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18 November 2025

Caerphilly County Borough Council

Property Services Division

Penallta House

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18 November 2025

For the attention of:

Mr Project Lead

Education & Community Development Portfolio

Subject: BIM Delivery Strategy for Ysgol Y Twyn (UPRN 5016) – Outline Business Case

Dear Ms. Morgan,

Thank you for appointing **4D Consultancy (Deian Davies Digital Design Ltd)** as the Lead Digital and BIM Consultant for the development of *Ysgol Y Twyn* – a new state-of-the-art infant school and community facility at the heart of Caerphilly.

This letter sets out our proposed approach to Building Information Modelling (BIM) for the Outline Business Case, and explains how we will ensure the project meets the requirements set by the Welsh Government under the Sustainable Communities for Learning Programme.

In addition, this letter will also detail our approach to BIM maturity, whole-life asset management, Levels of Information Need (LOIN), CAFM integration, digital coordination, and adherence to ISO 19650 standards. It also outlines the digital framework that will guide design, construction, and long-term operational management of the school, community hall, and Caerphilly Story Gallery.



As per your brief, we are thrilled to be working on this one form entry infant school comprising of additional community facilities, small hall community hall and a story gallery. These spaces will operate independently but will share digital information and asset management systems where appropriate.

To support yourselves, Caerphilly Council, the client; we, 4D Consultancy, will lead a collaborative design and delivery team consisting of:

- **4D Consultancy**. – Architectural Design, Project Management & Cost Management
- **Crymych Structures Ltd.** – Civil & Structural Engineering
- **Egni MEP Solutions** – Mechanical & Electrical Engineering
- **Preseli Solutions Ltd.** – Asset Management & CAFM Integration

This structure ensures that all project disciplines work together effectively from the start.

4D Consultancy's Approach – For Client Approval

For us, Building Information Modelling and Management (BIM) is fundamentally about organising accurate, structured digital information so that the project can be designed, delivered and managed as efficiently as possible.

Our approach is built around three core principles: **Clear Information Requirements**, **A Shared Digital Environment**, and **Long-Term Value**.

We begin by defining exactly what information is required, when it is needed, and who is responsible for producing it. All drawings, models, documents and records will be managed within a secure Common Data Environment (CDE), ensuring consistency across the project team and eliminating the risk of outdated or duplicated files. In addition to producing the information needed for design and construction, we also develop structured data that will support long-term operation, maintenance and facilities management of the building.

All of our processes follow the ISO 19650 international BIM standards, which are required by Welsh Government for all major education projects.

To demonstrate our capability in achieving the BIM maturity expected for this scheme, we will implement the following measures:

Experienced and Qualified Team – Our multidisciplinary team includes architects, engineers, project managers and digital specialists with extensive experience in BIM delivery. Each member routinely applies BIM tools and workflows across live projects, ensuring we have the necessary expertise to meet the project's BIM requirements from the outset.



BIM Execution Plan (BEP) – A comprehensive BEP will be prepared to define the project's BIM objectives, information requirements, roles, responsibilities and workflows. This plan will form the basis of our BIM delivery strategy, ensuring that all parties work in a coordinated and consistent manner. The BEP will be updated at key stages to maintain alignment with project objectives as the design develops.

Training and Professional Development – All staff involved in BIM delivery will participate in ongoing training to ensure they remain fully up to date with the latest industry standards, including ISO 19650, and emerging digital technologies. Training will be provided through online seminars, workshops and practical sessions, enabling our team to continually strengthen their BIM capability throughout the project lifecycle.

Quality Assurance and Information Control – Robust quality assurance procedures will be embedded throughout our workflows to ensure that all information produced is accurate, coordinated and compliant with BIM standards. Regular audits, model reviews and validation checks will be undertaken, with any discrepancies addressed promptly to maintain the integrity of the digital information throughout design, construction and handover.

BIM Maturity, Information Requirements and Why They Matter.

We will deliver this project at the BIM maturity level required by the Sustainable Communities for Learning Programme, ensuring that Welsh Government's expectations are fully met.

To achieve this, the project team will work from a single, coordinated digital model managed by 4D Consultancy. This model will be updated and reviewed regularly, with information checks carried out at every key stage. Fortnightly coordination meetings will ensure that decisions are based on accurate, up-to-date information and that all disciplines remain aligned. At RIBA Stage 6 (Handover), we will provide a complete digital asset model that supports future maintenance and facilities management, in collaboration with Preseli Solutions Ltd through Stage 7 (In Use). This approach reduces risks, avoids costly rework and ensures both Caerphilly Council and Welsh Government receive a fully compliant and reliable digital record of the building.

Levels of Information Need (LOIN)

As the project progresses, not all elements of the design need to be modelled in full detail straight away. To manage this efficiently, we will apply **Levels of Information Need (LOIN)** to specify:

- how much graphical detail is required?
- what non-graphical data must be included?
- when that information needs to be produced?



