the specification
1.3   take action to ensure that all tasks, test and checks have been completed in line with organisational procedures
1.4   take action to confirm that everyone involved accepts the status of the asset prior to transfer of responsibility
1.5   identify any unusual features, defects or discrepancies relating to the condition of the asset
1.6   take action to make the transfer of responsibility and obtain agreement between everyone involved on the precise moment of transfer of responsibility
1.7   take action to ensure that clear, accurate and complete records of the transfer of responsibility are made in line with organisational procedures

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Learning outcome
The learner will:
2. know how to transfer responsibility of telecoms assets
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 explain the organisational procedures for the transfer of responsibility of assets
2.3 explain how to determine the condition of the asset prior to transfer of responsibility
2.4 describe the requirements for the completion of work and testing activities prior to transfer of responsibility
2.5 explain what constitutes an unacceptable product or equipment condition
2.6 describe organisational procedures for recording and documenting information on the status of equipment
2.7 explain what transfer of responsibility documentation should be supplied and to whom in line with organisational procedures
2.8 describe the approved organisational reporting lines and procedures for transfer of responsibility
2.9 describe the limits of own authority and responsibility and those of others involved in relation to transfer of responsibility of telecoms systems

Unit 338　　　Transfer responsibility of telecoms assets

Supporting information

Assessment Requirements

1.1
Evidence must include observed natural performance.

1.2, 1.3, 1.4, 1.6, 1.7
Evidence should be as a result of direct observation if possible; however, suitable historic evidence supported by personal accounts and questioning is acceptable.

This unit is about transferring responsibility of configured telecoms assets following maintenance, fault finding or installation work carried out by own team to the control of others. Learners will be able to provide suitable and sufficient evidence to confirm the operational status of the equipment, prior to the transfer of responsibility including:

- System fit for entry into service
- System fit for entry into restricted service
- System is not fit for entry into service

Learners must ensure that the allocated tasks and the required integrity checks have been completed in accordance with organisational procedures.

Learners must be able to carry out the transfer of responsibility processes concerned with the completion of tasks in accordance with organisational procedures.

Learners must ensure that the equipment is handed back for operational use only after sufficient evidence exists to ensure safe working.

Learners must ensure that the transfer of responsibility information supplied accurately identifies the operation status and equipment.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 339   Contribute to technical leadership of signal engineering activities

UAN:	F/503/0733
Level:	3
Credit value:	2
GLH:	4
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners demonstrate occupational competency in contributing to the technical leadership of telecoms engineering activities and includes providing up to date information and advice.

Learning outcome
The learner will:
1. be able to contribute to technical leadership of signal engineering activities
Assessment criteria
The learner can:
1.1   comply with organisational procedures working safely at all times
1.2   assess work methods and procedures for their suitability and technical feasibility
1.3   take action to choose the appropriate action to deal with potential problems
1.4   within limits of own authority identify potential deviations from the allocated tasks and alter the plan accordingly
1.5   record and report any alterations and monitor their impact on the allocated tasks
1.6   take action to provide colleagues with valid up-to-date information, advice and guidance
1.7   take action to clarify and give guidance and assistance when information is unclear, inaccurate or conflicting
1.8   analyse problems in full and choose an effective solution that will maintain the quality and progress of the work
1.9   take action to deal promptly with problems which are within own control and report those that cannot be resolved

Learning outcome
The learner will:
2. know how to contribute to technical leadership of signal engineering activities

Assessment criteria
The learner can:
2.1   list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2   explain the relevant railway possession and protection arrangements for the work site and equipment to provide a safe system of work and how to check these have been implemented
2.3   explain how to determine and source the documentation requirements for the activities undertaken and how to confirm that these meet organisational procedures
2.4   explain how to locate and safely access the site and equipment
2.5   describe the different methods and techniques for planning and progressing work activities
2.6   describe the range and type of problem solving methods and techniques
2.7   explain how to present and communicate information relating to the engineering activity
2.8   describe the activities which may compromise system functionality and integrity
2.9   describe how to access, interpret and apply relevant technical information, standards, drawings, instructions, specifications and schedules for signalling engineering activities
2.10   describe the range and type of operational constraints and authorisation procedures for carrying out signalling activities on the operational railway
2.11   describe the requirements to make the system safe whilst undertaking engineering activities
2.12   explain how and when signalling activities cannot be achieved and the impact that there can be if there are any deviations from the planned activities
2.13   describe how to respond to influencing factors whilst carrying out the signal engineering activities including environmental factors, site conditions and working on operational railway equipment
2.14   describe the approved organisational reporting lines and procedures
2.15   describe the limits of own authority and responsibility and those of others involved in relation to technical leadership of signal engineering activities

Unit 339   Contribute to technical leadership of signal engineering activities

Supporting information

Assessment Requirements
1.1, 1.2
Evidence must include observed natural performance.

1.6
Evidence should be as a result of direct observation if possible; however, suitable historic evidence supported by personal accounts and questioning is acceptable.

1.3, 1.4, 1.5, 1.8, 1.9
Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts, or questioning are acceptable.

