 

**AS ISO 19650 Aligned**

October 2022

**Exchange Information Requirements (EIR) Template**

|  |  |
| --- | --- |
| Project Reference: |  |
| Project name: |  |
| Project address/location: |  |
| Brief project description: |  |
| Appointing party: |  |

|  |  |
| --- | --- |
| Version: |  |
| Date: |  |

**NATSPEC Exchange Information Requirements (EIR) Template**

October 2022

Publisher: Construction Information Systems Limited ABN 20 117 574 606

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**Document references**

In this document:

* The ‘*EIR Template’* or ‘*Template*’ means the *NATSPEC Exchange Information Requirements (EIR) Template*.
* The ‘EIR’means theexchange information requirements for the nominated project.
* The ‘*BEP*’ means the *BIM Execution Plan* (for a specific project).
* The ‘*National BIM Guide’* or ‘*Guide*’ means the *NATSPEC National BIM Guide*.

**Acknowledgements**

NATSPEC thanks the numerous individuals and organisations who contributed to the development of this document through material they provided and/or comments they made on drafts.

**Comments**

NATSPEC welcomes comments or suggestions for improvements to this document and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. NATSPEC also encourages users to share their experiences of applying it on projects with us. The input of industry stakeholders helps keep NATSPEC documents relevant to current practice and useful.

Contact us via email at [bim@natspec.com.au](mailto:bim@natspec.com.au).

**Exchange information requirements (EIR)**

**Document control**

This table is for listing the contacts who worked on the development of the EIR, and who can be contacted to answer queries about them. Indicate responsibilities for the development of the EIR in the ‘RACI’ column.

| Title/Role | Name | Company/  Organisation | Email | Tel. No. | RACI |
| --- | --- | --- | --- | --- | --- |
| Author |  |  |  |  |  |
| Owner |  |  |  |  |  |
| Appointing party representative |  |  |  |  |  |
| Information Manager |  |  |  |  |  |

**Key to responsibilities for developing EIR**

R Responsible for undertaking activity

A Accountable for activity completion

C Consulted during activity

I Informed following activity completion

Add or amend roles in the table as required. Those shown are examples only – customise to suit the project.

Role responsible for maintaining and updating EIR:

Enter the role or individual/s responsible. Refer to required procedures for consultation, notification, review, approval, etc in **Technical,** **Project information production methods and procedures directory**.

**Version history**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Date | Amended by | Approved by | Comments |
|  |  |  |  |  |
|  |  |  |  |  |
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**Exchange information requirements (EIR)**

EIR are prepared by the appointing party. EIR are the pieces of information required by them to support their decision making during the delivery phase and operational phases of assets. They are an aggregation of project information requirements (PIR) and asset information requirements (AIR).

The prospective lead appointing party allocates subsets of these information requirements to each appointed party as required when preparing the pre-appointment BIM Execution Plan (BEP).

EIR are structured around the level of information need required at each information delivery milestone and should be expressed in a way that enables them to be readily incorporated into appointments, e.g. grouping by discipline and/or trade.

Refer to AS ISO 19650.1, Section 5. and AS ISO 19650.2, Clause 5.2.1.

**Using this Template**

This EIR Template is designed specifically for developing EIR after AIR and PIR have been defined.

This Template includes prompts for eliciting EIR and provides a structure for organising them effectively.

See *Appendix D – Defining information requirements* for an explanation of its structure and instructions for its use.

# This EIR Document

## AS ISO 19650 alignment

This document is aligned with the requirements of the AS ISO 19650 series of standards and uses the terminology from them throughout. Refer to them for details of the requirements and definitions of terms.

Definitions of terms can also be found on the ISO Online Browsing Platform (OBP): <https://www.iso.org/obp/ui>

A basic understanding of the concepts, principles and terminology found in AS ISO 19650 is crucial for making effective use of this template. See the *NATSPEC National BIM Guide* for an introduction to the subject.

## Purpose

Thisdocument defines the exchange information requirements (EIR) for the project.

Make sure the project to which this document applies is clearly identified, e.g. in the document title, on the cover.

## Application

This EIRdocument forms part of the invitation to tender documentation provided by the appointing party to prospective appointed parties. It describes the information the prospective delivery team is required to deliver for the project stages they are engaged for.

Applicable project phases:

Examples of options – adjust wording to suit project:

* This EIR document applies to the design phases only of the project, up to and including the handover of the AIM and/or PIM from the design team to the construction team.
* This EIR document applies to the construction phases only of the project, from the handover of the AIM and/or PIM from the design team to the construction team and up to and including the handover of models from the construction team to the operators of the completed built asset.
* This EIR document applies to the design and construction phases of the project, up to and including the handover of the AIM and/or PIM from the design and construction teams to the operators of the completed built asset.

The last option offers the most opportunities to realise the potential benefits of BIM.

**Design status**

A brief description of the point design development has reached at the time invitations to tender are issued, (e.g. functional brief, concept design, sketch design, developed design, contract documentation) will also give prospective appointed parties a clearer picture of the extent to which the design has been resolved, so they can assess the resources and risks associated with developing it further, without having to infer it from the details included in the EIR alone.

Include any additional information that provides context for EIR, e.g. project plan of work, program.

# Project details

## Project description

Outline description:

Insert a brief description of the project including its purpose and/or refer to documents that describes it in more detail.

## Project goals

The appointing party’s goals for the project are shown in the **Project goals table**.

**Project goals table**

|  |  |  |
| --- | --- | --- |
| Priority | Goal description | Measures of success |
|  |  |  |
|  |  |  |
|  |  |  |

**Priority:** e.g. High, Medium, Low, 1, 2, 3, etc. Define numerical designations to make it clear what is meant by each.

