Qualification Specification

DPH-011

BPEC Level 1 Diploma in Plumbing Foundation

Qualification Number – **601/2514/7**

Contents

About BPEC

BPEC Certification Ltd was initially established in 1997 to act as an accredited certification body to oversee competence assessment of individuals working in the gas industry. It has extended its coverage and now offers a range of assessment and certification services to meet the needs of operatives working in the Building Services Sector.

In 2010 BPEC established a recognised Awarding Organisation, offering a suite of regulated qualifications. These have been developed with the input of industry and learning providers to meet the skills needs of the Building Services Engineering sector.

The Company is committed to high levels of customer service and providing support to organisations who deliver our qualifications. We are also committed to offering qualifications, assessments and learning materials, which meet the needs of employers, learners, and training providers on an ongoing basis.

BPEC Certification is a not-for-profit company, and any surplus funds are gift aided to the BPEC Charity. The focus of the Charity is to raise the knowledge and skills of those who work in the UK plumbing and heating industry and support associated projects, grants, and awards.

Should you wish to learn more about BPEC (including our charity work) please contact:

BPEC Certification Ltd
1-2 Mallard Way
Pride Park
Derby
DE24 8GX

Tel: 01332 376000

Or visit our website at:

www.bpec.org.uk

1. Introduction to the Qualification

1.1. Qualification Overview

Qualification Title		BPEC Level 1 Diploma in Plumbing Foundation			
Qualification Number (QN)		601/2514/7			
BPEC Qualification Code		DPH-011			
Assessment Method/s		Online MCT's**,** Written knowledge assessment papers, In Centre Practical Assessments			
Entry Requirements		Learners must be 16 years old or over			
GLH	356	**TQT**	400	**Credits**	40
Mandatory Units		9			
Last Registration Date		30/09/2024			
Last Certification Date		30/09/2027			

1.2. Who this Qualification is for?

This qualification is for those learners wishing to gain a rudimentary knowledge of plumbing who may be thinking of entering the Plumbing/Heating/Building Services Engineering industry.

1.3. The Purpose of the Qualification

Learners will develop basic skills, knowledge, and disciplines of plumbing, allowing further progression onto higher levels of plumbing qualifications.

1.4. Support and Accreditation

This qualification is supported by industry and regulated by OFQUAL.

1.5. Relationship to Other Qualifications

This Level 1 qualification is part of a suite of three (3) diploma qualifications in plumbing foundation and, as such, allows successful learners to progress to Level 2 of the suite of qualifications. Successful progression on to the Level 2 Diploma in Plumbing Foundation will exempt the learner from Units J/602/2479, J/602/2482 and D/602/2486 of the Level 2 diploma.

Successful completion of the qualification also allows progression onto Phase 1 of the Level 3 Diploma in Plumbing and Domestic Heating, giving exemption from the Surpass on-line Health and Safety Multiple Choice Examination.

1.6. Qualification Limitations

The holder of this qualification is NOT recognised as a plumber. However, successful completion of the qualification presents the learner with specific pathways into further learning within the plumbing and heating industry.

2. Qualification Structure

This is a Level 1 qualification of 40 credits and 356 guided learning hours consisting of 9 mandatory units. ALL units must be achieved to achieve the overall qualification.

Successful completion of this qualification provides learners with the basic knowledge and skills required for progression to the Level 2 Diploma in Plumbing Foundation. The qualification and unit details are shown below:

Unit Ref.	Unit Type	Unit Title	Level	Credit Value	TQT	GLH
J/602/2479	K/P	Understand and carry out safe working practices in building services engineering	2	10	400	88
J/602/2482	K	Understand how to communicate with others within Building Services Engineering	2	3		28
D/602/2486	K	Understand how to apply environmental protection measures within BSE	2	4		38
Y/502/8180	K	Understand fundamental scientific principles within building services engineering	1	3		28
K/505/9403	K/P	Understand and carry out copper pipe fabrication work for domestic plumbing systems	1	5		42
K/505/9417	K/P	Understand and carry out low carbon steel pipe fabrication work for domestic plumbing systems	1	5		42
M/505/9418	K/P	Understand and carry out plastic pipe fabrication work for domestic plumbing systems	1	4		32
K/505/9420	K	Understand the key features of domestic plumbing systems	1	4		38
T/505/9419	K/P	Understand and demonstrate techniques for installing and securing plumbing pipework	1	2		20
		Totals	---	40	400	356

3. The Learners

3.1. Qualifications that the Learner must have completed before taking the Qualification

None that are applicable

3.2. Knowledge, skills or understanding that the Learner is required to have before taking the qualification

a) Specific

None that are applicable

b) General

The centre should:

- Undertake initial assessment of each Learner to ensure that they have the minimum levels of numeracy and literacy to comply with the health and safety aspects of the qualification and the completion of the Learning Outcomes and assessments.
- Establish if the Learner has any specific training needs
- Identify any support and guidance the Learner may require when working towards the qualification.

3.3. The Units the Learner must have completed before the Qualification will be awarded

Learners will need to complete all 9 mandatory Units.

3.4. Any other requirements which a Learner must have satisfied before the Learner will be assessed or before the Qualification is awarded

None identified

3.5. Qualification achievement

The Qualification will be awarded when all necessary Units have been completed.

4. Delivery requirements

4.1. Centre Recognition

Centres wishing to deliver this qualification will need to gain Centre Recognition and Qualification Approval (see 5.2). For full details of the recognition process please contact:

BPEC Certification

1-2 Mallard Way
Pride Park
Derby
DE24 8GX
Tel: 01332 376000
aoadmin@bpec.org.uk

4.2. Qualification Approval

- Centres wishing to deliver this Qualification who are already recognised (see 5.1) should complete and submit a Qualification Approval Form to BPEC Certification Ltd.
- Before submission, centres should ensure that they can meet the delivery requirements.
- Centres who are approved to deliver this qualification and wish to extend delivery to satellite sites must seek approval for each additional site.

4.3. Physical Resources

- General – Centres must provide a safe environment for Learners and staff with appropriate policies and procedures in place which are adhered to.
- Teaching Provision – Centres must provide adequate facilities and equipment to allow the effective teaching of the qualification including any practical provision.
- Assessments/Exam Provision – Centres must provide facilities and equipment which allow assessments and exams to be conducted in accordance with the assessment criteria/guidance and exam procedures.

4.4. Assessor/Trainer Requirements

Assessors must:

- Hold, or be working towards TAQA (A1/A2 – D32/33 updated) standards and continue to practice to these standards and possess CPD evidence of personally maintaining these standards, or
- Have other suitable equivalent assessor qualifications endorsed by BPEC.
- 'Candidate assessors' who are working towards their assessor qualifications must always be supervised by a qualified assessor. They should have a clear action plan for achieving the assessor qualification(s), (assessor approval will be withdrawn if the assessor qualification/units have not been attained within a period of 18 months).

4.4.1. Assessor occupational competence

For the purposes of this qualification, occupational competence will be deemed to have been demonstrated by the verifiable evidence of all the following:

- A relevant level 3 plumbing qualification:
    - If older qualifications are held – such as city & guilds craft or advanced craft certificates – the assessor must be able to evidence through CPD activity a thorough knowledge of the qualification standards and requirements
    - If other MES-related NVQ/SVQ qualifications are held – such as domestic gas (wet central heating), heating and ventilation installation (domestic), domestic heating – the assessor must be able to evidence plumbing competence through CPD activity
- A relevant, current CPD record including relevant qualifications
- A verifiable CV of industry experience and current knowledge of industry practice and techniques relevant to the occupational area in which they assess
- A thorough knowledge and understanding of the qualification standards and requirements.