This unit is about contributing to the technical leadership of telecoms engineering activities providing colleagues with valid and up to date information, examples of the types of information include:
- Special notices
- Engineering standards
- Work instructions
- Technical and safety briefing

Learners must identify the necessary safety requirements and take the relevant action to ensure the safety of own self, others and railway operations. The safety requirements include relevant local safety certificates, the implementation of relevant documentation, the implementation of a safe system of work and the use of relevant personal protective equipment. Learners must ensure that organisational procedures are met and followed by themselves as well as for those for whom they have responsibility. Learners must ensure that all actions are taken within the limits of own authority and responsibility.

Learners will identify potential deviations from the allocated tasks, and alter the plan as required ensuring that the alterations are recorded and reported and their impact on the allocated tasks monitored. Learners must be able to clarify and give guidance assistance where information is unclear, inaccurate or conflicting.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Unit 340   Organise local telecoms engineering activities

UAN:	F/503/0585
Level:	3
Credit value:	2
GLH:	4
Endorsement by a sector or regulatory body:	This unit is endorsed by GoSkills
Aim:	The purpose of this unit is for learners demonstrate occupational competency in organising local telecoms engineering activities. It includes planning, prioritising and determining roles and responsibilities.

Learning outcome
The learner will:
1. be able to organise local telecoms engineering activities
Assessment criteria
The learner can:
1.1 identify, source and confirm information required for the activity
1.2 identify, plan and record work methods and activities that make optimum use of resources
1.3 take action to prioritise work activities to achieve objectives which are cost-effective and efficient
1.4 allocate activities and responsibilities to relevant personnel according to their competences, including providing the required instructions
1.5 take action to agree and record individual roles and group responsibilities and seek advice from others to help resolve any problems
1.6 take action to anticipate and show how changes to plans and allocated tasks will be accommodated including providing details of the predicted impact on activities
1.7 make a record of agreed work plans and communicate the plans to all involved
1.8 take action to deal promptly with problems which are within own control and report those that cannot be resolved

Learning outcome
The learner will:
2. know how to organise local telecoms engineering activities
Assessment criteria
The learner can:
2.1 list the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity
2.2 explain the different methods and techniques for prioritising and planning activities, including time management and problem solving
2.3 explain the roles and responsibilities of individuals and groups in relation to the activity
2.4 explain how to source and analyse the required equipment and system documentation
2.5 explain how to source, interpret and apply relevant technical information, standards, diagrams, instructions, specifications and schedules for engineering activities
2.6 explain how to identify, analyse and deal with influencing factors whilst carrying out the tasks including environmental factors
2.7 explain the importance of effective working relationships when organising local telecoms engineering activities and how these can be achieved
2.8 describe how and when telecoms activities cannot be achieved and the impact of any deviations from the allocated tasks
2.9 describe the approved organisational reporting lines and procedures
2.10 describe the limits of own authority and responsibility and those of others involved in relation to technical leadership of telecoms engineering activities

Unit 340   Organise local telecoms engineering activities

Supporting information

Assessment Requirements

1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7

Evidence should be as a result of direct observation if possible; however, suitable historic evidence supported by personal accounts and questioning is acceptable.

1.8

Evidence should be as a result of direct observation if possible, however suitable historic evidence, personal accounts, or questioning are acceptable.

This unit is about organising local telecoms engineering activities. Learners will be able to identify potential deviations from the allocated tasks and alter the plan as required within the limit of own authority. Any alterations must be recorded, reported and their impact on the allocated tasks monitored.

Learners must be able to accurately identify tasks, and their interdependence, ensuring that work is organised in a logical order. Learners will also be responsible in allocating activities and responsibilities to staff according to their competences and providing staff with the required instructions.

Learners must establish and maintain communications and effective liaison arrangements with relevant personnel including team members, other teams, operations staff, engineering control staff and peers. Communication should be both remote and face-to-face.

The information gathered should meet organisational procedures and be appropriate for the complexity of the tasks. The information available includes:

- Site availability and access
- Operations and engineering notices
- Plans, schedules and procedures
- Diagrams, records and specifications

Learners must be able to obtain suitable clarification and assistance where information is unclear, inaccurate or conflicting.

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.

Appendix 1   Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **www.cityandguilds.com**.

Centre Manual - Supporting Customer Excellence contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Our Quality Assurance Requirements encompasses all of the relevant requirements of key regulatory documents such as:

- Regulatory Arrangements for the Qualifications and Credit Framework (2008)
- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- **Walled Garden:** how to register and certificate candidates on line
- **Qualifications and Credit Framework (QCF)**: general guidance about the QCF and how qualifications will change, as well as information on the IT systems needed and FAQs
- **Events**: dates and information on the latest Centre events
- **Online assessment**: how to register for e-assessments.

Centre Guide – Delivering International Qualifications contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

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Useful contacts

UK learners General qualification information	T: +44 (0)844 543 0033 E: **learnersupport@cityandguilds.com**
International learners General qualification information	T: +44 (0)844 543 0033 F: +44 (0)20 7294 2413 E: **intcg@cityandguilds.com**
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **centresupport@cityandguilds.com**
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: **business@cityandguilds.com**
Publications Logbooks, Centre documents, Forms, Free literature	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413

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