Qualification Specification:

OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)

- **Qualification No: 610/6490/7**

Version: 1.0

1. Specification Updates

Key changes have been listed below:

Section	Detail of change	Version and date of Issue
Specification	Newly developed qualification	V1- June 2025

2. Contents

3. Introduction to Open College Network Northern Ireland (OCN NI)

The Open College Network Northern Ireland (OCN NI) is a UK recognised awarding organisation based in Northern Ireland. We are regulated by CCEA Regulation to develop and award regulated professional and technical (vocational) qualifications from Entry Level up to and including Level 5 across all sector areas. In addition, OCN NI is also regulated by Ofqual to award qualifications in England.

OCN NI is also an educational charity that advances education by developing nationally recognised qualifications and recognising the achievements of learners. We work with centres such as Further Education Colleges, Private Training Organisations, Voluntary and Community Organisations, Schools, SME's and Public Sector bodies to provide learners with opportunities to progress into further learning and/or employment. OCN NI's Strategic Plan can be found on the OCN NI website www.ocnni.org.uk.

For further information on OCN NI qualifications or to contact us, you can visit our website at www.ocnni.org.uk. The website should provide you with details about our qualifications, courses, contact information, and any other relevant information you may need.

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4. About this Specification

This specification details OCN NI's specific requirements for the delivery and assessment of the **OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM).**

This specification will provide guidelines for centres to ensure the effective and correct delivery of this qualification. OCN NI qualification specifications are based on research and engagement with the practitioner community to ensure they provide appropriate skills and knowledge for learners.

The qualification specification will detail the following aspects of the OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM).

- **Qualification Features**: this includes the key characteristics and features of these qualifications, such as their intended audience, purpose, and credit value.

- **Centre Requirements:** this details the prerequisites and obligations that centres must fulfil to be eligible to deliver and assess these qualifications. These include guidelines on staff qualifications, resources, and required procedures.

- **Structure and Content:** this details the structure and content of the qualifications including units, and any specific content that learners will be required to study.

- **Assessment Requirements:** this details assessment criteria and assessment methods for these qualifications, ensuring that summative assessment approaches are clear.

- **Quality Assurance:** the quality and consistency of delivery and assessment of these qualifications are of paramount importance to OCN NI. The mandatory quality assurance arrangements including processes for internal and external quality assurance that all centres offering these qualifications must adhere to are detailed.

- **Administration:** guidance on the administrative aspects of delivering these qualifications, including registration, certification, and record-keeping.

- Reference to other handbooks and policies as appropriate to the qualifications.

It is important to note that OCN NI will communicate any significant updates or changes to this specification in writing to our centres. Additionally, we will make these changes available on our official website at www.ocnni.org.uk.

To stay current, please refer to the online version of this specification as it is the most authoritative and up-to-date publication. Be aware that downloaded and printed copies may not reflect the latest revisions.

4.1 Additional Support

OCN NI offers a comprehensive range of support services designed to assist centres in meeting the delivery and quality assurance requirements of OCN NI qualifications. These services include:

- **Learner Assessment Booklets**: These booklets are created to assist learners in demonstrating the fulfilment of assessment criteria and organising the quality assurance prerequisites for each individual unit.

- **Specimen Assessment Materials**: These booklets are created to assist learners in demonstrating the fulfilment of assessment criteria and organising the quality assurance prerequisites for each individual unit.

- **Qualification Support Pack**: A support pack has been developed to support centres in the delivery of these qualifications. The pack includes planning and assessment templates, guides to best practice, etc.

- **Professional Development for Educators**: OCN NI provides opportunities for professional development tailored to meet the various needs of practitioners and quality assurance staff. Centres can join our training sessions, available in both face-to-face and online formats, or explore a wealth of training materials by visiting www.ocnni.org.uk

- **OCN NI Subject Advisors**: Our team of subject advisors offers vital information and support to centres. They provide guidance on specification details, non-exam assessment advice, updates on resource developments, and various training opportunities. They actively engage with subject communities through an array of networks to facilitate the exchange of ideas and expertise, to support practitioners to provide quality education programs to learners.

All centres can access information, support and guidance to support the delivery and quality assurance of these qualifications by contacting their designated Business Development Advisor or by contacting us on Contact Us | OCN NI

5. About this Qualification

5.1 Qualification Regulation Information

OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)

Qualification Number: 610/6490/7

Operational start date: 15/09/2025
Review date: 14/09/2030

The qualifications' operational start and end dates define the regulated qualifications' lifecycle. The operational end date is the final date for learner registration, while learners have until the certificate end date to complete the qualification and receive their certificates.

It is important to note that all OCN NI regulated qualifications are listed on the Register of Regulated Qualifications (RQF), which can be found at Ofqual Register. This register is maintained by Ofqual in England and CCEA Regulation in Northern Ireland. It contains information about qualifications that are regulated and accredited. It is a key resource for learners, employers, and educational institutions to verify the status and recognition of qualifications.

Centres must adhere to administrative guidelines diligently, with special attention to the fact that fees, registration, and certification end dates for the qualification may be subject to changes. It is a centre's responsibility to make itself aware of updates on any modifications to ensure compliance with the latest requirements. OCN NI provides centres with timely updates through various channels including website, newsletters and through this specification. Information on qualification fees can be found on the Centre Login section of the OCN NI website www.ocnni.org.uk .

5.2 Sector Subject Area

A subject sector area is a specific category used to classify academic and vocational qualifications. Subject sector areas are part of the educational and qualifications framework to organise and categorise qualifications. The sector subject for these qualifications is:

Subject Area: 5.2 Building and Construction

This qualification is mapped to National Occupational Standards (NOS) below where appropriate.

NOS:

COSBIMB61.1 Prepare Drawings in a Building Information Modelling Environment
COSBEDO09 Collate Project Information and Prepare Specifications in Built Environment Design
COSBEDMO25 Manage Project Building Information Modelling Protocols in Built Environment Design Management

5.3 Grading

Grading for this qualification is pass/fail.

5.4 Qualifications' Aim and Objectives

Qualifications' Aim

The aim of the OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM) is to provide individuals with the knowledge and skills to develop 3D Building Models for MEP, including being able to collaborate as part of a team to develop a complex 3D Building Model.

Qualifications' Objectives

The objectives of the OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM) is to enable learners to understand:

- Building Information Modelling (BIM) collaboration and the function of the Common Data Environment (CDE)
- how to integrate structural and MEP services into a 3D model and use clash detection software to resolve structural issues
- how to use analytical model and system analysis to address environmental issues

5.5 Target Learners

This qualification is targeted at learners who have an interest in working in the architectural, engineering and construction sector, particularly within the areas of digital construction and building information modelling.

5.6 Entry Requirements

There are no specific entry requirements for this qualification, however an understanding and appreciation of the building and construction sector would be necessary. Learners must be at least 18 years of age to take this qualification.

