QUALIFICATION HANDBOOK

Level 2 Diplomas in Smart Metering (7428-21-22-23)

March 2022 Version 6.2

City & Guilds

Qualification at a glance

Subject area	**Smart Metering**
City & Guilds number	7428
Age group approved	16-18, 19+
Entry requirements	None
Fast track	Available
Support materials	Centre handbook

Title and level	**City & Guilds number**	**Accreditation number**
Level 2 Diploma in Smart Metering - Power	7428-21	600/1270/5
Level 2 Diploma in Smart Metering - Gas	7428-22	600/1271/7
Level 2 Diploma in Smart Metering – Dual Fuel	7428-23	600/1282/1

Date and version number	**Change detail**	**Section**
May 2012 V3.0	Inserted EU Skills Assessment Strategy	Appendix 1
	Deleted information that was duplicated in the EU Skills Assessment Strategy	Section 1
	Re-worded and amended the 'Gas Registration' that completion of (7428-22-23) enables	Structure
	Inserted 'Assessment requirements for Independent Summative Assessment'	Section 2
March 2013 V3.1	Amended the title of unit 210 on page 56 and deleted the assessment description for unit 210 on page 48 and indicated to the reader to refer to page 56 for this instead	Units and Appendix 1
May 2013 V4.0	Added elective units 211-214 and made some amendments to the formatting of the units	Structure and Units
January 2014 V5.0	Remove paragraph refering to EUSGU001 being completed as stand	Appendix 1 EU Skills

	alone/introductory as part of a larger qualification. Add two evidence and assessment requirement tables.	Assessment Strategy
November 2014 V5.1	Added guidance regarding acceptance of ACS as part of a qualification.	Appendix 1 EU Skills Assessment Strategy
March 2016 V6	Added further guidance around gas unit assessments and EU Skills Assessment Strategy City & Guilds Group statement updated Phone numbers deleted	Assessment Useful contacts Useful contacts
October 2017 V6.1	Added TQT and GLH details Deleted QCF	Qualification Structure Throughout

Contents

1Introduction

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

Area	Description
Who are the qualifications for?	For candidates who work in the Power Industry that need to be competent in dual fuel, gas or power.
What do the qualifications cover?	Allow candidates to learn, develop and practise the skills required for employment and/or career progression in smart metering.
Are the qualifications a part of a framework or initiative?	They serve as a competence component in the Apprenticeship framework.
Who did we develop the qualifications with?	They were developed in association with industry employers and the sector skills council, Energy & Utility Skills (EU Skills).
What opportunities for progression are there?	Candidates can progress into employment or to the following City & Guilds qualifications: • Level 3 Diploma in Electrical Power Engineering - Substation Plant: 500/7323/0 • Level 3 Diploma in Electrical Power Engineering - Underground Cables: 500/7324/2 • Level 3 Diploma in Electrical Power Engineering - Overhead Lines: 500/7318/7 • Level 3 Diploma in Electrical Power Engineering - Lead Substation Craftsperson: 500/7971/2 • Level 3 Diploma in Electrical Power Engineering - Lead Overhead Lines Person: 500/8007/6.

1.1 Structure

To achieve the **Level 2 Diploma in Smart Metering – Power (7428-21),** learners must achieve **37** credits from the mandatory units. Additional elective units may be taken but they will not be counted towards the minimum credits required.

Level 2 Diploma in Smart Metering - Power

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
L/502/9858	201	Working practices in the energy and utilities sector	2
A/502/9855	202	Working safely in the energy and utilities sector	4
J/503/0233	203	Using and communicating technical information in the energy and utilities sector	3
F/502/9856	204	Delivering customer service when working within the energy and utilities sector	2
A/503/0231	205	Install and commission communication systems for smart meters	4
M/600/3988	206	Install single phase meter and associated equipment	11
A/600/3993	207	Change single phase meter and associated equipment	11
Elective			
J/600/4001	211	Install multi phase meter – whole current (new connection)	15
F/600/4000	212	Change multi phase meter – whole current	15
M/600/4008	213	Install single phase meter and associated equipment on multi phase cut-out (new connection)	10
T/600/4009	214	Change single phase meter and associated equipment on multi phase cut-outs	10

To achieve the **Level 2 Diploma in Smart Metering – Gas (7428-22)**, learners must achieve **41** credits from the mandatory units. An additional elective unit may be taken but will not be counted towards the minimum credits required.

***Level 2 Diploma in Smart Metering - Gas**

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
L/502/9858	201	Working practices in the energy and utilities sector	2
A/502/9855	202	Working safely in the energy and utilities sector	4
J/503/0233	203	Using and communicating technical information in the energy and utilities sector	3
F/502/9856	204	Delivering customer service when working within the energy and utilities sector	2
A/503/0231	205	Install and commission communication systems for smart meters	4
K/503/0256	208	Applied practices and principles for installing low pressure natural gas smart meters up to U6 only	20
F/503/0232	209	Prepare, install and commission low pressure natural gas smart meter and regulator up to 6.0m^3/hr	3
J/502/9857	210	Low pressure gas smart meter tightness testing and direct purging	3
Elective			
F/505/0884	215	Prepare, install and commission medium pressure natural gas smart meter and regulator up to 6.0 m^3/hr	9

To achieve the **Level 2 Diploma in Smart Metering – Dual Fuel (7428-23)**, learners must achieve **63** credits from the mandatory units. Additional elective units may be taken but they will not be counted towards the minimum credits required.

***Level 2 Diploma in Smart Metering – Dual Fuel**

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
L/502/9858	201	Working practices in the energy and utilities sector	2
A/502/9855	202	Working safely in the energy and utilities sector	4
J/503/0233	203	Using and communicating technical information in the energy and utilities sector	3
F/502/9856	204	Delivering customer service when working within the energy and utilities sector	2
A/503/0231	205	Install and commission communication systems for smart meters	4
M/600/3988	206	Install single phase meter and associated equipment	11
A/600/3993	207	Change single phase meter and associated equipment	11
K/503/0256	208	Applied practices and principles for installing low pressure natural gas smart meters up to U6 only	20
F/503/0232	209	Prepare, install and commission low pressure natural gas smart meter and regulator up to 6.0m^3/hr	3
J/502/9857	210	Low pressure gas smart meter tightness testing and direct purging	3
Elective			
J/600/4001	211	Install multi phase meter – whole current (new connection)	15
F/600/4000	212	Change multi phase meter – whole current	15
M/600/4008	213	Install single phase meter and associated equipment on multi phase cut-out (new connection)	10
T/600/4009	214	Change single phase meter and associated equipment on multi phase cut-outs	10
F/505/0884	215	Prepare, install and commission medium pressure natural gas smart meter and regulator up to 6.0 m^3/hr	9

Total Qualification Time

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

Title and level	GLH	TQT
Level 2 Diploma In Smart Metering - power	148	370
Level 2 Diploma In Smart Metering - gas	262	410

2 Assessment

2.1 Summary of Assessment Methods

Performance Unit (P)	A unit that gives the candidate the opportunity to demonstrate they have the practical skills that are in keeping with the relevant National Occupational Standards for identified activities.
Gas Unit (G)	A unit that gives the candidate the opportunity to demonstrate their knowledge, understanding and practical skills of gas work in accordance with the National Occupational Standards for identified activities. These units will be assessed via gas specific question papers, Independent Summative Assessments (ISA) and the completion of the gas unit specific logbooks (as appropriate).

Units for 7428-21, 22, 23

Unit No.	Title	Assessment Method	Unit type	Where to obtain assessment materials
201	Working practices in the energy and utilities sector	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
202	Working safely in the energy and utilities sector	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
203	Using and communicating technical information in the energy and utilities sector	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
204	Delivering customer service when working within the energy and utilities sector	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
205	Install and commission communication systems for smart meters	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.

206	Install single phase meter and associated equipment	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
207	Change single phase meter and associated equipment	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
208	Applied practices and principles for installing low pressure natural gas smart meters up to U6 only	This unit will be assessed via gas question papers, Independent Summative Assessments (ISA) and the development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit.	G	All assessment materials and logbooks can be found on the **City & Guilds website**. Relevant question papers and ISA's for specific qualifications are listed on the appropriate 'Quick Guide' on the **7428 webpage**. Passwords for the question papers and ISA's are available from our partner Blue Flame Associates using the application form, which is also available on the **6189 page of the City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
209	Prepare, install and commission low pressure natural gas smart meter and regulator up to 6.0m3/hr	This unit will be assessed via gas question papers, Independent Summative Assessments (ISA) and the development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit.	G	All assessment materials and logbooks can be found on the **City & Guilds website**. Relevant question papers and ISA's for specific qualifications are listed on the appropriate 'Quick Guide' on the **7428 webpage**. Passwords for the question papers and ISA's are available from our partner Blue Flame Associates using the application form, which is also available on the **6189 page of the City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
210	Low pressure gas smart meter tightness testing and direct purging	This unit will be assessed via gas question papers, Independent Summative	G	All assessment materials and logbooks can be found on the **City & Guilds website**. Relevant question papers and ISA's for specific qualifications

		Assessments (ISA) and the development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit.		are listed on the appropriate 'Quick Guide' on the **7428 webpage**. Passwords for the question papers and ISA's are available from our partner Blue Flame Associates using the application form, which is also available on the **6189 page of the City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
211	Install multi phase meter – whole current (new connection)	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
212	Change multi phase meter – whole current	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
213	Install single phase meter and associated equipment on multi phase cut-out (new connection)	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
214	Change single phase meter and associated equipment on multi phase cut-outs	The development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit	P	All assessment materials and logbooks can be found on the **City & Guilds website**. Passwords for the logbook is available on the Walled Garden.
215	Prepare, install and commission medium pressure natural gas smart meter and regulator up to 6.0 m3/hr	This unit will be assessed via gas question papers, Independent Summative Assessments (ISA) and the development of a portfolio using a logbooks and will be assessed to the assessment criteria set out in the unit.	G	All assessment materials and logbooks can be found on the **City & Guilds website**. Relevant question papers and ISA's for specific qualifications are listed on the appropriate 'Quick Guide' on the **7428 webpage**. Passwords for the question papers and ISA's are available from our partner Blue Flame Associates using the application form, which is also available on

the **6189 page of the City & Guilds website**.

Passwords for the logbook is available on the Walled Garden.

Achievement of the mandatory units 208, 209, 210 as part of 7428-22/23 (Gas and Dual Power) will enable Gas registration to the following categories;

- CMA 1
- MET 1&2

Achievement of the elective unit 215 as part of 7428-22/23 (Gas and Dual Power) will enable Gas registration to the following category;

- REGT 1

2.2 Assessment requirements for Gas Units

Independent Summative Assessment (ISA) for Gas and Fuel Pathways

Independent Assessment

Due to its alignment with ACS, the 7428 scheme introduced the requirement for 'Independent Assessment' of specific tasks within the qualification. This placed an additional requirement on the process that is not traditionally associated with NVQs. This 'Independent Assessment' provides confirmation that the candidate can perform gas safety related tasks, competently.

Independent Summative Assessments (ISAs)

To simplify the 'Independent Assessment' requirements' of the 7428 scheme and to demonstrate alignment with the current ACS Assessment model, a new method has been included; this is the 'Independent Summative Assessment' (ISA). The assessment process for the ISAs involves assessment of the candidate's performance by realistic simulation in a managed, independent assessment environment. The 'Independent Assessor' will assess the candidates' competence against a specified set of gas safety related performance criteria that is contained within the ISA Assessors Marking Sheets.

Several ISAs have been developed to compliment the Smart Metering qualification suite, and a detailed list documenting these, can be found in the separate 'Quick Guide to ISA's' document on the City and Guilds website under 7428's webpage. This 'Quick Guide' is periodically updated and the latest version must always be used.

The introduction of these ISA's simplifies the process of 'Independent Assessment' on the 7428 Scheme. In particular it removes the need for an 'Independent Assessor' to be used for 'Workplace (Onsite / On the Job) Assessments'.

Note: It is important to recognise that the introduction of the ISAs only removes the requirement for 'Independent Assessment' in the workplace. It does **not** remove the requirement for 'Workplace Assessment' and this is still seen as the primary source of evidence for making judgements of competence. The 'Assessment Process' for the Gas and Dual Fuel Pathways should be in accordance with this handbook.

ISA Assessment Process

To ensure a consistent approach is taken to delivering and implementing the ISAs, the following requirements have been laid down.

- The ISAs can only be undertaken at a convenient point in the learning programme.
- The assessor for the ISAs should be 'Independent' and still comply with the assessor requirements as detailed in this handbook.
- The 'Assessment Area' that is used to assess the ISAs should be 'Independent';
    - i.e. the candidates should not have had access to the area prior to the initial assessment,
    - the candidates must not have been trained or coached on specific items of equipment/appliance/scenarios that could be found in the ISA assessment area over and above such learning they may have normally received whilst working towards their qualification
    - The area should have sufficient equipment/appliances to allow a selection of 'Candidates Routes' to be planned to reduce assessment predictability and maintain the robustness of the assessment process.
- All ISA assessment documentation (Assessors Marking Sheets, Candidates Job Sheets, Practical Assessment Workbooks, etc.) must remain within the Centre. Candidates must not be allowed to remove these from the Centre, even when they have completed their qualification and are entitled to retain their portfolio (as with the Knowledge & Understanding Paperwork).