**Goal description:** A brief description, e.g. Increase cost certainty. Refer to the goals described in the AIR and PIR when summarising them here..

**Measures of success:** Quantifiable if possible, e.g. reduced number of requests for information.

If goals are documented elsewhere, you may prefer to delete the table and reference the relevant document instead.

# Commercial

## Procurement strategy

The project procurement strategy is shown in the **Project procurement strategy table**.

**Project procurement strategy table**

|  |  |
| --- | --- |
| Project procurement strategy: |  |
| Contractor engagement: indicative date: |  |

**Project procurement strategy**: e.g. Design Bid Build, Design and Construct, Integrated Project Delivery*.* If not yet decided, write ‘To be confirmed’.

The procurement strategy will determine if a single or multiple BIM Execution Plans (BEP) are required and when/how responsibilities are handed over. If the designer’s engagement is included with the contractor’s, the Design BEP and Construction BEP can be combined in one document.

If procurement details are documented elsewhere, you may prefer to delete the table and reference the relevant document instead.

Appointing party’s project procurement approach:

If this information has already been provided in the NATSPEC PIR Template, copy it here.

Outline the appointing party’s approach to project procurement to provide context for the items described in this document. This may not be applicable to those who have not procured projects before.

This can include details such as:

* The priority given to types of project information.
* In-house personnel currently responsible for project procurement, and their roles.
* Current project procurement systems in place including software used for this purpose.
* Extent of outsourcing of project procurement responsibilities and the scope of associated contracts.
* Proposed approach to transitioning information and responsibilities from the design team to construction team where applicable.

If the project procurement approach has been described in the organisational information requirements (OIR), copy it to this location. If the organisation has a formal strategy or policy document, include it in the Annex and reference it here.

Appointing party’s asset management approach:

If this information has already been provided in the NATSPEC AIR Template, copy it here.

Outline the appointing party’s approach to asset management to provide context for the items described in this document.

This can include details such as:

* The priority given to asset information.
* In-house personnel currently responsible for asset management, and their roles.
* Current asset management systems in place including software used for this purpose.
* Where none exists: Proposed approach to asset management including how it will be resourced, e.g. staff, software, infrastructure.
* Extent of outsourcing of asset management responsibilities and the scope of associated contracts.
* Proposed approach to transitioning from an existing asset management system to a new one including data migration.

If the asset management approach has been described in the Organisational Information Requirements (OIR), copy it to this location. If the organisation has a formal Strategic Asset Management Plan (SAMP) or policy document, include it in the **Annex** and reference it here.

## Project team members

The contact details for key stakeholders who contributed to the development of the EIR are shown in the **Project team members table**.

**Project team members table**

| Role | Discipline | Name | Company/  Organisation | Email |
| --- | --- | --- | --- | --- |
| Appointing party representative |  |  |  |  |
| Information Manager |  |  |  |  |
| Project Manager |  |  |  |  |

Add or amend roles in the table as required. Those shown are examples only – customise them to suit the project.

Confine contacts to those who need to be kept informed of changes in AIR or can answer queries about them.

If the details are extensive, you may prefer to include them in the **Annex** and reference it here.

## Common data environment

Provision of common data environment (CDE):

A project CDE should have been established by the appointing party in conformance with AS ISO 19650.2, Clause 5.1.7. If this is the case, enter ‘By the appointing party’ at the prompt.

If the appointing party has not established a CDE, specify the technical implementation requirements, management expectations and commercial arrangements regarding ownership and responsibilities during and after project delivery.

Establishing a CDE prior to invitations to tender has the advantage of providing a single secure location for standards and project reference information that form part of the tender documentation. This is more effective and reliable than sending them individually to each prospective appointed party.

CDE access:

Provide a link to the CDE.

Instructions for using the CDE:

Provide a link to the CDE location for instructions.

## Project information delivery milestones

The dates required by the appointing party for the delivery of information are shown in the **Project information delivery milestones table**.

Information delivery dates should be based on the timing of key decision points for the project. Allow sufficient lead time for appointing party decision making processes between the two.

Providing a project program to prospective appointed parties – if one is available – will place milestones in context.

Make sure dates do not conflict with program requirements documented elsewhere.

See Guidance below the **Project and asset information purposes table** for sources of plain language questions (PLQ) that can help define the asset information required for key decision points.

**Project information delivery milestones** **table**

| Delivery milestone | Weeks before\* | Key decision point | Weeks before\*\* | End of project phase |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

\* Weeks before the key decision point \*\* Weeks before end of project phase

NOTE: This table should align with the delivery milestones and dates from the AIR and PIR prepared previously.

* Edit the table as required, e.g. add or delete delivery milestones, key decision points and/or project phases.
* Enter phase names or descriptions agreed for the project, e.g. Schematic design, Contract documentation.
* Enter descriptions of delivery milestones, key decision points. Number or designate as required.
* Enter lead times between delivery milestones, key decision points and the end of project phases in the ‘Weeks before’ columns.

See Appendix D – Defining information requirements for an example of a completed table.

Dates can be substituted for lead times if they have been determined.

Information handover procedure:

Describe the procedure for handing over the AIM and PIM to the appointing party including post-handover evaluations to confirm that their information requirements have been satisfied. Coordinate the procedures detailed in the AIR and PIR. Reference relevant standards such as *The Soft Landings Framework Australia and New Zealand* (CIBSE) as required.

Project information acceptance criteria: Conformance with the information requirements specified in this EIR document and the standards cited for each PIM and AIM element in **Technical**, **Standards and project reference information**.

