apprenticeship
FRAMEWORK

Building Services Engineering Technology and Project Management (England)

IMPORTANT NOTIFICATION FOR ALL APPRENTICESHIP STARTS FROM 22 AUGUST 2017

Modifications to SASE came into effect on 22 August 2017. Accordingly, SASE publication DFE-00167-2017 applies **both** to new Apprenticeship starts from 22 August 2017 **and** all Apprenticeships commenced before and not completed by 22 August 2017.

For more details of the changes please read the following preface page to the framework document.

Latest framework version?

Please use this link to see if this is the latest issued version of this framework:

afo.sscalliance.org/frameworkslibrary/index.cfm?id=FR01261

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Apprenticeships

CHANGES TO THE ENGLISH AND MATHS REGULAR MINIMUM REQUIREMENTS FOR APPRENTICESHIP STARTS FROM 22 AUGUST 2017 AND APPRENTICESHIPS REMAINING INCOMPLETE ON 22 AUGUST 2017.

Modifications to SASE came into effect on 22 August 2017. Accordingly, SASE publication DFE-00167-2017 applies both to new Apprenticeship starts from 22 August 2017 and all Apprenticeships commenced before and not completed by 22 August 2017.

The modifications allow for an exemption to the English and Maths regular minimum requirements for people with Special Educational Needs, Learning Difficulties or Disabilities. This means that adjusting the minimum requirements to Entry Level 3 in English and Maths can be considered by the provider, on an individual and case-by-case basis, where **all of the conditions** of the updated SASE section 18 (Intermediate level) or section 37 (Advanced level) for have been satisfied and can be evidenced.

Full details relating to the exceptions eligibility criteria are contained in:

Sections 15-23 of SASE for Intermediate Level Apprenticeships
Sections 34-42 of SASE for Advanced Level Apprenticeships

When applying this exemption, providers must **STILL** consider how to enable the Apprentice to access further literacy and numeracy development – including Level 1 and Level 2 courses – as part of their overall training provision.

The modifications to SASE have also extended the list of qualifications that meet the minimum English requirements to allow for a British Sign Language (BSL) qualification, at the appropriate level, to be accepted as an alternative to a qualification in English, where **BSL is the primary language of the Apprentice**.

Full details relating to BSL acceptance are contained in:

Section 5(f) of SASE for Intermediate Level Apprenticeships
Section 28(f) of SASE for Advanced Level Apprenticeships

Furthermore, the SASE modifications have further extended the list of qualifications that meet the minimum English and Maths requirements to allow for the acceptance of a range of UK-wide qualifications, as an alternative to qualifications gained in England.

Full details relating to the list of acceptable qualifications are contained in:

Sections 5(g-j) and 6(f-i) of SASE for Intermediate Level Apprenticeships
Sections 28(g-j) and 29(f-i) of SASE for Advanced Level Apprenticeships

The modifications include reference to the new numerical grades in the reformed GCSE system and the **minimum** grade requirements. A grade 4 (new grading) will be considered equivalent to a grade C (old grading). A grade 2 (new grading) will be considered equivalent to a Grade E (old grading).

Full details relating to the numerically graded GCSEs are contained in:

Sections 5 and 6 of SASE for Intermediate Level Apprenticeships
Sections 28 and 29 of SASE for Advanced Level Apprenticeships

Please note that some frameworks may have English and Maths grade/level requirements that are **above** the SASE **regular** minimum requirements. The exceptions relating to the use of British Sign Language or Entry Level 3 qualifications, detailed above, **do not apply** to **industry-specific** minimum entry requirements. Please check specific framework documents to ascertain where this is the case and/or check directly with the Issuing Authority responsible for the framework.

The updated version of SASE, and guidance documents, can be accessed here:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/630068/Specification_of_Apprenticeship_Standards_for_England_.pdf

Building Services Engineering Technology and Project Management (England)

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Framework summary

Building Services Engineering Technology and Project Management

Advanced Level Apprenticeship in Building Services Engineering Technology and Project Management

This framework includes information on Personal Learning and Thinking Skills

Pathways for this framework at level 3 include:

Pathway 1: Technician

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Certificate in Building Services Engineering Technology & Project Management

Knowledge qualifications available to this pathway:

K1 - Level 3 Diploma in Construction and the Built Environment (Building Services Engineering)

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Functional skills

Pathway 2: Design Technician

Competence qualifications available to this pathway:

C1 - Level 3 Diploma in Building Services Engineering for Technicians (QCF)

Knowledge qualifications available to this pathway:

K1 - Level 3 Diploma in Construction and the Built Environment (QCF)

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Functional skills

Framework information

Information on the Issuing Authority for this framework:

SummitSkills

The Apprenticeship sector for occupations in electrical and electronic servicing, plumbing, heating and building services (summarised as electrotechnical; plumbing, heating and ventilating; refrigeration and air conditioning).

Issue number: 6	**This framework includes:**
Framework ID: FR01261	Level 3
Date this framework is to be reviewed by: 01/04/2017	This framework is for use in: **England**

Short description

Apprenticeships for occupations in Building Services Engineering Technology & Project Management are designed to meet the industrys' competence requirements. Depending on the pathway chosen you will either plan and monitor or design (manually or with CAD - Computer Aided Design) installations and refurbishments of work potentially involving environmental technologies, lighting, heating, ventilation and building control systems. You may work on one site or be involved at multiple sites from new buildings to historic restorations.

