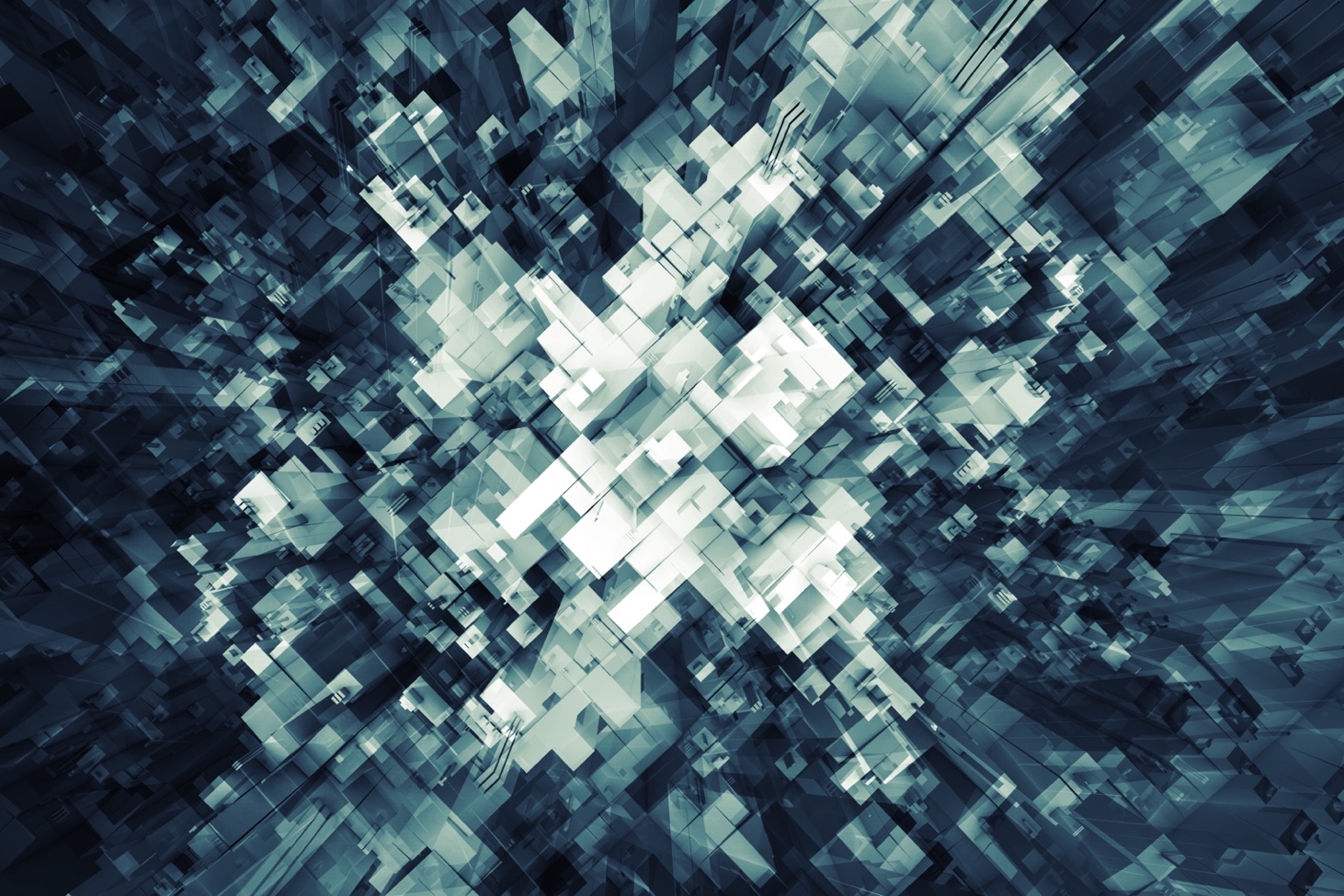
**Digital  
Engineering  
Series**



**DE2T: Employer’s Information Requirements Template**

Employer’s Information Requirements Template

CIBSE DE2T: 2016

The Chartered Institution of Building Services Engineers

222 Balham High Road, London, SW12 9BS

© September 2016 The Chartered Institution of Building Services Engineers London   
Registered charity number 278104

