



Victorian
Registration &
Qualifications
Authority

**22654VIC Course in Building Information
Modelling (BIM)
and
22655VIC Advanced Diploma of Building
Information Modelling (BIM)**

Version 1

**This course has been accredited under Part 4.4 of the
*Education and Training Reform Act 2006.***

**Accredited for the period: 1 March 2024 to 28 February
2029**



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Section A – Copyright and course classification information

1. Copyright owner of the course	Department of Jobs, Skills, Industry and Regions © State of Victoria 2024
2. Address	<p>Executive Director:</p> <p>Higher Education and Workforce Skills and Employment Department of Jobs, Skills, Industry and Regions (DJSIR) GPO Box 4509 Melbourne Vic 3001</p> <p>Organisational Contact:</p> <p>Manager, Training and Learning Products Unit Higher Education and Workforce Skills and Employment Department of Jobs, Skills, Industry and Regions (DJSIR) Telephone: 131823 Email: course.enquiry@djsir.vic.gov.au</p> <p>Day-to-day contact:</p> <p>Curriculum Maintenance Manager (CMM), Building Industries Holmesglen Institute PO Box 42 Holmesglen VIC 3148 Telephone: (03) 9564 1987 Email: teresa.signorello@holmesglen.edu.au</p>
3. Type of submission	<p>This submission is for the re-accreditation of the:</p> <ul style="list-style-type: none"> • 22508VIC Course in Building Information Modelling (BIM) • 22507VIC Advanced Diploma of Building Information Modelling (BIM).
4. Copyright acknowledgement	<p>The following units of competency:</p> <ul style="list-style-type: none"> • BSBPMG426 Apply project risk management techniques • BSBTEC403 Apply digital solutions to work processes <p>have been imported from the BSB Business Services Training Package administered by the Commonwealth of Australia.</p> <p>The following units of competency:</p> <ul style="list-style-type: none"> • CPCBIM4002 Use BIM processes to carry out construction work • CPCBIM4001 Plan to comply with BIM requirements for construction work • CPCBIM4003 Contribute to BIM deliverables for construction work <p>have been imported from the CPC Construction, Plumbing and Services</p>



	<p>Training Package administered by the Commonwealth of Australia.</p> <p>The following units of competency:</p> <ul style="list-style-type: none"> • CPPBDN4110 Set up BIM capable software and files for building design drafting projects • CPPSCM3020 Source and extract information from strata plans • CPPSCM4040 Develop and monitor maintenance strategies that contribute to asset life cycle <p>have been imported from the CPP Property Services Training Package administered by the Commonwealth of Australia.</p> <p>The following unit of competency:</p> <ul style="list-style-type: none"> • MEM29012 Access and use a digital twin for operational purposes <p>has been imported from the MEM Manufacturing and Engineering Training Package administered by the Commonwealth of Australia. © Commonwealth of Australia</p> <p>The following unit of competency:</p> <ul style="list-style-type: none"> • VU23584 Use mixed or blended reality technologies • VU23585 Use building information modelling (BIM) technologies for a project <p>have been imported from the 22635VIC Diploma of Project Management for Prefabricated Building Systems (Timber). Copyright of this material is reserved to the Crown in the right of the State of Victoria. © State of Victoria (Department of Jobs, Skills, Industry and Regions 2024). This work is licensed under a Creative Commons Attribution-No Derivatives 4.0 International licence (see Creative Commons for more information).</p>
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	<p>GPO Box 4509 Melbourne Vic 3001 Email: course.enquiry@djsir.vic.gov.au</p> <p>Copies of this publication can be downloaded free of charge from the Department website.</p>
6. Course accrediting body	Victorian Registration and Qualifications Authority
7. AVETMISS information	<p>ANZSCO code – 312199 Architectural, Building and Surveying Technicians nec</p> <p>ASCED Code – 0403 Building</p> <p>National course code: 22654VIC 22655VIC</p>
8. Period of accreditation	1 March 2024 – 28 February 2029



Section B – Course information

1. Nomenclature	Standard 4.1 and 5.8 AQTF 2021 Standards for Accredited Courses
1.1 Name of the qualification	Course in Building Information Modelling (BIM) Advanced Diploma of Building Information Modelling (BIM)
1.2 Nominal duration of the course	Course in Building Information Modelling (BIM) – 130 – 195 hours Advanced Diploma of Building Information Modelling (BIM) – 540-580 hours
2. Vocational or educational outcomes	Standard 5.1 AQTF 2021 Standards for Accredited Courses
2.1 Outcome(s) of the course	<p>Course in Building Information Modelling (BIM)</p> <p>The Course in Building Information Modelling (BIM) is designed to provide participants with the skill and knowledge required to:</p> <ul style="list-style-type: none"> • integrate digital technologies into common work practices • access and use a digital twin for operational purposes. <p>Graduates of the Course in Building Information Modelling (BIM) aims to enhance their capability as practitioners within the construction or property services sectors. Vocations most suited for skill extension by the course include:</p> <ul style="list-style-type: none"> • construction contractors • service installation contractors • building facilities managers. <p>Advanced Diploma of Building Information Modelling (BIM)</p> <p>The Advanced Diploma of Building Information Modelling (BIM) is designed to provide participants with the skills and knowledge required to manage the detailed activity of a building construction or engineering project using BIM compatible software that includes:</p> <ul style="list-style-type: none"> • BIM workflow processes, from planning, coordination, integration, commissioning, to handover • project cost control processes, including analysis of data for the life cycle of the construction • the application of environmental sustainability in BIM projects • the application of BIM digital fabrication. <p>Graduates of the Advanced Diploma of Building Information Modelling (BIM) will be able to be employed as building construction/engineering managers/project managers responsible for construction projects using BIM compatible software. Specific job titles may include BIM Modeler, BIM Coordinator and BIM Manager.</p>

<p>2.2 Course description</p>	<p>Course in Building Information Modelling (BIM)</p> <p>The Course in Building Information Modelling (BIM) provides an accredited training program to enhance the capability of contractors and facility managers working within the construction or property services sectors. On completion of the course, it will provide graduates with the skills and knowledge required to apply digital technologies to work practices during the construction phase, or post construction for management of the asset life cycle.</p> <p>Advanced Diploma of Building Information Modelling (BIM)</p> <p>The Advanced Diploma of Building Information Modelling (BIM) course provides an accredited training program and vocational outcomes for graduates at paraprofessional level. On completion of the course, it will provide graduates with the skills and knowledge required to manage the detailed activity of a building construction or engineering project using BIM compatible software to achieve optimisation of the project workflow from start to completion.</p>
<p>3. Development of the course</p>	<p>Standards 4.1, 5.1, 5.2, 5.3 and 5.4 AQTF 2021 Standards for Accredited Courses</p>
<p>3.1 Industry, education, legislative, enterprise or community needs</p>	<p>Building Information Modelling (BIM), as a technology and a process¹, introduces improved efficiencies to the design, construction and operation of a building, through increased information accuracy and integration. In practical terms, this means efficient building designs can be developed, accurate material projections to complete the project can be made, and the number of deliveries to the construction site and the amount of leftover material that could end up in landfill, can be reduced². It allows architects, engineers, real estate developers, contractors, manufacturers, facilities managers and construction professionals to plan, design, build and reference a structure within one 3D model. Therefore, it has a number of different uses for different cohorts along the supply chain, from drafters and engineers for structural drawings, contractors for construction efficiency to facilities managers for asset data management.</p> <p>The scope of BIM application is vast given the size of the construction industry; it is the third-largest industry in Australia for the number of people it employs and its share in Gross Domestic Product (GDP). It generates over \$360 billion in revenue, producing around 9% of GDP³. It consists of a few large construction companies such as Lendlease Ltd</p>

¹ [Building Information Modeling \(BIM\): Now and Beyond, Australasian Journal of Construction Economics and Building ,p.1](#)

² [https://www.geoweeknews.com/news/how-bim-can-help-meet-sustainable-building-goals#:~:text=BIM%20enables%20architects%20to%20make,Environmental%20Design%20\(LEED\)%20certification.](https://www.geoweeknews.com/news/how-bim-can-help-meet-sustainable-building-goals#:~:text=BIM%20enables%20architects%20to%20make,Environmental%20Design%20(LEED)%20certification.)