This Apprenticeship framework document contains two occupation pathways at Advanced Level:

Job roles:

- Building Services Engineering Technician
- Building Services Engineering Design Technician

Contact information

Proposer of this framework

SummitSkills the Sector Skills Council for the Building Services Engineering Sector has engaged with employers, manufacturers, trade associations and training providers through consultations with the Technician Consortium Group to ensure that this framework document is fit-for-purpose.

Developer of this framework

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Revising a framework

Contact details

Who is making this revision:	Trevor Hill
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Why this framework is being revised

A new pathway for Building Services Engineering Design Technicians has been added. Phrases and terminology have also been revised following the frameworks review to ensure compliance with current quality assurance requirements.

Summary of changes made to this framework

- A new pathway for Building Services Engineering Design Technicians has been added.
- The National Apprenticeships Service statement on apprenticeships has been added.
- Link to Skills for Sustainable Growth has been added.

Qualifications removed

N/A

Qualifications added

Level 3 Diploma in Building Services Engineering for Technicians (QCF) - 600/7813/3

Qualifications that have been extended

N/A

Purpose of this framework

Summary of the purpose of the framework

These frameworks are designed to provide new entrants and those seeking progression in their career with the opportunity to develop competencies that are needed to carry out job roles and responsibilities associated with Building Services Engineering Technology & Project Management, including relevant:

- Environmental Technologies
- Technological requirements and changes
- Statutory and Non-Statutory Regulations & Requirements
- Working practices in accordance with project management procedures

It will also contribute towards meeting the skills priorities for England - Skills for Sustainable Growth http://www.bis.gov.uk/assets/biscore/further-education-skills/docs/s/10-1273-skills-forsustainable-growth-strategy-summary

Your employer may have a variety of contracts from new buildings to refurbishment of historic premises for every sector of industry such as defence, health, finance, education, research etc.

You will be dealing with issues such as the environment, sustainability and acoustics and will generally work in either a mechanical or electrical discipline.

The role will require not only technical skills but also the skills of customer service and communication.

Successful completion of the Advanced Level framework equips an apprentice with the ability to identify and use relevant understanding, methods and skills to complete tasks and address problems that, while well defined, have a measure of complexity. They include taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgement within parameters. They also reflect awareness of different perspectives or approaches within an area of study or work.

The following job roles will be covered in the framework:

- Building Services Engineering Technician
- Building Services Engineering Design Technician

National Apprenticeship Service (NAS) – Statement on Apprenticeship Quality

Definition

1. An Apprenticeship is a job with an accompanying skills development programme designed by

employers in the sector. It allows the apprentice to gain technical knowledge and real practical experience, along with functional and personal skills, required for their immediate job and future career. These are acquired through a mix of learning in the workplace, formal off the job training and the opportunity to practice and embed new skills in a real work context. This broader mix differentiates the Apprenticeship experience from training delivered to meet narrowly focused job needs.

2. On completion of the Apprenticeship the apprentice must be able to undertake the full range of duties, in the range of circumstances appropriate to the job, confidently and competently to the standard set by the industry.

Aims and objectives of this framework (England)

The aim of this framework is to ensure that the Advanced Level Apprenticeship programme delivers:

- The Skills and Knowledge required by the industry to achieve competence
- Job related skills that will be used in the working environment
- New entrants to replace those retiring or leaving the sector
- Transferable Skills such as problem solving, communication, team working, literacy, numeracy and ICT skills which are a priority for the sector
- Career progression

Employers have endorsed this programme as it delivers qualified competent employees and improves productivity and retention.

Further information can be found at www.summitskills.org.uk

Entry conditions for this framework

Although there are generally no nationally laid-down minimum entry or previous experience requirements to undertake these Advanced Level Apprenticeships in Building Services Engineering & Project Management the, following selection criteria may be used as guidance.

The programme is likely to be suitable for individuals who:

- Have an aptitude for technical subjects and/or are practically minded
- Have an interest in technology
- Can demonstrate an ability to solve practical and theoretical problems
- Have a portfolio of evidence from work experience, non-accredited courses, volunteering, have previously worked or are working in the sector

A career in this industry will not only reward an apprentice's potential, but also offer opportunities to enhance their technical capability. The industry needs new entrants of appropriate ability and offers a varied and rewarding career in a challenging working environment.

Other selection criteria may include:

- Ability to communicate effectively with a range of people
- Being numerate and literate as a significant amount of paperwork will be involved
- Good colour vision to recognise colour coded wires and components
- Willingness to learn to drive if you don't already have a driving licence as some of the work will require you to drive to customers premises (Insurance requirements may differ per company)
- Willingness to work outside and carry out manual handling tasks as some materials and equipment are heavy
- Willingness to work unsociable hours
- Willingness to undergo a Criminal Records Bureau (CRB)/Disclosure and Barring Service (DBS) check when required
- Willingness to work safely and respectively in support of government safeguarding policies http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_126770.pdf

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and successfully complete these Advanced Level Apprenticeship are:

- Functional Skills, or their equivalent in English, Maths and/or ICT at level 1 or 2 OR
- GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject OR
- Level 2 GNVQs in relevant vocational/technical subjects OR
- A 14-19 Higher Diploma in either Construction and The Built Environment, or Engineering

