CONSTRUCTION INDUSTRY COUNCIL
建造業議會

Construction Industry Council
BIM Certification and Accreditation Schemes

Application Guide for Certification of Building Information Modelling (BIM) Managers

1. Background

1.1 This Application Guide sets out the approach and procedures to be adopted in the processing and assessment of applications for certification of BIM Managers.

1.2 A "Roadmap for BIM Strategic Implementation in Hong Kong's Construction Industry" was prepared by the Working Group on Roadmap for BIM Implementation under the then Committee on Environment and Technology of the Construction Industry Council (CIC) in 2014. One of the key initiatives in the Roadmap was to expedite the building up of BIM capacity and capability.

1.3 In 2017, the HKSAR Government decreed that BIM technology must be used in the design and construction of all major government capital works projects with a project cost estimate of more than HK$30 million that were scheduled to start during or after 2018, and that the use of this technology in private construction projects should also be promoted. This has generated a surge in demand for BIM personnel and training needs.

1.4 To ensure that construction professionals have appropriate skill levels and competency in using BIM technology, and that the scope and quality of BIM courses provided in the market meet the needs of the industry, it was important to establish a certification body for BIM personnel and an accreditation body for BIM courses in Hong Kong.

1.5 To facilitate the healthy development of BIM in Hong Kong, CIC has introduced the BIM Certification and Accreditation Schemes to ascertain the competency of BIM personnel and the quality of local BIM training courses.

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2. Eligibility Criteria for Certification of BIM Managers

2.1 The Certification of BIM Manager is targeted at BIM practitioners who already have relevant practical experience in BIM projects[1], such as in development of BIM standards; planning, design, contract administration and execution of BIM projects in the areas of quantity surveying, construction management, project management, cost and programme management, design management and specification, and property management; BIM education; quality assurance, etc., meet the relevant academic and / or professional qualification requirements, and have completed a CIC-accredited BIM Manager Course, or a CIC-Accredited BIM Manager Top-up Course which is applicable for CIC-Certified BIM Coordinators (CCBCs).

2.2 The targeted BIM practitioners should be able to observe a high standard of professional conduct and ethical behaviour, as all CIC-Certified BIM Managers are expected to uphold the standing and reputation of the CIC and the BIM profession.

2.3 **Core Competencies of a BIM Manager**

The Core Competencies of a BIM Manager are:

(a) BIM Initiation (Ability to describe BIM concepts, definitions and scopes, BIM standards and guidelines in the Hong Kong and global contexts). [Level 2]

(b) BIM Software and Technologies (Ability to describe BIM software/platforms and their modelling and digital information development processes, and various technologies associated with BIM). [Level 2]

(c) BIM Uses and Processes (Ability to explain BIM uses, processes and BIM software/platform utilisation, and to design and manage end-to-end BIM project workflows). [Level 4]

(d) Digital Information Management, Collaboration and Integration (Ability to plan, establish and manage Common Data Environment and data quality control systems for effective digital information management, exchange and utilisation in BIM projects.). [Level 4]

(e) Commercial and Contractual Aspects (Ability to explain commercial and financial considerations, and comply with contractual issues related to BIM implementation). [Level 4]

(f) Communication Skills (Ability to apply effective interpersonal and communication skills in diverse professional settings, including presentations, meetings, reporting, training material development, etc.). [Level 4]

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[1] Practical experience in BIM should be gained from construction projects which necessitate the use of BIM and the associated deliverables are to meet certain objectives of the projects. These deliverables as products of BIM applications have to be reviewed by the responsible person(s) of the projects and adopted in the implementation of the projects to distinguish them from merely experiential experiences, i.e. without formal verification by the project team.

(g) Leadership, Management and Integrity Aspects (Ability to lead and manage subordinates for BIM implementation with professionalism, integrity and ethical behaviour upholding a high CIC standard.)

For the details of the core competencies of a CCBM, please refer to Annex A of this Application Guide.

3. Assessment Criteria

3.1 An applicant may apply for certification as a BIM Manager through the Normal Route, the Special Path for CIC-Certified BIM Coordinators (CCBCs), or the Adept Route. The applicant shall satisfy the common requirements in Section 3.2 and the route-specific criteria applicable to the selected route.

