

Date: 16th March 2022

Our Ref.: 5010/Ysgol Bae Abertawe

Swansea Council

Civic Centre,
Oystermouth Rd,
Maritime Quarter,
Swansea,
SA1 3SN

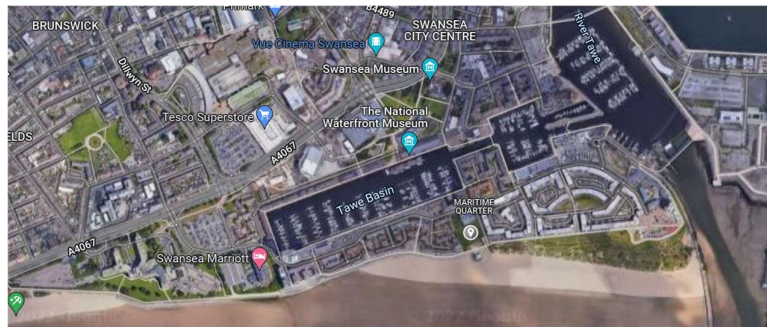
Dear Sirs/Madame,

Subject: Ysgol Bae Abertawe: BIM Maturity Assessment & Draft BIM Execution Plan

We refer to your request for information regarding our understanding of the requirements of BIM maturity for the above project and now have pleasure in enclosing our response.

Project Description

Swansea Council have appointed Morgan Construction Wales Ltd for the design and construction of a 'state of the art' infant school, together with associated external works in Maritime Quarter, Swansea Bay. The project is a joint funded venture with the Welsh Government, under the 21st Century Schools programme and is required to meet the standard of BIM maturity (Level 2).



Introduction:

In order to successfully implement BIM into this school construction project, it is crucial that all project collaborators have sufficient knowledge of its capabilities. Morgan Construction Wales prides itself with the aim to address the fragmentation problems that plague the construction industry today through incorporating digital technologies such as BIM (Building Information Modelling) to encourage the growth of integrated processes throughout a projects lifecycle.

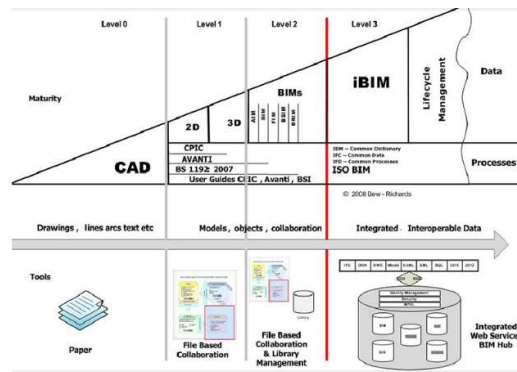
Having looked over this proposed project, we want to express our growing concern regarding the BIM capabilities, or lack-there-of, of potential project stakeholders and participants. As a result of this, we have undertaken a maturity audit to assess the competency of the potential project team members and have come to the conclusion that we can meet the BIM maturity Level 2 requirements set by the 21st Century Schools Programme.

BIM Maturity Level 2:

Having now been prescribed by the UK Government for the past few years, all public sector projects are to meet BIM maturity level 2 as a minimum. "...Government will require fully collaborative 3D BIM (with all project and asset information, documentation and data being electronic) as a minimum by 2016".

In broad terms, BIM maturity level 2 encourages collaborative working between participants and stakeholders with streamline information and data exchanges and effortless coordination amongst systems. Design consultants such as architects, electrical

contractors, engineers, etc. work on their own individual 3D CAD models, where information is then automatically exchanged and transferred seamlessly to one-another, creating a complete federated BIM Model.



BIM Maturity Wedge

I believe that it goes without saying that in order to meet the level 2 maturity of BIM, that all requirements for level 1 are met first. Because, as illustrated in the model above, it is apparent that BIM maturity level 2 is built upon the foundations of requires outlined within level 1. Each maturity level is therefore a more concrete and robust system of the level prior.