## Existing conditions information

Available existing conditions information:

Describe the existing conditions information that will be made available for prospective appointed parties, e.g. surveys, geotechnical reports, models, asset registers. Include it in the CDE (or tender resources) and reference it in the **Project reference information directory**. If none is available, enter ‘None’ at the prompt.

Additional existing conditions modelling requirements:

Specify any modelling of existing conditions required in addition to that provided by the appointing party. Refer to *Appendix C – BIM use & enabler descriptions* **2.1 Existing conditions modelling** for guidance on defining the scope of information required.

## Asset and project information purposes

Information purposes: The purposes of the asset and project information required by the appointing party are shown in the **Asset and project information purposes table**.

**Purpose of this table**

This table is used to record the purposes of the asset and project information required by the appointing party. The purposes reflect the underlying reasons for information requirements (the ‘why’). They can provide context and assist understanding by those responding to them. Information requirements inform which properties or metadata need to be included in model objects.

Information purposes have been used in this table to group sets of related information requirements together. These include:

* Design: Information that designers are required to provide to communicate design intent.
* Construction: Information that contractors and subcontractors require to construct a built asset, e.g. drawings, specs.
* Project management – appointing party: Information that needs to be provided to the appointing party so they can assess a project’s progress and make informed decisions when responding to any issues that arise.
* Asset management: Information that the owners or operators of a built asset require to operate, maintain, refurbish or alter it effectively.

AS ISO 19650.1 clause 5.1 summarises some of the purposes for which asset information might be required. AS ISO 19650.1 clause 5.3 also advises that a set of AIR should be prepared in response to each trigger event during asset operation, e.g. corrective maintenance in response to failure.

Note: The prospective lead appointed party may wish to add their own project information purposes when preparing their pre-appointment BIM Execution Plan.

**Asset and project information purposes table**

|  |  |
| --- | --- |
| Information purpose | Information requirements |
| **Design** |  |
|  |  |
|  |  |
|  |  |
| **Construction** |  |
|  |  |
|  |  |
|  |  |
| **Project management – appointing party** |  |
|  |  |
|  |  |
|  |  |
| **Asset management** |  |
|  |  |
|  |  |
|  |  |

* Use this table to collate the contents of the **Asset information purposes table** from the AIR document and the **Project information purposes table** from the PIR document.
* Add or delete rows as required to include the information purposes selected for the project.
* Enter the details of the information required for each purpose in the ‘Information requirements’ column. Additional rows can be added for each individual requirement under each purpose if preferred.

The following resources can assist the definition of information requirements:

* *ABAB Asset Information Requirements Guide*, Appendix A includes a list of plain language questions (PLQ) that can be asked to prompt answers about the information required.
* *Victorian Digital Asset Strategy (VDAS) Guidance Appendix 3: Sample key decision points* provides examples of PLQ that can be asked at each stage of a project.
* *BS 8536-1* and *BS 8536-2 Briefing for design and construction* also include briefing checklists and PLQ useful for this purpose in Annexes A and G.

## Asset and project information models

Requirement: Deliver the elements of the asset and project information models described in the following clauses.

The delivery of the AIM and PIM may involve several different appointments at different stages of the project. Clearly defining AIR and PIR based on the appointing party’s information purposes will assist coordination and integration of their content.

### AIM and PIM integration strategies

Requirement: Coordinate information included in each element of the AIM and PIM to minimise duplication and eliminate omissions and contradictions. Implement measures to integrate information to enable it to be used effectively for the purposes documented in the **Asset information purposes table** and **Project information purposes table**.

Duplication of information in multiple locations makes its management more difficult and prone to error. Adopting the ‘single’ source of truth’ principle reduces these risks. Applying metadata to digital information for attributes such as identity and classification enables it to be stored in one location and referenced from other locations (rather than duplicated) as required.

Information classification: Incorporate classification data in AIM and PIM information containers/files and model objects to enable the effective integration and management of information.

Classification data can be embedded in an information container/file naming convention or in metadata.

A container can be a model, a spreadsheet file, a database, an application, etc.

AIM and PIM integration measures:

Copy and merge the **AIM integration strategy** from the AIR document and **PIM integration strategy** from the PIR document or reference them here. See the AIR and PIR Templates for guidance.

If the appointing party does not have any specific requirements for achieving integration of the AIM and PIM, delete the prompt and request proposals from the prospective appointed parties.

## AIM and PIM deliverables

Requirement: Provide the deliverables shown in the **AIM and PIM deliverables table**.

Timing: Provide the deliverables at the delivery milestones shown in the **Project information delivery milestones table**.

**Purpose of this table**

This table is used to collate the deliverables listed in the **AIM deliverables table** and **PIM deliverables table** required for each information purpose from the AIR and PIR documents consecutively. This is to identify every deliverable required prior to determining the level of information need of each at each information delivery milestone and recording them in the **AIM and PIM deliverables level of information need (LoIN) table**.

If preferred, deliverables can be collated directly in the last mentioned table rather than using the **AIM and PIM deliverables table** as an intermediate step.

If the AIR and/or PIR Templates have not been completed previously or it is considered necessary to make clear which deliverables are generated by each information purpose, include the clauses and tables here.

Note: The prospective lead appointed party may wish to add deliverables based on their own project information purposes when preparing their pre-appointment BIM Execution Plan.

**AIM and PIM deliverables table**

| AIM and PIM element |
| --- |
| **Models** |
|  |
|  |
|  |
| **Drawings** |
|  |
|  |
|  |
| **Documents** |
|  |
|  |
|  |
| **Data (object-based)** |
| See **Asset object property table** |

* Add or delete rows under each AIM and PIM element for each item required and edit the descriptions to suit the project.
* Group deliverables by discipline or trade to simplify the task of incorporating them in project-related appointments.