4.4.2. Assessor continuing professional development

The occupational competence of assessors must be updated on a regular basis and be periodically confirmed via continuing professional development (CPD) via the Assessment Centre. Evidence of CPD will be sought by the External Quality Assurer (EQA) for all approved Assessors at the Centre.

It is the responsibility of each assessor to identify and make use of opportunities for CPD, such as industry conferences, access to trade journals, and Professional Body/Trade Association events, at least on an annual basis to enhance and upgrade their professional development and technical knowledge.

It is imperative that records are kept of all such CPD opportunities/occasions and that they provide evidence of cascading such technical knowledge and industry intelligence to all relevant colleagues.

4.5. IQA occupational competence

For the purposes of this qualification, occupational competence will be deemed to have been demonstrated by the verifiable evidence of one of the following:

- A Level 3 NVQ in Plumbing
- A related building services qualification with proven technical expertise
- A related building services qualification with access to plumbing technical expertise when undertaking IQA activities.

4.6. External Quality Assurers (EQAs)

EQAs must:

- Hold or be working towards TAQA (V2 or D36 updated)
- Hold a Level 3 NVQ in plumbing or a related building services engineering qualification.

5. Support Materials

5.1. Qualification Specification

This Qualification Specification provides details of all Units, Learning Outcomes, Assessment Criteria and specific advice regarding the assessment process.

5.2. Learner Knowledge Assessment Packs

An Underpinning Knowledge Learner Work Pack is available FOC for this Qualification for all Learners registered on the Qualification.

5.3. Textbooks

BPEC Qualification Textbooks are available from BPEC direct. Alternatively, free textbook units specifically for part of this qualification can be downloaded from the BPEC website.

6. Unit Details

J/602/2479 - Understand and carry out safe working practices in building services engineering

Unit level	2	*This combination unit provides learning in the essential health & safety job knowledge required to work safely in the Building Services Engineering Industries. The essential job knowledge covered relates to work on new-build construction sites (dwellings and industrial/commercial buildings) and refurbishment work in occupied and unoccupied properties (dwellings and industrial / commercial buildings).*
GLH	88	
Unit		
J/602/2479 - Understand and carry out safe working practices in building services engineering		

Learning Outcomes		Assessment Criteria
LO1	Know the health and safety legislation that applies to the building services industry	1.1 – 1.5
LO2	Know how to recognise and respond to hazardous situations while working in the buildingservices industry	2.1 – 2.9
LO3	Know the safe personal protection measures while working in the building services industry	3.1 – 3.2
LO4	Be able to apply manual handling techniques	4.1 – 4.2
LO5	Know how to respond to accidents that occur while working in the building services industry	5.1 – 5.4
LO6	Know the procedures for electrical safety when working in the building services industry	6.1 – 6.6
LO7	Be able to apply basic electrical safety measures in the building services industry	7.1 – 7.3
LO8	Know the methods of working safely with heat producing equipment in the building services industry	8.1 – 8.7
LO9	Be able to safely work with gas heating equipment in the building services industry	9.1 – 9.3
LO10	Know the methods of safely using access equipment in the building services industry	10.1 – 10.5
LO11	Be able to safely use access equipment in the building services industry	11.1 – 11.2
LO12	Know the methods of working safely in excavations and confined spaces in the building services industry	12.1 – 12.5

Learning Outcome 1	
Know the Health and Safety legislation that applies to the building services industry	
Assessment Criteria	
1.1	State the aims of Health and Safety legislation in protecting the workforce and members of the public. a) General legislation b) Construction specific legislation c) Building services specific legislation

Learning Outcome 1	
Know the Health and Safety legislation that applies to the building services industry	
Assessment Criteria (continued)	
1.2	Identify the responsibilities of members of the construction team under health & safety legislation. a) Employers (including employer representatives) b) Designers c) Main contractors d) Sub-contractors e) Employees f) Self-employed (labour only) g) Clients (customers)
1.3	State the legal status of health and safety guidance materials. a) Acts of Parliament b) Regulations c) Approved Codes of Practice d) HSE Guidance Notes
1.4	State the role of enforcing authorities under health & safety legislation. a) Health & Safety Executive b) Local Authority
1.5	Identify the powers of inspectors under health & safety legislation. a) Improvement notice b) Prohibition notice c) Powers of prosecution d) Role in providing advice and guidance

Learning Outcome 2	
Know how to recognise and respond to hazardous situations while working in the building services industry	
Assessment Criteria	
2.1	Identify the types of general site hazards that may be encountered while at work. Site/work area cleanliness: a) Tripping hazards b) Slipping hazards Using equipment: c) Inadequate or lack of personal protective equipment d) Defective (unsafe) equipment Personal conduct: e) Manual handling f) Working at heights
2.2	State the potential dangers to the workforce and members of the public when work is carried out. a) On construction sites (all property types) b) In industrial commercial premises (occupied and unoccupied refurbishment) c) In dwellings (occupied and unoccupied refurbishment)

Learning Outcome 2	
Know how to recognise and respond to hazardous situations while working in the building services industry	
Assessment Criteria (continued)	
2.3	Identify the methods that can be used to prevent accidents or dangerous situations occurring during work activities. Working practices (use and understanding of): a) Method statements b) Permit to work systems c) Risk assessments d) Safety notices (use and understanding of): e) Mandatory signs f) Prohibition signs g) Hazard signs h) Firefighting signs i) Safe condition signs j) Combination signs
2.4	Identify how hazardous substance legislation classifies substances and the direct precautions to be taken while working with those substances. a) Toxic b) Harmful c) Corrosive d) Irritant e) Oxidising f) Extremely flammable
2.5	Identify the general precautions necessary for working with commonly encountered substances. a) Lead - solid and fume b) Solvents and lubricants c) Fluxes d) Jointing compounds e) Sealants f) Gases – LPG, oxy-acetylene, and carbon dioxide g) Cleaning agents
2.6	State the range of common building materials and services components that may contain asbestos
2.7	Identify the types of asbestos that may be encountered in the workplace: a) White asbestos (Chrysotile) b) Brown or grey asbestos (Amosite) c) Blue asbestos (Crocidolite) d) Asbestos cement materials
2.8	State the procedures that must be used to safely work with asbestos cement based materials. a) Flue, soil, rainwater pipes and gutters b) Tanks and cisterns c) Artex d) Small gaskets and seals

Learning Outcome 2	
Know how to recognise and respond to hazardous situations while working in the building services industry	
Assessment Criteria (continued)	
2.9	Identify the actions to be taken when asbestos is encountered while undertaking work activities. a) Protection of the workforce and members of the public. b) Licensing requirements for asbestos removal organisations c) Safe disposal requirements

Learning Outcome 3	
Know the safe personal protection measures while working in the building services industry	
Assessment Criteria	
3.1	State the purpose of, and application of protective equipment. a) Clothing protection including high visibility b) Eye protection c) Hand protection d) Head protection e) Foot protection f) Hearing protection g) Respiratory protection
3.2	Identify the procedures for manually handling heavy and bulky items. a) Assessment of a safe load that a person can lift b) Application of safe kinetic lifting technique c) Use of simple mechanical lifting aids – sack trolley d) Application and use of mechanical lifting aids on large construction sites