³ [Construction Industry in Australia - Market Statistics & Overview \(mordorintelligence.com\)](#)



and CIMIC Group Ltd, and is largely comprised of small to medium sized businesses⁴. In comparison to other industries, construction is one of the least ‘digitally engaged’ industry sectors. As BIM is projected to completely replace current computer-aided design (CAD) systems in the future,⁵ BIM processes and technology are expected to impinge on job roles throughout the construction industry, especially at the technical (applied), managerial and strategic levels.

While converging technologies, such as smartphone and tablet technologies have had uptake and enable project workers and stakeholders to quickly access building information, key competencies in BIM awareness need to be further developed⁶. Effective interaction with BIM systems by chains of subcontractors requires awareness, familiarity and experience interacting with BIM processes and technology. Those without BIM awareness are likely to be locked out of supply chains.

State and Federal governments acknowledge that BIM is the global building industry standard and have issued a series of long term plans to increase the implementation of BIM in Australia. In March 2016 the Australian Government’s Standing Committee on Infrastructure, Transport and Cities proposed to make BIM compulsory on government-funded infrastructure projects exceeding \$50million in costs⁷. The NSW Government also mandated the use of BIM for the Sydney Metro Northwest project⁸, previously known as the North West Rail Link, which is an \$8.3billion project. In late 2018, the QLD government mandated that all major government construction projects with an estimated capital cost of \$50 million or more would be required to use BIM.⁹ and Victoria requires BIM as part of the state’s competitive tendering criteria for interstate and overseas projects¹⁰. The adoption of BIM over time will prove a competitive advantage for those businesses that implement methodologies sought after by government procurement contracts.

Jobs and Skills Australia produces employment projections to show where likely future job opportunities may be in the broad economy. Data for the five years from November 2021 to November 2026 shows employment growth for Architectural, Building & Surveying Technicians workers:

- is expected to grow strongly

⁴ ibid

⁵ [Building Information Modeling \(BIM\): Now and Beyond, Australasian Journal of Construction Economics and Building, p.25](#)

⁶ Hosseini, M.R., et.al., (2016). *BIM Adoption Within Australian Small and Medium-sized Enterprises (SME's): an innovation diffusion model*, p.4

⁷ House of Representatives Standing Committee on Infrastructure, Transport and Cities (2016), *Smart ICT Report of the inquiry into the role of smart ICT in the design and planning of infrastructure*. Commonwealth of Australia, p.Xiii.

⁸ Sardari, S., (4 Jan 2017). *New South Wales Government mandate BIM on Sydney Metro Northwest project*. LinkedIn.

⁹ [Queensland Government, Building Information Modelling \(BIM\)](#)

¹⁰ Victorian State Government. (2016). *The Construction Technologies Sector Strategy: Victoria's Future Industries*, p.19

- increase by 11.9%
- is likely to reach 82,200 by 2026.

And, over this period, the number of construction managers:

- is expected to grow strongly
- increase by 10.2%
- is likely to reach 123,300 by 2026¹¹.

These vocations are highly impacted by BIM technology. Forecast growth in their employment sectors evidences an expectation of increased building activity and an adoption of contemporary BIM skill and knowledge. Skills training in BIM is required to increase workforce capability to support industry efficiencies.

The Victorian Department of Jobs, Skills, Industry and Regions, as copyright holder for the Victorian Crown Copyright accredited courses, supports technological advancement and adoption of contemporary BIM skill and knowledge into industry practice, and has therefore determined there is a continuing need for the Course in Building Information Modelling (BIM) and the Advanced Diploma of Building Information Modelling (BIM).

There is one Victorian RTO (Box Hill Institute) registered to deliver both the Course in, and the Advanced Diploma of Building Information Modelling (BIM).

Following is the enrolment data for the currently accredited 22508VIC Course in Building Information Modelling (BIM):

Victorian Enrolments	2019	2020	2021	2022	2023
Govt sub	0	0	4	1	0
FFS	1	18	0	0	0
Total	1	18	4	1	0

Enrolments peaked in 2020 with 18 students and declined dramatically thereafter. According to course administrators, this is attributed partly to a lack of course marketing and ambiguity regarding the intended cohort.

Following is the enrolment data of the currently accredited 22507VIC Advanced Diploma of Building Information Modelling (BIM):

Victorian	2019	2020	2021	2022	2023

¹¹ [employment-outlook-industry-and-occupation-trends.pdf \(labourmarketinsights.gov.au\)](https://labourmarketinsights.gov.au),p.15



Enrolments					
Govt sub	39	37	0	0	0
FFS	0	0	14	9	0
Total	39	37	14	9	0

Enrolment has trended downwards since 2019. According to course administrators, this is attributed partly to a lack of course marketing and ambiguity regarding the intended cohort. Industry is confident that address of these factors will positively impact uptake of both courses into the future.

The target group for the Course in Building Information Modelling (BIM) are contractors involved in the construction of residential, commercial and civil structures, contractors responsible for the installation of building services and facilities managers responsible for the operation and maintenance of buildings, post construction.

The target group for the Advanced Diploma of Building Information Modelling (BIM) are building practitioners, such as architects, engineers, real estate developers, contractors, manufacturers, and other construction professionals, who want to expand their skills and knowledge in applying BIM technology for construction projects.

The project for the redevelopment of the Course in Building Information Modelling (BIM) and the Advanced Diploma of Building Information Modelling (BIM) was overseen by a project steering committee comprising of the following industry and RTO representatives:

Rachel Strauss (Chair)	Bimco
Will Joske	BIM Academy/Digital Victoria Department of Transport & Planning
Dave Philpott	Buchan Group
Daniel Rhodes	Billard Leece Partnership
Shannon Thomas	AMCA Australia (Air Conditioning and Mechanical Contractors Association of Australia).
Anagha Karandikar	Advanced Construction Technology, Swinburne University of Technology
Mark Newhook	Advanced Building Design, Box Hill Institute
In attendance	
Teresa Signorello	CMM Building Industries



	<p>Susan Fechner CMM Building Industries.</p> <p>As well as face-to-face and email consultations, the members of the project steering committee met formally on three occasions to review and confirm the required skills and knowledge outcomes of the course, course structure and final accreditation submission.</p> <p>The courses:</p> <ul style="list-style-type: none"> • do not duplicate, by title or coverage, the outcomes of an endorsed training package qualification • are not a subset of a single training package qualification that could be recognised through one or more statements of attainment or a skill set • do not include units of competency additional to those in a training package qualification that could be recognised through statements of attainment in addition to the qualification • do not comprise units that duplicate units of competency of a training package qualification.
<p>3.2 Review for re-accreditation</p>	<p>The courses were allocated to the CMM Building Industries portfolio in late 2022. An evaluation of the accredited courses was undertaken as part of the reaccreditation process to determine the relevance and currency of their outcomes to industry since initial accreditation in March 2019. Course enrolment data was considered for analysis. Enrolments into the Course in Building Information Modelling (BIM) have been negligible since its initial pilot. Enrolments into the Advanced Diploma of Building Information Modelling (BIM) averaged 38 enrolments in the first two years and declined thereafter. Despite the lack of uptake in recent years, industry continues to affirm course need. Course cohorts and structures were the focus of the review to ensure alignment of course outcomes to industry need. This resulted in refining the composition of the cohort group for each course and changes to both course structures. This included:</p> <ul style="list-style-type: none"> • updating all enterprise units to reflect the revised Standards for Accredited Courses unit template • inclusion of current versions of endorsed units of competency where they have been updated • inclusion of current versions of units of competency from accredited courses • deletion of units considered not appropriate or aligned to the course outcome • inclusion of newly imported units of competency that reflect the contemporary skill and knowledge needs of the vocational outcomes. <p>Transition arrangements</p> <p>Course in Building Information Modelling (BIM)</p> <p>The course 22654VIC Course in Building Information Modelling (BIM)</p>

supersedes and is not equivalent to 22508VIC Course in Building Information Modelling (BIM).

The following table shows the unit mapping against 22654VIC and 22508VIC to indicate its relationship regarding equivalence status.