ISA Assessment Marking

Initial Assessment

- Candidates must **achieve 100% to pass the ISA assessment**.
- Where a candidate has failed (following any oral questioning asked as part of the assessment), they may be re-assessed by oral questioning and/or observing the practical performance against those performance criteria where competence was not demonstrate during the initial assessment.
- Following the second attempt described above, candidates that achieve 100% pass the ISA assessment. Candidates attaining less than 100%, therefore failing the assessment will require further training before undertaking a re-attempt of the failed performance criteria again.

Note: Due to the requirement for further training, the re-sitting of the entire ISA / Task should not take place for at least 48 hours after the initial assessment on which the Candidate was referred.

Partial re-take assessment

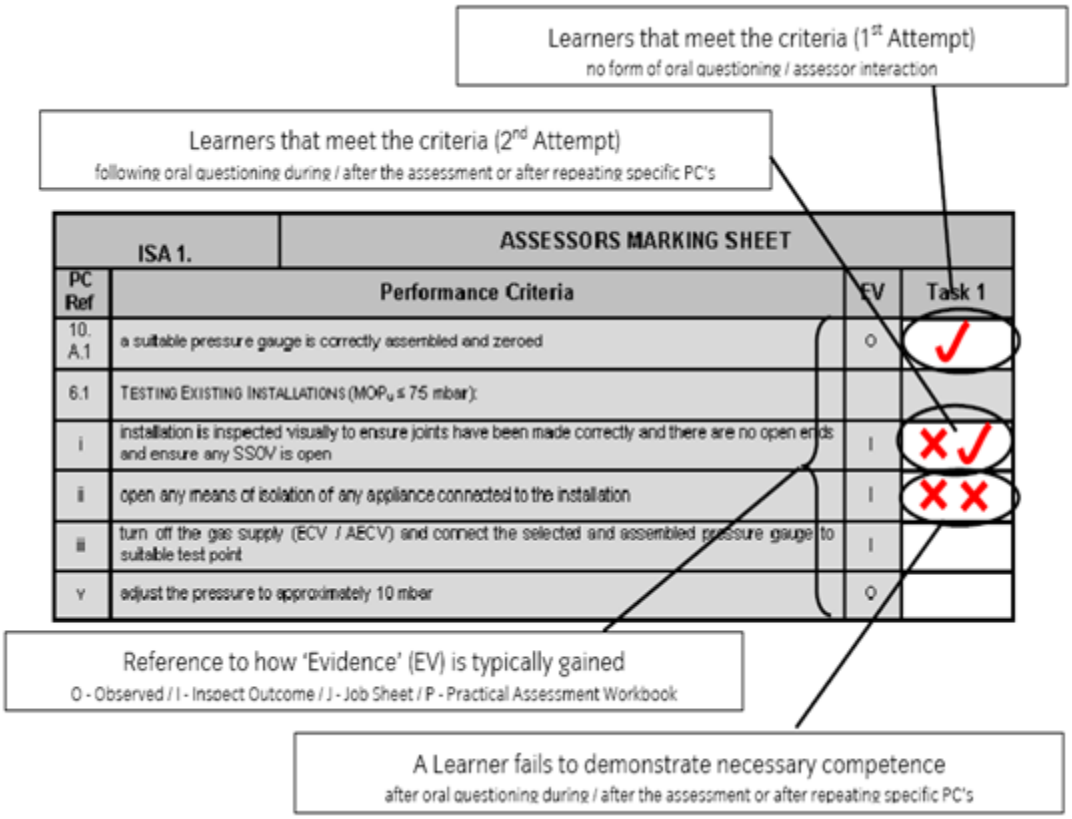
- The candidate may undertake a re-assessment of the failed performance criteria or the full task of the ISA referred.
- Following the re-assessment described above, candidates that achieve 100% achieve a pass against the ISA assessment. Where a candidate is unable to achieve the 100% (following any oral questioning asked as part of the assessment), they may be re-assessed by oral questioning and / or observing the practical performance of the candidate against those performance criteria on which competence was not demonstrated during the retake.
- Candidates attaining less than 100% on a second attempt on a Partial Re-Take Assessment will be deemed to have failed to demonstrate a satisfactory competence level for the specific assessment.
- Where a candidate has failed to demonstrate a satisfactory competence level at this summative assessment stage, an interview should be set up between the candidate, their workplace assessor(s), the independent assessor and the internal verifier (and employer if required) to review the candidates performance. Following this interview, an action plan will be agreed by those in attendance, that the candidate must complete before re-attempting the entire ISA assessment (including all Tasks and Practical Assessment Workbook Scenarios)

Note: Due to the requirement for further actions, the re-sitting of the entire ISA should not take place for at least 14 days after the Partial Re-Take Assessment on which the Candidate was referred.

Completion of ISA Assessor Checklists

Initial Assessment

The Assessors Checklist must be completed as indicated in the following diagram



Partial Re-take Assessment

Assessors undertaking Partial Re-Take Assessment of candidates should use a blank Assessor Check List to mark the candidates' performance against the task or tasks they are being asked to repeat.

Candidates should also be provided with a 'Blank' Candidates Job Sheet to complete during the assessment.

Note: It may be beneficial to ease identification of Partial Re-Take Assessment documentation by using a different colour paper to that used for Initial Assessment.

The Partial Re-Take Assessment should be marked on the same paperwork as for Initial Assessment, but the Assessor should indicate in the appropriate box that a Partial Retake Assessment has taken place (see example below).

Task Decision:	Pass (P), Refer (R) or Fail (F)	P
Partial Re-Take Assessment of Task:	Yes (Y) or Not Applicable (N/A)	y

Practical Task / Activity	Initial Assessment Recommendation	Partial Re-Take Assessment Recommendation	Overall Task / Activity Recommendation [1]	Internally Verified [2]
Task 1	PASS / ~~REFER~~*	PASS / FAIL *	PASS / ~~FAIL~~*	YES / NO *
Task 2	~~PASS~~ / REFER *	PASS / ~~FAIL~~*	PASS / ~~FAIL~~*	YES / NO *
Task 3	PASS / ~~REFER~~*	PASS / FAIL *	PASS / ~~FAIL~~*	YES / NO *
PAW Result from Candidates Job Sheet	PASS / ~~REFER~~*	PASS / FAIL *	PASS / ~~FAIL~~*	YES / NO *
PRACTICAL ASSESSMENT RECOMMENDATION:			PASS / ~~FAIL~~*	* Delete as required

ISA Route Plans

Each ISA contains a 'Route Plan' that enables Centres to document their approach to assessment. Each plan contains at least **two** variations that enable the Centre to vary the assessment to reduce the predictability of the assessment occasion.

Centres should complete and retain copies of these to allow the Internal and External Verifiers to monitor the assessment process and make objective decisions on a Candidate's performance during an assessment. The External Verifiers will audit Candidate's records against these 'Route Plans' on their monitoring visits.

Each Route plan has a 'Used From' date, this clearly indicates the date the plan was used from. Where equipment, setups are modified etc. the Route Plan should be amended and a new one created with the appropriate revised 'Used From' date. Out of date 'Route Plans' should be retained by the Centre for use by Internal and External Verifiers.

Each ISA Assessment contains a 'Route Plan Example'; these are designed to give Centres guidance in developing routes. These examples show green and red text, the green text indicates areas that will be 'blank' on the normal 'Route Plan' and this gives the Centre a great deal of latitude to vary routes and utilise existing equipment. The red text remains on the normal 'Route Plan', this should not normally be altered as they are either requirements of the NVQ / ACS alignment process or are figures, etc. that are fixed for other reasons (eg a statutory requirement).

ISA Practical Provisions

It is important to ensure that when ISA Assessments are carried out during the completion of Smart Metering qualifications that suitable 'Practical Provisions' are available. Details of these practical provisions can be found in the 'Quick Guide to ISA Practical Provisions'. This 'Quick Guide' is periodically updated and the latest version must always be used.

Knowledge Questions

Knowledge and understanding written assessments will be undertaken via the use of City & Guilds set question papers. Several 'Question Papers' have been developed to compliment the full suite of Smart Metering and a detailed list documenting these, as applicable to each Award Complex (including all 'APRs'), can be found on 7428 suite webpage.

Centres must check the City & Guilds website regularly to ensure that the latest updated versions are being used.

Underpinning Knowledge Questions Assessment Process

All written question papers will be Centre delivered and Centre Assessed (i.e. within an approved 7428 centre).

The instructions for invigilating, marking and using the underpinning knowledge question papers are contained within each question paper. These instructions **must** be followed in their entirety for each question paper.

Trial or 'Mock' question papers must not be used or allowed into the assessment area, this includes any question papers that may have been used as 'Learning Aid' during the course of any training programme.

A copy of the answers completed on the 'Candidates Answer Sheet' must not be made.

Marking Criteria

Candidates must achieve 100% by answering **all** questions correctly. To achieve this, candidates shall go through the following stages:

- **First sitting** (Time allowed: as documented on the front cover)
  - Candidates that achieve 100% pass this paper.
  - Candidates that achieve **less than** 100% are referred and may undergo a second attempt of the individual questions answered incorrectly, using a blank 'Candidates Answer Sheet' with the relevant questions that were answered incorrectly highlighted.

- **Second sitting** (Time allowed: 2 minutes per question to be answered)
  - Candidates that achieve 100% pass this paper.
  - Candidates attaining an overall result between 80% and 99% for all questions answered on the first and second sittings on this paper are referred, but may undergo a third sitting of the individual questions answered incorrectly, via oral questioning.
  - Candidates attaining an overall result of less than 80% for all questions answered on the first and second sittings on this paper are referred and will require more training before sitting the **entire** question paper again.*

- **Third sitting (Oral questioning)**
  - Candidates that achieve 100% pass this paper.
  - Candidates attaining an overall result of less than 100% for all questions answered on this paper at this stage are referred and will require more training before sitting the **entire** question paper again.*

Note: The questions answered incorrectly on the second sitting shall be rephrased when asked as an oral question on this sitting, ensuring the required knowledge and understanding criteria is still covered. **All** questions asked and the Candidates associated answer(s) shall be recorded on the reverse of the relevant 'Candidates Answer Sheets'. Multiple choice questions shall not be used at this stage.

***Due to the requirement for further training, the re-sitting of the entire paper should not take place for at least 48 hours after the sitting on which the candidate was referred.**

Additional guidance for oral questioning

The Assessor should ask the oral questions on completion of the written assessment. When using oral questions, Assessors should be mindful of the effect their behaviour can have on candidate

performance. Questions should be asked in the spirit of gaining information rather than pressurising a Candidate by creating the atmosphere of a test.

All oral questions must be relevant to the assessment criteria and the Assessor must not coach or lead the Candidate towards providing correct answers. The Assessor must not ask the candidate any 'leading' or 'closed' questions. Assessors should take care to ask clear questions.

3.3 Recognition of Prior Learning (RPL)

Recognition of Prior Learning (RPL) evidence is an acceptable source of evidence for these qualifications. All evidence shall be sufficient, valid, reliable, authentic and current (within the last three years).

For evidence of gas safety competence the following constraints shall apply:

- Certificates covering the competence criteria for Gas Safe Registration are acceptable as RPL evidence. However, as these do not attest to competence in the other essential aspects of gas installation and maintenance, all unit requirements must be satisfied in full to achieve the qualification.

  All evidence of current gas safety competence **must** be demonstrated throughout the qualification being undertaken.

All RPL evidence must be approved by the centre's RPL Advisor. The RPL Advisor shall hold D36 or equivalent.

ACS acceptance as part of a qualification

ACS evidence can be accepted against RWE assessments and relevant knowledge and understanding criteria contained in the Matters of Gas Safety criteria. The requirements are as follows:

a. ACS obtained prior to registration.

Where ACS is obtained prior to registration all assessments of experience and workplace assessment requirements tabulated in this document **must still** be adhered to.

b. ACS obtained whilst undertaking the qualification.

Where ACS is obtained whilst undertaking a qualification, all the assessment of experience and work place evidence requirements tabulated within this document must be achieved **prior** to the completion of the ACS.

Note: The relevant ACS assessments, must have at least 36 months remaining until the individual assessments expire at the time of claiming the full qualification.

All RPL evidence must be approved by the centre's RPL Advisor. The RPL Advisor shall hold D36 or equivalent. Due consideration needs to be given the risks involved in accepting third party certificated evidence, not least the consideration that the third party certificate may be withdrawn at any time without the knowledge of the centre who have accepted it as evidence.

2.3 Assessment Strategy

Requirements for Scheme Staff

Assessors

General

Assessors **must** be vocationally and occupationally competent in the areas they are assessing and have a thorough knowledge of the National Occupational Standards

In addition to the qualifications listed below, the Assessor must be able to provide appropriate documented evidence that demonstrates they have a minimum of 5 years proven occupational experience in the activities they will be assessing. Particular attention should be paid to providing evidence of occupational experience in the gas safety critical areas being assessed.

Where Assessors undertake assessments in the workplace, and are not supported by a suitable gas operative, then they or their employer must be a member of an appropriate Gas Registration Body in accordance with the Gas Safety (Installation and Use) Regulations. In these circumstances they should also hold suitable insurance for this activity.

