AEC (UK) BIM Protocol

Implementing UK BIM Standards for the Architectural, Engineering and Construction industry.

Version 2.0	September 2012	Updated to unify protocols outlined in AEC (UK) BIM Standard for Revit and Bentley Building.

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Contents

1 Introduction

1.1 Background

The AEC (UK) Initiative was formed in 2000 to improve the process of design information production, management and exchange. Initially the initiative addressed CAD layering conventions as the primary concern for users of design data. As design needs and technology has developed, the initiative has expanded to cover other aspects of design data production and information exchange.

The committee was re-formed in 2009, including new members from companies and consultancies highly experienced in BIM software and implementation, to address the growing need within the UK AEC industry for application of UK standards in a unified, practical & pragmatic manner within a design environment.

The AEC (UK) BIM Protocol was first released in November 2009, and this updated version collates the learning and experience gained since then. This generic document provides platform-independent protocols which are further enhanced by the software-specific supplements.

Copyright Notice:

It is important to note that this standard will only become truly useful if as many companies adopt it as possible. To that extent, it may be freely distributed and used in any format necessary, provided credit is given to the committee.

1.2 The Committee

The group has representatives from architectural, engineering and construction companies in the UK, large and small, hence the adoption of the AEC (UK) moniker. The BIM committee is working together to realise a unified, usable, co-ordinated approach to Building Information Modelling in a design environment.

Committee

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1.3 Disclaimer

All the advice outlined in this document is for information only. The authors and contributing companies take no responsibility for the utilisation of these procedures and guidelines. Their suitability should be considered carefully before embarking upon any integration into your current working practices.

None of the recommendations in this document are intended as a replacement for companies who already have an AEC (UK)-based or BS1192-compliant system.

1.4 Scope

The AEC (UK) BIM Protocol v2.0 builds on the guidelines and frameworks defined by the UK standards documents, including BS1192:2007, PAS1192-2 and BS8541-1 as well as existing, proven internal company procedures.

This document intends to provide BS-compliant, platform-independent protocols for designers' BIM authoring tools.

It focuses primarily on adaptation of those standards for practical and efficient application of BIM, particularly at the design stages of a project. The objectives are:

1. To maximise production efficiency through adopting a coordinated and consistent approach to working in BIM.

2. To define the standards, settings and best practices that ensure delivery of high quality data and uniform drawing output across an entire project.

3. To ensure that digital BIM files are structured correctly to enable efficient data sharing whilst working in a collaborative environment across multi-disciplinary teams both internally and in external BIM environments.

The AEC (UK) BIM Protocol v2.0 forms the "hub" of a complete software-based solution. The supplementary documents provide the additional detail and enhancements required to implement these protocols using specific BIM authoring software:

- AEC (UK) BIM Protocol for Autodesk Revit

- AEC (UK) BIM Protocol for Bentley AECOsim Building Designer

- More are to be published shortly.
  Users of other BIM authoring tools are invited to engage with this committee to produce their own supplementary documents. Please contact the committee for further information.

1.5 Update Procedure

Proposed changes and additions to this standard should be submitted in writing with accompanying examples, discussion, or other supportive material to committee. Feedback will be gathered and continuously reviewed; they will be collated to form new revisions at appropriate intervals.

It is expected that this standard will undergo a relatively rapid evolution process, as the industry adapts to the implications and advantages of BIM methodology.

1.6 References

This standard is written with reference to the following documents:

- BS1192:2007
- PAS1192-2:2012
- BS8541-1 and BS8541-2:2011
- AEC (UK) CAD Standard Basic Layer Code 2001
- AEC (UK) CAD Standard Advanced Layer Code 2002

1.7 Definitions

The following terms define the concepts of BIM and data structures used in this Standard.

BIM	Building Information Modelling (BIM): the creation and use of coordinated, internally consistent, computable information about a project in design and construction.
Component	A component is an individual element that can be reused in a number of situations. Examples include doors, stair cores, furniture, façade panels, columns, walls etc. Components are typically inserted and moved/rotated into required position.
Assembly	A collection of components and/or modelled elements arranged to define part or all of a building model such as groups or sub-models. An assembly typically contains information that can be referenced without repositioning.
Container Model	An optional repository which can be used to compile assemblies and components for specific purposes including export and publication. A container can exist for each individual profession/discipline or for multiple disciplines, for buildings or for a complete project.
WIP	Work In Progress (WIP): each individual company or discipline's own work. This information has not been approved or verified fit

	to share across the project team. Reference BS1192:2007.
Shared	Information that has been checked and approved and is made available across the project team such as information for data exchange between BIM software, like gbXML, CIS/2 and IFC files. Reference BS1192:2007.
Published	Published information refers to documents and other data generated from Shared information. Typically this will include exported data, contract drawings, reports and specifications. Reference BS1192:2007.
Views/ Output files	A generated rendition of graphical or non-graphical information (a plan, section, elevation, schedule, or other view of a project).

2 Best Practice

To achieve technical excellence and a successful outcome to a project, it is essential that BIM working and subsequent data and drawing production output is carefully planned. This must involve explicit attention to management, display and quality of the design data. Below are a number of best practice key principles that will aid efficient, high quality working.