22654VIC Course in Building Information Modelling (BIM)	22508VIC Course in Building Information Modelling (BIM)	Relationship
VU23585 Use building information modelling (BIM) technologies for a project	VU22678 Use building information modelling (BIM) technologies for a project	Equivalent
MEM29012 Access and use a digital twin for operational purposes		Newly imported
BSBTEC403 Apply digital solutions to work processes		Newly imported
CPCBIM4002 Use BIM processes to carry out construction work		Newly imported
CPCBIM4001 Plan to comply with BIM requirements for construction work		Newly imported
CPCBIM4003 Contribute to BIM deliverables for construction work		Newly imported
CPPSCM3020 Source and extract information from strata plans		Newly imported
CPPSCM4040 Develop and monitor maintenance strategies that contribute to asset		Newly imported

life cycle		
	VU22708 Manage projects using building information modelling (BIM) technology	Deleted
	VU22709 Apply benefits of building information modelling (BIM) for a project	Deleted
	VU22710 Apply sustainable design principles and practices for BIM projects	Deleted
	VU22679 Use mixed or blended reality technologies	Deleted
	VU22711 Utilise digital fabrication technology for BIM	Deleted
	VU22460 Design sustainable buildings	Deleted
	VU22456 Apply structural and construction technology to the design of commercial buildings	Deleted
	CPPBDN4004 Set up BIM capable software and files for building design drafting projects	Deleted

Advanced Diploma of Building Information Modelling (BIM)

The 22655VIC Advanced Diploma of Building Information Modelling (BIM) supersedes and is equivalent to 22507VIC Advanced Diploma of Building Information Modelling (BIM).

The following table identifies the relationship between the current and previous units.

22655VIC Advanced Diploma of Building Information Modelling (BIM)	22507VIC Advanced Diploma of Building Information Modelling (BIM)	Relationship
BSBPMG426 Apply project risk management techniques	BSBPMG415 Apply project risk management techniques	Equivalent
CPPBDN4110 Set up BIM capable software and files for building design drafting projects	CPPBDN4004 Set up BIM capable software and files for building design drafting projects	Equivalent
	CPPBDN5013A Develop and collaborate on building design models for small-scale building design projects	Deleted
	VU22456 Apply structural and construction technology to the design of commercial buildings	Deleted
	VU22460 Design sustainable buildings	Deleted
	VU22465 Provide design solutions for residential and commercial buildings	Deleted
VU23585 Use building information modelling (BIM) technologies for a project	VU22678 Use building information modelling (BIM) technologies for a project	Equivalent
VU23584 Use mixed or blended reality technologies	VU22679 Use mixed or blended reality technologies	Equivalent
VU23613 Manage	VU22708 Manage	Equivalent

	projects using building information modelling (BIM) technology	projects using building information modelling (BIM) technology	
	VU23616 Apply building information modelling (BIM) technology to optimise building project efficiency	VU22709 Apply benefits of building information modelling (BIM) for a project	Equivalent
	VU23614 Apply sustainability principles and practices for building information modelling (BIM) projects	VU22710 Apply sustainable design principles and practices for BIM projects	Equivalent
	VU23617 Utilise digital fabrication technology for building information modelling (BIM)	VU22711 Utilise digital fabrication technology for BIM	Equivalent
	VU23611 Manage building information modelling (BIM) contracts	VU22713 Manage building information modelling (BIM) contracts	Equivalent
	VU23612 Manage cost control, planning, analysis and control processes	VU22714 Manage cost control, planning, analysis and control processes	Equivalent
	VU23615 Manage project performance using building information modelling (BIM) technology	VU22715 Apply building information modelling (BIM) technology to validate project performance	Equivalent

4. Course outcomes	Standards 5.5, 5.6 and 5.7 AQTF 2021 Standards for Accredited Courses
4.1 Qualification level	<p>Course in Building Information Modelling (BIM)</p> <p>The Course in Building Information Modelling (BIM) will meet an identified industry need, but does not have the breadth, depth or volume of learning of a qualification.</p>



Advanced Diploma of Building Information Modelling (BIM)

The outcomes of the Advanced Diploma of Building Information Modelling (BIM) comply with the criteria of the AQF Advanced Diploma qualification type descriptor.

Graduates of the Advanced Diploma of Building Information Modelling (BIM) will have specialised and integrated technical and theoretical knowledge with depth within BIM, including:

- demonstrating an understanding of all building cycles
- employing a range of applications required in construction workflows
- applying the principles and practices of sustainable BIM managed projects.

Graduates of the Advanced Diploma of Building Information Modelling (BIM) will have a wide range of cognitive and communication skills, and specialised technical, creative or conceptual skills to select and apply methods and technologies to:

- identify, analyse, synthesise, and act on information from a range of sources, such as building contracts and BIM software specifications
- transfer specialised skills and knowledge to others, including construction team members and stakeholders
- formulate responses to complex problems to produce efficient and compliant outcomes
- express ideas and perspectives to promote shared understandings of project scope, outcomes, timeline and roles and responsibilities.

Graduates of the Advanced Diploma of Building Information Modelling (BIM) will demonstrate the application of skills and knowledge:

- with depth in areas of specialisation, in contexts subject to change. For example, in determining functionality and evaluation of relevant software for particular stages of the project development.
- with initiative and judgement in planning, design, technical or management functions with some direction. For example, applying BIM compatible software in the design, management and review of building project from start to completion.
- to adapt a range of fundamental principles and complex techniques to known and unknown situations. For example, in determining the strengths and limitations of some BIM contract designs, their implementation and contingency management.
- across a broad range of technical or management functions with accountability for personal outputs and personal and team outcomes within broad parameters. For example, managing complex projects using BIM technologies and processes in overseeing the construction of buildings and clash planning.

Volume of learning

The volume of learning for this qualification is between 1.5 – 2 years which is consistent with the AQF Volume of Learning requirement for an

	<p>Advanced Diploma. The course and incorporates structured training delivery and assessment and unstructured learning activities undertaken by the learner. The hours for unstructured learning activities is suggested to be at a minimum of 1000 hours and may include:</p> <ul style="list-style-type: none"> • research • assignments • self-study to revise areas of knowledge and practice skills.
4.2 Foundation skills	Foundation skills applicable to the outcomes of this course are identified in the performance criteria or within the Foundation Skills section of the units of competency where not explicit in the performance criteria.
4.3 Recognition given to the course (if applicable)	Not applicable.
4.4 Licensing/regulatory requirements (if applicable)	<p>There are no licensing or regulatory requirements for these courses, however completion of the general construction induction training program is required by anyone carrying out construction work on a construction site. Achievement of the unit CPCWHS1001 Prepare to work safely in the construction industry or its successor, meets this requirement.</p> <p>For information visit WorkSafe website:</p> <p>https://www.worksafe.vic.gov.au/construction-induction-training-white-card</p>

5. Course rules	Standards 5.8 and 5.9 AQTF 2021 Standards for Accredited Courses
5.1 Course structure	<p>Course in Building Information Modelling (BIM)</p> <p>To be awarded the 22654VIC Course in Building Information Modelling (BIM), learners must successfully complete a total of 4 units of competency, comprising:</p> <ul style="list-style-type: none"> • 2 core units • 2 elective units to be selected from the elective units listed below. <p>Where the full course is not completed, a VET Statement of Attainment will be issued for each unit successfully completed.</p>

Course in Building Information Modelling (BIM)

Unit of competency code	Unit of competency title	Field of Education code (six-digit)	Pre-requisite	Nominal hours
Core units				
BSBTEC403	Apply digital solutions to work processes	080399	Nil	50
MEM29012	Access and use a digital twin for operational purposes	030101	Nil	50
Elective units				
CPCBIM4001	Plan to comply with BIM requirements for construction work	040305	Nil	25
CPCBIM4002	Use BIM processes to carry out construction work	040305	Nil	35
CPCBIM4003	Contribute to BIM deliverables for construction work	040305	Nil	20
VU23585	Use building information modelling (BIM) technologies for a project	080905	Nil	60
CPPSCM3020	Source and extract information from strata plans	080503	Nil	10
CPPSCM4040	Develop and monitor maintenance strategies that contribute to asset life cycle	080503	Nil	20



Total nominal hours**130-195****Advanced Diploma of Building Information Modelling (BIM)**

To achieve the qualification 22655VIC Advanced Diploma of Building Information Modelling (BIM), learners must successfully complete a total of 8 units of competency, comprising:

- 6 core units
- 2 elective units to be selected from the elective units listed below.

Where the full qualification is not completed, a VET Statement of Attainment will be issued for each unit successfully completed.