### AIM and PIM deliverables formats

Requirement: Provide deliverables shown in the **AIM and PIM deliverables table** in the formats shown in the **AIM and PIM deliverables format table**.

**Purpose of this table**

This table is used to specify the file or physical format of deliverables shown in the **AIM and PIM deliverables table**.

See *Appendix D – Defining information requirements* for an example of a completed table.

If requirements for individual deliverable types vary significantly, the table can be combined with the **AIM and PIM deliverables table** to show details for each.

**AIM and PIM deliverables format table**

| Deliverable | File type | Physical format | No. of copies \* |
| --- | --- | --- | --- |
| Models |  |  |  |
| Drawings |  |  |  |
| Documents |  |  |  |
| Photographic images |  |  |  |
| Videos, animations |  |  |  |
| Data |  |  |  |

\* Number of hard copies at handover to the operational phase of the asset.

If hard copies are required at other information delivery milestones, amend the text above to describe them.

If the number of hard copies required for each information delivery milestone differs, add additional columns with headers such as ‘No. of copies at Milestone 1’, ‘No. of copies at Milestone 2’, etc and enter the quantities required for each.

Submission of hard copies:

Specify the procedures for submitting hard copies of deliverables including the status of copies to be provided, e.g. record documentation only, the method of delivery and responsibilities. The details can be entered here or the relevant procedure included in the **Technical, Project information production methods and procedures directory** and referenced here.

If hard copies are not required under the contract or these requirements are specified elsewhere, delete the prompt.

## AIM and PIM deliverables level of information need

Requirement: Provide deliverables at each information delivery milestone at the level of information need, and in the formats specified in the **AIM and PIM deliverables level of information need table**.

**Level of information need**

This template uses the concept of level of information need as described in *EN 17412-1:2020* (and *ISO/DIS 7817:2022*) *Building information modelling – Level of information need – Part 1: Concepts and principles*. See *Appendix D – Defining information requirements* clause 6 for commentary on the subject.

**Purpose of this table (below)**

This table is used to specify the level of information need of model, drawing and document deliverables at each information delivery milestone. The level of information need of individual model objects is covered separately in later clauses.

To start this process, collate deliverables from the AIR and PIR documents in the ‘AIM and PIM element’ column.

This approach is suggested because many items will be required for more than one purpose at any given milestone.

Note: The prospective lead appointed party may wish to add deliverables based on their own project information purposes when preparing their pre-appointment BIM Execution Plan.

**AIM and PIM deliverables level of information need (LoIN) table**

| AIM and PIM element | LoIN at  Milestone 1 | Discipline | LoIN at  Milestone 2 | Discipline | LoIN at  Milestone 3 | Discipline |
| --- | --- | --- | --- | --- | --- | --- |
| **Models \*** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Drawings** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Documents** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Data (object-based)** |  |  |  |  |  |  |
| See **Asset object alphanumeric LoIN table** |  |  |  |  |  |  |
| **Other** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

\* Refers to virtual 3D models as a whole, i.e. not individual model object/elements.

* Collate all deliverables shown in the **AIM and PIM deliverables table** in the ‘AIM and PIM element’ column. (It may be simpler to copy the whole table and edit the header row to match this table.)
* Add columns as required for each milestone listed in the **Project information delivery milestones table**.
* Enter the level of information need details for each item at each milestone. Refer to *EN 17412-1* for the aspects used to specify level of information need.

There are three common methods for defining level of information need:

* Descriptive: Describing level of information need at one or more stages of the project lifecycle. For many deliverables such as drawings, few of the descriptions in common use, e.g. conceptual, design development, are well defined. Their application can be highly subjective and they are open to widely varying interpretations which can lead to misunderstandings and disputes.
* Industry specification: Referencing an industry specification, e.g. BIMForum Level of Development (LOD) Specification. They provide greater certainty than descriptive methods.
* Asset definition: Defining the level of information need for each asset (object) individually is the most complete method. It is generally more time-consuming than the other methods but documents such as the USACE Minimum Modelling Matrix can be used to streamline the definition of LOD for many assets.

Some of the aspects that can be used to specify level of information need include:

* For models: Use a description of the model’s overall level of information need, e.g. massing model, concept model, construction model, as-built model. The level of information need for individual model objects is specified elsewhere in the relevant LOD Table, Descriptive modelling specification or Object properties table. See the prompt (red text) for this purpose below.
* For drawings: Use standard descriptions such as concept, sketch, preliminary working, construction and as-built drawings. Drawing scale can also be used as an indicator of the level of detail needed. If considered necessary, reference documents that describe documentation expectations for each type, e.g. *RIBA Plan of Work*, *RIBA Job Book*, *BSRIA BG 6 A Design Framework for Building Services*.
* For documents: Use descriptions such as outline, preliminary draft, construction to indicate the general development status of a document or specify the scope and content required.
* For data: This applies to object-based information. The level of information need for individual model objects is specified separately in the **Asset object alphanumeric level of information need table**.
* For other deliverable types, e.g. non object-based data, images, audio-visual presentations, animations: Use descriptions best suited to the general nature of the deliverable, e.g. scope of subject matter, resolution, run time.

**Discipline**

* Indicate responsibilities for providing each deliverable by entering the acronym for the relevant party from the following **Key to disciplines** in the ‘Discipline’ column. Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.