This document is based on the best knowledge available at the time of publication. However, no responsibility of any kind for any injury, death, loss, damage or delay however caused resulting from the use of these recommendations can be accepted by the Chartered Institution of Building Services Engineers, the authors or others involved in its publication. In adopting these recommendations for use each adopter by doing so agrees to accept full responsibility for any personal injury, death, loss, damage or delay arising out of or in connection with their use by or on behalf of such adopter irrespective of the cause or reason therefore and agrees to defend, indemnify and hold harmless the Chartered Institution of Building Services Engineers, the authors and others involved in their publication from any and all liability arising out of or in connection with such use as aforesaid and irrespective of any negligence on the part of those indemnified.

Design, layout and typesetting by CIBSE Publications

**Note from the publisher**

This publication is primarily intended to provide guidance to those responsible for the design, installation, commissioning, operation and maintenance of building services. It is not intended to be exhaustive or definitive and it will be necessary for users of the guidance given to exercise their own professional judgement when deciding whether to abide by or depart from it.

Any commercial products depicted or described within this publication are included for the purposes of illustration only and their inclusion does not constitute endorsement or recommendation by the Institution.

Publication history

First published – September 2016

Redesigned – May 2017

# Foreword

This template is intended for those that generate, complete and review BIM Execution Plans (BEPs). It is based on PAS 1192-2:2013 and provides guidance to users of BEPs as to how information may be sought, generated and reviewed, so as to add value to the employer.

It is not intended to be an exhaustive or definitive document and it will be necessary for users of the guidance given to exercise their own professional judgement when deciding whether to abide by or depart from it.

The concept of the BIM Execution Plan is that it is a response to an Employer’s Information Requirements document (EIR), setting out the proposals for how a project can be delivered digitally.

For the writers of BIM Execution Plans, it is important to understand what your employer, or prospective employer, needs to know and what they will understand from your responses. It is important to give clear and concise answers to the EIR and that these are verified by including examples, certificates and other supporting documentation.

The BEP process is there to make the information exchanges between the design teams, construction teams and their employer predictable and well defined, using formats that are interoperable between the various software platforms used.

[Foreword iii](#_Toc482630908)

[Introduction 1](#_Toc482630909)

[Scope 3](#_Toc482630910)

[Use of this Template 3](#_Toc482630911)

[1. Project information 4](#_Toc482631099)

[2. Information required by the EIR 5](#_Toc482631100)

[2.1 Technical 5](#_Toc482631101)

[2.2 Levels of definition 6](#_Toc482631102)

[2.3 Standards 8](#_Toc482631103)

[2.4 Roles and responsibilities 9](#_Toc482631104)

[2.5 Planning the work and data segregation 10](#_Toc482631105)

[2.5.1 Model management 10](#_Toc482631106)

[2.5.2 Volumes, zones and areas 11](#_Toc482631107)

[2.5.3 Naming conventions 12](#_Toc482631108)

[2.5.4 Publishing processes 13](#_Toc482631109)

[2.6 Security 14](#_Toc482631110)

[2.7 Coordination and clash detection 15](#_Toc482631111)

[2.7.1 Process overview 15](#_Toc482631112)

[2.7.2 Clash resolution process 16](#_Toc482631113)

[2.7.3 Technical query workflow 16](#_Toc482631114)

[2.7.4 Tolerance strategy 16](#_Toc482631115)

[2.8 Collaboration process 17](#_Toc482631116)

[2.8.1 Form of sharing 17](#_Toc482631117)

[2.8.2 Extent of model 17](#_Toc482631118)

[2.8.3 Frequency of information exchange 17](#_Toc482631119)

[2.8.4 Details of model review workshops 17](#_Toc482631120)

[2.9 Health and Safety/ CDM 18](#_Toc482631121)

[2.10 Systems performance 19](#_Toc482631122)

[2.11 Compliance plan 19](#_Toc482631123)

[2.12 Delivery strategy for asset information 19](#_Toc482631124)

[2.13 Data drops and project deliverables 20](#_Toc482631125)