OR

- A Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Level 3

Title for this framework at level 3

Advanced Level Apprenticeship in Building Services Engineering Technology and Project Management

Pathways for this framework at level 3

Pathway 1:	Technician
Pathway 2:	Design Technician

Level 3, Pathway 1: Technician

Description of this pathway

BSE Technician - Servicing, maintaining and commissioning services within a building such as planning and administering refurbishments of lighting, heating, ventilation, lifts etc - total credits for this framework are 169-174 depending on unit options chosen

- Minimum 154 credits for the Combined (Knowledge 138 credits & Competence 16 credits) Qualification
- 15 credits for Functional Skills English, Mathematics & ICT

Where Recognition of Prior Learning (RPL) for competence, knowledge or Functional Skills is applied, the Apprenticeship programme must be tailored to allow the Apprentice to undertake new learning, including learning at a higher level and to develop new skills.

In order to demonstrate the industry recognised level of competence reflected by this Advanced framework it is expected the minimum duration for its completion will be **no less than 42 months.**

Entry requirements for this pathway in addition to the framework entry requirements

No additional requirements for this pathway

Job title(s)	Job role(s)
Building Services Engineering Technician	Oversees work to service, maintain and commission services within a building such as planning and administering refurbishments of lighting, heating, ventilation, lifts etc and ongoing monitoring of energy and environmental control systems.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Certificate in Building Services Engineering Technology & Project Management

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/4309/X	EAL	34-39	190-224	N/A

Knowledge qualifications available to this pathway

K1 - Level 3 Diploma in Construction and the Built Environment (Building Services Engineering)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/7137/3	Edexcel	120	720	N/A

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

This framework requires the completion of the competence qualification C1a identified in the competence qualifications section C1 above, as well as the knowledge qualification K1a identified in the knowledge section K1 above,

Competence qualification Title - **Level 3 NVQ Certificate in Building Services Engineering Technology & Project Management (QCF)** which has four ***Mandatory*** units and the candidate must chose 3 pairs of units from the 6 pair options:

Mandatory Knowledge Units

- Understand how to monitor and implement health and safety during building services engineering projects A/503/0861 ***Unit Credit Value 4***
- Understand how to monitor and implement building services engineering projects in the work location H/503/0823 ***Unit Credit Value 5***

Mandatory Knowledge Element Total = 9 credits

Mandatory Competence Units

- Monitor and implement building services engineering projects in the work location F/503/0814 ***Unit Credit Value 4***
- Monitor and implement health and safety during building services engineering projects T/503/0812 ***Unit Credit Value 4***

Mandatory Competence Element Total = 8 credits

Optional Units - Select 3 pairs (Each pair is a performance unit coupled with the relevant knowledge unit)

Pair Group One (PG1) - 8 credits

- Understand how to apply design principles to building services engineering projects M/503/0825 ***Unit Credit Value 4 - Knowledge***
- Apply design principles to building services engineering projects J/503/0815 ***Unit Credit Value 4 - Competence***

Pair Group Two (PG2) - 7 credits

- Understand how to contribute to estimating and tendering processes for building services engineering projects T/503/0826 ***Unit Credit Value 4 - Knowledge***
- Contribute to estimating and tendering processes for building services engineering projects L/503/0816 ***Unit Credit Value 3 - Competence***

Pair Group Three (PG3) - 7 credits

- Understand how to monitor commissioning and testing for building services engineering projects F/503/0828 ***Unit Credit Value 4 - Knowledge***
- Monitor commissioning and testing procedures for building services engineering projects Y/503/0818 ***Unit Credit Value 3 - Competence***

Pair Group Four (PG4) - 6 credits

- Understand how to apply contract conditions for building services engineering projects H/503/0854 ***Unit Credit Value 3 - Knowledge***
- Apply contract conditions for building services engineering projects D/503/0819 ***Unit Credit Value 3 - Competence***

Pair Group Five (PG5) - 4 credits

- Understand how to provide technical and functional information to relevant people K/503/0855 ***Unit Credit Value 2 - Knowledge***
- Provide technical and functional information to relevant people R/503/0820 ***Unit Credit Value 2 - Competence***

Pair Group Six (PG6) - 7 credits

- Understand how to contribute to planning work methods, resources and systems to meet building services engineering project work requirements M/503/0856 ***Unit Credit Value 4 - Knowledge***
- Contribute to planning work methods, resources and systems to meet building services engineering project work requirements Y/503/0821 ***Unit Credit Value 3 - Competence***

Optional Knowledge Element Total, subject to pair choices = 9-12 credits

Optional Competence Element Total, subject to pair choices = 8-10 credits

Total Knowledge Elements in Qualification subject to pair choices = 18-21 credits

Total Competence Elements in Qualification subject to pair choices = 16-18 credits

Knowledge qualification Title - ***Level 3 Diploma in Construction and the Built Environment (Building Services Engineering)*** which has several routes but 12 of the following units (6 Mandatory and 6 Optional Totaling 120 credits & 720 GLH) must be completed to fulfil the requirements of this framework:

Six Mandatory Units

- Mathematics in Construction and the Built Environment J/600/0451 ***Unit Credit Value 10***
- Health, Safety and Welfare in Construction and the Built Environment L/600/0211 ***Unit Credit Value 10***
- Sustainable Construction R/600/0212 ***Unit Credit Value 10***
- Science and Materials in Construction and the Built Environment T/600/0221 ***Unit Credit Value 10***
- Building Services Control Systems J/600/0319 ***Unit Credit Value 10***
- Building Services Science T/600/0297 ***Unit Credit Value 10***

Plus 6 Optional Units from the 13 listed below which enables flexibility in the framework for an individual to select units compatible with their job role/responsibilities.

