

Swansea Council Educational Services,
Civic Centre,
Oystermouth Road,
Swansea.
SA1 3SN.

Steven Cox,
Heol Y Gors,
Cwmbwrla,
Swansea,
SA5 8LD

29th April 2021.

Dear Sir/Madam,

Project 5010 – Ysgol Bae Abertawe

Following the UK government's 2011 Construction Strategy defining the 4 levels of BIM. A building strategy meeting BIM level 2 maturity will be developed for the design, construction and management of your new school facility.

Scottish future trusts states *'Level 2 BIM is distinguished by collaborative working, and requires "an information exchange process which is specific to that project and coordinated between various systems and project participants"'* (McPartland, 2014) (NBS, 2016)

As the Lead Appointed Party I will be responsible for co-ordinating information between the delivery team and you the Client (Appointing Party). Information will be exchanged in accordance with ISO 19650-2 clause 5 standards.

The process will be developed in a collaborative 3D environment accompanied with the building information and digital data. Ysgol Bae Abertawe Project will be created in separate disciplines through a Common Data Environment (CDE) to meet the ISO 19650 standards and your Exchange Information Requirements (EIR). Through a common agreement, the multiple disciplines will manage information and follow the relevant standards and procedures set out in ISO 19650.

The International Organisation for Standardisation (ISO) have published the first two international standards for Building Information Modelling (BIM) noted below with their UK references codes: (Trusts, 2020)

BS EN ISO 19650–1 Organisation of information about construction works – Information management using building information modelling – Part 1: concepts and principles, *and*

BS EN ISO 19650-2 Organisation of information about construction works – Information management using building information modelling – Part 2: Delivery phase of assets.

These two ISO 19650 standards supersede BS1192:2007 + A2:2016 (principles) and PAS1192 part 2 (capital/delivery phase) previously used. (Trusts, 2020)

For Level 2 BIM, the standard deliverables we would be expected to produce include: (NBS, 2016)

- Compliance with Exchange Information Requirements (EIR)
- BIM Execution Plan (BEP)
- Common Data Environment (CDE)
- ISO19650 Standards
- Digital Plan of Work (describing Level of Detail – LoD / CIC Work Stages)
- Intelligent 3D libraries
- Intelligent 3D models
- 3D based collaboration
- 3D digital survey
- Asset performance optimisation
- COBie

You as the Client will be required to provide an EIR in line with ISO19650-2 Clause 5.3 defining the minimum contents of the Exchange Information Requirements.

The EIR will define what you the Client will want from the project information model at the end of each stage. This document will also assist with decision making through the project.

As the lead appointed party I will be required to produce a BIM Execution Plan (BEP), establishing an outline of the processes for successful delivery and information management. The BEP is a detailed plan that defines how the project will be executed, monitored and organised with regard to BIM.

The purpose of the BIM execution Plan will be to provide all task team members with guidance of their responsibilities. This will be achieved by setting objectives, goals, team members responsibilities and outlining how the process will be achieved from initial design stage through to completion.

The BEP should be considered a living document and can be developed and refined throughout the project's life cycle to ensure the project remains on schedule and meets briefed requirements. Within the Plan it will set out the Level of Definition (LOD) required from the BIM documentation. The LOD is aligned with the RIBA Plan of Works to inform all parties of how much information they are expected to provide. (McPartland, 2014)

(Hall, 2017) A successful project will be achieved through an efficient collaborative approach from all team members for the duration of the project, achieved through a Common Data Environment (CDE).

The CDE is an online platform for collecting, managing and sharing information between the whole team working on the project. ISO 19650-2 describes the four distinct phases of a CDE, which are Work in Progress (WIP); Shared; Published Documentation; and Archive. It also gives details on naming, numbering and identification of all data that is held in the CDE. The platform used for the scheme will be a cloud based system which will be sub-divided into the separate disciplines. This facility will be utilised to create and build an accurate and well-structured Project Information Model.

The CDE will be owned by the Client and will be useful to base future decisions and learn from that will benefit future projects.

Modelling tools such as Autodesk AutoCAD and Autodesk Revit will be used to create 2D and 3D models of the facility. Models will be produced by all the separate disciplines then entered into the CDE using various collaborative software tools set out in the BEP. This will allow all stakeholders to co-ordinate efficiently through the project and have additional benefits such as Clash Detection. Clash Detection is the technique of identifying if -- and where or how -- two parts of the building (e.g., plumbing, walls, etc) are interfering with one another. Autodesk *states 'With BIM, you have the opportunity to plan it right before you build onsite. You can avoid last-minute changes and unforeseen issues by enabling easy reviewing and commenting across multiple disciplines.'* (Hall, 2017)

Through the lifecycle of the scheme and collection of all information and data, as a project outcome a Computer Aided Facilities Management (CAFM) will be integrated into the scheme to allow you as a Client to manage the repair and maintenance of the school from a web based dashboard.