[2.14 Client’s strategic purposes 21](#_Toc482631126)

[2.15 BIM competence assessment 22](#_Toc482631127)

[2.15.1 Level 2 BIM Competence 22](#_Toc482631128)

[2.15.2 BIM capability and experience 23](#_Toc482631129)

[2.15.3 Evidence of BIM execution planning 24](#_Toc482631130)

[2.15.4 Workload and resourcing 24](#_Toc482631131)

[2.15.5 Principal supply chain 27](#_Toc482631132)

[2.15.6 Supply chain assessment process 27](#_Toc482631133)

[2.16 Project metrics 28](#_Toc482631134)

[2.16.1 Building design parameters 28](#_Toc482631135)

[2.16.2 Space design parameters 29](#_Toc482631136)

[Appendix 1 – Further Reading 32](#_Toc482631137)

# Introduction

Use of Employer’s Information Requirements (EIRs) is a fundamental part of the UK Government’s BIM Level 2 mandate. For any project to claim compliance with this mandate there must be an EIR, which is a pre-tender document setting out the information to be delivered, and the standards and processes to be adopted by the supplier as part of the project delivery process.

The EIR should enable a potential project team to develop a BIM Execution Plan (BEP) describing how they will provide or exchange information through the stages of the project from initial design to operation.

It is, in effect, the digital aspect of the wider Employer’s Requirements set of documents and should not replicate information found elsewhere in this set.

The Employer’s Information Requirements will, in essence, ask the questions of the suppliers, be they consultants, contractors or manufacturers, that are responded to by the BIM Execution Plan (BEP).

The drive for an EIR should come from an employer’s Operational (or Organisation) Information Requirements (OIR), which is what an employer needs to know about their built assets to effectively run their business. In practice, not many employers have an OIR on which to draw, but this does not mean that an EIR cannot be produced.

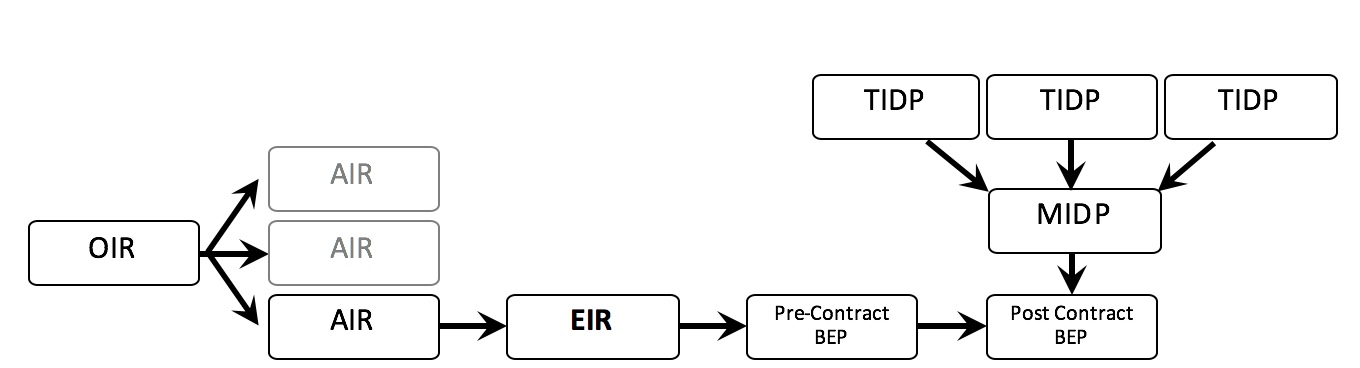


Figure 1 - Hierarchy of Information Requirements

|  |  |  |
| --- | --- | --- |
| Abbreviation | Expansion | Meaning |
| OIR | Operation or Organisation Information Requirements | Information that is used to assist the running of an organisation |
| AIR | Asset Information Requirements | Information regarding a built asset used to effectively run it |
| EIR | Employer’s Information Requirements | Information an employer should ask for in relation to the building of an asset |
| BEP | BIM Execution Plan | Supply chain response to EIR |
| MIDP | Master Information Delivery Plan | Amalgam of TIDPs from suppliers |
| TIDP | Task Information Delivery Plan | Supplier responsibility to deliver project information |

Table 1 - Document Abbreviations

# Scope

This template is intended for those that write Employer’s Information Requirement documents, with particular emphasis on the requirements relating to the Building Services aspects.