The additional requirements to achieve recognition to BIM maturity level 2 are outlined within PAS1192-2:2013. The notable requirements are summarised below.

- The development of information models must utilise other models through referencing, federates or data exchanges. An example of this can be incorporating an M&E design with the architects design model to identify potential clashes.
- A provision of an Employers Information Requirements document that outlines definition and decision points.
- A provision of a BIM Execution Plan which identifies standards, methodology, master information and a delivery matrix aligned to the project in question. An example of one created by ourselves has been appended to this letter, as requested.
- An assessment into supplier and supply chains capability of BIM.
- Provision of a Common Data Environment.
- Development of information models utilising database-based software, and analysis software.

As a brief note, we advise that in order to help achieve level 2, we encourage you to ensure that collaborators with Ysgol Bae Abertawe have installed CAD software that supports common file formats such as COBie or IFC.

Notable Standards and Specifications

As outlined above, I summarised the requirements identified within PAS1192-2:2013. A link to the document is available below:

<https://www.hfms.org.hu/joomla/images/stories/PAS/PAS1192-2-BIM.pdf>

Draft BIM Execution Plan:

As per your initial request, please find attached our BIM Execution Plan Proposal.

5010 - MCW-00-01-SP-A-DRAFT-BEP.pdf is selected

I look forward to hearing your feedback in your response.

Morgan Construction Wales

Head Office Address: Tyr Drindod, Alltynap Road, Johnstown, Carmarthen, SA31 3NE



Closing Words:

Please acknowledge safe receipt of this letter together with the enclosure drafted BIM Execution Plan.

Yours faithfully,

MORGAN CONSTRUCTION WALES LIMITED

J Lloyd

James Lloyd

Trainee Quantity Surveyor

Head Office

Tyr Drindod,
Alltynap Road,
Johnstown,
Carmarthen,
SA31 3NE

Tel: 01267 267502

E-mail: enquiries@morganconstructionwales.co.uk

Website: morganconstructionwales.co.uk





Ysgol Bae Abertawe
Morgan Construction Wales-01
5010 - MCW-00-01-SP-A-BEP

Pre - Contract BIM Execution Plan (BEP)

Approval Record

By:	James Lloyd	Date:	24/03/2022
Apr:		Date:	

Revision Record

Revision:	Date:	Revision Details:
01	24/3	Draft BEP for approval

Contents

1	BIM Execution Plan Overview	3
1.1	Document Ownership	3
1.2	Document Authority	3
2	Project Information	4
2.1	Project Description	4
2.2	Key Project Contacts	5
3	Management	6
3.1	Design Consultant BIM Manager	6
3.2	Lead BIM Coordinators	6
3.3	Project Team BIM Manager	
4	Planning and Documentation	8
4.1	Design Development Phase	8
4.2	Construction Phase	8
5	Standards, Methods and Procedures	9
5.1	Level of Development (LOD) Procedures	9
5.2	Model Detail	9
5.3	Level of Development (LOD) Record	
6	IT Solutions	11
6.1	Approved BIM Software	11

Ysgol Bae Abertawe	5010
Pre Contract BIM Execution Plan (BEP)	

BIM Execution Plan Overview

This Pre Contract BIM Execution Plan has been prepared by Morgan Construction Wales to enable the Contractor to specify the proposed Building Information Modelling (BIM) requirements in line with ISO 19650 and associated standards, adhering to the objectives and goals set by Swansea Council.

1.1 Document Ownership

This document should be compiled and completed by Morgan Construction Wales and associated collaborators, as part of a collaborative submission, reviewed with all key clients and project stakeholders.

1.2 Document Authority

Upon completion, this document will define the requirements of various stakeholders that will establish part of the project delivery team at differing stages of the projects lifecycle. The requirements outlined within this document are to be reviewed by the Client's appointed consultants and included within their later appointments.

