



# **Guidance for Employers Information Requirements**

## Revisions

<b>Revision</b>	<b>Status</b>	<b>Date</b>	<b>Description</b>	<b>Revised By</b>	<b>Issued To</b>
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## Purpose of Document

PAS1192-2:2013 requires the provision of a clear definition of the employer's information requirements (EIR) and key decision points (to form part of the contract possibly through adoption of the CIC BIM Protocol). The EIR should evaluate the proposed approach, capability and capacity of each supplier, and their supply chain, to deliver the required information, prior to contract award.

EIRs are produced as part of a wider set of documentation for use during project procurement and shall typically be issued as part of the employer's requirements or tender documentation. The development of the EIR shall start either with the assessment of an existing asset, leading to the development of the employer's need, or directly with the employer's need if no existing asset or asset information model is to be considered.

The EIR shall be incorporated into the tender documentation, to enable suppliers to produce their Pre-contract BIM Execution Plan (BEP) upon which their proposed approach, capability and capacity can be evaluated. The EIR is a key document with regards to communicating information requirements as well as establishing information management requirements. The EIR will act as a good basis from which to review the contents of the bidder's BIM Execution Planning, confirming its completeness.

The contents of the EIRs should be aligned to employer decision points which in turn will coincide with project stages. The EIR should be consistent with other appointment and contract documents in use on the project, which in turn should be aligned with industry standards such as the RIAI or PWC project stages. Information requirements should be specific, measurable, achievable, realistic and time-bound against, for defined project stages and information exchanges.

The employer, or the employer's representative, shall be responsible for ensuring that information requirements are included in project contracts in such a way as to avoid duplication of responsibilities.

## Scope

The Employers Information Requirements guidance document is intended to support Employers undertaking BIM Level 2. It is recommended that Employers become familiar with a BIM Protocol such as the Construction Industry Council (CIC) BIM Protocol which should be included as part of the agreement or contract between the Employer and the project team members. The BIM Protocol should include a Model Production and Delivery Table identifying model uses, Levels of Model Definition (LoMD) and responsibility for modelling for each Project Stage /Information Exchange. The Project BIM Protocol should also identify the Project Information Manager.

PAS1192-2:2013 Clause 5.3 defines the minimum contents of the Employers Information Requirements.

The EIR document is divided into 4 sections:

1. Project Information
2. Information Management (*Required by PAS1192-2 Clause 5.3 a*)
3. Commercial Management (*Required by PAS1192-2 Clause 5.3 b*)
4. Competence Assessment (*Required by PAS1192-2 Clause 5.3 c*)

The clauses in each section follow the order as set out in PAS1192-2:2013. Each clause includes a *reference to the relevant clause in PAS1192-2:2013*, the purpose for including the clause in the EIR, a description of the clause, *examples of content to be included in an EIR* and *advise on expectations for the information provided in the EIR or a request for a response by the bidder*. These have been colour coded for clarity.

Employers should seek independent advice from their insurance provider and where necessary legal advice on the professional risks associated with working in BIM using the CIC BIM Protocol, a bespoke BIM Protocol or not using a BIM Protocol. Each organisation using BIM collaboratively should be familiar with guidance contained in the 'Outline Scope of Services for the Role of Information Management' and 'Best Practice Guide for Professional Indemnity Insurance when using BIM' published by the Construction Industry Council.

This document is generic in nature and is intended as guidance for an Employers Information Requirements document. Prior to its use, the document should be reviewed thoroughly to ensure that it is fit for purpose on the intended project. It is not the intention of this document to state how each organisation will implement BIM with their respective organisations but organisations are encouraged to ensure that their internal procedures support this document and standards for Level 2 BIM in the interest of project quality control and improving collaborative processes.

## RIAI BIM Committee

The BIM committee is working together to realise a unified, usable, co-ordinated approach to Building Information Modelling in a design environment.

Committee		
Ralph Montague (Chair)	Arcdox	<a href="mailto:ralph@arcdox.com">ralph@arcdox.com</a>
Bernard Voortman	Cummins & Voortman Ltd.	<a href="mailto:bernard@cvltd.ie">bernard@cvltd.ie</a>
Michael Earley	Scott Tallon Walker Architects	<a href="mailto:michael.earley@stwarchitects.com">michael.earley@stwarchitects.com</a>
David O'Connell	McCauley Daye O'Connell Architects	<a href="mailto:doconnell@mdo.ie">doconnell@mdo.ie</a>
Paul Lennon	Coady Partnership	<a href="mailto:plennon@coady.ie">plennon@coady.ie</a>
Rich De Palma	RKD Architects/DPW Group	<a href="mailto:rdepalma@rkd.ie">rdepalma@rkd.ie</a>
Michael Hinshelwood	Lafferty Associates	<a href="mailto:mhinshelwood@lafferty.ie">mhinshelwood@lafferty.ie</a>
Karol Mac Gairbheith	CIAT Representative	<a href="mailto:karolsmg@googlemail.com">karolsmg@googlemail.com</a>
Pat Slattery	Arcdox	<a href="mailto:pat@arcdox.com">pat@arcdox.com</a>

## Update Procedure

Proposed changes to this document should be submitted in writing with accompanying examples, discussion or other supportive material to the RIAI BIM Committee. Feedback will be gathered and continuously reviewed; they will be collated to form new revisions at appropriate intervals.

## Copyright

This format of this document is based requirements of PAS1192-2:2013 and 'Employer's Information Requirements - Guidance notes version 07: 28.02.13' provided by the BIM Task Group.

It is important to note that this document will only become truly useful if as many companies adopt it as possible. To that extent, it may be freely distributed and used in any format necessary, provided credit is given to the RIAI BIM Committee.

## Credits

We wish to thank the members of the BIM Task Group [www.bimtaskgroup.org](http://www.bimtaskgroup.org)

## Disclaimer

All the advice outlined in this document is for information only. The authors and contributing companies take no responsibility for the utilisation of these procedures and guidelines. Their suitability should be considered carefully before embarking upon any integration into your current working practices.

# Section 1 - Project Information

The following project information should either be included in the EIR or referenced in other tender documentation where it is included. Project Information should be completed by the Employer.

## 1.1 Project Details

### 1.1.1 Employer

As defined in Appendix A section A.57 The Employer is an individual or organization for whom the contract is executed and delivered.

### 1.1.2 Client

As defined in Appendix A section A.29. The Client is the individual or organization commissioning a built asset. The client may be different from the employer.

### 1.1.3 Project Name

The EIR should include a unique name which identifies this project as distinct from other projects which the employer or client may undertake.

### 1.1.4 Project Location

The EIR should include a full address of the project site.

## 1.2 Project Scope

### 1.2.1 Contract / Delivery Type

The EIR should identify the method for design and/or construction procurement e.g. Traditional, Design & Build, 2 Stage IPD, etc.

### 1.2.2 Project Stages

The EIR should identify the project stages that will be used e.g. RIBA, PWC, etc. Versions should be included where applicable.

### 1.2.3 Project Phasing

The EIR should identify if the project will be procured or constructed in time based phases.

### 1.2.4 Approximate Site Area

The EIR should include approximate site in square meters.

### 1.2.5 Approximate Gross Internal Area

The EIR should include approximate gross internal area in square meters.

## 1.3 Project Description

The EIR should include a description of the project or refer to other tender documentation where the description is included. The description should include building type(s), site constraints, building uses, etc.



## Section 2 - Information Management

### 2.1 Level of Definition (LOD)

*Required by PAS1192-2 Clause 5.3 a) 1).*

The purpose of this section is to define requirements for information submissions/data drops at project stages. This information is used to populate the Model Production and Delivery Table (MPDT) included in the BIM Protocol.