This has been written with reference to PAS 1192-2:2013 and should be read in conjunction with this freely available document. This document and other British Standards Institute (BSI) standards and specifications that surround BIM Level 2 are available for download at [bim-level2.org](http://bim-level2.org/).

This template is not intended to be exhaustive, but a useful starting point. Each employer and each project will have a unique set of circumstances that need to be addressed and these should be considered at the EIR stage, as far as this is possible or practical.

# Use of this Template

This template is intended for use on any project that requires BIM Level 2. Projects with repeat clients, that have a good knowledge of BIM and its processes, can complete most of the fields below. For a client that does not regularly procure built assets, the fields can be left blank and the tendering team can propose solutions.

Many of the tables have generic data added, these may be added to or removed as the project requires.

This template can be used as a starting point for a BIM Execution Plan (BEP), or have tables copied into the BEP, as the BEP does require extra data that is not covered by an EIR. CIBSE are providing a BEP template that will be pre-populated with the tables shown below.

# Project information

Employer to provide project details and reference information that is available to the project team to assist in preparing their tender information.

| Ref: | Information | Response |
| --- | --- | --- |
| 1.1 | **Project Name** |  |
| 1.2 | **Project Reference** |  |
| 1.3 | **Address line 1** |  |
| 1.4 | **Address line 2** |  |
| 1.5 | **Address line 3** |  |
| 1.6 | **Town** |  |
| 1.7 | **County** |  |
| 1.8 | **Post code** |  |
| 1.9 | **Survey Point** |  |
| 1.10 | **Project Base Point** |  |
| 1.11 | **Attached Information** |  |

Table 1 – Project information

# Information required by the EIR

## Technical

Employer may ask for specific technical requirements or ask the tendering team to propose solutions.

| Ref: | Information required | Question | Req’d | Response or Document Reference |
| --- | --- | --- | --- | --- |
| 2.1.1 | **Software Platforms** | 2.1.1 – Modelling | Choose an item. |  |
| 2.1.2 – Clash Rendition | Choose an item. |  |
| 2.1.2 | **Data Exchange Format** | 2.2.1 – Documents | Choose an item. |  |
| 2.2.2 – Models | Choose an item. |  |
| 2.2.3 – Data | Choose an item. |  |
| 2.1.3 | **Training** | 2.3.1 – CDE | Choose an item. |  |
| 2.3.2 – Model Viewer | Choose an item. |  |
| 2.3.3 – Data Viewer | Choose an item. |  |

Table 2.1 – Technical

## Levels of definition

Employer may ask for specific levels of definition for constructed aspects at each project stage, or ask for the tendering team to propose levels. The list of constructed aspects (systems) below is illustrative and should be customised to suit project requirements.

| System | Owner | Stage 1 | | Stage 2 | | Stage 3 | | Stage 4 | | Stage 5 | | Stage 6 | | Stage 7 | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LoD | LoI | LoD | LoI | LoD | LoI | LoD | LoI | LoD | LoI | LoD | LoI | LoD | LoI |
| Rooms | **Architect** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Walls External | **Architect** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Walls Internal | **Architect** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Floors | **Architect** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Roofs | **Architect** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Columns | **Structures** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Beams | **Structures** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Slabs | **Structures** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ventilation | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cooling | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Heating | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Main Plant | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rainwater Drainage | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Waste Drainage | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Electrical Distribution | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lighting | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fire Alarms | **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Roads, paths and paving | **Landscape** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| External planting | **Landscape** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Irrigation systems | **Landscape** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fencing and railings | **Landscape** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Street furniture | **Landscape** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Water features | **Landscape** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Table 2.2 – Levels of definition

## Standards

Employer to define which standards are to be employed or ask the tendering team to provide proposed standards to which they will work.

