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Investing in a Smart, Sustainable and Inclusive Future

Graduate Apprenticeships

Framework document for

Construction and the Built Environment at SCQF level 10

January 2019

Document control

Version history

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6.0	Higher apprenticeship reference	SDS	1 July 2019

Terms and abbreviations

Term	Meaning
SDS	Skills Development Scotland
GA(s)	Graduate Apprenticeship(s) / Apprentice(s)
SCQF	Scottish Credit and Qualifications Framework
TEG	Technical Expert Group
QA	Quality Assurance
CBE	Construction and the Built Environment
LABSS	Local Authority Building Standards Scotland
APM	Association of Project Managers
CIOB	Chartered Institute of Building
RICS	Royal Institution of Chartered Surveyors
CIAT	Chartered Institute of Architectural Technologists
FOI	Freedom of Information
DP	Data protection
WBS	Work Breakdown Structure

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Contents

1. Graduate Apprenticeships in Scotland

1.1 Purpose of the Graduate Apprenticeship framework document

The purpose of this document is to provide employers and learning providers with information required to deliver a Graduate Apprenticeship in **Construction and the Built Environment.** The framework sets out the skills and learning outcomes identified through employer consultation that are required to support the development of this programme.

This framework document should be read in conjunction with the following publications:

1. Work-based Learning Principles
2. Product Specification at **SCQF level 10**
3. Quality Assurance Guidance

This documentation is available on the Skills Development Scotland (SDS) corporate website:

www.skillsdevelopmentscotland.co.uk

1.2 What are Graduate Apprenticeships?

Graduate Apprenticeships (GAs):

- are accredited work-based learning programmes that lead to degrees or degree-level, professionally recognised qualifications
- are part of the apprenticeship family, supporting the transition into employment by providing work-based learning pathways from Foundation and Modern Apprenticeships to Higher and Graduate Apprenticeships, at SCQF Levels 8 –11
- have been developed as part of the Scottish Government's approach to developing Scotland's young workforce and Skills Development Scotland's work-based learning strategy

1.3 Why do we need Graduate Apprenticeships in Scotland?

International experience demonstrates how degree-level apprenticeships can drive economic growth. We believe this approach can benefit the Scottish economy.

The range of approaches taken in countries including Switzerland and Germany to develop employer-led, work-based learning pathways to learning and employment provide the basis for how Scotland can use work-based learning to improve the operation of the labour market and to deliver economic growth[1]. Skills Development Scotland is now leveraging the development of Graduate Apprenticeships to support this change.

[1] PWC (2015) Young Workforce' Index: How well are OECD economies developing the economic potential of their young people?

1.4 Who develops Graduate Apprenticeships?

Graduate Apprenticeships are developed by Skills Development Scotland through consultation with employers, universities, professional bodies and qualification authorities in the form of Technical Expert Groups (TEGs). The TEGs act as advisory groups on behalf of the sector and are based on the current and future skills needs of industry. They advise on the topics and related outcomes that should be included in a framework.

More information about who was involved in the development of this framework can be found in **Appendix C**.

1.5 Who are Graduate Apprenticeships for?

Graduate Apprenticeships provide a new way into degree-level study for individuals who are either currently in employment or are entering employment. GAs are available to employees aged 16 or over.

1.6 Who delivers Graduate Apprenticeships?

Graduate Apprenticeships are delivered by universities in partnership with employers and college learning providers. An up-to-date list of learning providers and the frameworks they offer can be found on **www.apprenticeships.scot**.

2. Delivery

As Graduate Apprenticeships are work-based degrees, the place of employment is the place of learning. The learning and skills development must be fully integrated into both the **delivery and assessment** of the degrees when part of a Graduate Apprenticeship. This integration can only be satisfactorily achieved by proper planning and design prior to delivery and not by add-on components or ad-hoc modifications.

The authenticity of the programme is shown in the way employers are involved in the design and delivery of the degrees and the way in which work-based learning is positioned as integral to both the learning and the assessment needed for successful completion of the programmes.

GA are designed as full-time programmes. They are not part-time or sandwich courses. Attendance at the place of learning will be agreed between the provider and the employer sending individuals on the programmes. Examples of how this might work are:

- by day release or
- by block release of three or four-week duration, three times per year
- through distance learning with an initial "boot camp or induction"

Fundamentally, most of an individual's time should be spent in the workplace on directed study.

In designing the degrees to meet the work-based learning requirements of the GA, learning providers must ensure that they also meet the principles and criteria noted here:

Box 1. Principles and criteria

This GA is an **SCQF level 10** work-based degree. All proposed university degree programmes for this GA framework must:

- be **480 credits**
- be based on a partnership between employers and the learning provider
- evidence how the programmes exemplify the work-based learning requirements
- have clear goals and aspirations in support of equality and diversity with appropriate monitoring and other processes in place
- demonstrate how they will ensure that apprentices, upon graduation, will consistently achieve the necessary industry skills, knowledge and competence defined in **Appendix A**
- develop learning through reflection and review of work processes and experience
- meet the requirements to apply for professional body recognition

NB Delivery models based on sandwich years or industrial placement block release are not considered as work-based learning as part of this framework.