Applicants are strongly encouraged to read the "Supplementary Guide on Preparing the Application for Certification as CCBM or CCBC", available from the CIC BIM Portal, before preparing their application submission and assessment interview.

3.2 Common Requirements Applicable to All Routes

An applicant shall:

(a) demonstrate the core competencies of a BIM Manager set out in Section 2.3 and Annex A through the submitted documents and assessment interview;

(b) submit a competency statement of between 1,500 and 2,500 words, incorporated in the application form, to demonstrate practical BIM experience and English writing skills;

(c) successfully complete a CIC-accredited BIM Manager Course, or a CIC-accredited BIM Manager Top-up Course where applicable to eligible CCBCs; and

(d) demonstrate professional conduct and integrity, having regard to their professional disciplinary history, conviction records, if any, and performance at the assessment interview. An applicant who has

i. committed misconduct or neglect in any professional respect,

ii. been disqualified from the BIM Certification and Accreditation Schemes by the CIC Certification and Accreditation Board (BIMCAB) and removed from the CIC-Certified BIM Managers or CIC-Certified BIM Coordinators register,

iii. been disqualified from being registered or certified as a BIM personnel by other BIM certification body for disciplinary reasons, or

iv. been convicted of any criminal offence involving bribery, fraud, dishonesty or malfeasance, or any offence which may bring the CIC and the BIM profession into disrepute,

will not be considered for certification unless BIMCAB determines otherwise after taking into account all relevant circumstances.

3.3 Normal Route

An applicant applying through the Normal Route shall:

(a) hold either:

- a CIC-recognised professional qualification, i.e. full membership of The Hong Kong Institute of Architects (HKIA)[2], The Hong Kong Institution of Engineers (HKIE)[3] or The Hong Kong Institute of Surveyors (HKIS)[4], **OR**
- a degree accredited or recognised by a CIC-recognised professional body[2] [3] [4] in architecture, engineering, surveying, building or construction, or equivalent, as recognised by CIC, plus 5 years of relevant post-degree experience (stationed in Hong Kong for at least 6 months);

(b) have in the past 5 years gained at least 2 years of practical experience in BIM (stationed in Hong Kong for at least 6 months)

3.4 Special Path for CIC-Certified BIM Coordinators

An applicant applying through the Special Path shall:

(a) possess a degree accredited or recognised by a CIC-recognised professional body[2] [3] [4] in architecture, engineering, surveying, building or construction, or equivalent, as recognised by CIC;

(b) have at least 2 years of relevant post-degree experience and 3 years of working experience gained after obtaining CCBC certification, including at least 6 months stationed in Hong Kong; and

(c) have at least 2 years of practical BIM experience gained after obtaining CCBC certification, including at least 6 months stationed in Hong Kong.

3.5 Adept Route

An applicant applying through the Adept Route shall:

(a) hold either:

- any non CIC-recognised degree or above qualification, plus proof of at least 10 years of construction-related work experience in post of increasing responsibility, **OR**
- no degree but with proof of at least 15 years of construction-related work experience in post of increasing responsibility;

(b) have at least 6 years of practical experience in BIM management capacity (stationed in Hong Kong for at least 2 years)

[2] The Hong Kong Institute of Architects (http://www.hkia.net).

[3] The Hong Kong Institution of Engineers (https://www.hkie.org.hk).

[4] The Hong Kong Institute of Surveyors (https://www.hkis.org.hk).

(c) provide assessments from at least 2 clients[5] in support of the applicant's practical BIM management experience;

(d) be nominated by a CIC-Certified BIM Manager (CCBM), with strong reasons supporting the nomination;

(e) be supported by 4 additional persons who understand the applicant's work and who are CCBMs and/or professional members of HKIA, HKIE or HKIS practising in the construction industry. At least one supporter shall be a Fellow of HKIA, HKIE or HKIS, and at least two supporters shall be CCBMs; and

(f) demonstrate the required competencies, practical experience, professional judgement, conduct and integrity through the submitted documents and assessment interview.