Learning Outcome 4	
Be able to apply manual handling techniques	
Assessment Criteria	
4.1	Perform manual handling of heavy and bulky items a) Plan the lift b) Safely move the load c) Assist in a two-person lift
4.2	Manually handle loads using mechanical lifting aids

Learning Outcome 5	
Know how to respond to accidents that occur while working in the building services industry	
Assessment Criteria	
5.1	Identify the requirements for first aid provision while working: a) In small occupied properties b) On construction sites (new-build and refurbishment)
5.2	Identify the actions that should be taken when an accident or emergency is discovered. a) Raising the alarm b) The role of the emergency services and contact methods c) Typical emergency evacuation procedures

Learning Outcome 5	
Know how to respond to accidents that occur while working in the building services industry	
Assessment Criteria (continued)	
5.3	State the procedures for dealing with minor injuries that can occur while working. a) Cuts b) Minor burns c) Objects in the eye d) Exposure to fumes
5.4	State the procedures for dealing with major injuries that can occur while working. a) Statutory requirements for the reporting of accidents/serious occurrences b) The use of company accident books c) The details to be recorded on a simple accident/incident report form

Learning Outcome 6	
Know the procedures for electrical safety when working in the building services industry	
Assessment Criteria	
6.1	Identify the common electrical dangers encountered on construction sites and in private dwellings a) Faulty electrical equipment b) Signs of damaged or worn electrical cables – power tools and property hard wiring system c) Trailing cables d) Proximity of cables to services pipework e) Buried/hidden cables f) Inadequate over-current protection devices
6.2	Identify the methods of safely using electrical tools and equipment on site. a) Battery powered supplies b) 110-volt supplies c) 230-volt supplies
6.3	Identify how to conduct a visual inspection of a power tool for safe condition before use. a) Checking for a valid PAT test b) Inspection for general condition
6.4	State the procedure that should be applied for tools and equipment that fail safety checks.
6.5	State the electrical industry safe isolation procedure that should be applied to building services equipment before carrying out work on them.
6.6	State the use of temporary continuity bonding when working on pipework components.

Learning Outcome 7	
Be able to apply basic electrical safety measures in the building services industry	
Assessment Criteria	
7.1	Demonstrate the electrical industry safe isolation procedure to safely isolate an item of fixed mechanical or electrical plant or equipment.
7.2	Carry out a visual safety inspection of power tools before use and report on their condition.
7.3	Demonstrate the application of temporary continuity bonding when cutting into a fixed metallic pipework system.

Learning Outcome 8	
Know the methods of working safely with heat producing equipment in the building services industry	
Assessment Criteria	
8.1	Identify the various types of gases used in pipe and sheet jointing processes a) Bottle colours b) Properties of the gases used c) Uses within the industry
8.2	Identify how bottled gases and equipment should be safely transported and stored.
8.3	Identify the various types of heat producing equipment and how to check them for safety. a) Hoses b) Colours used c) Thread directions d) Flashback arrestors e) Control valves f) Gauges g) Blowpipes h) Direct connecting combined units (aeration in the nozzle)
8.4	Identify how gas heating equipment is safely assembled and used a) Bottle location and position b) Equipment assembly sequence c) Leak detection procedures d) Safe purging procedure e) Safe lighting and extinguishing procedure f) Actions in the event of leakage
8.5	Identify the three elements of the fire triangle and how combustion takes place.
8.6	State the dangers of working with heat producing equipment and how to prevent fires occurring.
8.7	State the method for fighting small localised fires that can occur in the workplace. a) When to avoid tackling fires b) Types of extinguisher c) Selection of extinguisher by fire type d) Method of use

Learning Outcome 9	
Be able to safely work with gas heating equipment in the building services industry.	
Assessment Criteria	
9.1	Perform a safety check of gas heating equipment a) Transportation of gas bottles to the work area b) Assess components and equipment for safety
9.2	Perform the safe assembly of gas heating equipment for use a) Hose and blowpipe or combined unit attachment b) Leak detection procedures c) Purging procedures d) Lighting and extinguishing procedures
9.3	Demonstrate the use of a fire extinguisher in extinguishing a small solid fuel fire.

Learning Outcome 10	
Know the methods of safely using access equipment in the building services industry	
Assessment Criteria	
10.1	Identify the situations where it may be necessary to work at height.
10.2	Identify the types of equipment used to permit work at heights in the building services industry. a) Step ladders b) Ladders c) Mobile mini towers/scaffolds d) Roof ladders and crawling boards e) Mobile tower scaffolds f) Fixed scaffolds and edge protection g) Mobile elevated work platforms including scissor lifts and cherry pickers
10.3	Identify how to select suitable equipment for carrying out work at heights based on the work being carried out.
10.4	State the range of safety checks to be carried out on access equipment before it is used. a) Step ladders b) Ladders c) Mobile mini towers/scaffolds d) Roof ladders and crawling boards e) Mobile tower scaffolds f) Fixed scaffolds and edge protection
10.5	State the method of assembly and use of access equipment. a) Step ladders b) Ladders c) Mobile mini towers/scaffolds d) Roof ladders and crawling boards e) Mobile tower scaffolds f) Fixed scaffolds and edge protection

Learning Outcome 11	
Be able to safely use access equipment in the building services industry.	
Assessment Criteria	
11.1	Demonstrate the safe method of assembly and use of: a) Step Ladders b) Ladders
11.2	Demonstrate the safe method of assembly and use of mobile tower scaffolds.

Learning Outcome 12	
Know the methods of working safely in excavations and confined spaces in the building services industry.	
Assessment Criteria	
12.1	Identify the situations in which it may be necessary to work in excavations.
12.2	State how excavations should be prepared for safe working. a) Safe access into the excavation b) Trench support systems

Learning Outcome 12	
Know the methods of working safely in excavations and confined spaces in the building services industry.	
Assessment Criteria (continued)	
12.3	State the measures that need to be applied to prevent persons or equipment falling into excavations. a) Use of warning signs b) Use of barriers for pedestrians c) Vehicle proximity to excavation edges
12.4	Identify where work in confined spaces may be required.
12.5	State the potential dangers when working in confined spaces. a) Drainage systems b) Plant rooms c) Main service duct-rooms d) In tanks, cylinders, boilers or cisterns e) Under suspended timber floors f) In roof spaces

J/602/2482 - Understand how to communicate with others within Building Services Engineering

Unit level	**2**	*This knowledge unit provides learning in the development and continued maintenance of effective working relationships in the building services industry associated with work in dwellings, industrial and commercial premises and for private and contract type clients.*
GLH	**28**	
Unit		
J/602/2482 - Understand how to communicate with others within Building Services Engineering		

Learning Outcomes		**Assessment Criteria**
LO1	Know the members of the construction team and their role within the building services industry	1.1 – 1.3
LO2	Know how to apply information sources in the building services industry	2.1 – 2.4
LO3	Know how to communicate with others in the building services industry	3.1 – 3.4

