

Name – Jack Arthurs

Student Number – 1906127

Course – HND Quantity Surveying (Year 3)

Module – BIM

Assignment Title – Client Letter and Draft BEP

Tutor – Gavin Traylor



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

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J.A.C Ltd.
25 Construction Drive
Cimla
Neath
SA11 1AA
T: 01639 814913
E: JA@JACLTD.co.uk

29th March 2022

Our Ref: JA/22/5010

Mr John Doe
City and County of Swansea
Civic Centre
Oystermouth Road
Swansea
SA1 3SN

RE: 5010-Ysgol Bae Abertawe-BIM Requirements

Dear Mr. John Doe,

Thank you for your enquiry, and as such please find below detailed response and attached BEP for your review.

Firstly, to introduce myself my name is Jack Arthurs and I am the owner of J.A.C Ltd, I have been employed as the Lead Consultant in charge of delivering the new 'state of the art' infant school in Swansea, titled Ysgol Bae Abertawe, under the 21st Century schools programme. This project will be required to meet the BIM Level 2 standards and the below letter as requested by yourselves is to give confidence in the J.A.C Ltd team competency to meet these requirements.

To achieve this, the below letter will be split into the following sections: This will also aid to reference in any further correspondence going forward.

- Introduction to BIM Maturity
- How we share, coordinate and manage in BIM

Introduction to BIM Maturity

To demonstrate J.A.C's knowledge of BIM Maturity, we would like to take this occasion to articulate below.

Building Information Modelling is a phrase that describes the process of creating, sharing, and publishing digital information about a building or facility, and in this case an Infant School.

In BIM there are a range of levels that demonstrate the kind of information that is being portrayed, these are called the maturity levels.

These go from Level 0 to 3, For this project we will be going up to Level 2.

Level 0

This is where the information begins, generally once the works information has been handed over by the client to a designer, who drafts up some *unmanaged* drawings and a brief specification list. This is commonly referred to as the digital drawing board.

Level 1

Once plans have started to set off and become more detailed, these fall into Level 1.

Level 1 includes *managed* drawings and move from the rough sketches to more detailed 2 and 3D information.

This information includes conceptual models and visualisations and is now managed; however, it is not yet shared between other members.

Level 2

This is the level we will work to for Ysgol Bae Abertawe.

The information at this level is now detailed building information and developed 3D drawings with data supporting within. These models specify separate disciplines, which are known as Architectural, Structural, Facilities, Services etc.

Level 2 in the UK as of 2016 is the minimum requirement that must be met on centrally procured public projects. This level enables tenders to provide the appropriate information at the required time, allowing better cost certainty; A councils must!

To achieve this level there was standards to adhere to known as BS 1192, however please note that as of January 2019 these were superseded by the international level standards of ISO 19650. I will touch up on the international standards in the BEP.

At level 2 it is imperative that a cloud-based collaboration systems known as CDE is used – a common data environment; This allows files to be accessed by anyone, anywhere, anytime. We will explain how we will work towards collaborative working below and in our attached BEP.

Level 3

As we are not working to level 3, I will not delve too deep, however at J.A.C Ltd we like to show willing to go that extra mile.

Towards the end of the list is level 3, which was launched in February 2015. Level 3 is when the information is classed as Fully Integrated.

Level 3 is one of the final goals of the sector, it is a mile stone to hit.

At Level 3 we see after-construction plans such as the projects lifecycle management of assets and more dimensions of BIM such as 6D (Sustainability) and 7D (Facility Management).

This is where you will see the acronym IBIM, which stands for Integrated Building Information Modelling. IBIM was created to focus on the importance of communication and effective collaboration to work efficiently on projects.

How we share, coordinate, and manage Information

The above levels and diagram detail the who, what and when, however it is no use without every party singing off the same hymn sheet.

This is where the standards detail the level of communication recommended, which is by all parties using a common data environment.

A CDE allows the entire project teams to have the ability to display, share and edit the information in a fluid way, without loss of information or workflow conflicts.