| Ref: | Process | Standard | Req’d | Additional Information |
| --- | --- | --- | --- | --- |
| 2.3.1 | **Capital phase** | PAS 1192-2:2013  BS 1192-4:2007+A1:2016 | Choose an item. |  |
| 2.3.2 | **Operational phase** | PAS 1192-3:2013 | Choose an item. |  |
| 2.3.3 | **COBie** | BS 1192-4:2014 | Choose an item. |  |
| 2.3.4 | **Security** | PAS 1192-5:2015 | Choose an item. |  |
| 2.3.5 | **Briefing for design and construction** | BS 8536-1:2015 | Choose an item. |  |
| 2.3.6 | **CIC BIM Protocol** |  | Choose an item. |  |
| 2.3.7 | **Digital Plan of Work** |  | Choose an item. |  |
| 2.3.8 | **Government Soft Landings** |  | Choose an item. |  |

Table 2.3 – Standards

## Roles and responsibilities

Employer to provide, or ask to be provided, details of the roles and responsibilities for the project. Roles shown are indicative and may be added to or removed.

| Ref: | Role | Team | Req’d | Responsibilities |
| --- | --- | --- | --- | --- |
| 5.1 | **Client’s Technical Adviser** |  | Choose an item. |  |
| 5.2 | **Project Delivery Manager** |  | Choose an item. |  |
| 5.3 | **Information Manager** |  | Choose an item. |  |
| 5.4 | **Lead Designer** |  | Choose an item. |  |
| 5.5 | **Task Team Manager - Services** |  | Choose an item. |  |
| 5.6 | **Task Team Manager - Structures** |  | Choose an item. |  |
| 5.7 | **Task Team Manager - Fire** |  | Choose an item. |  |
| 5.8 | **Other** |  | Choose an item. |  |

Table 2.4 – Roles and responsibilities

## Planning the work and data segregation

### Model management

Employer to provide detail model size and outline content. This can be proposed by the tendering team if required.

| Ref: | Topic | Requirement | Req’d | Notes |
| --- | --- | --- | --- | --- |
| 2.5.1.1 | **Model Split** |  | Choose an item. |  |
| 2.5.1.2 | **Model Size** |  | Choose an item. |  |
| 2.5.1.3 | **Model Zones** |  | Choose an item. |  |
| 2.5.1.4 | **Systems** |  | Choose an item. |  |
| 2.5.1.5 | **Attribute Data** |  | Choose an item. |  |

Table 2.5.1 – Model management

### Volumes, zones and areas

If the project is to be coarsely divided into volumes, zones and/or areas, the employer should provide any known detail here. The tendering teams may be asked to provide this, if the employer does not have this information.

| Ref: | Volume | Requirement | Req’d | Notes |
| --- | --- | --- | --- | --- |
| 2.5.2.1 | **Volume 1** |  | Choose an item. |  |
| 2.5.2.2 | **Volume 2** |  | Choose an item. |  |
| 2.5.2.3 | **Volume 3** |  | Choose an item. |  |
| 2.5.2.4 | **Volume 4** |  | Choose an item. |  |
| 2.5.2.5 | **Volume 5** |  | Choose an item. |  |

Table 2.5.2 – Volumes, zones and areas

### Naming conventions

If the employer has a known standard for file naming, that conforms to BS 1192:2007 and PAS 1192-2, then this may be demonstrated here as a project requirement. If there is no employer standard, then the tendering team may propose one. Some fields are optional and the field lengths variable, the employer, or tendering team, may define this here.

| Ref: | Field | Field Length | Req’d | Allowable Values |
| --- | --- | --- | --- | --- |
| 2.5.3.1.1 | **Project** | Choose an item. | Choose an item. |  |
| 2.5.3.1.2 | **Originator** | Choose an item. | Choose an item. |  |
| 2.5.3.1.3 | **Zones and assets** | Choose an item. | Choose an item. |  |
| 2.5.3.1.4 | **Levels and locations** | Choose an item. | Choose an item. |  |
| 2.5.3.1.5 | **Type** | Choose an item. | Choose an item. |  |
| 2.5.3.1.6 | **Role** | Choose an item. | Choose an item. |  |
| 2.5.3.1.7 | **Classification** | Choose an item. | Choose an item. |  |
| 2.5.3.1.8 | **Number** | Choose an item. | Choose an item. |  |
| 2.5.3.1.9 | **Suitability** | Choose an item. | Choose an item. |  |
| 2.5.3.1.10 | **Revision** | Choose an item. | Choose an item. |  |