**Key to disciplines**

|  |  |  |  |
| --- | --- | --- | --- |
| A | Architecture | O | Other discipline, e.g. sustainability |
| B | Building surveying | P | Plumbing/Hydraulic engineering |
| C | Civil engineering | Q | Quantity surveying |
| D | Demolition/dismantling | R | Project management |
| E | Electrical engineering | S | Structural engineering |
| F | Facilities/Asset Management | T | Town and country planning |
| G | Ground engineering/geotechnical | U | Interior design |
| H | Highways and traffic engineering | V | Vertical transportation |
| J | Contractor | W | Water engineering |
| K | Subcontractor | X | Non-discipline specific |
| L | Landscape architecture | Y | Topographical surveying |
| M | Mechanical engineering | Z | Multiple disciplines |
| N | Fire engineering |  |  |
| Δ/Ω | Indicates a property has been included in an object by one party, e.g. Δ, and the value entered by another, e.g. Ω. | | | |

## Spatial object level of information need

Requirement: At each information delivery milestone include the properties in spatial objects shown in the **Spatial object level of information need table**.

Note: A schedule of spaces/spatial objects has not been included in this template because spaces are usually documented elsewhere. Also, the properties required will usually apply to all spatial objects.

**Purpose of this Table**

The **Spatial object property table** specified all the spatial object properties required for information purposes. After including those properties in the table below, use it to show at which information delivery milestone they should be provided. This approach is suggested because many properties will be required for more than one purpose at any given milestone.

The level of information need for spatial objects is implied by the properties required at each milestone, i.e. a numerical scale or external metric is not used.

**Spatial object level of information need table**

| **Property category** | **Generic property name** | **IFC4 property name or property set** | **Required at Milestone 1** | **Discipline** | **Required at Milestone 2** | **Discipline** | **Required at Milestone 3** | **Discipline** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General ID & description** |  |  |  |  |  |  |  |  |
| **Location** |  |  |  |  |  |  |  |  |
| **Geometrical quantities** |  |  |  |  |  |  |  |  |
| **Function** |  |  |  |  |  |  |  |  |
| **Occupancy** |  |  |  |  |  |  |  |  |
| **Surface finishes** |  |  |  |  |  |  |  |  |
| **Maintenance** |  |  |  |  |  |  |  |  |
| **Condition** |  |  |  |  |  |  |  |  |

* Copy the properties from the **Spatial object property table** into this table. (It may be simpler to copy the whole table here, change the ‘Information purpose 1, 2, 3, ….’ headings to ‘Required at Milestone 1, 2, 3, ….’, and clear the checked or filled cells before reusing them to indicate which properties are required at each milestone.
* Add columns as required for each milestone listed in the **Project information delivery milestones table**.
* Indicate the properties required for each information purpose by adding a tick, symbol or fill to the cells.
* If preferred, N/A can be added to cells to make it clear an item is not required.

This table specifies the properties applicable to ALL spatial objects. If different property sets are required for particular groups or classes of spatial objects, subdivide the table into the groups or classes and specify the properties for each.

**Discipline**

* Indicate responsibilities for including the required properties in spatial objects and entering values for them by entering the acronym for the relevant party from the following **Key to responsibilities** in the ‘Responsibility’ column. Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.
* If responsibilities for properties have been documented already, review them when they are collated in this table to ensure there are no gaps, inconsistencies or contradictions.

**Key to disciplines**

|  |  |  |  |
| --- | --- | --- | --- |
| A | Architecture | O | Other discipline, e.g. sustainability |
| B | Building surveying | P | Plumbing/Hydraulic engineering |
| C | Civil engineering | Q | Quantity surveying |
| D | Demolition/dismantling | R | Project management |
| E | Electrical engineering | S | Structural engineering |
| F | Facilities/Asset Management | T | Town and country planning |
| G | Ground engineering/geotechnical | U | Interior design |
| H | Highways and traffic engineering | V | Vertical transportation |
| J | Contractor | W | Water engineering |
| K | Subcontractor | X | Non-discipline specific |
| L | Landscape architecture | Y | Topographical surveying |
| M | Mechanical engineering | Z | Multiple disciplines |
| N | Fire engineering |  |  |
| Δ/Ω | Indicates a property has been included in an object by one party, e.g. Δ, and the value entered by another, e.g. Ω. | | |

## Physical asset classes included in the AIM

Requirement: The physical asset classes to be included in the asset information model (AIM) are shown in the **AIM physical asset classes table**.

It is not necessary or cost-effective to schedule out every asset class or type found in a project for the purposes of the EIR. This information is usually adequately documented elsewhere. The suggested approach is generally only to schedule asset classes that require regular maintenance, e.g. chillers in the **AIM physical asset classes table**. (This means that the contents of the table will effectively be the same as those found in the table of the same name in the AIR Template.)

Refer to the guidance in the AIR Template.

**AIM physical asset classes table**

| Asset class ID | Asset class |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |

Copy the **AIM physical asset classes table** to this EIR document from the AIM Template or reference it here.

Data source:

Copy the data source reference from the AIR and/or PIR document.

### Physical asset object alphanumeric level of information need

Requirement: At each information delivery milestone include the alphanumeric properties in physical asset objects shown in the **Asset object alphanumeric level of information need table**.

Timing: Include sets of properties at the delivery milestones shown in the **Project information delivery milestones table**.

Two alternative tables for documenting level of information need are provided:

* Asset object alphanumeric level of information need table
* Asset object shared properties responsibility matrix

Select one and amend the text above accordingly.

**Purpose of this Table**

The **Asset object property table** identified all the asset object properties required for information purposes. After including those properties in the table below, use it to show at which information delivery milestone they should be provided. This approach is suggested because many properties will be required for more than one purpose at any given milestone.