3.6 Relevant Practical BIM Experience

Relevant practical BIM experience under Sections 3.3 to 3.5 may include the development of BIM standards; planning, design, contract administration and execution of BIM projects in the areas of quantity surveying, construction management, project management, cost and programme management, design management and specification, and property management; BIM education; quality assurance, etc.

4. Application Requirements and Assessment Process

4.1 Application Submission and Communication

An applicant shall submit a completed online application through "My Portal" on the CIC BIM Portal, pay the prescribed application fee, and provide the supporting documents specified below for the applicable route. CIC may request clarification, further information or additional documentary evidence where necessary to substantiate an application.

Email is the primary communication channel between CIC and the applicant. The applicant is advised to check regularly the mailbox of the email address provided in the application form.

4.2 Supporting Documents for the Normal Route

An applicant applying through the Normal Route shall submit:

[5] Client is the owner of the project. Client Side Evaluator should be the employee of the Client or third party directly employed by the Client* (e.g. main contractor, lead consultant, etc.) but not at the same organisation with the applicant. **(For applicant who is the employee of the Client, the Client Side Evaluator must be the employee of Client organisation)*. The Client Side Evaluator should be Professional (i.e. MHKIA, MHKIE, MHKIS, or above), CIC-Certified BIM Manager (CCBM), Project Manager, BIM Manager or Facility Manager of the project team and in a supervisory level but not the direct supervisor in the same company/organisation of the applicant. The template is available at bim.cic.hk

(a) certified true copies of membership certificates–related to a CIC-recognised professional qualification, i.e. full membership of HKIA, HKIE or HKIS, **OR**
certified true copies of academic qualification certificates related to a degree accredited or recognised by a CIC-recognised professional body in architecture, engineering, surveying, building or construction, or equivalent, as recognised by CIC, plus proof of 5 years of relevant post-degree experience (stationed in Hong Kong for at least 6 months);

(b) a portfolio of work examples demonstrating that the applicant has gained, within the five years immediately preceding the application, at least two years of practical BIM experience, including at least six months stationed in Hong Kong, in the areas described in Section 3.6;

(c) a completed and signed Certification of Practical Experience in BIM[6];

(d) a competency statement of between 1,500 and 2,500 words;

(e) evidence of completing a CIC-Accredited BIM Manager Course, or CIC-Accredited BIM Manager Top-up Course which is applicable for CCBCs (e.g. completion certificate); and

(f) a curriculum vitae.

4.3 Supporting Documents for the Special Path for CCBCs

An applicant applying through the Special Path shall submit:

(a) certified true copies of academic qualification certificates related to a degree accredited or recognised by a CIC-recognised professional body in architecture, engineering, surveying, building or construction, or equivalent, as recognised by CIC;

(b) proof of at least 2 years of relevant post-degree experience and 3 years of working experience gained after obtaining CCBC certification, including at least 6 months stationed in Hong Kong;

(c) a portfolio of work examples demonstrating that the applicant has gained at least two years of practical BIM experience after obtaining CCBC certification, including at least six months stationed in Hong Kong, in the areas described in Section 3.6;

(d) a completed and signed Certification of Practical Experience in BIM ;

(e) a competency statement of between 1,500 and 2,500 words;

(f) evidence of completing a CIC-Accredited BIM Manager Course, or CIC-Accredited BIM Manager Top-up Course which is applicable for CCBCs (e.g. completion certificate);

(g) evidence of CCBC certification, where required by CIC; and

[6] CIC has designed a template for Certification of Practical Experience in BIM available in the Download Page of the CIC BIM Portal.

(h) a curriculum vitae.