Table 2.5.3.1 – File naming conventions

| Ref: | Field | Field Length | Req’d | Allowable Values |
| --- | --- | --- | --- | --- |
| 2.5.3.2.1 | **Role** | Choose an item. | Choose an item. |  |
| 2.5.3.2.2 | **Classification** | Choose an item. | Choose an item. |  |
| 2.5.3.2.3 | **Presentation** | Choose an item. | Choose an item. | D, H, M, P, T |
| 2.5.3.2.4 | **Description** | As Required | Choose an item. |  |

Table 2.5.3.2 – Layer naming conventions

### Publishing processes

Provide details of required publication process, in line with common data environment procedures.

## Security

Provide details of client security requirements for the project, including details of electronic security of the common data environment and any file uploaded there.

## Coordination and clash detection

### Process overview

Provide flow diagram of clash detection process, example diagram shown below:

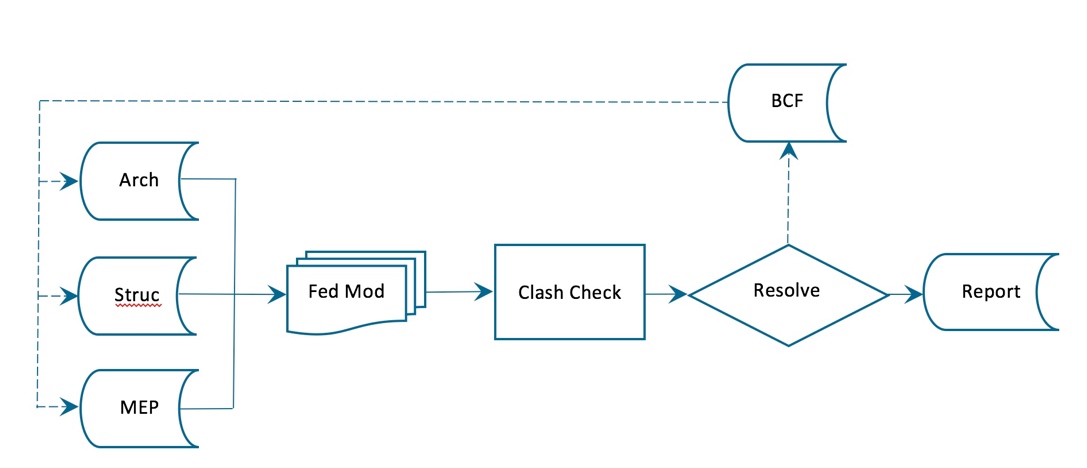


Figure 2.7.1 – Process overview

|  |  |
| --- | --- |
| Term | Definition |
| Arch | Architectural model clash rendition |
| Struc | Structural model clash rendition |
| MEP | Building services model clash rendition |
| Fed Mod | Federated model |
| Clash Check | Use designated software to check for clashes |
| Resolve | Resolve clashes as team |
| Report | Create and keep report of clashes and their resolutions |
| BCF | Export clashes that require rework to BIM Collaboration Format |

### Clash resolution process

Provide detail of the proposed clash resolution process. Some points to consider are shown in the table below:

|  |  |
| --- | --- |
| Point | Considerations |
| Type of Clash | Actual clash, Allowable clash, Not a clash |
| Resolution | Visual impact, Engineering impact, Cost impact |
| Visual impact | Fit with architecture |
| Engineering impact | Best solution, installation, maintenance |
| Cost impact | Design, Procure, Install, Run, Maintain |

### Technical query workflow

Provide details of the proposed workflow for the handling of technical queries.

### Tolerance strategy

Provide details of the proposed strategy for construction, installation and manufacturing tolerances.

## Collaboration process

Provide details of the collaboration processes under the following headings:

### Form of sharing

Provide details of the proposed format of model exchange files.

### Extent of model

Provide details of the extent of the models to be exchanged. Reference may be made to Section 2.2 – Levels of Definition.