Qualifications

Assessors must be technically qualified in domestic gas installation / maintenance and hold one of the following qualifications

- C&G / SQA - S/NVQ in Domestic Natural Gas (Level 3); or
- C&G - 662 Certificate for Service Engineers (Gas); or
- C&G - 598-2 Certificate in Gas Installation Studies; or
- C&G - 660 Certificate in Gas Fitting - Final

This list is not considered exhaustive and other 'Mechanical Engineering Services' (MES) or 'Building Engineering Services' (BES) qualifications at Level 3/SCQF Level 6 or equivalent may be considered acceptable. Centres must submit requests to confirm the acceptability of other qualifications to their External Verifier for a decision regarding the acceptability of other qualifications. The External Verifier must keep a record of any such decisions.

In addition to the above qualifications, all Assessors must hold a current certificate of gas safety competence in the areas of gas work they will be assessing that is not more than 5 years old (either current ACS Certificates of Gas Safety Competence or a qualification which is recognised to award this competence).

'Centre Based Assessors' **must** hold one of the following:

- Level Three Award "Assessing Vocationally Related Achievement"
- Level Three Certificate "Assessing Vocationally Related Achievement"
- A1* or D32 /D33 with an Upgrade to A1 as a minimum
- SQA Accredited Learning and Development Unit L&D 9DI – Assess workplace competence using direct and indirect methods (replaces Units A1)*

'Workplace Assessors' **must** hold one of the following:

- Level Three Award "Assessing Competence in the Work Environment"
- Level Three Certificate "Assessing Vocationally Related Achievement"
- SQA Accredited Learning and Development Unit L&D 9D Assess workplace competence using direct methods
- A2 or D32 with an upgrade to A2 as a minimum *

* The Teaching Qualification for Secondary Education (TQSE) or the Teaching Qualification for Further Education (TQFE) (which is recognised in Scotland) these awards are acceptable providing they are the versions that are recognised as equivalents to the A1 award plus appropriate CPD.

Assessors holding D units must have evidence of Continuing Professional Development (CPD) to demonstrate compliance with the A units.

A qualified Assessor shall supervise 'Candidate Assessors' who are working towards their Assessor qualifications. They should have a clear action plan for achieving the Assessor qualification(s).

Assessor approval will be withdrawn if the qualification / units have not been attained within 18 months. Evidence of CPD will be sought by the External Verifier for all Assessors approved to assess for the centre.

Internal Quality Assurance (internal verifiers)

General

Internal Verifiers **must** be vocationally and occupationally competent in the areas they are verifying and have a thorough knowledge of the qualification units being assessed.

In addition to the qualifications listed below, the Internal Verifiers must be able to provide appropriate documented evidence that demonstrates they have a minimum of 5 years proven occupational experience in the activities they will be verifying. Particular attention should be paid to providing evidence of occupational experience in the gas safety critical areas being verified.

Internal Verifiers shall be technically qualified in domestic gas installation / maintenance and hold one of the following qualifications:

- C&G / SQA - S/NVQ in Domestic Natural Gas (Level 3)
- C&G - 662 Certificate for Service Engineers (Gas)
- C&G - 598-2 Certificate in Gas Installation Studies
- C&G - 660 Certificate in Gas Fitting - Final

This list is not considered exhaustive and other 'Mechanical Engineering Services' (MES) or 'Building Engineering Services' (BES) qualifications at Level 3 or equivalent may be considered acceptable.

Centres must submit requests to confirm the acceptability of other qualifications to their External Verifier for a decision regarding the acceptability of other qualifications. The External Verifier must keep a record of any such decisions.

In addition to the above the Internal Verifier must hold a current certificate of gas safety competence in the areas of gas work they will be internally verifying that is not more than 5 years old (current ACS Certificates of Gas Safety Competence or a qualification which is recognised to award this competence).

Where the Internal Verifiers themselves do not hold a suitable technical qualifications they must have access to technical expertise from qualified personnel, who hold the relevant qualifications, to support them where the verification requires technical support and interpretation.

Internal Verifiers must hold one of the following:

- Level Three Certificate "Assessing Vocationally Related Achievement"
- A1 or D32/D33 with an upgrade to A1 as a minimum
- Learning and Development Unit L&D 9DI – Assess workplace competence using direct and indirect methods

And

- Level Four Award " Internal Quality assurance of assessment processes and practice"
- Level Four Certificate "leading the Internal Quality assurance of assessment processes and practice"
- V1 or D34 with an upgrade to V1 as a minimum*
  * The Teaching Qualification for Secondary Education (TQSE) or the Teaching Qualification for Further Education (TQFE) (which is recognised in Scotland) these awards are acceptable providing they are the versions that are recognised as equivalents to the A1 award plus appropriate CPD.

    Internal Verifiers holding D units must have evidence of CPD to demonstrate compliance with the A and V units
- SQA Accredited Learning and Development Unit L&D 11 "Internally monitor and maintain the quality of workplace assessment"

It is recommended that 'Candidate Internal Verifiers' have a clear action plan for achieving the Internal Verifier qualification(s).

Internal Verifier approval will be withdrawn if the qualification / units have not been attained within 18 months.

Requirements for Assessment

The Smart Metering (7428) qualifications are assessed through a combination of workplace assessment, simulation assessment and knowledge assessment.

*** Important Notes:**

1. The assessment requirements set out in this document must be met in full.
2. In accordance with good practice and Ofqual requirements regarding Conflict of Interest in Assessment (Condition A4 in General Conditions of Regulation – Ofqual 2011) Assessors involved in providing direct training to a Learner, either as part of a group or on a 'one to one' basis should not carry out assessments for any of those trained aspects. Alternatively Awarding Organisations may put in place effective quality control measures to ensure that any potential conflicts of interest do not have an adverse effect on assessment outcomes.
3. Gas Safe Register competence criteria are incorporated in all assessments. It is essential that the Awarding Organisations/Awarding Bodies update their Assessors and Assessment Materials to ensure that any changes to these criteria are reflected in the performance of the candidate from the date they become effective. (for example: if the IGE/UP/1B Testing procedure changed six months prior to the candidate completing the qualification, all assessments including testing from the change date, must be completed against the changed procedure standard).

Practical Evidence

Learners must be able to practice on all specified unit components within the tables below.

RWE assessments must be included in the portfolio of evidence leading to completion of a qualification unit in line with the requirements set out for each unit. This must be supplemented by evidence gathered directly from the workplace as required for each unit and a work experience portfolio, signed off as accurate and authentic by a suitably qualified and Gas Safe Registered engineer.

Learners **must** demonstrate competence in the workplace during the performance of genuine work activities, by carrying out the tasks and duties that would be reasonably expected of them as a competent operative. Learners will be expected to have demonstrated competence in the assessed tasks over a period of time under normal working conditions to generate a sufficiency of evidence.

The gas industry is highly regulated regarding safety requirements and this is reflected in these qualifications. Certain Gas Safety related assessments must only be carried out under simulated conditions. Gas Safety critical activities within the Units will normally be assessed in a simulated RWE and where necessary these requirements are incorporated in the tables.

Learners must demonstrate competence in each unit through assessments in line with the evidence and assessment requirement tables that follow.

Evidence and assessment requirement tables

Unit 209	**Prepare, install and commission natural gas smart meter and regulator** (6 m^3/h)

UNIT ASSESSMENT REQUIREMENTS:

- Assessments must be carried out as documented in this table
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

209.1 Installation of a gas smart meter

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range: • Smart Meter 6 m^3/h **Secondary Range:** • Low Pressure Fed Supply • Internal Installation • Surface or Built In Meter Box • Semi Concealed Meter Box • New Installation • Installation Exchange	One Successful Assessment (ISA 3 - Smart Meter)	Evidence of experience undertaking the satisfactory installation of gas smart meters is required across the documented ranges. At least 10[1] separate installation occasions must occur with the Learner demonstrating experience across the Assessment Criteria on each occasion. At least 6[1] of the installation occasions must be from the workplace.	One Successful Assessment [2]

Table Notes:

1 The documented numbers required to be evidenced do include the assessment occasions.

2 This assessment may be undertaken by gas utilisation qualified personnel without an assessor qualification (see Important Note on Page 34)

Unit 210	**Low pressure gas smart meter tightness testing and direct purging** (IGEM/UP/1B)

UNIT ASSESSMENT REQUIREMENTS:

- Assessments must be carried out as documented in this table
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

210.1 Tightness testing and purging gas installations

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range: • Natural Gas Installations **Secondary Range:** • Purge Natural Gas Installation with Volume 0.02 m^3 • Purge Natural Gas Installation with Volume > 0.02 m^3 0.035 m^3 • New Installation • Existing Installation	One Successful Assessment **(ISA 14)**	Evidence of experience undertaking the satisfactory tightness testing and purging is required across the documented ranges. At least 5 [1] separate installation occasions must occur with the Learner demonstrating experience across the Assessment Criteria on each occasion. At least 3[1] of the installation occasions must be from the workplace.	One Successful Assessment [2]

Table Notes:

[1] The documented numbers required to be evidenced do include the assessment occasions

[2] This assessment may be undertaken by gas utilisation qualified personnel without an assessor qualification

Unit 215	**Prepare, install and commission smart gas meter and regulator** (Natural Gas Meter ≤ 6 m^3/h with MOPu > 75 mbar ≤ 2 bar)

UNIT ASSESSMENT REQUIREMENTS:

- Assessments must be carried out as documented in this table.
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

215.1 Installation of a gas smart meter fed by a medium pressure supply *(MOPu > 75 mbar ≤ 2 bar)*

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range: • Smart Meter ≤ 6 m^3/h **Secondary Range:** • Medium Pressure Fed Supply • Regulator incorporating a Slam Shut Valve (SSV) (PRS 28/E) • Regulator incorporating a Metering Installation Excess Flow Valve (MIEFV) (PRS 29/E) • Surface or Built In Meter Box • Semi Concealed Meter Box • New Installation • Installation Exchange (Existing Installation with NO Meter Inlet Valve (MIV))	One successful assessment	Evidence of experience undertaking the satisfactory installation of gas smart meters is required across the documented ranges. At least 5[1] separate installation occasions must occur with the Learner demonstrating experience across the Assessment Criteria on each occasion. At least 3[1] of the installation occasions must be from the workplace.	One successful Assessment

Table notes:
[1]The documented numbers required to be evidenced do include the assessment occasions.

COMBINED SMART GAS METER INSTALLATION UNITS GSM 2.0 & GSM 4.0

Unit GSM 2.0	**Prepare, install and commission smart gas meter and regulator** (Natural Gas Meter ≤ 6 m3/h with MOPu ≤ 75 mbar)
Unit GSM 4.0	**Prepare, install and commission smart gas meter and regulator** (Natural Gas Meter ≤ 6 m^3/h with MOPu > 75 mbar ≤ 2 bar)

UNIT ASSESSMENT REQUIREMENTS:

- Assessments must be carried out as documented in this table
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

GSM 2.0.1 & GSM 4.0.1 Installation of a gas smart meter fed by a low pressure supply or a medium pressure supply *(MOPu > 75 mbar ≤ 2 bar)*

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range: • Smart Meter ≤ 6 m^3/h **Secondary Range:** • Low pressure • Medium Pressure Fed Supply • Regulator incorporating a Slam Shut Valve (SSV) (PRS 28/E) • Regulator incorporating a Metering Installation Excess Flow Valve (MIEFV) (PRS 29/E) • Surface or Built In Meter Box • Semi Concealed Meter Box • New Installation • Installation Exchange (Existing Installation with NO Meter Inlet Valve (MIV))	Two successful Assessments[1]	Evidence of experience undertaking the satisfactory installation of gas smart meters is required across the documented ranges. At least 10[2] separate installation occasions must occur with the Learner demonstrating experience across the Assessment Criteria on each occasion. At least 8[3] of the installation occasions must be from the workplace.	Two successful assessments

Table notes:

[1] One assessment to be on a low pressure fed meter, one assessment to be on a medium pressure fed meter.

[2] The documented numbers required to be evidenced do include the assessment occasions.

[3] Four assessments to be on a low pressure fed meter, four assessments to be on a medium pressure fed meter.

Additional assessment requirements

Generic Core Knowledge Units

All knowledge criteria must be evidenced by learners. Awarding Organisations can use a variety of assessment methods which will demonstrate that learners have successfully met the unit criteria. These can include Closed Book Written Questions, Open Book Written Questions, Recorded Oral Questions, Projects and Assignments.

Specific Core Knowledge and Performance Units

All knowledge and performance criteria must be evidenced by learners. Awarding Organisations can use a variety of assessment methods which will demonstrate that learners have successfully met the unit criteria. These can include Closed Book Written Questions, Open Book Written Questions, Recorded Oral Questions, Projects, Assignments, Evidence from Practical Assessments conducted in a RWE and evidence from Practical Assessments conducted in the workplace.

Optional Knowledge and Performance Units

All knowledge and performance criteria must be evidenced by learners. Awarding Organisations must ensure that the "Assessment Strategy Evidence and Assessment Requirement Tables" produced for each unit are followed. A variety of assessment methods can be used to demonstrate that learners have successfully met the unit criteria. These can include Closed Book Written Questions, Open Book Written Questions, Recorded Oral Questions Projects, Assignments, Evidence from Practical Assessments conducted in a RWE and evidence from Practical Assessments conducted in the workplace.

Matters of Gas Safety

Awarding Organisations must ensure that all units and the associated "matters of gas safety criteria" are referenced to those issued by Energy & Utility Skills. The "matters of gas safety criteria" are updated on a six monthly cycle and any changes must be implemented in line with the industry requirements agreed with Gas Safe Register.