The document is required to be returned as part of Morgan Construction Wales' tender information. At such stage, this document shall be agreed by all representatives of the project team, with the authority of their contracting organisation to accept this document as the Pre Contract BIM Execution Plan (BEP) as referenced within the Terms of Engagement or subcontracts. This acceptance and authorising also confirms the relevant supply chains personnel have read and understood its outlined requirements.

Copyright ©	Document name	Version	Status	Date	Page Number
All rights reserved Document uncontrolled when printed	5010 - MCW-00-01-SP-A-BEP	P0.1	SO	24 March 2022	3

Ysgol Bae Abertawe	5010
Pre Contract BIM Execution Plan (BEP)	

Project Information

Morgan Construction Wales have been approached by Swansea Council, requesting a proposal of designing, constructing and delivering a 'state of the art' infant school in Swansea. The project is a joint funded venture with the Welsh Government, utilising the 21st Century schools programme.

2.1 Project Description

Table 1: Project Information

	
Project Number	5010
Project Name	Ysgol Bae Abertawe
Building Description	1 form entry infant school for 90 pupils, with 48 PT Nursery Provision
Client Name	Swansea Council Welsh Government
Project Location	 Swansea Bay
Project Address	Maritime Quarter, Swansea, SA1 1YB
CIC BIM Protocol in use	CIC/BIM Protocol Second Edition 2018

Copyright ©	Document name	Version	Status	Date	Page Number
All rights reserved Document uncontrolled when printed	5010 - MCW-00-01-SP-A-BEP	P0.1	SO	24 March 2022	4

2.2 Key Project Contacts

Table 2: Contact Details			
Role	Contact Name	Employer	Email
Construction Manager	Matt Grimes	Morgan Construction Wales	m.g@morganconstructionwales.co.uk
Project Manager	Flynn Downes	Morgan Construction Wales	f.d@morganconstructionwales.co.uk
Senior Quantity Surveyor	Cyrus Christie	Morgan Construction Wales	c.c@morganconstructionwales.co.uk
Project Quantity Surveyor	Joel Piroe	Morgan Construction Wales	j.p@morganconstructionwales.co.uk
Architect	Olivier Ntcham	Hammond Architectural	olivier@hammondarch.com
Structural Engineer	Ben Cabango	HLN Engineering	Hlnengineering@gmail.com
Electrical Engineer	Michael Obafemi	Goodwin Electronics	m.obafemi@goodwinelectronics.com
Mechanical Engineer	Jamie Paterson	Springer Ltd	info@springerltd.co.uk
Landscaping Architect	Kyle Naughton	Urban Landscapes Cardiff Ltd	Kyle.urbanlandscape@gmail.com

Management

3.1 Design Consultant BIM Manager

An individual shall be elected by all Design Team collaborators to serve as the main point of contact for any and all issues relating to BIM. This point of contact shall be available to the design team, construction/project team and any other person with a BIM related issue. Therefore it is pivotal that this individual has a considerably strong and robust understanding of BIM and its processes, no matter the size or complexity.

Responsibilities include but is not limited to:

- The implementation of construction information is developed, coordinated, published, verified and integrated seamlessly, meeting all outlined configurations and standards.
- Coordination of project team training and file management.
- Coordinating the setup of a shared file server with the Design Team collaborators, including access permissions and restrictions where required.
- Facilitates use of composite design models in design coordination/clash detection meetings. The provision of reports by identification and resolution of all collisions.
- Interfaces with design and project team, managing software updates and installations.
- Act as the primary interface between the design and construction teams for data transfers and consolidation for BIM data.
- Schedule, coordinate, chair BIM technical meetings as and when required.
- Coordinates with the Project Team BIM Manager to assure proper BIM final deliverables.