As you can imagine, having a cloud based CDE on a large or dynamic, complex job like an Infant school would greatly speed up and nullify any duplications and mistakes in passing information around the traditional way.

At J.A.C Ltd we will use software to manage the above such as Revizto™, which allow you to do all the above in the effective manner necessary.

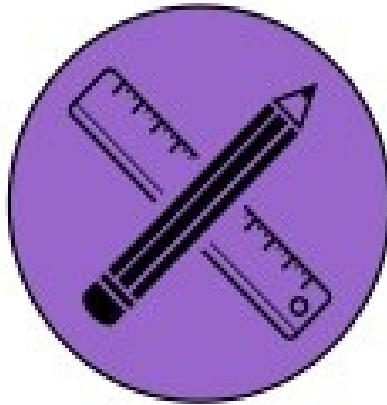
By using Revizto™, It is not just used to coordinate and work together but also includes things like Clash detection that gives all users the ability to detect conflicts between different architectural and engineering models, which is very important to avoid project delays and cost hikes.

Please review our attached BEP to see how we do this in more detail.

We thank you for your letter, and if there is any more information you require, please do not hesitate in contacting me.

Sincerely,
Jack Arthurs

Building Information Modelling (BIM) Execution Plan (BEP)



JAC LTD

Project Description:	1 form entry infant school for 90 pupils, with 48 PT Nursery provision
Project Number:	5010
Date:	29 th March 2022

Revision: A
Status: For review

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Document Control Sheet

Revision	Page Nrs	Change	Status	Date	By
A	ALL	Implementation of Document	For review	22 03 22	J A

Project Delivery Manager

This document is owned, managed and maintained by the current person(s) listed below:

Representatives Name	Company	Role
Jack Arthurs	J.A.C Ltd	Lead Consultant

(1) The Purpose of document

This document is intended to demonstrate the proposed approach to a project, and to show a project team how to recognise and execute the roles required of them within.

Under ISO 19650 the BEP is directly related to the Employers Information Requirements (EIR) which is an important document that sets out all the information that is required by the consultant above, J.A.C Ltd.

This document is to support the key points and project stages, and is aimed to work in collaboration to the project brief. This document will discuss the following points, to help produce the information required by the client and to provide support to the contract coordinator throughout the life cycle of the project:

- Project Information
- Management
- Planning and Documentation
- Standard Methods and Procedures
- IT Solutions

(2) Project Information

Table 1 – Project Information

Client	Swansea Council
Project Name	Ysgol Bae Abertawe
Project Description	1 form entry infant school for 90 pupils, with 48 PT Nursery provision
Project Number	5010
Proposed Project Start Date	As Table 4
Proposed Completion Date	As Table 4

(3) Management

The success of a BEP is reliant on each person included within to perform their designated role and agreed responsibilities. These are outlined in section 3, Table 2.

(3.1) Roles and responsibilities

Throughout a project it is important to set and identify the roles and responsibilities of the project team. Table 2 outlines each role, company, name and contact details who are to fulfil the necessary project roles.

Table 2 – Roles and responsibilities

Role Company	Name	Email and Telephone Number
Lead Consultant J.A.C Ltd	Jack Arthurs	JA@JACLTD.co.uk 01639 814913
Lead Designer J.A.C Ltd	Charlie Arthurs	CA@JACLTD.co.uk 01639 814913
Clients Representative Swansea Council	Wayne Edwards	Wayne.edwards@swansea.gov.uk 01792 636000
Construction Manager JNC Ltd	Steve Arthurs	SJA@JNCLTD.co.uk 01639 822001
Project Information Manager J.A.C Ltd / JNC Ltd	Jack Arthurs / Steve Arthurs	JA@JACLTD.co.uk 01639 814913 / SJA@JNCLTD.co.uk 01639 822001
Site Manager JNC Ltd	Christian Arthurs	CJA@JNCLTD.co.uk 01639 822001
Project Manager JNC Ltd	Doug Davies	DD@JNCLTD.co.uk 01639 822001
Quantity Surveyor Swansea Council / JNC Ltd	Kyle Williams / Clive James	Kyle.williams@swansea.gov.uk 01792 636000 / CJ@JNCLTD.CO.UK

(3.2) Role authorities

The above roles and responsibilities above correlate to the below definitions, to fully identify and detail the person(s) responsibility and disciplines.