5.7 Progression

The OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM) allows for progression within the suite of OCN NI Building Information Management qualifications including the OCN NI Level 4 Award in Collaboration in Building Information Modelling and OCN NI Level 4 Certificate in Collaboration in Building Information Modelling/ Management and to further learning in the areas of Building Information Modelling / Management, Architectural and Building Design and/or into employment.

5.8 Delivery Language

This qualification is exclusively available in English. If there is a desire to offer this qualification in Welsh or Irish (Gaeilge), we encourage you to get in touch with OCN NI. They will assess the demand for such provisions and, if feasible, provide the qualification in the requested language as appropriate.

6. Centre Requirements for Delivering this Qualification

6.1 Centre Recognition

New and existing OCN NI recognised centres must apply for and be granted approval to deliver these qualifications prior to the commencement of delivery.

6.2 Qualification Approval

Once a centre has successfully undergone the Centre Recognition process, it becomes eligible to apply for qualification approval. The centre's capability to meet and sustain the qualification criteria will be assessed. Throughout the qualification approval process, OCN NI will aim to ensure that:

- centres possess suitable physical resources (e.g., equipment, IT, learning materials, teaching rooms) to support qualification delivery and assessment
- centre staff involved in the assessment process have relevant expertise and/or occupational experience
- robust systems are in place for ensuring ongoing professional development for staff delivering the qualifications
- centres have appropriate health and safety policies concerning learner equipment use
- qualification delivery by centres complies with current equality and diversity legislation and regulations
- as a part of the assessment process for this qualification it may be useful for learners to have access to a practical work setting

6.3 Centre Staffing

To offer this qualification centres are mandated to establish the following roles as a minimum, although a single staff member may serve in more than one capacity*:

- Centre contact
- Programme Co-ordinator
- Assessor
- Internal Quality Assurance (IQA)

*Note: An individual cannot serve as an IQA for their own assessments.

6.4 Tutor Requirements

Tutors responsible for delivering this qualification are expected to possess a high degree of occupational competency. They should meet the following criteria:

- **Occupational Competency:** Tutors should demonstrate a clear understanding of the subject matter, including up-to-date knowledge. They should also have a minimum of one year's relevant experience in this area. This competence should enable them to effectively impart knowledge and practical skills to learners.

- **Qualifications:** Tutors should hold qualifications at a level that is at least one level higher than the qualification they are teaching. This ensures that they have the necessary academic foundation to provide in-depth guidance and support to learners.

These requirements collectively ensure that learners receive instruction from highly qualified and experienced instructors, thereby enhancing the quality and effectiveness of their educational experience.

6.5 Assessor Requirements

The assessment of this qualification takes place within the centre and is subjected to OCN NI's rigorous quality assurance procedures. The achievement of individual units is based on the criteria defined in each unit.

Assessors play a pivotal role in ensuring the validity and fairness of assessments. They are required to meet the following criteria:

- **Occupational Competency:** Assessors should possess a high degree of occupational competency in the relevant subject matter. This expertise enables them to accurately evaluate and measure a learner's knowledge and skills. Additionally, they should hold qualifications at a level that is at least one level higher than the qualification they are assessing, ensuring their in-depth understanding of the subject matter.

- **Assessment Expertise:** Assessors should have direct or related experience in the field of assessment. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.

- **Assessors Qualification:** Assessors should hold or be currently undertaking a recognised assessor's qualification; or must have attended the OCN NI Assessment Training.

- **Comprehensive Assessment Oversight:** Assessors are responsible for evaluating all assessment tasks and activities comprehensively. They must thoroughly review and assess each element to ensure a fair and accurate representation of a learner's skills and knowledge.

These rigorous requirements uphold the quality and integrity of the qualification's assessment process, ensuring that learners receive a fair and reliable evaluation of their competencies.

6.6 Internal Quality Assurer Requirements

The Internal Quality Assurer plays a crucial role in the centre's internal quality assurance processes. The centre must designate a skilled and trained IQA who assumes the role of an internal quality monitor responsible for verifying the delivery and assessment of the qualifications.

The Internal Quality Assurer for this qualification must meet the following criteria:

- **IQA Expertise:** IQA should have direct or related experience in the field of verification and have at least one year's occupational experience in the areas they are internally quality assuring. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.
- **IQA Qualification:** IQA should hold or be currently undertaking a recognised IQA qualification; or must have attended the OCN NI IQA Training.
- **Thorough Evaluation of Assessment Tasks and Activities:** IQA are tasked with conducting in-depth reviews and assessments of all assessment tasks and activities. Their responsibility is to ensure a comprehensive and meticulous oversight of each element to guarantee a just and precise reflection of a learner's abilities and knowledge and to ensure that all assessment and quality assurance requirements are fulfilled.

7. Qualification Structure

7.1 Qualification Purpose

The OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM) is designed to equip professionals in the construction and building services industries with advanced skills in digital coordination and collaboration. It focuses on developing the use of BIM tools including the Common Data Environment (CDE) to coordinate MEP systems, within complex construction projects, across various disciplines and the use clash detection software to resolve structural issues.

7.2 Qualification Level

In the context of the OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM) it is essential to understand the significance of qualification levels, as they play a pivotal role in assessing the depth and complexity of knowledge and skills required for successful attainment. This qualification aligns with Level 4, which signifies a complex level of difficulty and intricacy. It's important to note that qualification levels in the educational framework range from Level 1 to Level 8, complemented by three 'entry' levels, namely Entry 1 to Entry 3.

7.3 Qualification Size

Total Qualification Time (TQT)

This represents the total amount of time a learner is expected to spend to complete the qualification successfully. It includes both guided learning hours (GLH) and independent study or additional learning time.

Guided Learning Hours (GLH)

These are the hours of guided instruction and teaching provided to learners. This may include classroom instruction, tutorials, or other forms of structured learning.

OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)	
Total Qualification Time (TQT):	100 hours
Total Credits Required:	10 credits
Guided Learning Hours (GLH):	60 hours

7.4 How to Achieve the Qualification

To achieve the **OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)** learners must complete the one unit .

8. Assessment Structure

This qualification is assessed through internal assessment and each unit is accompanied by specific assessment criteria that define the requirements for achievement.

8.1 Assessment Guidance: Portfolio

The portfolio for this qualification is designed to provide a comprehensive view of a learner's skills and knowledge. It is a holistic collection of evidence that may include a single piece of evidence that satisfies multiple assessment criteria. There is no requirement for learners to maintain separate evidence for each assessment criterion.

When learners are creating their portfolio, they should refer to the assessment criteria to understand the evidence required. Explanations of command words/verbs used in the assessment criteria can be found in Appendix 1 of this document.

It is essential that the evidence in the portfolio reflects the application of skills in real-world situations. Learners should ensure that they provide multiple examples or references whenever the assessment criteria require it.

8.2 Understanding the Units

The units outlined in this specification establish clear assessment expectations. They serve as a valuable guide for conducting assessments and ensuring quality assurance efficiently. Each unit within this specification follows a consistent structure. This section explains the operational framework of these units. It is imperative that all educators, assessors, Internal Quality Assurers, and other personnel overseeing the qualification review and familiarise themselves with this section to ensure a comprehensive understanding of how these units function.