- Project in Construction and the Built Environment M/600/0444 ***Unit Credit Value 10***
- Information and Communication Technology for Construction and the Built Environment K/600/0443 ***Unit Credit Value 10***
- Tendering and Estimating in Construction F/600/0397 ***Unit Credit Value 10***
- Measurement Techniques in Construction Y/600/0356 ***Unit Credit Value 10***
- Electrical Installation Design in Building Services Engineering F/600/0416 ***Unit Credit Value 10***
- Ventilation and Air Conditioning Design in Building Services Engineering H/600/0375 ***Unit Credit Value 10***
- Low Temperature Hot Water Heating in Building Services Engineering M/600/0380 ***Unit Credit Value 10***
- Refrigeration Technology in Building Services Engineering T/600/0459 ***Unit Credit Value 10***
- Plumbing Technology in Building Services Engineering Y/600/0437 ***Unit Credit Value 10***
- Electrical Principles in Building Services Engineering A/600/0415 ***Unit Credit Value 10***
- Commissioning Electrical Installations in Building Services Engineering R/600/0405 ***Unit Credit Value 10***
- Electrical Installation Standards and Components in Building Services Engineering H/600/0408 ***Unit Credit Value 10***
- Fluids - Static and Dynamic in Building Services Engineering L/600/0371 ***Unit credit Value 10***

Knowledge Qualification total = 120 credits (6 Mandatory Units - 60 credits + 6 Optional Units - 60 credits)

For further qualification details refer to: ***register.ofqual.gov.uk /Qualification*** and search for qualification or unit number.

Transferable skills (England)

Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	2	5
GCSE qualification in English (with enhanced functional content)	C	5
Key Skills qualification in Communication achieved either before September 2013 as part of the Apprenticeship, or...*	2	5
GCSE Qualification in English*	C	N/A
A' Level or AS Level qualification in English Language*	E	N/A
A' Level or AS Level qualification in English Literature*	E	N/A
A' Level or AS Level qualification in English Language and Literature*	E	N/A
GCSE or O' Level qualification in English Language**	A	N/A
A' Level or AS Level qualification in English Language**	A	N/A
A' Level or AS Level qualification in English Literature**	A	N/A
A' Level or AS Level qualification in English Language and Literature**	A	N/A

* *achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.*

** *achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.*

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	2	5
GCSE qualification (with enhanced functional content) in Mathematics	C	5
Key Skills qualification in Application of Number achieved either before September 2013 as part of the Apprenticeship, or... *	2	5
GCSE qualification in Mathematics*	C	N/A
A' level or AS Level qualification in Mathematics*	E	N/A
A' Level or AS Level qualification in Pure Mathematics*	E	N/A
A'Level or AS Level qualification in Further Mathematics*	E	N/A
GCSE or O'Level qualification in Mathematics**	A	N/A
A' Level or AS Level qualification in Mathematics**	A	N/A
A' Level or AS Level qualification in Pure Mathematics**	A	N/A
A' Level or AS Level qualification in Further Mathematics**	A	N/A

* *achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.*

** *achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.*

ICT

Apprentices must complete or have completed one of the ICT transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have one of these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

ICT	Minimum level or grade	Credit value
Functional Skills qualification in Information and Communications Technology (ICT)	2	5
GCSE qualification in ICT (with enhanced functional content)	C	5
Key Skills qualification in ICT achieved either before September 2013 as part of the Apprenticeship, or...*	2	5
GCSE qualification in ICT*	C	N/A
A' Level or AS Level qualification in ICT*	E	N/A
GCSE or O'Level qualification in ICT**	A	N/A
A' Level or AS Level qualification in ICT**	A	N/A

* *achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.*

** *achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.*

Inclusion of Information and Communications Technology (ICT)

No further information

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Work or work experience

- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Key Skills or Functional Skills
- Level 2 GNVQs in relevant vocational/technical subjects
- A 14-19 Higher Diploma in either Construction and the Built Environment or Engineering
- A Level 2 "Access to Building Services Engineering" qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

On successful completion of the Advanced Level Apprenticeship in Building Services Engineering Technology and Project Management, an apprentice will have the skills, knowledge and qualifications:

- Progression to relevant Level 4/5 qualifications e.g. Level 4 Building Services Engineering Technology & Project Management, Higher National Certificate in Construction and the Built Environment or Foundation Degree in Building Services Engineering
- Progress in their career with further training into job roles such as Technician, System Designer, Estimator, Project/Contracts Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer or Commercial Manager
- That will contribute to their recognition with a professional body ie. the Engineering Councils UK Standards for Professional Engineering Competence http://www.engc.org.uk/

Further career guidance can be found at: www.summitskills.org.uk/careers/23

UCAS points for this pathway: N/A

Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below can be achieved through an induction programme, in combination with the EAL (600/4309/X) Level 3 NVQ Certificate in Building Services Engineering Technology & Project Management (QCF) qualification into which they are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate plus a completed ACE Declaration & Universal Authorisation form with confirmation by the assessor and apprentice that all nine ERR elements have been achieved.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers;
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety, and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme;
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities;
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisation's principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

Level 3, Pathway 2: Design Technician

Description of this pathway

Design Technician - Designing, estimating and scheduling work to a specification in a variety of premises. The role may involve work on new buildings or refurbishment of lighting, heating, ventilation and control systems- 238 credits total.