(3.21) Clients Representative

The client (**Swansea Council**) is to be kept up to date and informed immediately of any changes within the BIM process and BEP. It is very important they are kept within the processes to ensure the project is still working within the Employers Information Requirements and the project is achieving the BIM objectives.

This role is to be carried out by the person(s) outlined in Section 3.1 – Table 2.

(3.22) Main Contractor

The Main Contractor (**JNC Limited**) is to carry out the roles of Construction Manager, Project Information Manager, Site Manager, Project Manager and Quantity Surveyor.

On this project the Main Contractor has taken all Managerial Roles to do with the Operations on the ground, to fully achieve efficient collaborative working.

These roles are to be carried out by the person(s) outlined in Section 3.1 – Table 2.

(3.23) Consultants

The Consultants (**J.A.C Limited**) are to carry out the main responsibilities and duties of the design. They will adhere to the specifications given in this document and Employers Information Requirements, and are responsible to carry out the role of lead consultant on this project.

These roles are to be carried out by the person(s) outlined in Section 3.1 – Table 2.

Table 3 – Role authorities.

Role	Authority
Lead Consultant	Direct the work of the consultant team and main point of communication between all parties.
Lead Designer	Conduct design work and lead the development of.
Clients Representative	Handle Client involvement and portray client needs.
Construction Manager	Plan and coordinate the project.
Project Information Manager	To Develop, maintain and manage the BIM standards and processes, and to insure EIR's are included.
Site Manager	Manage site operations.
Project Manager	Manage day to day management of the project and work alongside the Construction Manager.
Quantity Surveyor	To manage the cost of the project.

(3.3) Major Project Milestones

To record the projects progress, multiple “checkpoints” will be detailed below in Table 4 to highlight the successful completion of.

These detail the goals the project team want to achieve and when.

Table 4 – Milestones

Strategic Definition	November 2020
Preparation and Brief	March 2021
Concept Design	September 2021
COVID-19 DELAY	December 2021
Spatial Coordination	March 2022
Technical Design	May 2022
Manufacture and Construction	May 2022
Handover	August 2022
Use	August 2022

Only major milestones and any delays (if applicable) are to be included in the above Table. A more detailed programme will be developed by the appropriate people noted in Section 3 Table 3.

(3.4) Survey Strategy

Table 5 below will highlight the plan of work for the Surveys required as noted in the EIR's.

Table 5 – Survey Strategy

Method	Format of Information	By	Notes
CAT Survey	DWG	TBC	
Drainage Survey	DWG	TBC	
OS Data	DWG	TBC	
Topographical Data	DWG	TBC	

(3.5) Approval of Information

To ensure all work included within the project is adequately checked and reviewed by others, some information will require the below scheduled member to sign-off the information.

Table 6 below details this schedule.

Table 6 – Schedule of Approved Information Responsibilities

Name	Role	Models	Drawings	Peer Review	Lead Designer / Lead Contractor	Client Review Team
Jack Arthurs	As Table 2	X	X	X		
Charlie Arthurs	As Table 2	X	X	X	X	
Wayne Edwards	As Table 2		X			X
Steve Arthurs	As Table 2		X	X		
Christian Arthurs	As Table 2			X		
Doug Davies	As Table 2	X	X	X	X	
Kyle Williams	As Table 2		X	X	X	X
Clive James	As Table 2		X	X	X	

(4) Planning and Documentation

(4.1) Supply Chain Capability

Supply chain approval and the production of documentation for scope information management should be carried out at the earliest possible time, post contract award.

This is via the use of:

- Supply chain Pre-Qualification Questionnaire forms
- Supply chain capability forms
- Supply chain IT assessment forms
- Supply chain resource assessment forms
- Supply chain previously completed projects forms

These forms are to be agreed by all parties in Table 2 and included within the project information. All parties are to be evaluated on their ability to meet the requirements of the project prior to starting any work for such project.

