**Construction Sustainability Presenter Notes**

**Level 2 and Level 3 Students – double session**

**Slide 1**

**Slide 2 – Agenda**

**Slide 3 – Presenter Introduction**

Please provide an overview of your career journey, qualifications, an overview of the business you work for. Please add any pictures or information to the slide.

**Slide 4 – United Nations Sustainability Development Goals**

Read through the goals.

Adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. [THE 17 GOALS | Sustainable Development](https://sdgs.un.org/goals)

**Slide 5 – Procurement**

**Question –** has anyone heard of procurement before? do you know what it is?

Procurement is the process of buying or obtaining goods and services, typically for business or government purposes, and usually relatively large scale.

End clients may use a procurement framework, contractors and consultants will submit competitive tenders for the work and the work will be awarded by the client based on several criteria: cost, time, social value and quality. The Client may choose to instruct a consultant to oversee the project or work directly with the contractor.

**Slide 6 – Value Toolkit**

The Value Toolkit enables value-based decision making focused on driving better social, environmental and economic outcomes, improving industry’s impact on current and future generations.

Decision making in construction has been historically driven by how much something cost, or how long it took to build.  A project’s entire value was measured against those two benchmarks.

Together with over 200 partners in industry, academia and government, the Construction Innovation Hub have reframed the definition of value, and how it can be measured through the Toolkit.

The Value Toolkit is a suite of tools to empower clients and policymakers to make value-based procurement decisions that will result in the environmental, social and economic outcomes they want.

**Slide 7 – BREEAM**

BREEAM (Building Research Establishment Environmental Assessment Method) is a sustainability assessment method that is used to masterplan projects, infrastructure and buildings.

[**https://breeam.com/**](https://breeam.com/)

**Slide 8 – Career Map – Quantity Surveyor**

Salary information from Go Construction – August 2025

Also known as - Cost manager, cost consultant.

Quantity Surveyors estimate and control costs for large construction projects. They make sure that structures meet legal and quality standards. Quantity Surveyors are involved at every stage of a project. Whether they’re working on residential, commercial or industrial projects, clients rely on them to ensure that the outcome is value for money.

Anything in Blue is an apprenticeship, anything in orange is a HTQ and anything in white is full time study programme, there are more courses available, but this is an example of a career map.

L6 Quantity Surveyor Apprenticeship available at Northumbria University, Teesside University and other providers: [Training providers for Construction quantity surveyor (degree) (level 6)](https://findapprenticeshiptraining.apprenticeships.education.gov.uk/courses/482/providers?location=Newcastle%20upon%20Tyne,%20Tyne%20%26%20Wear&distance=40)

BSc available at Northumbria University

L4 Construction Quantity Surveying Technician Apprenticeship – available at New College Durham and other providers: [Training providers for Construction quantity surveying technician (level 4)](https://findapprenticeshiptraining.apprenticeships.education.gov.uk/courses/468/providers?location=Newcastle%20upon%20Tyne,%20Tyne%20%26%20Wear&distance=40)

**Slide 9**

**Slide 10 – Digital Construction**

Types of Digital construction to provide an overview of, ask questions on the slide

* CAD - Computer aided design (CAD) is the use of computer software to design new products in 3D. This enables businesses to visualise new designs in a variety of materials and send images around the world for collaboration and consultation. Once production is finalised, these designs are sent to computer aided manufacture (CAM) machines to be formed.
* CAM -  Computer Aided Manufacturing (CAM) is the use of software and computer-controlled machinery to automate a manufacturing process.
* Based on that definition, you need three components for a CAM system to function:
* Software that tells a machine how to make a product by generating toolpaths
* Industrial machinery that can turn raw material into a finished product
* Post-processing converts toolpaths into a language machines can understand what
* Digital twins — which are a virtual representation of physical components, or current processes and operations — are key for monitoring progress and identifying potential problems. Because digital twins are continuously updated, issues can be caught early and quickly remedied. For example, for internal purposes, a firm can monitor the digital twins of their construction equipment to verify everything is working optimally. Digital twins can also be used in external services, such as to confirm the functionality of installed systems that can then be handed off to a facility manager for future monitoring.
* Mobile technology is a common asset that makes communication easier and reduces the need for travel. Online mobile devices can send and receive instant updates about a project or important safety alerts. Mobile technology can be utilized offline as well for remote project sites that have bad or no network signal. Programs can be downloaded in the morning, record relevant data during while on-site, and then upload to cloud servers when there’s an available connection.
* Machine learning AI and Big Data analytics can be used to generate more accurate forecasts of cash, labour, equipment, materials, and other resources needed across an operation. Over time, machine learning can refine and build more accurate forecast curves based on project history and new data collected from on-site workers as well as IoT devices and UAVs. These programs can then apply those data analytics insights to new projects that have similar characteristics, making better estimates for time frames, equipment utilization, materials needed, and productivity.
* Unmanned aerial vehicles (UAVs) — more commonly referred to as drones — are another powerful resource for information gathering. UAVs can quickly survey areas, collecting data to generate topographic maps in a fraction of the time and cost when compared to traditional surveying.