The responsibility for the maintenance of the Model Production Delivery Table (MPDT) sits with the Employer. The table can be managed by a party appointed by the employer. For example, post-contract the MPDT could be managed by the Project Delivery Manager or Project Information Manager.

Accurate recording of the Level of Definition is important. PAS1192-2:2013 defines the Level of Definition as a collective term used for and including "level of model detail" and the "level of information detail". PAS1192-2:2013 also refers to Level of Model Definition as "The minimum level of detail needed by the team or the employer for each model's purpose shall be defined" and "The level of graphical information and data to be delivered at each information exchange will be defined with reference to industry standards".

Model Originators will typically be required to complete models strictly to the level of detail required at a particular stage. Similarly information users will typically be required to only rely on information completed to the contractually defined level of detail.

The MPDT defines the scope of the models for the purposes of the contract. It is important that the MPDT is comprehensive and is regularly updated. The MPDT also defines for the purposes of the contract the levels of detail used for the various phases of the project.

Example:

The following Project Stages will be incorporated into the BIM Protocol:

Project Stages / Data Drops			
Stage	Stage Description	Data Drop	Purpose
Stage 1	Inception		
Stage 2	Outline Proposals	1	P01 Approved Outline Business Case
Stage 3	Scheme Design		
Stage 4	Detail Design		
Stage 5	Production Information	2a	P02 Tender Package
Stage 6	Tender Action	2b	P03 Appoint Contractor
Stage 6	Tender Action	2c	P04 Agree Maximum Price for Contractor Proposals
Stage 7	Project Planning		
Stage 8	Operations on Site	3	P05 Practical Completion

	At Handover	4	P06 Operations and Maintenance
	Final Cert	5	P07 Regulations and Compliance

In accordance with Clause 9.8 of PAS1192-2:2013, the minimum level of detail needed by the employer for each model's purpose shall be defined as follows:

Levels of Definition (LOD)	
LOD	LOD Description
LOD1	Brief
LOD2	Concept
LOD3	Developed Design
LOD4	Production
LOD5	Installation
LOD6	As Constructed
LOD7	In Use

*No response is required in the Pre-contract BIM Execution Plan. The Project Stages and Level of Detail should be included in Appendix 1 of the BIM Protocol and used to populate the Model Production and Delivery Table (MPDT).*

*Note: Level of Definition is sometimes referred to as Level of Detail. The PAS1192-2:2013 term Level of Definition which combines Level of Model Definition and Level of Information Definition should be used.*

## 2.2 Training Requirements

*Required by PAS1192-2 Clause 5.3 a) 2).*

The purpose of this section is to provide bidders with details of training that will be provided in connection with project systems, or training requirements which the bidder will be required to deliver as part of their appointment/contract.

The EIR should include details of training for specified client specific applications that will be used on the project. The EIR should communicate clearly that the responsibility for training associated with other modelling and analysis tools rests with the consultant/constructor.

Example:

The Information Manager shall be provided with training at the Employers expense in the Employers FM system ASAP following the BIM Kick-off meeting.

The bidder shall provide details of training and costs for the Common Data Environment (CDE).

*If required, the Pre-contract BIM Execution Plan should confirm any additional training. Costs for additional training must included in the bid.*

## 2.3 Planning of Work and Data Segregation

*Required by PAS1192-2 Clause 5.3 a) 3).*

The purpose of this section is to set out requirements for the bidder's proposals for the management of the modelling process.

A statement that information should be managed in accordance with the processes described in PAS1192-2:2013 and BS1192:2007.

Where the employer has specific requirements for work management, the requirement and request for proposals should be identified.

Example:

Information should be managed in accordance with the processes described in PAS1192-2:2013 and BS1192:2007.

File naming for models and extracts for models should be in accordance with BS1192:2007. The bidder should include an example of a single project file naming strategy which is in compliance with BS1192:2007.

The bidder should provide a methodology for how models will be managed. The expectation is that this will be coordinated by the Information Manager.

The bidder shall provide a methodology for dividing the building into manageable volumes and how these volumes shall be defined and managed for all model authors.

*The Pre-contract BIM Execution Plan should confirm that the project will be managed in accordance with the prescribed standards and where applicable provide proposals for how specific requirements for work management will be undertaken. Detailed proposals will be included in the Post-contract BIM Execution Plan.*

## 2.4 Co-ordination and Clash Avoidance

*Required by PAS1192-2 Clause 5.3 a) 4).*

The purpose of this section is to define the required co-ordination process, together with requirements for quality control.

This EIR should include requests for details of the following project management processes:

- Details of the clash detection process including:
  - Software
  - Process overview
  - Responsibilities
  - Outputs
- Technical query workflow
- Tolerance strategy
- Clash resolution process

Example:

The bidder should provide details for the following project management processes:

- Details of the clash detection process including:
  - Software
  - Process overview
  - Responsibilities
  - Outputs
- Technical query workflow
- Tolerance strategy
- Clash resolution process

*The Pre-contract BIM Execution Plan should respond to the request for details above. Agreed processes will be defined in the completed Post-contract BIM Execution Plan.*

## 2.5 Collaboration Process

*Required in response to the EIR by PAS1192-2 Clause 5.3 a) 5).*

The purpose of this section is to define how, where and when project information will be shared.

It should be stated clearly that the Collaboration Process shall be carried out in accordance with BS1192:2007.

It should be stated clearly if the Employer is providing or procuring the CDE and the specifics of that CDE should be included if known. If the bidder is requested to provide the CDE, it should be stated clearly if costs should be included for in the tender. It should be noted if the bidder is to provide a specific CDE system or a type of CDE system.

The Project Information Manager is responsible for managing the operation, standards and culture of the common data environment.

The bidder should be requested to provide the following details:

- Form of sharing.
- Frequency of collaboration and information exchange.
- Details of model review workshops and other collaborative working practices.

Example:

The Collaboration Process shall be carried out in accordance with BS1192:2007.

Project information will be shared via a Common Data Environment (CDE) which should allow information to be exchanged in accordance with BS1192:2007. The Information Manager will be responsible for managing the CDE in accordance with the Outline Scope of Services for Information Management by the Construction Industry Council. The costs for procuring and providing the CDE will be borne by the successful bidder.

The CDE must provide the following functionality:

- Include licenses to access the CDE for all task team members and the employer team.
- Provide a secure login system.

- Comply with security requirements in section 2.7 of the EIR.
- Provide a means of recording metadata for files. At a minimum, the CDE should record the revision and suitability code for each file exchanged.
- Allow current and previous revisions to be viewed and downloaded.
- Provide a system for approval of documents in accordance with BS1192:2007.
- The CDE should include a viewer for the federated model which can be accessed by registered and authorised users.
- Provide an audit trail for files sufficient to determine:
  - individual and organisation who shared the document
  - date and time when the document was shared
  - list of recipients
  - individuals who viewed, downloaded and approved documents.

The bidder should provide a schedule identifying the frequency of collaboration and information exchange.

The bidder should provide a schedule of meetings/workshops for project collaboration identifying the frequency for each type of meeting. A BIM Kick-off meeting is mandatory to agree roles, responsibilities and authorities.

The exchange of information should be optimised to ensure that meeting participants have sufficient information to collaborate for both the purpose and maturity of the process e.g. clash reports for the areas being discussed, completed COBie and other FM data required by the employer for review prior to completion of a data drop. The bidder should indicate when information is exchanged prior to meetings.

*The Pre-contract BIM Execution Plan should respond to the request for details above. Agreed processes will be defined in the completed Post Contract BIM Execution Plan.*

## 2.6 Health and Safety

*Required by PAS1192-2 Clause 5.3 a) 6).*

The purpose of this section is to enable the employer to define how BIM-based working will support Health and Safety monitoring aligned with the work stages. Data and records capture processes also need to be documented.