4.4 Supporting Documents for the Adept Route

An applicant applying through the Adept Route shall submit:

(a) certified true copies of any degree or above qualification, plus proof of at least 10 years of construction-related work experience in post of increasing responsibility,

OR

no degree but with proof of at least 15 years of construction-related work experience in post of increasing responsibility;

(b) a portfolio of work examples demonstrating that the applicant has at least six years of practical experience in a BIM management capacity, including at least two years stationed in Hong Kong, in the areas described in Section 3.6;

(c) a completed and signed Certification of Practical Experience in BIM[6];

(d) at least 2 client assessments (Refer to Section 3.5) of the applicant's practical BIM management experience using Application Form (PN01-F-01 - Adept Route) Annex B, available in the Download Page;

(e) a completed and signed nomination by a CCBM and supporting statements from 4 additional supporters (Refer to Section 3.5) using Application Form (PN01-F-01 - Adept Route) Annexes C and D, available in the Download Page;

(f) a competency statement of between 1,500 and 2,500 words;

(g) evidence of completing a CIC-accredited BIM Manager Course or, where the applicant is an eligible CCBC, the applicable CIC-accredited BIM Manager Top-up Course (e.g. completion certificate); and

(h) a curriculum vitae.

4.5 Completeness Check and Further Information

Upon receipt of an application, the Construction Digitalisation Department of CIC will check the submitted documents for completeness and may request clarification, further information or additional supporting documents. An application will be regarded as withdrawn if the applicant fails to provide the required information within three months from the date of CIC's request.

4.6 Assessment by BIMAP

The CIC BIM Assessment Panel (BIMAP) will review the submitted documents against the applicable requirements in Section 3. If the submission is considered satisfactory, BIMAP will invite the applicant to attend an assessment interview. The interview is intended to verify the applicant's submitted experience and assess whether the applicant possesses the core competencies, practical experience, professional judgement, conduct and integrity required of a BIM Manager.

4.7 Re-sitting of Interview Assessment

Where an applicant fails in only one Core Competency (CC) at the assessment interview, BIMAP may, at its discretion, offer the applicant one opportunity to re-sit the interview assessment for that failed CC.

The CIC Secretariat will notify the applicant of the re-sitting arrangements. The re-sitting interview shall normally be held within three months after the date of the previous interview.

If the applicant is unable to attend the re-sitting interview within the three-month period, the application will be disapproved unless an alternative arrangement has been agreed by the BIMCAB Secretariat.

If the applicant fails the re-sitting interview, the applicant must submit a new application for certification and will be assessed again against all applicable Core Competencies.

4.8 Recommendation and Decision

Upon completion of the assessment, including any re-sitting interview where applicable, BIMAP will make a recommendation to BIMCAB for approval or disapproval. BIMCAB will consider the recommendation and determine the application.

4.9 Indicative Processing Time

The application process generally takes approximately four to six months after CIC has received and verified all necessary documents and information required for assessment. The processing time is indicative and may vary depending on the circumstances of individual applications, including but not limited to the completeness of the submission, any clarification, supplementary information or verification required, application volume, and assessment interview scheduling.

The application process comprises the following stages:

a) verification of the submitted documents by the Construction Digitalisation Department of CIC;
b) documentary review and assessment interview by BIMAP; and
c) final decision by BIMCAB.

Applicants are advised to allow sufficient time for processing, taking into account that the actual processing time may vary.

5. Notification of Assessment Result

5.1 Upon completion of the assessment process, BIMAP will submit its recommendation to BIMCAB for consideration and decision on the application. The applicant will be notified of the assessment result by mail.

6. Payment

6.1 Fee payable

A non-refundable application fee of HK$1,000 is required for the application.

6.2 Payment Method

Applicants should pay the required application fee online or by cheque, which should be made payable to “Construction Industry Council”. All payments received are non-refundable, non-endorsable and non-transferable.

7. Certification Validity

7.1 The certification status of a BIM Manager shall be valid from the date of granting the certification status up to the end of that calendar year, and the names of the CIC-Certified BIM Managers will be placed on the CIC-Certified BIM Manager Register.

7.2 Renewal of Registration

The Construction Digitalisation Department of CIC will send a renewal reminder to the CIC-Certified BIM Managers on a yearly basis at least 3 months prior to the date of expiry of their existing certification.

The CIC-Certified BIM Managers should submit the following to the Construction Digitalisation Department of CIC for renewal at least 1 month prior to the date of expiry of the existing registration:

(a) online renewal application through “My Portal” in CIC BIM Portal (www.bim.cic.hk), confirming that they have undertaken at least 12 hours of BIM-related Continuing Professional Development (CPD) in the past year including the number of CPD hours on mandatory key topics as stipulated by CIC from time to time, and associated documents if applicable; and

(b) renewal fee (HK$500).