- 223 credits for either combined (Knowledge 120 credits & Competence 103 credits) qualification
- 15 credits for Functional Skills in English, Mathematics & ICT

Where Recognition of Prior Learning (RPL) is applied in relation to competence, knowledge or Functional Skills, the Apprenticeship programme must be tailored to allow the Apprentice to undertake new learning, including learning at a higher level and developing new skills.

In order to demonstrate the industry recognised level of competence reflected by this Advanced framework it is expected the minimum duration for its completion will be **no less than 42 months**.

Entry requirements for this pathway in addition to the framework entry requirements

No further information

Job title(s)	Job role(s)
Building Services Engineering Design Technician	Carries out design work including production of manual and CAD (Computer Aided Design) drawings, provides estimates, schedules and data to meet a specification. The role may involve work on new buildings or refurbishment of lighting, heating, ventilation and control systems in a variety of premises.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 Diploma in Building Services Engineering for Technicians (QCF)					
No.	**Ref no.**	**Awarding organisation**	**Credit value**	**Guided learning hours**	**UCAS points value**
C1a	600/7813/3	Pearson Education Ltd (Edexcel)	103	334	N/A

Knowledge qualifications available to this pathway

K1 - Level 3 Diploma in Construction and the Built Environment (QCF)					
No.	**Ref no.**	**Awarding organisation**	**Credit value**	**Guided learning hours**	**UCAS points value**
K1a	500/7137/3	Pearson Education Ltd (Edexcel)	120	720	N/A

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

This framework requires the completion of the competence qualification C1a identified in the competence qualifications section C1 above, as well as the knowledge qualification K1a identified in the knowledge section K1 above,

Competence Qualification Title - Level 3 Diploma in Building Services Engineering Technicians (QCF) which has the following units:

Competence units

- Techniques and Procedures for Building Services Engineering Tasks A/504/6056 ***Credit Value 16***
- Developing Building Services Engineering Solutions F/504/6057 ***Credit Value 17***
- Management and Leadership in Building Services Engineering L/504/6059 ***Credit Value 10***
- Working Independently in Building Services Engineering F/504/6060 ***Credit Value 12***
- Commercial Activities in Building Services Engineering J/504/6061 ***Credit Value 8***
- Health, Safety and Welfare for Building Services Engineers L/504/6062 ***Credit Value 16***
- Sustainable Development in Building Services Engineering Y/504/6064 ***Credit Value 8***
- Interpersonal Skills and Communication in Building Services Engineering D/504/6065 ***Credit Value 12***
- Professional Values for Building Services Engineers H/504/6066 ***Credit Value 4***

Competence Element = 103 credits

Total Qualification = 103 credits

Knowledge qualification Title - Level 3 Diploma in Construction and the Built Environment (Building Services Engineering) which has several routes but 12 of the following units (6 Mandatory and 6 Optional Totaling 120 credits & 720 GLH) must be completed to fulfil the requirements of this framework:

Six Mandatory Units

- Mathematics in Construction and the Built Environment J/600/0451 ***Credit Value 10***
- Health, Safety and Welfare in Construction and the Built Environment L/600/0211 ***Credit Value 10***
- Sustainable Construction R/600/0212 ***Credit Value 10***
- Science and Materials in Construction and the Built Environment T/600/0221 ***Credit Value***

10

- Building Services Control Systems J/600/0319 ***Credit Value 10***
- Building Services Science T/600/0297***Credit Value 10***

Plus 6 Optional Units from the 13 listed below which enables flexibility in the framework for an individual to select units compatible with their job role/responsibilities.

- Project in Construction and the Built Environment M/600/0444 ***Credit Value 10***
- Information and Communication Technology for Construction and the Built Environment K/600/0443 ***Credit Value 10***
- Tendering and Estimating in Construction F/600/0397 ***Credit Value 10***
- Measurement Techniques in Construction Y/600/0356 ***Credit Value 10***
- Electrical Installation Design in Building Services Engineering F/600/0416 ***Credit Value 10***
- Ventilation and Air Conditioning Design in Building Services Engineering H/600/0375 ***Credit Value 10***
- Low Temperature Hot Water Heating in Building Services Engineering M/600/0380 ***Credit Value 10***
- Refrigeration Technology in Building Services Engineering T/600/0459 ***Credit Value 10***
- Plumbing Technology in Building Services Engineering Y/600/0437 ***Credit Value 10***
- Electrical Principles in Building Services Engineering A/600/0415 ***Credit Value 10***
- Commissioning Electrical Installations in Building Services Engineering R/600/0405 ***Credit Value 10***
- Electrical Installation Standards and Components in Building Services Engineering H/600/0408 ***Credit Value 10***
- Fluids - Static and Dynamic in Building Services Engineering L/600/0371 ***Credit Value 10***

Knowledge Qualification total = 120 credits (6 Mandatory Units - 60 credits + 6 Optional Units - 60 credits)

For further qualification details refer to: www.register.ofqual.gov.uk/Qua lification and search by relevant qualification or unit number.

