



Harmonisation of Building Information Modelling and Digital Engineering Services Procurement

A GUIDE TO CONTEMPORARY PRACTICES

Making it easier for suppliers to do business with the government.



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Australasian BIM Advisory Board (ABAB)

In May 2017, the Australasian BIM Advisory Board (ABAB) was established by the Australasian Procurement and Construction Council (APCC) and the Australian Construction Industry Forum (ACIF), together with NATSPEC, buildingSMART Australasia and Standards Australia. This partnership of national policy and key standard-setting bodies represents a common-sense approach that captures the synergies existing in, and between, each organisation's areas of responsibility in the built environment. It also supports a more consistent approach to the adoption of Building Information Modelling (BIM) across jurisdictional boundaries.

The establishment of ABAB is a first for the Australasian building sector with government, industry and academia partnering to provide leadership to improve productivity and project outcomes through BIM adoption.

ABAB is committed to optimal delivery of outcomes that eliminate waste, maximise end-user benefits and increase the productivity of the Australasian economies. ABAB has evolved from a previous APCC-ACIF collaboration established in 2015 at a BIM Summit. This summit produced resource documentation to support BIM adoption (refer to www.apcc.gov.au for copies).

Members of ABAB have identified that, without central principal coordination, the fragmented development of protocols, guidelines and approaches form a significant risk that may lead to wasted effort and inefficiencies, including unnecessary costs and reduced competitiveness, across the built environment industry.

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What is Building Information Modelling (BIM)?

BIM is a digital form of construction and asset operations. It brings together technology process improvements and digital information to radically improve client and project outcomes and asset operations. BIM is a strategic enabler for improving decision-making for both buildings and public infrastructure assets across the whole life cycle. It applies to new build projects and crucially, BIM supports the renovation, refurbishment, and maintenance of the built environment – the largest share of the sector. [EU BIM Task group Handbook, 2018].

What is BIM process consistency?

BIM process consistency is the consistent use of proven methods, techniques, standards, templates, workflows, and tools within and across the public sector. BIM process consistency improves the performance of BIM adoption and implementation.

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Acknowledgments

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1 Introduction

1.1 Background

In May 2017, the Australasian BIM Advisory Board (ABAB) was established by the Australasian Procurement and Construction Council (APCC) and the Australian Construction Industry Forum (ACIF), together with NATSPEC, buildingSMART Australasia, Austroads, and Standards Australia. This partnership of national policy and key standard-setting bodies represents a common-sense approach that captures the synergies existing in, and between, each organisation's areas of responsibility in the built environment. It also supports a more consistent approach to the adoption of Building Information Modelling (BIM) across jurisdictional boundaries. The establishment of ABAB is a first for the Australasian building sector with government, industry and academia partnering to provide leadership to improve productivity and project outcomes through BIM adoption.

ABAB is committed to optimal delivery of outcomes that eliminate waste, maximise end-user benefits and increase the productivity of the Australasian economies. Members of ABAB have identified that without centralised principal coordination, the fragmented development of protocols, guidelines, and approaches poses a significant risk. This risk may result in wasted effort, inefficiencies, reduced competitiveness, unnecessary costs, and adverse effects across the industry.

The procuring by governments of Building Information Modelling and Digital Engineering (DE)¹ services from the private sector is a relatively new phenomenon. ABAB has adopted the European Union (EU) BIM Task Group's definition of BIM:

BIM is a digital form of construction and asset operations. It brings together technology, process improvements and digital information to radically improve client and project outcomes and asset operations. BIM is a strategic enabler for improving decision-making for both buildings and public infrastructure assets across the whole life cycle. It applies to new build projects; and crucially, supports the renovation, refurbishment, and maintenance of the built environment – the largest share of the sector.

BIM is used hereafter to refer to BIM and DE services.

With Australasian governments' growing interest in driving the benefits² that BIM brings to asset creation and operations, prequalification and/or panel arrangements, procurement of BIM services is expected to grow. In addition, a recent scan of APCC members indicates that procurement of BIM services through either a prequalification or panel arrangements is low, and in most cases non-existent. The predicted growth and immaturity provides an opportunity to drive best practice and consistency in the way governments consider and request BIM services.

Inconsistent BIM requirements and tender requests will result in significant duplication of effort and frustration by the pool of available expertise in the BIM discipline. Thus, a consistent approach to the procurement of BIM is needed.

¹ The convergence of emerging technologies such as Building Information Modelling (BIM), Geographic Information Systems (GIS) and related systems to derive better business, project, and asset management outcomes. Digital Engineering enables a collaborative way of working using digital processes to enable more productive methods of planning, designing, constructing, operating, and maintaining assets through their life cycle.

² See A Framework for the Adoption of Project Team Integration and Building Information Modelling.

1.2 Purpose

It is acknowledged that the size of the procurement spend in BIM services is at its infancy however is expected to grow quickly over the coming years. This Guide aims to:

- drive national consistency in how governments request provision of BIM services by identifying the various requirements when government tenders for BIM services; and
- facilitate a perfect competitive market by registering a pool of prequalified providers that provide necessary BIM services to governments across Australasia.