**Slide 11 – Video**

**Slide 12 – Recycling Construction Materials**

* A study from 2013 suggested that 13% of materials delivered to a site go direct to waste without being used.

**Slide 13 – Modern Methods of Construction**

Question – has anyone heard of MMC Before? have you seen it being used construction projects?

**Slide 14 – Modern Methods of Construction Video Explainer**

**Slide 15 – 5 minute discussion in groups covering the questions on the slide**

**Slide 16- Retrofit**

**Slide 17 – 5 minute discussion in groups**

What is an EPC?

* Energy Performance Certificate, there are 27 million domestic buildings in the UK and the majority of them require significant energy efficiency improvements. There is a requirement for landlords to achieve EPC grade C or above.

Why is retrofitting social housing domestic properties a priority to the government?

* Reduces emissions, reduces energy bills, makes homes more comfortable and able to retain heat.

What additional skills do you think you would need to work in this type of construction?

* Relevant retrofit qualification, good customer service skills as working in occupied homes

**Slide 18**

* Read through some of the key points
* Data sourced from [Housing and buildings](https://www.netzeronortheastengland.co.uk/housing-and-buildings) and

**Slide19 – Domestic Retrofit – What Does it include?**

Retrofitting can range from small activities such as fitting energy-efficient light bulbs to installing state of the art heating systems. Each property must be surveyed to understand what measures would work in that property, retrofit measures can include:

* Loft insulation
* Wall insulation (external / internal / cavity)
* Under floor insulation
* Double or triple glazed window and doors
* Improved ventilation design
* Reducing draughts, primarily around windows and doors
* More efficient heating and hot water systems
* Installing heat pumps or solar panels

**Slide 20 – NE Domestic Retrofit**

Video and Task

**Slide 21 – Commercial Retrofit**

Statistics from Rics reported in the final quarter of 2022

* Does the class understand what we mean by “commercial buildings”
* Stranded Assets - huge investment is required from private investors to upgrade their real estate portfolios.  Stranded Assets is the term used to describe properties that will not meet future energy efficient standards or market expectations and risk becoming disused/ demolished.
* Retrofitting has benefit to those using the building but if the owner isn't using the building but renting it out - what is the incentive to retrofit.
* Sustainable buildings tend to be sought after by business tenants - offices in central London with strong sustainability credentials benefit from 6–11% higher rental premiums, so long term investors will see benefit
* Nearly a quarter of all UK homes, 6.2m properties, were built before 1919 and almost a third of commercial properties, about 600,000, are also historical sites. They are responsible for about a fifth of the nation’s greenhouse gas emissions, with old buildings accounting for a significant proportion.
* Rics reported in the final quarter of 2022 that demand for office space was down -29%, retail space down -45%, demand for industrial sector space was up +6% - In the longer term there may be demand to repurpose buildings.

**Slide 22 – Sick Building Syndrome**

Sick building syndrome is the name for symptoms you get while you're in a particular building. It usually happens in an office, but you can get it in any building. Symptoms of sick building syndrome get worse the longer you're in a particular building and get better after you leave.

Other people in the building may also have symptoms.

Possible symptoms include:

* headaches
* blocked or runny nose
* dry, itchy skin
* dry, sore eyes or throat
* cough or wheezing
* skin rashes
* tiredness and difficulty concentrating

Information: These symptoms are common and can be caused by lots of things. They're unlikely to be a sign of sick building syndrome if you have them all the time, or when you're in lots of different places.