Advanced Diploma of Building Information Modelling (BIM)

Unit of competency code	Unit of competency title	Field of Education code (six-digit)	Pre-requisite	Nominal hours
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Core units

VU23585	Use building information modelling (BIM) technologies for a project	040301	Nil	60
VU23611	Manage building information modelling (BIM) contracts	040199	Nil	80
VU23612	Manage cost control, planning, analysis and control processes	040199	Nil	80
VU23613	Manage projects using building information modelling (BIM) technology	040199	Nil	120
VU23614	Apply sustainability principles and practices for building information modelling (BIM) projects	040199	Nil	60
VU23615	Manage project performance using building information modelling (BIM) technology	040199	Nil	80

Elective units

BSBPMG426	Apply project risk management techniques	080315	Nil	40
VU23616	Apply building information modelling (BIM) technology to optimise building project efficiency	040199	Nil	40
CPPBDN4110	Set up BIM-capable software and files for building design drafting projects	080905	Nil	40
VU23617	Utilise digital fabrication technology for	040199	Nil	60



	building information modelling (BIM)			
VU23584	Use mixed or blended reality technologies	020115	Nil	20
Total nominal hours				540-580

Standard 5.11 AQTF 2021 Standards for Accredited Courses

5.2 Entry requirements

Course in Building Information Modelling (BIM)

There are no entry requirements for the 22654VIC Course in Building Information Modelling (BIM).

Learners are best equipped to achieve the outcomes of the Course in Building Information Modelling (BIM), if they have minimum language, literacy and numeracy skills that are equivalent to level 3 of the Australian Core Skills Framework (ACSF). ACSF detail may be accessed from [here](#).

Learners with language, literacy and numeracy skills at lower levels than those suggested may require additional support to successfully undertake the course.

Advanced Diploma of Building Information Modelling (BIM)

Entrants to this course must have:

- an AQF level 4 qualification or above, related to project management, information technology or building and construction **OR**
- relevant work experience as a building practitioner or paraprofessional.

Learners are best equipped to achieve the outcomes of the Advanced Diploma of Building Information Modelling (BIM), if they have minimum language, literacy and numeracy skills that are equivalent to level 4 of the Australian Core Skills Framework (ACSF). ACSF detail may be accessed from [here](#).

Learners with language, literacy and numeracy skills at lower levels than those suggested may require additional support to successfully undertake the course.

6. Assessment

Standard 5.12 and 5.14 AQTF 2021 Standards for Accredited Courses

6.1 Assessment strategy

All assessment, including Recognition of Prior Learning (RPL), must be compliant with the requirements of:

	<ul style="list-style-type: none"> • Standard 1 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 4.1 and 4.2 of the VRQA Guidelines for VET Providers, <p>or</p> <ul style="list-style-type: none"> • the Standards for Registered Training Organisations 2015 (SRTOs), <p>or</p> <ul style="list-style-type: none"> • the relevant standards and Guidelines for RTOs at the time of assessment. <p>These standards ensure that the assessment strategies meet requirements of the courses and therefore ensure that all assessments are valid, reliable and flexible and fair.</p> <p>Assessment strategies should be designed to:</p> <ul style="list-style-type: none"> • cover the range of skills and knowledge required to demonstrate achievement of competence in BIM and building construction context • be appropriate to the knowledge, skills, methods of delivery and needs and characteristics of learners while meeting the demands of industry • recognise prior learning • be equitable to all groups of learners. <p>The following assessment methods are appropriate for units of competency in these accredited courses:</p> <ul style="list-style-type: none"> • oral and/or written questioning • inspection of final process outcomes • portfolio of documented on-site work evidence • practical demonstration of required physical tasks • investigative research and case study analysis. <p>Assessment strategies for the imported units from Training Packages and Accredited Courses should be consistent with the Assessment Requirements for the relevant training packages and accredited courses.</p>
<p>6.2 Assessor competencies</p>	<p>Assessment must be undertaken by a person or persons in accordance with:</p> <ul style="list-style-type: none"> • Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 3 of the VRQA Guidelines for VET Providers, <p>or</p> <ul style="list-style-type: none"> • the Standards for Registered Training Organisations 2015 (SRTOs), <p>or</p> <ul style="list-style-type: none"> • the relevant standards and Guidelines for RTOs at the time of assessment.



	Units of competency imported from Training Packages and Accredited Courses must reflect the requirements for assessors specified in that training package or accredited course.
7. Delivery	Standards 5.12, 5.13 and 5.14 AQTF 2021 Standards for Accredited Courses
7.1 Delivery modes	<p>The Course in, and Advanced Diploma of Building Information Modelling (BIM) may be offered on a full or part-time basis using any combination of the following delivery modes:</p> <ul style="list-style-type: none"> • face-to-face, classroom-based delivery • blended (e-learning) delivery • distance learning. <p>Delivery strategies should consider the nature of the units and the learning needs of the participants. It is recommended that the courses be conducted using project-based delivery and assessment methods involving the clustering of units, to maximise opportunities for learners to have learning experiences which are as close as possible to a real-work environment.</p> <p>Delivery methods for units of competency may involve:</p> <ul style="list-style-type: none"> • classroom presentation • group discussion • work-based projects • case study analysis • practical work • project-based learning encompassing the clustering of units. <p>Due to the potential for a dispersed distribution of learners, course providers may wish to consider blended or distance modes in the delivery of training. The facilitation of distance learning and the achievement of competencies through workplace activities or on-the-job training should be fostered and encouraged where possible.</p> <p>Delivery of units of competency imported from Training Packages and Accredited Courses should be contextualised to the building information modelling (BIM) environment, whilst ensuring that the delivery guidelines are adhered to.</p>
7.2 Resources	<p>Successful delivery of these courses requires access to current building systems information, processes and equipment. For this to occur, providers and building and construction enterprises may form partnerships to deliver realistic and authentic training and assessment.</p> <p>The resources that should be available for these courses relate to normal work practice using procedures, information, and resources typical of a workplace. This must include:</p> <ul style="list-style-type: none"> • access to a workplace or an environment where building information modelling (BIM) is applied

- access to relevant building design plans, drawing facilities, relevant software and instructions
- WHS/OHS policy and work procedures and instructions
- internet, operational information technology hardware, BIM compatible software and related equipment
- project management tools
- manufacturers' specifications
- simulated projects and case studies.

Training must be undertaken by a person or persons in accordance with:

- Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guideline 3 of the VRQA Guidelines for VET Providers,

or

- the Standards for Registered Training Organisations 2015 (SRTOs),

or

- the relevant standards and Guidelines for RTOs at the time of assessment.

The units of competency imported from Training Packages and Accredited Courses must reflect the requirements for resources/trainers specified in that training package.

8. Pathways and articulation

Standard 5.10 AQTF 2021 Standards for Accredited Courses

Course in Building Information Modelling (BIM)

Graduates may choose to undertake further study to extend their skill base for the use of BIM within the construction or facilities management sectors. This may include, but is not limited to:

- relevant Certificate IV or Diploma qualifications within the CPC Construction Plumbing and Services Training Package and CPP Property Services Training Package.

There are no formal articulation arrangements in place for this course at the time of accreditation.

Advanced Diploma of Building Information Modelling (BIM)

Graduates may choose to undertake more generalist study in project management within the construction sector including, but not limited to:

- CPC60220 Advanced Diploma of Building and Construction (Management)
- a higher education qualification in construction management

There are no formal articulation arrangements in place for this qualification at the time of accreditation.

9. Ongoing monitoring and evaluation	Standard 5.15 AQTF 2021 Standards for Accredited Courses
	<p>The CMM for Building Industries is responsible for the ongoing monitoring and evaluation of the 22654VIC Course in Building Information Modelling (BIM) and 22655VIC Advanced Diploma of Building Information Modelling (BIM).</p> <p>Formal course evaluations will be undertaken halfway through the accreditation period and will be based on student and teacher evaluation surveys and industry stakeholder surveys/consultations.</p> <p>The Victorian Registration and Qualifications Authority (VRQA) will be notified of any changes to the courses.</p>

Section C – Units of competency

Course in Building Information Modelling (BIM)

The list of the units of competency imported from training packages include:

- BSBTEC403 Apply digital solutions to work processes
- CPCBIM4001 Plan to comply with BIM requirements for construction work
- CPCBIM4002 Use BIM processes to carry out construction work
- CPCBIM4003 Contribute to BIM deliverables for construction work
- CPPSCM3020 Source and extract information from strata plans
- CPPSCM4040 Develop and monitor maintenance strategies that contribute to asset life cycle
- MEM29012 Access and use a digital twin for operational purposes.