All subcontractors (if any) that are to be employed by the Main Contractor in Table 2, will require to be assessed using the above forms.

All completed forms are to be recorded by the appropriate person and available for viewing by all parties at any time.

An example of an assessment completed can be summarised for all forms as per the below table 7.

Table 7 – Supply Chain assessment summary

Supplier Name	Role	Resource Numbers	Training	Years of Experience	Names of Individuals	Approved by

(5) Standard Methods and Procedures (SMP)

A crucial part in BIM is to ensure all parties adopt the same methods and procedures when producing information, allowing information to be used, reused and changed without the method / procedure changing.

A set of SMP covers the way information is named, expressed and referenced, and is to be set out below.

To ensure information is compatible, the below section 5.1 will detail the agreed formats.

(5.1) Agreed project processes for collaboration and information modelling

All processes and information is to be in the agreed formats as below, to ensure efficient communication through all parties.

Table 8 – Processes for collaboration and information modelling

Company	Software	Network	File Base
J.A.C Limited	Revit	Revizto	RVT
JNC Lintied	Revit, Microsoft Office	Revizto	RVT, Microsoft Office*
Swansea Council	Microsoft Office	Revizto	Microsoft Office*

*Numerous File Bases

(5.2) Volume Strategy

A volume is a manageable spatial division of the project that allows more than one person to work on the model. Each volume is represented by a separate reference file but can be collated together to view the project as a whole.

This process is agreed by the lead designer to allow the systems to all work together, and it is important this is done at the beginning of the project.

(5.3) Project Information Model (PIM) Origin and Orientation

The origin and orientation of the project is in reference to the global / local grids (Ordnance survey). These points are noted using a grid intersection notation, Easting, Northing and Elevation / Site Datum.

These points and levels are to be confirmed and used by all members of the project team.

(5.4) Units and Measurements

All dimensions are to be rounded to 0.1 of a decimal.

The below table details the units and measurements accepted.

Table 9 – Units and Measurements

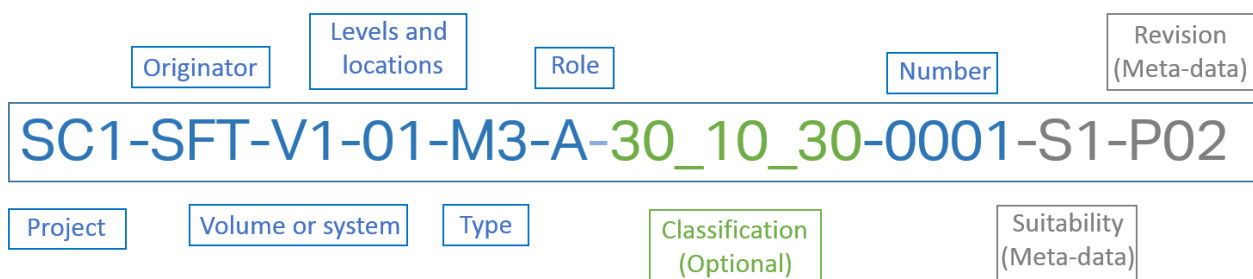
Quantity Measured	Base SI Unit	Symbol
Mass	Kilogram	Kg
Length	Meter	M
Area	Square Metre	M2
Volume	Cubic Metre	M2
Temperature	Kelvin	K
Luminous Intensity	Candela	cd

(5.5) File Naming Convention

A file naming convention is a required procedure to allow shared and published files to be understandable. The naming convention for files are broken down in Table 10.

Table 10 – File Naming Convention

Field	Obligation	Description
Project	Required	Code for project
Originator	Required	Code for organisation creating information.
Volume or system	Required	Code for system reference.
Levels and location	Required	Code to locate info (Floor 1 etc.)
Type	Required	Code for type of file Cost Plan, method statement etc.)
Role	Required	Code for role of organisation (A – Architect etc.)
Classification	Optional	Code to reference asset (Uniclass or equivalent)
Number	Required	Sequential file number
Suitability	Meta-data	Code for status of data (WIP, Shared, published etc)
Revision	Meta-data	Code for revision of data.