This EIR should include details of how BIM enabled processes will be used to manage the employer's and bidders Health and Safety obligations, sufficient to demonstrate competence and capability at tender.

Example:

The supplier pre-contract BIM Execution Plan should include:

- Integration of person(s) undertaking role of Health and Safety Coordination into the BIM Collaboration process.
- Identify key meetings where Health and Safety is reviewed as part of the collaboration process.

- Process for recording and incorporating decisions from Health and Safety matters arising from meetings above.

*The Pre-contract BIM Execution Plan should respond to the request for details above. Agreed processes will be defined in the completed Post Contract BIM Execution Plan.*

## 2.7 Security Requirements

*Required by PAS1192-2 Clause 5.3 a) 7).*

The purpose of this section is to communicate client specific security measures required in order to secure the data.

This EIR should include details of the security standards that apply to information used on the project.

The Employer should state any specific requirements for securing the CDE, parts of the CDE or other systems which store project data. If there are no specific requirements, the bidder should be required to include a methodology for securing the system.

Confidentiality agreements if required should be stated here.

Example:

Any file when uploaded to the collaboration site or other electronic document management system, is to be secure to the standard required by the employer. The CDE should conform to the following requirements/standards:

- ISO 27001 Compliance
- Tier 4 Disaster Recovery
- EU - US Safe Harbour Compliance (Data Protection Act)

The employer shall provide a confidentiality agreement will be included in agreements/contracts with successful bidders.

*The Pre-contract BIM Execution Plan should demonstrate the bidders compliance with mandated security systems.*

## 2.8 Information to be either excluded or included from information models

*Required by PAS1192-2 Clause 5.3 a) 8).*

The purpose of this section is to communicate a schedule of client specific assets that should be included or excluded from the Project Information Model (PIM) and the Asset Information Model (AIM). This section also enables the employer to obtain proposals with regards to asset information delivery into the employer's FM environment.

The EIR should include confirmation of the information exchange format and reference to requirements for the Asset Information Model (AIM).

A list of inclusions and exclusions for client manageable assets may be included.

Text describing AIM delivery strategy should be populated with appropriate requirements and constraints, indicating where any specific detail is required in a contractor's Pre-contract BIM Execution plan as part of a bid submission.

In addition, proposals should be included in the Pre-contract BIM Execution Plan setting out proposals for how best to deliver information into the following defined facilities maintenance environment.

Define the details of systems/databases/information formats in use so that the contractor can demonstrate compliance with information management requirements.

Examples:

- The asset information should be delivered in the COBie format to PAS1192-4:2014 standards as part of the data Drops identified in the Model production Delivery Table. Assets identified in the Employers Asset Information Model should be populated with data appropriate to the level of Model Definition for each Data Drop.
- A mandatory field is required which provides a link from the assets identified in the Asset Information Model to the relevant documents of the Operations and Maintenance manual. In addition, a field is also required which includes a Unique Asset Identifier which will be provided by the Employers Facility Management Systems provider.
- In order to verify the locations of services, a Point cloud survey should be undertaken by the main contractor before services are closed up. The As Built model should be verified against the point cloud surveys.
- Buildings, floors, rooms and manageable assets should be coded in accordance with the Employers Asset Management Plan provided in the tender documentation.
- The contractor should be aware, and make all their subcontractors and suppliers aware, that this project will be carried out using a BIM (building information modelling) process, prior to submitting their tender.
- The contractor will need to make allowance in their programme of sub-contractor appointments for development of the model of the sub-contract element of work, for coordination and approval before works commence on site.
- A read-only DWF/NWD version of the federated building information model is being made available as part of the tender stage, along with a COBie output in Excel format. Free viewing software is available to download.
- The client/designers can confirm that the contract drawings for the xxxxxxxxxx have been derived as far as practically possible from the models and they are dimensionally accurate, however the contractor should be aware that additional information (notes/details) may be contained within the drawings schedules and specifications that may not be in the model and must refer to the contract drawings and schedules and specifications in all instances. The drawings and specifications and schedules are the contract documents.
- The client/designers can also confirm that the following contract drawings for the xxxxxxxxxx have not being derived from the models. The drawings and specifications and schedules are the contract documents and the BIM for this part of the works issued for information only and cannot be relied upon as being consistent with the drawings.
- The contractor will be required to provide meeting facilities with IT and projection facilities to allow access to the construction model, and wireless internet connection on site to allow controlled mobile device accessibility to BIM information to all areas of the work.
- The contractor and their supply chain should confirm with their tender submissions that they have reviewed the models provided, for constructability, logistics and health & safety, and

ideally those should be linked to the construction programme and estimates as part of their tender submission, to demonstrate their understanding of the project and BIM.

- If any alternative proposals are being suggested as part of the tender, the contractor and subcontractors should ideally develop those aspects of the model from tender issue to tender return, incorporating any proposed construction alternatives, or additional information added to existing model elements if applicable. A developed COBie output will also be required as part of the tender.
- The client can confirm that a fully editable [software & version] of the architectural, structural and MEP services design intent models will be made available to the successful contractor. The Models for the project has been develop to tender stage, approximating LoMD 4 'Production' (as defined by PAS 1192-2:2013; Figure 20 – Levels of model definition for building and infrastructure projects). The Models cannot be relied upon beyond these levels of definition. The contractor may use these models to develop further into a construction coordination model if they so choose, however the contractor is responsible for developing their own construction BIM in conjunction with the subcontractors, and in taking on the design intent models, they take full responsibility for checking these before incorporating information into construction, fabrication and installation models. The contractor and subcontractors are expected to add site plant, equipment, carnage, temporary works, scaffolding health and safety equipment etc. into the model and edit the model as required to show sequencing of works in conjunction with the construction programme. Cost estimates may be linked to the model so that value earned demonstrations can be provided at any stage.
- It is the contractor's responsibility to develop and maintain the construction model during the construction phase of the project and ensure that other members of the supply chain develop their portions of the work in a model formats that can be federated into the overall construction model. Models should be produced before fabrication/installation, and should form part of the standard submittals/approvals process of fabrication or "shop drawings". As far as practically possible, all fabrication and shop drawings should be derived from the construction models.
- All members of the supply chain and all the contractor will be required to input the asset information (as required by the EIR) into the model during the construction stage and update the model should any changes occurred during construction and installation to reflect these changes so that at building handover the model and the digital data contained therein is accurate as built information
- The contractor will be required to take on the role of information manager during construction stage or appoint someone to take on the role on their behalf (Scope of service of Information manager included in tender documents). The information manager construction stage will be required to execute and manage the BIM Execution Plan (BEP) and operate and maintain the Common Data Environment (CDE) established at design stage.
- The end deliverable will be a federated object-based construction BIM and AIM, in the formats specified in the EIR, with associated digital asset information in COBie format and construction, fabrication and installation drawings derived as far as practically possible from the models. Testing commissioning certificates and product information sheets should be cross-referenced to the objects in the model through a unique identifying code (element ID) in the project database.

*The Pre-contract BIM Execution Plan should demonstrate the bidders compliance with mandated inclusions and exclusions.*



## 2.9 Systems Performance

*Required by PAS1192-2 Clause 5.3 a) 9).*

The purpose of this section is to communicate to bidders any constraints in the employer's systems or specific IT requirements which may need additional resources or non-standard solutions.

The EIR should include the following employer-side IT system restrictions and requirements need to be taken into account when developing the BIM Execution Plan:

- Model size
- Software uses
- Access to free viewers

Example:

Individual model sizes shall not exceed 200MB. The federated Model size shall not exceed 500MB. Models issued via the CDE for clash detection shall be IFCx4 format.

The CDE should include a viewer for the federated model which can be accessed by registered and authorised users.