This Guide is the first stage in development of a best practice consistent approach to the procurement of BIM services across jurisdictional/agencies and can be translated into a Prequalification and/or Panel scheme, thus making it easier for industry to work with multiple governments. The Guide aims to provide a template with information and guidance to facilitate harmonisation, while granting space for government jurisdictions and agencies to shape their own approaches to digital challenges in their respective operational contexts.

1.3 Method

This Guide is based on the Framework of DE Services Prequalification Scheme by Transport for NSW and has been developed by consulting with BIM experts and leveraging their experiences and knowledge in this field.

1.4 Audience

This Guide provides practical support for:

- government agencies looking to procure BIM services; and
- BIM services providers trying to understand and bid for government work.

This Guide includes two sections:



Framework

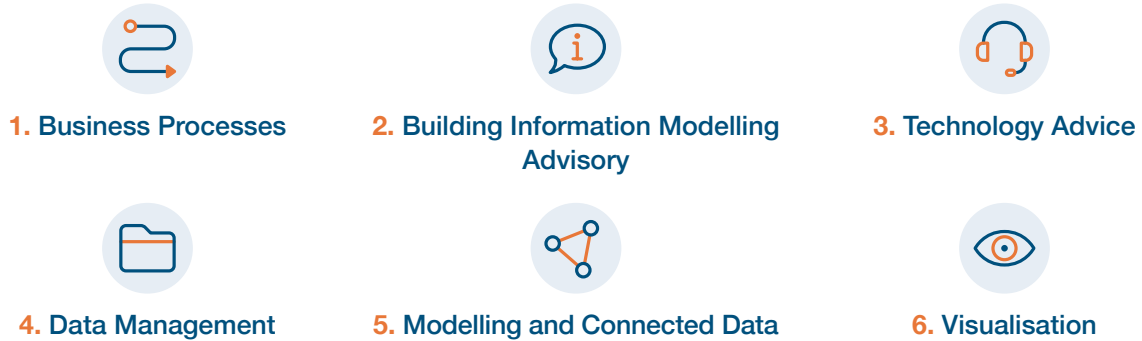


Process



2 Framework

The Framework consists of six areas:



Under these six areas, there are 27 divisions comprising 74 measures. This Framework helps government agencies and BIM services providers to understand BIM services procurement requirements.



2.1 Business Processes

The Business Processes area evaluates an applicant's potential to complete a project efficiently. It consists of three divisions:

- ▶ business process mapping/re-engineering
- ▶ integration with asset management
- ▶ automation.

2.1.1 Business Process Mapping/Re-engineering

Business Process Mapping/Re-engineering is an approach that lays out some, or all, of the processes of a business, connecting each process together, and identifying what can be undertaken by the organisation to improve and find a more efficient way of working. This approach comprises of three measures:

- map information management processes and workflows according to ISO 19650 standards
- conduct business process review, gap analysis, evaluation, and optimisation strategies
- integrate BIM workflows into existing business processes.

2.1.2 Integration with Asset Management

Integration with Asset Management is an approach that integrates the business with asset management providing visibility into the organisation's assets with accuracy, ease, and simplicity. This approach comprises of three measures:

- map information workflows across asset lifecycle
- develop processes to optimise project and asset data transfer across lifecycle stages (e.g., asset handover)
- implement BIM standards to enable consistent data/information management across asset lifecycle.

2.1.3 Automation

Automation is an approach that makes business processes operate automatically, so that human input and error is minimised and productivity and efficiency within the business is increased. This approach comprises of three measures:

- digitalise workflows to enable end-to-end digital processes within a multidivisional organisation, function, and department (MOFD)
- digitalise standards to enable automated processes e.g., parametric rules-based design, data cleansing/assurance
- automate cross-platform data transfer and exchange to support BIM business processes.



2.2 Building Information Modelling Advisory

The Building Information Modelling Advisory area evaluates an applicant's expertise to provide BIM advisory services for improved performance. It consists of eight divisions:

- ▶ strategy development and planning
- ▶ maturity assessment
- ▶ organisational transformation
- ▶ business case development
- ▶ change management
- ▶ project management
- ▶ procurement
- ▶ digital engineering management.

2.2.1 Strategy Development and Planning

Strategy Development and Planning is a process where an organisation states a BIM vision and creates a plan to reach the stated vision. This process comprises five measures:

- set a long-term BIM vision for a MOFD
- define appropriate BIM policy and governance within a MOFD
- review, evaluate, develop, and advise the strategy for a MOFD
- implement BIM strategy within a MOFD
- conduct an auditing process of the Common Data Environment (CDE) within a MOFD.

2.2.2 Maturity Assessment

Maturity Assessment is a tool that assesses the effectiveness of an organisation's current capability and supports development of a plan to improve capability consistently and continuously. This tool comprises four measures:

- present comprehensive analysis of BIM capability
- demonstrate alignment of its practices with the key benchmarking framework of BIM capability – ISO 19650 International Standards
- demonstrate knowledge about BIM industry best practice
- showcase an incremental program for improving BIM capability.