The successful delivery of Graduate Apprenticeships depends upon an effective partnership between the apprentice, the employer and the learning provider. This will involve additions to their normal responsibilities for employees, learning providers, and apprentices.

Delivery of the content of the GA will be agreed by the participating learning providers, which may involve delivery of specialist or employer-specific content. Employers should also be closely involved with all aspects of the programme, including the course specification, delivery, and assessment of practical activities.

The learning provider has responsibility for the quality assurance and enhancement of all elements of the programmes but they must adhere to the SDS specified documents referenced in **Section 1** and any additional guidance documentation provided as part of their competitive grant award. Practical activities must make use of the work environment and course content must take account of the technologies used in the apprentice's employment.

Apprentices must have individual learning and training plans. The learning provider and existing employer HR systems should be co-ordinated during the development of the individual learning and training plan to ensure that the required employer contextualisation is effective. Even within a specific employer, there may be apprentices who use differing technologies.

3. Roles and responsibilities

3.1 Role of the employer

Apprentices are employees and subject to the standard terms and conditions applying to all employees.

Employers participating in the Graduate Apprenticeship programme must:

- consider whether a candidate has a reasonable chance of achieving the chosen programme during the selection process – this includes not only the course content but the acquisition of wider graduate attributes
- provide agreed information to support the candidate's application to the degree course
- provide apprentices with suitable opportunities to gain the type of experience in the workplace that will support their learning and skills acquisition
- provide each apprentice with a nominated mentor who must be readily accessible to the apprentice and to the learning provider
- liaise with the learning provider on the content and practical activities in the apprentice's individual learning and training plan
- provide information that will support the individual apprentice and their assessment

3.2 Role of the learning provider

Apprentices are both employed by the employer, as well as enrolled with the learning provider. As such they should have access to the same facilities as any other student.

GA course design and delivery must adhere to the principles detailed in preceding sections and in addition the learning provider must:

- adopt a flexible approach to considering the suitability of candidates by taking account of the portfolio of previous learning and experience an individual brings to the programme – this will include any relevant Foundation or Modern Apprenticeship undertaken – and support best practice in assessing individuals and in gathering evidence from employers where this is required
- liaise with the employer on the content and practical activities in the apprentice's individual learning plan

In addition, the learning provider should liaise with existing employer Training and Development and Quality Assurance (QA) systems to minimise double assessment. Development and meaningful implementation of individual learning plans is an essential component of the GA and assessments should take account of existing evidence wherever possible.

New evidence that directly relates to the workplace may be authenticated by employers or the individual's mentor.

There are a range of different delivery mechanisms, but the integration of knowledge within contextualised learning opportunities must be the overriding factor.

3.3 Possible delivery might include

Content delivery and assessment responsibilities:

	Employer	***Learning Provider***	***Other***
Delivery of knowledge and understanding content	✓ Employer specific topics	✓ Generic and non-employer specific	✓ Private providers
Assessment of practical application	✓	✓	✓ Apprentice
Development of personal and business skills	✓ Specification, delivery, progress monitoring, assessment and mentoring	✓ Specification, delivery, progress monitoring and assessment	✓ May be a third party used for delivery, monitoring and assessment

4. Entry

4.1 Eligibility

- Graduate Apprenticeships are available to new and existing employees of participating employers.
- Candidates must be at least 16 years of age. However, the suitability of an individual for entry onto a GA will be decided by the employer and their learning provider partner.
- Candidates must be resident in Scotland throughout the Graduate Apprenticeship. In addition to this, their employer's working premises must also be located in Scotland. When applying to become a Graduate Apprentice the individual will be required to satisfy the employer that they have the right to live and work in the UK.
- Entry requirements are likely to vary across learning providers. For courses where there is a mandatory requirement for a specific subject, learning providers should consider ways they can provide support to individuals who don't hold a traditional qualification but have nevertheless shown aptitude and competence at the necessary level.

4.2 Recognition of prior learning

Candidates will undergo a selection process for a Graduate Apprenticeship, based on employer HR processes. The admissions departments need to take account of this and liaise with employers to provide advice and guidance on the prior learning and experience that will be accepted for entry onto the course.

A more flexible approach to entry requirements should be adopted by learning providers, and be done in consultation with employers. This should involve consideration of candidates on a case by case basis, who have completed relevant Foundation, Modern or Technical Apprenticeships as well as industry / vendor certifications.

Universities and other providers are asked to consider ways they can optimise the apprentice's prior learning within the programme to ensure there is no unnecessary repetition of content.

5. Demand

The Construction sector includes planning for construction projects (architecture, urban planning etc, and the sub-sectors necessary to build developments (electrical installations, joinery etc.). The sector covers the construction of a wide range of projects from domestic buildings to roads and railways. This framework relates to the professional roles undertaken in the planning development, design, construction and management of projects.

The Built environment covers the maintenance, management and valuation of assets including land and property transactions.

Employment[2]

In 2017, employment in the sector was 233,600 accounting for eight per cent of all employment in Scotland. This makes it the third largest employing sector. Since the recession in 2008 employment in the sector has declined by ten per cent, which is faster than the one per cent decline for all industries. However, more recently (since 2015) employment has grown by two per cent, compared to no growth across all industries. This suggests a large sector which declined during the recession but has experienced recent recovery and growth.