This table is intended for recording the **alphanumeric** aspects of level of information need – refer to the next clause for geometrical aspects.

The level of information need for asset objects is implied by the properties required at each milestone, i.e. a numerical scale or external metric is not used.

**Asset object alphanumeric level of information need table**

| **Property category** | **Generic property name** | **IFC4 property name or property set** | **Required at Milestone 1** | **Discipline** | **Required at Milestone 2** | **Discipline** | **Required at Milestone 2** | **Discipline** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General ID & description** |  |  |  |  |  |  |  |  |
| **Location** |  |  |  |  |  |  |  |  |
| **Parent system or assembly** |  |  |  |  |  |  |  |  |
| **Classification or category** |  |  |  |  |  |  |  |  |
| **Manufacture & supply** |  |  |  |  |  |  |  |  |
| **Warranties** |  |  |  |  |  |  |  |  |
| **Life cycle & maintenance** |  |  |  |  |  |  |  |  |
| **Temporal** |  |  |  |  |  |  |  |  |
| **Performance** |  |  |  |  |  |  |  |  |
| **Condition** |  |  |  |  |  |  |  |  |
| **Financial** |  |  |  |  |  |  |  |  |

* Copy the properties from the **Asset object property table** from the AIR and PIR documents into this table. (It may be simpler to copy the whole table/s here, change the ‘Information purpose 1, 2, 3, ….’ headings to ‘Required at Milestone 1, 2, 3, ….’, and clear the checked or filled cells before reusing them to indicate which properties are required at each milestone).
* Add columns as required for each milestone listed in the **Project information delivery milestones table**.
* Indicate the properties required for each milestone by adding a tick, symbol or fill to the cells.
* If preferred, N/A can be added to cells to make it clear an item is not required.

This table specifies the properties applicable to ALL asset objects. If different property sets are required for particular groups or classes of asset objects, subdivide the table into the groups or classes and specify the properties for each.

**Discipline**

* Indicate responsibilities for including the required properties in asset objects and entering values for them by entering the acronym for the relevant party from the following **Key to disciplines** in the ‘Responsibility’ column.
* Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.
* If responsibilities for properties have been documented already, review them when they are collated in this table to ensure there are no gaps, inconsistencies or contradictions.

**Key (to disciplines)**

|  |  |  |  |
| --- | --- | --- | --- |
| A | Architecture | O | Other discipline, e.g. sustainability |
| B | Building surveying | P | Plumbing/Hydraulic engineering |
| C | Civil engineering | Q | Quantity surveying |
| D | Demolition/dismantling | R | Project management |
| E | Electrical engineering | S | Structural engineering |
| F | Facilities/Asset Management | T | Town and country planning |
| G | Ground engineering/geotechnical | U | Interior design |
| H | Highways and traffic engineering | V | Vertical transportation |
| J | Contractor | W | Water engineering |
| K | Subcontractor | X | Non-discipline specific |
| L | Landscape architecture | Y | Topographical surveying |
| M | Mechanical engineering | Z | Multiple disciplines |
| N | Fire engineering |  |  |
| Δ/Ω | Indicates a property has been included in an object by one party, e.g. Δ, and the value entered by another, e.g. Ω. |

The table below is an alternative to the **Asset object level of information need table**. Indicate the discipline responsible for adding properties to asset objects at each phase of a project by inserting a symbol or fill in the appropriate cell.

Add or delete phases in the header row as required. The discipline codes shown are examples only. Amend as required.

**Asset object shared properties responsibility matrix**

| **Property category** | **Generic property name** | **Data type** | **Responsibility** | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Design** | | | | | | **Construction** | | | | **FM** |
| **A** | **S** | **C** | **M** | **E** | **P** | **J** | **K1** | **K2** | **K3** | **F** |
| **General ID & description** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Location** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Parent system or assembly** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Classification or category** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Manufacture & supply** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Warranties** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Life cycle & maintenance** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Temporal** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Performance** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Condition** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Financial** |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Discipline**

* Indicate responsibilities for providing each deliverable by entering the acronym for the relevant party from the following **Key to disciplines** in the ‘Responsibility’ column. Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.

**Key to disciplines**

|  |  |  |  |
| --- | --- | --- | --- |
| A | Architecture | O | Other discipline, e.g. sustainability |
| B | Building surveying | P | Plumbing/Hydraulic engineering |
| C | Civil engineering | Q | Quantity surveying |
| D | Demolition/dismantling | R | Project management |
| E | Electrical engineering | S | Structural engineering |
| F | Facilities/Asset Management | T | Town and country planning |
| G | Ground engineering/geotechnical | U | Interior design |
| H | Highways and traffic engineering | V | Vertical transportation |
| J | Contractor | W | Water engineering |
| K | Subcontractor | X | Non-discipline specific |
| L | Landscape architecture | Y | Topographical surveying |
| M | Mechanical engineering | Z | Multiple disciplines |
| N | Fire engineering |  |  |
| Δ/Ω | Indicates a property has been included in an object by one party, e.g. Δ, and the value entered by another, e.g. Ω. | | |

### Physical asset object geometrical level of information need

Requirement: Provide physical asset object geometrical properties at each information delivery milestone at the level of information need specified.

Asset object geometrical level of information need reference:

If it is decided to define the geometrical level of information need or Level of Development (LOD) of asset objects at this point in the project, enter a reference to the applicable document and its location at the prompt, e.g. Level of Development (LOD) Table, Minimum Modelling Matrix, Descriptive Modelling Specification.

If the document is included in the **Annex** or **Project information standards directory**, then refer to it at the prompt.