2.2.3 Organisational Transformation

Organisational transformation is a method for an organisation to undertake change initiatives to move from where it currently is to a sustainable competitive future state. The change initiatives involves three measures:

- tailor and integrate ISO 19650 International Standards within a MOFD
- conduct technical and process review with respect to ISO 19650 International Standards
- conduct organisation and team structure review with respect to ISO 19650 International Standards.

2.2.4 Business Case Development

Business Case Development is a tool that provides an organisation's leadership team with an assessment of a particular decision's investment, benefits, and risks to make a compelling recommendation for implementation. In developing a strong business case, three measures need to be considered:

- demonstrate preparation to support BIM strategy and implementation
- conduct benefits realisation analysis and oversight of BIM
- illustrate understanding of and respond to the employer's information requirements.

2.2.5 Change Management

Change Management is an approach to systematically deal with the transition or transformation of an organisation's goals, processes, or technologies to identify the most efficient means of generating consistent and optimum results. This approach comprises three measures:

- develop and implement its digital transformation programs within a MOFD
- show evidence of communication and stakeholder engagement planning and implementation before rolling out changes
- establish continual improvement practices with respect to change and BIM implementation.

2.2.6 Project Management

Project Management is the process of leading the work of a service provider's project team to plan and manage a project to achieve goals within the given constraints. This process comprises three measures:

- have knowledge of Common Data Environment (CDE) and how to use CDE to enable more effective collaboration across project teams
- plan and implement BIM within a MOFD
- facilitate non-traditional project management practices e.g., Design Thinking, Value Management, Human Based Design etc.

2.2.7 Procurement

Procurement is a method of discovering and agreeing to terms and purchasing goods, services, or other works from an external source, often using a tendering or competitive bidding process, and typically for business purposes. This method comprises two measures:

- alignment between the BIM procurement planning and the project delivery strategy, including contract model and engineering assurance
- make effort to seek impartial specialist advice on commercial aspects of BIM procurement e.g., Intellectual Property, Insurance, Risk Management etc.

2.2.8 Digital Engineering Management

Digital Engineering Management is a set of skills that integrate various digital technologies, such as BIM, mixed realities, big data analytics and blockchain, to radically transform the construction sector. A service provider with qualified digital engineering management skills needs to show a 'good track record' in three measures:

- show development, review, and publication of documentation to support BIM implementation (e.g., policies, standards, guidelines etc) within a MOFD
- oversight and manage BIM service providers to support project delivery and asset management outcomes
- provide client-side BIM project management to support project delivery and asset management outcomes.

2.2.9 Legal Advice

Provision of legal aspects of digital assets or information management procurement, e.g., Intellectual Property, Data Security, Insurance, Risk Management etc.



2.3 Technology Advice

The Technology Advice area evaluates an applicant's knowledge to inform clients on the use of best technology to achieve organisational objectives. It consists of three divisions:

- ▶ software requirement and integration
- ▶ modelling platforms
- ▶ geospatial platforms.

2.3.1 Software Requirements and Integration

Software Requirement and Integration are descriptions of features and functionalities of what a software can do and how it will be expected to perform. An organisation's knowledge about software requirement and integration comprises three measures:

- develop functional and non-functional requirements for BIM related software platforms
- provide specialist advice on implementation of BIM software solutions to support a BIM Common/ Connected Data Environment for project delivery and/or Enterprise Asset Management
- provide services in the creation and deployment of a Common Data Environment.

2.3.2 Modelling Platforms

A Modelling Platform is the foundational system that automates and livestreams the modelling process. An organisation's knowledge about modelling platforms comprises three measures:

- give specialist advice on software platforms to enable BIM model production, review, analysis, and exchange
- give specialist advice on software platforms to support advanced modelling techniques (e.g., parametric, rules-based design etc)
- give specialist advice on implementation and maintenance of BIM modelling platforms to support a MOFD.

2.3.3 Geospatial Platforms

A Geospatial Platform is a system that provides geospatial data, services, and applications for use. An organisation's knowledge about geospatial platform involves two measures:

- provide specialist advice of geospatial software platforms to enable Geographic Information System (GIS) production, review, and exchange, to support a MOFD
- provide specialist advice on implementation and management of integrated geospatial platforms to support whole-of-life asset management solutions.



2.4 Data Management

The Data Management area evaluates an applicant's ability to collect, keep, and use data securely, efficiently, and cost-effectively for business decision-making. It consists of six divisions:

- ▶ BIM business architecture
- ▶ metadata schemas and standards
- ▶ data migration
- ▶ BIM object library
- ▶ large file data management system
- ▶ data assurance/validation.

2.4.1 BIM Business Architecture

BIM business architecture is a basis for translating digital vision into digital reality. At its core, it comprises three measures:

- map and provide specialist advice of business architecture to integrate BIM within a MOFD
- implement BIM business architecture to enable whole-of-life BIM solutions where required
- implement master data management within a MOFD.

2.4.2 Metadata Schemas and Standards

Metadata is data that describes other data, providing a structured reference that helps to sort and identify attributes of the information it describes. A key component of metadata is the schema. Data schemas are the overall logical structure for the data. It describes how the data is set up, and usually addresses standards for common components of metadata like dates, names, and places. To be useful, metadata needs to be standardised. This includes agreeing on language, spelling, date format, etc. If no standard is used, it can be exceedingly difficult to compare data sets. Two measures need to be considered in this regard:

- develop object-based data schemas and associated metadata to enable whole-of-life integrated BIM solutions
- implement BIM object-based data standards within a MOFD.