This ensures that the right information is available at the right time, supporting informed decision-making while avoiding unnecessary modelling costs.

For example:

- **Early design stages:** simple building shapes for option testing and cost planning.
- **Detailed design:** coordinated information on walls, beams, structural layouts and service routes.
- **Pre-construction:** installation-level detail, manufacturer data, asset information and maintenance requirements.

Throughout all RIBA stages, we will clearly define the **Level of Information (LOI)** and **Level of Detail (LOD)** required, from initial concept through construction, handover and into building use. This ensures that the information produced is always proportionate, aligned with funding requirements and usable for long-term asset management.

Appended to this letter, we have included example LOIN tables for different stages of the project, based on the RIBA Plan of Work 2020, along with recommended inclusions for the Employer's Information Requirements (EIR) and Asset Information Requirements (AIR).

Computer-Aided Facilities Management (CAFM) Integration

A core aim of 4D Consultancy Ltd is to ensure that all information produced during design and construction supports the Council's long-term management of the school. To achieve this, we embed CAFM requirements directly into the project's information management strategy from the outset.

Our approach includes:

- **Identifying CAFM Data Requirements Early:**
Working with Preseli Solutions Ltd, we prepare a CAFM Data Specification aligned to the Council's existing FM software. This ensures all asset data—such as equipment types, schedules, maintenance intervals, and warranty information—is delivered in a format the CAFM system can accept without modification.
- **Structured Asset Information Creation:**
Asset data will be developed progressively through the RIBA stages, culminating in a complete Asset Information Model (AIM). Mandatory data fields such as Uniclass classifications, expected lifespan, manufacturer details, COBie drops, and maintenance instructions will be included.
- **Validation and Compliance Checks:**
Before handover, we will run CAFM-readiness audits. This includes verifying



data consistency, checking attribute completeness, and exporting test COBie sheets for the Council's approval.

This approach ensures a seamless transition from project completion to operational management, minimising future administration effort and reducing the risk of missing or incompatible data at handover.

Whole-Life Costing and Digital Asset Value.

A key benefit of BIM is the ability to understand cost, performance, and maintenance implications across the full life of the building. Whole-life costing will be embedded through:

- **Lifecycle Data Capture:**
The digital model will include expected service life, replacement cycles, and anticipated maintenance demands of key components.
- **Lifecycle Cost Simulations:**
Using the LOIN framework, we ensure each element has the appropriate cost and performance data at the required stage. This supports informed choices during design—helping the Council to evaluate long-term value, not just initial capital cost.
- **Post-Occupancy Value:**
The structured data handed over at Stage 6 greatly reduces operational uncertainty. Facilities managers will receive a full digital record that supports financial planning for maintenance, energy monitoring, and replacement budgeting.

This approach aligns with the Welsh Government Sustainable Communities for Learning Programme requirement to demonstrate value across the building's life, not just at construction.

ISO 19650-Compliant Workflows

Our workflows follow the ISO 19650 series of standards, ensuring that information is consistently structured, traceable, and reliable. Key elements include:

- **Defined Information Requirements:**
Employer's Information Requirements (EIR), Exchange Information Requirements (EIR/ExIR), and Asset Information Requirements (AIR) will be prepared in accordance with ISO 19650-1 and ISO 19650-2.
- **A Managed Common Data Environment (CDE):**
The CDE will follow ISO 19650 naming conventions, metadata standards,



approval statuses, and workflow rules. This platform is used for all documents, models, and correspondence to avoid duplication and maintain version control.

- **Information Delivery Planning:**

A master Information Delivery Plan (IDP) will be prepared and coordinated with all designers and contractors. This sets out who delivers what information, when, and to what required level.

- **Quality Assurance and Audit Trails:**

Every file, model revision, and approval stage is recorded. This provides full transparency and ensures data is validated before it progresses from "Work in Progress" to "Shared," "Published," and finally "Archived."

This robust, standards-driven approach reduces risk, supports compliance with Welsh Government expectations, and ensures high-quality digital information throughout the project lifecycle.

Operation of Independent Functions

We recognise that the infant school, nursery provision, Twyn Community Hall, and Caerphilly Story Gallery will each operate as independent functions. Our BIM approach will therefore ensure that each facility has its own clearly defined digital asset data, operational zones, maintenance responsibilities and access requirements. However, where beneficial, shared systems (such as energy monitoring, fire safety systems, security, and CAFM data structures) will be aligned to ensure efficient management and cost-effective long-term operation for Caerphilly Council.

We trust that this letter provides the assurance required for the Outline Business Case and demonstrates that 4D Consultancy is fully prepared to deliver a coordinated, compliant, and future-ready BIM strategy for Ysgol Y Twyn.

Yours sincerely,

Deian Davies 

Lead Digital & BIM Consultant
4D Consultancy Ltd (Deian Davies Digital Design)

Please turn over for appendices and references...