3.2 Lead BIM Coordinators

In addition to the lead Design Consultant, each major collaborators such as architecture, structural, landscape, etc. shall also nominate an individual to address the role and responsibilities of a BIM Coordinator for their scope of works. Again, the individual is required to have established a sufficient understanding of BIM and have past experience in line with the complexity and size of the project. Responsibilities include but is not limited to:

- Coordinate and attend technical discipline development meetings concerning BIM, as chaired by the Design Consultant BIM Manager.
- Undertake the lead responsibility for all BIM coordination and management for their area of expertise and trade.
- Coordinate clash detection and resolution processes.
- Coordinate internal BIM training in line with Design Consultant BIM Manager's requirements.

3.3 Project Team BIM Manager

Finally, the Project/Construction Team BIM Manager is assigned to attend to the Construction Teams point of contact for all BIM related issues. This role is similar to the one prior, The Lead BIM Coordinator however rather concerns the project team and

Copyright ©	Document name	Version	Status	Date	Page Number
All rights reserved Document uncontrolled when printed	5010 - MCW-00-01-SP-A-BEP	P0.1	SO	24 March 2022	6

Ysgol Bae Abertawe	5010
Pre Contract BIM Execution Plan (BEP)	

not the individual major trades. Alike the past two responsibilities, this individual again requires adequate BIM training and experience and must attend to the following list of responsibilities (but is not limited to):

- Maintain the project team's BIM coordination and management by creating information and its development.
- Coordinate software training amongst the project team and manage software updates and installation.
- Assumes the main point of contact for BIM and related issues between the Construction Team, subcontractors, the Design Team and others as required
- Coordinates construction sequencing and scheduling through programmes and schedules and ensure Construction Teams BIMs are integrated.
- Facilitates use of composite trade models in construction coordination/clash detection meetings and provides detection reports by the identification and resolution of all hard and soft collisions
- Coordinates with the Design Team to facilitate design changes in the field have been documented and are updated in the BIMs in a timely manner.

Copyright ©	Document name	Version	Status	Date	Page Number
All rights reserved Document uncontrolled when printed	5010 - MCW-00-01-SP-A-BEP	P0.1	SO	24 March 2022	7

Planning and Documentation

4.1 Design Development Phase

The main objective for the design development stage is to come to a conclusion with the final design of the school. Any issues and clashes identified shall be co-ordinately resolved by the respective design collaborators. Finally a Construction BIM shall be provided to all an analysis into schedules, cost and constructability as per programmes.

The Design Team Collaborators' BIM will continue to act as the baseline for all other subsystem designs. The subsystem designs will be modified accordingly to represent the enhanced design. This therefore ensures there are no discrepancies between designs and errors are eliminated.

The responsibility for this stage are assigned to the consulting BIM managers, where they are required to revise and finalise their respective designs. Upon completion, the designs are to be delivered to the Design Team BIM Manger, where a review shall be carried out to identify clashes and potential errors. In addition, they will ensure that all compliance is met in regards to phasing. This process is closed after the Design Team BIM Manager hands over the designs to the Construction Team and returns the final designs to the consulting BIM managers.

4.2 Construction Phase

Consulting Engineers BIMs based on submittals, RFIs, or owner-directed changes maintain the Construction BIM based on construction activities. The construction team will submit RFIs and submittals through the collaborative project management system. Navisworks files shall be created for all critical milestones

Design Team Consultants will see their BIMs revised throughout the Construction period, with directives being issued by site regarding alterations or changes. The BIMs are required to constantly reflect the revised contract documents, therefore it is pivotal that these are updated with every variation or amendment made on site. The Construction BIMs will be used for scheduling and analysis, whilst also being used for trade management, coordination and sequencing.

The Design Team BIM Manager will work with their Consulting Engineers to answer the RFIs and submittals and adjust the BIMs accordingly. The Construction Teams BIM Manager will update the Construction BIMs and will work with the Design Team to update the Design Team BIMs.