Levels and Locations	
ZZ	Multiple Levels
XX	No Level Applicable

GF	Ground Floor
00	Base Level of Building or linear Asset
Floor Levels	
01	Floor 1
02	Floor 2, Etc.
Mezzanine Levels	
M1	Mezzanine above level 1
M2	Mezzanine above level 2
Below Ground Floors	
B1	Floor -1
B2	Floor -2

Table 12 – Type

Codes for Drawings and Models	
AF	Animation File
CM	Combined Model
CR	Specific for the clash process
DR	2d Drawing
M2	2D Model file
M3	3D Model file
MR	Model rendition file for other renditions (thematic analysis)
VS	Visualisation
Codes for Documents	
BQ	Bills Of Quantities
CA	Calculations
CI	Correspondence
CO	Cost Plan
DB	Database
FN	File Note
HS	Health & Safety
IE	Information Exchange
MI	Minutes/Action Notes
MS	Method Statements
PP	Presentation
RD	Programme
RI	Request for information
RP	Report
SA	Schedule of accommodation
SH	Schedule

SN	Snagging List
SP	Specification
SU	Survey

Table 13 – Roles & Discipline

Codes for Roles and Disciplines	
A	Architect
B	Building Surveyor
C	Civil Engineer
D	Drainage, Highways Engineer
E	Electrical Engineer
F	Facilities Manager
G	Geographical and Land Surveyor
H	Heating & Ventilation Designer
I	Interior Designer
K	Client
L	Landscape Architect
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

Table 14 – Meta-data

Status	Description	Graphical	Non-Graphical	Document
<u>Work in Progress</u>				
SO	Initial Status of WIP	Yes	Yes	Yes
<u>Shared (Non Contractural)</u>				
S1	Suitable for co-ordination	Yes	Yes	Yes
S2	Suitable for Information	Yes	Yes	Yes
S3	Suitable for review	No	Yes	Yes
S4	Suitable for approval	No	Yes	Yes
<u>WIP to Publish</u>				
D1	Suitable for Costing	Yes	Yes	Yes
D2	Suitable for Tender	Yes	Yes	Yes
D3	Suitable for design	Yes	Yes	Yes

D4	Suitable for Manufacture	Yes	Yes	Yes
<u>Published Documents</u>				
A1,A2,A3	Approved / Accepted	Yes	Yes	No
B1,B2,B3	Partial Sign Off	Yes	Yes	No

(5.6) Room Numbering and Naming

Models should be completed with Room information with a reasonable numbering and naming system, to allow references to take place.

(5.7) Drawing Sheets

Drawing sheets should be created within each discipline and to remain in the models.

(6) IT Solutions

This section covers the software and formats that will be used by the design team, which is to be agreed before the project starts.

(6.1) Software

Table 15 – Software

Software	Application	Format
Autodesk Revit	Model Authoring	.RVT
Adobe Acrobat Reader	Documentation	.PDF

(6.2) Exchange Formats

Table 16 – Exchange Formats

	RVT	PDF	DWG	Excel
Models	X	X		
Drawings		X	X	
Published Drawings		X	X	
Schedules		X		X
Spreadsheets		X		X

Bibliography

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- https://www.designingbuildings.co.uk/wiki/BIM_level_2
- https://www.designingbuildings.co.uk/wiki/ISO_19650
- <https://www.globalcad.co.uk/bim-level-3-is-the-industry-ready/#:~:text=BIM%20Level%203%20is%20all,to%20be%20accessible%20by%20everyone.>
- <https://biblus.accasoftware.com/en/bim-maturity-levels-from-stage-0-to-stage-3/>
- <https://revizto.com/en/what-is-bim-coordination/>
- https://www.designingbuildings.co.uk/wiki/BIM_volume
- <https://bimportal.scottishfuturestrust.org.uk/level1/stage/8/task/47>