- **Title:** The title will reflect the content of the unit and should be clear and concise.
- **Level:** A unit can have one of six RQF levels: Entry, One, Two, Three, Four or Five. All units within this qualification are Level 4.
- **Credit Value:** This describes the number of credits ascribed to a unit. It identifies the number of credits a learner is awarded upon successful achievement of the unit. One credit is awarded for the learning outcomes which a learner, on average, might reasonably be expected to achieve in a notional 10 hours of learning.
- **Learning Outcome:** A coherent set of measurable achievements.
- **Assessment Criteria:** These enable a judgement to be made about whether or not, and how well, the students have achieved the learning outcomes.
- **Assessment Guidance and Methods:** These detail the different assessment methods within the unit that may be used.
- **Unit Content:** This provides indicative content to assist in teaching and learning.
- **Scope:** This includes possible teaching content.

9. Qualification Summary by Unit

OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)

In order to achieve the OCN NI Level Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM) , the learner must successfully complete the one unit – 10 credits.

Total Qualification Time (TQT) for this qualification: 100 hours
Guided Learning Hours (GLH) for this qualification: 60 hours

Unit Reference Number	OCN NI Unit Code	Unit Title	Credit Value	GLH	Level
R/651/7718	CBG813	Digital Construction Mechanical Electrical Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)	10	60	Four

10. Unit Content

10.1 Digital Construction Mechanical Electrical Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)

Title	Digital Construction Mechanical Electrical Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)
Level	Four
Credit Value	10
Guided Learning Hours (GLH)	60
OCN NI Unit Code	CBG813
Unit Reference No	R/651/7718
Learn Direct Code	CS2
Unit purpose and aim(s): This unit will enable the learner to gain an understanding of digital construction in a multidisciplinary context. This will include the coordination and collaboration of differing teams and resolution of models across teams.	

Learning Outcomes	Assessment Criteria
1. Understand Building Information Modelling (BIM) collaboration and the function of the Common Data Environment (CDE).	1.1. Explain what is meant by collaboration in relation to the BIM process. 1.2. Explain the role and benefits of the Common Data Environment (CDE).
2. Be able to integrate Structural and Mechanical, Electrical and Plumbing (MEP) services into a federated model.	2.1. Summarise user interface and project navigation features for an MEP services authoring software. 2.2. Demonstrate how to link an Architectural model with Mechanical/Electrical/Plumbing (MEP) and Structural models. 2.3. Demonstrate how to Record/Produce Transfer Standards, Levels and Grids and Walls when linking models. 2.4. Demonstrate how to transfer BIM Object elements information from a linked Architectural linked model into a host MEP model. 2.5. Demonstrate the integration/federation of the following disciplines into a Federated model: • mechanical heating and ventilation system • electrical layout – power and lighting • plumbing system – water supply and drainage system • structural Framing and Architectural component
3. Be able to model MEP systems elements.	3.1. Demonstrate using both preloaded and customised elements and components with linked models the modelling of an industry-standard integrated MEP system for the following: a) mechanical - heating and ventilation system b) electrical layout – power and lighting

	c) plumbing system – water supply and drainage system 3.2. Produce MEP discipline schedules - one per disciple. 3.3. Carry out an analysis check to verify system integrity. 3.4. Demonstrate how to publish model information by placing MEP model generated views in sheets and printing one per MEP area including: a) plans b) sections
4. Be able to use clash detection/interference analysis software for discipline integration and Coordination review.	4.1. Explain the use of clash detection software and interference analysis and coordination review to identify and resolve coordination issues. 4.2. Demonstrate the use of clash detection software and Interference analysis to identify two multidiscipline coordination issues. 4.3. Resolve two multidiscipline coordination issues detected with clash detection and interference tools.
5. Be able to use system analysis to improve energy efficiency and environmental performance.	5.1. Explain what is meant by analysis, its role in the BIM process and how it can be used to improve energy efficiency and environmental performance within the MEP BIM context. 5.2. Demonstrate how energy efficiency and environmental performance can be improved with a BIM model using either analytical models or system analysis or both.

Assessment Guidance

NOS:
COSBIMB61.1 Prepare Drawings in a Building Information Modelling Environment
COSBEDO09 Collate Project Information and Prepare Specifications in Built Environment Design
COSBEDMO25 Manage Project Building Information Modelling Protocols in Built Environment Design Management

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit title: Digital Construction Mechanical Electrical Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)
1. Understand Building Information Modelling (BIM) collaboration and the function of the Common Data Environment (CDE).	**Scope** **Teaching will cover:** • **Introduction to Building Information Modelling (BIM) Definition and Principles:** Definition of BIM as a collaborative process and method based on the use of data enriched digital models, including: o explanation of the overall goals of BIM regarding improving processes of information management and improvements of coordination of building design, construction, and operation. o overview of BIM's role in improving coordination, reducing errors, and enhancing project efficiency, including: the role of BIM dimensions (3D, 4D, 5D, etc.) in assisting the goals and benefits, within the relevant context to MEP, Architectural, and structural design and construction coordination(e.g.: example 3D and 4D for better coordination between disciplines including clash detection and construction sequence, 6D for performance simulation such as systems performance (MEP),energy efficiency, and any other relevant ones) o definition of a PIM (Project Information Model) and AIM (Asset Information model) • **Benefits of BIM Collaboration for multidisciplinary collaboration** o discuss benefits (clash detection, cost estimation, and improved energy efficiency through integrated design) to facilitate management and collaboration between architects, engineers, contractors, and other stakeholders. o identify collaborative workflows, including model sharing, federation, version control, and communication protocols. o highlight Roles and responsibilities of project stakeholders (e.g., architects, MEP engineers, structural engineers) in a BIM environment. • **BIM Standards and Protocols role in collaboration overview:** o introduction to UK BIM standards, such as BS EN ISO 19650 series, which outline BIM processes and information management. o introduction to BIM Execution Plans (BEP) and their role in defining project collaboration workflows. o cover the importance of interoperability and data exchange formats (e.g., IFC, COBie). • **Definition and Purpose of the CDE:** Explain CDE as a centralized digital platform (or other solution) for storing, managing, and sharing project information and its role as single source of truth for all project data. • **Cover Key Functions of the CDE:** o data management: storing 3d models, drawings, specifications, and metadata. o version control: tracking changes and ensuring stakeholders access the latest information. o access control: managing permissions to ensure data security and appropriate access for stakeholders. o audit trails: maintaining records of data changes for accountability. • **CDE General Workflow:**

