

ACBA 5010 - BIM

CLIENT LETTER

MATHEW CATLIN (2224765), WORD COUNT = 1574 & 1066

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1. Client Letter



[by email only to: example@recipient.co.uk]

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Date: 21 December 2022

Dear Carmarthen County Council,

21st Century Schools Programme - Ysgol Glangwili BIM Maturity and Collaboration

I'm writing to you within regards to the BIM maturity requirements for the project stated above, given this we need to ensure the level of information need is sufficient enough to undertake the core design tasks of the project some of these tasks described briefly will be providing a collaborative 3D model, performing clash detection, to sequence the construction phase, to improve safety throughout design and to utilise BIM models to help output quantities, all of which will be included within our BIM Execution Plan (BEP).

Further to the above I would like to provide you with some of examples of how we aim to share, co-ordinate and manage information for the project through our BEP and international standards such as ISO19650 and PAS 1192 as of recently the UK are taking a step to move away from the traditional BIM level 2 which just incorporates standards such as PAS1192 and the old UK Annex and transfer to the international standards some of which can be found in the diagram below:

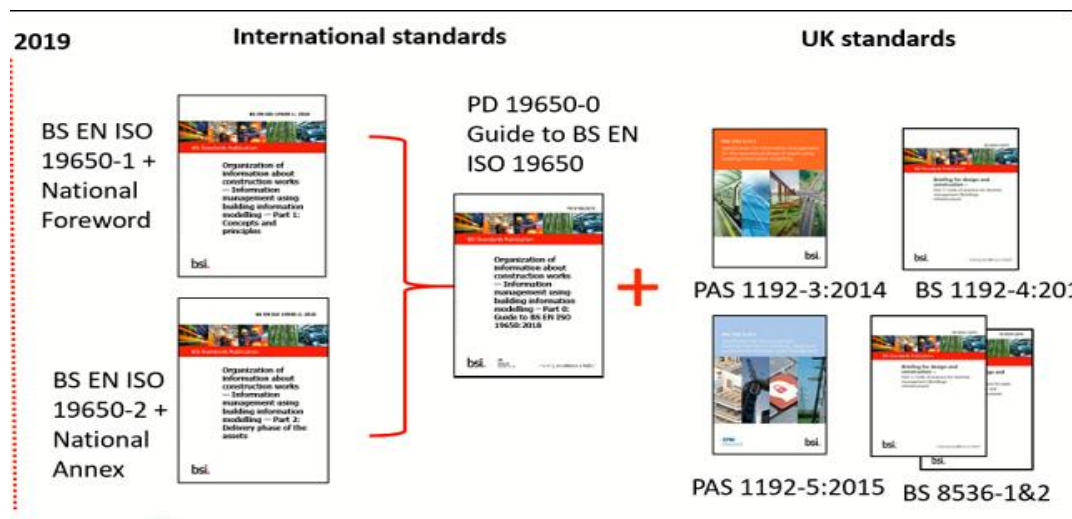


Figure 1 – UK & International BIM Standards (Scottishfuturestrust.org.uk, 2016)

The international standards will help us to cover a collaborative production of information and should help us to achieve a high-quality design for this 21st century school's project. *From beginning to end, the BIM process is also a collaborative effort: design team members work to eliminate clashes between structure and services prior to the project going to site; owners, architects and contractors work proactively to ensure that every element fits and performs the way it's supposed to; and the facilities management team ensures the best functionality and life value of the asset until its demolition* (Sharman, 2016). Given this information the level of information need for the project should be able to adhere to the services needed in order to provide a concept design in the early stages and then advance through the RIBA stages of work, allowing for clash detection of multidisciplinary models and will also help us after the project has been constructed to help us monitor the full life cycle of the building. In order to do this BIM maturity needs to be able to allow us to continue to monitor the models throughout the design, construction phase and then also allow us to update changes to the models through the construction phase throughout a technical query process which will help us to track all the changes. Along with this need we need to be able to share any changes through construction phase with all disciplines efficiently so that, our as built models are a true reflection of what's been built so that full life cycle monitoring of the assets can be achieved using ISO 19650-3:2020 which *will help asset owners and operators achieve their business objectives through effective and efficient production, use, and management of information throughout the operational and end-of-life phases of assets where building information modelling is used* ("ISO 19650-3: 2020 Overview").