Learning Outcome 1	
Know the members of the construction team and their role within the building services industry	
Assessment Criteria	
1.1	Identify the key roles of the site management team. a) Architect b) Project manager/Clerk of Works c) Structural engineer d) Surveyor e) Building services engineer f) Quantity surveyor g) Buyer h) Estimator i) Contracts manager j) Construction manager
1.2	Identify the key roles of the individuals that report to the site management team: a) Sub-contractors b) Site supervisor c) Trade supervisor d) Trades e) Bricklayer f) Joiner g) Plasterer h) Tiler i) Electrician j) H&V fitter k) Gas fitter l) Decorator m) Ground workers

Learning Outcome 1	
Know the members of the construction team and their role within the building services industry	
Assessment Criteria (continued)	
1.3	Identify the key roles of site visitors a) Building control inspector b) Water inspector c) HSE inspector d) Electrical services inspector

Learning Outcome 2	
Know how to apply information sources in the building services industry	
Assessment Criteria	
2.1	Identify the types of statutory legislation and guidance information that applies to working in the industry: a) Legislation b) Data protection c) Equal opportunities d) Health & safety e) Employment f) Regulations g) British standards h) Codes of practice i) Manufacturer guidance j) Installation instructions k) Service & maintenance instructions l) User instructions
2.2	Identify the purpose of information that is used in the workplace: a) Job specifications b) Plans/drawings c) Work programmes d) Delivery notes e) Time sheets f) Policy documentation – health & safety, environmental, customer service
2.3	Identify the purpose of information given to customers: a) Quotations b) Estimates c) Invoices/statements d) Statutory cancelation rights e) Handover information

Learning Outcome 2	
Know how to apply information sources in the building services industry	
Assessment Criteria (continued)	
2.4	State the importance of company policies and procedures that affect working relationships: a) Company working policies/procedures b) Behaviour c) Timekeeping d) Dress code e) Contract of employment f) Limits to personal authority g) Apprentices h) Level 2 qualified staff i) Level 3 qualified staff j) Supervisor and management responsibilities

Learning Outcome 3	
Know how to communicate with others in the building services industry.	
Assessment Criteria	
3.1	Identify suitable communication methods for use in work situations: a) Oral communication b) Written communication c) Email d) Fax e) Letter
3.2	Define methods of effective communication for people with: a) Physical disabilities b) Learning difficulties c) Language differences d) Dialects e) Accents f) Foreign and second language issues
3.3	State the actions to take to deal with conflicts between: a) Customers and operatives b) Co-workers c) Supervisors and operatives
3.4	State the effects that poor communication may have on an organisation: a) Between operatives b) Between operatives and management c) Company to customer

D/602/2486 – Understand how to apply environmental protection measures within BSE

Unit level	2	*The knowledge unit provides learning in a range of basic measures associated with protection of the environment. Areas covered include the effective use of material resources, minimising wastage. The legislation surrounding the effective use of energy and water resources including an introduction to the use of environmental emerging technologies is also covered in the unit.*
GLH	38	
Unit		
D/602/2486- Understand how to apply environmental protection measures within BSE		

Learning Outcomes		Assessment Criteria
LO1	Know the energy conservation legislation that applies to the building services industry	1.1 – 1.2
LO2	Know the applications of energy sources used in the building services industry	2.1 – 2.5
LO3	Know the importance of energy conservation when commissioning building services systems	3.1 – 3.2
LO4	Know the methods of reducing waste and conserving energy while working in the building services industry	4.1 – 4.3
LO5	Know how to safely dispose of materials used in the building services industry	5.1 – 5.5
LO6	Know the methods of conserving and reducing wastage of water within the building services industry	6.1 – 6.6

Learning Outcome 1	
Know the energy conservation legislation that applies to the building services industry.	
Assessment Criteria	
1.1	State the aims of energy conservation legislation: a) General legislation b) Construction specific legislation c) Building services specific legislation
1.2	Identify the responsibilities of members of the construction team under energy conservation legislation: a) Clients (customers) b) Designers c) Employers d) Employees

Learning Outcome 2	
Know the applications of energy sources used in the building services industry.	
Assessment Criteria	
2.1	Identify the types of energy used in properties: a) High carbon b) Natural Gas / LPG c) Fuel oils d) Solid fuels (coal and peat) e) Electricity (from non-renewable sources) f) Hydrogen fuel cells g) Heat pumps h) Combined heat & power (CHP) i) Combined cooling, heat & power (CCHP) j) Low carbon k) Solar thermal l) Solid fuel (biomass) m) Zero Carbon n) Electricity – wind o) Electricity – tidal p) Hydroelectric q) Solar photovoltaic
2.2	Identify the basic operating principles of installations containing environmental energy sources. a) Solar thermal b) Solid fuel (biomass) c) Heat pumps (water, air and ground source) d) Combined heat & power (CHP) e) Combined cooling, heat & power (CCHP) f) Wind turbine g) Solar photovoltaic
2.3	Identify organisations which give guidance and advice on energy saving and conservation techniques.
2.4	Identify how to use energy rating tables and their effect on component selection.
2.5	State where to find information on alternative energy sources.

Learning Outcome 3	
Know the importance of energy conservation when commissioning building services systems.	
Assessment Criteria	
3.1	State the role of the commissioning process in conserving energy usage.
3.2	State the actions to be covered during the system handover procedure to the customer that will contribute to conserving energy usage.

Learning Outcome 4	
Know the methods of reducing waste and conserving energy while working in the building services industry.	
Assessment Criteria	
4.1	Identify the working practices that can be employed to conserve energy and protect the environment.
4.2	State the methods used for reducing material wastage: a) Planning work activities b) Accurate measurement and cutting
4.3	Identify the methods of conserving material usage: a) Reducing material over ordering b) Minimising damage to stored materials c) Prevention of loss/theft

Learning Outcome 5	
Know how to safely dispose of materials used in the building services industry.	
Assessment Criteria	
5.1	Identify the statutory legislation for waste management on construction sites
5.2	State the methods of safely disposing of waste materials: a) Licensed waste disposal b) Waste carriers license c) Recycling d) Specialist disposal – asbestos and other forms of hazardous waste
5.3	Specify the approved processes for recycling materials: a) Metals b) Plastics c) Wood/cardboard
5.4	Identify the disposal requirements of potentially hazardous materials: a) Asbestos b) Electrical and electronic equipment c) Refrigerants (fluorinated gases)
5.5	Identify what action to take if work activities endanger the environment.