	○ the four CDE states as per ISO 19650: Work in Progress (WIP), Shared, Published, and Archived. ○ process of data approval and progression through these states, with examples of how MEP, structural, and architectural models move through the CDE workflow. ○ explain how the CDE stores and manages 3D models for MEP (e.g., ductwork, piping), structural (e.g., beams, columns), and architectural elements. ○ discuss how federated models (combined MEP, structural, and architectural models) are managed in the CDE for clash detection and coordination. • **Supporting Clash Detection:** ○ describe how the CDE facilitates clash detection by providing access to up-to-date models from all disciplines. ○ explain the process of resolving clashes through collaborative workflows within the CDE. • **Energy Efficiency and Environmental Performance:** ○ discuss how the CDE stores analytical models and system analysis data (e.g., energy simulations, thermal performance) to support sustainability goals. ○ explain how BIM data in the CDE can be used to optimize MEP systems (e.g., HVAC efficiency) and structural designs for environmental performance. • **Legal and Contractual Aspects of BIM and CDE:** ○ explain Information Management Responsibilities. in overseeing the CDE and ensuring compliance with BIM protocols. ○ discuss Exchange information requirements (EIR) and their impact on CDE setup. • **Data Security and Intellectual Property:** ○ highlight the importance of data security measures in the CDE (e.g., encryption, user authentication). ○ discuss intellectual property considerations for models and data shared in the CDE. • **Examples of CDE Platforms:** ○ introduce common CDE solutions (e.g., Autodesk Construction Cloud, Bentley ProjectWise, etc...). ○ discuss CDE integration with BIM software for multi discipline collaboration
2. Be able to integrate structural and Mechanical, Electrical and Plumbing (MEP) services into a federated model.	**Scope** **Note:** The following indicative scope showcases specific examples based on the use of Revit. However equivalent and similar actions and commands can be employed using another suitable BIM authoring software(s) with similar capacities), and/or different workflows, as long as covering the LO knowledge and achieving the AC 2.1, AC 2.2, AC 2.3, AC 2.4, and AC 2.5 **Teaching will cover:** **AC 2.1** • **Overview of Software Role**: ○ define software purposes. E.g. Revit: authoring BIM software for designing, modelling, and managing MEP systems (mechanical, electrical, plumbing), as well as Structural and Architectural Elements. ○ explain its role in coordinated 3D models for MEP systems, Structure and Architecture (Creation and Federation of Models. Quantification. Simulation) ○ highlight software integration with BIM workflows, including clash detection and energy analysis. • **Getting started**

	○ home menu ○ creating a new model/project ○ using templates ○ setup up options • **Overall Software elements hierarchy functionality (e.g. in Revit):** ○ elements hierarchy (modelling elements, datum, and view specific) ○ host elements ○ categories ○ families ○ types • **Core UI Components (e.g. of Revit):** ○ **Ribbon overview:** explain the tabs (e.g., Systems, Architecture, View, Manage, insert) and MEP-specific tools under the Systems tab (e.g., Duct, Pipe, Electrical). ○ **Quick Access Toolbar:** customisation tools for frequent commands (e.g., Save, Undo, Open). ○ **Properties Palette:** highlight its role in viewing and editing MEP element properties (e.g., pipe diameter, duct type). ○ **Project Browser:** explain its structure for organizing views and families relevant to MEP systems. (MEP-specific views and schedules) ○ **View Control Bar**: cover tools for adjusting view settings (e.g., scale, detail level, visual style) for MEP models. • **Selection techniques (e.g. of Revit):** ○ selecting ○ adding and subtracting from selection ○ other selection techniques (cross selections) ○ filtering selections • **Views for MEP**: ○ **Floor Plans:** explain how to navigate and create MEP-specific floor plans (e.g., mechanical, electrical, plumbing plans). ○ **3D Views**: describe Ui tools navigating 3D models to visualize MEP systems (e.g., ductwork, piping layouts). ○ **Sections and Elevations:** cover UI tools for creating and navigating section views to inspect MEP routing and coordination. ○ **Schedules**: introduce UI navigation of MEP schedules (e.g., equipment lists, pipe schedules) for data management. • **Navigation Tools**: ○ **View Cube:** explain its use for rotating and orienting 3D views of MEP systems. ○ **Steering Wheel:** describe tools like Pan, Zoom, and Orbit for navigating MEP models**.** ○ **Section Box:** highlight its use for better visualise MEP systems in 3D views for detailed inspection**.** ○ **Temporary Hide/Isolate:** explain how to hide/ isolate MEP (e.g., ducts, pipes) or other discipline elements for focused navigation. ○ **Zoom, Pan & Orbit** • **View controls and Filters**: ○ discuss creating MEP-specific view templates to control visibility of mechanical, electrical, or plumbing elements. ○ explain UI visibility filters including Graphic override for highlighting specific MEP systems (e.g., supply vs. return ducts, power vs. lighting circuits). • **MEP-Specific UI Context**: introduce MEP disciplines software interface (e.g. Revit):

	○ introducing the Systems tab ○ overview of HVAC (e.g. ductwork ○ overview of Electrical (e.g., lighting, power ○ overview of Plumbing (e.g., piping, drainage). ○ discuss contextual tabs that appear when selecting MEP elements (e.g., modifying duct or pipe systems). • **MEP System Creation and Navigation:** ○ describe navigating and editing MEP systems (e.g., duct systems, piping systems, electrical circuits). ○ show the "Select System" tool to highlight and navigate connected MEP components. • **MEP System Browser**: ○ introduce the System Browser for navigating MEP systems (e.g., HVAC, electrical, plumbing). ○ explain how to use it to check system connectivity, identify unassigned elements, and troubleshoot MEP networks. • **UI customization:** customise the UI for MEP workflows (e.g., creating shortcuts for frequent MEP tools). • **UI Tools for Clash Detection Navigation**: ○ discuss navigating UI to find tools for coordination of models and clashes detection between MEP systems and other disciplines (e.g., structural beams). ○ introduce navigation UI to find Revit's Coordination Review tools for resolving clashes. • **UI features related to Analytical Models for MEP**: ○ introduce the UI location of the Analyse tab for MEP performance analysis (e.g., energy analysis, load calculations). ○ overview of UI Tools related to analytical models for MEP systems (e.g., energy analysis, load calculations). **AC 2.2** • **Opening Discipline-Specific Templates** (Mechanical, Electrical, Plumbing Templates) **or existing Project/Model** • **Save Templates into Model:** save system template a model) for linking/ federation • **Shared Coordinates:** set up shared coordinates between models • **Origin Consistency:** ensuring (e.g. in Revit) base point or project base point alignment • **Linking another** (e.g. architectural). **discipline model.** (e.g. in Revit) Show how: ○ use Insert tab and the Link Revit tool (not Import). ○ highlight other Link options (IFC, etc…) ○ configuring linking options Link Revit dialog, including positioning (Auto - Origin to Origin; Auto - By Shared Coordinates; Manual – Origin; and Reference Type: • **Checking Placement and Coordination:** navigating views to verify if linking is **correct** (alignment, orientation, and scale) • **Control visibility of linked model** (in Revit e.g. Visibility/Graphics (VG) or Revit Links in the Project Browser or manage tab). • **Establishing Worksets:** show how to manage links via worksets • **Manage the Link Settings** Using Manage > Manage Links > (Revit) to: ○ reload or unload the link ○ change reference type ○ update path type (relative, absolute, or none)