Realistic Working Environment (RWE) Assessments

RWE simulated assessment may only be used as specified and, if necessary, with the prior approval of the External Verifier (see previous section). Any approval given by the External Verifier MUST be recorded and filed in the centre's Quality Manual and in the 'Learner's Portfolio' for audit purposes.

These assessments will normally be installation and maintenance activities conducted in a workshop area. These areas are considered to be a 'managed' environment because there is a degree of control over the conditions under which the activity is undertaken. The simulation activities and areas will normally include:

- real time pressures;
- a range of appliances, applicable to the assessment types;
- a variety of flue types, e.g. Type 'B', Type 'C', natural & fanned draught with a range of construction methods;
- a range of potential hazards that could realistically be found in a domestic dwelling, e.g. combustible surfaces, opening windows, doors, fans, curtains etc. *(Note: these hazards may be simulated)*;
- a range of installation conditions, e.g. surface installation, under floor installation, through wall installation etc.
- a range of building material types, e.g. brick walls, block walls, plaster board and timber walls.

The RWE must take account of health and safety requirements for risk assessments, gas safety related issues and against other activities where generating evidence is limited.

Gathering Evidence

In order to achieve a qualification, Learners **must** produce sufficient evidence of competence. Documentation must be provided to ensure that evidence of competence is gathered, organised and recorded in a uniform manner across all centres.

Where appropriate, learners may provide evidence of prior learning (see RPL Section of this Guide).

Witness testimony may be used as supporting evidence to cover the range of activities not covered naturally by workplace assessment. This evidence will normally be via a completed document signed by a 'Technically and Occupationally Competent Witness' (the centres External Verifier will be able to give further advice on the use of witness testimony).

Note: Witness testimony is not acceptable as evidence to meet the "Matters of Gas Safety" criteria, incorporated into each qualification.

The Learner's Portfolio

The learner portfolio documents the evidence which will demonstrate learner progress. It records their assessment achievement, development and work experience leading to the attainment of their chosen qualification.

The 'Learner's Portfolio' could be made up of a combination of the following:

- Summary of the results from Knowledge & Understanding Question Papers

- Summary of the results from Assessments (RWE/Workplace)
- Assessment sheets
- Copies of all Learner specific questions together with a record of the answers given (oral or written)
- Feedback sheets
- Workplace Experience Evidence
- Witness Statements
- Work Method Statements
- Evidence of Prior Learning (RPL Evidence)
- Assessor Assessment Plans - feedback to Learners
- Company or employer job sheets and specifications
- Curriculum Vitae
- Photographic Evidence

Witness Testimony

'Witness Testimony' can **not** be accepted as a primary source of evidence for all work activities. 'Witness Testimony' may be used as supporting evidence to cover the range of activities not covered by 'Workplace Assessment' or RWE Assessment.

'Witness Testimony' evidence can only be accepted if the testimony is completed by a 'Technically and Occupationally Competent Witness' and will normally be in the form of a completed and signed source of evidence with other supporting evidence (e.g. company or employer job sheets, photographic evidence). The centre's External Verifier will be able to give further advice on the use of witness testimony.

The evidence provided by 'Witness Testimony' and other non-observed sources must be substantiated by an Assessor (eg by confirming the suitability of the witness and by professional discussion). Once the evidence has been substantiated and suitably documented, then it can be referenced to the appropriate record of achievement by the Assessor.

Written & Oral Questioning

Assessors should use questioning where they consider it is appropriate to fully cover the subject area being assessed and to allow the Learner to evidence their full understanding.

When using oral questions, Assessors should be mindful of the effect their behaviour can have on the Learner's performance. Questions should be asked in the spirit of gaining information rather than pressurising a Learner by creating the atmosphere of a test.

All oral questions must be relevant to the assessment criteria and the Assessor **must not** coach or lead the Learner towards providing correct answers. The Assessor **must not** ask the Learner any 'leading' or 'closed' questions. Assessors should take care to ask clear questions.

Questions and the Learner's responses should be recorded on the appropriate assessment documentation, for example on the 'Feedback Sheet' provided.

Feedback

Learners shall be given feedback at appropriate times during the completion of their qualification, as determined suitable by the Assessor, employer, mentor, etc. This would normally be associated with an assessment activity with Assessor involvement and should be given as soon as practical after the completion of the activity.

It is important that a copy of all feedback and oral questioning sessions with Learners are kept for inclusion in the Learner Portfolio.

Notes from feedback and oral questioning sessions might not include a precise record of the feedback, questions and answers to every question, but a summary of the feedback, questions and answers must be recorded with reference to specific criteria as necessary.

Glossary of Terms EU Skills Assessment strategy

Approved Centre: an organisation inspected by the Awarding Body and deemed to have the trained staff and resources to make assessment arrangements for particular qualifications.

Assessor: person accountable to the external verifier (through the internal verifier) who is both experienced and qualified/or working towards qualifications in assessing Learners. Assessor skills include observation, evaluation, making judgements about individual performance. Assessors may be based in the workplace, in an approved centre such as a college, or be peripatetic, visiting Learners in a variety of situations.

Assessment Plan: Between Assessor and Learner a structured approach is used to specify how, where and when evidence will be generated and what method of assessment will be used. This information is recorded, dated and signed by assessor and Learner and is used as the basis for review meetings between Learner and assessor.

Awarding Organisation: an organisation recognised by Ofqual for the purpose of awarding qualifications.

Learner: employee or student / trainee who wishes to be assessed in order to gain a qualification (formerly referred to as a candidate).

Competence: an assessment based on the Learner's ability to perform a task to a defined standard specified in the national occupational standards.

Evidence: the means by which an external verifier can be satisfied that an individual has been properly assessed, usually a combination of completed/endorsed witness statements, and assessments by a qualified assessor with additional documentation collected in a portfolio of evidence.

External Verifier: person accountable to the Awarding Body who by monitoring and advising internal verifiers and assessors effects quality assurance.

Internal Verifier: person accountable to the external verifier and the Awarding Body who is based in the approved centre and who co-ordinates assessment arrangements and monitors assessor standards.

National Standard of Work (Performance Criteria): required from learners to demonstrate their capability.

National Vocational Qualification: a qualification recognised by UKCES as being relevant to the need of industry.

Portfolio: a structured collection of evidence from several sources, gathered together and referenced to the national occupational standards, in which a learner's achievements are recorded.

Real Work: where the provision of the product or service by the Learner, if not carried out, would require an organisation to employ someone else to do it.

Realistic Working Environment (RWE): an environment within which Learners are producing performance evidence subject to the following conditions:

- real work pressures (e.g. working hours, timescales, accountability, establishing priorities)
- real work problems
- real tools to do the job (e.g. real information, industry standard equipment)
- a real client or customer (not the trainer or assessor).

RPL: the Recognition of Prior Learning- the facility for an individual to receive credit for previously acquired (and still current) competence.

Technically & Occupationally Competent Witness: a gas operative who holds a current certificate of competence in the area of work for which they are providing witness testimony (these operatives must be a 'member of a class of persons' as outlined in Regulation 3(3) of the Gas Safety (Installation and Use) Regulations).

3Centre requirements

3.1Approval

Centres will need to gain both centre and qualification approval to offer these qualifications. Please refer to the *Centre guide* and *Providing City & Guilds Qualifications* for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

3.2 Resource requirements

Centre staffing

Staff delivering these qualifications 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.

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 should hold, or be working towards, the relevant Assessor/Verifier (A/V) units for their role in delivering, assessing and verifying these qualifications, or meet the relevant experience requirements outlined above. They should:

- be vocationally and occupationally competent in the areas they are assessing and have a thorough knowledge of the National Occupational Standards

- be able to provide appropriate documented evidence that demonstrates they have a minimum of five years proven occupational experience in the activities they will be assessing; particular attention should be paid to providing evidence of occupational experience in the gas safety critical areas being assessed

- be technically qualified in domestic gas installation/maintenance and hold one of the following qualifications:
    - City & Guilds / SQA – S/NVQ in Domestic Natural Gas (Level 3)
    - City & Guilds – 662 Certificate for Service Engineers (Gas)
    - City & Guilds – 598-2 Certificate in Gas Installation Studies

- City & Guilds – 660 Certificate in Gas Fitting – Final

- hold a current Certificate of Gas Safety Competence in the areas of gas work they will be assessing that is not more than 5 years old (either current ACS Certificates of Gas Safety Competence or a 6012 S/NVQ are acceptable).

This list is not considered exhaustive and other 'Mechanical Engineering Services' (MES) or 'Building Engineering Services' (BES) qualifications at Level 3 or equivalent may be considered acceptable.

Where assessors undertake assessments in the workplace, and are not supported by a suitable gas operative, they or their employer must be a member of an appropriate Gas Registration Body in accordance with Gas Safety (Installation and Use) Regulations. In these circumstances they should also hold suitable insurance for this activity.

Where the internal verifiers themselves do not hold suitable technical qualifications, they must have access to technical expertise from qualified personnel, who hold the relevant qualifications, to support them where the verification requires technical support and interpretation.

Continuing professional development (CPD)
Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice and that it takes account of any national or legislative developments.

3.3 Candidate entry requirements

City & Guilds does not set entry requirements for these qualifications; however, centres must ensure that candidates have the potential and opportunity to gain the qualifications successfully.

Age restrictions

City & Guilds cannot accept any registrations for candidates under 16 as these qualifications are not approved for under 16s.

4Delivering the qualification

4.1Initial assessment and induction

An initial assessment of each candidate should be made before the start of their programme to identify:

- if the candidate has any specific training needs
- support and guidance they may need when working towards their qualifications
- any units they have already completed, or credit they have accumulated which is relevant to the qualifications
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the candidate fully understands the requirements of the qualifications, their responsibilities as a candidate, and the responsibilities of the centre. This information can be recorded on a learning contract.

4.2 Recording documents

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

City & Guilds endorses several ePortfolio systems. 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.

5Units

Availability of units

The following units can also be obtained from the centre resources section of the City & Guilds website.

They are also on The Register of Regulated Qualifications: **http://register.ofqual.gov.uk/Unit**

Structure of units

These units each have the following:

- City & Guilds reference number
- unit accreditation number
- title
- level
- credit value
- unit aim
- relationship to NOS, other qualifications and frameworks
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria.

Unit 201 Working practices in the energy and utilities sector

UAN:	**L/502/9858**
Level:	Level 2
Credit value:	2
GLH:	13
Relationship to NOS:	This unit has a relationship with the Working Efficiently and Effectively in Engineering National Occupational Standard.
Assessment:	A minimum of one assessment must be based on evidence from the workplace.
Aim:	This unit is designed to provide either new entrants, or those operatives already working within the energy and utilities sector, the opportunity to plan and prepare to complete activities and maintain working practices throughout. Learners will have the opportunity to respond to and resolve problems and contribute to their own personal learning and development whilst maintaining effective working relationships.

Learning outcome
The learner will: 1. be able to plan and prepare to complete activities in the energy and utilities sector.
Assessment criteria
The learner can: 1.1 select appropriate tools, equipment, materials and personal protective equipment (PPE) for the allocated activity 1.2 prepare the working area 1.3 obtain authorisation to carry out the work from the responsible person.

Learning outcome
The learner will: 2. be able to maintain working practices whilst completing activities in the energy and utilities sector.
Assessment criteria
The learner can: 2.1 adhere to all working practices and normative standards whilst completing activities in the energy and utilities sector.
Learning outcome
The learner will: 3. be able to identify, respond to and resolve problems and areas for improvement in own area of responsibility.

Assessment criteria
The learner can: 3.1 identify problems and areas for improvement in own area of responsibility relating to **two** of the following within the energy and utilities sector: a. materials b. tools c. equipment d. information sources e. people f. safety procedures g. workmanship h. time i. weather 3.2 respond appropriately to problems and areas for improvement within the energy and utilities sector 3.3 resolve problems and areas for improvement within the energy and utilities sector 3.4 resolve issues and problems to complete the activity.

Learning outcome
The learner will: 4. be able to create and maintain effective working relationships in the energy and utilities sector.
Assessment criteria
The learner can: 4.1 dress appropriately for the working activity 4.2 communicate effectively with internal and external customers and members of the public 4.3 return information sources to designated personnel on completion of activities 4.4 return resources to designated locations on completion of activities.

Learning outcome
The learner will: 5. be able to contribute to own personal learning and development needs in the energy and utilities sector.
Assessment criteria
The learner can: 5.1 identify personal learning and development needs in relation to work activity and discuss with designated personnel 5.2 agree an appropriate action plan to address personal learning and development needs with designated personnel 5.3 review and revise personal development records.

Unit 202 Working safely in the energy and utilities sector

UAN:	**A/502/9855**
Level:	Level 2
Credit value:	4
GLH:	27
Relationship to NOS:	This unit has a relationship with the Working Safely in an Engineering Environment National Occupational Standard.
Assessment:	A minimum of one assessment must be based on evidence from the workplace.
Aim:	This unit is designed to provide either new entrants or those operatives already working within the energy and utilities sector the opportunity to know hazards and risks, work to approved safety signs and select, use and store personal protective equipment (PPE). They will be able to maintain a safe working environment, handle tools, equipment and materials safely and take action in the event of an emergency.

Learning outcome
The learner will: 1. know hazards and risks in the energy and utilities sector.
Assessment criteria
The learner can: 1.1 identify hazards and risks in the energy and utilities sector 1.2 describe appropriate action to mitigate identified hazards and risks.