Learning Outcome 6	
Know the methods of conserving and reducing wastage of water within the building services industry.	
Assessment Criteria	
6.1	Identify the statutory legislation for water wastage and misuse
6.2	State the methods used for reducing material wastage: Planning work activities Accurate measurement and cutting

Learning Outcome 6	
Know the methods of conserving and reducing wastage of water within the building services industry.	
Assessment Criteria (continued)	
6.3	Identify the methods of conserving material usage: Reducing material over ordering Minimising damage to stored materials Prevention of loss/theft
6.4	Identify the methods available for capturing surface water and recycling used water.
6.5	Identify the uses of captured and recycled water in properties.
6.6	State the basic working principles of captured and recycled water systems: Rain water harvesting Grey water systems

Y/502/8180 – Understand fundamental scientific principles within building services engineering

Unit level	**1**	*This knowledge unit provides learning in the basic essential scientific principles that apply to building services engineering work activities.*
GLH	**28**	
Unit		
Y/502/8180 - Understand fundamental scientific principles within building services engineering		

Learning Outcomes		**Assessment Criteria**
LO1	Know the standard units of measurement used in the building services engineering industry	1.1 – 1.2
LO2	Know the properties of materials used in the building services engineering industries	2.1 – 2.2
LO3	Know the basic principles for energy, heat and power in the building services engineeringindustry	3.1 – 3.4
LO4	Know the principles of force and pressure and their application in the building services engineering industries	4.1 – 4.2
LO5	Know simple mechanical principles and their application in the building services engineering industries	5.1 – 5.2
LO6	Know the principles of electricity as they relate to the building services engineering industries	6.1 – 6.3

Learning Outcome 1	
Know the standard units of measurement used in the building services engineering industry	
Assessment Criteria	
1.1	Define Internationally recognised (SI) units of measurement for: c) Metre (length) d) Kilogram (mass) e) Second (time) f) Kelvin (temperature)
1.2	Define SI derived units for: a) Area (m^2) b) Volume (m^3) c) Litres (L) d) Density (kg/m^3) e) Velocity (m/s)

Learning Outcome 2	
Know the properties of materials used in the building services engineering industries	
Assessment Criteria	
2.1	Identify the types of solid materials used in the building services industry a) Metals b) Plastics c) Fireclays/ceramics

Learning Outcome 2	
Know the properties of materials used in the building services engineering industries	
Assessment Criteria (continued)	
2.2	Give examples of the properties of solid materials a) Strength – tensile and compressive b) Hardness c) Ductility d) Malleability e) Conductivity – heat and electricity

Learning Outcome 3	
Know the basic principles for energy, heat, and power in the building services engineering industry	
Assessment Criteria	
3.1	Indicate the relationship between the Celsius and Kelvin temperature scales a) Units of temperature measurement b) Temperature measurement devices used
3.2	Identify the terminology associated with a change of state a) a. Solid, liquid & gas
3.3	Give examples of heat transfer b) Conduction in solids c) Convection in liquids and gases d) Radiation between two bodies
3.4	Indicate how units of energy and heat are related a) Energy – Joules (J) b) Specific heat capacity (kJ/kg/°C) c) Power – Watts (W)

Learning Outcome 4	
Know the principles of force and pressure and their application in the building services engineering industries	
Assessment Criteria	
4.1	Give examples of the relationship between velocity, pressure and flow rate in systems a) Effects of increasing/reducing pipe size on b) velocity and flow rate at constant pressure
4.2	Identify the reasons why pipework restricts the flow of liquids and gases a) Changes of direction, bends and tees b) Pipe size c) Friction

Learning Outcome 5	
Know simple mechanical principles and their application in the building services engineering industries	
Assessment Criteria	
5.1	State the principles behind simple machines a) Mechanical advantage
5.2	Indicate the principles of basic mechanics b) Theory of moments c) Action & reaction d) Centre of gravity e) Equilibrium

Learning Outcome 6	
Know the principles of electricity as they relate to the building services engineering industries	
Assessment Criteria	
6.1	Outline the basic principles of electron flow theory a) Measurements of electrical flow b) Material conductivity and resistance c) Direct and alternating current
6.2	Use simple units of electrical measurement a) Current (Amps) b) Voltage (Volts) c) Resistance (Ohms) d) Power (Watts)
6.3	State how to carry out simple electrical calculations a) Ohm's law b) Voltage, current and resistance in series circuits

K/505/9403 - Understand and carry out copper pipe fabrication work for domestic plumbing systems

Unit level	**1**
GLH	**42**
Unit	
K/505/9403 - Understand and carry out copper pipe fabrication work for domestic plumbing systems	*This combination unit provides learning in the essential job knowledge and basic skills required to safely fabricate copper pipe for use in domestic plumbing systems. The unit is designed to cover work that is applicable to new-build domestic construction sites and refurbishment work in occupied and unoccupied domestic properties.*

Learning Outcomes		Assessment Criteria
LO1	Be able to apply Health and Safety procedures during completion of work activities	1.1 – 1.3
LO2	Know the hand tools that are used for copper pipe fabrication work	2.1 – 2.2
LO3	Be able to safely use hand tools to carry out copper pipe fabrication work	3.1
LO4	Know the materials and components used for copper pipe fabrications	4.1 – 4.3
LO5	Know the procedures for completing basic copper pipe fabrication processes	5.1 – 5.6
LO6	Be able to carry out basic copper pipe fabrication processes	6.1 – 6.6

Learning Outcome 1	
Be able to apply Health and Safety procedures during completion of work activities	
Assessment Criteria	
1.1	Identify and correctly use appropriate items of Personal Protective Equipment for copper pipe fabrication activities
1.2	Check work area for potential hazards before beginning work
1.3	Report any potential hazards noticed before or during completion of work activities

Learning Outcome 2	
Know the hand tools that are used for copper pipe fabrication work	
Assessment Criteria	
2.1	List the hand tools that are used for the following copper pipe fabrication work activities: a) Measuring and marking out b) Cutting and de-burring c) Bending d) Jointing by mechanical means e) Jointing by use of heating equipment
2.2	State how to safely use and look after hand tools that are required for copper pipe fabrication work

Learning Outcome 3	
Be able to safely use hand tools to carry out copper pipe fabrication work	
Assessment Criteria	
3.1	Demonstrate how to safely use the following hand tools and equipment for copper pipe fabrication work: a) Tape measure and pencil/marker b) Pipe slice/pipe cutter c) Junior hacksaw d) De-burring tool e) Bending machine f) Set square g) Folding metallic ruler h) Grips/pump pliers/joint pliers i) Adjustable spanners j) Small blowlamp k) Wire wool/cleaner l) Soldering mat

Learning Outcome 4	
Know the materials and components used for copper pipe fabrications	
Assessment Criteria	
4.1	State the sizes of copper pipe that are typically used in domestic plumbing systems
4.2	State the types of fittings that are used for copper pipework fabrications in domestic plumbing systems
4.3	Identify materials and equipment that are used for: a) Cleaning and preparing copper pipe for mechanical jointing b) Cleaning and preparing copper pipe for jointing by use of heating equipment c) Fixing and securing copper pipework to building fabric

Learning Outcome 5	
Know the procedures for completing basic copper pipe fabrication processes	
Assessment Criteria	
5.1	State the types of drawings and specifications used to detail copper pipe fabrications
5.2	Identify basic information (component/fitting type, pipe sizes etc) from drawings
5.3	State the correct procedures for fabricating copper pipe: a) Measuring and marking out b) Cutting and de-burring c) Producing 90° bends and off-sets
5.4	State the correct procedures for jointing copper pipe using the following methods: a) Mechanical (compression + plastic push fit) b) Capillary (solder ring + end feed)
5.5	State the correct procedures for fixing and securing copper pipe to building fabric
5.6	List the basic steps for pressure testing copper pipe assemblies

Learning Outcome 6	
Be able to carry out basic copper pipe fabrication processes	
Assessment Criteria	
6.1	Correctly read basic drawings and specifications to identify fabrication requirements
6.2	Accurately measure copper pipe and safely cut to required size
6.3	Safely use bending equipment to fabricate copper pipe to include completion of: a) 90° bends b) Off-sets
6.4	Fabricate a copper pipe frame using mechanical and soldered jointing techniques
6.5	Demonstrate the basic procedure for leak testing a copper pipe assembly
6.6	Demonstrate the correct procedures for tidying the work area upon completion of work activities, including: a) Returning tools and equipment b) Returning excess materials to stores c) Safe disposal of waste