7.3 The CIC-Certified BIM Managers should keep records of the BIM-related CPD and mandatory key topics undertaken during the year (including attendance at any CIC-recognised courses, conferences or seminars, documented self-study (maximum 3 CPD hours), etc.). They may be requested to provide evidence of the BIM-related CPD and mandatory key topics completed in the past 3 years, without which the renewal application may not be considered.

The Construction Digitalisation Department of CIC will process the renewal application and, for a successful application, update the new registration period accordingly. Where necessary, the application may be referred to BIMAP for further assessment, and BIMAP will make a recommendation to BIMCAB for final decision.

7.4 There would be a remark column indicating “Expired” status in the CIC-Certified BIM Manager Register three months after expiry of their existing certification, if they fail to return the signed renewal application form and associated documents, together with the renewal fee, by that time. The use of the CCBM title and logo would be prohibited after the date of expiry of their certification.

8. Application for Reinstatement

8.1 A person whose CIC-Certified BIM Manager status has expired may, within two years after the date of expiry of the last certification, apply for reinstatement. An application for reinstatement shall be submitted through “My Portal” in accordance with the renewal procedure in Section 7.2. The applicant shall pay any outstanding subscription arising since the expiry date and submit any supporting documents requested by CIC.

8.2 A person whose last CIC-Certified BIM Manager certification expired more than two years ago shall submit a fresh application for certification as a BIM Manager in accordance with the procedure in Section 4.

9. Appeal Cases

9.1 An applicant for certification as a BIM Manager, including renewal/ reinstatement of registration, who is dissatisfied with a decision of BIMCAB may appeal to the CIC BIM Appeal Board (BIMAB). An applicant exercising the right of appeal should submit the following to the Construction Digitalisation Department of CIC, no later than 21 calendar days after receiving notification of the decision of BIMCAB:

(a) a completed application form for appeal (Form PN01-F-03); and

(b) an application fee (HK$1,500).

9.2 Upon receipt of an appeal case, BIMAB will review the case upon receipt of all necessary documentation about the case. BIMAB’s decision is final. BIMAB will inform BIMCAB of its decision. The application fee will be refunded to the applicant if the appeal is found to be valid.

9.3 Applicants will be notified of the appeal result by mail.

10. Prevention of Bribery Reminder

10.1 The CIC is a scheduled public body under the Prevention of Bribery Ordinance (POBO) (Cap. 201) and prohibits its employees, members and appointed BIMCAS assessors from soliciting or accepting advantages from the applicants when processing applications of BIMCAS. Applicants are reminded that it is an offence under POBO to offer any advantages (e.g. money, gift, etc.) to an employee or a member of CIC or an appointed BIMCAS assessor as an inducement to or a reward for facilitating or expediting the processing of applications.

11. Enquiry

Construction Digitalisation Department - Construction Industry Council
38/F, COS Centre
56 Tsun Yip Street
Kwun Tong, Kowloon
Tel : 2100 9000
Email : bimcas@cic.hk

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Annex A

Detailed Core Competencies of a CIC-Certified BIM Manager

Minimum Level of Competency:

Level 1(L1): Demonstrate a general appreciation of the subject and how it may affect, or integrate with other subjects.
Level 2 (L2): Possess knowledge and understanding of the subject and be competent to describe its applications and procedures.
Level 3 (L3): Able to perform the subject independently or with minimal supervision.
Level 4 (L4): Ability to lead and execute the subject without supervision and competently advise and mentor others.