2.4.3 Data Migration

Data Migration is the process of moving data from one location to another, one format to another, or one application to another. This is the result of introducing a new system or location for the data. This involves three measures:

- scan BIM objects to IFC compliant
- collate, converse, and migrate project and asset data and related information between databases and software platforms
- manipulate asset data formats between proprietary and open data formats to support BIM processes.

2.4.4 BIM Object Library*

BIM Object Library is an online environment created for the storage of manufacturers' BIM object model files. This includes three measures:

- develop a standardised BIM object library to enable whole-of-life integrated BIM solutions
- implement a standardised BIM object library to support a MOFD
- update all objects to be Industry Foundation Classes compliant.

* Caution is recommended when asking for a BIM Object Library as it may be difficult to maintain and be kept up-to-date with the multitude of software and updates.

2.4.5 Large File Management System

A Large File Management System is a technological tool that helps the business organise documents, records and other data as well as better understand their data and storage utilisation. Businesses often have documents that they need to refer to and store whether it be for legal, commercial, public record keeping, or other reasons. Establishing a large file management system is key for the efficient running of the business. This includes two measures:

- seek specialist advice on services to support large file access and management of BIM related data (e.g., high-resolution video, point cloud laser scans, precinct models, etc)
- seek specialist advice on services to support large file data access and collaboration to support a MOFD.

2.4.6 Data Assurance/Validation

Data Assurance/Validation is a step in the data workflow to validate the accuracy, clarity, and details of data inputs, values, and models. Without validating data, the business runs the risk of basing decisions on data with imperfections that are not accurately representative of the situation at hand. Setting basic data validation rules will help the business uphold organised standards that will effectively make working with data more efficient. This includes two measures:

- develop BIM assurance systems and processes to meet key asset lifecycle milestones
- assure asset information and associated BIM deliverables to support project delivery and asset management outcomes.

2.4.7 Data Security Management Plan

Data Security Management Plan is a documented protocol that defines how project data will be protected from loss or unauthorised access during creation, exchange, and retention. This requires the provider to consider three measures:

- establish data security protocols
- establish adequate user access rights to data
- have inhouse data security experts.



2.5 Modelling and Connected Data

Modelling Data is the process of defining all the different data the business collects and produces. Connected data creates the representation of relationships between data elements. The modelling and connected data area evaluates an applicant's ability to optimise analytics performance, no matter how large and complex the data estate is – or becomes. It consists of three divisions:

- ▶ model production
- ▶ geospatial production
- ▶ connected data.

2.5.1 Model production

As-built project BIM models are generally made up of several different component models that may be produced by different consultants, contractors, or service providers. The model production identifies the originator for each model and the level of detail it should have reached at different stages of the project. This approach comprises five measures as required:

- have all BIM objects modelled IFC compliant
- have post-production of raw data obtained from laser scanning or photogrammetry
- have feature extraction and/or object recognition from laser scan point clouds
- have digitisation and conversion of raster to vector-based models
- have process point clouds and/or 3D surface models to develop 3D-object based models
- have updated conversion of CAD elements, traditional survey and/or legacy drawing information to 3D object-based models.

2.5.2 Geospatial Production

Geospatial Production is producing information that describes objects, events, or other features with a location on or near the surface of the earth. A provider qualified in geospatial production will be determined by four measures:

- develop for, or align with the organisations policy regarding Earth surface movement
- produce 2D/3D GIS capturing engineering, urban design, precinct planning and related data
- implement GIS solutions to support enterprise project/asset data management
- produce photo-realistic “reality mesh” models to support project delivery and asset management outcomes.

2.5.3 Connected Data

Connected Data is bringing data from every project element all together by providing one centralised platform for all stakeholders to collaborate at any phase of the building process, from initial concept to completion. Building such a platform comprises three measures:

- produce 4D BIM with associated scheduling information
- produce 5D BIM with associated cost information
- produce data-rich as-built BIM to support asset handover.



2.6 Visualisation

Visualisation is a generated image of a building's structure or space. Combined with the power of immersive visualisation, it is possible to explore the design model and get a much more accurate understanding of the final product before moving into construction.

2.6.1 Extended Reality

Extended Reality is the commonly used umbrella term for:

Model Rendering and Animation – a step within the Computer-Generated Image creation process which allows the creation of digital, realistic snapshots of buildings that are not physically built yet.

Augmented Reality - the integration of digital information with the user's environment in real time.

Virtual Reality (VR) - an immersive 3D environment, isolated from the real world, where graphical and non-graphical information can be viewed and manipulated.

These tools comprise three measures:

- provision of services in the development of Extended Realities applications or solutions within a Department or Project
- provision of services in the implementation of Extended Realities applications or solutions within a Department or Project
- provision of subject matter expertise to support the implementation and ongoing operation of Extended Realities applications or solutions within a Department or Project.