	AC 2.3
	• **Demonstrate how to Transfer standards from linked model**. E.g. (in Revit, demonstrate in the **Manage tab the use of the Transfer Project Standards tool**. however, if using another software demonstrate similar principles but with relevant UI)
	• **Show how to choose from the linked model which Standards to transfer** (E.g. Revit standard types of lists)
	  ○ view templates (recommended)
	  ○ line styles (recommended)
	  ○ object styles (recommended)
	  ○ fill patterns (optional but recommended)
	  ○ materials (optional)
	  ○ filters (recommended if used)
	  ○ annotation styles
	  ○ text style (only if using linked arch text in host model - optional)
	  ○ dimensions styles (only if using same annotation standards optional)
	  ○ annotation symbols (only if there are customised architectural symbols optional)
	  ○ view tags(optional)
	  ○ project parameters (sometimes necessary if custom parameters affect visibility case by case)
	• **Resolve naming conflicts from transfer of standards:** resolve possible naming conflicts during transfer with the Conflict Resolution dialog options:
	  ○ overwrite (replace your current setting with the linked one),
	  ○ new only (import only standards not currently in your model),
	  ○ cancel (if you want to reconsider).
	• **Confirming transfer of standards to MEP model**
	• **Use Copy/Monitor to transfer levels, grids, and walls** from a linked architectural model. E.g. (in Revit): Showcase: **the Collaborate tab > Copy/Monitor > Select Link tool**
	• **Selecting Levels and Grids from the linked model.**
	• **Using Copy** option in the command to transfer them to the discipline model, ensuring alignment. (include batch copy)
	• Reuse the **Copy/Monitor to create copy walls** into the MEP the discipline model.
	• Demonstrate use of **Coordination Review log** to track copied elements and changes
	AC 2.4
	• Demonstrate how to **transfer BIM Objects information from the** Architectural linked model in AC into a new MEP host model. E.g. (using Revit models transferring family info)
	  ○ show the use of the **Bind model tools** and ungrouping afterwards.
	  ○ using the **Copy to clipboard** from original linked model and **paste** tools into host model
	  ○ another suitable methodology
	• **Understanding instance vs type parameters**
	AC 2.5
	Create a federated model where all discipline elements are integrated. E.g.:

	○ mechanical: duct systems, air terminals, equipment placement ○ electrical: circuiting, lighting fixtures, switch systems ○ plumbing: pipe systems, hot/cold water, drainage layout ○ structural: load-bearing components, framing systems, foundations
3. Be able to create industry-standard Model for MEP systems and elements.	**Scope** **Note:** The following indicative scope showcases specific examples based on the use of Revit. However equivalent and similar actions and commands can be employed using another suitable BIM authoring software(s) with similar capacities), and/or different workflows, as long as covering the LO knowledge and achieving the AC3.1, AC3.2 and AC 3.3 **Teaching will cover:** **AC 3.1a** • **Within a federated MEP model linked to other disciplines, use software UI systems tools to model connected heating and ventilation systems, integrated with the other building elements. Use preloaded and customised components. To include for example** ○ creating spaces ○ mechanical equipment ○ mechanical control devices ○ ducts ○ air terminals ○ air side and air side components ○ connectors ○ ventilations and heating fixtures • **Ensuring all components of the system are properly connected** **AC 3.1b** • **Within a federated MEP model linked to other disciplines, use software UI systems tools to model electrical- power and lighting - systems, integrated with the other building elements. Use preloaded and customised components. To include for example:** ○ switch boards ○ wires ○ conducts ○ cable trays, ○ electrical power equipment and devices ○ lighting equipment, fixtures and fittings • **Ensuring all components of the system are properly connected** **AC 3.1c** • **Within a federated MEP model linked to other disciplines, use software UI systems tools to model a connected plumbing- water and sewage - systems, integrated with the other building elements. Use preloaded and customised components. To include for example:** ○ pipes ○ plumbing fittings & accessories ○ plumbing equipment ○ plumbing fixture • **Ensuring all components of the system are properly connected** **AC 3.2** • **Creating an MEP categories schedules and customising** ○ multiple fields ○ sorting and filtering ○ formatting

	○ appearance **AC 3.3** • **Use the analyse tab in the UI (Revit based- or similar) to conduct analysis to Check Systems. For example:** ○ duct pressure ○ pipe pressure ○ checking duct systems ○ checking pipe systems • **Generate reports with results from system checks** **AC 3.4** • **Creating and printing sheets** ○ placing views and sheets ○ controlling graphical setting of views including scale. ○ publish sheets (PDFS)
4. Be able to use clash detection interference analysis software for discipline integration and Coordination review.	**Scope** **Teaching will cover:** **AC 4.1** • **Introduction Role of BIM as enabler for comprehensive integration of multi-disciplinary models across architectural, structural, mechanical, electrical, and plumbing (MEP) systems. And Explain role and importance of clash detection:** highlight how early identification and resolution of spatial and design conflicts using clash detection, interference analysis, and coordination review are BIM tools and processes that help teams proactively manage design complexity, improve collaboration, minimize on-site changes, and contribute to more sustainable and cost-effective construction outcomes. Referring to the importance of this digital multidiscipline coordination and project management with PIM (Project Information Model) • **Explain what clash detection is, e.g.:** Interference analysis as a simulation of the spatial and functional relationships of building elements in a digital environment. Uses the federated 3D model (discipline models integrations), and software algorithms to assess for physical overlaps (e.g., ducts intersecting beams) or system conflicts (e.g., pipe routing through electrical zones). • **Identify Clash Detection Software and Interference Analysis Clash detection software** (to be updated/ adapted in accordance with latest and current market trends). Can include but not exclusively E.g.: ○ Autodesk Navisworks ○ Trimble connected to windows (previously known as Tekla Bim sight) ○ Revit ○ Solibri ○ Bluebeam • **Identify Common Key features of clash detection and interference tools:** ○ automated detection algorithms: Identify various types of clashes such as: Hard Clashes: Direct physical overlaps (e.g., steel beam intersecting HVAC duct); Soft Clashes: Violations of clearance or spatial tolerances (e.g., insufficient buffer between cable trays and walls); 4D Clashes: Conflicts related to construction sequencing and scheduling. ○ visual feedback: tool to are automatically highlighted Clashes in the 3D model, facilitating users to understand and locate issues (visually)