	Detailed Core Competencies		Level of Competency
1. BIM Initiation	*1.1. – BIM Concept*		
	1.1.1	BIM definitions and terminology	L2
	1.1.2	Difference between CAD (2D/3D) and BIM	L2
	1.1.3	BIM in the context of whole life cycle of a built asset and smart city	L2
	1.1.4	Value and benefits of adopting BIM in the whole life cycle of a built asset	L2
	1.1.5	Collaborative working in BIM	L2
	1.1.6	Limitation of BIM	L2
	1.1.7	How BIM can affect the AECO practice and address the current challenges	L2
	1.2. – Local, Mainland & Global BIM development and standards		
	1.2.1	Local BIM standards, publications and available resources	L2
		1.2.1.1 CIC BIM standards and other related publications and resources	L2
		1.2.1.2 Government BIM & BIM-AM related technical circulars, standards, guidelines and publications	L2
	1.2.2	BIM development in Mainland and global context	L1
	1.2.3	Mainland and international BIM standards, publications and initiatives	L2
		1.2.3.1 Mainland BIM standards GB/T series	L1
		1.2.3.2 ISO 19650 series	L2
		1.2.3.3 openBIM and other collaborative formats	L2

	Detailed Core Competencies		Level of Competency
2. BIM Software and Technologies	*2.1. – BIM Software and Platforms*		
	2.1.1	Common BIM software and platforms for various trades	L2
	2.1.2	Key characteristics, file format & version, strength and limitation of common BIM software and platforms	L2
	2.1.3	Interoperability across common BIM software and platforms	L2
	2.2. – Technologies and Construction Related Applications		
	2.2.1	Internet & cloud	L1
	2.2.2	Laser scanning & photogrammetry	L2
	2.2.3	Unmanned Aircraft System (UAS) / Drone	L2
	2.2.4	Geographic Information System (GIS)	L2
	2.2.5	Common Spatial Data Infrastructure (CSDI), 3D Digital Map and 3D Photo-realistic Model by the HKSAR	L1
	2.2.6	Internet of Things (IoT), Radio Frequency Identification (RFID), mobile or smart devices	L2
	2.2.7	Virtual reality (VR), Augmented Reality (AR) and Mixed Reality (MR)	L2
	2.2.8	Digital Twin	L2
	2.2.9	Robotics	L1
	2.2.10	Programming, automation and API	L1
	2.2.11	MiC, MiMEP and DfMA	L2
	2.2.12	Indoor positioning	L1
	2.2.13	Artificial Intelligence (AI), Machine Learning and Large Language Model (LLM)	L1
	2.2.14	Smart Site Safety System (4S) and Digital Works Supervision System (DWSS)	L1

	Detailed Core Competencies		Level of Competency
3. BIM Uses and Processes	*3.1. – BIM Organisational Strategy and Requirements*		
	3.1.1	Overview of BIM strategy, uses and organisation	L2
	3.1.2	Key personnel in relation to BIM and their roles and responsibilities	L2
	3.1.3	Establish and lead the development of the BIM Requirements at the organisational level	L4
		3.1.3.1 Organisational Information Requirements (OIR)	
		3.1.3.2 Asset Information Requirements (AIR)	
		3.1.3.3 Security Information Requirements (SIR)	
	3.1.4	Develop and lead the implementation of the CDE strategy at the organisational level	L4
	3.1.5	Establish and manage the strategies for integrating BIM with broader construction digitalisation technologies at the organisational level (e.g. GIS, Digital Twin, 4S, etc)	L4
	3.1.6	Case study	L2
	3.2. – Project Planning Stage		
	3.2.1	Define and establish the Appointing Party BIM Requirements and the Project Information Requirements (PIR) at the project level	L4
	3.2.2	Develop and manage the Exchange Information Requirements (EIR)	L4
	3.2.3	Determine and lead the integration of technologies and system requirements at the project level (e.g. BIM software, platforms, CDE, etc.)	L4
	3.2.4	Develop and oversee project delivery requirements and appropriate BIM Uses at the project level	L4
	3.2.5	Develop and manage the Level of Information Need (LOIN) to be adopted at the project level	L4
	3.2.6	Establish and manage the BIM & information standards, methods and procedures at the project level	L4
	3.2.7	Coordinate and manage the shared resources with the Lead Consultant / Lead Contractor at the project level	L4
	3.2.8	Assess and validate the capability and capacity of the delivery team	L4
	3.2.9	Case study	L2
	3.3. – Project Design Stage		
	3.3.1	Develop and lead the Pre-appointment and Post-appointment BIM Implementation Plan (BIM IP)	L4
	3.3.2	Develop and lead the Pre-appointment and Post-appointment BIM Execution Plan (BEP)	L4
	3.3.3	Define and manage the Information Management Assignment Matrix	L4
	3.3.4	Establish and manage the detailed modelling methodology and requirements	L4