**Slide 23– 5 Minute Task**

Imagine you are an architect and have been commissioned to design a new office building, the client and end user have requested the building be as sustainable as possible. What factors would you need to consider when designing the building?  When design sustainable buildings architects must consider the materials used in the construction of the building and ensuring energy efficiency when the building is in use. Several factors must be considered:

* Location (Greenfield or Brownfield land)
* Climate zones
* Energy efficient design
* Building orientation and size
* Window to wall ratio
* Floor to floor height and building weight
* Building envelope
* Building energy performance
* Indoor Air quality
* Water conservation
* Sustainable Building Materials
* Durability
* Waste Reduction

**Slide 24 – Architect Career Map**

Salary information from Go Construct August 2025

As an architect, you will be responsible for creating designs for new building and projects. Duties may include using specialist tools and understanding the requirements of the business or client. The job role of an architect involves the following duties:

* Liaising with clients to understand their needs
* Considering budget, safety and community requirements for a project
* Creating new building designs
* Advising on the restoration and conservation of existing buildings
* Ensuring building regulations, planning laws and environmental considerations are met
* Drawing detailed plans and blueprints using computer design programmes
* Working closely with contractors, engineers, surveyors, lawyers and planning departments
* Inspecting structures during the build, to make sure they meet requirements
* Supervising other architects throughout each phase of a building’s design and construction
* Ensuring jobs are completed on time and to budget
* Working in an office, with occasional or frequent site visits and meetings.

Blue boxes are apprenticeships, orange are HTQ’s

L4 Construction, Design and Build Technician Apprenticeship – Available at Gateshead College, New College Durham, Hartlepool College and Middlesbrough College

L7 Architect Apprenticeship – available at Northumbria University, entry criteria: A minimum of a 2:1 honours degree from a Part 1 accredited Architectural course, or equivalent and a minimum of three months relevant postgraduate work experience.

Ba Architecture – available at Newcastle University and Northumbria University, UCAS Requirements = 3x A Level A’s at Newcastle and 128 points at Northumbria.

**Slide 25 – Site Manager Career Map**

Salary information Go Construct August 2025

As a site manager you will be responsible for looking after the teams on a construction site, as well as liaising with the clients. You could be monitoring costs and budget, and ordering materials for the project.

The job role of a site manager involves the following duties:

* Liaising with clients and reporting on progress to staff and the public
* Supervising construction workers and hiring subcontractors
* Buying materials for each phase of the project
* Monitoring build costs and project progress
* Conducting quality and safety inspections
* Checking and preparing site reports, designs and drawings
* Maintaining quality control checks
* Motivating the workforce
* Day to day problem solving and dealing with any issues that arise
* Using specialist project management computer programmes
* Working on-site in all weathers, at clients’ businesses or in a site office.

Blue boxes are apprenticeships, orange boxes are HTQ’s

L4 Construction Site Supervisor – available at New College Durham, Gateshead College, Hartlepool College, Darlington College, Middlesbrough College and NHBC Services Limited.

[Training providers for Construction site supervisor (level 4)](https://findapprenticeshiptraining.apprenticeships.education.gov.uk/courses/502/providers?location=Newcastle%20upon%20Tyne,%20Tyne%20%26%20Wear&distance=40)

HNC Construction and the Built Environment – Available at Gateshead College, Middlesbrough College

HNC Construction Management – Available at Gateshead College, Sunderland College.

L6 Construction Site Management Apprenticeship – Available at Teesside University, The University College of Estates Management, The Chartered Institute of Building.

[Training providers for Construction site management (degree) (level 6)](https://findapprenticeshiptraining.apprenticeships.education.gov.uk/courses/501/providers?location=Newcastle%20upon%20Tyne,%20Tyne%20%26%20Wear&distance=40)

**Slide 26 – Salary Information by Role**

Salary information from Go Construct August 2025

Trades breakdown:

* Plasterer- £22,000- £52,000
* Bricklayer- £24,000 - £56,000
* Joiner- £24,000- £52,000
* Electrician - £25,000 - £60,000
* Painter and Decorator - £18,000 - £51,000
* Scaffolder - £20,000 - £51,000
* Plumber - £19,000 - £55,000

**Slide 27 – Skills Employers Want**

**Slide 28 – North East Future Skills**

These skills we compiled using the skills listed in the 2 x regional LSIP’s, Skills 4.0 and Skills Builder of the skills employers in the North East want new entrants into the workforce to have, I then sense checked this list with regional employer groups.

Read through the skills, allow the class to discuss in groups the questions on the screen.

**Slide 29 – Thank you.**