Learning outcome
The learner will: 2. be able to work to required safety signs and legislation in the energy and utilities sector.
Assessment criteria
The learner can: 2.1 work safely in accordance with normative industry standards and legislation. **All** of the following must be covered: a. environment b. use of tools and equipment c. materials and substances d. sector working practices 2.2 identify and work safely in accordance with statutory and advisory safety signs and labels.
Learning outcome
The learner will:

3. be able to select, use and store personal protective equipment (PPE) relevant to the activity being carried out in the energy and utilities sector.
Assessment criteria
The learner can: 3.1 select appropriate PPE for the activity being carried out in the energy and utility sector 3.2 carry out pre-use checks on PPE according to company requirements 3.3 use PPE in accordance with legislative requirements 3.4 store PPE appropriately.

Learning outcome
The learner will: 4. be able to take action in the event of accidents and emergencies in the energy and utilities sector.
Assessment criteria
The learner can: 4.1 respond to accidents and emergency situations: a. injury to self b. injury to others 4.2 report accidents, injuries and hazardous or dangerous occurrences to the correct person in line with legislative requirements.

Learning outcome
The learner will: 5. be able to maintain a safe working environment in the energy and utilities sector.
Assessment criteria
The learner can: 5.1 establish and maintain entry and exit routes to working locations 5.2 store tools, equipment and materials safely 5.3 use tools, equipment and materials safely and for the purpose intended. **All** of the following must be covered: a. tools b. equipment c. materials 5.4 dispose of hazardous substances and waste materials in accordance with legislative requirements.

Learning outcome
The learner will: 6. be able to manual handle tools, equipment and materials safely in the energy and utilities sector.
Assessment criteria
The learner can: 6.1 demonstrate safe and correct lifting and carrying technique when carrying out lifting of: a. tools b. equipment c. materials.

Unit 203 Using and communicating technical information in the energy and utilities sector

UAN:	**J/503/0233**
Level:	Level 2
Credit value:	3
GLH:	17
Relationship to NOS:	This unit has a relationship with the Using and Communicating Technical Information National Occupational Standard.
Assessment:	A minimum of one assessment must be based on evidence from the workplace.
Aim:	This unit is designed to provide either new entrants, or those already working within the energy and utilities sector, the opportunity to know relevant information sources and be able to obtain, interpret, use, record and communicate technical information relating to the energy and utilities sector

Learning outcome

The learner will:

1. know relevant information sources for the energy and utilities sector.

Assessment criteria

The learner can:

1.1 identify relevant technical information sources appropriate for the activity to cover **three** from the following:

a. job instructions
b. test schedules
c. company information
d. material specifications
e. reference table and chart
f. planning documentation
g. operating sheets
h. process specification
i. risk assessment
j. method statements

1.2 identify relevant diagrammatic and pictorial information sources appropriate for the activity to cover **two** of the following:

a. detailed component drawings
b. general assembly drawings
c. repair drawings
d. wiring/circuit diagrams
e. installation drawings
f. approved sketches
g. illustrations
h. visual display screens
i. modification drawings
j. fabrication drawings
k. operational diagrams
l. physical layouts
m. manufacturer's manuals and drawings
n. photographic representations.

Learning outcome
The learner will: 2. be able to obtain, interpret and use technical information in the energy and utilities sector.
Assessment criteria
The learner can: 2.1 obtain appropriate technical information from the information source to carry out activities in the energy and utilities sector 2.2 interpret technical information to carry out the work activity, four of the following must be covered: a. de-commissioning procedure b. installation procedure c. commissioning procedure d. test results procedure e. handover procedure 2.3 report any inconsistencies or inaccuracies in information sources to appropriate person(s).

Learning outcome
The learner will: 3. be able to record and communicate technical information in the energy and utilities sector.
Assessment criteria
The learner can: 3.1 produce technical information to record completed activities 3.2 correctly complete technical information to record completed activities 3.3 communicate technical information to the appropriate personnel.

Unit 204 Delivering customer service when working within the energy and utilities sector

UAN:	**F/502/9856**
Level:	Level 2
Credit value:	2
GLH:	13
Relationship to NOS:	This unit has a relationship with the Deliver Customer Service on your Customer's Premises National Occupational Standard.
Assessment:	A minimum of one assessment must be based on evidence from the workplace.
Aim:	This unit is designed to provide either new entrants or those operatives already working within the energy and utilities sector the opportunity to prepare for a work activity in the energy and utilities sector and establish and maintain working relations with customers, including responding to and resolving customer queries.

Learning outcome
The learner will: 1. be able to prepare for a work activity in a customer's premises in the energy and utilities sector.
Assessment criteria
The learner can: 1.1 determine the purpose for visiting the customer from information given 1.2 identify the location of the customer's premises 1.3 prepare relevant information and documentation prior to visiting the customer; evidence to cover **three** of the following: a. personal company identification b. plans c. work instructions d. company information e. customer or client information.

Learning outcome
The learner will: 2. be able to establish and maintain working relations with customers in the energy and utilities sector.
Assessment criteria
The learner can: 2.1 introduce and identify self to the customer in line with company requirements 2.2 explain to the customer the purpose of the visit 2.3 listen to the customer and respond appropriately to customer requirements 2.4 agree work-plan with the customer, providing all relevant information 2.5 record relevant information from the work activity 2.6 respond appropriately to customer concerns and issues in line with company procedures; evidence to cover **two** of the following: a. resolve customer issues on site within own level of responsibility b. resolve customer issues on site when outside own area of responsibility by referring to an appropriate person c. report issues which cannot be resolved on site d. provide the customer with contact details of other personnel if requested.

Unit 205 Install and commission communication systems for smart meters

UAN:	**A/503/0231**
Level:	Level 2
Credit value:	4
GLH:	18
Relationship to NOS:	This unit has a relationship with the Installing Communication Systems in Smart/Advanced Meters (SAM10) and Supporting Customers to Use Digital Devices When Installing Smart Meters (SAM11) National Occupational Standard.
Assessment:	A minimum of one assessment must be based on evidence from the workplace.
Aim:	This unit is designed to provide either new entrants or those operatives already working within the energy and utilities sector the opportunity to: • know the principles of smart metering communication systems • be able to plan, install, commission and test communication systems for smart meters • identify and rectify faults on communication systems.

Learning outcome
The learner will: 1. know the principles of communication technologies used in smart metering.
Assessment criteria
The learner can: 1.1 describe how communication systems for smart metering work 1.2 describe the benefits of communication technologies used in smart metering for: a. customers b. energy suppliers 1.3 explain the different types of in-house display equipment 1.4 describe the implications of installing one type of communication system over another 1.5 explain how to achieve interoperability between meters.

Learning outcome
The learner will: 2. be able to plan the location for the smart metering communication system.
Assessment criteria
The learner can: 2.1 explain how to assess the installation location for safety and correct operations of the communication system 2.2 carry out a risk assessment of proposed locations and record observations using approved documentation 2.3 identify a suitable location for the planned communication system installation for the customer 2.4 carry out relevant checks to ensure that equipment and components provided are correct for the planned installation.

Learning outcome
The learner will: 3. be able to install communication system for smart meters.
Assessment criteria
The learner can: 3.1 select and use the designated tools and installation components 3.2 prepare the location to accommodate the planned installation using information from installation plans, manufacturer's manuals and the site specific risk assessment 3.3 assemble equipment and components to manufacturer's specification 3.4 install communication system as required by the plan 3.5 install in-home display/software equipment as required by the plan 3.6 connect the installation to services as required by the plan 3.7 leave the installation site in a safe, clean and secure condition upon completion 3.8 record installation information accurately using relevant documentation and procedures 3.9 inform the customer if the installation cannot be completed and what actions are required for successful completion.

Learning outcome
The learner will: 4. be able to commission, test and complete communication installation for smart meters.
Assessment criteria
The learner can: 4.1 activate the communication system 4.2 check that the installation functions according to specification 4.3 test the communication reception system for transmitting and receiving data 4.4 complete final checks on the communication system in accordance with specifications 4.5 confirm all communication systems work in accordance with manufacturer's and employer's requirements 4.6 inform the customer when the installation is complete or if there are any problems with the installation and advise when work will be completed 4.7 demonstrate to the customer how the installation works providing them with any relevant user operating instructions, to include at least **two** of the following: a. operation of IHU b. access to supplier web based energy information c. appending credit and accessing relevant energy usage information d. pairing smart meter with compatible appliances e. operation of export tariffs 4.8 complete all relevant installation documentation.

Learning outcome
The learner will: 5. be able to identify and rectify faults in smart meter communication systems.
Assessment criteria
The learner can: 5.1 use relevant diagnostic procedures to determine the causes of system faults in line with manufacturer's guidelines 5.2 report system faults in equipment and components that cannot be rectified on site to the responsible person(s) 5.3 explain guidelines on replacing defective components where applicable 5.4 rectify system faults, replacing defective components 5.5 complete appropriate documentation and report findings in line with industry procedures.

Unit 206 Install single phase meter and associated equipment

UAN:	**M/600/3988**
Level:	Level 2
Credit value:	11
GLH:	30
Assessment:	A minimum of two assessments are required for this unit. A minimum of one assessment must include a full electricity meter equipment, and associated communications, installation in a workplace environment. A minimum of one assessment must be based on evidence using the National Assessment Specification.
Aim:	This unit is about installing single phase metering and associated equipment in an electrical power engineering environment. It involves completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finished work meets the quality assurance and operating specifications set by the organisation.

Learning outcome
The learner will: 1. be able to plan for work activities to install single phase meter and associated equipment in line with company procedures.
Assessment criteria
The learner can: 1.1 identify work location using available information 1.2 conduct a site specific risk assessment in line with health and safety regulations 1.3 **plan the work to be undertaken** in line with risk assessment 1.4 inform all affected parties of their intended work plan.

Learning outcome
The learner will: 2. be able to prepare resources to install single phase meter and associated equipment in line with company procedures.
Assessment criteria
The learner can: 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations 2.2 apply **control measures** to ensure the work area is fit for purpose in line with risk assessment 2.3 identify the meter and associated equipment to be installed, in line with the work plan 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment 2.5 check tools and equipment are fit for purpose to carry out the identified work 2.6 check meter details and accurately record meter readings 2.7 report faults with tools, equipment and personal protective equipment (PPE).

Learning outcome
The learner will: 3. be able to install a single phase meter and associated equipment in line with company procedures.
Assessment criteria
The learner can: 3.1 **install** the identified single phase meter and associated equipment using selected tools and equipment, in line with the work plan and risk assessment 3.2 install an isolator on at least one occasion, in line with the work plan 3.3 perform testing procedures on completed installations 3.4 check the completed installation complies with work instructions and equipment specifications 3.5 demonstrate that problems are resolved safely and efficiently, referring matters which cannot be rectified to the appropriate person 3.6 work in accordance with safe working and environmental practices, health and safety regulations and environmental legislation 3.7 complete required post activity documentation 3.8 demonstrate that tools and equipment are stored 3.9 demonstrate that waste materials are handled in line with statutory procedures 3.10 demonstrate that the work area is left in a safe condition.

Learning outcome
The learner will: 4. understand how to install a single phase meter and associated equipment using general knowledge.
Assessment criteria
The learner can: 4.1 describe the main principles of health and safety regulations and environmental legislation 4.2 identify company reporting lines, authorisation roles and responsibilities 4.3 describe the company policies and procedures that directly impact on the work to be undertaken.

Learning outcome
The learner will: 5. understand how to install a single phase meter and associated equipment using work-specific knowledge.
Assessment criteria
The learner can: 5.1 describe the company procedures and processes for reporting problems with tools and equipment 5.2 describe the procedures and information sources used to make sure that tools and equipment are fit for purpose 5.3 describe the processes and procedures for inspecting and preparing tools and equipment prior to use 5.4 identify the instructions and processes for using tools and equipment safely when undertaking routine checks 5.5 describe what personal protective equipment (PPE) needs to be worn when undertaking work activities 5.6 describe what materials and substances are dangerous and hazardous to health 5.7 describe how to maintain safe working and environmental practices 5.8 describe how to minimise risks to self and others when undertaking work activities 5.9 identify company work instructions and reporting systems 5.10 describe the required response to different types and categories of emergency situations that may occur 5.11 describe how to install plant and apparatus using specified principles, methods, processes and procedures 5.12 identify and report inaccurate and incorrect work instructions and documentation.

Unit 206 Install single phase meter and associated equipment

Supporting information

Unit range

1.3 **Plan the work to be undertaken**; must include: location, content and sequence of tasks, personnel.

2.2 **Control measures**

Must include: signs and barriers, demarcation of work area, control and removal of hazards, and contamination protection.

3.1 **Install**

Installation must include one of the following:

a) single phase single rate meter
b) multi rate with communication method
c) two rate (with timeswitch and teleswitch with off peak or no off peak supplies)
d) two rate 5 terminal meter
e) multi-rate meter
f) two rate key and token (with or without communication method, with or without off peak supply.

Unit 207 Change single phase meter and associated equipment

UAN:	**A/600/3993**
Level:	Level 2
Credit value:	11
GLH:	30
Assessment:	A minimum of two assessments are required for this unit. A minimum of one assessment must be observed in the workplace.
Aim:	This unit is about changing single phase metering and associated equipment in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves the wearing of personal protective equipment whilst carrying out the work.