The level of information need (LoI) for this project shall be in accordance with the UK National Building Specification toolkit (NBS) utilising a numbering system which is similar to the RIBA plan of work 2020. We as Principal designer will ensure that the level of information need required will be aligned to BS EN ISO 19650-2 Clause 5.5.3 which states that we as the lead appointed party will test and document the projects information procedures and methods, to ensure that we can provide a fully operational BIM system, which can be used collaboratively throughout all designated parties ensuring that a safe transfer of information, methods and procedures are communicated across the project, all the information will be provided and shared through the use of a BEP.

The co-ordination and management of the project will be further addressed with our BEP and BIM Protocol, a brief description for what will be included in this is training requirements, we will put together site specific BIM training to available to all parties, further to this we will make all the relevant guidance available to all parties, which will provided within our Common Data Environment (CDE), access instructions to this will be provided to yourselves as a minimum. As a minimum we will also ensure to

incorporate any third party design input into our federated models and CDE. We will also ensure provide, any further information requirements as the project develops through the RIBA plan of work stages and update the BEP and model production Delivery Document and communicate this through all parties in a timely manner, throughout the stages of the project. This will allow us to navigate timescales more effectively and precisely.

As for sharing information possible approved software we could use called Bentley ProjectWise, this software product will allow us to store and share design information easily and using the correct BIM naming conventions as per ISO 19650. The software will also allow us to provide an audit trail of all edits to any design documentation at any one point in time. This platform also gives us a collaborative approach and allows multiple parties to see and edit design information given on specific read and write permissions set by ourselves, ensuring the safety of critical design information. Another piece of approved software that could help us manage information accurately is Vizerra Revizto this software will allow us to create a federated model, from multidisciplinary models this will help us to improve efficiency of our design team, and will also allow us to undertake a clash detection test to help amend any potential design clashes prior to going to site, this in turn will help to save a lot of money on our project.

Appended to this letter is a report that outlines further information on the level of information need for the project and some researched examples which will help you to understand further what is required and should be included in the Exchange Information Requirements (EIR's)

Please Include Myself, and the address in the header in any return correspondence:
Mathew.catlin@blueprintconstruction.com

Yours sincerely,

M. Catlin

Mathew Catlin, BluePrint Construction

Encl. Appendix A – Further information and research on Level of Information

2. Project Information

2.1. Project Details

The proposal to Carmarthen County Council (CCC) outlining the level of Building Information Modelling (BIM) maturity showing how information will be shared and co-ordinated around the relevant parties for the Ysgol Glangwili project under the 21st century schools programme and complying with the BIM BS EN ISO 19650 standard. I will then further investigate and demonstrate the level of information need throughout the RIBA stages of a project to give CCC all the information required so that they can decide what should be included in Their EIR's. This document will also be used to set out any major milestones of the project so that document submission can be tailored around those.

2.2. Project Requirements

The proposal is a top tier design proposal of an infant school to be located in Carmarthen, it is joint funded venture with Welsh Government. As we have been asked to provide whole life monitoring through a Computer Aided Facility Management (CAFM) which should be able to provide a facility manager the ability to plan, use and monitor a range of assets within the building allowing for maintenance operations to increase efficiency and allow a space management system to the user.

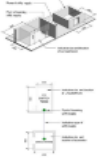
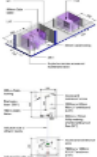
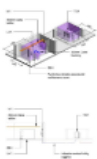
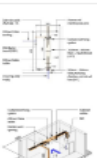
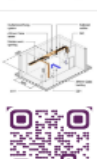
2.3. CDM

In this section the CDM requirements will be outlined naming Blueprint Construction as the Principal Designer and Archibuild Ltd as the Principal Contractor.