2.7 Further Considerations: Education and Training

Specialist training providers who can provide / deliver BIM training to Government staff is vital in lifting capability and maturity across Government and Industry. This should be considered at both academia and Government Industry practitioners levels.

- **Education (Academia)**
 - Provision of services to develop digital asset / engineering management education materials, strategies, programmes, and delivery methodologies
 - Provision of services to develop education courses to build digital asset / engineering knowledge and awareness, based on global best practice
 - Provision and delivery of education courses to Department and Agency staff.
- **Training (Government / Industry Practitioners)**
 - Provision of services to develop digital asset / engineering training strategies, programmes, and delivery methodologies
 - Provision of services in the development of specialist digital asset / engineering awareness training material for Department Head's / Sponsors
 - Provision of services in the development of specialist digital asset / engineering training material for Project Delivery teams
 - Provision of services in the development of specialist digital asset / engineering training material for Departments and Agency staff
 - Provision and delivery of digital asset / engineering training material to Departments and Agency staff.



3 Process

The process proposed by the Guide involves three steps:

- ▶ Project Registration
- ▶ Assessment
- ▶ Selection

Both the **government agency** and **BIM services providers** are required to take these steps. These steps contribute to a cost-effective evaluation of the BIM services providers' potential performance in BIM.

3.1 Step 1: Project Registration

Table 1 contains project information. The **government agency** uses this table to release information about the Project to attract BIM services providers.

Table 1 Project Data

| | |
|---|--|
| Project name | |
| Contract number | |
| Jurisdiction | |
| Location | |
| Client organisation | |
| Project description | |
| Contract type | |
| Announced cost-total project estimate | |
| Announced timing of construction | |
| Funding source | |
| Project manager name and best contact information | |

Table 2 is an adaptable Scorecard. Since no two projects are the same and the industry norms are continuously evolving, the **government agency** uses this table to nominate the areas required for the project, assign different weighting to each nominated area, and provide an explanation for the weighting. The weighting of each area is subject to the government agency's decision on how important this area is to the project.

Table 2 Adaptable Scorecard

| Areas | Tick if required | Weighting (all selected areas total to 100%) | Rationale of weighting |
|---|--------------------------|--|------------------------|
| Business Processes | <input type="checkbox"/> | | |
| Building Information Modelling Advisory | <input type="checkbox"/> | | |
| Technology Advice | <input type="checkbox"/> | | |
| Data Management | <input type="checkbox"/> | | |
| Modelling and Connected Data | <input type="checkbox"/> | | |
| Visualisation | <input type="checkbox"/> | | |

Table 3 is a registration form. **BIM services providers** should first understand the descriptive statements of each area in Section 2. Then they need to select the areas based on the project they are applying for. BIM services providers who have registered are called applicants. Once submitting the registration form, all applicants should provide information relating to the selected areas and agree that their information is assessed by the government agency.

Table 3 Registration Form

| PROJECT NAME | | |
|---------------------------------|--|--|
| Applicant information | | Tick if provided |
| Company BIM Representative Name | | <input type="checkbox"/> Business Processes |
| Website URL | | <input type="checkbox"/> Building Information Modelling Advisory |
| Person completing the form | | <input type="checkbox"/> Technology Advice |
| Telephone number | | <input type="checkbox"/> Data Management |
| Mobile number | | <input type="checkbox"/> Modelling and Connected Data |
| Email address | | <input type="checkbox"/> Visualisation |
| Revision history | | |

3.2 Step 2: Assessment

The following tables are assessment tools which may be used for prequalification. This assessment can enable registration of a pool of prequalified BIM service providers for Government.

In the table, the first column lists questions relating to measures for applicants to answer. The second column records applicants understanding of each measure. In the third column, all applicants should provide supporting evidence about their organisation to show their ability and/or experience relating to the measure. The fourth, fifth, sixth, seventh and eighth columns require the government agency to assess the applicant's responses.

1 = Conventional Practice, 2 = Typical Practice, 3 = Advanced Practice, 4 = Best Practice, and 5 = Innovative Practice. If no response is provided in the respective measure, the score = 0.



Template 2.1 Business Processes

Template 2.1.1: Business Process Mapping/Re-engineering - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Map information management processes and workflows according to ISO 19650 Standards | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Conduct business process review, gap analysis, evaluation, and optimisation strategies | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Integrate BIM workflows into existing business processes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.1.2: Integration with Asset Management - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Map information workflows across asset lifecycle | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Develop processes to optimise project and asset data transfer across lifecycle stages (e.g., asset handover) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Implement BIM standards to enable consistent data/information management across asset lifecycle | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.1.3: Automation - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Digitalise workflows to enable end-to-end digital processes within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Digitalise standards to enable automated processes e.g., parametric rules-based design, data cleansing/assurance | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Automate cross-platform data transfer and exchange to support BIM business processes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Business Processes Total Area Score = (2.1.1 + 2.1.2 + 2.1.3) * weighting%