*The Pre-contract BIM Execution Plan provided as part of the bid submission should confirm the requirements and constraints, indicating where any specific detail where required.*

## 2.10 Compliance Plan

*Required by PAS1192-2 Clause 5.3 a) 10).*

The purpose of this section is to enable the bidder to communicate how the integrity of the model and other data sources will be maintained.

The EIR should include details of client-specified model and data compliance requirements, including references to standards and to compliance software that is used by the employer.

Example 1 (Descriptive)

In accordance with clause 9.2.2.2 of PAS1192-2:2013, to pass through the Approval Gate (Gate 1), a check, review and approval process shall be carried out before issue to the SHARED area.

The checks shall include:

- a) Model suitability check;
- b) Standard Method Procedure (SMP) check;
- c) Technical content check;
- d) COBie completeness check;
- e) Drawings extract checks along with any additional documentation that is shared as a co-ordinated package of information; and
- f) Approval by the task team manager.

Each bidder should provide details of the checks which should be cross reference against the following headings:

- a) Role Responsible
- b) Associated software
- c) Level of assurance / Frequency

Example 2 (Prescriptive):

The Project Information Model and Asset Information Model should be developed in compliance with the standards identified in section 3.5 Standards and Guidance Documents

The following Quality Assurance/ Control procedures shall be used:

QA Assurance / Control procedure		Role Responsible	Associated Software	Level of Assurance / Frequency
Checks	Definition			
<b>Model suitability checks</b>				
Model Integrity	Check that model is fit for coordination.	Task Information Manager	BIM Authoring Software	Every Issue
Model Validation	Validate models issued as Shared are complete and correct.	Task Information Manager	BIM Authoring Software	Every Shared Issue (Gate 1)
Level of Model Definition	Validate model with the Project Information Model with the Production Delivery Table (MDPT).	Task Information Manager	BIM Authoring Software	Every Issue. Comprehensive audit prior to each Data Drop.
<b>Standard Method Procedure (SMP) checks</b>				
Volume strategy	Check that the volume strategy defined in the BEP are adhered to	Task Information Manager	BIM Authoring Software	Every Issue
PIM origin and orientation	Check that coordinates defined in the BEP are adhered to	Task Information Manager	BIM Authoring Software	Every Issue
File naming convention	Check file naming and metadata are completed correctly in accordance with BEP.	Task Information Manager	Common Data Environment, Splash Sheet with each model.	Every Issue
Layer naming convention, where used	Check layer naming is correct and in accordance with BEP.	Task Information Manager	BIM Authoring Software	Every Issue
Agreed construction tolerances for all disciplines	Check that construction tolerances are in accordance with BEP.	Task Information Manager, Task Interface Manager	BIM Authoring Software, Clash Detection software	Every Issue
Drawing sheet templates	Check that drawing sheet templates used are in accordance with BEP.	Task Information Manager	BIM Authoring Software	Every Issue
Annotation, dimensions, abbreviations and symbols	Check that annotation, dimensions, abbreviations and symbols used are in accordance with standards defined in the BEP.	Task Information Manager	BIM Authoring Software	Every Issue
Attribute data	Check that agreed shared attributes/parameters are used and that the naming and type of attribute	Task Information Manager	BIM Authoring Software	Every Issue

	is correct. All EIR and project team attributes should be defined or referenced from the BEP. (Refer to COBie completeness checks also)			
<b>Technical Content checks</b>				
Visual	Ensure there are no unintended model components in the model and that the model conveys design intent.	Task Team Manager, Lead Designer	BIM Authoring software	Every Issue
Clash Detection	Detect issues in the model where two components are clashing including hard and soft clashes.	Task Interface Manager, Lead Designer	Clash Detection software	Coordination Reviews
<b>COBie completeness checks</b>				
COBie data	Check COBie data exists and is correct and is suitable for the Data Drop as defined in the EIR.	Task Information Manager, Information Manager	BIM Authoring software, Specialist data software e.g. Solibri Model Checker	Every Shared Issue (Gate 1)
<b>Drawings extract checks</b>				
Drawings / Sheets	Check that all linked models and appropriate geometry and information is included. Include revision clouds/tags where required. Check sheet number, revision and suitability.	Task Information Manager	BIM Authoring software	Every Issue
Schedules	Check that all linked models are included prior to information being generated. Include revision clouds/tags where required. Check sheet number, revision and suitability.	Task Information Manager	BIM Authoring software	Every Issue
Visualisations	Check that all linked models and appropriate geometry and information is included. Check materials for objects. Check sheet number, revision and suitability.	Task Information Manager	BIM Authoring software	Every Issue
<b>Approval by the task team manager</b>				
Shared Issue (Gate 1)	Check that all information being issued as Shared (Gate 1 is approved.	Task Team Manager	Viewing software defined in BEP	Every Shared Issue (Gate 1)
<b>Other checks</b>				
Project Programme	Review the Project Information Model progression against the Master Information Delivery Plan (MIDP)	Project Delivery Manager	Excel / Asta / Primavera / Microsoft Project or other agreed software for project programming.	Every Issue

The period of aftercare (the number of years that the model should be managed for) should be defined.

Example:

The period of aftercare (the number of years that the model should be managed for) will be a maximum of one year post handover. The Information Manager for the construction phase shall engage with the GSL Champion and the Employers Representative during this period where the Project Information Model (PIM) transitions to the Asset Information Model (AIM).

*The above table can be provided as an example or a template for a compliance plan which can be used prescriptively in the EIR or as a check list for the bidders Pre-Contract BIM Execution Plan as part of a bid submission. The Post-contract BIM Execution Plan will set out compliance processes and the means by which compliance is monitored and managed.*

## 2.11 Coordinates

*Required by PAS1192-2 Clause 5.3 a) 11).*

The purpose of this section is to encourage the adoption a common coordinate system for all BIM data with consistent adoption for all models. Defines requirements for the common coordinate system for all BIM data. Details modifications to imported DWG/DGN co-ordinates.

The EIR should include standards for the coordinate system to be used. Levels of accuracy may also be included.

Example:

Each Project Information Model shall adopt the common Project Shared Coordinate System which is based on survey information using Irish Transverse Mercator (ITM) coordinates. The minimum requirement is spatial coordination stated as follows:

- The Architect should as early as possible share a model containing of Grids and Levels. This model should be used to acquire project co-ordinates.
- All task teams will adopt the established Project Shared Coordinate system across all Project Information Models to allow them to be referenced without modification.
- The model will use real world co-ordinates systems and be produced to a true height above datum based on Irish Transverse Mercator (ITM) co-ordinate system. Coordinates should be based on an accurate survey and not Ordnance Survey maps.
- Building Levels should relate to the Irish Transverse Mercator (ITM) co-ordinate system.
- The models should be oriented correctly to the true north.
- Units to nearest mm. Coordinates should be based on RICS 1:100 Survey accuracy.

The EIR may also contain a definition of any co-ordinate origin/system (3 dimensions) that the employer requires to be used to place graphical models, for example Ordnance Survey locators, geospatial and location with respect to an agreed origin.

Example:

Point	Location Description	Easting (mm)	Northing (mm)	Elevation or site datum

*No response is required in the Pre-contract BIM Execution Plan. The standards and methodology should be included in the Post-contract BIM Execution Plan. Specific detailed information e.g. point coordinates should be included in the post contract BIM Execution Plan.*

## **2.12 Software Formats**

*Refer to PAS1192-2 Clause 5.3 a) 12).*

## Section 3 - Commercial Management

### 3.1 Exchange of Information

*Required by PAS1192-2 Clause 5.3 b) 1).*

The purpose of this section is to communicate the content of data drops and how data drops are aligned to work stages.