Learning outcome
The learner will: 1. be able to plan for work activities to change single phase meter and associated equipment in line with company procedures.
Assessment criteria
The learner can: 1.1 identify work location using available information 1.2 conduct a site specific risk assessment in line with health and safety regulations 1.3 **plan the work to be undertaken** in line with risk assessment 1.4 inform all affected parties of their intended work plan.

Learning outcome
The learner will: 2. be able to prepare resources to change single phase meter and associated equipment in line with company procedures.
Assessment criteria
The learner can: 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations 2.2 apply **control measures** to ensure the work area is fit for purpose in line with risk assessment 2.3 identify the meter and associated equipment to be installed, in line with the work plan 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment 2.5 check tools and equipment are fit for purpose to carry out the identified work 2.6 check meter details and accurately record meter readings 2.7 report faults with tools, equipment and personal protective equipment (PPE).

Learning outcome
The learner will: 3. be able to change a single phase meter and associated equipment in line with company procedures.
Assessment criteria
The learner can: 3.1 **remove** the identified single phase meter and associated equipment using selected tools and equipment, in line with the work plan and risk assessment 3.2 replace removed meters 3.3 perform testing procedures on completed installations 3.4 demonstrate that problems are resolved safely and efficiently, referring matters which cannot be rectified to the appropriate person 3.5 demonstrate that work is carried out in accordance with safe working and environmental practices, health and safety regulations and environmental legislation 3.6 complete required post activity documentation 3.7 demonstrate that tools and equipment are stored 3.8 demonstrate that waste materials are handled in line with statutory procedures 3.9 demonstrate that the work area is left in a safe condition.

Learning outcome
The learner will: 4. understand how to change a single phase meter and associated equipment using general knowledge.
Assessment criteria
The learner can: 4.1 describe the main principles of health and safety regulations and environmental legislation 4.2 identify company reporting lines, authorisation roles and responsibilities 4.3 describe the company policies and procedures that directly impact on the work to be undertaken.

Learning outcome
The learner will: 5. understand how to change a single phase meter and associated equipment using work-specific knowledge.
Assessment criteria
The learner can: 5.1 describe the company procedures and processes for reporting problems with tools and equipment 5.2 describe the procedures and information sources used to make sure that tools and equipment are fit for purpose 5.3 describe the processes and procedures for inspecting and preparing tools and equipment prior to use 5.4 identify the instructions and processes for using tools and equipment safely when undertaking routine checks 5.5 describe what personal protective equipment (PPE) needs to be worn when undertaking work activities 5.6 describe what materials and substances are dangerous and hazardous to health 5.7 describe how to maintain safe working and environmental practices 5.8 describe how to minimise risks to self and others when undertaking work activities 5.9 identify the procedures and documentation used for reporting problems 5.10 identify company work instructions and reporting systems 5.11 describe the required response to different types and categories of emergency situations that may occur 5.12 describe how to replace plant and apparatus using specified principles, methods, processes and procedures 5.13 identify and report inaccurate and incorrect work instructions and documentation.

Unit 207 Change single phase meter and associated equipment

Supporting information

Unit range

1.3 **Plan the work to be undertaken**; must include: location, content and sequence of tasks, personnel.

2.2 **Control measures**

Must include: signs and barriers, demarcation of work area, control and removal of hazards, and contamination protection.

3.1 **Remove**

Removal must include one of the following:

a) single phase single rate meter
b) multi rate with communication method
c) two rate (with timeswitch and teleswitch with or without off peak supplies)
d) two rate 5 terminal meter
e) multi-rate meter
f) f) two rate key and token (with and without communication method, with or without off peak supplies).

Unit 208 Applied practices and principles for installing low pressure natural gas smart meters up to U6 only

UAN:	**K/503/0256**
Level:	Level 2
Credit value:	20
GLH:	150
Relationship to NOS:	This unit has a relationship with the Gas Smart Meter tightness testing and direct purging – IGE/UP/1B (low pressure only) National Occupational Standard.
Aim:	This unit is designed to provide either new entrants or those operatives already working within the gas industry with the opportunity to: • understand the dangers associated with electricity • be able to use scientific principles in gas utilisation for natural gas smart meters • understand gas pressure regulators • know about combustion and the effects of its products • understand building materials and methods used in the installation of natural gas smart meters • understand the gas safety legislation and standards relating to gas smart metering.

Learning outcome
The learner will: 1. understand the dangers associated with electricity when preparing to install low pressure natural gas smart meters.
Assessment criteria
The learner can: 1.1 evaluate the potential risks of electrical shock resulting from the existing electrical installation and faulty electrical tools and equipment. **All** of the following must be covered: a. common electrical dangers on construction sites, in business and private properties b. signs of damaged or worn electrical cables, power tools and property hard wiring systems c. signs of visual faults in electrical components d. trailing cables e. proximity of cables to any service pipework and meter installation f. buried and hidden cables g. avoidance of cables under wooden floor 1.2 explain different types of earthing used in properties, including main and supplementary protective bonding; **all** of the following must be covered: a. requirements and procedures for use of temporary continuity bonding

b. earthing methods and sizing
c. main equipotential bonding
d. supplementary bonding
e. temporary bonding
f. electrical earth bonding labels.

Learning outcome
The learner will: 2. be able to use scientific principles in gas utilisation for natural gas smart metering.
Assessment criteria
The learner can: 2.1 identify the types of gas meter currently used in the gas industry and the gas rate for each of them.

Learning outcome
The learner will: 3. understand how to use gas pressure regulators.
Assessment criteria
The learner can: 3.1 identify the correct operating pressures for low pressure in the natural gas network 3.2 outline the network pressure tiers 3.3 explain the need for, and use of, pressure regulators including factors affecting pressure loss 3.4 explain how to correctly use pressure gauges to include digital and water.

Learning outcome
The learner will: 4. know about combustion and the effects of its products.
Assessment criteria
The learner can: 4.1 evaluate the characteristics of: a. complete and incomplete combustion including air and fuel requirements b. pre and post aerated flames c. the effects of carbon monoxide on building occupants 4.2 identify, visually, burner faults resulting in incomplete combustion including: a. flame lift b. lighting back.

Learning outcome
The learner will: 5. understand building materials and methods used in the installation of natural gas smart meters.
Assessment criteria
The learner can: 5.1 explain how to identify corrosion in metals and protection methods; all of the following must be covered: a. properties of metals b. corrosion c. protection from corrosion to protective finishes d. construction materials including plastics, timber, bricks, concrete, cement and plaster 5.2 explain how to identify correct and incorrect service entries into buildings. **Both** of the following must be covered: a. damp proof course b. other services entering properties 5.3 explain how to identify suitable and unsuitable routes within buildings for the installation of gas pipework and fittings. All of the following must be covered: a. types of pipe materials and fittings suitable for carrying gas b. jointing of materials and fittings including copper capillary, compression, push-fit joints, press fit joints c. steel including threaded and union joints d. suitable pipe supports and fixings including methods used for a variety of walls, brick, concrete, thermalite block, studded, dry lined and timber frame e. location of pipes, route and appearance f. pipework in walls, voids, ducts/shafts and under floors g. exterior pipework h. interrelation with other services i. corrosion protection j. gas pipe identification k. disconnection of pipes and fittings including use of temporary continuity bond 5.4 summarise the need for ventilation for gas fuelled appliances, ventilation paths and their effect upon sizes 5.5 calculate ventilation requirements for all types of gas-fuelled appliances. **All** of the following must be covered in the calculations: a. ventilation openings and grilles b. adventitious ventilation c. location of vents d. installation of vents through walls e. ventilation paths via other rooms f. ventilation paths to compartments including ducts g. ventilation requirements for open-flue appliances h. ventilation requirements for flueless appliances i. ventilation requirements for appliances in compartments j. compartment ventilation labels k. effects of extractor fans l. ventilation for vertex flues m. passive stack ventilation

5.6 explain how to identify correct and incorrect ventilators and installations

5.7 describe the different types of open flue and room sealed chimney systems. **All** of the following types of chimney systems must be covered:

a. natural
b. fanned draught
c. rigid chimney types: brick/masonry, single and double wall, metallic and non-metallic
d. flexible metallic liners
e. shared (common) chimney systems
f. SE & U Ducts

5.8 summarise the suitability and characteristics of all of the following chimney construction materials:

a. metallic (single/double wall)
b. non metallic
c. brick/masonry chimneys
d. chimney blocks
e. flexible metallic liners
f. gas flue boxes

5.9 identify correct and incorrect chimney outlet positions for open flue chimneys and room sealed appliances. Both of the following must be covered:

a. pitched and flat roofs
b. proximity to windows, doors, carports

5.10 explain the different flue and chimney systems and how they operate. **All** of the following must be covered:

a. parts of an open flue chimney
b. open flue chimney system operation
c. chimney system design
d. temperature effects
e. condensation problems
f. flue terminal design
g. open flue, natural draught chimney outlet locations/positions before and after 2001
h. general operations of room sealed chimney including: parts and operation of a room-sealed appliance flue (natural draught and fan draught), room sealed appliance flue, flue terminal design
i. room sealed chimney materials including metallic and plastic
j. room sealed chimney outlet positions including terminal positions, neighbouring properties, carports or extensions, condensing appliances, basements, light wells and retaining walls, terminal guards requirements

5.11 explain the need to test an open chimney and room sealed appliance and who would carry out the test. To include **all** of the following:

a. visual checks
b. factors that affect performance including down draught and wind effects
c. effects of passive stack ventilation
d. effects of fans
e. flue flow test and spillage
f. testing fanned draught open flue systems
g. checking case seals and case integrity
h. checking/testing positive pressure case appliances.

Learning outcome
The learner will: 6. understand gas safety regulations, legislation and standards in natural gas smart metering.
Assessment criteria
The learner can: 6.1 explain the scope and purpose of regulations, legislation and standards relating to work activities covering: a. Gas Safety (Installation and Use) Regulations b. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 6.2 explain the unsafe situations procedure and how the information at each level is passed on to the customer 6.3 identify, visually, unsafe situations in appliances, meters and installation pipework.

Unit 209 Prepare, install and commission low pressure natural gas smart meter and regulator up to 6.0m3/hr

UAN:	**F/503/0232**
Level:	Level 2
Credit value:	3
GLH:	8
Relationship to NOS:	This unit has a relationship with the Install Gas Smart Meters and Regulators – up to 6.0m³/hr DSG 3.12 National Occupational Standard.
Assessment:	A minimum of two assessments must be conducted in the workplace, the remaining assessments can either be based in the workplace or in a RWE.
Aim:	This unit is designed to provide new entrants or those already working within the gas industry the opportunity to plan and prepare work activities, plan resources, de-commission, install and commission natural gas smart meters (up to 6.0m³/hr) on low pressure gas services

Learning outcome
1. be able to plan and prepare work activities to install natural gas smart meter (up to 6.0m³/hr) on low pressure gas systems.
Assessment criteria
The learner can: 1.1 identify and agree the work location using available information 1.2 check the work site for damage or defects 1.3 record and report any damage or defects to the correct people 1.4 inform all affected parties of their intended work plan, in line with industry standards 1.5 demonstrate how to test for the presence of voltage at the meter installation using an approved voltage sensing device 1.6 confirm the siting of the emergency control valve is accessible, correctly labelled and operating correctly, reporting any defects to the network owner for rectification 1.7 conduct a site specific risk assessment, completing required documentation in line with health and safety regulations and industry standards 1.8 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety requirements 1.9 explain what to look for when carrying out a visual inspection of tools and equipment 1.10 plan the work to be undertaken to comply with industry standards and manufacturer's guidelines, taking into account risk assessment, location, ventilation 1.11 explain the appropriate industry standards and procedures that directly impact on the work to be undertaken

1.12 describe the appropriate regulations relating to safe access and working at heights 1.13 select the appropriate tools and equipment required to work at heights and in confined spaces.

Learning outcome
The learner will: 2. be able to prepare resources to install natural gas smart meter (up to 6.0m^3/hr) on low pressure gas systems.
Assessment criteria
The learner can: 2.1 select and prepare tools and equipment compatible with the work plan, risk assessment and industry standards 2.2 report any defects and/or shortages 2.3 apply correct control measures to ensure the work site is in a safe and suitable condition for work and the area is protected from damage being caused throughout the work 2.4 identify and confirm the meter installation is supplied with low pressure (75mbar or less) 2.5 confirm and record meter readings 2.6 confirm the gas load is operating at the maximum capacity of the meter 2.7 explain the actions to be taken in case of non-compliance of the meter installation 2.8 identify and confirm suitability of the meter and associated equipment to be installed, in line with industry standards and work plan.

Learning outcome
The learner will: 3. be able to de-commission natural gas meters and regulators (up to 6.0m^3/hr) on low pressure gas service.
Assessment criteria
The learner can: 3.1 check that conditions within the gas and earthing systems permit safe de-commissioning 3.2 use the correct tools and equipment for the different de-commissioning activities including use of temporary continuity bonds 3.3 use designated safe isolation methods, tests and procedures to de-commission meters, regulators, gas installation and components 3.4 take appropriate precautionary action to ensure that temporarily de-commissioned meters, regulators, gas installation components do not present a safety hazard 3.5 permanently remove and disconnect meters, regulators, gas systems and components including any equipotential bonding as required ensuring the appropriate labelling, storage and waste management procedures are followed 3.6 correctly label any live gas pipes following permanent removal of a meter leaving a permanent bond or other electrical safety measures in place 3.7 explain the procedures for temporary and permanent de-commissioning of meters and regulators, including the use of temporary continuity bonds 3.8 explain the precautions to be taken to ensure they do not prevent safety hazards 3.9 communicate appropriately with responsible persons in the de-commissioning process.