3.3.5	Manage the production and delivery of the BIM Uses in the planning and design stages	L4
3.3.6	Lead and report in BIM-related meetings and documentations	L4
3.3.7	Case Study	L2
3.4. – Project Construction & Handover Stage		
3.4.1	Develop and lead the Pre-appointment and Post-appointment BIM Implementation Plan (BIM IP)	L4
3.4.2	Develop and lead the Pre-appointment and Post-appointment BIM Execution Plan (BEP)	L4
3.4.3	Define and manage the Information Management Assignment Matrix	L4
3.4.4	Establish and manage the detailed modelling methodology and requirements	L4
3.4.5	Manage the production and delivery of the BIM Uses in the construction and handover stages	L4
3.4.6	Lead and report in BIM-related meetings and documentations	L4
3.4.7	Case Study	L2
3.5. – Building/Asset Operation & Maintenance Stage		
3.5.1	Technologies for BIM asset management and integration with the building / asset management system	L2
3.5.2	Manage the production and delivery of the Asset Information Model (AIM) and associated data for operation and maintenance (O&M) stage	L4
3.5.3	Manage the information exchange from the AIM to the building / asset management system	L4
3.5.4	Maintain and update the Asset Information Model (AIM) throughout the O&M stage	L4
3.5.5	Lead and coordinate BIM-based asset management with asset management, facility management, and operation teams	L4
3.5.6	Case Study	L2

	Detailed Core Competencies		Level of Competency
4. Digital Information Management, Collaboration and Integration	*4.1. – Digital Information Management*		
	4.1.1	Plan and manage the information management workflow for various work stages	L4
	4.1.2	Plan and manage the BIM information and model exchange for multi-disciplinary collaboration	L4
	4.1.3	Define and manage the details of the Level of Information Need (LOIN) in terms of graphical, non-graphical, and documentation requirements for various work stages	L4
	4.1.4	Plan and manage the integration, archiving, and handover of BIM model and associated data across the work stages	L4
	4.1.5	Establish and maintain various BIM related coding systems and classifications for various work stages	L4
	4.1.6	Plan and manage the process of information exchange across various open / proprietary file formats (e.g. BCF, IFC, IDM, bsDD, COBie, MVD, IDS, etc.)	L4
	4.2. – Common Data Environment (CDE)		
	4.2.1	CDE and the workflow as per ISO 19650	L2
	4.2.2	Common CDE solutions in the market	L2
	4.2.3	Establish and manage a CDE	L4
	4.2.4	Assess and select an appropriate CDE based on project requirements	L4
	4.2.5	Lead and manage the information exchange process of CDE	L4
	4.2.6	Limitation of CDE	L2
	4.3 – Data Quality Assurance & Audit across various work stages		
	4.3.1	Plan and develop the BIM quality assurance and audit processes, methodologies and checking systems for various work stages	L4
	4.3.2	Manage the production of BIM quality assurance, audit and model checking for various work stages	L4
	4.3.3	Define and oversee the production of BIM quality assurance and audit reporting for various work stages	L4

	Detailed Core Competencies		Level of Competency
5. Commercial and Contract	*5.1. – Commercial Issues*		
	5.1.1	Foster BIM literacy across organisation and stakeholders	L4
	5.1.2	Define and manage the requirements of hardware, software and IT infrastructure for BIM	L4
	5.1.3	Lead the human resource management, competency and training for BIM	L4
	5.1.4	Lead the procurement and supply chain management for BIM	L4
	5.1.5	Establish and oversee risk management strategies for BIM implementation.	L4
	5.2. – Contractual and Liabilities Issues		
	5.2.1	Understand the potential risks associated with model sharing, data accuracy and reliance on digital deliverables	L2
	5.2.2	Describe the contractual provisions related to BIM, such as roles and responsibilities, ownership of models, intellectual property rights, and protocols for data exchange etc.	L2
	5.2.3	Understand how BEPs, information requirements and standards integrate with contractual frameworks to define deliverables and the rights and liabilities of the parties involved	L2