The list of the units of competency imported from accredited courses include:

- VU23585 Use building information modelling (BIM) technologies for a project.

Advanced Diploma of Building Information Modelling (BIM)

The list of the units of competency imported from training packages include:

- BSBPMG426 Apply project risk management techniques
- CPPBDN4110 Set up BIM capable software and files for building design drafting projects.

The list of the units of competency imported from accredited courses include:

- VU23585 Use building information modelling (BIM) technologies for a project
- VU23584 Use mixed or blended reality technologies.

Units of competency developed for the course, which comply with the AQTF 2021 Standards for Accredited Courses - Unit of Competency Template and detailed in this section include:

- VU23611 Manage building information modelling (BIM) contracts
- VU23612 Manage cost control, planning, analysis and control processes
- VU23613 Manage projects using building information modelling (BIM) technology
- VU23614 Apply sustainability principles and practices for building information modelling (BIM) projects
- VU23615 Manage project performance using building information modelling (BIM) technology
- VU23616 Apply building information modelling (BIM) technology to optimise building project efficiency
- VU23617 Utilise digital fabrication technology for building information modelling (BIM).

Unit code	VU23611
Unit title	Manage building information modelling (BIM) contracts
Application	<p>This unit describes the performance outcomes, skills and knowledge required to manage project contracts where BIM technologies are applied.</p> <p>It requires the ability to comply with the relevant legislation, regulations, and standards to execute the project, assign roles and responsibilities and evaluate the contract on completion.</p> <p>This unit applies to individuals using BIM technologies within a contractual context for key stakeholders in achieving collaborative project workflows and outcomes.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Determine building project deliverables	1.1	Analyse project contract and identify areas for BIM application within project context
		1.2	Determine scope and legal parameters of BIM related work for own practice and for stakeholders according to project contract
		1.3	Evaluate client information requirements against project contract requirements for clarity and accuracy of project deliverables
		1.4	Determine technical requirements of building project for software, hardware, infrastructure, coordination, stakeholder collaboration and delivery
		1.5	Establish data exchange and formats, intellectual property and information management according to relevant BIM protocols
		1.6	Determine skill levels and training requirements of project



			team to apply BIM for a project
2	Develop and apply contract management strategies for the project	2.1	Determine contract limitations, legal use of model, pricing, legal risk, workflow and deliverables
		2.2	Apply relevant legal framework considerations for project
		2.3	Design risk mitigation strategies for scope of works
		2.4	Establish contract management processes, execution planning and contingencies according to project requirements
		2.5	Manage liability faults or errors for project information and information for the model
3	Assign roles and responsibilities	3.1	Determine ownership of project information and information model according to project requirements
		3.2	Develop and document an information execution plan to follow how project information is issued to various stakeholders
4	Evaluate BIM contract completion	4.1	Assess appropriateness of contract model for project against design specifications and assembly procedures
		4.2	Report effectiveness of the contract model in achieving building project information outcomes to relevant stakeholders
		4.3	Record relevant improvements to BIM contract management for future project reference

Range of Conditions

N/A

Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret key information from legislation and specifications
Writing skills to:	<ul style="list-style-type: none"> produce reports using clear language, industry terminology and information presented in logical order.



Oral communication skills to:	<ul style="list-style-type: none"> use language appropriate to audience and stakeholder understanding when communicating and reporting on contract management
Numeracy skills to:	<ul style="list-style-type: none"> interpret, calculate and utilise mathematical information in project contract and specifications
Digital literacy skills to:	<ul style="list-style-type: none"> determine BIM functionality of software programs

Unit Mapping Information

Code and Title Current Version	Code and Title Previous Version	Comments
VU23611 Manage building information modelling (BIM) contracts	VU22713 Manage building information modelling (BIM) contracts	Equivalent unit. Updated to meet revised Standards for Accredited Courses unit template.



Assessment Requirements Template	
Title	Assessment Requirements for VU23611 Manage building information modelling (BIM) contracts
Performance Evidence	<p>The learner must demonstrate the ability to complete tasks outlined in the elements, performance criteria and foundation skills of this unit including evidence of the ability to:</p> <ul style="list-style-type: none"> • develop and apply contract management processes to meet the requirements and context of a building project. <p>In completing the above, there must also be evidence that the learner has:</p> <ul style="list-style-type: none"> • applied project deliverables to contract management • assigned roles and responsibilities to the relevant stakeholders • evaluated and reported on the effectiveness of the BIM contract after completion • communicated effectively with stakeholders regarding BIM deliverables, framework and contractual obligations.
Knowledge Evidence	<p>The learner must be able to apply essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • standards, legislation and regulatory requirements related to managing BIM contracts • legal framework considerations for working with BIM • BIM execution and contingency plans • BIM lifecycle • benefits and key features of BIM contract models • BIM contract management and contingencies strategies • data sharing and communication protocols and procedures • organisational procedures related to applying BIM applications to managing BIM contracts • roles and responsibilities and capacity requirements of project team and stakeholders • BIM documentation and reporting requirements.
Assessment Conditions	<p>Skills in this unit must be demonstrated in a workplace or an environment where building information modelling (BIM) is applied.</p> <p>This includes access to:</p> <ul style="list-style-type: none"> • internet, information technology and BIM compatible software • related technologies, including mixed or blended technologies • relevant specifications and documentation • relevant legislation, regulations and standards • real or simulated stakeholders. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this</p>

unit.



Unit code	VU23612
Unit title	Manage cost control, planning, analysis and control processes
Application	<p>This unit describes the performance outcomes, skills and knowledge required to manage building information modelling (BIM) cost control measures associated with building projects.</p> <p>It requires the ability to monitor project costs and expenditure to consider how estimates interact with actual project acquittals.</p> <p>This unit applies to individuals using BIM technologies to facilitate financial project management and cost control measures are in place for the project life cycle.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Plan BIM cost control processes for a project	1.1	Interpret cost control plan to determine scope of works and identify technologies to be used
		1.2	Determine extent of cost control measures required for BIM project
		1.3	Integrate deliverables, relevant timelines and estimated costs in planning process
		1.4	Apply a cost control strategy in collaboration with stakeholders
		1.5	Design risk mitigation strategies to ensure effective delivery of project deliverables against scope of works and organisational policy and procedures
2	Conduct project cost control monitoring	2.1	Establish a performance checklist and communication processes in collaboration with stakeholders
		2.2	Receive and analyse project progress data according to plan

		2.3	Interpret analysis results and communicate cost variations to stakeholders according to project guidelines and specifications
		2.4	Manage contingencies and solutions based processes in collaboration with stakeholders and project requirements
		2.5	Adjust project cost estimates and relevant expenditure in collaboration with stakeholders and project requirements
3	Evaluate BIM cost control measures for a project	3.1	Review project cost control, performance and relevant variations against actual project acquittals
		3.2	Determine areas for improvement in consultation with key stakeholders
		3.3	Record and report on effectiveness of cost control measures in achieving planned expenditure outcomes
		3.4	Record relevant improvements to BIM cost control measures and management for future project reference

Range of Conditions

N/A

Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret key information from organisational policies and procedures and specifications interpret and analyse data to determine measures required
Writing skills to:	<ul style="list-style-type: none"> produce reports using clear language, industry terminology and information presented in logically order.
Oral communication skills to:	<ul style="list-style-type: none"> use questioning to identify and confirm requirements use language appropriate to audience and stakeholder understanding
Numeracy skills to:	<ul style="list-style-type: none"> use arithmetic and financial formulae to analyse numeric information in budgets and expenditure

Unit Mapping Information	Code and Title Current Version	Code and Title Previous Version	Comments
	VU23612 Manage cost control, planning, analysis and control processes	VU22714 Manage cost control, planning, analysis and control processes	Equivalent unit. Updated to meet revised Standards for Accredited Courses unit template.