The EIR should include details of the information requirements:

- Schedule of work stages (RIAI/GCCC/PWC/RIBA/CIC/bespoke WBS)
- Alignment of data drops to the work stages
- Key purposes of data drops (See section 3.2)

The EIR should also include Specific information requirements from the data drops, defined as responses to the 'Plain Language Questions'. The data required to populate the data drops will vary at each stage in accordance with the 'Plain Language Questions' that need to be supported by the data drops. These address the performance requirements which a project is required to meet to comply with the brief and wider regulatory requirements. The project team is required to provide information in the model to demonstrate compliance with questions associated with the data drops.

Example:

Project Stages and Data Drops are defined in Section 2.1 Level of Detail.

The following data is required to populate the data drops at each stage in accordance with the 'Plain Language Questions' that need to be supported by the data drops:

Heading	Description	BIM Models (M3)	2D Drawing (DR)	COBie (IE)	Specification (SP)	Schedules (SC)	Programme (PR)	Visualisations (VS)	Reports (RP)	Responsibility	Notes
<b>Data Drop 1 (Stage 2 Outline Proposals)</b>											
Space Planning	Room layouts and areas in accordance with Accommodation Schedule. Include required adjacencies and circulation.	x	x	x		x				ARCH	
Massing	Approximate scale of spaces sufficient to describe proposal for outline planning purposes.	x	x					x	x	ARCH	

Existing Services	Identification of existing underground services.	x							x	CIVL	
Existing Conditions	Topographical and Point Cloud Survey	x	x						x	ARCH	
Design Programme	Design Programme up to appointment of main Contractor						x			PMAN	
<b>Data Drop 2a (Stage 5 Production Information)</b>											
Room Data Sheets	Equipment included for each room type	x	x		x	x			x	ARCH	Visualisations of selected room types only to convey quality of design.

For each of the data drops, information will be required in the following formats:

- Native - 3D model files product specific for all design and analysis models in accordance with section 3.3
- Information Exchange - COBie in excel format in accordance with BS1192-4:2014
- PDF files - no older than version 7.0

*No response is required in the Pre-contract BIM Execution Plan. The table above is a statement of minimum requirements for information that should be exchanged at the data drops identified in section 2.1 of this document. Exchange of Information should be reviewed at each project stage. Any updates should agreed with the supplier at each project stage.*

### 3.2 Client's Strategic Purpose

*Required by PAS1192-2 Clause 5.3 b) 2).*

The purpose of this section is to describe the expected purposes of the information provided using the COBie data exchange format.

Section 1.1.2 CIC BIM Protocol defines Permitted Purpose as: “a purpose related to the Project (or the construction, operation and maintenance of the Project) which is consistent with the applicable Level of Detail of the relevant Model (including a Model forming part of a Federated Model) and the purpose for which the relevant Model was prepared”.

Clause 3.3 CIC BIM Protocol identifies "A key area of concern for many information providers is that the wider use of data-rich BIM will make it harder to protect IPR. The CIC BIM Protocol uses a general concept of 'Permitted Purpose' to define the licensed uses of Models, rather than stating the specific uses of each model"

The CIC BIM Protocol does not specifically state the purposes for which models will be used. Setting out proposed purposes in the EIRs informs the scope of the licences defined in the Protocol.

Example:

It is expected that the primary use of the data will be for the following purposes:

- P01 Approved Outline Business Case
- P02 Tender Package
- P03 Appoint Contractor
- P04 Agree Maximum Price for Contractor Proposals
- P05 Practical Completion
- P06 Operations and Maintenance
- P07 Regulation and Compliance

*The purposes included in the EIR can define the use to which the models are licensed as part of the BIM Protocol. Employers should consider including the purposes in Appendix 1 of the BIM Protocol which should be correlated with the Level of Detail, Project Stage and Data Drops.*

### 3.3 Software Formats

*Required by PAS1192-2 Clause 5.3 b) 3).*

Define the platform for the Building Information Model as well as other software platforms to be used. The purpose of this section is to communicate software platforms and versions where these are known and where they might influence the preparation of a bid.

Public sector employers may not wish to or be able to specify software packages to be used by their suppliers, but may instead specify the formats of any outputs.

Private sector employers may choose to specify software packages and/or output formats. In accordance with an open approach to software solutions, the EIRs should not dictate a software solution to the supply chain.

Depending on the stage of the project, the Employer should state the versions and platforms used to prepare data drops that the bidder will receive. The employer should also define the versions and platforms used for employer collaboration and facilities management.

When appointing a design team or integrated project team, only collaboration, information exchange and FM versions and platforms should be described in the EIRs.

Example:

The bidder should provide information on the software formats for each of the task team members.

Task Team	Primary BIM Software and version	Coordination / Clash Detection Software and version	Specialist Software and version



*Software or software formats provided by the Employer should be included in the EIR. The software for each task team should be included in the pre-contract BIM Execution Plan.*

### 3.4 Responsibility Matrix

*Required by PAS1192-2 Clause 5.3 b) 4).*

The purpose of the Responsibility Matrix is to set out the relationship between disciplines and production of information or models in line with the defined project stages.

Preparation of a design responsibility matrix should begin early in the development of the project. It may start with a simple, strategic overview of design responsibility for the main design elements. As the project progresses however, it should increase in detail to allocate responsibility for specific elements, systems and products, setting out the level of detail and format of design information to be produced and any requirement for collateral warranties.

The bidder should provide a methodology for preparing and maintaining the responsibility matrix.

Example:

The bidder should provide a methodology for preparing and maintaining a post-contract responsibility matrix. An example or template responsibility matrix should be provided.

*No response is required in the Pre-contract BIM Execution Plan. A Responsibility Matrix should be prepared by the supplier in conjunction with the Post-contract Execution Plan.*

### 3.5 Standards and Guidance Documents

*Required by PAS1192-2 Clause 5.3 b) 5).*

The purpose of this section is to define the BIM Standards that are incorporated into the Information Requirements, Appendix 2 of the CIC BIM Protocol.

Example:

The following are definitions of the core documents and standards that are to be mandated on the project and will be incorporated into the BIM Protocol - Appendix 2.

Standards:

- PAS1192-2:2013
- PAS1192-3:2014
- BS 1192:2007
- BS 1192-4:2014
- BS1192-5:2015 (currently out for consultation)
- BS 8541-2:2011 - Library objects for architecture, engineering and construction Part 1: Identification and classification – Code of practice
- BS 8541-2:2011 - Library objects for architecture, engineering and construction – Part 2: Recommended 2D symbols of building elements for use in building information modelling
- BS 8541-3:2012 - Library objects for architecture, engineering and construction – Part 3: Shape and measurement – Code of practice

- BS 8541-4:2012 - Collaborative Production of Architectural, Engineering and Construction Information Part 4 – Employer information requirements (COBie).
- BS1192-4:2014 - Collaborative Production of Architectural, Engineering and Construction Information Part 4 – Employer information requirements (COBie).

Other Publications:

- Building Information Model (BIM) Protocol (2013) - Construction Industry Council
- Outline Scope of Services for the Role of Information Management - Construction Industry Council (CIC)
- Best Practice Guide for Professional Indemnity Insurance when using BIM - Construction Industry Council (CIC)

*The standards should be incorporated into the BIM Protocol - Appendix 2.*

### 3.6 Roles, Responsibilities and Authorities

*Required by PAS1192-2 Clause 5.3 b) 6).*

The purpose of this section is to bring to the attention of the project team the allocation of roles associated with the management of the model and project information.

At the induction meeting as many of the information management roles shall be identified and confirmed as possible.

Task Teams are any team assembled to complete a task. Examples: Architectural Task Team Structural Task Team or Multi disciplinary Task Team to design a specialist part of the project, say bespoke curtain wall. This may also include the specialist and professional design teams collaborating to complete that Task.