Regionally, the highest levels of employment were in Lanarkshire (36,000), Glasgow (33,000) and Aberdeen City and Shire (33,000). Furthermore, the highest employment concentration was in West Lothian (almost double the national average). In this region, the absolute level of employment was lower but the Construction sector was an important source of jobs.

The employment growth in the sector is forecast to continue and accelerate. By 2020, employment in the sector will have grown by 6,400, an increase of three per cent. This is compared to static employment across all industries. The sector's growth is expected to increase over the longer term; by 2027 employment in the sector will have increased by 11 per cent making it the fastest growing sector. By comparison, the employment growth across all industries will be three per cent.

Growth will create jobs in the sector and the need to replace workers will also generate demand. Based on employment in 2017, 28 per cent the workforce will need to be replaced by 2027. The Construction Industry Training Board has highlighted the need to find over 12,000 new workers to meet the replacement demand by 2022. The sector's net requirement for workers up to 2027 will be 91,100. This is seven per cent of the net requirement for workers across all industries.

Over half of the total net requirement for workers in the Construction sector will be distributed across four regions. These are: Glasgow (16 per cent); Lanarkshire (15 per cent); Edinburgh, East and Midlothian (13 per cent); and Aberdeen City and Shire (12 per cent). Given that ten per cent of the construction workforce in Scotland is non-UK nationals; the implications of Brexit are likely to have an impact on the industry's supply of labour. [3]

[2] Oxford Economics Regional and Sector Forecast Data (2000-2027)
[3] CITB White Paper – Migration and Construction

Occupations[4]

In 2017, half of the people working in the Construction sector were in mid level occupations. The proportion of the workforce in high and low-level occupations was lower, 33 per cent and 17 per cent respectively. In 2027 there will be a small change in the occupational structure of the workforce with one per cent more of the workforce being in mid level occupations and one per cent fewer in low level occupations.

CITB forecast the industry will require 70 new project managers each year for the next five years with the total number of project managers anticipated to reach 3,580 by 2021. In addition, some 6,730 surveyors and 23,430 other construction professional and technical roles will be required by 2021. With an increasingly ageing workforce there is demand for new entrants into the sector[5]

The GA in Construction and Built Environment will play a key role in attracting the next generation of employees, recruiting to replace those who have left the industry during the economic crisis, and upskilling the existing workforce to succeed those in senior role who will retire.

Construction Skills Investment Plan

The Construction Skills Investment Plan (developed in 2012) acknowledges the apprenticeship family as a means of addressing skills needs. The SIP details modern apprenticeships to be well established in the sector for technical traders however notes interest in expanding the modern apprenticeship approach into higher level skills.

[4] Oxford Economics Regional and Sectoral Forecast (2000-27)
[5] Construction Skills Network Forecast (2017-21)

6. The framework

6.1 Overview

The **Construction and the Built Environment** Graduate Apprenticeship is based on industry-defined needs and has been developed in collaboration with employers and the education sector to allow knowledge, understanding, skills and competence to be developed with the necessary attributes industry expects from graduates.

Within the **Construction and the Built Environment** Graduate Apprenticeship, the degree content must be delivered per the principles and outcomes detailed in this framework.

The specific Graduate Apprenticeship included in this framework is:

- **Construction and the Built Environment (CBE)**

The output of this framework will be a Graduate Apprenticeship at **SCQF Level 10** entitled:

Graduate Apprenticeships in BSc or BEng (Hons) Construction and the Built Environment

6.2 Purpose

The purpose of this programme is to produce graduates with the required skills, knowledge and attributes to work within the Construction and the Built Environment sector in whichever context or discipline they choose to pursue. Graduates will have a thorough understanding of key concepts and theories and the underpinning skills and knowledge required. They will also possess the important attributes and behaviours to make them responsible and reflective problem-solvers, critical-thinkers and managers.

The **Construction and the Built Environment** degree is designed to produce graduates with: -

- competence in project and delivery management including the knowledge, skills, and professional competences necessary to begin practice as a professional in the construction and the built environment sector.
- an understanding of appropriate solutions around the principles of design and technology
- the ability to reconcile conflicting project objectives, finding appropriate solutions which recognise, cost, time, quality, life cycle aspects and sustainability
- the ability to learn new methods, and technologies as they emerge and appreciate the necessity of such continuing professional development
- apply and understand relevant laws – describe standards, regulations and their consequences across the sector

- an understanding of business management concepts, such as data management, business finance and business strategies
- the ability to confidently work both as an individual and part of a team to develop and deliver solutions within construction and the built environment
- an understanding of the importance of applying negotiation, effective work habits, leadership, and good communication with stakeholders
- the ability to take responsibility for obligations for health, safety, welfare environment and quality issues
- understand the need for and maintain a commitment to a high level of professional and ethical conduct, recognising obligations to society, the profession and the wider environment
- competence in the valuation of land and property*

*Applies to those within the land and property sector only

Details of the high-level learning and skills outcomes for these content areas are provided in **Appendix A** along with some examples of low level learning outcomes in **Appendix B.**

6.3 Occupational outcomes

The **Construction and the Built Environment** GA is aimed at employment in the following areas:

Architectural Technology

Building Surveying

Building Standards

Construction Buying and Procurement

Construction Management

Estimating and Tendering

Facilities Management

Planning and Development

Programming

Project Management

Property Surveying

Rural Surveying

Valuation

Quantity Surveying

6.4 Learning outcomes

Please refer to **Appendix A** for a full list of learning outcomes for the **Construction and the Built Environment** GA.