# Management

## Information quality assurance

Information quality assurance requirements:

Describe the measures required for assuring the quality of information. Include measures relating to the Common Data Environment (CDE) under **CDE management**.

If the appointing party does not have existing quality assurance requirements for asset information, they may choose to request proposals from tenderers for consideration. In this instance, delete the following text about quality assurance standards.

Quality assurance standards: Conform to the standards documented in **Technical, Standards and project reference information**.

## Information security and privacy

Information security requirements:

Describe the measures required for ensuring the security and privacy of asset information including governance protocols and responsibilities. This includes but is not limited to technical measures, authorisation processes for access, levels of access, security classification of information, privacy and IP protection measures and procedures in the event of breaches.

Reference the relevant sections of the appointing party’s existing security policies and strategies, security management plans and security breach/incident management plans if available.

Include measures relating to the Common Data Environment (CDE) under **CDE management**.

AS ISO 19650.5 specifies the principles and requirements for security-minded information management. It addresses the steps required to create security strategies, security management plans, etc (but does not provide them ready-made).

## CDE management

CDE standards and procedures:

Describe the measures required to maintain the security and integrity of the CDE. Include applicable standards and procedures in in the **Project information standards directory** and **Project information production methods and procedures directory**.

Incorporate details of these measures in the instructions for using the Common Data Environment (CDE) at **Commercial**, **Common Data Environment**.

If the appointing party does not have existing requirements for management of the CDE, they may choose to request proposals from tenderers for consideration.

## Project meetings

Requirements: The meetings required by the appointing party are shown in the **Meetings schedule**.

**Purpose of this schedule**

This schedule is to show only the meetings required by the appointing party for their decision making and management purposes. The prospective appointed party may propose additional meetings for their own purposes in the pre-appointment BEP.

Include only meetings specifically about BIM and information management-related matters.

Coordinate with any other project meeting requirements documented elsewhere.

**Meetings schedule**

| Meeting type | Frequency | Chairperson | Participants |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Meeting type**: Add meeting types as required.

**Frequency**: e.g. weekly, fortnightly, monthly, 1st Tuesday of each month. If required, this column can be subdivided into project phases to show different frequencies at each.

**Chairperson**: e.g. appointing party’s representative. If a specific person is nominated, also include their project role.

**Participants**: e.g. Information Manager, lead appointed party’s representative.

## BIM Execution Plan

Requirement: Prospective appointed parties are required to submit a pre-appointment BIM Execution Plan (BEP) as part of their response to the invitation to tender. The pre-appointment BEP will document their proposed response to the appointing party’s requirements documented in this EIR.

Pre-appointment BEP content:

E.g. based on the current *NATSPEC BEP Template*. If this is not used, outline the proposed content at the prompt. Other tendering requirements can be documented in the tender response requirements. The *NATSPEC Tendering requirements Template*, which includes a place to document tender evaluation criteria, can be used for this purpose.

# Technical

## Software

Open standards: To facilitate the exchange of information between project team members and ensure the long-term access to project data, all model authoring software is required to be buildingSMART IFC 2x3 TC1 (2.3.0.1) compliant.

Amend the text above if prospective appointed parties can demonstrate their software can conform to later releases of IFC, e.g. IFC 4 Add2.

Non-IFC compliant software other than model authoring software: Where data needs to be exchanged between any non-IFC compliant software proposed for the project, demonstrate how exchange will be achieved.

Proposed software: Describe software proposed for use on the project in the pre-appointment BEP.

Software compatibility testing: Prior to mobilisation, test software for compatibility and demonstrate that the information exchanges between software proposed for the project can be achieved.

## IT infrastructure

Requirement: Provide IT infrastructure for the project including hardware, network, communication, management and support provisions including back-up systems in the event of disruptions.

IT capacity and performance: Adequate for the information delivery documented in the BIM Execution Plan.

## Collaboration Resources

Requirement: Provide collaboration resources necessary for the information delivery documented in the BIM Execution Plan.

If a CDE has not been established by the appointing party, describe the implementation proposed in response to the requirements specified in the under **Commercial**, **Common data environment**.

## Coordination facilities

Provision of coordination facilities:

If any project coordination facilities including rooms and equipment will be provided by the appointing party, document them here. If no facilities are proposed, enter ‘By lead appointing party’, or similar, at the prompt.

## Coordination

Requirement: Make sure all construction models have been spatially coordinated to eliminate clashes between model elements. Make sure information has been coordinated to eliminate contradictions and inconsistencies, and that all cross references are correct.

Coordination requirements:

Describe the measures required for assuring the coordination of models and information. Alternatively, include applicable standards and procedures in in the **Project information standards directory** and **Project information production methods and procedures directory** and reference them here.

If the appointing party does not have existing standards and procedures for information quality assurance and coordination, they may choose to request proposals from tenderers for consideration.

## Model geographic location

Requirement: Establish a Model Geo-reference Point before modelling commences. Align all models with the Model Geo-reference Point documented in the BIM Execution Plan.

A Model Geo-reference Point is a point used to associate locations in the virtual model with those in the physical world. It is a generic term for various ones used in different modelling applications, e.g. Project Base Point in Revit.

The Model Geo-reference Point’s position is defined relative to a physical Survey Point marked on site. It is important to select locations that can be preserved throughout the construction period. (It is possible the Model Geo-reference Point will be disturbed during construction but its position can be determined relative to the Survey Point.)

If the Model Geo-reference Point has been established prior to tender, replace the above text with the details of the Point. A table for specifying them is included in the *NATSPEC BIM Execution Plan (BEP) Template*.