The following Roles, Responsibilities and Authorities are defined in Section 7.5 of PAS1192-2:2013. The roles should be reaffirmed in the EIR either explicitly by including the table below or referencing section 7.5 of PAS1192-2:2013. Any changes to the roles, responsibilities and authorities should be documented in the EIR.

Supplier (push)

Role	Responsibility	Authority
<b>Project Information Manager</b>	Enable reliable information exchange through a common data environment. Maintain and receive information into the Information Model. Enable integration and co-ordination of information within Information Model. Configure information for Project Outputs. Populate the information exchange format for the Information Model.	Enforce the Project BIM Execution Plan and ensure delivery of the Information requirement in the EIR. Accept /reject information exchanges within the common data environment. <b>No design responsibility or right to issue instructions.</b>

<b>Project Delivery Manager</b>	Assure delivery of information exchanges. Confirm suppliers ability to deliver information requirements.	Accept /reject information exchanges within the common data environment.
<b>Lead Designer</b>	Manage information development and information approvals. In accordance with clause 9.2.2.2, Approval Gate 1 a check, review and approval process shall be carried out before issue to the SHARED area.  Confirm design deliverables.  Overall lead for configuration management.  If a clash is detected which cannot be resolved by the Task Team Interface Manager then the lead designer shall be involved in the discussion to reach agreement and make the necessary changes to the models.	Approve design changes proposed to resolve clashes.  Confirm status and approve information for issue within the common data environment.
<b>Task Management (Project Team members)</b>		
<b>Task Team Manager</b>	Production of design outputs related to a task team specific, package based or time-based task.	Change the status of their team's signed-off information, update the revision and issue the information and model(s) to the PUBLISHED part of the CDE.
<b>Task Information Manager (Information Management)</b>	Direct the production of task information in compliance with standards and methods.  Direct the production of task information using agreed systems.	Confirm that information is suitable for issue within a common data environment.
<b>Task Interface Manager (Spatial Coordination and Clash Detection)</b>	Manage spatial co-ordination on behalf of a task team.  Propose resolutions to co-ordination clashes.	Propose resolutions to clashes.
<b>Information Originator (Geometry and information)</b>	Develop constituent parts of the information model in connection with specific tasks.  Production of project outputs.	Ownership of model information.

## Employer (pull)

<b>Role</b>	<b>Responsibility</b>	<b>Authority</b>
<b>Employers Representative</b>	In accordance with clause 9.2.2.4 of PAS1192-2:2013, authorise information in the Client Shared Area of the CDE.	Confirm status and approve information within the common data environment.
<b>Employers Technical Advisor</b>	Support the employers representative in technical matters in relation to information management.	

All the roles defined and their respective responsibilities and authorities, are stated only in connection with information management. Other arrangements may be put in place for other aspects of the overall project.

Clarity of roles, responsibility and authority are an essential aspect of effective information management. Roles should be embedded into contracts, either through a specific schedule of services or more general obligations. Information management roles are likely to be embedded into more extensive project roles – design team leader, principal contractor, etc.

PAS 1192-2:2013 identifies the types of roles that should be considered and likely responsibilities. It should be remembered that PAS1192-2:2013 should be read in conjunction with other contract documentation such as the Plans of Work and Schedule of Services. The roles indicated in PAS1192-2:2013 are for guidance only and will differ from project to project depending upon market sector, project size and the supply chain tier you are positioned in. Key to the allocation of roles, responsibility and authority is the appropriateness and ability of the organization to be able to deliver. In smaller businesses many of these roles may be executed by the same individual.

On projects led with the CIC BIM Protocol (2013), a key role is the Information Manager. The Information Manager has a role in facilitating the management of the federated model and the production of project outputs. The information manager is also responsible for managing the operation, standards and culture of the Common Data Environment (CDE). The Information Manager is not a standalone role and is expected to shift from design team to contractor prior to start on site. Under the BIM Protocol, a client is obliged to appoint an Information Manager.

The organisation identified as 'design lead' or 'contractor lead' depending on the project stage shall undertake the role of Information Management.

*The Pre-contract BIM Execution Plan should confirm the roles, responsibilities and authorities as defined in PAS1192-2:2013 incorporating any changes defined in the EIR. The Pre-contract BIM Execution Plan should identify person(s) for each role. CVs for the persons identified should be included as part of the bid submission.*

*The individual(s) responsible for the role of Information Management will be identified in the BIM Protocol. The Employer should be notified of any change of personnel for the roles at contract signing. Agreed changes should be incorporated into the Post Contract BIM Execution Plan.*

## Section 4 - Competence Assessment

### 4.1 Competence Assessment

*Required by PAS1192-2 Clause 5.3 c) 1).*

The purpose of this section is to assess details of the collaboration process from the bidder sufficient to demonstrate BIM competence and capability at tender.

A supplier BIM assessment form shall be completed by all appropriate organizations within the supply chain, so as to demonstrate their competence in and understanding of BIM and provide a comparable document by which to assess their capability.

The supplier BIM assessments should be summarised as part of the bid. Use of the supply chain capability summary means that a potential supplier does not need to submit assessment forms from each supply chain organization.

Each bidder should provide a supply chain capability summary which should include:

Item	Description	Response
BIM Capability and Experience	Responses will describe how mature an organisation is, and what capabilities are held.	<p>Bidders should include the following detail:</p> <ul style="list-style-type: none"> <li>• BIM experience - organisational and personnel</li> <li>• BIM capabilities</li> <li>• Out-sourced roles</li> </ul> <p>Guidance: The information requested in this section is detailed further in the Project Implementation Plan described in PAS 1192-2</p>
Evidence of BIM Execution Planning	Responses will include examples of BIM execution planning	<p>Bidders should include the following detail:</p> <ul style="list-style-type: none"> <li>• BIM Execution Plans</li> <li>• Lessons learnt</li> </ul> <p>Guidance: The content of the BIM Execution Plan at tender and start on site stages are described in PAS 1192-2</p>
Confirmation of BIM Toolset	Responses will describe the processes and procedures that make up the bidder's BIM and information management toolkit	<p>Bidders should include the detail on procedures aligned with core project stages as follows:</p> <ul style="list-style-type: none"> <li>• BS1192 (2007)</li> <li>• PAS1192-2 (2013)</li> <li>• COBie UK 2012</li> <li>• Other bespoke processes</li> </ul>
Details of BIM Workload and Resourcing	Responses will describe the resources (and what levels) that are available to the project	<p>Bidders should include the following detail:</p> <ul style="list-style-type: none"> <li>• Resource matrix with level, number, utilisation</li> <li>• Outsourcing details or services etc.</li> </ul> <p>Guidance: The content of the assessment is described as the supplier BIM assessment form described in PAS 1192-2</p>
Principal Supply Chain	Responses will describe the supply chain's ability	Bidders should include the following detail:

	to link into the process and how will this be assessed	<ul style="list-style-type: none"> <li>• Key supply chain partners</li> <li>• Expected outputs</li> <li>• Assessment process</li> </ul>
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Templates of the documents listed in this section are included in the Construction Project Information Exchange (CPIX) Protocol, available via the CPI website – <http://www.cpic.org.uk>.

## 4.2 Changes to associated tender documentation

*Required by PAS1192-2 Clause 5.3 c) 2).*

The purpose of this section is to identify insertions related to BIM Level 2 into the tender documents.

A PQQ may be used for an initial expression of interest. PAS91:2013 may be used.

A Project Implementation Plan (PIP) in accordance with section 6.3 of PAS1192-2:2013 should be included with the tender.

All bidders should include a Pre-contract BIM Execution Plan in response to an EIR. The EIR should be prescriptive on the format of the Pre-contract BEP template used e.g. RIAI Pre-contract BIM Execution Plan template or template provided or Pre-Contract Building Information Modelling (BIM) Execution Plan (BEP) version 2.0 April 2013.