Learning outcome
The learner will: 4. be able to install natural gas smart meter (up to 6.0m^3/hr) on low pressure gas service.

Assessment criteria
The learner can: 4.1 work in accordance with relevant health, safety, environmental and industry standards throughout the installation 4.2 explain how and where to access information relating to the installation 4.3 install the identified natural gas smart meter (2.5 to 6.0m^3/hr) and associated equipment on low pressure gas service using selected tools and equipment, in line with the work plan, risk assessment, manufacturer's specifications and relevant regulations and standards 4.4 explain who to liaise with when procedures or routines may be affected by the suspension of the gas supply and the importance of this 4.5 correctly carry out testing procedures on completed installations in line with industry standards 4.6 check the completed installation meets and complies with the work plan and equipment specifications 4.7 check for adequate earthing and bonding to the installation 4.8 explain the actions to be taken if earthing and bonding are inadequate 4.9 confirm the integrity of the installation and gas system using tightness and purging procedures (low pressure testing only) 4.10 appropriately complete and attach a warning notice on at least **one** occasion 4.11 resolve any problems encountered during the installation safely and efficiently in line with industry standards, referring matters which cannot be resolved to an appropriate person 4.12 inform the customer if work not completed and explain the reason(s) 4.13 complete all relevant documentation/electronic data relating to the installation in line with industry standards 4.14 store all tools and equipment in line with industry standards and health and safety requirements 4.15 safely collect and dispose of all waste, including components that may be hazardous to health or the environment in line with industry standards.

Learning outcome
The learner will: 5. be able to commission natural gas smart meter (up to 6.0m^3/hr) on low pressure gas service.
Assessment criteria
The learner can: 5.1 confirm that conditions within the gas installation are suitable and will permit safe commissioning 5.2 select and use appropriate tools and equipment for the commissioning activity 5.3 confirm the gas operating pressure is correct for the activity and adjust or inform the network owner if not able to achieve the correct pressure 5.4 visually inspect to confirm the operation of the installation conforms to manufacturer's instructions, industry standards and British Standards 5.5 explain the gas industry unsafe situations procedure and when this applies, including when to isolate unsafe gas appliances, systems and components 5.6 relight any previously connected appliances to manufacturer's instructions and visually inspect for safety defects 5.7 instruct the customer on the correct operation of the installation, providing a copy of manufacturer's instructions and other relevant documentation.

Unit 210 Low pressure gas smart meter tightness testing and direct purging

UAN:	**J/502/9857**
Level:	Level 2
Credit value:	3
GLH:	16
Relationship to NOS:	This unit has a relationship with the Gas Smart Meter Tightness Testing And Direct Purging – IGE/UP/1B (Low Pressure Only) National Occupational Standard.
Assessment:	See page 56.
Aim:	This unit is designed to provide either new entrants or those operatives already working in the gas industry installing smart meters the opportunity to plan and prepare work activities, de-commission natural gas systems and carry out tightness tests and direct purging on low pressure natural gas smart meters

Learning outcome
The learner will: 1. be able to plan and prepare work activities for tightness testing and direct purging - low pressure only.
Assessment criteria
The learner can: 1.1 confirm the siting of the gas supply and provision of ventilation meets the industry requirements for tightness testing and direct purging 1.2 conduct a site specific risk assessment, completing required documentation in line with health and safety regulations and industry standards 1.3 plan the work to be undertaken to comply with industry standards and manufacturer's guidelines taking into account risk assessment, location, ventilation 1.4 confirm that the gas supply meets the industry requirements for the installation.

Learning outcome
The learner will: 2. be able to de-commission natural gas systems and components to industry standards.
Assessment criteria
The learner can: 2.1 check and confirm that conditions within the gas installation permit safe de-commissioning 2.2 select and use the correct tools and equipment for de-commissioning activities 2.3 explain the process to be followed should materials, components, tools and equipment not be available to commence the de-commissioning process 2.4 use designated safe isolation methods, tests and procedures to de-commission gas installations and components 2.5 take appropriate precautionary action to ensure that temporarily de-commissioned appliances, gas systems and components do not present a safety hazard 2.6 take appropriate, safe and correct action to prevent de-commissioned gas systems being brought into operation 2.7 communicate with others who may be affected by the suspension of the gas supply including other trades and customer.

Learning outcome
The learner will: 3. be able to tightness test and direct purge low pressure natural gas smart meters.
Assessment criteria
The learner can: 3.1 apply control measures to ensure safety and suitability of the work site during the test in line with a site specific risk assessment 3.2 apply methods of working which protect the building décor, customer property and existing systems and components 3.3 carry out a trace and repair to a gas escape and retest 3.4 isolate unsafe gas appliances, gas systems and components and apply the gas industry unsafe situations procedure 3.5 carry out low pressure purging procedures to the current standard to confirm the safe supply of gas to the installed gas pipe work and appliances 3.6 resolve any problems as they arise in accordance with approved procedures and refer to an appropriate person when problems cannot be resolved 3.7 instruct the customer or appropriate person on the correct operation of the meter installation, valves and components, providing a copy of any literature 3.8 complete all records and documentation in line with industry standards following tightness testing and direct purging 3.9 store all tools and equipment in line with health and safety requirements 3.10 safely collect and dispose of all waste, including system contents that may be hazardous to health or the environment, in line with legislative requirements.

Unit 211 Install multi phase meter – whole current (new connection)

UAN:	**J/600/4001**
Level:	Level 2
Credit value:	15
GLH:	45

Learning outcome
The learner will: 1. plan for work activities to install multi phase meter (whole current).
Assessment criteria
The learner can: 1.1 identify the correct work location using available information 1.2 conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations 1.3 plan the work to be undertaken to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel 1.4 inform all affected parties of their intended work plan, in line with company procedures.

Learning outcome
The learner will: 2. prepare resources to install multi phase meter (whole current).
Assessment criteria
The learner can: 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and company procedures (eg signs and barriers, demarcation of work area, control and removal of hazards, contamination protection) 2.3 identify the correct meter to be installed, in line with company procedures and work plan 2.4 select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures 2.5 check the tools and equipment are fit for purpose to carry out the identified work in line with company procedures 2.6 confirm meter details and record meter readings 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures.

Learning outcome
The learner will: 3. install multi phase meter (whole current).
Assessment criteria
The learner can: 3.1 install identified multi phase meter using selected tools and equipment, in line with the work plan, risk assessment and company procedures. Installation to include **one** electronic multi phase meter and any **one** of the following: a. multi phase multi rate meter with communication method b. mechanical multi phase meter c. mechanical multi phase multi rate with or without off peak supplies d. electronic multi phase multi rate meter with or without off peak supplies 3.2 carry out appropriate testing procedures on completed installations, in line with company procedures 3.3 check the completed installation to ensure it meets and complies with work instructions and equipment specifications 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person 3.5 work throughout the duration of the work in accordance with: a. safe working and environmental practices b. company procedures c. health and safety regulations d. environmental legislation 3.6 complete all required post activity documentation in line with company policy 3.7 ensure all tools and equipment are stored in line with company procedures 3.8 ensure hazardous and non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures 3.9 ensure the work area is left in a safe condition compatible with company procedures.

Learning outcome
The learner will: 4. know and understand how to install multi phase meter (whole current) using general knowledge.
Assessment criteria
The learner can: 4.1 demonstrate they know the main principles of health and safety and environmental legislation and regulations 4.2 demonstrate they know the company reporting lines and authorisation roles and responsibilities 4.3 demonstrate they know the company policies and procedures that directly impact on the work to be undertaken.

Learning outcome
The learner will: 5. know and understand how to install multi phase meter (whole current) using work-specific knowledge.
Assessment criteria

The learner can:

5.1 demonstrate they know the company procedures and processes for reporting problems with tools and equipment

5.2 demonstrate they know how to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use

5.4 demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 demonstrate they know what personal protective equipment needs to worn when undertaken work activities

5.6 demonstrate they know what materials and substances are dangerous and hazardous to health

5.7 demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work

5.8 demonstrate they know how to minimise risks to self and others when undertaking work activities

5.9 demonstrate they know the company work instruction, information and reporting systems and documentation

5.10 demonstrate they know how to respond to the different types and categories of emergency situations that might occur

5.11 demonstrate they know how to install plant and apparatus using specified principles, methods, processes and procedures

5.12 demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation.

Unit 212 Change multi phase meter – whole current

UAN:	**F/600/4000**
Level:	Level 2
Credit value:	15
GLH:	45

Learning outcome
The learner will: 1. plan for work activities to change multi phase meter (whole current).
Assessment criteria
The learner can: 1.1 identify the correct work location using available information 1.2 conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations 1.3 plan the work to be undertaken to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel 1.4 inform all affected parties of their intended work plan, in line with company procedures.

Learning outcome
The learner will: 2. prepare resources to change multi phase meter (whole current).
Assessment criteria
The learner can: 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and company procedures (eg signs and barriers, demarcation of work area, control and removal of hazards, contamination protection) 2.3 identify the correct meter and associated equipment to be worked on, in line with company procedures and work plan 2.4 select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures 2.5 check the tools and equipment are fit for purpose to carry out the identified work in line with company procedures 2.6 confirm meter details and record meter readings 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures.

Learning outcome
The learner will:

3. change multi phase meter (whole current).
Assessment criteria
The learner can: 3.1 remove the identified single phase meter and associated equipment using selected tools and equipment, in line with the work plan, risk assessment and company procedures. Removal must include **one** multi phase single rate meter and any **one** of the following: a. multi phase mechanical meter with or without timeswitch and teleswitch b. electronic multi phase meter c. multi rate meter with communication method 3.2 follow job instructions and company procedures to replace the removed meters with any **two** of the following: a. multi phase multi rate meter with communication method b. mechanical multi phase meter c. mechanical multi phase multi rate with or without off peak supplies d. electronic multi phase multi-rate meter with or without off peak supplies 3.3 carry out appropriate testing procedures on completed installations, in line with company procedures 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person 3.5 work throughout the duration of the work in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation 3.6 complete all required post activity documentation in line with company policy 3.7 ensure all tools and equipment are stored in line with company procedures 3.8 ensure hazardous and non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures 3.9 ensure the work area is left in a safe condition compatible with company procedures.

Learning outcome
The learner will: 4. know and understand how to change multi phase meter (whole current) using general knowledge.
Assessment criteria
The learner can: 4.1 demonstrate they know the main principles of health and safety and environmental legislation and regulations 4.2 demonstrate they know the company reporting lines and authorisation roles and responsibilities 4.3 demonstrate they know the company policies and procedures that directly impact on the work to be undertaken.

Learning outcome
The learner will: 5. know and understand how to change multi phase meter (whole current) using work-specific knowledge.
Assessment criteria
The learner can:

5.1	demonstrate they know the company procedures and processes for reporting problems with tools and equipment
5.2	demonstrate they know how to read and interpret the, procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3	demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4	demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
5.5	demonstrate they know what personal protective equipment needs to worn when undertaken work activities
5.6	demonstrate they know what materials and substances are dangerous and hazardous to health
5.7	demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work
5.8	demonstrate they know how to minimise risks to self and others when undertaking work activities
5.9	demonstrate they know the procedures and documentation used for reporting problems
5.10	demonstrate they know the company work instruction, information and reporting systems and documentation
5.11	demonstrate they know how to respond to the different types and categories of emergency situations that might occur
5.12	demonstrate they know how to replace plant and apparatus using specified principles, methods, processes and procedures
5.13	demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation.

Unit 213 Install single phase meter and associated equipment on multi phase cut-out (new connection)

UAN:	**M/600/4008**
Level:	Level 2
Credit value:	10
GLH:	30

Learning outcome
The learner will: 1. plan for work activities to install single phase meter and associated equipment on multi phase cut-outs.
Assessment criteria
The learner can: 1.1 identify the correct work location using available information 1.2 conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations 1.3 plan the work to be undertaken to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel 1.4 inform all affected parties of their intended work plan, in line with company procedures.

Learning outcome
The learner will: 2. prepare resources to install single phase meter and associated equipment on multi phase cut-outs.
Assessment criteria
The learner can: 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and company procedures (eg signs and barriers, demarcation of work area, control and removal of hazards, contamination protection) 2.3 identify the correct meter to be installed, in line with company procedures and work plan 2.4 select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures 2.5 check the tools and equipment are fit for purpose to carry out the identified work in line with company procedures 2.6 confirm meter details and record meter readings 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures.

Learning outcome
The learner will: 3. install single phase meter and associated equipment on multi phase cut-outs.
Assessment criteria
The learner can: 3.1 install identified single multi phase meter and associated equipment on multi phase cut outs using selected tools and equipment, in line with the work plan, risk assessment and company procedures. Installation to include **one** single phase single rate meter and any **one** of the following: a. multi rate with communication method b. two rate (with timeswitch and teleswitch with or without off peak supplies) c. multi rate 5 terminal meter d. multi-rate meter e. two rate key and token (with or without communication method, with or without off peak supplies) 3.2 install an isolator on at least **one** occasion, in line with company precedures and work plan 3.3 carry out company required testing procedures on completed installations, in line with company procedures 3.4 check the installation meets and complies with the work instructions and equipment specifications 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person 3.6 work throughout the duration of the work in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation 3.7 complete all required post activity documentation in line with company policy 3.8 ensure all tools and equipment are stored in line with company procedures 3.9 ensure hazardous and non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures 3.10 ensure the work area is left in a safe condition compatible with company procedures.