K/505/9417 – Understand and carry out low carbon steel pipe fabrication work for domestic plumbing systems

Unit level	**1**
GLH	**42**
Unit	
K/505/9417 - Understand and carry out low carbon steel pipe fabrication work for domestic plumbing systems	*This combination unit provides learning in the essential job knowledge and basic skills required to safely fabricate low carbon steel pipe.*

Learning Outcomes		**Assessment Criteria**
LO1	Be able to apply Health and Safety procedures during completion of work activities	1.1 – 1.3
LO2	Know the hand tools that are used for low carbon steel pipe fabrication work	2.1 – 2.2
LO3	Be able to safely use hand tools to carry out low carbon steel pipe fabrication work	3.1
LO4	Know the materials and components used for low carbon steel pipe fabrications	4.1 – 4.3
LO5	Know the procedures for completing basic low carbon steel pipe fabrication processes	5.1 – 5.6
LO6	Be able to carry out basic low carbon steel pipe fabrication processes	6.1 – 6.6

Learning Outcome 1	
Be able to apply Health and Safety procedures during completion of work activities	
Assessment Criteria	
1.1	Identify and correctly use appropriate items of Personal Protective Equipment for low carbon steel pipe fabrication activities
1.2	Check work area for potential hazards before beginning work
1.3	Report any potential hazards noticed before or during completion of work activities

Learning Outcome 2	
Know the hand tools that are used for low carbon steel pipe fabrication work	
Assessment Criteria	
2.1	List the hand tools that are used for the following low carbon steel pipe fabrication work activities: a) Measuring and marking out b) Cutting and de-burring c) Hydraulic bending d) Jointing by mechanical means
2.2	State how to safely use and look after hand tools that are required for low carbon steel pipe fabrication work

Learning Outcome 3	
Be able to safely use hand tools to carry out low carbon steel pipe fabrication work	
Assessment Criteria	
3.1	Demonstrate how to safely use the following hand tools and equipment for low carbon steel pipe fabrication work: a) Tape measure and pencil/marker b) Pipe /tube cutter c) Large frame hacksaw d) File e) Hydraulic bending machine f) Set square g) Manual pipe threading equipment h) Wire brush i) Stilsons/pipe wrench j) Spanners/adjustable spanners k) Pipe vice

Learning Outcome 4	
Know the materials and components used for low carbon steel pipe fabrications	
Assessment Criteria	
4.1	State the sizes of low carbon steel pipe that are commonly used
4.2	State the types of fittings that are used for low carbon steel pipe fabrications
4.3	Identify materials and equipment that are used for: a) Cleaning and preparing low carbon steel pipe for mechanical jointing b) Fixing and securing low carbon steel pipework to building fabric

Learning Outcome 5	
Know the procedures for completing basic low carbon steel pipe fabrication processes	
Assessment Criteria	
5.1	State the types of drawings and specifications used to detail low carbon steel pipe fabrications
5.2	Identify basic information (component/fitting type, pipe sizes etc) from drawings
5.3	State the correct procedures for fabricating low carbon steel pipe: a) Measuring and marking out b) Cutting and reaming c) Cutting threads d) Producing 90° bends using hydraulic bending machine
5.4	State the correct procedures for joining low carbon steel pipe using threaded and screwed joints
5.5	State the correct procedures for fixing and securing low carbon steel pipe to building fabric
5.6	List the basic steps for pressure testing low carbon steel pipe assemblies

Learning Outcome 6	
Be able to carry out basic low carbon steel pipe fabrication processes	
Assessment Criteria	
6.1	Correctly read basic drawings and specifications to identify fabrication requirements
6.2	Accurately measure low carbon steel pipe and safely cut to required size
6.3	Safely use hydraulic bending equipment to fabricate 90° bends in low carbon steel pipe
6.4	Fabricate a low carbon steel pipe frame using screwed joints
6.5	Demonstrate the basic procedure for leak testing a low carbon steel pipe assembly
6.6	Demonstrate the correct procedures for tidying the work area upon completion of work activities, including: a) Returning tools and equipment b) Returning excess materials to stores c) Safe disposal of waste

M/505/9418 - Understand and carry out plastic pipe fabrication work for domestic plumbing systems

Unit level	**1**	*This combination unit provides learning in the essential job knowledge and basic skills required to safely fabricate plastic pipe for use in domestic plumbing systems. The unit is designed to cover work that is applicable to new-build domestic construction sites and refurbishment work in occupied and unoccupied domestic properties.*
GLH	**32**	
Unit		
M/505/9418 - Understand and carry out plastic pipe fabrication work for domestic plumbing systems		

Learning Outcomes		Assessment Criteria
LO1	Be able to apply Health and Safety procedures during completion of work activities	1.1 – 1.3
LO2	Know the hand tools that are used for plastic pipe fabrication work	2.1 – 2.2
LO3	Be able to safely use hand tools to carry out plastic pipe fabrication work	3.1
LO4	Know the materials and components used for plastic pipe fabrications	4.1 – 4.4
LO5	Know the procedures for completing basic plastic pipe fabrication processes	5.1 – 5.6
LO6	Be able to carry out basic plastic pipe fabrication processes	6.1 – 6.6

Learning Outcome 1	
Be able to apply Health and Safety procedures during completion of work activities	
Assessment Criteria	
1.1	Identify and correctly use appropriate items of Personal Protective Equipment for plastic pipe fabrication activities
1.2	Check work area for potential hazards before beginning work
1.3	Report any potential hazards noticed before or during completion of work activities

Learning Outcome 2	
Know the hand tools that are used for plastic pipe fabrication work	
Assessment Criteria	
2.1	List the hand tools that are used for the following plastic pipe fabrication work activities: a) Measuring and marking out b) Cutting and preparing c) Jointing by mechanical means
2.2	State how to safely use and look after hand tools that are required for plastic pipe fabrication work

Learning Outcome 3	
Be able to safely use hand tools to carry out plastic pipe fabrication work	
Assessment Criteria	
3.1	Demonstrate how to safely use the following hand tools and equipment for plastic pipe fabrication work: a) Tape measure and pencil/marker b) Plastic pipe cutters/ratchet c) De-mounting tool d) Adjustable spanner e) Screwdrivers

Learning Outcome 4	
Know the materials and components used for plastic pipe fabrications	
Assessment Criteria	
4.1	State the sizes of plastic pipe that is commonly used in domestic water and heating supply systems
4.2	State the sizes of plastic pipe that is commonly used in domestic waste systems
4.3	State the types of fittings that are commonly used for plastic pipe fabrications
4.4	Identify materials and equipment that are used for: a) Cleaning and preparing plastic pipe for mechanical jointing and jointing using solvent cement b) Fixing and securing plastic pipe to building fabric

Learning Outcome 5	
Know the procedures for completing basic plastic pipe fabrication processes	
Assessment Criteria	
5.1	State the types of drawings and specifications used to detail plastic pipe fabrications
5.2	Identify basic information (component/fitting type, pipe sizes etc) from drawings
5.3	State the correct procedures for fabricating plastic pipe: a) Measuring and marking out b) Cutting and preparing pipe for installation
5.4	State the correct procedures for jointing plastic pipe using the following methods: a) Compression b) Push fit c) Solvent cement
5.5	State the correct procedures for fixing and securing plastic pipe to building fabric
5.6	List the basic steps for pressure testing plastic pipe assemblies