Also, data can be shared, stored and updated through the life cycle of the scheme by utilising Construction-Operations Building Information exchange (COBie). This information can be passed onto the Client to support the facilities management of the building, and can also be used to check scheme meets the requirements of the project. COBie satisfies ISO19650 Clause 5.5. Following completion of the facility, the CDE will be utilised to implement further COBie outputs.

As lead appointed party I look forward to working through this process with you. If you have any queries please feel free to contact me at your convenience.

Your Sincerely,
Steve Cox.

Bibliography

Hall, J., 2017 . *Autodesk BIM 360*. [Online]

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McPartland, R., 2014. *NBS*. [Online]

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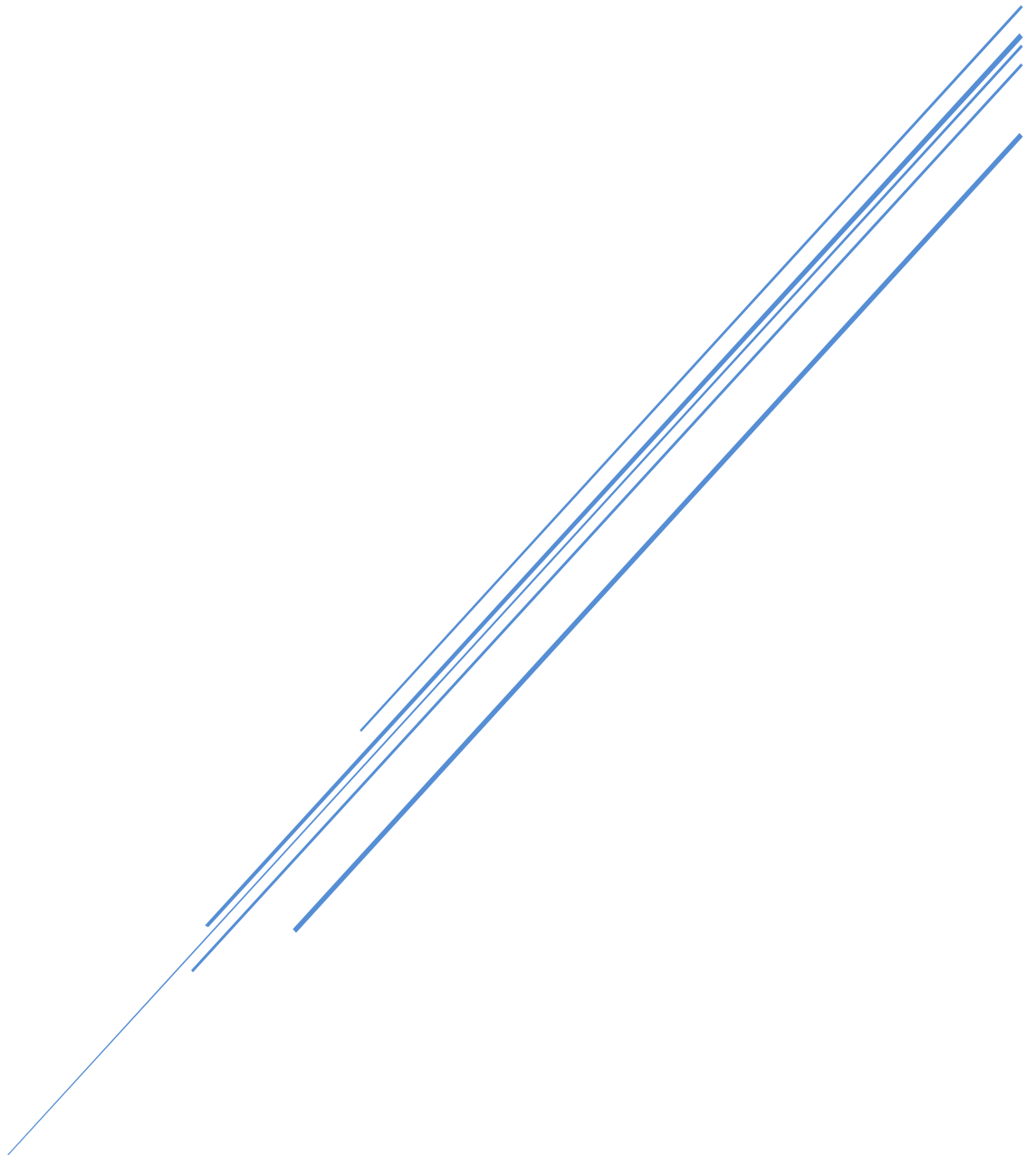
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BIM EXECUTION PLAN