Brief expectations of what will be received through our information pack;

Appendix A: Level of Information Need (LOIN) Tables

RIBA Plan of Work 2020	RIBA Stage	Model Detail (Geometry)	Data Requirements	Purpose
The RIBA Plan of Work 2020 provides a framework for the building process, from concept to completion. It is divided into eight stages, each with specific tasks and deliverables. The plan is designed to be flexible, allowing for adaptation to different project types and scales.	0	Strategic Definition	Strategic Definition	Strategic Definition
	1	Preparation and Briefing	Preparation and Briefing	Preparation and Briefing
The RIBA Plan of Work 2020 provides a framework for the building process, from concept to completion. It is divided into eight stages, each with specific tasks and deliverables. The plan is designed to be flexible, allowing for adaptation to different project types and scales.	2	Concept Design	Concept Design	Concept Design
	3	Spatial Coordination	Spatial Coordination	Spatial Coordination
The RIBA Plan of Work 2020 provides a framework for the building process, from concept to completion. It is divided into eight stages, each with specific tasks and deliverables. The plan is designed to be flexible, allowing for adaptation to different project types and scales.	4	Technical Design	Technical Design	Technical Design
	5	Manufacturing and Construction	Manufacturing and Construction	Manufacturing and Construction
The RIBA Plan of Work 2020 provides a framework for the building process, from concept to completion. It is divided into eight stages, each with specific tasks and deliverables. The plan is designed to be flexible, allowing for adaptation to different project types and scales.	6	Handover	Handover	Handover
	7	Use	Use	Use

RIBA plan of work is an industry standard we will be following at 4D Consultancy.

Example LOIN Table (Summary)

(A full version can be produced upon request in spreadsheet or table format.)

RIBA Stage	Model Detail (Geometry)	Data Requirements	Purpose
Stage 2 – Concept	Massing models, key spatial relationships	Area data, high-level system options	Strategic briefing, early cost advice
Stage 3 – Spatial Coordination	Coordinated architectural, structural, MEP layouts	System performance data, preliminary asset info	Planning, clash detection, design freeze

Stage 4 – Technical Design	Fully detailed and dimensioned models	Manufacturer details, lifecycle data, maintenance info	Construction planning, cost certainty
Stage 5 – Construction	As-built model updates	Installation records, commissioning data	Verification, safety file creation
Stage 6 – Handover	As-built AIM	COBie datasets, warranties, serial numbers	Facilities management integration
Stage 7 – In Use	Updated AIM	Maintenance records and operational performance	Long-term asset management

The above table summarises our involvement throughout the project.

Appendix B: Sample Employer’s Information Requirements (EIR)

A sample EIR would include:

1. Project Information Requirements

- RIBA Stage outputs
- Naming conventions
- File exchange formats (DWG, PDF) if you wish to receive other formats please let us know (COBie, IFC)

2. Management Requirements

- BIM roles and responsibilities
- Approval procedures within the CDE
- Requirements for clash detection and reporting
- Meeting frequency for coordination

3. Technical Requirements

- LOIN expectations
- Attribute requirements following Uniclass 2015
- Model coordination rules
- Standards to be followed (ISO 19650, BS 1192 legacy references)

4. Commercial Requirements

Continued ...

- Data delivery milestones
- Contractor responsibilities
- Information acceptance criteria

A complete EIR can be drafted for the Council if required.

Appendix C: Sample Asset Information Requirements (AIR)

Core Data Fields for Each Asset

- Uniclass classification
- Manufacturer
- Model/Type
- Expected service life
- Warranty details
- Maintenance intervals
- Location (space code, zone, floor)
- Linked documentation (O&M manuals, certificates, NBS)

Operational Requirements

- Energy performance data
- Replacement schedules
- Spare parts lists
- CAFM import format requirements

Appendix D: BIM Execution Plan (BEP) - Outline

1. Project Details

- Project scope
- Key stakeholders
- BIM goals and outcomes

Continued ...

2. Information Delivery Strategy

- Model federation procedures
- Use of revisto for live sharing information
- Clash detection strategy
- File naming rules

3. Roles and Responsibilities

- Information Manager
- Task Team Manager
- Authors, coordinators, reviewers

4. Planning and Scheduling

- Master Information Delivery Plan (MIDP)
- Task Information Delivery Plans (TIDP)
- Quality control checks

5. Technical Approach

- Modelling standards
- Data exchange formats
- Use of IFC, COBie, and AIM requirements

6. Handover and Closeout

- As-built model requirements
- AIM validation process
- Documentation standards

Please turn over for links and references...

Links

<https://architectureforlondon.com/news/the-riba-plan-of-work/>

<https://archdesk.com/blog/data-exchange-construction>

<https://www.thenbs.com/>

<https://nibs.org/nbims/v4/bep>

<https://revizto.com/en/bim-quality-assurance-validation/>

<https://revizto.com/en/>

<https://revizto.com/en/integrations/>

<https://www.trimble.com/blog/construction/en-US/article/ready-for-lod-riba-the-power-of-content-enabled-modelling>

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