

Dear Client,

I am writing this letter to outline the measures that will be taken within the project team to reach BIM level 2- there are 5 key elements to meet the desired standards and they are as follows; 'Employers information requirement's, collaborative working, individually authored models, common classifications of data, information exchange methods and finally the creation of the federated model. The standards that will be met is understand and follow the BIM protocol and collaborative and co-ordinate as per the attached we have created a project plan which will provide you with the project deliverables, schedule of works and roles and responsibilities. Also the design stage – construction, the project will be managed, with storing and exchanging a lot of information to achieve BIM compliance we will use the CDE(Common data environment. Which is shared with everyone associated with the project and sharing data securely BIM level 2 IS a standard called "PAS1192-5" which covers all the security for safely sharing project information which is important to the client and the project. Controls will be in place to ensure the information shared is in a secure way no matter what software is used. Everyone involved in this project will need to achieve BIM compliance will need to know exactly where the information is kept and what that information is so a system will be in place to use as a common language. Also, we will ensure we use COBie (Construction operations Building information exchange) It will be represented on a spreadsheet where non graphical data is stored and shared this will be updated throughout the whole project. This will be passed to you to enable you to support the maintenance and operation of the building. And then we have the handover stage, at the end of this project we will deliver the appropriate data to you including any AIM (Asset information model) which would have been developed through each stage of the information delivery cycle. This will also include any information relating to managing and maintain the building to do their job effectively. We will have a soft landings meeting and the project teams will be included to ensure we have a smooth handover process as they will know the building in and out.

Best Regards,

Chelbie Jones

Project Consultant,

YBA (Swansea Ysgol Bae Abertawe)
BIM Execution Plan (BEP)

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1 BIM PROJECT EXECUTION PLAN OVERVIEW

To Implement building information modelling on this project the project team has developed this detailed BIM project Execution Plan (BEP) The BIM Project Execution Plan defines uses for BIM on the project for example design authoring and design coordinator. It is essential that the project team comply with the requirements of the BEP to support the successful delivery of the client's objectives in relation to BIM requirements.

The BEP is structural using the principles stated within PAS1192-2013 with reference to BS1192:2007+A1 2015 but also includes variations to suit the specific project agreed BIM requirements.

BIM MISSION STATEMENT

We are set out to develop BIM from the outset of the project for this to inform the design development, coordination, quantity take off, sequencing, and hand over information for this project reflected in the scope of services to the project.

The BIM model will be a collaborative model assembled and validated to a level of detail appropriate for construction. The model will contain enough coding and information to produce a drawn element of the contractor's proposal's information for construction and project handover. The model will also include standard and predefined coding fields for facilities management like time records for the building. Any deviation from the procedure must be agreed with the management team.

2 PROJECT INFORMATION

The section defines the basic project references and project millstone's

Project Owner	Swansea Client
Project Name	Ysgol Bae Abertawe
Project Location and address	
Contract Type	
Brief description	Joint venture with the welsh government of 21 st century school.
Additional project information	1 form entry infant school for 90 pupils.

PROJECT SCHEDULE / PASHES / MILESTONES

Includes BIM milestone's, predesign activities, major design review, stakeholders review and any other major events which occur during the project lifecycle.

PROJECT PHASE / MILESTONE	ESTIMATED START DATE	ESTIMATED COMPLETION DATE	PROJECTS STAKEHOLDERS INVOLVED
RIBA STAGE 1	March 2020	AUGUST 2022	CONSULTANT DESIGN
Financial close / award consultant	April 2020	September 2022	Contractor
Project Completion		September 2022	Consultant design team and production

3 PROJECT TEAM REPERESENTIVES AND ROLES

This section of the BEP covers the requirements of PAS119-2 CLAUSE 7.2.1 A)