5010 – Ysgol Bae Abertawe



City & County of Swansea

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1 Project Information

Client:	Swansea Council
Project Title:	Ysgol Bae Abertawe
Project Number:	5010
Project Address:	The Slipway, Swansea, SA1 1YB.
Project Co-ordinates:	192364.7 N 265976.9 E
Project Description:	Developing a process for information management for a 1 Form entry school for 90 Pupils designed in conjunction with Wales 21 st Century Schools BB99 guidance
Design Start Date:	TBC
Construction Start Date:	TBC
Completion Date:	TBC
Handover Date:	TBC

2 Management

2.1 Standards

All consultants to conform to the ISO 19650-2 standards Clause 5.1.4 for this section.

2.2 Roles

Contact	Role/Title	Company	Email	Phone
Steven Cox	Architect	Swansea Council	steve.cox@swansea.gov.uk	
	Client Representative	Swansea Council	Client@swansea.gov.uk	
	Information Manager	TBC		
	Mechanical	TBC		
	Electrical	TBC		
	Civil Engineer	TBC		
	Structural Engineer	TBC		

2.3 Responsibilities In accordance with ISO 19650 Clause 5.1.

Role/Title	Role Code	Responsibility
Architect (Lead)	A	- Overseeing the Architectural element of the design - Responsible for publishing Architectural Design to CDE - Ensure design is in accordance with EIR - The Lead Designer is responsible for the reviewing of the SHARED consultant information and authorising it as being appropriate for sharing with the Client's Representative. - Approve design changes proposed to resolve clashes
Client Representative	K	- Provide assistance with Requests and Approvals at critical stages - Project history maintained with previous submissions of published information moved into the Archive section of the CDE (Typically Archive Folder)

Information Manager	N	– Ensure process is managed in line with Standards – Liaise with team members to ensure information is shared correctly – Liaising with Design Team and IT managers to ensure software operating properly – Collaborative production of information – Confirm suppliers ability to deliver Information Requirements – Populate the Information Exchange Formats for the Information Model
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2.4 Competence Assessment

Company	Consultant	Level of BIM Training (Basic, Intermediate, Advanced)	Year(s) Experience	Name
	Architect	Advanced		
	Information Manager	Advanced		
	Mechanical	Intermediate		
	Electrical	Intermediate		
	Civil Engineer	Basic		
	Landscape Architects	Basic		
	Structural Engineer	Intermediate		

2.5 Project Milestones This section covers the requirements of ISO 19650 Clause 5.1.3

Workstage	01 Preparation & Brief	02 Concept Design	03 Developed Design	04 Technical Design	05 Construction	06 Handover & Closeout
Milestone	Outline Costings	Employer's Requirements	Employer's Requirements	Contractor's Proposals	Construction Package	Completion / Operation
Start Date						
End Date						

Note: Information will be entered into the table following release of the EIR.

3 Standards, Methods and Procedures

3.1 Standards

All consultants to conform to the ISO 19650-2 standards Clause 5.1.4 for this section.

3.2 Naming

Consultants may choose to name their files differently in order to comply with their own internal file naming system but this is only suitable to models within the Work In Progress (WIP) environment.

All files uploaded to the Common Data Environment shall be named in accordance with:

- File Naming Conventions -
- Sheet Naming Conventions -

3.3 Workset Naming

All models within the Common Data Environment which are work-sharing enabled (Revit Specific) shall conform to the Workset and Use requirements recorded in:

- Workset Naming and Use -

3.4 Room and Element naming

All models within the Common Data Environment shall conform to the Room and Element naming requirements recorded in:

- Room Naming
- Element Naming

3.5 Sheet Naming

All Sheets and Views must be removed from the BIM models during Information Exchange unless explicitly specified within the EIR and agreed by the project team.

Title blocks must include 'Status', 'Purpose of Issue' and 'Revision'.