Learning Outcome 6	
Be able to carry out basic plastic pipe fabrication processes	
Assessment Criteria	
6.1	Correctly read basic drawings and specifications to identify fabrication requirements
6.2	Accurately measure plastic pipe and safely cut to required size
6.3	Fabricate a plastic waste pipe frame using push fit and compression jointing techniques
6.4	Fabricate a plastic water or heating supply pipe frame using push fit jointing techniques
6.5	Demonstrate the basic procedure for leak testing a plastic pipe assembly
6.6	Demonstrate the correct procedures for tidying the work area upon completion of work activities, including: a) Returning tools and equipment b) Returning excess materials to stores c) Safe disposal of waste

K/505/9420 - Understand the key features of domestic plumbing systems

Unit level	1	
GLH	38	
Unit		*This knowledge unit provides learning in the essential job knowledge relating to the characteristics of key domestic plumbing systems.*
K/505/9420 - Understand the key features of domestic plumbing systems		

Learning Outcomes		Assessment Criteria
LO1	Know the key regulations that apply to domestic plumbing installations	1.1
LO2	Know the key features of domestic plumbing systems	2.1 – 2.4
LO3	Know the key components in basic domestic plumbing systems	3.1 – 3.4
LO4	Know the basic requirements for testing domestic plumbing systems	4.1 – 4.3
LO5	Know the basic procedures for decommissioning plumbing systems	5.1 – 5.2

Learning Outcome 1	
Know the key regulations that apply to domestic plumbing installations	
Assessment Criteria	
1.1	List the key regulations that apply to the installation of: a) Cold water systems b) Hot water systems c) Domestic heating systems (wet) d) Above ground discharge systems

Learning Outcome 2	
Know the key features of domestic plumbing systems	
Assessment Criteria	
2.1	State the key features of the following domestic cold water systems: a) Direct b) Indirect
2.2	State the key features of the following domestic hot water systems a) Direct b) Indirect c) Vented d) Unvented
2.3	State the key features of domestic heating and hot water systems which utilise: a) Combination boilers b) System boilers with separate hot water storage vessels
2.4	State the key features of the primary ventilated stack system

Learning Outcome 3	
Know the key components in basic domestic plumbing systems	
Assessment Criteria	
3.1	Identify the location and purpose of the following cold water system components: a) Supply pipe b) Stop valve c) Drain valve d) Cold Water Storage Cistern e) Service valve
3.2	Identify the location and purpose of the following hot water system components: a) Hot water storage cylinder b) Coil type heat exchanger c) Feed and expansion cistern d) Service valve
3.3	Identify the location and purpose of the following hot water heating system components: a) Flow and return pipework b) Motorised valves c) Room thermostats d) Cylinder thermostats e) Radiators f) Pump
3.4	Identify the location and purpose of the following above ground discharge system components: a) Traps b) Long radius bend c) Flushing cisterns and devices

Learning Outcome 4	
Know the basic requirements for testing domestic plumbing systems	
Assessment Criteria	
4.1	List the test equipment that is required for: a) Cold and hot water systems b) Above ground discharge systems
4.2	State the basic procedure for carrying out soundness tests on: a) Cold and hot water systems b) Above ground discharge systems
4.3	State what is meant by commissioning

Learning Outcome 5	
Know the basic procedures for decommissioning plumbing systems	
Assessment Criteria	
5.1	State what is meant by decommissioning
5.2	List the steps that must be undertaken when decommissioning plumbing systems

T/505/9419 - Understand and demonstrate techniques for installing and securing plumbing pipework

Unit level	1	*This knowledge unit provides learning in the essential job knowledge and skills relating to the methods and techniques for fixing and securing domestic plumbing pipework.*
GLH	20	
Unit		
T/505/9419 - Understand and demonstrate techniques for installing and securing plumbing pipework		

Learning Outcomes		Assessment Criteria
LO1	Know the hand and power tools that are used for installing and securing plumbing pipework	1.1 – 1.2
LO2	Know the safety requirements for using power tools in the installation of plumbing pipework	2.1 – 2.3
LO3	Know the safety requirements for using hand tools in the installation of plumbing pipework	3.1 – 3.3
LO4	Be able to safely use hand and power tools to drill and fix pipe supports and brackets	4.1 – 4.4
LO5	Know the requirements for selecting, positioning and fixing pipe supports and brackets for different types of plumbing pipework	5.1 – 5.6
LO6	Be able to correctly position and fix pipe supports and brackets for different types of plumbing pipework	6.1 – 6.4

Learning Outcome 1	
Know the hand and power tools that are used for installing and securing plumbing pipework	
Assessment Criteria	
1.1	List the hand tools that are used for drilling and fixing pipe supports and brackets
1.2	List the power tools that are used for drilling and fixing pipe supports and bracket

Learning Outcome 2	
Know the safety requirements for using power tools in the installation of plumbing pipework	
Assessment Criteria	
2.1	Identify the appropriate Personal Protective Equipment (PPE) to be used when drilling through different types of building fabric: a) Brick work/block work b) Plaster/ plasterboard c) Timber
2.2	State the safety requirements for using the following power tools: a) Power drills b) Cordless drills
2.3	List the basic pre-use and maintenance checks that should be performed before and after power tool use

Learning Outcome 3	
Know the safety requirements for using hand tools in the installation of plumbing pipework	
Assessment Criteria	
3.1	Identify the appropriate Personal Protective Equipment (PPE) that should be worn when using hand tools to install plumbing pipework
3.2	State the safety requirements for using the following hand tools: a) Hammers b) Screwdrivers c) Wood chisels
3.3	List the basic pre-use and maintenance checks that should be performed before and after hand tool use

Learning Outcome 4	
Be able to safely use hand and power tools to drill and fix pipe supports and brackets	
Assessment Criteria	
4.1	Select appropriate PPE for the required work operation
4.2	Demonstrate the correct use of Personal Protective Equipment when drilling and fixing pipe supports and brackets
4.3	Demonstrate methods for safely using the following power tools when drilling and fixing pipe supports and brackets: a) Power drills b) Cordless drills
4.4	Demonstrate methods for safely using the following hand tools during the installation of pipe supports and brackets: a) Tape measure b) Hammer c) Screwdrivers d) Spirit level e) Plumb line

Learning Outcome 5	
Know the requirements for selecting, positioning and fixing pipe supports and brackets for different types of plumbing pipework	
Assessment Criteria	
5.1	Identify appropriate pipe brackets for the fixing of: a) Copper pipe b) Low carbon steel pipe c) Plastic pipe (soil and waste systems) d) Plastic pipe (water supply or heating systems)
5.2	State the recommended pipe support/bracket spacings for: a) Copper pipe in vertical and horizontal positions b) Low carbon steel pipe in vertical and horizontal positions c) Plastic waste pipe in vertical and horizontal positions