ROLE	DISICPLINE	COMPANY	CONTRACT NAME	JOB TITLE	EMAIL	
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YBA (Swansea Ysgol Bae Abertawe)
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Project delivery manager	CONTRACTOR	CJ	Chelbie Jones	Project Director		
Construction manager	CONTRACTOR	CJ	James Morgan	Design manager		
Design manager						
Design coordinator	CONTRACTOR	CJ	James Morgan	Design coordinator		
BIM Coordinator	CONTRACTOR	CJ	Danielle Coppel	Regional BIM co-ordinator		
Lead designer	Architect	CEAJ	Darren jones	Senior associate		
Task team manager	Architect Structure (slab) Structure (super) Curtain walling Structural steel Mechanical Electrical Civils- Drainage Civils highway Landscape Lighting	CEAJ CA CA CEAJ – SUB CON CA – SUB CON IEC IEC CA CA CEAJ IEC Sub con	Jim Thomas Jim Thomas Jack jones			
Task team information managers	Architect Structure (slab) Structure (super) Curtain walling Structural steel Mechanical Electrical Civils- Drainage	CEAJ CA CA CEAJ – SUB CON CA – SUB CON IEC IEC CA CA CEAJ IEC Sub con				

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	Civils highway Landscape Lighting FF+E Consultant					
Task team BIM Coordinator	CEAJ CA CA CEAJ – SUB CON CA – SUB CON IEC IEC CA CA CEAJ IEC Sub con	CEAJ CA CA CEAJ – SUB CON CA – SUB CON IEC IEC CA CA CEAJ IEC Sub con				
Task Team BIM authors	CEAJ CA CA CEAJ – SUB CON CA – SUB CON IEC IEC CA CA CEAJ IEC Sub con	CEAJ CA CA CEAJ – SUB CON CA – SUB CON IEC IEC CA CA CEAJ IEC Sub con				

ROLE	
Project Delivery manager information exchanges	Assure delivery of all design
Construction manager	Assure delivery of construction
Design manager relation to technical content on	Manage all the processes in Project information

Design coordinator regarding technical content, carry out clash detection workshops	assist design manager processes c
BIM Coordinator and models started within the	Milestone review BIM protocol BEP
Lead Designer information, enforce spatial	Coordinated delivery of all design Coordination.
Task Team manager related to discipline – specific take, enforce documentation spatial coordination on behalf	Production of design outputs Package based or time-based Standards, manage and negotiate Of a task team.
Task team BIM coordinator standards	Enforce project BIM + CAD
Task team BIM author BIM connection with specific	Develop consistent parts of the Tasks / requirements

Bim Coordinator

Role corresponds specifically with the establishment and management of BIM processes, protocols, and procedures. Main duty is review the BIM protocol and model compliance to prescribed within the project Execution Plan.

- Developing and authoring the constituent parts of the BIM in line with task/requirements
- Ensuring standards and auditing of models before issue
- Production of required outputs
- Publishing the required outputs to the CDE at agreed programmed intervals
- Managing spatial coordination, review clash reports and propose solutions before or at the design clash detection workshops
- Attending design/clash resolution workshops

This document has been agreed by the representatives of project team as listed above with the authority of their parent companies to accept this document as agreed BEP

NOTE – the BEP will evolve as part of the development of the project and much be revisited at regular intervals to ensure additional detail/information is incorporated to reflect the level of BIM implementation/ process at those intervals.

4 INFORMATION REQUIRED BY THE EIR

There is currently not EIR defined on the project, however there are BIM defined client and team aspirations, requirements and deliverables within the project.

4.1 CO-ordination and clash detection

Required within the project is the coordination process. The requirement's for coordination are stated within section 7 & 9

The model will be used for coordination and interface detection and will be central to the design review process. The following application will be used;

Autodesk revit for day to day coordination checks between models

Autodesk Navisworks manager for mark ups – clash detections.

All design team members are to take responsibility for ensuring they have taken the necessary steps to coordinate and resolve clashes before uploading the models for review by the design team lead and contractor. The design review sessions will be utilised as a means for project team members to highlight any particular areas of risk that may need auditing of the models for any undetected clashes by the design team.

Required within the project is the use of a managed and standardised CDE, in the form of 4 projects (viewpoint for projects) sharing of all project team information will be managed within this secure project extract.

Section 09 contains further detail regarding coordination process including the common data environment (CDE) meeting types and frequency workshops

Section 10 contains further detail regarding BIM collaboration including design review, coordination / clash detection, model detail, software exchange format and processes.

4.3 COMPLIANCE PLAN

This section of BEP contains the projects proposals for managing the coordination process it describes the project controls, intended to be used to ensure that the coordination process is managed in accordance with the requirements of the project.

Refer to section 10 & 11 for coordination and compliance protocol.

The project will consist of a model comprising federated models of each discipline.