Assessment Requirements Template	
Title	Assessment Requirements for VU23612 Manage cost control, planning, analysis and control processes
Performance Evidence	<p>The learner must demonstrate the ability to complete tasks outlined in the elements, performance criteria and foundation skills of this unit including evidence of the ability to:</p> <ul style="list-style-type: none"> • manage costs and expenditure for a building project using BIM applications. <p>In completing the above, there must also be evidence that the learner has:</p> <ul style="list-style-type: none"> • developed and applied a cost control plan that includes risk mitigation strategies • conducted project cost control monitoring against the cost control plan • evaluated BIM cost control measures.
Knowledge Evidence	<p>The learner must be able to apply essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • types of budgets and cost control plans • BIM applications and BIM related workflows used to manage project costs and expenditure • cost control measures and risk mitigation strategies used to manage and monitor building projects • basic accounting principles • key requirements for financial record keeping • organisational policies and procedures relating to budgeting and monitoring costs and expenditure.
Assessment Conditions	<p>Skills in this unit must be demonstrated in a workplace or an environment where building information modelling (BIM) is applied.</p> <p>This includes access to:</p> <ul style="list-style-type: none"> • internet, information technology and BIM compatible software • related technologies, including mixed or blended technologies • relevant specifications and documentation • relevant legislation and regulations • real or simulated people. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

Unit code	VU23613
Unit title	Manage projects using building information modelling (BIM) technology
Application	<p>This unit describes the performance outcomes, skills and knowledge required to manage a building information modelling (BIM) project using relevant technologies to direct and integrate BIM workflow.</p> <p>It requires the ability to apply effective communication and collaborative processes and a team approach to achieve project outcomes.</p> <p>This unit applies to individuals managing BIM projects using relevant technology to facilitate project management through the design and implementation of effective collaborative models. The application of appropriate BIM processes will vary depending on the requirements of the relevant stakeholders, such as: architects, designers, engineers, quantity surveyors and developers.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Develop a BIM communication and delivery plan	1.1	Identify key stakeholders and applicable technologies for project scope of works and contract requirements
		1.2	Plan for relevant information sharing arrangements or solutions for various stakeholder requirements and their Information Technology systems configurations
		1.3	Design a communication and information sharing process within BIM for integrating non BIM data from relevant stakeholders
		1.4	Identify visual communication workflow and technology for issue tracking
		1.5	Design a workflow to manage construction methodologies



			for the project
		1.6	Assess internal organisational and broader delivery team capability against project requirements and contingency strategies to be applied for the project
2	Develop a BIM management strategy	2.1	Identify and map workflow using appropriate BIM processes to achieve project objectives
		2.2	Assess functionality of technology for project requirements
		2.3	Identify key stakeholders' roles and responsibilities as determined by the contract
		2.4	Identify risks and design mitigation strategies to ensure effective delivery of project deliverables in accordance with the scope of works and contract
		2.5	Identify strategies for establishing and creating positive outcomes within a collaborative model, in accordance with industry management standards relevant to the communication and delivery plan
3	Establish work roles and responsibilities for a project	3.1	Confirm project workflow execution and communication processes in collaboration with stakeholders
		3.2	Assign work roles and responsibilities to ensure a team approach to achieving BIM deliverables
		3.3	Apply relevant risk mitigation strategies according to the scope of works and contract and in collaboration with key stakeholders and project requirements
4	Apply BIM integration processes for a project	4.1	Coordinate and integrate project scope of works and contract within the BIM processes in collaboration with key stakeholders
		4.2	Assign information sharing solution arrangements for various stakeholder requirements and their IT system configurations
		4.3	Implement appropriate IT system redundancy processes to ensure integrity of data is maintained against project requirements and specifications
		4.4	Maintain relevant licensing, regulatory, certification and sign-off of construction methods and software applications
5	Coordinate projects	5.1	Gather and analyse data to map and report on project



	using BIM technology		performance in collaboration with stakeholders
		5.2	Maintain an effective communication platform for relevant stakeholders for the project life cycle
		5.3	Manage relevant BIM contract requirements, timelines and sequencing of project information exchanges, stages and deliverables and anticipated conflict
		5.4	Manage contingencies and solutions based processes in collaboration with stakeholders and project
		5.5	Apply ongoing continuous improvement and review processes for project duration
6	Apply BIM software for project	6.1	Compare and adapt non BIM inputs to ensure functionality with relevant BIM technology applications and models
		6.2	Evaluate validation techniques and physical testing procedures for functionality with BIM software
7	Commission and handover BIM project	7.1	Confirm terms and conditions of project handover according to contract requirements and specifications
		7.2	Plan and map use of field tools applied during construction to validate as-built data and models
		7.3	Validate quality assurance and control checklists applied for the project with relevant stakeholders
		7.4	Extract, manage and collate relevant data and information from BIM project platform for commissioning and handover, according to contract requirements and specifications
8	Evaluate BIM project process	8.1	Assess project workflow performance and effectiveness in achieving project deliverables
		8.2	Record and report on effectiveness and improvement areas in achieving planned deliverables
		8.3	Record relevant improvements to BIM workflow processes and management for future project reference.

Range of Conditions

N/A

Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret key information from project scope, contract and specifications
Writing skills to:	<ul style="list-style-type: none"> document detailed plans and produce reports using clear language, industry terminology and information presented in logically order.
Oral communication skills to:	<ul style="list-style-type: none"> use questioning to identify and confirm requirements communicate using language appropriate to audience and stakeholder understanding
Numeracy skills to:	<ul style="list-style-type: none"> interpret and communicate mathematical information in specifications
Digital literacy skills to:	<ul style="list-style-type: none"> determine BIM functionality with software programs operate and apply information technology systems and processes

Unit Mapping Information

Code and Title Current Version	Code and Title Previous Version	Comments
VU23613 Manage projects using building information modelling (BIM) technology	VU22708 Manage projects using building information modelling (BIM) technology	Equivalent unit. Updated to meet revised Standards for Accredited Courses unit template.



Assessment Requirements Template

<p>Title</p> <p>Performance Evidence</p>	<p>Assessment Requirements for VU23613 Manage projects using building information modelling (BIM) technology</p> <p>The learner must demonstrate the ability to complete tasks outlined in the elements, performance criteria and foundation skills of this unit including evidence of the ability to:</p> <ul style="list-style-type: none"> • manage the workflow for a building project using a range of BIM compatible software. <p>In completing the above, there must also be evidence that the learner has:</p> <ul style="list-style-type: none"> • designed and implemented BIM workflow processes • worked collaboratively with relevant stakeholders in achieving project requirements • applied contingency strategies to manage risk • ensured effective project performance and handover at project completion.
<p>Knowledge Evidence</p>	<p>The learner must be able to apply essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • benefits and functionality of BIM technology to manage workflow • BIM technologies including: <ul style="list-style-type: none"> ○ BIM model authoring tools ○ contributing non BIM authoring tools ○ BIM model coordination and validation tools ○ BIM data management tools ○ communication, visual communication, issue tracking and common data environment tools ○ analysis tools • IT systems redundancy • BIM industry standards and protocols for communication and data sharing processes • methods for sequencing work to achieve efficiencies across multi-disciplinary construction projects • purpose and content of BIM execution plans and their relationship to project requirements • BIM management and risk mitigation strategies used to manage project workflow • roles and responsibilities of project team members and key stakeholders • BIM integration processes • commission and handover processes for BIM projects, including quality assurance, continuous improvement, validation techniques and physical testing

	<ul style="list-style-type: none"> reporting and documentation procedures used for managing BIM projects.
Assessment Conditions	<p>Skills in this unit must be demonstrated in a workplace or an environment where building information modelling (BIM) is applied.</p> <p>This includes access to:</p> <ul style="list-style-type: none"> internet, information technology and BIM compatible software related technologies, including mixed or blended technologies relevant specifications and documentation relevant legislation and regulations real or simulated people. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

Unit code	VU23614
Unit title	Apply sustainability principles and practices for building information modelling (BIM) projects
Application	<p>This unit describes the performance outcomes, skills and knowledge required to use BIM applications to achieve sustainable outcomes.</p> <p>It requires the ability to determine principles and methods of sustainable practices to develop and manage BIM project outcomes.</p> <p>This unit applies to individuals who facilitate achieving sustainable outcomes in various life cycle stages of a BIM project.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Research the impacts of BIM on buildings and the natural environment	1.1	Assess BIM tools and their potential to contribute to environmentally sustainable designs
		1.2	Establish ongoing monitoring processes to ensure effectiveness of performance of BIM technology in achieving planned outcomes
		1.3	Interpret impact of current government and industry responses to Environmentally Sustainable Design (ESD)
		1.4	Identify energy efficient design principles according to relevant legislation
		1.5	Identify environmental design rating tools in relation to relevant legislation and the National Construction Code (NCC)
2	Analyse project requirements to determine outputs	2.1	Assess project brief to determine the level of detail and data requirements within the project scope