6.5 Professional recognition

The primary focus of the **Construction and Built Environment** GA is on developing the knowledge, understanding and skills outcomes sought by employers. This GA framework can also support the achievement of professional recognition, as it includes the range of learning and skills outcomes required by professional bodies. Successful completion of this GA may allow progression towards Membership of the following

- Association of Project Managers (APM)
- Chartered Institute of Building (CIOB)
- Royal Institution of Chartered Surveyors (RICS)
- Chartered Institute of Architectural Technologists (CIAT)
- Chartered Association of Building Engineers (CABE)
- Institute of Civil Engineers (ICE)

6.6 Related Scottish apprenticeship frameworks

The following Scottish Apprenticeship frameworks and qualifications are relevant pathways that may contribute toward progression into the **Construction and the Built Environment** GA. The apprenticeships are eligible for funding contributions from Skills Development Scotland, and provide employers with a range of alternative pathways at different levels of entry:

In school:

Foundation Apprenticeship in Engineering (SCQF level 6)
FA Engineering SCQF L6

Foundation Apprenticeship in Civil Engineering (SCQF level 6)
FA Civil Engineering SCQF L6

Post-school:

Modern Apprenticeships – Water Industries (SCQF level 6)
MA Water Industries SCQF L6

Modern Apprenticeship - Sustainable Resource Management (SCQF levels 5 & 6)
MA Sustainable Resource Management SCQF L5/6

Modern Apprenticeship - Extractive and Mineral Processing (SCQF level 6)
MA Extractive and Mineral Processing SCQF L6

Modern Apprenticeship – Construction Building (SCQF Level 6)
MA Construction Building SCQF L6

Modern Apprenticeship – Construction Specialist (SCQF level 6)
MA Construction Specialist SCQF L6

Modern Apprenticeship - Construction Technical Apprenticeship (SCQF level 8)
MA Construction Technical SCQF L8

Modern Apprenticeship - Construction Technical Apprenticeship (SCQF level 9)
MA Construction Technical SCQF L9

Appendix A. Learning and skills outcomes

Construction and the Built Environment (SCQF level 10)

This section details the high-level learning and skills outcomes for the GA in **Construction and the Built Environment** degree

This presents a broad set of employer defined outcomes against which universities can position their intended provision to meet the high-level learning outcomes and flavour the programme for their intended employer audience.

Note to learning providers: While additional sections have been added (high level outcomes 1.5, 3.8 and 4.6) that predominantly focus on building standards pathways, it is anticipated that existing CBE framework courses may already include content material which align to some of these outcomes.

Topics and high-level learning and skills outcomes:

Learning and skills outcomes for Construction and the Built Environment
1.Design and technology
1.1 Technology of buildings including materials
1.2 Principles of design, construction and regulation in your chosen field
1.3 Detailed pathology of buildings and the related defects and causes
1.4 Sustainability
1.5 Building regulations, statutory requirements and safety**
2. Business management
2.1 Law
2.2 Data Management
2.3 Business finance and accounting (level 11)
2.4 Business strategy and management (level 11)
3.Project and delivery management
3.1 Measurement
3.2 Project management
3.3 Project planning
3.4 Project execution
3.5 Project risk assessment and management
3.6 Commercial management
3.7 Valuation of Land and Property *
3.8 Delivery of compliant buildings**

4.Professional practice
4.1 Comply with overarching professional standards
4.2 Exercise responsibilities in an ethical manner
4.3 Maintain current awareness of sustainability and environmental considerations
4.4 Maintain sound theoretical understanding of current and emerging professional practice
4.5 Apply knowledge of health, safety, welfare, environment and quality
4.6 Holistic working practices to ensure compliant buildings**
5.Personal and interpersonal
5.1 Communications
5.2 Personal attributes
5.3 Professional attributes
5.4 Team working

** This outcome applies to those within the Land and Property sector only*

***This outcome applies to those in a building control role*

Appendix B. Low-level outcomes examples

The next section provides examples of low level learning and skills outcomes which employers may expect individuals to cover in a Graduate Apprenticeship in **Construction and the Built Environment**.

The low-level learning and skills outcomes are not intended to be used as a pro-forma curriculum.

Each learning provider will have its own approach to delivering the degree and progression between stages. The low-level skills and derived learning outcomes that are detailed in the following sections will provide guidance to ensure that each degree covers the desired learning outcomes appropriately.