Examples (omit or change relevant examples):

The following changes and documents are included in the tender documentation:

- In accordance with Section 5.2 of PAS1192-2:2013, a detailed Employer's Information Requirements (EIR) document is included in the tender documentation.
- In accordance with Section 6.2 of PAS1192-2:2013, bidders are required to submit a pre-contract BIM execution Plan (BEP), in the format of the RIAI Pre-contract BIM Execution Plan template, to demonstrate how they intend to deliver on the Employers Information Requirements (EIR). The pre-contract BEP shall be submitted by the bidder to the employer on behalf of the whole supply chain.
- In accordance with sections 6.3, 6.4, 6.5, 6.6 and 6.7 of PAS1192-2:2013, the bidder and their supply chain will be required to complete a Project Implementation Plan (PIP) in the format of the template identified in section 4.1 of this document, to indicate that they have the personnel, IT resources and BIM expertise to deliver the on the BIM execution plan.

Where the bidder or members of the supply chain do not currently have BIM capabilities they should include a statement of how they intend to develop these capabilities, or meet these requirements, as part of delivering on the BIM execution plan. All costs associated with developing the BIM capabilities to deliver on the employer's information requirements should be included in the contract and supply chains tender.

- A Pre-qualification Questionnaire (PQQ) is included as part of the tender documentation.

*No response is required in the Pre-contract BIM Execution Plan. The above is a summary of the changes to the procurement process for the project based on PAS1192-2:2013.*

## 4.3 BIM tender assessment details

*Required by PAS1192-2 Clause 5.3 c) 3).*

The purpose of this section is provide bidders with information on scoring and weighting of information provided in relation to BIM as part of the tender.

*BIM tender assessment details should be including as part of overall tender assessment details in order to indicate both the weighting and important of information required for BIM and the importance and weighting of BIM within the overall bid submission.*

# Annex A (informative) Terms, definitions and abbreviations for BIM documentation

The following terms, definitions and abbreviations have been selected from PAS1192-2:2013 as being relevant to an Employers Information Requirements document and should be read in conjunction with PAS1192-2:2013 Annex A. The PAS1192-2:2013 annex numbering has been included for ease of cross referencing. Additional notes have been included which cross reference with BS1192:2007 and the CIC BIM Protocol.

In the interest of achieving a common language in the industry, the following terms should be used in the EIR:

## A.2 2D drawing

A 2D drawing contains a view of a model that is referenced into a “drawing sheet template” (blank drawing and title block). Such drawings must always be considered to be static documents, as they are drawing renditions or snapshots of the design’s model files. Such renditions are generated each time the drawing is prepared for “sharing” at regular milestones.

## A.3 2D model (M2)

A model with entities having two-dimensional properties. Such models are always to be considered to be dynamic, as they will be made up of “model files” that are “x-ref” or “reference” files.

## A.4 3D model (M3)

A model with objects having three-dimensional properties. Such models are always to be considered to be dynamic, as they will be made up of “model files” that are “x-ref” or “reference” files.

*NOTE 3D Models with data can be considered Level 2 BIM models whereas 3D Models without data are Level 1 BIM. Refer to Figure 1 in PAS1192-2:2013.*

## A.6 3D Visualization (VS)

3D images from the 3D CAD model, or a virtual representation of the building or facility to be constructed; used for visualizing the project. Refer to Clause 9.2 of BS1192:2007 where 2D Drawings are represented by the VS Type.

## A.7 Archive

Component of the common data environment (CDE).

*NOTE The archive section of the CDE is for inactive or superseded information. Such information will provide a history of the project information transfers, sharing, change orders and knowledge retention, and can be used for other contractual purposes or “discovery”.*

## A.8 As-built or as-constructed

A model consisting of documentation, non- graphical information and graphical information defining the delivered project.

“As-built” is defined as the record drawings and documentation defining deviation to the designed information occurring during construction at the end of the project.

“As-constructed” defines the defect and deviation to the designed model occurring during construction. The “as-constructed” model and its appended documentation are continually updated through re-measurement as construction progresses. This allows for deviation to be reviewed with respect to the following packages and making knowledgeable assessment of impact and resolution.

## A.111 SMP

Standard Method and Procedure. Set of standard methods and procedures covering the way information is named, expressed and referenced.



**A.12 AIM/Asset Information Model**

Maintained information model used to manage, maintain and operate the asset.

**A.13 BEP/BIM Execution Plan**

Plan prepared by the suppliers to explain how the information modelling aspects of a project will be carried out.

**A.14 BIM**

Building information modelling.

**A.27 Clash Rendition (CR)**

Rendition of the native format model file to be used specifically for spatial coordination processes. To achieve clash avoidance or to be used for clash detection.

**A.29 Client**

Individual or organization commissioning a built asset.

*NOTE The client may be different from the employer.*

**A.30 common data environment (CDE)**

Single source of information for any given project, used to collect, manage and disseminate all relevant approved project documents for multi-disciplinary teams in a managed process.

*NOTE 1 A CDE may use a project server, an extranet, a file-based retrieval system or other suitable toolset.*

*NOTE 2 Note CDE as defined in the BS 1192:2007.*

*NOTE 3 The fundamental requirement for producing information through a collaborative activity is to share information early, and to trust the information that is being shared as well as the originator of that information. What is needed is a disciplined auditable process that is transparent and controllable. The method for managing a project through a common data environment (CDE) is applicable to all sizes of practice, and in particular it prepares that office to be able to work collaboratively. As a standard that is adopted by all, it will help to remove the problem of having to constantly retrain on each and every project when client standards are to be applied. If the clients accept the procedures and make them contractual, then these problems disappear. The CDE is a means of allowing information to be shared efficiently and accurately between all members of the project team – whether that information is in 2D or 3D, or indeed textual or numeric. The CDE enables multi-disciplinary design teams to collaborate in a managed environment, where the build-up and development of information follows the design, manufacturing and construction sequence. See BS 1192:2007 or Building Information Modelling – A Standard Framework and Guide to BS 1192, Richards, 2010. The CDE process also ensures that information is only generated once and is then reused as necessary by all members of the supply chain. It also ensures that the information is constantly updated and enriched for final delivery as part of the Facilities Management (FM) document.*

**A.42 COBie-UK-2012**

Structured facility information for the commissioning, operation and maintenance of a project often in a neutral spreadsheet format that will be used to supply data to the employer or operator to populate decision making tools, FM and asset management systems.

*NOTE Templates for the preparation of COBie information exchange files can be downloaded from the BIM Task Group website: <http://www.bimtaskgroup.org>.*

**A.48 Document**

Information for use in the briefing, design, construction, operation, maintenance or decommissioning of a construction project, including but not limited to correspondence, drawings, schedules, specifications, calculations, spreadsheets.

*NOTE Documents must either be immutable or incorporate a means of controlling changes.*

### **A.50 Drawing (DR)**

Static, printed, graphical representation of part or all of a project or asset. Refer to Clause 9.2 of BS1192:2007 where 2D Drawings are represented by the DR Type.

### **A.57 employer**

Individual or organization for whom the contract is executed and delivered.

### **A.58 employer's Information Requirements (EIR)**

Document setting out the information to be delivered by the supplier as part of the project delivery process to the employer.

### **A.61 Gate/Stage**

Division of a standardized process map for the acquisition of a facility, at some of which the requirements can be delivered.

*NOTE The stages at which information exchanges are required should be specified in the EIR by reference to the agreed stage and gate names. See the CIC Scope of Services*

### **A.70 information exchange**

Structured collection of information at one of a number of pre-defined stages of a project with defined format and fidelity.

### **A.71 Information Management**

Tasks and procedures applied to inputting, processing and generation activities to ensure accuracy and integrity of information.