Learning outcome
The learner will: 4. know and understand how to install single phase meter and associated equipment on multi phase cut-outs using general knowledge.
Assessment criteria
The learner can: 4.1 demonstrate they know the main principles of health and safety and environmental legislation and regulations 4.2 demonstrate they know the company reporting lines and authorisation roles and responsibilities 4.3 demonstrate they know the company policies and procedures that directly impact on the work to be undertaken.

Learning outcome
The learner will: 5. know and understand how to install single phase meter and associated equipment on multi phase cut-outs using work-specific knowledge.
Assessment criteria
The learner can: 5.1 demonstrate they know the company procedures and processes for reporting problems with tools and equipment 5.2 demonstrate they know how to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use 5.3 demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use 5.4 demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks 5.5 demonstrate they know what personal protective equipment needs to worn when undertaken work activities 5.6 demonstrate they know what materials and substances are dangerous and hazardous to health 5.7 demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work 5.8 demonstrate they know how to minimise risks to self and others when undertaking work activities 5.9 demonstrate they know the company work instruction, information and reporting systems and documentation 5.10 demonstrate they know how to respond to the different types and categories of emergency situations that might occur 5.11 demonstrate they know how to install plant and apparatus using specified principles, methods, processes and procedures 5.12 demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation.

Unit 214 Change single phase meter and associated equipment on multi phase cut-outs

UAN:	**T/600/4009**
Level:	Level 2
Credit value:	10
GLH:	30

Learning outcome
The learner will: 1. plan for work activities to change single phase meter and associated equipment on multi phase cut-outs.
Assessment criteria
The learner can: 1.1 identify the correct work location using available information 1.2 conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations 1.3 plan the work to be undertaken to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel 1.4 inform all affected parties of their intended work plan, in line with company procedures.

Learning outcome
The learner will: 2. prepare resources to change single phase meter and associated equipment on multi phase cut-outs.
Assessment criteria
The learner can: 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and company procedures (eg signs and barriers, demarcation of work area, control and removal of hazards, contamination protection) 2.3 identify the correct meter and associated equipment to be worked on, in line with company procedures and work plan 2.4 select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures 2.5 check the tools and equipment are fit for purpose to carry out the identified work in line with company procedures 2.6 confirm meter details and record meter readings 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures.

Learning outcome
The learner will: 3. change single phase meter and associated equipment on multi phase cut-outs.
Assessment criteria
The learner can: 3.1 remove the identified single phase meter and associated equipment using selected tools and equipment, in line with the work plan, risk assessment and company procedures. Removal must include **one** single phase single rate meter and any **one** of the following: a. multi rate with communication method b. two rate (with timeswitch and teleswitch with or without off peak supplies) c. multi rate 5 terminal meter d. multi-rate meter e. two rate key and token (with or without communication method, with or without off peak supplies) 3.2 replace removed meters in line with company procedures and work plan with any **two** of the following: a. multi rate with communication method b. mechanical single phase meter c. electronic single phase meter d. multi rate (with timeswitch and teleswitch with or without off peak supplies) e. multi rate 5 terminal meter f. check meter g. multi-rate meter h. multi rate key and token (with or without communication method, with or without off peak supplies) 3.3 carry out appropriate testing procedures on completed installations, in line with company procedures 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person 3.5 work throughout the duration of the work in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation 3.6 complete all required post activity documentation in line with company policy 3.7 ensure all tools and equipment are stored in line with company procedures 3.8 ensure hazardous and non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures 3.9 ensure the work area is left in a safe condition compatible with company procedures.

Learning outcome
The learner will: 4. know and understand how to change single phase meter and associated equipment on multi phase cut-outs using general knowledge.
Assessment criteria
The learner can: 4.1 demonstrate they know the main principles of health and safety and environmental legislation and regulations 4.2 demonstrate they know the company reporting lines and authorisation roles and responsibilities 4.3 demonstrate they know the company policies and procedures that directly impact on the work to be undertaken.

Learning outcome
The learner will: 5. know and understand how to change single phase meter and associated equipment on multi phase cut-outs using work-specific knowledge.
Assessment criteria
The learner can: 5.1 demonstrate they know the company procedures and processes for reporting problems with tools and equipment 5.2 demonstrate they know how to read and interpret the, procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use 5.3 demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use 5.4 demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks 5.5 demonstrate they know what personal protective equipment needs to worn when undertaken work activities 5.6 demonstrate they know what materials and substances are dangerous and hazardous to health 5.7 demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work 5.8 demonstrate they know how to minimise risks to self and others when undertaking work activities 5.9 demonstrate they know the procedures and documentation used for reporting problems 5.10 demonstrate they know the company work instruction, information and reporting systems and documentation 5.11 demonstrate they know how to respond to the different types and categories of emergency situations that might occur 5.12 demonstrate they know how to replace plant and apparatus using specified principles, methods, processes and procedures 5.13 demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation.

Unit 215 Prepare, install and commission medium pressure natural gas smart meter and regulator up to 6.0m³/hr

UAN:	**F/505/0884**
Level:	Level 2
Credit value:	9
GLH:	48
Relationship to NOS:	This unit of assessment relates directly to Energy & Utility Skills Sector Performance Standards (approved National Occupational Standards) Gas Utilisation: • DSG 3.12 Install Gas Meters & Regulators (2.5 to 16 m³/h) • GSM 2.0 Install Smart Gas Meters & Regulators (2.5 to 6.0m³/h).

Assessment requirements specified by a sector or regulatory body:	Performance assessments must be conducted on domestic meters up to 16.0m³/hr
	This unit is designed to assess;
	• The performance skills of learners, primarily in the work place, with performance tasks undertaken in simulated work environments where a lack of opportunity exists or safety conditions cannot be met.
	• The knowledge and understanding of learners using a range of assessment strategies including:
	  • inferred knowledge assessed as part of a performance assessment
	  • project work
	  • written responses to multiple choice questions
	  • written responses requiring short written answers
	  • oral questioning by the assessor
	The Energy & Utility Skills overarching Assessment Strategy sets out the full assessment strategy and requirements.

Aim:	The aim of the unit is to assess the competence of individuals to recognised national occupational standards. The Unit supports workforce development and describes the competencies necessary to install, commission and decommission gas smart meters and regulators on medium pressure fed natural gas supplies. The scope of work covered by this Unit is the installation, commissioning and decommissioning smart gas meters and regulators (up to 6.0m³/hr) on medium pressure fed natural gas systems. This unit will provide evidence of competence to enable an individual to apply for a 'licence to practice' from the gas industry registrar, currently Gas Safe Register.

Learning outcome
The learner will: 1. be able to plan and prepare work activities for decommissioning, installing, exchanging and commissioning smart gas meters and regulators (up to 6.0m^3/h) on medium pressure fed natural gas systems.
Assessment criteria
The learner can: 1.1 identify and agree the customer's job requirements 1.2 compare the customer's job requirements with statutory and national standards identifying any conflicting issues 1.3 survey the work site for any features that could affect the installation 1.4 check all required materials, tools and equipment are available, fit for purpose and adequately stored when not in use 1.5 complete site specific risk assessments in line with health and safety regulations and national standards 1.6 select, inspect and wear appropriate personal protective equipment (PPE) 1.7 apply correct measures to protect the work site and the building fabric against possible damage being caused during the job 1.8 check adequate services are available and the gas supply, existing main equipotential bonding and ventilation meets national standards' requirements for meter installation 1.9 check the siting of the gas meter, regulator, relief vent pipe, meter housing and other associated components meets national standards' requirements for location, siting and clearances 1.10 identify whether the installation is a primary or secondary meter 1.11 identify whether the upstream supply is low or medium pressure and, if medium pressure, which pressure tier 1.12 check the siting of the emergency control valve (ECV) and meter inlet valve (MIV) is accessible, correctly labelled and operates correctly 1.13 check existing installation for unsafe situations, and where necessary apply industry unsafe situations procedures correctly 1.14 test for the presence of voltage at the meter with a suitable voltage sensing device 1.15 explain the actions to be taken where defects or deficiencies are identified during pre-installation surveys.

Learning outcome
The learner will: 2. be able to de-commission smart gas meters and regulators (up to 6.0m³/h) on medium pressure fed natural gas systems.
Assessment criteria
The learner can: 2.1 check the existing installation permits safe de-commissioning 2.2 select and use correct tools and equipment for de-commissioning activities 2.3 carry out tightness testing in accordance with current national standards prior to commencing work 2.4 use designated safe isolation methods, tests and procedures to de-commission the meter installation 2.5 take precautionary actions to ensure that temporarily de-commissioned gas meters, regulators, equipotential bonding, gas installations and associated components do not present a safety hazard 2.6 disconnect and remove gas meters, regulators, relief vent pipes, and other associated components ensuring the installation is safe 2.7 mark any live gas pipes, after permanent removal of a meter, with a notice to indicate the pipe contains gas.

Learning outcome
The learner will: 3. be able to install and exchange smart gas meters and regulators (up to 6.0m³/h) on medium pressure fed natural gas systems.
Assessment criteria
The learner can: 3.1 carry out planned preparatory work to meet the meter installation and exchange requirements 3.2 select and use correct tools and equipment for the meter installation and exchange activities 3.3 check existing installation, new gas meter, regulator, relief vent pipe and other associated components for any damage 3.4 check seals are intact, packaging is removed and gas ways are clear 3.5 assemble and position the gas meter, regulator, relief vent pipe and other associated components and confirm it meets national standards 3.6 carry out tightness testing and purging procedures in accordance with national standards 3.7 check for adequate main equipotential bonding to the gas installation 3.8 explain the actions to be taken if main equipotential bonding is inadequate 3.9 apply all necessary labels to the meter installation 3.10 label and disconnect or seal off from the gas supply with an appropriate fitting, gas equipment where they are not to be commissioned immediately 3.11 explain where non return valves may be used in conjunction with a meter installation.

Learning outcome
The learner will: 4. be able to commission smart gas meters and regulators (up to 6.0m^3/h) on medium pressure fed natural gas systems.
Assessment criteria
The learner can: 4.1 check meter installation has been installed in accordance with national standards 4.2 select and use correct tools and equipment for the meter installation commissioning activities 4.3 check the installations operating pressure at the meter and / or regulator outlet is in accordance with national standards 4.4 check the safe operation of all meter and regulator controls including emergency control valve, meter inlet valve, over pressure shut off, under pressure shut off, excess flow valve and other safety devices in accordance with national standards 4.5 relight any existing appliances 4.6 instruct the customer in the use of the gas meter, regulator and other associated components, providing them with all instructions 4.7 complete all necessary documentation including confirming the safe commissioning of the gas meter, regulator and other associated components 4.8 safely handle, collect and dispose of all waste, including components that may be hazardous to health or the environment in line with national standards 4.9 work in accordance with relevant health, safety, environmental and national standards throughout the entire job.

Learning outcome
The learner will: 5. be able to liaise with other persons and resolve problems relating to decommissioning, installing, exchanging and commissioning smart gas meters and regulators (up to 6.0m^3/h) on medium pressure fed natural gas systems.
Assessment criteria
The learner can: 5.1 communicate with customers, line managers or other appropriate person throughout the job 5.2 identify any deficiencies, unsafe or 'not to current standards' situations that may exist, and rectify or apply industry unsafe situations procedure 5.3 identify an unsafe situation and apply industry unsafe situations procedure 5.4 resolve problems encountered during the job, referring matters that cannot be resolved to appropriate person(s).

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**.

Providing City & Guilds Qualifications – a guide to centre and qualification approval 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.

Ensuring quality contains updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document contains information on:

- Management systems
- Maintaining records
- Assessment
- Internal verification and quality assurance
- External verification.

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 on such things as:

- **Walled Garden**
  Find out how to register and certificate candidates on line
- **Events**
  Contains dates and information on the latest Centre events
- **Online assessment**
  Contains information on how to register for GOLA assessments.

Useful contacts

UK learners **General qualification information**	E: **learnersupport@cityandguilds.com**
International learners General qualification information	E: **intcg@cityandguilds.com**
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	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	E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, GOLA, Navigation, User/menu option, Problems	E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	E: **business_unit@cityandguilds.com**
Publications Logbooks, Centre documents, Forms, Free literature	

If you have a complaint, or any suggestions for improvement about any of the services that we provide, email: **feedbackandcomplaints@cityandguilds.com**

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City & Guilds is the UK's leading provider of vocational qualifications, offering over 500 awards across a wide range of industries, and progressing from entry level to the highest levels of professional achievement. With over 8500 centres in 100 countries, City & Guilds is recognised by employers worldwide for providing qualifications that offer proof of the skills they need to get the job done.

City & Guilds Group

The City & Guilds Group is a leader in global skills development. Our purpose is to help people and organisations to develop their skills for personal and economic growth. Made up of City & Guilds, City & Guilds Kineo, The Oxford Group and ILM, we work with education providers, businesses and governments in over 100 countries.

Published by City & Guilds, a registered charity established to promote education and training

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HB-01-7428