Table 1 Skills and knowledge coverage in design and technology

1. Design and Technology
1.1 Technology of buildings including materials
1.2 Principles of design, construction and regulation in your chosen field
1.3 Detailed pathology of buildings and the related defects and causes
1.4 Sustainability
1.5 Building regulations, statutory requirements and safety**

***This outcome applies to those in a building control role*

1.1Technology of buildings including materials

CBE1.1.a Understand the technology components and construction processes commonly used in the industry

CBE1.1.b Make recommendations on the choice of construction solutions for projects

CBE1.1.c Understand how the various elements of the building work inter relate

CBE1.1.d Understand alternative construction details in relation to functional elements of the design

1.2 Principles of design, construction and regulation in relation to your chosen field

CBE1.2.a Understand the stages of design and construction from inception to completion

CBE1.2.b Understand how construction design solutions vary for different types of buildings

CBE1.2.c Report on the impact of different design solutions and construction processes on cost and programme

CBE1.2.d Understand the impact of design and construction on maintenance, life cycle costs and how this affects an assets value

1.3 Detailed pathology of buildings and the related defects, causes

CBE1.3.a	Understand the detailed pathology of buildings and building services and components
CBE1.3.b	Explain cause and effect of typical building defects
CBE1.3.c	Knowledge and understanding of different types of testing and their limitations
CBE1.3.d	Awareness of construction, detailing of different building types and through ages of construction
CBE1.3.e	Explain the cause of failures and give recommendations on appropriate remedial measures
CBE1.3.f	Produce schedule of work based on information gathered from inspection

1.4 Sustainability

CBE1.4.a	Demonstrate knowledge and understanding of why and how sustainability seeks to balance economic, environmental and social objectives at global, national and local levels, in the context of land, property and the built environment
CBE1.4.b	Apply sustainable techniques to your advice in relation to the design and selection of processes and materials
CBE1.4.c	Provide reasoned advice on the policy, law and best practice of sustainability, in your area of practice
CBE1.4.d	Apply sustainable techniques in order to adapt existing buildings *

1.5 Building regulations, statutory requirements and safety

CBE1.5.a	Understand the scope, limitations and compliance requirements of the building standards system
CBE1.5.b	Demonstrate the ability to interpret and apply guidance outlined in the technical handbooks or other appropriate guidance for building standards regulations compliance
CBE1.5.c	Ability to work with construction sector disciplines to secure safe, sustainable buildings during the planning, design, construction and completion stages
CBE1.5.d	Understand the duties and responsibilities in engaging with demolition works, remedial works, defects and the removal of dangers identified in existing buildings
CBE1.5.e	Recognise the responsibilities to act in the public interest for safety and compliance

CBE1.5.f Apply an understanding within the procurement process of the statutory provisions, including document management inherent in the construction and completion process

Table 2 Skills and knowledge coverage in business management

2. Business Management
2.1 Law
2.2 Data Management
2.3 Business Finance and Accounting
2.4 Business Strategy and Management

2.1 Law

CBE2.1.a Understand and apply knowledge of property and construction business c law and legislation

CBE2.1.b Understand and apply knowledge of contract documentation used within the industry, including producing contract documentation.

CBE2.1.c Understand when different forms of contract would be used and reasons why they would be appropriate

CBE2.1.d Understand and carry out contract mechanisms and procedures at various stages of the contract

CBE2.1.e Understand third party rights including relevant legislation

CBE2.1.f Have an understanding of contractual provisions such as letters of intent, insurances, retention bonds and collateral warranties

CBE2.1.g Have an understanding of completion and possession issues such as early possession and practical completion

CBE2.1.h Carry out the evaluation of proposed contract amendments

CBE2.1.i Understand and apply knowledge of the law and the role of the legal advisors relating to the acquisition and disposal of land and property

CBE2.1.j Knowledge and understanding of Freedom of Information and Data Protection

CBE2.1.k Understand and advise on conflict avoidance and dispute resolution procedures

CBE2.1.l Understand and apply knowledge of the law of leases to the negotiation of lease terms and the ongoing management of property.

2.2 Data Management

CBE2.2.a Demonstrate knowledge and understanding of the sources of information and data and of the systems applicable to your area

CBE2.2.b	Knowledge of and reasons for collection of data for your area of practice
CBE2.2.c	Knowledge of methods and techniques most appropriate for the collection and storage of data
CBE2.2.d	Explain the cause and consequences of data breaches
CBE2.2.e	Explain, with examples, the conflicting relationship between freedom of information & data protection if applicable to your area of practice
CBE2.2.f	Knowledge of the security of data collected in your area of practice
CBE2.2.g	Evaluate, present, manage, analyse data and/or apply spatial data and information
CBE2.2.h	Show an advanced understanding of accuracy, precision and error sources
CBE2.2.i	Carry out analyses of data and use analyses of data to provide advice for clients

2.3 Business Finance and Accounting

CBE2.3.a	Demonstrate knowledge and understanding of accounting concepts and the format and preparation of management and company accounts, including profit and loss statements, cash flow statements and balance sheets.
CBE2.3.b	Interrogate accounts to measure and establish financial stability including identifying risks
CBE2.3.c	Demonstrate a range of financial skills to include managing a budget, discounted cash flows, financial forecasting, ratios, net present values, paybacks rates of return and the assessment and mitigation of risk management information
CBE2.3.d	Formulate a well-reasoned investment proposal and construct and present a basic business investment case, including costed scenarios/options and benefits using quantitative methods
CBE2.3.e	Understand the importance of cash flow and the need to control the procedure through managing invoicing and debt recovery processes
CBE2.3.f	Explain the funding model or financial structure of your organisation.
CBE2.3.g	Knowledge and understanding of the sources of funding in your area of practice
CBE2.3.h	Knowledge and understanding of budget phasing and budget management.
CBE2.3.i	Knowledge and understanding of financial management