### Frequency of information exchange

Provide details of the timings for exchanging models. This may be a frequency, measured in weeks, or a schedule of dates for the information exchanges.

### Details of model review workshops

Provide details of model review workshops. This should include either the frequency of the workshops or a schedule of dates and an outline agenda for the workshops with a list of roles of those who should attend.

Reference may be made to the clash review process and how this is to fit into the model review.

## Health and Safety/ CDM

Provide details of the BIM related approach to health and safety and construction design management processes. Also, include a schedule of deliverables against the work stages, an example is shown below:

| Deliverable | Owner | Stage 1 | Stage 2 | Stage 3 | Stage 4 | Stage 5 | Stage 6 | Stage 7 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Issue | Issue | Issue | Issue | Issue | Issue | Issue |
|  |  | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. |
|  |  | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. |
|  |  | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. | Choose an item. |

Table 2.9 – Health and safety/ CDM

## Systems performance

Provide details of any information technology constraints or limitations, as required by the client. Reference may be made to Section 2.1 – Technical.

## Compliance plan

Provide details of quality assurance procedures relevant to the project and any software used for compliance purposes.

The period of aftercare for the model, maintaining its currency, should also be stated.

## Delivery strategy for asset information

Provide details of the process for delivering information to the asset information model (AIM). The AIM will be using the software platform; *<add software platform>*.

## Data drops and project deliverables

Provide details of the project deliverables and at which stage they are to be expected. This can form the basis of the Master Information Delivery Plan (MIDP) and the Task Information Delivery Plans (TIDP). A partially completed table is shown below by way of example.

| Stage | Drop | Deliverable | Native | IFC | PDF | COBie | Other | By |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Stage 0 |  | **EIR** |  |  |  |  |  | Employer |
|  |  | **BEP** |  |  |  |  |  |  |
| Stage 1 | **1** | **BEP** |  |  |  |  |  | Design Team |
|  |  | **Brief** |  |  |  |  |  |  |
| Stage 2 | **2** | **Model** |  |  |  |  |  | Design Team |
|  |  |  |  |  |  |  |  |  |
| Stage 3 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Stage 4 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Stage 5 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Stage 6 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Stage 7 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Table 2.13 – Data drops and project deliverables

## Client’s strategic purposes

Details of the purposes to which information submitted and required by this EIR are shown in the table below. Refer to BS 1192-4 and BS ISO 55000 for more information.

| Reference | Purpose |
| --- | --- |
| P01 | Register of assets |
| P02 | Support for business questions |
| P03 | Support for compliance and regulatory responsibilities |
| P04 | Management of capacity and utilization |
| P05 | Management of security and surveillance |
| P06 | Support for repurposing |
| P07 | Predicted and actual impacts |
| P08 | Operations |
| P09 | Maintenance and repair |
| P10 | Replacement |
| P11 | Decommissioning and disposal |
| P12 |  |

Table 2.14 – Client’s strategic purposes

## BIM competence assessment

### 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |

### 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |  |

### 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

### 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

### 

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Project metrics

Employer may provide, or ask to be provided, the basic design metrics that will be used to design the built asset. It should be noted that some of these values will be suitable only for certain stages. The table below is an example and may be altered as the project requires.

### Building design parameters

| Ref: | Parameter | Unit | Value |
| --- | --- | --- | --- |
| 2.16.1.1 | **Density of air** | kg/m³ |  |
| 2.16.1.2 | **Specific heat capacity of air** | kJ/kg.K |  |
| 2.16.1.3 | **Latent heat of evaporation** | kJ/kg |  |
| 2.16.1.4 | **External summer design dry bulb temp.** | °C |  |
| 2.16.1.5 | **External summer design wet bulb temp.** | °C |  |
| 2.16.1.6 | **External summer design moisture content** | kg/kg |  |
| 2.16.1.7 | **External winter design dry bulb temp.** | °C |  |
| 2.16.1.8 | **External winter design wet bulb temp.** | °C |  |
| 2.16.1.9 | **External winter design moisture content** | kg/kg |  |