Individual designers will own audit their own models, along with complying with the requirement's set out within the BEP.

4.4 DELIVERY STRATEGY FOR ASSET INFORMATION

The client has defined asset / FM requirement's for the project, refer to section 12 for further details

4.5 TRAINING

In order to enable and enhance the collaborative process it is proposed that inhouse workshops will be provided to regarding CDE 4P to all project team members. This will enable training on any BIM authoring software such as auto desk, revit and autoCAD.

5 PROJECT GOALS / BIM OBJECTIVES

Describe how the BIM model and facility data are leveraged to maximise project value eg. Design alternatives, life cycle analysis, scheduling, estimating, material selection, prefabrication opportunities, site placements, ect.)

5.1 PROJECT MAJOR BIM GOALS / OBJECTIVES

The project is to be designed using a BIM implementation/ process and technology to enable model based approach to support the following

- Disciplined coordination of information/ models/data and drawing sheets;
- Identification of conflict detection/review and provide a process to support co-ordinated resolution across multi disciplines.
- Reduce construction delivery programme risk (both time and safety related)
- Incorporate at an FM attributed data that links with client FM tools.
- Provide improved project management

It shall be noted that various members of the project team may not be required to have specific input into a particular objective but are merely required to provide support as appropriate.

The table below details the core project wide BIM Processes objectives along with associated description and a list of the primary contributors. These should be read in conjunction with section 5.3 which details the project information delivery (PIM) strategy.

BIM GOAL	Description	Objective	Completion dates
Design development	Development of information rich 3D models using parametric tools	Support reliable decision making better quality design and improved understanding of design intent	
Automated schedules	Development of automated production of all schedules.	To promote accuracy for other processes relating to cost, measurement, procurement and tracking.	
Coordinated review/ conflict detection	Use of conflict detection software during coordination process to determine and resolve conflicts by cross-checking multi discipline 3D models	Informed decision making, improved understanding of design intent, enhanced team communication, reduce RFIs (requests for information) eliminate of site conflicts, increase site productivity, reduce material waste and increased site safety.	
Visualisation and communication.	Production of visualisation imagery from BIM	To support communications and understanding	

	environment. Explore games, engine and options.	of design intent, identified issues, proposed solutions and public stakeholders/team understanding,	
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5.3 DATA VALIDATION

We have a robust quality assurance processes for models, schemes, analysis and documentation. This is in alignment with the ISO9001 – Quality management certification.

The primary goals for quality assurance / quality control (QA / QC) within are as follows;

- To provide predictable, repeatable, and verifiable project processes to ensure contract submittal requirements are met.

To deliver and receive digital submittals with full fidelity and completeness in order to ensure usability of electronic data.

To perform data and project quality review thoroughly consistently and efficiently.

Data quality versus project quality

Within the context of BIM, our processes divide QA/QC into two primary categories: Data quality and project quality.

Data quality refers to BIM aspects which impact accuracy and usability of the electronic content as defined by data and file integrity, as well as by higher level characteristics such as industry best practices, standards and project specific requirements, data quality does not require architectural or engineering professional judgement to evaluate.

The Table below will be used to identify key outputs required from the Building Information Model at varying stages of the construction process. It's divided into five stages; concept designs, developed design, technical design, construction, handover and close out. Which is based on the RIBA plan of work 2014.

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BIM AREA	RE F.	TECHNICAL DESIGN / LIST OF BIM USERS	P C	A R C H I T E C T	S R C H I T U C T U R E	M E C H A N I C A L	C I V I L	D R A I N	L A N D S C A P E	S U P P L Y C H A I N	F F E S U L P A B R I C A T O R	S F S	S P R I K L E R S	M E P			
Design	01	Design authoring		L	L	L	2 D	2 D	2 D		L	L	L	L	L		
	02	Design Review		L	I	I	I	I	I		I	I	I	I	I		
	03	BIM driven limited number of typical RDS(room data sheets)		L	L		2 D	2 D	2 D		L	L	L	L	L		
	04	BIM Driven – quality take off schedules	L	I	I	I					I	I	I	I	I		
	05	BIM driven automated internal wall elevations		L													
Clash Preventi on	06	3D spatial coordination		L	I	I	I	2 D		2 D	I	I	I				
	07	3D Clash Detection	L	I	I	I	I	2 D		2 D	I	I	I				
Informati on Manage ment	09	Single source of information for all project models, documents and data for seamless handover (4p)	L	I	I	I	I	I		I	I	I	I				
Fabricati on	10	BIM Supply Chain Fabrication modelling	L	I	I	I	I	I		I	I	I	I				
FM Facilities manage ment	11	FM attributed model	L	I	I	I	I	I		I	I	I	I				