2.4 Business Strategy and Management

CBE2.4.a	Knowledge and understanding of how resource allocation can impact on the success of a business/organisation.
CBE2.4.b	Knowledge of good business practices; how accountability and governance is maintained in the organisation.
CBE2.4.c	Knowledge of how performance objectives are established and met.
CBE2.4.d	Knowledge and understanding of how training contributes to the overall success of the organisation.
CBE2.4.e	Understanding of how business plans address objectives in industry, and other environments.
CBE2.4.f	Understand methods, procedures, processes, or rules employed in order to meet organisational objectives.
CBE2.4.g	Knowledge of good business practices and how accountability is maintained in the organisation.
CBE2.4.h	Understand what is meant by organisational theory, change management, marketing, human resource management and service management within your field of practice
CBE2.4.i	Understand and can apply the principles of quality management
CBE2.4.j	Understand the core processes involved in starting and running a business
CBE2.4.k	Understand the significance of human factors including leadership in the effective implementation and management of business

Table 3 Skills and knowledge coverage in project and delivery management

3. Project and delivery management
3.1 Measurement
3.2 Project management
3.3 Project planning
3.4 Project execution
3.5 Project risk assessment and management
3.6 Commercial management
3.7 Valuation of Land and Property *
3.8 Delivery of compliant buildings**

** This outcome applies to those within the Land and Property sector only*

***This outcome applies to those in a building control role*

3.1 Measurement

CBE3.1.a Understand the methods and principles of measurement within your field

CBE3.1.b Undertake measurement and present information gained from measure in an appropriate manner

CBE3.1.c Utilise appropriate tools, equipment and technology when undertaking measurement

CBE3.1.d Understand the limitations of measurement relevant to your area of practice

CBE3.1.e Produce documents such as bills of quantities, schedules of activities/works, statements of value, areas schedules

CBE3.1.f Advise on appropriate methods of measurement

3.2 Project Management

CBE3.2.a Follow a systematic methodology for initiating, planning, executing, controlling, and closing projects, applying industry standard processes, methods, techniques and tools to procure /execute projects

CBE3.2.b Engage and liaise with key stakeholders and other disciplines necessary for successful project delivery

CBE3.2.c Identify factors that may affect project implementation, carrying out a holistic and systematic risk identification and assessment

CBE3.2.d Plan project budgets and milestone management, identifying assumptions, dependencies and constraints that might impact on delivery

CBE3.2.e Prepare schedules of works for various phases of a project

CBE3.2.f	Specify project scope, and identify project objectives and critical success factors
CBE3.2.g	Interpret and apply standards for project quality planning and assurance
CBE3.2.h	Manage and lead teams and individuals
CBE3.2.i	Develop staff through formal and informal methods to meet changing technical and managerial needs
CBE3.2.j	Contribute to continual improvement and effective organisational performance
CBE3.2.k	Understand how to set up the project team, including defining the roles and responsibilities of a typical project management team and how they interact

3.3 Project Planning

CBE3.3.a	Identify and agree the project scope, timescale and deliverables to compile a project specification
CBE3.3.b	Have gained an understanding of project planning, including milestone management construct a project plan for a multi-threaded project applying assumptions, dependencies and constraints, including resource allocation and scheduling
CBE3.3.c	Understand how to produce a work breakdown structure (WBS), identify activities and estimate for these to produce overall estimates of costs/effort and allocating and managing appropriate phased contingency
CBE3.3.d	Develop logic diagram and perform network and critical path analysis
CBE3.3.e	Understand how to implement the phases of a project including; kick-off meeting, progress monitoring and reporting , project deviation and recovery, capturing and managing actions and the final handover meeting of specified deliverables
CBE3.3.f	A clear understanding of the roles of individual stakeholders
CBE3.3.g	Preparing and understanding the outline business case
CBE3.3.h	Stating the client's required cost, time and performance/quality expectations
CBE3.3.i	Establishing success measurement criteria and benefits of the project to the client
CBE3.3.j	Establishing any known project risks, constraints and interfaces
CBE3.3.k	Developing a project execution plan for managing the detailed design and specification of the development/project
CBE3.3.l	Establishing clear procedures for managing changes to the development/project brief

3.4 Project Execution

CBE3.4.a.	Understand the management of a project including identifying and resolving deviations and the management of problems and escalation processes
CBE3.4.b	Understand and carry out the monitoring and auditing of quality assurance and quality control measures
CBE3.4.c.	Understand how to apply project controls, including S curves, to identify and manage deviations from the planned schedule of a project
CBE3.4.d	Understand the importance of regular project reviews and the need to effectively manage the project review process, including planning and management
CBE3.4.e	Understand the issues of quality, cost and time concerned with project implementation, including contractual obligations and resource constraints
CBE3.4.f	Manage and allocate tasks and resources to project plan and budget
CBE3.4.g	Manage contracts with clients/contractors and evaluate performance
CBE3.4.h	Undertake financial and programme monitoring of projects, producing programmes and advising on corrective measures
CBE3.4.i	Understand and identify productivity issues and solutions.