Ysgol Bae Abertawe	5010
Pre Contract BIM Execution Plan (BEP)	

Standards, Methods & Procedures

5.1 Level of Development (LOD) Procedures

Prior to commencement, a detailed BIM plan is to be developed and managed for every phase of the project. Each phase shall be well-thought out and constructed, identifying the Level of Development required, in addition to the BIM Maturity level. In this event, it is to be BIM Maturity Level 2.

All Design BIMs for Ysgol Bae Abertawe shall be constructed using Autodesk Revit software platforms. This shall be coordinated by design team members collectively to ensure compatibility between architectural and structural designs is seamless. USF approval is required.

Due to not all project designs requiring identical phases and durations, adjustments shall be made to the models Level of Development (LOD), as agreed by the design consultants and collaborators.

Finally, to comment on the BIM maturity, all drawings shall be delivered to meet USF-CAD and USF-BIM-EP.

5.2 Level of Development (LOD) Procedures

The below table defines the LOD for the School project as per section 8 “8 Model Element Specifications” included within the USF BIM Guidelines and Standards.

Table 3: Model Detail			
Model Name	Model Elements (as per USF BIM Guidelines)	Project Phase	LOD
Structural Model	B1	Schematic Design	100
	B1 – B3, B5	Design Development	200
	B1 – B3, B5	Construction	300
	B2, B3, B5	Record/Deliverables	300/500
Architectural Model	A1, A2, A4, A5	Schematic Design	100
	A1 – A7	Design Development	200
	A1 – A7	Construction	300/400
	A2 – A4, A6	Record/Deliverables	300/500

5.3 Level of Development (LOD) Procedures

Level of Development has been introduced to specify the content requirements and authorized uses for each Model Element. Each Development of the LOD utilises its previous and is built upon. The below descriptions have been set in place to establish the requirement of the LOD for each model element in the project.

LOD 100 – Conceptual

The building massing in regards to area, height, width, location and orientation is modelled.

Copyright ©	Document name	Version	Status	Date	Page Number
All rights reserved Document uncontrolled when printed	5010 - MCW-00-01-SP-A-BEP	P0.1	SO	24 March 2022	9

Ysgol Bae Abertawe	5010
Pre Contract BIM Execution Plan (BEP)	

LOD 200 – Approximate

Model Elements are modeled as generalized systems or assemblies with approximate quantities, size, location, and orientation.

LOD 300 – Precise

As above, the elements are modelled as detailed systems and incorporate accurate quantities, shapes, location and orientation.

LOD 400 – Fabrication

Complete fabrication, assembly and detailing information is incorporated as per LOD 300.

LOD 500 – Record Documents

Model Elements are modeled as constructed assemblies actual and precisely representing size, shape, location, quantity, and orientation, including “Recorded Field Data”.

Copyright ©	Document name	Version	Status	Date	Page Number
All rights reserved Document uncontrolled when printed	5010 - MCW-00-01-SP-A-BEP	P0.1	SO	24 March 2022	10

Ysgol Bae Abertawe	5010
Pre Contract BIM Execution Plan (BEP)	

IT Solutions

5.1 Approved BIM Software

As part of a method and measure to combat the likelihood of errors and mistakes, it is to be decided that we will introduce a standard BIM software to be used by all collaborators. This shall encourage the mitigation and minimise the likelihood of costly errors occurring leading to time delays and rising costs. The **USF-BIM-EP** shall address all software to be used on the school project as and when needed, with considerations to any other software applications, such as Third Party Applications requiring approval by USF before use.

The Auto desk products currently used by USF are:

- Autodesk REVIT Architecture
- Autodesk REVIT Structure

Therefore as a result of this, Morgan Construction Wales shall incorporate the use of this software only for the Ysgol Bae Abertawe Project. Subject to consider change upon clients review and comments.

Copyright ©	Document name	Version	Status	Date	Page Number
All rights reserved Document uncontrolled when printed	5010 - MCW-00-01-SP-A-BEP	P0.1	SO	24 March 2022	11