The Role of Information Management is defined in PAS1192-2:2013 clause 7.5. Refer also to Outline Scope of Services for the Role of Information Management - Construction Industry Council (CIC) and Best Practice Guide for Professional Indemnity Insurance when using BIM - Construction Industry Council (CIC)

### **A.72 Information Model**

The information model comprises three constituent parts: documentation, non-graphical information and graphical information.

*NOTE The model is conveyed using PDF, COBie and native model files.*

### **A.77 Levels of model detail (LOD)**

Description of graphical content of models at each of the stages defined for example in the CIC Scope of Services.

### **A.78 Levels of model information (LOI)**

Description of non-graphical content of models at each of the stages defined for example in the CIC Scope of Services.

### **A.79 Master information document index (MIDI)**

Index specifying a detailed list of the deliverables for a project; for model, sub models, documents and data also allocating responsibility to deliver and the programme for delivery of a project supply chain.

### **A.80 Manageable Assets**

Those aspects of the facility that may be managed during the facility life-cycle include both physical and spatial objects, and their functional groupings.

*NOTE 1 An asset is a uniquely identifiable element which has a financial value and against which maintenance actions are recorded.*

*NOTE 2 Some aspects, such as the structural frame, or individual pipe and duct segments, fixings and secondary elements may be excluded from scope by the employer.*

**A.91 Origin**

As the setting out point for a project or programme using co-ordinate geometry or related to the OS or geospatial reference.

**A.92 Originator**

Author of models, drawings and documents.

**A.96 Project delivery team**

Group of organizations or individuals contracted either directly or indirectly to deliver services or products to the project.

**A.97 Project information model (PIM)**

Information model developed during the design and production and construction phase of a project, consisting of documentation, non- graphical information and graphical information defining the delivered project.

*NOTE The PIM is developed firstly as a design intent model, showing the architectural and engineering intentions of the design suppliers. Then the PIM is developed into a virtual construction model containing all the objects to be manufactured, installed or constructed. It becomes the basis of the Asset Information Model once handed over.*

**A.98 Project implementation plan (PIP)**

Statement relating to the suppliers' IT and human resources capability to deliver the EIR.

*NOTE Also contains standard method and procedure.*

**A.99 Published/documentation**

Component of the CDE for drawing renditions that have been approved as suitable for a specific purpose – for example, suitable for construction.

*NOTE The published documentation section of the CDE contains drawings – and, if agreed by the project teams, the native model files and renditions – which are snapshots of the shared information taken at a specific time. They are compiled by referencing the relevant approved model files into a coordinated model file and cutting the views and sections from the models.*

**A.100 Purpose of issue**

States the purpose for issuing the document.

**A.101 Purposes**

Those aspects of the Facility that are intended to be managed by the facility owner.

*NOTE Some purposes, such as supporting the business case, may be common with the briefing and design processes.*

**A.104 Rendition**

Documentation in a form enabling the information to be viewed, printed and marked up. For example, PDF, DWF and NWD files are documentation consisting of snapshots of a model.

**A.105 Requirements**

Requirements are the documented expectations of facility owners/commissioners for sharable structured information. These are also referred to as the Employers Information Requirements (EIR) (alternatively, the Clients Information Requirements).

*NOTE Detailed requirements are included in this document.*

**A.106 Revision**

Used to identify revisions of documents, drawing and model files.

**A.109 Shared**

Component of the CDE. The shared section of the CDE is where information can be made available to others in a “safe” environment. The early release of information assists in the rapid development of the design solution. To allow this to be achieved, the concept of information “status/suitability” has been adopted.

**A.111 SMP**

Standard Method and Procedure. Set of standard methods and procedures covering the way information is named, expressed and referenced.

**A.115 Status**

Defines the “suitability” of information in a model, drawing or document. Not to be confused with the status in architectural documentation as “new build”, “retain” or “demolish”.

**A.116 Supplier**

Provider of services or goods either directly to the employer or to another supplier in a supply chain.

**A.117 Supplier information modelling assessment form**

The form conveying the capability and experience of a supplier to carry out information modelling in a collaborative environment.

**A.118 Supplier information technology assessment form**

The form conveying the capability and IT resources of a supplier for exchanging information in a collaborative environment.

**A.119 Supply chain capability assessment form**

Form summarizing the human resource and IT capability of each organization in a supply chain.

**A.125 Third party capability assessment form**

Form conveying the information management and IT capabilities of non-design, non-construction organizations in a supply chain.

**A.127 user**

Individual occupying or using a built asset for its designed purpose.

**A.129 volume**

Manageable spatial subdivision of a project, defined by the “project team” as a subdivision of the overall project that allows more than one person to work on the project models simultaneously and consistent with the analysis and design process.

*NOTE 1 Analogous to the volume strategy defined by the lead designer to allocate volumes within the project to different disciplines into which they carry out their system models (walls, structure, pipework, ductwork, electrical, etc). Also achieves spatial co-ordination prior to detail design. Each volume or subdivision is a reference file. When one or more referenced files is viewed, the full or partial project may be represented. This subdivision also becomes important when using extranets, as it allows the files to be kept to a manageable file size.*

*NOTE 2 This term is defined as “zone” in BS 1192:2007.*

**A.130 version**

Sub-indexing to revision as used in the common data environment to show the development of information and information models, e.g. if a version is named P1.1, P1 is the revision number and .1 is the version to that revision.

**A.132 work in progress (WIP)**

Component of the CDE.

# Bibliography

## Standards publications

- PAS1192-2:2013 - Specification for information management for the capital/delivery phase of construction projects using building information modelling
- PAS1192-3:2014 - Specification for information management for the operational phase of assets using building information modelling
- BS 1192:2007 - Collaborative production of architectural, engineering and construction information - Code of practice
- BS 1192-4:2014 - Collaborative production of information Part 4: Fulfilling employer's information exchange requirements using COBie – Code of practice
- PAS 1192-5:2015 - Specification for security-minded building information modelling, digital built environments and smart asset management (currently out for consultation)
- BS 8541-2:2011 - Library objects for architecture, engineering and construction Part 1: Identification and classification – Code of practice
- BS 8541-2:2011 - Library objects for architecture, engineering and construction – Part 2: Recommended 2D symbols of building elements for use in building information modelling
- BS 8541-3:2012 - Library objects for architecture, engineering and construction – Part 3: Shape and measurement – Code of practice
- BS 8541-4:2012 - Collaborative Production of Architectural, Engineering and Construction Information Part 4 – Employer information requirements (COBie).
- BS1192-4:2014 - Collaborative Production of Architectural, Engineering and Construction Information Part 4 – Employer information requirements (COBie).

## Other publications

- RIAI Post Contract BIM Execution Plan template (revision P1.4)
- CPIx Post Contract-Award Building Information Modelling (BIM) Execution Plan (BEP) Revision R1 March 2013
- Building Information Model (BIM) Protocol (2013) - Construction Industry Council
- Outline Scope of Services for the Role of Information Management - Construction Industry Council (CIC)
- Best Practice Guide for Professional Indemnity Insurance when using BIM - Construction Industry Council (CIC)

## Websites

- Building Information Modelling (BIM) Task Group - <http://www.bimtaskgroup.org>
- COBie-UK-2012, Reference documentation - <http://www.bimtaskgroup.org/COBie-UK-2012>
- Construction Industry Council (CIC) - <http://www.cic.org.uk>
- Construction Project Information Committee (CPIC) - <http://www.cpic.org.uk>

## Further Reading

- BS 8534:2011, Construction procurement policies, strategies and procedures – Code of practice
- BS EN ISO 9001:2008, Quality management systems – Requirements
- BS ISO 10007:2003, Quality management systems – Guidelines for configuration management
- BS ISO/IEC 27001:2005, Information technology – Security techniques – Information