3.5 Project risk assessment and management

CBE3.5.a	Understand the nature of risk and the methods and techniques used to measure and manage risk
CBE3.5.b	Implement systems for identifying and managing risk throughout the life of a project
CBE3.5.c	Define, analyse and prioritise project risks and issues, identifying risk severity, ranking risks and dealing with residual risk
CBE3.5.d	Record and communicate risks through risk reports, registers or logs
CBE3.5.e	Plan and implement contingency plans and risk responses
CBE3.5.f	Track risks and associated tasks, linking risks and dependencies to project activities

3.6 Commercial Management

CBE3.6.a	Apply knowledge of the commercial, economic and global context in which projects are undertaken
CBE3.6.b	Identify and understand the components that make up the cost of the project
CBE3.6.c	Understanding the effect that the design and construction processes have on the cost
CBE3.6.d	Awareness of the techniques used to reconcile the cost against income
CBE3.6.e	Financial management of the supply chain
CBE3.6.f	Preparing reports such as liability statements, cost to complete and cost value reconciliations
CBE3.6.g	Applying value management and value engineering processes
CBE3.6.h	Preparing and submitting cost data for in-house and/or external use in relation to areas such as cost of preliminaries, comparative cost of different construction techniques and taxation allowances
CBE3.6.i	Monitoring, analysing, reporting and advising on project cash flows and profitability for internal use
CBE3.6.j	Evaluating and advising on financial implications and appropriate management actions
CBE3.6.k	Assessment and agreement of the value of the works at all stages of a project

*3.7 Valuation of Land and Property**

CBE3.7.a	Demonstrate knowledge and understanding of the purposes for which valuations are undertaken; the relevant valuation methods and techniques; the appropriate standards and guidance in your area of practice; and any relevant statutory or mandatory requirements for valuation work in your area of practice
CBE3.7.b	Demonstrate practical competence in undertaking both capital and rental valuations and detailed involvement with the preparation and presentation of reports to clients, statutory officials and others.
CBE3.7.c	Demonstrate your ability to use valuation methods and techniques appropriate to your area of practice. Show how the relevant valuation standards; statutory requirements and guidance have been applied to develop and enhance your valuation experience.
CBE3.7.d	Demonstrate practical competence in undertaking valuations, either of a range of property/asset types or for a range of purposes.
CBE3.7.e	Prepare/present formal valuation reports under proper supervision and provide reasoned advice to clients, statutory officials and others.
CBE3.7.f	Undertake valuations and negotiations for a variety of different property/asset types using different valuation methods

3.8 Delivery of compliant buildings

CBE3.8.a Design and specify buildings, systems and components in accordance with building standards

CBE3.8.b Carry out construction checks to ensure compliance with building standards

CBE3.8.c Carry out specification checks to ensure compliance with building standards

CBE3.8.d Work with approved certifiers of design and construction to ensure compliance with building standards

Table 4 Skills and knowledge coverage in professional practice

4. Professional Practice
4.1 Comply with overarching professional standards
4.2 Exercise responsibilities in an ethical manner
4.3 Maintain current awareness of sustainability and environmental considerations
4.4 Maintain sound theoretical understanding of current and emerging professional practice
4.5 Apply knowledge of health, safety, welfare, environment and quality
4.6 Holistic working practices to ensure compliant buildings**

***This outcome applies to those in a building control role*

4.1 Comply with overarching professional standards

CBE4.1.a Understand the need for a high level of professional and ethical conduct

CBE4.1.b Maintain a commitment to professional values and codes of conduct, recognising obligations to society, the profession and the wider environment

4.2 Exercise responsibilities in an ethical manner

CBE4.2.a Exercise personal responsibilities as an individual and as a team member

CBE4.2.b Practice in such a way as to operate professionally, within ethics and anti-bribery guidelines

CBE4.2.c Accept appropriate responsibility for work carried out under own supervision

CBE4.2.d Treat all persons fairly and with respect

4.3 Maintain current awareness of sustainability and environmental considerations

CBE4.3.a	In own practice, contribute to a sustainable society
CBE4.3.b	Seek multiple views to solve sustainability challenges
CBE4.3.c	Actively seek the latest and accurate information on sustainability and environmental issues
CBE4.3.d	Maintain understanding of efficient ways of using resources

4.4 Maintain sound theoretical understanding of current and emerging professional practice

CBE4.5.a	Actively seek out opportunities to extend own technical knowledge of new applications and techniques
CBE4.5.b	Engage in formal and informal learning to meet development goals and expand skills and knowledge
CBE4.5.c	Broaden own knowledge of codes and standards
CBE4.5.d	Keep up to date with national and international issues

4.5 Apply knowledge of health, safety, welfare, environment and quality

CBE4.5.a	Develop working knowledge and practical application of health and safety legislation
CBE4.5.b	Identify and take responsibility for own obligations for health, safety, welfare environment and quality issues
CBE4.5.c	Apply and implement appropriate risk assessment and management
CBE4.5.d	Manage systems that satisfy health, safety, welfare, environment and quality requirements
CBE4.5.e	Contribute to the development of a health and safety culture
CBE4.5.f	Manage, evaluate, and improve health, safety, welfare, environment and quality systems
CBE4.5.g	Recognise the impact of occupational health issues including mental health.