Learning Outcome 5	
Know the requirements for selecting, positioning and fixing pipe supports and brackets for different types of plumbing pipework	
Assessment Criteria	
5.3	List the different methods that may be used for fixing pipework supports and brackets to the building fabric
5.4	Identify the different types of wall plug that can be used to help secure pipe brackets and supports
5.5	Identify the following types of drill bits and when they should be used: a) Wood bits b) Hole saws c) Diamond tipped bits d) Masonry drill bits
5.6	List the precautions that should be taken before drilling into building fabric

Learning Outcome 6	
Be able to correctly position and fix pipe supports and brackets for different types of plumbing pipework	
Assessment Criteria	
6.1	Select appropriate pipe supports and brackets for a given task
6.2	Check the correct spacing requirements for the pipe supports/brackets
6.3	Demonstrate the techniques for measuring, marking out, drilling and fixing pipe supports/brackets to different types of building fabric, including: a) Blockwork/brickwork b) Timber
6.4	Demonstrate the correct procedures for tidying the work area upon completion of work activities, including: a) Returning tools and equipment b) Returning excess materials to stores c) Safe disposal of waste

7. Assessment Requirements for Individual Units

7.1. L1 Generic Units

Unit Ref: Y/502/8180 – Understand fundamental scientific principles within building services engineering

To achieve the completion of this knowledge unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes and assessment criteria within the unit.

Unit Ref: K/505/9403 – Understand and carry out copper pipe fabrication work for domestic plumbing systems

To achieve the completion of this combination unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes within the unit. You must also complete the appropriate practical performance activities in simulated conditions as per the requirements for the unit as specified in the BPEC Qualification manual.

Unit Ref: K/505/9417 – Understand and carry out low carbon steel pipe fabrication work for domestic plumbing systems

To achieve the completion of this combination unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes within the unit. You must also complete the appropriate practical performance activities in simulated conditions as per the requirements for the unit as specified in the BPEC Qualification manual.

Unit Ref: M/505/9418 – Understand and carry out plastic pipe fabrication work for domestic plumbing systems

To achieve the completion of this combination unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes within the unit. You must also complete the appropriate practical performance activities in simulated conditions as per the requirements for the unit as specified in the BPEC Qualification manual.

Unit Ref: K/505/9420 – Understand the key features of domestic plumbing systems

To achieve the completion of this knowledge unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes and assessment criteria within the unit.

Unit Ref: T/505/9419 – Understand and demonstrate techniques for installing and securing plumbing pipework

To achieve the completion of this combination unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes within the unit. You must also complete the appropriate practical performance activities in simulated conditions as per the requirements for the unit as specified in the BPEC Qualification manual.

7.2. L2 Generic Units

Unit Ref: J/602/2479 – Understand and carry out safe working practices in building services engineering

To achieve the completion of this combination unit, you must satisfactorily complete the applicable

knowledge assessment for the knowledge learning outcomes within the unit. You must also complete the appropriate practical performance activities in simulated conditions as per the requirements for the unit as specified in the BPEC Qualification manual.

Unit Ref: J/602/2482 – Understand how to communicate with others within Building Services Engineering

To achieve the completion of this knowledge unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes and assessment criteria within the unit.

Unit Ref: D/602/2486 – Understand how to apply environmental protection measures within BSE

To achieve the completion of this knowledge unit, you must satisfactorily complete the applicable knowledge assessment for the knowledge learning outcomes and assessment criteria within the unit.

8. Marking Strategies

8.1. On-line Multiple-Choice Tests

The pass rate for all on-line exams is 60%.

If the pass rate of 60% if not achieved a full re-sit will be required. The centre should use the exams summary report to identify any areas that would need further training before offering any re-sits.

The centre should not enter any Learner into any exams without first confirming they are ready.

Unit		No. of Questions	Open or closed book
J/602/2479:	Understand and carry out safe working practices in building services engineering	50	**Closed book**
J/602/2482:	Understand how to communicate with others within Building Services Engineering	20	**Closed book**
D/602/2486:	Understand how to apply environmental protection measures within BSE	26	**Closed book**

8.2. Performance Assessments

The pass mark for the practical assessments is 100%.

First Attempt - Learners are given a first attempt in all areas of the performance assessment. Second Attempt – performance areas not satisfactorily completed will be re-attempted. At the assessor's discretion, the Learner is re-assessed by oral questioning and/or observing the performance in an attempt to establish competence in all remaining areas. Learners who have not achieved the 100% pass mark at this stage will be deemed to have failed the performance assessment. Learners wishing to retake the assessment will be required to re-attempt the full performance assessment in its entirety.

For all 'combination units' learners will be required to successfully complete a summative (performance) assessment. All appropriate information and supporting documentation is contained within the BPEC Qualification manual for the L1 Diploma Plumbing Foundation qualifications which applies to the following units:

a) **K/505/9403 –** Understand and carry out copper pipe fabrication work for domestic plumbing systems

b) **K/505/9417 –** Understand and carry out low carbon steel pipe fabrication work for domestic plumbing systems

c) **M/505/9418 –** Understand and carry out plastic pipe fabrication work for domestic plumbing systems

d) **T/505/9419 –** Understand and demonstrate techniques for installing and securing plumbing pipework

8.3. Knowledge and Understanding Assessments

The units listed below all require the learner to complete a unit summative (knowledge) assessment. The knowledge assessments (and supporting rationale) are provided by BPEC Certification Ltd.

Level 1 units

a) **Y/502/8180 –** Understand fundamental scientific principles within building services engineering

b) **K/505/9403 –** Understand and carry out copper pipe fabrication work for domestic plumbing systems

c) **K/505/9417 –** Understand and carry out low carbon steel pipe fabrication work for domestic plumbing systems

d) **M/505/9418 –** Understand and carry out plastic pipe fabrication work for domestic plumbing systems

e) **K/505/9420 –** Understand the key features of domestic plumbing systems

f) **T/505/9419 –** Understand and demonstrate techniques for installing and securing plumbing pipework

Level 2 units

g) **J/602/2479 –** Understand how to carry out safe working practices in building services engineering

h) **J/602/2482 –** Understand how to communicate with others within Building Services Engineering

i) **D/602/2486 –** Understand how to apply environmental protection measures within BSE

8.4. Marking Knowledge Assessments - BPEC Level 1 Diploma in Plumbing Foundation

The pass rate for the L1 plumbing qualification paper-based knowledge assessments are 100% for each unit. The L2 units within the L1 plumbing qualification are administered by on-line exams with a pass rate of 60% each.

8.5. Learner Result Submission Form

Learner Result Submission Forms have been produced for the L1 Plumbing qualification. This document shall be used to record that the learner has completed the whole qualification in a satisfactory manner. The document shall be completed and signed by the centre assessor and the internal verifier.

The completed Learner Result Submission Forms shall be sent to BPEC Certification Ltd. for certification. Copies of the Learner Result Form shall also be retained in the Learner Portfolio and the Centre Portfolio.

8.6. Unit Evidence Checklists

A Unit Evidence Checklist has been produced for each unit. This document shall be used to record that the learner has completed the unit in a satisfactory manner. Each section of the document shall be completed, and the document signed by the learner, the assessor(s) and the internal verifier.

9. Further Information

Requests for further information regarding centre/scheme approval or any aspect of assessment of the BPEC qualifications please contact:

BPEC Certification Ltd. 2 Mallard Way, Pride Park, Derby, DE24 8GX

T: 01332 376000 E: AOadmin@bpec.org.uk W: www.bpec.org.uk