Table 2.16.1 – Building design parameters

### Space design parameters

|  |  |  | Space Types | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ref: | Parameter | Unit | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 | Type 6 | Type 7 | Type 8 |
|  | **Non-seasonal Variables** | |  |  |  |  |  |  |  |  |
| 2.16.2.1 | **Occupancy rate** | m²/person |  |  |  |  |  |  |  |  |
| 2.16.2.2 | **Small power** | W/m² |  |  |  |  |  |  |  |  |
| 2.16.2.3 | **Lighting** | W/m² |  |  |  |  |  |  |  |  |
|  | **Summer Heat Gains** | |  |  |  |  |  |  |  |  |
| 2.16.2.4 | **Internal summer design dry bulb temp.** | °C |  |  |  |  |  |  |  |  |
| 2.16.2.5 | **Internal summer design relative humidity** | % |  |  |  |  |  |  |  |  |
| 2.16.2.6 | **Internal summer design moisture content** | kg/kg |  |  |  |  |  |  |  |  |
| 2.16.2.7 | **Infiltration rate in summer** | ACR/hr |  |  |  |  |  |  |  |  |
| 2.16.2.8 | **Occupant summer sensible** | W/person |  |  |  |  |  |  |  |  |
| 2.16.2.9 | **Occupant summer latent** | W/person |  |  |  |  |  |  |  |  |
| 2.16.2.10 | **Fabric conduction heat gain** | W/m² |  |  |  |  |  |  |  |  |
|  | **Winter Heat Losses** | |  |  |  |  |  |  |  |  |
| 2.16.2.11 | **Internal winter design dry bulb temp.** | °C |  |  |  |  |  |  |  |  |
| 2.16.2.12 | **Internal winter design relative humidity** | % |  |  |  |  |  |  |  |  |
| 2.16.2.13 | **Internal winter actual moisture content** | kg/kg |  |  |  |  |  |  |  |  |
| 2.16.2.14 | **Infiltration rate in winter** | ACR/hr |  |  |  |  |  |  |  |  |
| 2.16.2.15 | **Occupant winter sensible** | W/person |  |  |  |  |  |  |  |  |
| 2.16.2.16 | **Occupant winter latent** | W/person |  |  |  |  |  |  |  |  |
| 2.16.2.17 | **Fabric conduction heat loss** | W/m² |  |  |  |  |  |  |  |  |
|  | **Ventilation requirements** | |  |  |  |  |  |  |  |  |
| 2.16.2.18 | **Ventilation criteria (per person)** | l/s/p |  |  |  |  |  |  |  |  |
| 2.16.2.19 | **Ventilation criteria (air change rate)** | ACR/hr |  |  |  |  |  |  |  |  |
| 2.16.2.20 | **Air flow leakage rate** | % |  |  |  |  |  |  |  |  |

Table 2.16.2 – Space design parameters



























































































































































































# Appendix 1 – Further Reading

* Other guides in this series
  + <http://www.cibse.org/knowledge/cibse-publications/cibse-digital-engineering-series>
* PAS 1192-3:2014
  + <http://shop.bsigroup.com/forms/pass/pas-1192-3/>
* BS 1192-4:2014
  + <http://shop.bsigroup.com/forms/PASs/BS-1192-4-2014/>
* PAS 1192-5
  + <http://shop.bsigroup.com/forms/PASs/PAS-1192-5/>
* Construction Industry Council
  + <http://cic.org.uk/publications/>
* Government Soft Landings
  + [www.bimtaskgroup.org/gsl/](http://www.bimtaskgroup.org/gsl/)
* Employer’s Information Requirements - Core Content and Guidance Notes
  + <http://www.bimtaskgroup.org/bim-eirs/>
* NBS BIM Toolkit
  + <https://toolkit.thenbs.com/>
* The Construction (Design and Management) Regulations 2015
  + <http://www.legislation.gov.uk/uksi/2015/51/contents/made>
* The Construction (Design and Management) Regulations 2007
  + <http://www.legislation.gov.uk/uksi/2007/320/contents/made>
* The Construction (Design and Management) Regulations (Northern Ireland) 2016
  + <http://www.legislation.gov.uk/nisr/2016/146/contents/made>