Site set-out point establishment procedure:

Describe the procedure for communicating to the contractor the location of the Model Geo-reference Point and Survey Point for the purpose of aligning construction set-out on site with the model and contract documentation. Alternatively, include it in the CDE and reference its location in **Technical,** **Project information production methods and procedures directory**.

Strategy for aligning models with the Model Geo-reference Point:

E.g. Model Geo-reference Point and/or 3D grids provided by BIM Manager. If models created by different modelling applications are to be shared, outline procedures for aligning them to the same Model Geo-reference Point.

## Asset identification

Requirement: Provide all assets with a unique code for the purpose of identification and to facilitate the cross referencing of information about assets in different information locations and formats within the PIM.

Give preference to international and national standards for asset identification, e.g. VBIS. See <https://vbis.com.au/>

If this requirement is already covered by standards referenced in **Information standards**, you may choose to delete this clause.

## Model object and property naming

Open standards: To facilitate the reliable exchange of information, use buildingSMART Industry Foundation Classes (IFC) naming conventions for model objects and object properties.

Minimum requirements: Include the IFC designations IfcElementType and PredefinedType in all model element objects.

The *Open BIM Object Standard (OBOS)* provides guidance on creating and naming BIM objects and their properties to facilitate the reliable exchange of information between modellers using different applications.

The NATSPEC BIM Properties Generator includes a list of objects with their IFC designations and property sets.

See <https://bim.natspec.org/tools/properties-generator>

If this requirement is already covered by standards referenced in **Information standards**, you may choose to delete this clause.

## Standards and project reference information

Standards and project reference information location:

Include a link to an online repository, common data environment (CDE) or a description of a location. Ideally, a CDE or single secure location for these resources should be established prior to invitations to tender. Refer to AS ISO 19650-2, Clause 5.1.7. This is more effective and reliable compared to sending them individually to each prospective appointed party.

### Information standards

See *Appendix D – Defining information requirements* for examples of standards and project reference information.

Information for the project: Conform to the information standards and information management standards listed in the **Project information standards directory**.

**Project information standards directory**

| Document title | Edition / version | Date |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Edit to include all specific information standards required for the project by the appointing party’s organisation. Refer to AS ISO 19650.2 clause 5.1.4. Give preference to international, national or industry standards, e.g. AS ISO 19650.

Standards can cover topics such as:

* Requirements associated with information exchanges.
* Schema for structuring and classifying information.
* Methods for assigning level of information need.
* Standards relevant to the use of information during the operational phase of the asset.

The project’s information standards determine the organisation of information containers within the CDE.

### Information production methods and procedures

Information production for the project: Conform to the requirements of the documents listed in the **Project information production methods and procedures directory**.

**Project information production methods and procedures directory**

| Document title | Edition / version | Date |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Edit to include all specific information production methods and procedures required for the project by the appointing party’s organisation. Refer to AS ISO 19650.2 clause 5.1.

They can cover topics such as:

* The capture of existing asset information.
* The generation, review or approval of new information.
* The security or distribution of information.
* The delivery of information to the appointing party.
* Information acceptance criteria.

### Reference information

Requirement: Take into consideration the information listed in the **Project reference information directory** when producing information for the project.

**Project reference information directory**

| Document title | Edition / version | Date |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Edit to include all available information useful or relevant to prospective appointed parties when tendering and throughout the project. Its provision avoids potential duplication of effort and excessive contingency costs for risks. Refer to AS ISO 19650.2 clause 5.1.6.

It can include information about:

* The brief.
* Planning and construction approval documentation.
* The site.
* Adjoining assets and utilities.
* Existing assets.
* Guidance material.
* Exemplars of project deliverables, etc.

### Shared resources

Requirement: Take into consideration, or use as directed, the resources listed in the **Project shared resources directory**.

**Project shared resources directory**

| Document title | Edition / version | Date |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Edit to include information or resources that promote consistency of information and facilitates its exchange.

Refer to AS ISO 19650.2 clause 5.1.6.

It can include:

* Templates for BEP, TIDP, MIDP, etc.
* Templates for documents, drawings and models.
* Style libraries for text, lines, hatch, etc.
* Object libraries including 2D symbols and 3D objects.

# Annex

## References

Include any documents that you reference in the EIR here.

**REFERENCED DOCUMENTS**

**The following documents are mentioned only in the *Guidance* text:**

ABAB Asset Information Requirements Guide ABAB 2018

AS ISO 19650: Organization of information about construction works — Information management using building information modelling

Part 1: Concepts and principles

Part 2: Delivery phase of the assets

BSRIA BG 6 A Design Framework for Building Services BSRIA 2018 https://www.bsria.com/uk/product/gDXYjB/design\_framework\_for\_building\_services\_5th\_edition\_bg\_62018\_a15d25e1/

EN 17412-1:2020 Building information modelling – Level of information need – Part 1: Concepts and principles

Open BIM Object Standard (OBOS) NATSPEC & Masterspec NZ 2018

https://bim.natspec.org/documents/open-bim-object-standard

RIBA Job Book RIBA 2020 https://www.ribabooks.com/riba-job-book-10th-edition\_9781859469040

RIBA Plan of Work RIBA 2020

https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work#available-resources

The Soft Landings Framework Australia and New Zealand CIBSE 2014

<https://www.cibse.org/knowledge-research/knowledge-portal/soft-landings-framework-australia-and-new-zealand>

ISO 19650 Guidance Part D: Developing information requirements UK BIM Framework 2022

<https://ukbimframeworkguidance.notion.site/ukbimframeworkguidance/UK-BIM-Framework-Guidance-20a045d01cfb42fea2fef35a7b988dbc>