3. Purpose of BEP

3.1. Level of Detail needed

In order to define the level of information need on a project BEP will need to be provided, and the level of this needs to be considered in an EIR, throughout the different RIBA stages of work, the NBS Toolkit Image provided below clearly outlines the different stages and LOD required:

LOD bandings					
	Code	Description/ requirement	Purpose	Fabric example	Services example
2	Concept design What is typical for concept stage?	Visual information to provide general principles of the design. Showing arrangement of system with their relationship to internal and external context, and key project criteria to suit client brief. General descriptions would be expected to communicate principles of materiality, scope, colour and context. Expect strategic coordination with other professions to show general principles of the design.	To provide a visual indication of proposals at a concept stage and support general spatial coordination, identifying key requirements such as access and maintenance zones for primary systems.		
3	Spatial coordination What is typical as the design develops?	Visual information to provide developed principles of the design to a greater level of detail. Developed coordination between all professions. Visual development showing coordination for general size and primary relationships between different elements of the construction. Can form a brief for a specialist subcontractor or fabricator to progress with their technical design, fabrication and installation. This would be expected to include critical dimensional coordination, performance requirements and qualities of finish.	To provide a visual representation of proposals at a Design Development stage and to show greater spatial coordination, confirming brief for Technical Design stage.		
4	Technical design What is required for technical design?	Visual information to provide fixed principles of the design supporting procurement. Developed coordination between all professions. Visual representations showing coordination for general size and relationships between different elements of the construction. Dimensionally accurate graphical representation of system, indicating primary performance characteristics. Graphical information represented may alter, dependent on visual information to be produced, e.g. scope of work drawings, setting out, floor loading, etc. Typical installation details separately produced, linked to modal element and adjacent constructions.	To provide a visual representation of proposals at a Technical Design stage supporting full spatial coordination.		
5	Construction What has been constructed?	Visual information to provide full information to support construction/ installation. Developed coordination between all professions. Visual representations showing final coordination for size and relationships between different elements of the construction. Dimensionally accurate graphical representation of system, indicating primary performance characteristics and sufficient information to support installation. Typical installation details separately produced, linked to modal element and adjacent constructions.	To provide sufficient information for construction/ installation of the required products. To be updated during the construction process to reflect final decisions.		
6	Record A record of the final constructed built asset for FM/ owners	Visual information (such as record drawings) showing an as-built record of the final systems and products installed in the built asset, and any relevant references to associated information. Visual and geometric data may be acquired through surveys (e.g. laser scanning) of the final built asset.	Visual data that reflects final selections, including any changes made during construction. To provide future reference during the operation stage of a building's life cycle to aid with maintenance, product replacement and disassembly. This will include any verification that demonstrates final results, e.g. final survey results.		

NBS 10077

Figure 1 – Level of Detail (LOD) Bandings (Swaddle, 2022)

3.2. Level of Information Need & Management

Further to this LOI differentiates from LOD in a way which information is provided from the client rather than the level of detail provided from the consultant as the Project progresses through the RIBA stages of work, the LOI will change which will require updates to the BEP at each designated stage, the BEP is to be used by all parties throughout the project stages, and every time an amendment is made all parties will be involved in the approval of the document. The image below shows the information management process which outlines the different stages and the life cycle our BEP will go through from assessment to handover:

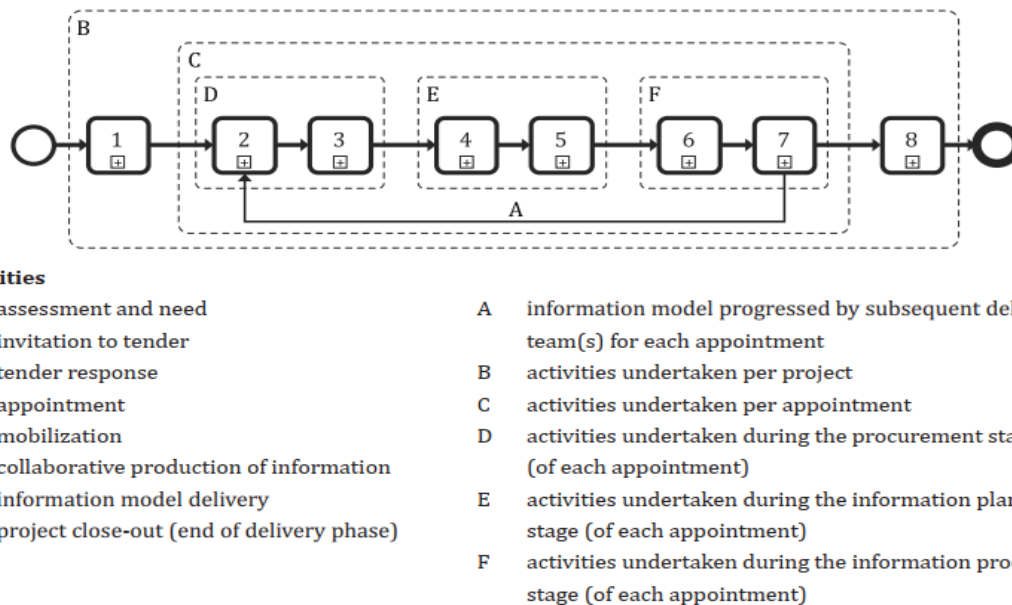


Figure 2: Information management process during the delivery phase of assets (ISO 19650-2:2018, clause 4, figure 3)

4. Management

4.1. Roles and responsibilities

The roles and responsibilities of all parties are set out, according to BS EN ISO 19650-2 different projects has different parties and teams involved in the delivery process this can vary depending on the size of the project the different parties will then have different levels of access to information throughout our CDE this is to ensure that no published documentation gets leaked through the workflow prematurely, it is the principal designers responsibility to include this in further detail with their BEP.

All parties will be sharing information electronically, the client needs to set out all parties' duties and terms. Client advisers or the appointed architect's Information Manager will assist. Clients will be setting down such things as guidance documents to be followed, software formats to use, model management conventions, the level of detail required at stage end submissions, file size constraints and exchange formats, and also providing the site survey origin point for setting out the model, the health and safety, security and training expectations (Richard Saxon, 2016). This means that often as the client will always provide this information alongside the consultant who has a responsibility

to help wherever possible. From my own past experience with this I've dealt with a Client who has been very uneducated when it comes to BIM processes therefore they have submitted a BIM Protocol rather than an EIR for the principal designer to work from this protocol is far less detailed and more generic and puts more work onto the consultant in order for the industry to collaborate more effectively it is essential that all parties buy into the process from the start until the end of the contract, and throughout facility management.

4.2. Asset Management

As you have stated you are looking to use a CAFM system for facility and asset management of the building to apply BIM through the life cycle of the proposal, this will greatly affect the efficiency of the maintenance of the proposal, further to this we will look to also provide maintenance schedules and link through the use of Modelling.

4.3. Common Data Environment (CDE)

It's essential for the appointing party to establish a CDE so that all the parties can share information securely supporting productive collaboration, and also ensuring the safety of documents by using specific access restrictions, this also always a centralised area where all the information is stored without confusion as per the image below:

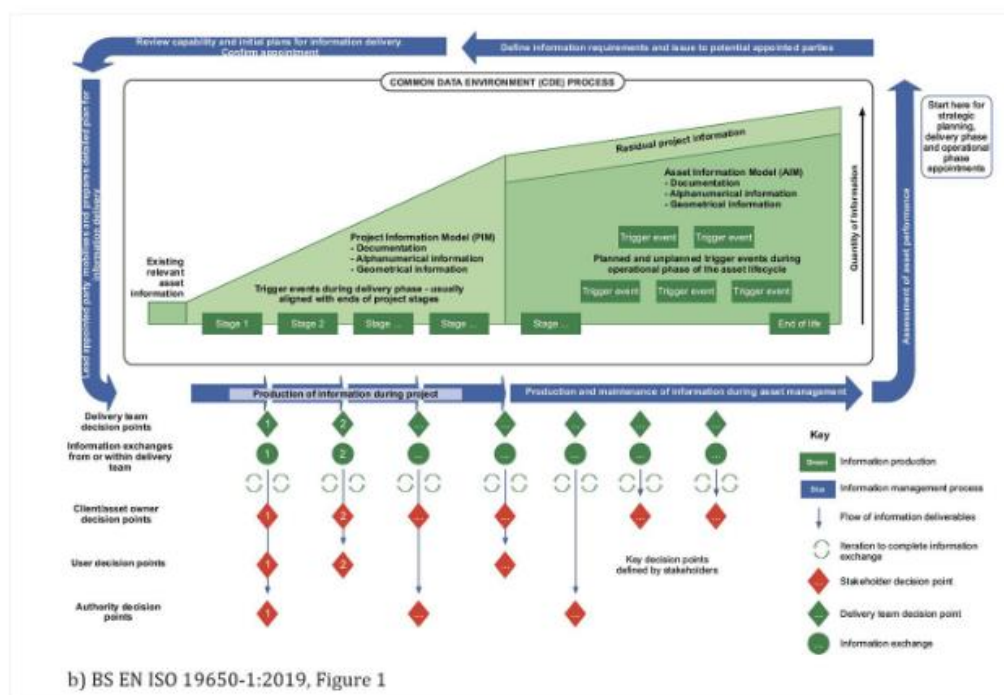


Figure 3 – CDE Diagram (Marshall, 2020)