		2.2	Identify relevant BIM contract requirements to use BIM for environmentally sustainable design outcomes
		2.3	Identify BIM tools and protocols for integrated evaluation, analysis, comparison and compliance
		2.4	Determine equipment requirements for ongoing monitoring and verification of performance of environmentally sustainable outcomes
3	Incorporate environmental sustainability criteria into BIM projects	3.1	Use BIM tools and protocols to maximise environmental sustainability for projects
		3.2	Use BIM for environmental sustainability practices related to life cycle assessments applicable to the project
		3.3	Use collaboration and effective coordination of stakeholder engagement to achieve sustainable outcomes for construction projects
		3.4	Apply BIM for resource optimisation and waste minimisation
		3.5	Plan and apply ongoing monitoring processes to ensure effectiveness of performance of BIM tools and technology in achieving ESD related objectives for building operations
4	Evaluate environmental sustainability for BIM projects	4.1	Assess compliance to ESD criteria and waste minimisation practices according to organisational and project design requirements and specifications
		4.2	Record and analyse data collected from real time monitoring, supported by BIM tools and protocols, to measure effectiveness of ESD related building performance benchmarks as defined for the building lifecycle
		4.3	Record and report on review findings to ensure continuous improvement processes are implemented on future projects

Range of Conditions

N/A

Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret key information from legislation, design specifications and guidelines
Writing skills to:	<ul style="list-style-type: none"> produce reports using clear language, industry terminology and information presented in logically order
Oral communication skills to:	<ul style="list-style-type: none"> use questioning to identify and confirm requirements use language appropriate to audience and stakeholder understanding when communicating and collaborating with external and internal stakeholders
Numeracy skills to:	<ul style="list-style-type: none"> interpret mathematical information in specifications
Digital literacy skills to:	<ul style="list-style-type: none"> determine BIM functionality with software programs operate relevant information technology for project use software applications suitable for production of documentation required for the project

Unit Mapping Information

Code and Title Current Version	Code and Title Previous Version	Comments
VU23614 Apply sustainability principles and practices for building information modelling (BIM) projects	VU22710 Apply sustainable design principles and practices for BIM projects	Equivalent unit. Updated to meet revised Standards for Accredited Courses unit template.



Assessment Requirements Template	
Title	Assessment Requirements for VU23614 Apply sustainability principles and practices for building information modelling (BIM) projects
Performance Evidence	<p>The learner must demonstrate the ability to complete tasks outlined in the elements, performance criteria and foundation skills of this unit including evidence of the ability to:</p> <ul style="list-style-type: none"> • apply sustainability principles and practices for a BIM project. <p>In completing the above, there must also be evidence that the learner has:</p> <ul style="list-style-type: none"> • assessed the economic impact in applying environmental sustainability criteria into the project • applied environmental sustainability criteria • worked collaboratively to incorporate sustainability design and waste management into the project.
Knowledge Evidence	<p>The learner must be able to apply essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • sustainability principles and practices for BIM projects including: <ul style="list-style-type: none"> ○ energy efficient design principles ○ government and industry responses to sustainable design ○ green star ○ building adaptation for catastrophic events responding to climate change ○ indoor environmental quality that includes air quality, thermal comfort, acoustics ○ impacts of national strategies on building design ○ principles of designing buildings for durability and adaptability • sustainability criteria • life cycle assessment • energy auditing principles • energy consumption relative to construction processes and building use • strengths and limitations of using BIM to apply sustainability principles and practices • recognition of BIM file structures • organisational and legislative requirements for documentation in all stages of building design project.
Assessment Conditions	<p>Skills in this unit must be demonstrated in a workplace or an environment where building information modelling (BIM) is applied.</p> <p>This includes access to:</p> <ul style="list-style-type: none"> • internet, information technology and BIM compatible software • related technologies, including mixed or blended technologies • relevant specifications and documentation

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- relevant legislation codes and Australian Standards
 - real or simulated people.

Assessor requirements

No specialist vocational competency requirements for assessors apply to this unit.

Unit code	VU23615
Unit title	Manage project performance using building information modelling (BIM) technology
Application	<p>This unit describes the performance outcomes, skills and knowledge required to manage project performance using building information modelling (BIM) technology.</p> <p>It requires the ability to plan a BIM based project management approach, manage projects using BIM technology and evaluate BIM based project effectiveness.</p> <p>It applies to individuals managing property related projects using relevant BIM technology. Property project management relates to all aspects of the building life cycle, including building design, construction, maintenance, refurbishment and demolition.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Plan a BIM based project management approach	1.1	Define project scope and determine associated BIM technology requirements
		1.2	Assess functionality of proposed BIM technology in relation to project requirements
		1.3	Identify key stakeholders and their associated roles and responsibilities to determine project scope of work parameters
		1.4	Determine an appropriate communication model for implementation for the project duration
		1.5	Design and establish a collaborative team-based approach to achieve BIM deliverables
		1.6	Design relevant project virtualisation imaging to facilitate



			stakeholder collaboration
2	Manage projects using BIM technology	2.1	Determine relevant data sharing strategies and processes to facilitate effective stakeholder collaboration
		2.2	Gather and analyse progressive BIM data to project milestones and report on project performance, in collaboration with stakeholders
		2.3	Design and implement an effective communication model to support development and maintenance of BIM stakeholder relationships
		2.4	Manage relevant BIM contract requirements, including scheduling, and the identification and resolution of potential clashes
		2.5	Manage contingencies and employ solution based processes in collaboration with stakeholders and project requirements
3	Evaluate BIM based project effectiveness	3.1	Review project rollout and performance and determine areas for improvement, in consultation with key stakeholders
		3.2	Record and report on effectiveness of BIM technology in contributing to the achievement of planned project outcomes.

Range of Conditions

N/A

Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret key information from relevant design specifications and guidelines
Writing skills to:	<ul style="list-style-type: none"> produce reports using clear language, industry terminology and information presented in logically order
Oral communication skills to:	<ul style="list-style-type: none"> use questioning to identify and confirm requirements use language appropriate to audience and stakeholder understanding
Numeracy skills to:	<ul style="list-style-type: none"> interpret mathematical information in project requirements and specifications



Digital literacy skills to:	<ul style="list-style-type: none"> determine BIM functionality with software programs
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Unit Mapping Information

Code and Title Current Version	Code and Title Previous Version	Comments
VU23615 Manage project performance using building information modelling (BIM) technology	VU22715 Apply building information modelling (BIM) technology to validate project performance	Equivalent unit. Updated to meet revised Standards for Accredited Courses unit template.



Assessment Requirements Template	
Title	Assessment Requirements for VU23615 Manage project performance using building information modelling (BIM) technology
Performance Evidence	<p>The learner must demonstrate the ability to complete tasks outlined in the elements, performance criteria and foundation skills of this unit including evidence of the ability to:</p> <ul style="list-style-type: none"> • manage a building project using BIM technology. <p>In completing the above, there must also be evidence that the learner has:</p> <ul style="list-style-type: none"> • planned the project according to scope and BIM technology requirements • analysed BIM data using collaborative communication models in assessing project performance.
Knowledge Evidence	<p>The learner must be able to apply essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • relevant industry and BIM technology used to manage performance • benefits and functionality of relevant BIM technology to facilitate project management • strengths and limitations of using BIM for team communication and collaborative processes • purpose and design of communicative models for stakeholders • contingencies and solutions based processes used for collaboration with stakeholders • data gathering, analysis and sharing strategies and processes used to facilitate effective collaboration.
Assessment Conditions	<p>Skills in this unit must be demonstrated in a workplace or an environment where building information modelling (BIM) is applied.</p> <p>This includes access to:</p> <ul style="list-style-type: none"> • internet, information technology and BIM compatible software • related technologies, including mixed or blended technologies • relevant specifications and documentation • real or simulated people. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