	○ rule-based filtering: tools to customize clash tests based on specific disciplines, systems, or model elements, to avoid excessive and unnecessary alerts. ○ reporting and documentation: Some software (e.g. Navisworks and Solibri) generate structured clash reports listing issue types, locations, responsible teams, and recommended actions. ○ coordination review-collaborative process that follows clash detection focusing on resolving identified issues for system compatibility and design optimisation. Model elements are reviewed and adjusted using BIM tools (e.g. Autodesk Revit, Navisworks, or Solibri Office). Highlight that this process usually generally includes: -clash Assignment and Ownership: Detected issues are assigned to relevant team members (e.g., structural engineers for beam conflicts, MEP designers for duct clashes). -collaborative Resolution: Teams work together to propose and validate design adjustments (rerouting systems, resizing components, or reconfiguring layouts) -federated Model Updates: After reviews reintegrated resolved elements into the federated model, to allow stakeholders to operate from the latest, clash-free version. -change Management and Auditing: (e.g. Navisworks & Revit) tracking model changes and maintaining version control logs for transparency and accountability throughout the process. • **Refer possible developments and Enhanced Features in Modern BIM Software:** ○ integrated Communication Tools: Many platforms support embedded commenting systems, BIM issue tracking (e.g., BCF BIM Collaboration Format), and task management. ○ cloud Collaboration: some facilitate real-time coordination across geographically distributed teams, allowing for synchronous updates and issue resolution. • **Exemplify Benefits for Resolving Coordination Issues, e.g.:** ○ minimized Rework and Construction Delays: Detecting clashes early helps avoid on-site issues, with studies estimating that clash detection can reduce rework costs by 5–10%, depending on project complexity. ○ enhanced Multi-Disciplinary Collaboration: By centralizing communication and model reviews, teams achieve better alignment across architecture, structure, and MEP disciplines. ○ improved Scheduling and Sequencing (4D BIM): Resolving 4D clashes ensures that construction activities are logically sequenced, reducing stoppages or delays during site operations. ○ greater Cost Efficiency: Identifying and resolving issues digitally is significantly cheaper than rework during physical construction. ○ sustainability and Resource Efficiency: Reduced rework leads to decreased material waste, transportation needs, and energy consumption—supporting broader environmental performance goals. ○ improved Design Quality: Continuous coordination helps refine system layouts, improving building functionality, accessibility, and maintainability. • **Identify / provide some case studies (optional). The following ones are for illustrative purposes only (Use any other appropriate examples):** ○ Miami Science Museum (USA): Clash detection in Navisworks resolved conflicts between HVAC ductwork and structural beams. Allowed rerouting services within the model, avoiding

	major construction delays and reducing material waste, contributing to sustainability targets. o Shanghai Tower (China): project team achieved a 20% reduction in coordination time. Streamlined issue resolution also led to notable cost savings and improved construction workflow. o Commercial Office Tower (Finland): Solibri Office was used for rule-based model checking and clash detection and identified clearance issues and egress violations, contributing to improved building safety and compliance. o Crossrail Project (UK), Navisworks was used to integrate MEP and structural models, clash detection in early design process reduced the volume of on-site corrections **Note:** The following indicative scope showcases specific examples based on the use of Revit. However equivalent and similar actions and commands can be used related to other BIM software with similar capacities (e.g. Navisworks), as long as covering the LO4 knowledge and AC4.2 and AC 4.3 **AC 4.2** • **Introducing navigation UI for Coordination Review tools for resolving clashes.** Explain in detail navigating UI to find and use tools for coordination of models and clashes detection between MEP systems and other disciplines (e.g., structural beams). E.g. (in Revit) o using **Collaborate tab>Interference Check > Run Interference Check.** o **Selecting clash detection sets** from host and linked models, e.g.: Select the first set (e.g., Ducts or Pipes from MEP model) and the second set (e.g., Structural Framing (Structural) or Walls (Arch) from Linked models. o **Ensuring checkboxes** include linked models are ticked o **Running the check** o **Checking list of clashes** (element Ds, descriptions, etc.) o clicking each result to zoom to **view clash in detail** • **Review and Isolating Clashes to improve coordination, using views:** o using View tab to Create a 3D View and rename it o click a clash in the list > zooms to it > apply a section box. o tag the two elements involved or temporarily colour them with filters. o repeat for other Clashes using a new 3D view**.** • **Review and Isolating Clashes to improve coordination, using views filters:** • **Using View Filters to Highlight clashes** o using View > Filters, to create rules for ducts/pipes/beams with clash risk. o apply colour overrides to visually identify potential issues**.** • **Using Interference Report and Comments to Track Clashes** o in the Interference Report, show how to add comments • **Export the interference report** **AC 4.3** • **Resolving the clashes identified in AC3.2.** (e.g. modifying Mep model and system element's location, modify and amend linked models- using solution that are most appropriate for the clashes detected) • **Re-running the clash detection to check if clashes are resolved.** • **Review results** o verifying isolated clash views

	○ verify interference check report. ○ exporting updated report
5. Be able to use analytical models and system analysis to improve energy efficiency and environmental performance.	**Scope** **Teaching will cover:** **AC 5.1** • **Introduce the role of BIM integrated design and analysis across a building's lifecycle, and in enabling data-driven decision-making.** Include explanation of how Analytical models and system analysis tools within BIM are, optimizing structural integrity, energy efficiency, and environmental performance by simulating building behaviour and system interactions. • **Explain the Definition of analytical Model, to include, e.g.:** notion of a simplified, data-rich digital representation of a building's geometry and physical properties, usually converting components (beams, columns, and walls) into lines, nodes, and surfaces with assigned properties and boundary conditions to enable computational simulations for structural, thermal, and environmental performance. • **Highlight Role in Energy optimisation.** Including but not exclusively e.g.: ○ how system analysis evaluates interconnected building systems (e.g., HVAC) to assess their performance, interactions, and efficiency within a BIM environment. ○ how it allows early-stage detection of design conflicts, inefficiencies, or performance issues, ensuring alignment with project goals like sustainability and energy efficiency. ○ multi-disciplinary data, analytical models and system analysis role in predictive optimisation throughout design, construction, and operation phases. • **Highlight Benefits** Including but not exclusively E.g.: ○ integrated workflow and collaboration- Analytical models as single sources of truth, enabling stakeholder coordination, reducing errors, and enhancing project efficiency. ○ cost and time savings-early detection of inefficiencies via system analysis can help optimize design decisions and specification to increase predicted efficiencies and reduce energy consumption costs. ○ enhanced sustainability: BIM-driven simulations support greener designs, reducing carbon footprints and aligning with certifications like LEED, BREEAM, or WELL. ○ data-driven decisions: Real-time feedback from analytical models informs optimisations, improving building performance and operational efficiency • **Provide examples of Energy Efficiency and Environmental Performance Analysis.** Including but not exclusive E.g.: ○ performance analysis with Simulation via analytical models of heat gain, ventilation, and solar performance designers can test scenarios like adjusting insulation, glazing, or building orientation to reduce energy consumption. ○ sustainability Analysis: BIM integrating data on embodied carbon and material lifecycle impacts, supporting certifications like LEED or BREEAM. ○ lifecycle Management: 6D BIM incorporating energy and environmental data for facility management Bim models' linkage with IoT sensors to provide real-time energy usage data, and enable adjustments to systems to reduce emissions • **Identify Key examples of BIM tools and software involved.** (to be updated/adapted in accordance with latest and current market trends). Can include but not exclusively E.g.:

	○ IES VE -enable advanced environmental simulations by importing BIM models from Revit or ArchiCAD, analysing CO_2 emissions and thermal comfort. ○ Autodesk Revit's in-built energy analysis ○ Autodesk Insight Carbon Analysis. (which replaced Green Building Studio and Insight 360) ○ Interoperability formats e.g.: case study of *gbXML* – how exporting models to *gbXML* analysis of how such format facilitated integration with energy simulation software outside a native modelling software ○ others (other software providers) • **Identify / provide some case studies (optional). The following ones are for illustrative purposes only (Use any other appropriate examples):** ○ Miami Science Museum: Leveraged BIM to integrate environmental data, optimizing material choices and energy systems, resulting in reduced operational emissions and a sustainable design. ○ Crossrail Project (UK): Utilized BIM for system analysis to coordinate complex MEP systems, reducing clashes, construction waste, and energy use. ○ Skanska Projects: Employed Tekla's BIM tools for precise energy simulations, minimizing embodied carbon in structural designs and enhancing sustainability. **Note:** The following indicative scope showcases specific examples based on the use of Revit. However equivalent and similar actions and commands can be used related to other BIM software with similar capacities (e.g. Navisworks), as long as covering the LO5 knowledge and AC5.2 **AC 5.2** • **Using BIM models utilize the Analyse tab, and the Energy Optimization Panel to perform energy analysis and optimisation.** (methodology to exemplify can use models created in previous ACs, or utilize a specifically conceived one supplied for this purpose) **Includes the use and setup for example but not exclusively** ○ setting location, weather stations and orientation ○ setting up analytical spaces and analytical surfaces. ○ creating an analytical energy model and conducting energy analysis ○ understand role of material thermal properties: conceptual, schematic, and detailed types ○ setting zones ○ working with masses ○ generate energy model • **Using Autodesk Insight Carbon Analysis to conduct simulation and analysis** • **Analysing results** • **Exporting Analyses reports** • **Proposing improvements and Modify equipment's and settings accordingly (**suggestion: e.g. present formative sample illustrative example) • **Rerunning analysis to verify improvements** • **Comparing optimised system solutions results with original analysis**

11. Quality Assurance of Centre Performance

11.1 Internal Assessment

When delivering and assessing this qualification, centres must align with stakeholders' expectations and address learners' needs by implementing a practical and applied programme. Centres have the flexibility to customise programmes to meet local requirements and establish connections with local employers and the broader vocational sector.

The Assessor should work with the Internal Quality Assurer to ensure that the assessment is planned in line with OCN NI requirements. Assessment Plans must be developed and approved by the Internal Quality Assurer prior to the delivery of the qualification.

All units within this qualification must undergo internal assessment. Learners must provide evidence that they have appropriately met all assessment criteria required for that grade.

The assessment format for all units involves a task conducted after the delivery of the unit's content, or part of it, if multiple tasks are used. Tasks may exhibit in various forms, encompassing practical and written types. Please refer to 'OCN NI's Assessment Definitions Guide' for additional details.

A task constitutes a distinct activity completed independently by learners, separated from teaching, practice, exploration, and other activities guided by tutors. Tasks are assigned to learners with a specified start date, completion date, and explicit requirements for the evidence to be produced. Some tasks may include observed practical components and require diverse forms of evidence.

A valid assignment will enable a clear and formal assessment outcome, which meets the requirements of the assessment criteria. Assessment decisions are based on the specific assessment criteria given in each unit and set at each grade level. The way in which individual units are written provides a balance of assessment of understanding, practical skills and vocational attributes appropriate to the purpose of qualifications.

It is the Assessor's role to ensure that learners are appropriately prepared for assessment, this begins from induction onwards. Assessors should ensure that learners understand how assessment tasks are used to determine the award of credit, the importance of meeting assessment timelines, and that all learners work must be independently created, where source documents are used this should be appropriately referenced, learners should be aware of what would constitute plagiarism and the possible consequences.

When conducting the assessment, Assessors must ensure they do not provide direct input, instructions or specific feedback which may compromise the authenticity of the work submitted.

Once the Assessor has authenticated the learners work, they must transparently demonstrate the rationale behind their assessment decisions. Once a learner completes all assigned tasks for a unit, the Assessor will allocate a grade for the unit. Refer to the 'Unit Grading Matrix' for additional information on the grading process.

Once the Assessor has completed the assessment process for the task, the assessment decision is recorded formally, and feedback is provided to the learner. The feedback should show the learner the outcome of the assessment decision, how it was determined or where the criteria has been met, it may indicate to the learner why achievement of the assessment criteria has not been met. It must be clear to the learner that this Assessment outcome is subject to verification.

For further information on assessment practice, please see the 'OCN NI Centre Handbook'. Assessment Training is also available and can be booked through the OCN NI Website.

11.2 Internal Quality Assurance

The role of the Internal Quality Assurer is to ensure appropriate internal quality assurance processes are carried out. The Internal Quality Assurer must oversee that assessments are conducted in accordance with relevant OCN NI policies, regulations, and this specification.

The Internal Quality Assurer must ensure assessments are fair, reliable, and uniform, thereby providing a consistent standard for all learners.

Internal Quality Assurers are required to provide constructive feedback to Assessors, identifying areas of strength and those that may require improvement. This feedback contributes to the ongoing professional development of Assessors.

Contributing to the standardisation of assessment practices within the centre is an important function of this role. This entails aligning assessment methods, grading criteria, and decision-making processes to maintain fairness and equity.

Internal Quality Assurers will actively engage in the sampling and monitoring of assessments to ensure the consistency and accuracy of assessment decisions. This process helps identify trends, areas for improvement, and ensures the robustness of the overall assessment system.

For further information on Internal Quality Assurance practice, please see the 'OCN NI Centre Handbook'. Internal Quality Assurance Training is also available and can be booked through the OCN NI Website.

11.3 Documentation

For internal quality assurance processes to be effective, the internal assessment and Internal Quality Assurance team needs to keep effective records.

- The programme must have an assessment and Internal Quality Assurance plan. When producing a plan, they should consider:
    - the time required for training and standardisation activities
    - the time available to undertake teaching and carry out assessment,
    - consider when learners may complete assessments and when quality assurance will take place
    - the completion dates for different assessment tasks
    - the date by which the assignment needs to be internally verified
    - sampling strategies
    - how to manage the assessment and verification of learners' work so that they can be given formal decisions promptly
    - how resubmission opportunities can be scheduled.

The following documents are available from OCN NI and document templates can be found in the Centre Login section of the OCN NI website www.ocnni.org.uk:

- A1 – Learner Assessment Record per Learner
- Learner Authentication Declarations
- Records of any reasonable adjustments applied for and the outcome – please see 'OCN NI's Reasonable Adjustments and Special Consideration Policy' for further information
- M1 Internal Quality Assurance Sample Record
- M2 Feedback to Assessor
- Records of any complaints or appeals

11.4 External Quality Assurance

All OCN NI recognised centres are subject to External Quality Assurance. External quality assurance activities will be conducted to confirm continued compliance with the CCEA Regulation General Conditions of Recognition, OCN NI terms and conditions and the requirements outlined within this qualification specification.