Transferable skills (England)

Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	2	5
GCSE qualification in English (with enhanced functional content)	C	5
Key Skills qualification in Communication achieved either before September 2013 as part of the Apprenticeship, or...*	2	5
GCSE Qualification in English*	C	N/A
A' Level or AS Level qualification in English Language*	E	N/A
A' Level or AS Level qualification in English Literature*	E	N/A
A' Level or AS Level qualification in English Language and Literature*	E	N/A
GCSE or O' Level qualification in English Language**	A	N/A
A' Level or AS Level qualification in English Language**	A	N/A
A' Level or AS Level qualification in English Literature**	A	N/A
A' Level or AS Level qualification in English Language and Literature**	A	N/A

* *achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.*

** *achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.*

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	2	5
GCSE qualification (with enhanced functional content) in Mathematics	C	5
Key Skills qualification in Application of Number achieved either before September 2013 as part of the Apprenticeship, or... *	2	5
GCSE qualification in Mathematics*	C	N/A
A' level or AS Level qualification in Mathematics*	E	N/A
A' Level or AS Level qualification in Pure Mathematics*	E	N/A
A'Level or AS Level qualification in Further Mathematics*	E	N/A
GCSE or O'Level qualification in Mathematics**	A	N/A
A' Level or AS Level qualification in Mathematics**	A	N/A
A' Level or AS Level qualification in Pure Mathematics**	A	N/A
A' Level or AS Level qualification in Further Mathematics**	A	N/A

* *achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.*

** *achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.*

ICT

Apprentices must complete or have completed one of the ICT transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have one of these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

ICT	Minimum level or grade	Credit value
Functional Skills qualification in Information and Communications Technology (ICT)	2	5
GCSE qualification in ICT (with enhanced functional content)	C	5
Key Skills qualification in ICT achieved either before September 2013 as part of the Apprenticeship, or...*	2	5
GCSE qualification in ICT*	C	N/A
A' Level or AS Level qualification in ICT*	E	N/A
GCSE or O'Level qualification in ICT**	A	N/A
A' Level or AS Level qualification in ICT**	A	N/A

** achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.*

*** achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.*

Inclusion of Information and Communications Technology (ICT)

Further competence in ICT potentially at a higher level may be gained using software in your role with some employers

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Key Skills or Functional Skills
- Level 2 GNVQs in relevant vocational/technical subjects
- A 14-19 Higher Diploma in either Construction and the Built Environment or Engineering
- A Level 2 "Access to Building Services Engineering" qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

On successful completion of the Advanced Level Apprenticeship in Building Services Engineering Technology and Project Management, an apprentice will have the skills, knowledge and qualifications:

- Progression to relevant Level 4/5 qualifications e.g. Level 4 Building Services Engineering Technology & Project Management, Higher National Certificate in Construction and the Built Environment or Foundation Degree in Building Services Engineering
- Progress in their career with further training into job roles such as Technician, System Designer, Estimator, Project/Contracts Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer or Commercial Manager
- That will contribute to their recognition with a professional body ie. the Engineering Councils UK Standards for Professional Engineering Competence http://www.engc.org.uk/

Further career guidance can be found at: www.summitskills.org.uk/careers/23

UCAS points for this pathway: N/A

Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below can be achieved through an induction programme, in combination with the Pearson (600/7813/3) Level 3 Diploma in Building Services Engineering for Technicians (QCF) qualification into which they are integrated and signposted. The ERR elements will be
evidenced by the issuing of a qualification achievement certificate plus a completed ACE Declaration & Universal Authorisation form with confirmation by the assessor and apprentice that all nine ERR elements have been achieved.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers;
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety, and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme;
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities;
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisation's principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

The remaining sections apply to all levels and pathways within this framework.

How equality and diversity will be met

The nature of the work means that the Building Services Engineering Technology and Project Management Sector is not a traditional career choice for women, but women do qualify and work successfully in the industry and this is encouraged. We are continuing to work with the UK Resource Centre for Women in Science, Engineering and Technology and the Platform 51 (formerly YWCA) to promote the opportunities for women working within the building services engineering sector.

SummitSkills will have overall responsibility for the development and review of the framework and for monitoring equality of opportunity, primarily by the analysis of the National Apprenticeship Service data.

There should be open recruitment of apprentices who meet the selection criteria, regardless of gender, ethnic origin, religion/belief, sexual orientation or disability .

All partners involved in the delivery of the apprenticeship and employers must be committed to a policy of equal opportunities and must have a formal equal opportunities policy and procedure in place. Employers/providers must be able to demonstrate that there are no overt or covert discriminatory practices in selection and employment. All promotional, selection and training activities must comply with relevant legislation such as the Equality Act 2010. http://www.equalityhumanrights.com/advice-and-guidance/new-equality-act-guidance/

Providers will monitor equality of opportunity practice and procedures within their own organisation and take positive action when necessary. It is also recommended that employers/providers conduct an exit interview if the apprentice leaves the programme before completion.