Template 2.2 Building Information Modelling Advisory

Template 2.2.1: Strategy Development and Planning - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Set a long-term BIM vision for a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Define appropriate BIM policy and governance within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Review, evaluate, develop, and advise the strategy for a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Implement BIM strategy within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Conduct an auditing process of the Common Data Environment (CDE) within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.2: Maturity Assessment - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Present comprehensive business analysis of BIM capability | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Demonstrate alignment of its practices with the key benchmarking framework of BIM capability – ISO 19650 International Standards | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Demonstrate knowledge about BIM industry best practice | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Showcase an incremental program for improving BIM capability | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.3: Organisational Transformation - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Tailor and integrate ISO 19650 International Standards within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Conduct technical and process review with respect to ISO 19650 International Standards | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Conduct organisation and team structure review with respect to ISO 19650 International Standards | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.4: Business Case Development - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Demonstrate preparation to support BIM strategy and implementation | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Conduct benefits realisation analysis and oversight of BIM | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Illustrate understanding of and respond to the employer's information requirements | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.5: Change Management - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|---|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Develops and implement its digital transformation programs within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shows evidence of communication and stakeholder engagement planning and implementation before rolling out changes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Establish continual improvement practices with respect to change and BIM implementation | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.6: Project Management - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|---|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Have knowledge of CDE and how to use CDE to enable more effective collaboration across project teams | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Plan and implement BIM within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Facilitate non-traditional project management practices e.g., Design Thinking, Value Management, Human Based Design etc | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.7: Procurement - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|---|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Align between the BIM procurement planning and the project delivery strategy, including contract model and engineering assurance | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Makes effort to seek impartial specialist advice on commercial aspects of BIM procurement e.g., Intellectual Property, Insurance, Risk Management etc | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.8: Digital Engineering Management - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Show development, review, and publication of documentation to support BIM implementation (e.g., policies, standards, guidelines etc) within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Oversight and management of BIM service providers to support project delivery and asset management outcomes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Provide client-side BIM project management to support project delivery and asset management outcomes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.2.9: Legal Advice - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Provision of legal aspects of digital assets or information management procurement | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

BIM Advisory Total Area Score = (2.2.1 + 2.2.2 + 2.2.3 + 2.2.4 + 2.2.5 + 2.2.6 + 2.2.7 + 2.2.8 +2.2.9) * weighting%



Template 2.3 Technology Advice

Template 2.3.1: Software Requirements and Integration - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Develop functional and non-functional requirements for BIM related software platforms | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Provide specialist advice on implementation of BIM software solutions to support a BIM Common/ Connected Data Environment for project delivery and/ or Enterprise Asset Management | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Provide services in the creation and development of a CDE | | | | | | | |

Template 2.3.2 Integration with Modelling Platforms - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Give specialist advice on software platforms to enable BIM model production, review, analysis, and exchange | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Give specialist advice on software platforms to support advanced modelling techniques (e.g., parametric, rules-based design etc) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Give specialist advice on implementation and maintenance of BIM modelling platforms to support a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.3.3: Geospatial Platforms - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Provide specialist advice of geospatial software platforms to enable Geographic Information System (GIS) production, review, and exchange, to support a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Provide specialist advice on implementation and management of integrated geospatial platforms to support whole-of-life asset management solutions | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Technology Advice Total Area Score = (2.3.1 + 2.3.2 + 2.3.3) * weighting%



Template 2.4 Data Management

Template 2.4.1: BIM Business Architecture - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Map and provides specialist advice of business architecture to integrate BIM within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Implement BIM business architecture to enable whole-of-life BIM solutions where required | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Implement master data management within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.4.2: Metadata Schemas and Standards - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Develop object-based data schemas and associated metadata to enable whole-of-life integrated BIM solutions | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Implement BIM object-based data standards within a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.4.3: Data Migration - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Scan BIM objects to IFC compliant | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Collate, converse, and migrate project and asset data and related information between databases and software platforms | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Manipulate asset data formats between proprietary and open data formats to support BIM processes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.4.4: BIM Object Library - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Develop a standardised BIM object library to enable whole-of-life integrated BIM solutions | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Implement a standardised BIM object library to support a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Update all objects to be Industry Foundation Classes compliant | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.4.5: Large File Management System - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Seek specialist advice on services to support large file access and management of BIM related data (e.g., high-resolution video, point cloud laser scans, precinct models etc) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Seek specialist advice on services to support large file data access and collaboration to support a MOFD | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.4.6: Data Assurance/Validation - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Develop BIM assurance systems and processes to meet key asset lifecycle milestones | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Assure asset information and associated BIM deliverables to support project delivery and asset management outcomes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.4.7: Data Security Management Plan - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|---|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Establish data security protocols | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Establish adequate user access rights to data | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Have in-house data security experts | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Data Management Total Area Score = (2.4.1 + 2.4.2 + 2.4.3 + 2.4.4 + 2.4.5 + 2.4.6 + 2.4.7) * weighting%