4.6 Holistic working practices to ensure compliant buildings

CBE4.6.a Apply an understanding of working with other design professionals to meet the statutory provisions of the Technical Handbooks issued in support of the building standards regulations

CBE4.6.b Ability to recognise input from all key stakeholders in the application of standards and the certifying of compliance in building projects

Table 5 Skills and knowledge coverage in personal and interpersonal

5. Personal and interpersonal
5.1 Communications
5.2 Personal attributes
5.3 Professional attributes
5.4 Team working

5.1 Communications

CBE5.1.a Identify the purpose of the communication, the audience and the outcomes to be achieved. Decide which method of communication to use and the level of formality required

CBE5.1.b. Make concise, engaging and well-structured verbal presentations, arguments and explanations of varying lengths, with and without the use of media, always considering the audience viewpoint.

CBE5.1.c. Competent in active listening appreciating others views and contributions

CBE5.1.d Give and receive feedback constructively by applying appropriate techniques and incorporate it into his/her own development and life-long learning

CBE5.1.e Effectively prepare and deliver presentations using relevant presentation media products such as PowerPoint and the use of appropriate visualisations and images to present information and ideas clearly and concisely

CBE5.1.f Be fluent in written communications with the ability to articulate complex issues, selecting an appropriate structure and with appropriate tone, style and language

CBE5.1.g Be competent at selling, questioning, negotiating and closing techniques in a range of interactions and engagements, both with internal and external stakeholders

CBE5.1.h Prepare for and chair effective meetings with clear agendas and defined outcomes, keeping to time and preparing clear outcomes or ‘meeting minutes’ in a timely manner

5.2. Personal attributes

CBE5.2.a	Be creative, self-motivated and self-aware and able to reflect on successes and failures in ways that strengthen positive attitude and develop self-reliance through an understanding of personal preferences, styles, strengths and weaknesses
CBE5.2.b	Can identify the preferences, motivations, strengths and limitations of other people and apply these insights to work more effectively with and to motivate others
CBE5.2.c	Can understand the outputs from and apply insights by using personal profiling tools such as Myers Briggs Type Indicator or Kirton Adaption/Innovation Indicator
CBE5.2.d	Can put forward, demonstrate value and gain commitment to a moderately complex technology-oriented solution, demonstrating understanding of business need, using open questions and summarising skills and basic negotiating skills
CBE5.2.e	Apply analytical and critical thinking skills to solutions and to systematically analyse and apply structured problem-solving techniques to them
CBE5.2.f	Undertake reviews of own development needs and plan how to meet personal and organisational objectives

5.3. Professional attributes

CBE5.3.a	Capability to deal with different, competing interests within and outside the organisation with excellent negotiation skills
CBE5.3.b	Deal with discord and confrontation including conducting difficult conversations
CBE5.3.c	Conduct effective research, using literature and other media, into IT and business-related topics
CBE5.3.d	Have gained and can demonstrate competence in gathering information from people using a variety of techniques including interviewing
CBE5.3.e	Have gained an understanding of performance evaluation tools and can demonstrate competence in designing and applying performance evaluation tools (including 360-degree feedback)
CBE5.3.f	Understand the importance of learning strategies and techniques in own development and life-long learning and for corporate learning and development
CBE5.3.g	Understand the principles of personal development planning and create, implement and maintain a personal development portfolio and a personal action plan
CBE5.3.h	Understand the importance of acting with personal and professional integrity and remaining focused and disciplined always

5.4. Team working

CBE5.4.a	Plan and implement own work goals, objectives, priorities and responsibilities with others
CBE5.4.b	Understand how to motivate others and get the best from people
CBE5.4.c	Within the team communicate, identify the different abilities and potential and show respect for individuals
CBE5.4.d	Understand how teams work effectively to produce solutions, work with team members to identify and solve problems and disagreements, share feedback with others on the achievement of team objectives and promoting improved team-working
CBE5.4.e	Understanding of the importance of applying effective work habits and leadership, providing clarity, direction and accountability and proactively acting when necessary

Appendix C. Framework development summary

A GA framework sets out the required knowledge, skills and learning outcomes identified through employer and key partner consultation to support the delivery of a Graduate Apprenticeship programme. This is achieved through employer and key partner input to Technical Expert Groups (TEGs).

TEGs are short life working groups designed to act as an advisory group on behalf of the sector and contributes to the development and course design of a GA. TEGs are integral to the process of developing GAs that provide quality, consistency and relevance to industry.

Each TEG is made up of employers, professional or industry bodies, learning providers, and subject/technical experts from the related industry.

The following organisations were consulted in the development of this framework:

Construction and the Built Environment (SCQF level 10)

Employers	Learning providers	Qualification and industry bodies
Graham & Sibbald	Robert Gordon University	RICS
McLaughlin & Harvey Construction	Edinburgh Napier University	SCG
Morgan Sindall	Glasgow Caledonian University	SQA
Scottish Government		CIOB
DM Hall Chartered Surveyors		CITB
Ayrshire Valuation Joint Board		ICE
Stewart Milne		SAA
David Robertson		LABSS
Robertson Group		
BAM Construction Ltd		
Scottish Government (Building Standards Division)		

Skills Development Scotland

This framework is also available on the Skills Development Scotland corporate website: www.skillsdevelopmentscotland.co.uk