On and off the job guided learning (England)

Total GLH for each pathway

Overview of Technician pathway

Knowledge Qualification Total - 720 hrs

Competence Qualification Total - 190-224 hrs (depending on pairs chosen)

Functional Skills (FS) - 135 hrs (notional value of 45hrs per FS x 3, which can be offset if previously completed)

Mentoring - 322 hrs (based on 46 wks x 2 hrs per full year over 42 months)

Minimum total GLH for this framework is 1367-1401 hrs (depending on pairs chosen)

Overview of Design Technician pathway

Knowledge Qualification Total - 720 hrs

Competence Qualification Total - 334 hrs

Functional Skills (FS) - 135 hrs (notional value of 45hrs per FS x 3, which can be offset if previously completed)

Mentoring - 322 hrs (based on 46 wks x 2 hrs per full year over 42 months)

Minimum total GLH for this framework is 1511 hrs

In addition to these hours we would encourage further practice take place in the work place as apprenticeships should normally require employment of at least 30 hrs per week as part of their Apprenticeship Agreement.

These Apprenticeships meet the National Apprenticeship Services requirement that apprenticeships for those aged:

- between 16 – 18, then the Apprenticeship must last at least 12 months
- 19 and over, then the Apprenticeship must be at least 12 months, unless relevant prior learning is recorded. Where this is the case, Apprenticeships will not be less than six months and must include new skills and new learning.

GLH:

- must be planned, reviewed and evaluated jointly between the apprentice and tutor, teacher, mentor or manager
- must allow access as and when required by the apprentice either to a tutor, teacher, mentor or manager
- must be delivered through one or more of the following methods: individual and group teaching, e-learning, distance learning, coaching, mentoring; feedback and assessment; collaborative/networked learning with peers; guided study

Apprenticeship delivery:

- must be planned to make full and effective use of the duration, including the opportunity for apprentices to embed and extend their learning through repeated workplace practice
- some of this GLH may be offset through Recognition of Prior Learning (RPL) of suitable qualifications and demonstrable experience
- a completed ACE Declaration & Universal Authorisation form signed by the assessor and apprentice will evidence that on and off the job hour requirements have been met and is available on SummitSkills website at: http://www.summitskills.org.uk/Apprenticeships/Certification-and-Registration/219

Minimum off-the-job guided learning hours

Technican pathway

Minimum total off-the-job GLH is 1045 hrs over 42 months (depending on pairs chosen up to an additional 34 hrs GLH will be required on top of the figures below)

- Yr 1 - 298 GLH
- Yr 2 - 298 GLH
- Yr 3 - 298 GLH
- Yr 4 - 151 GLH (based on 6 months

Design Technican pathway

Minimum total off-the-job GLH is 1189 hrs over 42 months

Yr 1 - 340 GLH
Yr 2 - 340 GLH
Yr 3 - 340 GLH
Yr 4 - 169 GLH (based on 6 months

How this requirement will be met

Guided Learning Hours (GLH) will be achieved through clear and specific outcomes which

contribute directly to the successful completion of the framework, and these may include accredited and non-accredited elements of the framework.

GLH will be delivered through one or more of the following methods: individual and group teaching; e-learning; distance learning; feedback and assessment; guided study.

All GLH delivery must be completed while undertaking apprenticeship training and will take place during contracted working hours. Off the job GLH will be away from the immediate pressures of the workplace eg day release, block release, web based learning, mentoring etc

This will be recorded and evidenced by training provider attendance statistics, assessment reports and apprentice diary/portfolio.

Minimum on-the-job guided learning hours

Technician pathway

Minimum total on-the-job GLH is 322 hrs over 42 months

- Yr 1 - 92 GLH
- Yr 2 - 92 GLH
- Yr 3 - 92 GLH
- Yr 4 - 46 GLH (based on 6 months

These are the minimum number of GLH that should be allocated for the apprentice to gather evidence in accordance with the requirements of the competence qualification and mentoring.

Design Technician pathway

Minimum total on-the-job GLH is 322 hrs over 42 months

- Yr 1 - 92 GLH
- Yr 2 - 92 GLH
- Yr 3 - 92 GLH
- Yr 4 - 46 GLH (based on 6 months

These are the minimum number of GLH that should be allocated for the apprentice to gather evidence in accordance with the requirements of the competence qualification and mentoring.

How this requirement will be met

Guided Learning Hours (GLH) will be achieved through clear and specific outcomes which contribute directly to the successful achievement of the framework and these may include accredited and non-accredited elements of the framework.

GLH will be delivered through one or more of the following methods: individual and group teaching; e-learning; distance learning; coaching; mentoring; feedback and assessment; collaborative/networked learning with peers; guided study.

All GLH delivery must be completed while undertaking apprenticeship training and will take place during contracted working hours.

On the job GLH must be recorded eg in a diary/portfolio checked by an assessor, logs of peer review discussions, performance reviews etc

This will be evidenced by an apprentice's portfolio, employer dialogue, qualification assessment records and reports.