Template 2.5 Modelling and Connected Data

Template 2.5.1: Model Production - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Have BIM objects modelled IFC compliant | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Have post-production of raw data obtained from laser scanning or photogrammetry | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Have feature extraction and/or object recognition from laser scan point clouds | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Have digitisation and conversion of raster to vector-based models | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Process point clouds and/or 3D surface models to develop 3D- object based models | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Have updated conversion of CAD elements, traditional survey and/or legacy drawing information to 3D object- based models | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.5.2: Geospatial Production - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|---|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Develop for, or align with the organisations policy regarding Earth surface movement | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Produce 2D/3D GIS capturing engineering, urban design, precinct planning and related data | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Implement GIS solutions to support enterprise project/asset data management | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Produce photo-realistic "reality mesh" models to support project delivery and asset management outcomes | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Template 2.5.3: Connected Data - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Produce 4D BIM with associated scheduling information | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Produce 5D BIM with associated cost information | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Produce data-rich as-built BIM to support asset handover | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Modelling and Connected Data Total Area Score = (2.5.1 + 2.5.2 + 2.5.3) * weighting%



Template 2.6 Visualisation

Template 2.6.1: Extended Reality - Total Division Score

| Measures | Understanding | Supporting evidence | 1 = Conventional Practice | 2 = Typical Practice | 3 = Advanced Practice | 4 = Best Practice | 5 = Innovative Practice |
|--|---------------|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Provision of services in the development of Extended Realities applications or solutions within a Department or project | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Provision of services in the implementation of Extended Realities applications or solutions within a Department or Project | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Provision of subject matter expertise to support the implementation and ongoing operation of Extended Realities applications or solutions within a Department or Project | | | | | | | |

Visualisation Total Area Score = (2.6.1) * weighting%

3.3 Step 3: Selection

The outcome is generated based on a weighted sum of the Division scores. The quality of the applicant = Total Score (2.1 + 2.2 + 2.3 + 2.4 + 2.5 + 2.6) / 6 (please refer to the table below as an example). This enables the government agency to produce a Short List of providers that are likely to be most appropriate for the project. Short-listed providers may then be invited to tender for the contract.

| | Bid One | Bid Two | Bid Three |
|--------------|---------|---------|-----------|
| 2.1 | | | |
| 2.2 | | | |
| 2.3 | | | |
| 2.4 | | | |
| 2.5 | | | |
| 2.6 | | | |
| 2.6 | | | |
| TOTAL | | | |

4 Summary

In summary, this comprehensive Guide provides a process for project registration, assessment, prequalification and selection for Building Information Modeling (BIM) service providers. It uses an industry performance-rating framework to assess six critical areas: business processes, building information modelling advisory, technology advice, data management, modelling and connected data, and visualisation.

The Guide is evidence-based, ensuring all measures are evaluated quantitatively. It is also adaptive, acknowledging that no two projects are identical. To cater to this uniqueness, the respective government agency designates the necessary areas for the project, assigning variable weights to each nominated area.

Furthermore, this Guide is instrumental in facilitating effective comparisons amongst diverse applicants, ensuring the most suitable candidate is selected.

Glossary

| | |
|--|--|
| Asset | Defined as an 'item, thing or entity that has potential or actual value to an organisation'. Assets can be tangible or intangible through physical and non-physical (digital) assets. Data and information are considered a digital asset (ISO 55000). |
| Asset Handover | The process by which the responsibility for an asset is passed from one party to another, typically at the end of a project or phase. This often involves transferring all relevant data and documentation about the asset. Key handover events are usually contractually defined. |
| Asset Lifecycle | The series of stages an asset goes through from creation or acquisition to disposal, which may include acquisition, design, construction, operation, maintenance, and disposal stages (ISO 55000). |
| As Built BIM | Description of a model or document that records the details of a construction work following its completion. The model includes comprehensive data about an asset's design, construction, and operational history. It reflects the asset as it was actually built and is often used for facility management and future modifications. (See Section 6 AS-BUILT MODELS in Asset Information Requirement Guide for more information about as-built models). |
| BIM Object Library | A repository of objects. Object libraries save modellers duplicating the effort required to create objects from scratch each time they are needed and provide the opportunity to introduce quality assurance and standardisation measures, e.g., naming conventions for objects and their properties. |
| Building Information Modelling (BIM) | A digital form of construction and asset operations. It brings together technology, process improvements and digital information to radically improve client and project outcomes and asset operations. BIM is a strategic enabler for improving decision-making for both buildings and public infrastructure assets across the whole life cycle. It applies to new build projects; and crucially, supports the renovation, refurbishment, and maintenance of the built environment – the largest share of the sector. |
| Common Data Environment (CDE) | A single source of information for any given project, used to collect, manage and disseminate documentation, the graphical model and non-graphical data for the whole project team. Creating this single source of information facilitates collaboration between project team members and helps avoid duplication and mistakes (ISO 19650-1). |
| Consistent Data/ Information Management | The systematic organisation, storage, retrieval, and use of information in a way that is consistent, reliable and efficient. This often involves the use of standard protocols, practices, and tools (ISO 19650-1). |
| Data | Information represented in a manner suitable for automatic processing. Source: 701-01-11. Reinterpretable representation of information in a formalised manner suitable for communication, interpretation, or processing. Information can be processed by human or automatic means. Also known as digital information (ISO/IEC 2382-1). |
| Data Cleansing/ Assurance | The process of detecting and correcting or removing corrupt or inaccurate records from a record set, table, or database to improve data quality. |
| Delivery Team | The group of individuals or organisations responsible for delivering a product, service, or project. |
| Digital Asset | In the context of this Policy a digital asset refers to the digital information required to plan and deliver an infrastructure project and/or operate and maintain the associated built assets. Digital assets developed throughout the course of delivering a project are immensely valuable and should be captured and used to better manage and operate assets at the conclusion of a project or for the purposes of continuous improvement on other projects. Source: Digital Asset Policy. |