The External Quality Assurer is assigned by OCN NI. The External Quality Assurer will review the delivery and assessment of this qualification. This will include, but is not limited to, the review of a sample of assessment evidence and evidence of the internal quality assurance of assessment and assessment decisions. This will form the basis of the External Quality Assurance report and will help OCN NI determine the centre's risk.

The role of the External Quality Assurer serves as an external overseer of assessment quality, working to uphold consistency, compliance, and continuous improvement within the assessment process. Their role is crucial in ensuring that assessments are valid, reliable, fair, and aligned with the required standards and regulations.

For further information on OCN NI Centre Assessments Standards Scrutiny (CASS) Strategy, please see the OCN NI Centre Handbook.

11.5 Standardisation

As a process, standardisation is designed to ensure consistency and promote good practice in understanding and the application of standards. Standardisation events:

- make qualified statements about the level of consistency in assessment across centres delivering a qualification
- make statements on the standard of evidence that is required to meet the assessment criteria for units in a qualification
- make recommendations on assessment practice
- produce advice and guidance for the assessment of units
- identify good practice in assessment and Internal Quality Assurance

Centres offering this qualification must carry out internal standardisation activities prior to the claim for certification.

Centres offering units of an OCN NI qualification must attend and contribute assessment materials and learner evidence for standardisation events if requested.

OCN NI will notify centres of the nature of sample evidence required for standardisation events (this will include assessment materials, learner evidence and relevant Assessor and Internal Quality Assurer documentation). OCN NI will make standardisation summary reports available and correspond directly with centres regarding event outcomes.

12. Administration

12.1 Registration

A centre must register learners for this qualification within 20 days of commencement of delivery of this programme.

For further information on learner registration please see the OCN NI Centre Handbook and the QuartzWeb Manual, available through the Centre Login section of the OCN NI website. Administration training is also available and can be booked through www.ocnni.org.uk.

12.2 Certification

Once all internal quality assurance activities have been successfully completed, the centre can claim certification for the learner(s).

Certificates will be issued to centres within 20 working days from completion of a satisfactory external quality assurance activity, if appropriate, alternatively from the submission of an accurate and complete marksheet.

It is the responsibility of the centre to ensure that certificates received from OCN NI are held securely and distributed to learners promptly and securely.

For further information on the uploading of results please see the QuartzWeb Manual for guidance, administration training is also available and can be booked through OCN NI

12.3 Charges

OCN NI publishes all up-to-date qualification fees in its Fees and Invoicing Policy document. Further information can be found on the centre login area of the OCN NI website.

12.4 Equality, Fairness and Inclusion

OCN NI's are committed to ensuring all learners have an equal opportunity to access our qualifications and assessment, and that our qualifications are awarded in a way that is fair to every learner.

OCN NI is committed to making sure that:

- learners with a protected characteristic are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers

For information on reasonable adjustments and special considerations please see the OCN NI Centre Handbook and Reasonable Adjustments and Special Considerations Policy held in the back office of the OCN NI website.

12.5 Retention of Evidence

OCN NI has published guidance for centres on the retention of evidence. Details are provided in the OCN NI Centre Handbook and can be accessed via the OCN NI website.

OCN NI Level 4 Award in Digital Construction Mechanical, Electrical and Plumbing (MEP) Multi-disciplinary Coordination and Collaboration using Building Information Modelling (BIM)
Qualification Number: 610/6490/7

Operational start date: 15/09/2025
Review date: 14/09/2030

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12.6 Appendix 1 - Definition of OCN NI's Assessment Verbs

The following verbs are working definitions of those used in OCN NI assessments with examples of how they can be applied and used in different but equally valid contexts.

Verb	Definition	Example
Carry Out	To effectively utilise information, items, or equipment to achieve specific objectives, produce tangible outcomes, or enhance understanding.	The learner will be expected to comprehend the information, items, or equipment they are required to use. This involves understanding the purpose, function, and relevance of the resources. The learner must carry out tasks using the information, items, or equipment to produce specific results. This involves following procedures accurately and demonstrating the ability to use resources effectively. The learner uses the resources to address challenges and find solutions. This involves applying knowledge and skills in practical scenarios to overcome obstacles and achieve goals. The learner integrates the information, items, or equipment into their workflow or understanding. This involves combining various resources to create coherent and effective outcomes. The learner demonstrates efficiency in using the resources, minimising waste and maximising effectiveness. This involves planning, organising, and executing tasks in a streamlined manner.
Demonstrate	To undertake an activity on a system or process showing complex skills and knowledge in more than one familiar and unfamiliar area and/or contexts.	The learner will be expected to demonstrate how to use tools, equipment, applications or follow a specific process, which may be complex, requiring them to apply high level theoretical knowledge or skills in real-world scenarios to demonstrate competency and practical understanding in both familiar and unfamiliar areas and / or contexts.
Explain	Make clear a given subject matter and / or give reasons for the procedure in a given situation or regarding a given subject matter. Set out purposes or reasons to rationalise a response or action	The learner will be expected to provide clarity on the subject, outlining the procedure or procedures associated with it, and set out reasons for its importance and / or significance. The learner will be expected to demonstrate a detailed comprehension of the subject matter.
Produce	To create, generate, or fabricate items or information through appropriate processes and techniques to meet specified objectives and	The learner will be expected to comprehend the requirements and objectives for the production task. This involves understanding the specifications, desired outcomes, and quality standards. The learner

	quality standards.	plans and prepares for the production process. This includes organizing necessary resources, materials, tools, and setting up the workspace. The learner selects the appropriate materials needed for production. This involves understanding the properties of different materials and choosing the most suitable ones for the task. The learner executes the production process accurately and systematically. This involves following specified steps, using appropriate techniques, and ensuring each part of the process is completed correctly. The learner inspects the produced items or information to ensure they meet the required standards and specifications. This involves checking for accuracy, completeness, and overall quality. The learner applies creativity and innovation during the production process. This involves finding new ways to solve problems, improving processes, or adding unique features to the output. The learner documents the production process and outcomes. This includes recording the steps taken, materials used, any issues encountered, and the final results.
Resolve	To be able to find a solution to a problem or problems using specific and relevant skills and systems or procedures.	The learner will be expected to demonstrate the skills needed to resolve problems during multidisciplinary coordination meetings, as well as knowledge of the tools to resolve conflicts between the various systems and equipment. Learners should be able to proactively identify and resolve coordination issues across disciplines, avoiding expensive rework and improving collaboration.
Summarise	To provide a brief account giving the main points of a topic or range of topics.	The learner will be expected to examine a topic or set of information and condense it into a concise summary that captures the essential points, themes, or arguments, without including unnecessary details. The learner should be able to demonstrate the ability to distil complex or extensive information into its core components and present it in a clear and coherent manner focusing on the most significant aspects and omitting extraneous details.