5. Standard Method & Procedure

5.1. File Naming Conventions

Within the CDE all files are to be named correctly under the BIM naming convention, these should include things like the project, originator, role, Level, Type and Number. These help to give each document extra information about who created the documents and how to find them.

5.2 Suitability & Revision

These are also included within the naming convention, and they show to all parties the stage the document is at the suitability shows Whether or not the document is work in progress or issued for construction and the revisions show how many times the document has been edited leaving a superseded version of the previous document which gives us an auditable trail of documents.

6. Example EIR Comparison

6.1. Network Rail Detailed EIR Example

Below is the image to a contents page of a very detailed EIR I have researched from a Network Rail Project:

		File Reference Number: 153407-NWR-RCD-MPM-000002					
IP Central, Midland Mainline Programme, Key Output 1A Employer's Information Requirements Date: 18/01/2019		Project Code	Originator	Document Type	Function	Sequential Number	Revision
Infrastructure Projects		157897	NWR	CRE	MAN	000001	P01
TABLE OF CONTENTS							
DOCUMENT CONTROL / AUTHORISATION		2					
ISSUE RECORD		2					
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DOCUMENT SUITE		7					
DEFINITION OF TERMS		7					
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		File Reference Number: 153407-NWR-RCD-MPM-000002					
IP Central, Midland Mainline Programme, Key Output 1A Employer's Information Requirements Date: 18/01/2019		Project Code	Originator	Document Type	Function	Sequential Number	Revision
Infrastructure Projects		157897	NWR	CRE	MAN	000001	P01
7.7 DIGITAL FILE FORMAT		30					
7.8 DIGITAL FILE SIZE		31					
8 AUTHORISED SOURCE INFORMATION		31					
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Figure 4 – Extract of Table of contents from Network Rail EIR (Network Rail, 2019)

As you can see from the amount headings, and many of them previously discussed a lot of thought has gone into this EIR which sets out a clear path for the lead consultant to follow throughout the project, They have looked to include a Large amount of information going from defining the units of measurements which shall be used throughout to approved software listings, this document covers a lot of information setting out stringent requirements for BIM within the contract, providing this information should make the project much clear and easier to interpret.

6.2. UCL Estates Brief EIR Example

Below is another extracted table of contents from UCL Estates EIR which I have also researched to compare:

UCL Estates



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Doc No: F&I/PS04	Owner: Head of Engineering	Version 2.0
F&I/003	Author: Ben Alexander	05/11/22
	WFO: Document Template(EIRs)	Uncontrolled when printed

UCL Estates



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APPENDICES

Glossary of Abbreviations and Terms
Appendix 1 – Project Particulars
Appendix 2 – Information Delivery Plan (IDP)
Appendix 3 – BIM Maturity KPI System
Appendix 4 – UCL H&S File Format

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Doc No: F&I/PS04	Owner: Head of Engineering	Version 1.3
F&I/003	Author: Ben Alexander	01/12/2017
	WFO: Document Template(EIRs)	Uncontrolled when printed

Figure 5 - Extract of Table of contents from UCL Estates EIR (Voegt, 2022)

This briefer EIR has much less information within it some of the more basic information is included such as LOD and LOI, it also outlines the applicable standards, information management requirements and roles and responsibilities. Although this document sets out most of what is needed the level of information for this would still be sufficient as the detail is still within the document and it still reads some good information discussing about what the Consultants BEP will require and also discusses the use of an Information Delivery Plan (IDP). Although the two documents do the same job they cannot be compared fully as the network Rail EIR has been used for a live project Whereas the UCL EIR has been set up for educational purposes, which will understandably have less detail regarding specifics.

References

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