| | |
|---|--|
| Digital Engineering | A contemporary and collaborative approach to working on assets allowing for a faster and more efficient approach to delivering projects and managing physical assets. It is a convergence of emerging technologies such as BIM, GIS, and other related systems for deriving better businesses, projects, and asset management outcomes. Digital engineering enables a collaborative way of working using digital processes to enable more productive methods of planning, designing, constructing, operating, and maintaining assets through their life cycle. The core elements of digital engineering include a standardised classification system, open data format, object-based models, spatially located data, and common data environment across all asset phases. Source: Victorian Digital Asset Strategy. |
| Digitalise Work Flows | The process of using digital technologies to change a business model and provide new revenue and value-producing opportunities; the process of moving to a digital business. |
| Employer Information Requirements (EIR) | A pre-contract document used in Building Information Modelling (BIM) Level 2 projects, which defines the information about the Asset that the Employer wishes to procure in order to achieve the Employer's Business or Operational needs (ISO 19650-1). |
| Enterprise Asset Management | An integrated system for managing the lifecycle of physical assets to maximise their use, save money, improve quality and efficiency, and safeguard health, safety, and environment (ISO 55000). |
| Exchange Information Requirements (EIR) | A document used in BIM projects that specifies the information that will be required by the employer from both the supply chain and the asset (the 'data deliverables') (ISO 19650-1). |
| GIS (Geographic Information System) | A system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data. |
| Industry Foundation Classes (IFC) | An open and standardised data format that allows the exchange of a building model between different software applications used in the construction industry, developed by BuildingSMART. |
| Information Management | Specification for what, when, how and for whom information is to be produced. Source: ISO 19650-1: 2018 Information Management (IM) is the process by which an organisation collects, structures, stores, uses, and shares its data to perform its core business across asset lifecycle activities. In the construction and infrastructure sector, IM is enabled by the application of the UK BIM Framework and supports wider digital transformation approaches (data analytics, data science, Internet of Things, Artificial Intelligence/ Machine Learning applications). Together, these approaches improve the quality, availability, and timeliness of the information available to organisations – facilitating more efficient and effective decisions and investments across the asset lifecycle. Source: Centre for Digital Built Britain (CDBB). |
| Laser Scanning | A surveying method that collects measurements used to create 3D models of objects and environments. It uses a laser beam to gauge spatial relationships and shapes by measuring the time. The method can capture a physical object's exact size and shape into the computer world as a digital 3-dimensional representation. |
| Lifecycle Stages | The stages through which an asset passes, typically including design, construction, operation, maintenance, and disposal (ISO 55000). |
| Master Data Management | A comprehensive method of enabling an enterprise to link all of its critical data to one file, called a master file, which provides a common point of reference. |
| Metadata | Metadata for recordkeeping refers to descriptive information about the content, context, structure, and management of records. It can be created, captured, and managed automatically by a piece of software or system, manually by a person, or by using a combined approach. Metadata about records may be held across several different systems within an agency, including recordkeeping and/or business systems. Source: Public Record Office Victoria. |
| Modelling Platforms | A Modelling Platform is the foundational system that automates and livestreams the modelling process. |
| Non-traditional Project Management Practices | This refers to project management practices that are not based on traditional, linear approaches but incorporate methodologies like Agile, Lean, Design Thinking, Value Management, and Human-Centered Design. |

| | |
|--------------------------------------|---|
| Object-Based Data Schemas | A data model that structures data as collections of logical entities, or “objects,” each of which is distinct from other objects and can be given specific values. |
| Open Data Formats | Data formats that are platform independent and made available with the intention of promoting open data, interoperability and easy exchange of information. |
| Parametric Rules-based Design | In computer-aided design, it is a methodology of designing models parametrically. The design is controlled by parameters that define the attributes of the design, enabling automatic updates and changes to the design by altering the parameters. |
| Photogrammetry | The science of making measurements from photographs, especially for recovering the exact positions of surface points. |
| Proprietary Data Formats | Data formats that are owned by a company or organisation and are not open source. These formats may require specific software to read and write. |
| Raster Based Model | A data structure representing a generally rectangular grid of pixels, or points of colour, viewable via a monitor, paper, or other display medium. Raster images are stored in image files with varying formats. |
| Rendered Animations | A sequence of visual content, like a movie or 3D walkthrough, which has been processed, or “rendered,” to produce a fluid and fully visualised sequence from raw data inputs. |
| Vector Model | A type of geometric data model that represents geographic features as points, lines, and polygons. Each point feature is represented as a single coordinate pair, while line and polygon features are represented as ordered lists of vertices. |



Harmonisation of Building Information Modelling and Digital Engineering Services Procurement

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