Personal learning and thinking skills assessment and recognition (England)

Summary of Personal Learning and Thinking Skills

This framework document contains two pathways:

- The Technician pathway includes the Level 3 NVQ Certificate in Building Services Engineering Technology & Project Management (QCF). There are 4 mandatory units which must be obtained whichever options are chosen.
- The Design Technician pathway includes the Level 3 Diploma in Building Services Engineering for Technicians (QCF)

Detailed below are the units from these qualifications which address the requirements of each of the six Personal Learning and Thinking Skills.

Creative thinking

Creative thinking will be demonstrated and delivered at a minimum level within the qualification units referenced below:

Technician Pathway

- Understand how to monitor and implement building services engineering projects in the work location (H/503/0823)
- Monitor and implement building services engineering projects in the work location (F/503/0814)
- Monitor and implement Health and Safety during building services engineering projects (T/503/0812)

Design Technician Pathway

- Developing Building Services Engineering Solutions (F/504/6057)
- Management and Leadership in Building Services Engineering (L/504/6059)
- Health, Safety and Welfare for Building Services Engineers (L/504/6062)

Assessment and recognition will take place during the delivery and be evidenced at certification by the achievement of the qualification.

Independent enquiry

Independent Enquiry will be demonstrated and delivered at a minimum level within the qualification units referenced below:

Technician Pathway

- Understand how to monitor and implement health and safety during building services engineering projects (A/503/0861)
- Monitor and implement building services engineering projects in the work location (F/503/0814)
- Understand how to monitor and implement building services engineering projects in the work location (H/503/0823)

Design Technician Pathway

- Working Independently in Building Services Engineering (F/504/6060)
- Management and Leadership in Building Services Engineering (L/504/6059)
- Sustainable Development in Building Services Engineering (Y/504/6064)

Assessment and recognition will take place during the delivery and be evidenced at certification by the achievement of the qualification.

Reflective learning

Reflective Learning will be demonstrated and delivered at a minimum level within the qualification units referenced below:

Technician Pathway

- Understand how to monitor and implement building services engineering projects in the work location (H/503/0823)
- Understand how to monitor and implement health and safety during building services engineering projects (A/503/0861)
- Monitor and implement Health and Safety during building services engineering projects (T/503/0812)

Design Technician Pathway

- Working Independently in Building Services Engineering (F/504/6060)
- Management and Leadership in Building Services Engineering (L/504/6059)
- Developing Building Services Engineering Solutions (F/504/6057)

Assessment and recognition will take place during the delivery and be evidenced at certification by the achievement of the qualification.

Team working

Team Working will be demonstrated and delivered at a minimum level within the qualification units referenced below:

Technician Pathway

- Understand how to monitor and implement building services engineering projects in the work location (H/503/0823)
- Monitor and implement Health and Safety during building services engineering projects (T/503/0812)
- Monitor and implement building services engineering projects in the work location (F/503/0814)

Design Technician Pathway

- Management and Leadership in Building Services Engineering (L/504/6059)
- Health, Safety and Welfare for Building Services Engineers (L/504/6062)
- Interpersonal Skills and Communication in Building Services Engineering (D/504/6065)

Assessment and recognition will take place during the delivery and be evidenced at certification by the achievement of the qualification.

Self management

Self Management will be demonstrated and delivered at a minimum level within the qualification units referenced below:

Technician Pathway

- Monitor and implement building services engineering projects in the work location (F/503/0814)
- Monitor and implement Health and Safety during building services engineering projects (T/503/0812)
- Understand how to monitor and implement building services engineering projects in the work location (H/503/0823)

Design Technician Pathway

- Management and Leadership in Building Services Engineering (L/504/6059)
- Developing Building Services Engineering Solutions (F/504/6057)
- Commercial Activities in Building Services Engineering (J/504/6061)

Assessment and recognition will take place during the delivery and be evidenced at certification by the achievement of the qualification.

Effective participation

Effective Participation will be demonstrated and delivered at a minimum level within the qualification units referenced below:

Technician Pathway

- Understand how to monitor and implement building services engineering projects in the work location (H/503/0823)
- Understand how to monitor and implement health and safety during building services engineering projects (A/503/0861)
- Monitor and implement building services engineering projects in the work location (F/503/0814)

DesignTechnician Pathway

- Management and Leadership in Building Services Engineering (L/504/6059)
- Sustainable Development in Building Services Engineering (Y/504/6064)
- Commercial Activities in Building Services Engineering (J/504/6061)

Assessment and recognition will take place during the delivery and be evidenced at certification by the achievement of the qualification.

Additional employer requirements

Although not a requirement for issuing an Apprenticeship Completion Certificate, employers in the building services engineering sector ***encourage*** organisations delivering a learning and assessment programme for the Advanced Level Apprenticeship Frameworks to integrate the ***Level 3 Award in the Fundamental Principles and Requirements of Environmental Technology Systems*** (BPEC 600/6377/4, City & Guilds 600/4282/5, EAL 600/0665/1, LCL 600/5715/4 or ProQual 600/6253/8; credit value 2, GLH 15) into their delivery models.

Matching qualifications from other Awarding Organisations may intermittently become available on the OFQUAL Register and this framework document will be updated bi-annually to reflect suitable qualifications at that time.

It should be noted that the delivery of this qualification will ***not*** attract funding

apprenticeship
FRAMEWORKS ONLINE

For more information visit
www.afo.sscalliance.org