Key

L = Lead Responsible for delivery

A = Assisting with delivery

I = Input with delivery (From BIM Model or BIM Generated Information)

E = Exploring delivery possibilities (Non- Contractual)

5.5 MODEL PRODUCTION DELIVERY TABLE (MPDT) AND LEVEL OF DEFINITION (LOD)

The model production/ Delivery Table (MPDT) defines the responsibilities and BIM model detail production definitions, is to ensure compliance and understanding that's stated to this project which will align the level of development (LOD) definitions of us (BIMFORUMS level of development specification 2015, level of development 100-500 series/. This is to be read with the specification available from the BIM forum which is to be used for stating the required level of information at each stage. The level of model detail is how much detail is included in the element. Level of development is the degree to which the elements geometry and information have been thought through to which the team members may rely on the information when using this model. The level of detail can be thought of as input to the element, while level of development is reliable output.

5.6 FUNDAMENTAL LOD DEFINITIONS

As mentioned above the project will be aligning with the BIMFORUM level of development specification.

<https://bimforum.org/lof/>

A model element can contain two types of information – A– the elements geometry and B – numeric textual attributes. To address these types of information's this specification contains two parts. Part A (Element Geometry) BIM Forum Specification) Part A consists of narrative descriptions and illustrations of specific model elements of each LOD. Part A forms the bulk of the specification. Refer below for descriptions of the Level of Development' (LOD) levels. Part B is an associated attribute information (model production delivery table) Part B is a model element table which mirrors the layout of the model LOD stages, also the associated BIM attributes that must be contained within the model elements/systems as a minimum.

. LOD 100 The Model Element may be graphically represented in the Model with a symbol or other generic

representation, but does not satisfy the requirements for LOD 200.

Information related to the Model Element (i.e. cost per square foot, tonnage of HVAC, etc.) can be

derived from other Model Elements.

BIMForum Interpretation: LOD 100 elements are not geometric representations. Examples are

information attached to other model elements or symbols showing the existence of a component but

not its shape, size, or precise location.

Any information derived from LOD 100 elements must be considered approximate

LOD	Description
LOD 100	LOD 100 – the model element may be graphically represented in the model with a symbol or other representation but does not satisfy the requirements for LOD 200. Information relating to the model element for example, cost per square foot, tonnage of HVAC, etc' can be derived from other model elements. BIMforum interpretation: LOD 100 elements are not geometric representations. Examples are information attached to other model elements or symbols showing the existence of a component but not its shape, size. Any information derived from LOD 100 element must be considered approximate
LOD 200	The model element is represented within the model as a a generic system object or assemble, with approximate quantities, size, shapes, and locations. Nongraphic information may also attach to the model element. BIMforum interpretation at this LOD elements are generic placeholders. They might be recognizable as the components they represent

5.7 BIM MEASUREMENT AND COORDINATE SYSTEMS

To ensure a coordinated design and chosen coordinate system needs to be utilised through the project. It is defined as the agreed coordinates below.

Co-ordinates taken from Ysgol Swansea BB99.

Point	Position	E Co-ordinate(m)	N Co-ordinate (m)	Z Co – ordinate (M)	Angle to true north
Project base point					

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Project survey point					
Scale	1:100 scale				
Units	All 3d models will be generated in millimetres				

5.8 BIM Model attribute data

BIM model element information will be required for this project, please refer to Ysgol Swansea BB99 for reference.

5.9 References

<https://www.archisoup.com/riba-work-stages-explained>

<https://remars.co.uk/mep-riba-stages/>

<https://austinfletcher.co.uk/articles/2020/02/07/key-elements-from-riba-stage-1-preparation-and-brief/>

<https://www.architecture.com/-/media/GatherContent/Test-resources-page/Additional-Documents/2020RIBAPlanofWorktemplatepdf.pdf#>

<https://www.thecadroom.com/bim-compliance-ready-bim-level-2/>