Refer to:

- Sheet Naming Conventions
- Drawing Sheet Templates

Information Exchanges which represent key project milestones will adhere to the review and approval processes detailed below:

Key project milestones are identified within the following BEP documents:

- Project Milestones
- BIM Calendar
- Task Information Delivery Plan
- Model Transmittal Sheet

3.6 Convention Guide – BEP

Project	Originator	Zone	Level	Type	Role	Number	Sustainability	Revision
5010	UWTSD	XX	XX	SP	A	0001	S0	BEP

3.7 Model Naming Convention

Model Description	File Name
Architectural Model	5010-UWTSD-XX-XX-M3-A-0001-WIP-A1
Structural Model	5010-UWTSD-XX-XX-M3-S-0001-WIP-A1
Mechanical Engineer	5010-UWTSD-XX-XX-M3-M-0001-WIP-A1
Electrical Engineer	5010-UWTSD-XX-XX-M3-E-0001-WIP-A1
Clash Rendition Model	5010-UWTSD-XX-XX-CR-A-0001-WIP-A1

3.8 Project Values

Code	Role
A	Architectural
B	Building Surveyor
C	Civil Engineer
D	Drainage, Highways Engineer
E	Electrical Engineer
F	Facilities Manager
G	Geographical Engineers
H	Heating and Ventilation Designer
I	Interior Designer
K	Client
L	Landscape Designer
M	Mechanical Engineer
P	Public Health Engineer
Q	Quantity Surveyor
S	Structural Engineer
T	Town and County Planner
W	Contractor
X	Sub-Contractor
Y	Specialist Designer
Z	General

3.09 Naming Convention – Suitability Codes

Code	Description	Revision
Work in Progress (WIP)		
S0	Initial Status	Preliminary Revision and Version
Shared (Non-Contractual)		
S1	Suitable for Co-ordination	Preliminary Revision
S2	Suitable for Information	Preliminary Revision
S3	Suitable for Review and Comment	Preliminary Revision
S4	Suitable for Stage Approval	Preliminary Revision
S5	Withdrawn	N/A
S6	Suitable for PIM Authorisation	Preliminary Revision
S7	Suitable for AIM Authorisation	Preliminary Revision
Published (Contractual)		
A1	Authorised and Accepted	Contractual Revision
A2	Partial Sign Off	Preliminary Revision
Published (for AIM acceptance)		
CR	As Constructed Record Document	Contractual Revision

3.10 Origin and Orientation

Point	Eastings	Northings	Elevation
Site Location Grid Reference	265976.9 E	192364.7 N	0

4 IT Solutions

Consultant	2D/3D	Software	Version	Information Exchange Format
Architect	3D	Revit	2020	.rvt & .ifc
Mechanical	3D	Revit	2020	.rvt & .ifc
Electrical	3D	Revit	2020	.rvt & .ifc
Civil Engineer	2D	CAD	2020	.dwg
Landscape Architects	2D	CAD	2020	.dwg
Structural Engineer	3D	Revit	2020	.rvt & .ifc

All consultants to conform to the ISO 19650-2 standards Clause 5.1.7 for this section.

4.1 Design Software

Consultant	Software	Version
Architect	Navisworks	2020
Mechanical	Navisworks	2020
Electrical	Navisworks	2020
Structural Engineer	Navisworks	2020

4.2 3D Co-ordination Software

CDE Platform

BIM Xtra through the BIM Xtra DMS platform.

Data Exchange Platform

IFC data model – in accordance with ISO 16739

4.3 Asset Information Modelling

Facilities Management/COBie

COBie data to be provided using the Autodesk COBie Extension for Revit utilising the UK COBie template

COBie Excel Spreadsheet (.exe)

IFC

IFC 'As Constructed' Asset Model to be provided in IFC4 Schema

Specification Tools

NBS - <https://www.thenbs.com/our-tools/nbs-national-bim-library>

5 Planning and Documentation

5.1 Level of Definition

Level of Definition (LOD)	
LOD	Definitions
LOD1	Not Geometric representations & site constraints
LOD2	Conceptual/Placeholders
LOD3	Accurate Geometry but generic objects / systems
LOD4	Accurate geometry with a specific objects / systems
LOD5	Fabrication and Construction
LOD6	As constructed
LOD7	Ongoing operation and maintenance

5.2 Responsibility Matrix

Responsibility Matrix contained within Appendix 1. In accordance with ISO19650 Clause 5.4

5.3 Task Information Delivery Plan (TIDP)

File Identifier							Model / Drawing Title	Delivery Dates				
Project	Originator	Volume	Level	File Type	Discipline	Number		Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5

5.4 Master Information Delivery Plan (MIDP)

The MIDP will be compiled through the gathering of TIDP's put together by the individual task teams.

Model Responsibility Matrix – Information Exchange

Model Responsibility Matrix - www.architecture.com › Additional-Documents

Appendix 2 – Responsibility Matrix (.exe)

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