Unit code	VU23616
Unit title	Apply building information modelling (BIM) technology to optimise building project efficiency
Application	<p>This unit describes the performance outcomes, skills and knowledge required to apply BIM technology to optimise building project efficiency.</p> <p>It requires the ability to determine the economic benefits of using BIM technologies for a building project, designing a BIM based approach, applying BIM technology efficiency to the project and reviewing the effectiveness of BIM technology to the project.</p> <p>This unit applies to building project managers or associated paraprofessionals involved in the construction of a building.</p> <p>The work context relates to property building projects related to the construction phase of the building life cycle.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Determine economic benefits of BIM	1.1	Determine cost and process efficiencies afforded by BIM technology in relation to the building project
		1.2	Develop holistic BIM value proposition for the building project, including operational context and environmental factors in relation to economic impact
2	Design BIM project approach	2.1	Determine client needs and align with data requirements to define BIM project objectives
		2.2	Establish a scope of works that identifies key milestones, performance indicators and cost breakdowns for the building project
		2.3	Identify and collaborate with stakeholders impacted by BIM project objectives to confirm capability and agreement with

			effective strategies for BIM technology usage
		2.4	Identify the range of BIM technology tools and functions to meet project BIM objectives
		2.5	Develop effective risk mitigation strategies according to the scope of works
3	Apply BIM technology efficiency to the project	3.1	Establish effective cost and procurement model based on building project type
		3.2	Evaluate relevant BIM software according to building project requirements
		3.3	Implement and manage data transfer according to building project and stakeholder requirements
		3.4	Apply relevant risk mitigation strategies to building project stages
4	Review effectiveness of BIM technology to the project	4.1	Assess BIM technology compliance with performance indicators
		4.2	Record and report on effectiveness of BIM technology in achieving project BIM objectives
		4.3	Record relevant improvements to BIM tool function and management for future project reference

Range of Conditions

N/A

Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret key information from design specifications and guidelines
Writing skills to:	<ul style="list-style-type: none"> produce reports using clear language, industry terminology and information presented in logically order
Oral communication skills to:	<ul style="list-style-type: none"> use questioning to identify and confirm requirements use language appropriate to audience and stakeholder understanding

Numeracy skills to:	<ul style="list-style-type: none"> • interpret mathematical information in specifications • conduct cost analyses to determine projected benefits and issues
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Unit Mapping Information

Code and Title Current Version	Code and Title Previous Version	Comments
VU23616 Apply building information modelling (BIM) to optimise building project efficiency	VU22709 Apply benefits of building information modelling (BIM) for a project	Equivalent unit. Updated to meet revised Standards for Accredited Courses unit template.



Assessment Requirements Template

<p>Title</p> <p>Performance Evidence</p>	<p>Assessment Requirements for VU23616 Apply building information modelling (BIM) technology to optimise building project efficiency</p> <p>The learner must demonstrate the ability to complete tasks outlined in the elements, performance criteria and foundation skills of this unit including evidence of the ability to:</p> <ul style="list-style-type: none"> • apply a BIM tool for a building project <p>In completing the above, there must also be evidence that the learner has:</p> <ul style="list-style-type: none"> • evaluated the economic benefits of using BIM • designed and managed the effectiveness of BIM tools through strategic implementation • monitored project progress through key performance indicators.
<p>Knowledge Evidence</p>	<p>The learner must be able to apply essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • cost and procurement models for using BIM • value proposition of using BIM tools • BIM documentation requirements • strengths and limitations of using BIM to achieve cost benefits • project management strategies.
<p>Assessment Conditions</p>	<p>Skills in this unit must be demonstrated in a workplace or an environment where building information modelling (BIM) is applied.</p> <p>This includes access to:</p> <ul style="list-style-type: none"> • internet, information technology and BIM compatible software • related technologies, including mixed or blended technologies • relevant specifications and documentation • relevant legislation codes and Australian Standards • real or simulated people. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

Unit code	VU23617
Unit title	Utilise digital fabrication technology for building information modelling (BIM)
Application	<p>This unit describes the performance outcomes, skills and knowledge required to utilise and manage digital fabrication requirements using relevant building information modelling (BIM) technology.</p> <p>It requires the ability to plan and prepare process, and manage the scheduling and production of the digital fabrication.</p> <p>This unit applies to individuals managing digital fabrication for BIM projects using relevant technology. The application of appropriate BIM processes will vary depending on the requirements of the relevant stakeholders such as, architects, manufacturers, designers, engineers, quantity surveyors and developers.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Prepare to use BIM technology for digital fabrication	1.1	Identify compatible software for BIM to facilitate digital design to fabrication workflow according to project requirements
		1.2	Plan for relevant information technology systems configurations to suit BIM software functionality requirements
		1.3	Develop a digital fabrication production schedule according to design requirements and specifications
		1.4	Design risk mitigation strategies to ensure effective fabrication of project according to design requirements and specifications and contract
		1.5	Identify and plan for design changes and scheduling variations



		1.6	Assess functionality of relevant BIM technology for fabrication requirements
2	Develop digital fabrication production sequencing of activities	2.1	Identify and map workflow using appropriate BIM processes for digital fabrication
		2.2	Identify relevant industry performance standards and quality benchmarks
		2.3	Confirm project specifications and determine most suitable fabrication methodology for project requirements and specifications
3	Manage digital fabrication production process projects using BIM technology	3.1	Extract relevant digital information for fabrication from applied BIM platform for communication and confirmation of brief with stakeholders
		3.2	Select and prioritise fabrication production processes according to design requirements, specifications and contract
		3.3	Apply appropriate tolerance adjustments for machine fabrication according to project requirements and specifications
		3.4	Apply relevant risk mitigation strategies according to project specification and contract
		3.5	Manage changes and contingencies and solutions based processes in collaboration with stakeholders and project
		3.6	Maintain quality processes for the duration of the digital fabrication project
4	Evaluate BIM fabrication production process	4.1	Review fabrication rollout and performance in consultation with key stakeholders
		4.2	Assess compliance against project design requirements, specifications and quality assurance processes
		4.3	Record and report on review findings for continuous improvement

Range of Conditions

N/A

Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret key information from design requirements and specifications
Writing skills to:	<ul style="list-style-type: none"> produce reports using clear language, industry terminology and information presented in logically order
Oral communication skills to:	<ul style="list-style-type: none"> use questioning to identify and confirm requirements use language appropriate to audience and stakeholder understanding
Numeracy skills to:	<ul style="list-style-type: none"> interpret and use statistical analysis of data
Digital literacy skills to:	<ul style="list-style-type: none"> extract and analyse data, productivity and scheduling

Unit Mapping Information

Code and Title Current Version	Code and Title Previous Version	Comments
VU23617 Utilise digital fabrication technology for building information modelling (BIM)	VU22711 Utilise digital fabrication technology for building information modelling (BIM)	Equivalent unit. Updated to meet revised Standards for Accredited Courses unit template.

Assessment Requirements Template	
Title	Assessment Requirements for VU23617 Utilise digital fabrication technology for building information modelling (BIM)
Performance Evidence	<p>The learner must demonstrate the ability to complete tasks outlined in the elements, performance criteria and foundation skills of this unit including evidence of the ability to:</p> <ul style="list-style-type: none"> • develop and implement digital fabrication processes to achieve outputs for a project using BIM technology. <p>In completing the above, there must also be evidence that the learner has:</p> <ul style="list-style-type: none"> • managed digital fabrication quality assurance processes according to project requirements and specifications • reviewed and reported on the effectiveness of digital fabrication production.
Knowledge Evidence	<p>The learner must be able to apply essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • BIM technologies used to facilitate digital design to fabrication • digital production and scheduling • functionality of BIM technology associated with digital fabrication • BIM production workflow • tolerance adjustment for machine fabrication • risk mitigation strategies used to manage digital fabrication production processes • sustainable practices and waste management processes associated with digital fabrication methods • quality processes used in digital fabrication production processes • interpretation of architectural, engineering and/or project plans, working drawings and assembly specifications and guidelines • project management strategies.
Assessment Conditions	<p>Skills in this unit must be demonstrated in a workplace or an environment where building information modelling (BIM) is applied.</p> <p>This includes access to:</p> <ul style="list-style-type: none"> • internet, information technology and BIM compatible software • related technologies, including mixed or blended technologies, and headset and/or glasses • relevant specifications and documentation • real or simulated people. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