2.1 BIM

- A Project BIM Execution Plan (BxP) shall be put in place that identifies key project tasks, outputs and model configuration. This may go on to form part of the Supply Chain Information Execution Plan (SCIEP) for projects required to comply with PAS1192-2.
- BIM Project Reviews should be agreed and take place regularly to ensure model integrity and project workflow is maintained.
- Develop clear guidelines for internal and external collaborative working which maintain the integrity of electronic data.
- Identify clear ownership of model elements through the life of the project.
- Sub-divide models between disciplines and within single disciplines to avoid file sizes becoming too big or slow to operate. (Refer to Section 6.)
- Understand and clearly document what is to be modelled and to what level of detail and/or development. Do not over model. (Refer to Section 7.)
- All changes to the model shall be carried out as 3D modifications, rather than 2D ‘patches’ to maintain the integrity of the model.
- Outstanding warnings shall be reviewed regularly and important issues resolved.

2.2 Drawing Production

Where drawings are a product of the BIM, traditional drawing conventions still apply, for example:

- A drawing shall contain design information solely for the purpose of the intended use of the drawing.
- To maximise efficiency, a policy of minimum detailing without compromising quality and integrity shall be adopted and repetition of details should be eliminated.
- Numbers of drawings should be kept to an absolute minimum and organised in a logical manner.
- Avoidance of view duplication is essential to ensure drawings maintain their integrity as the iterative design process progresses and amendments are made.

3 Project BIM Execution Plan

3.1 Roles and Responsibilities

The objective is to encourage better collaboration with a practical, inclusive, easy to understand and easy to adopt common language for job titles, descriptions and responsibilities. To create a clear vision, descriptions need to be agreed on key components of the BIM and whose responsibility they are.

The grid in Fig. 1 below has been based on the three primary functions of any successful process:

- Strategic
- Management
- Production

	Strategic						Management				Production	
Role	Corporate Objectives	Research	Process + Workflow	Standards	Implementation	Training	Execution Plan	Model Audit	Model Co-ordination	Content Creation	Modelling	Drawings Production
BIM Manager	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N
Coordinator	N	N	N	N	N	Y	Y	Y	Y	Y	Y	N
Modeller	N	N	N	N	N	N	N	N	N	Y	Y	Y

Fig. 1 Skills Matrix

3.1.1 Strategic

This is a firm wide role which impacts on each project, primary responsibilities being:

- Corporate BIM objectives
- Best practice / research

- Creating processes and workflows
- Creating standards and protocols
- Implementation
- Training strategy

3.1.1.1 BIM Manager (Strategic)

It is important to understand how vital a BIM Manager's role is. It is not simply a rebranded CAD Manager, nor does it replace the CAD Manager's role. It is about understanding what BIM can achieve: vision, engaging external stakeholders, collaborating partners and the internal teams. Somebody credible has to be responsible for the BIM strategy, the process change and the cultural impact. In-house or outsourced, successful models cannot be built without a strategic manager.

Business and project size will dictate the structure of the BIM team. The BIM Manager could perform all functions on smaller projects. No matter how large the project you only need one person responsible for the strategic function.

3.1.2 Management

This is a project focussed role, primary responsibilities being:

- BIM Execution Plan
- Auditing the BIM
- Interdisciplinary BIM co-ordination
- Content Creation

3.1.2.1 Coordinator (Management)

The management function is project- and BIM-specific. Each project needs a Coordinator to help set up the project, audit the model and co-ordinate with all collaborators. Multi-disciplinary co-ordination with BIM is essential. A Coordinator may manage several small projects.

3.1.3 Production

This is a project focussed role, primary responsibilities being:

- Modelling
- Drawing Production

3.1.3.1 Modeller (Production)

Production is project specific. BIM experience is not essential to produce the model but technology skills are.

3.2 Project BIM Execution Plan

The project BIM Execution Plan defines how the modelling aspect of the project is to be carried out and how the model and data are formatted. It should specifically address the Client's BIM Brief if one exists or, for full PAS1192-2 compliance, the "Employer's Information Requirements" and may form the basis of the Supply Chain Information Execution Plan (SCEIP).

As a stand-alone project document, the Project BIM Execution Plan document shall address as a minimum the following key items:

- **Goals and Uses**: Define the project's BIM goals, uses and aspirations along with the workflows required to deliver them.
- **Standards**: The BIM standard used in the project and any deviation from that standard.
- **Software Platform**: Defines BIM software to be utilised and how interoperability issues will be addressed.
- **Stakeholders**: Identifies project leadership and additional stakeholders and their roles and responsibilities.
- **Meetings**: Defines the BIM meeting frequency and attendees.
- **Project Deliverable**: Defines the project deliverable and the format in which it is delivered and exchanged.
- **Project Characteristics**: Number of buildings, size, location etc. Division of the work and schedule.
- **Shared Coordinates**: Defines the common coordinate system for all BIM data. Details modifications to imported DWG/DGN coordinates.
- **Data Segregation**: Addressing model organisational structures where relevant to enable multi-discipline, multi-user access and project phasing as well as ownership of project BIM data.
- **Checking/Validation**: Defines the checking/validation process of drawings and BIM data.
- **Data Exchange**: Defines the communication protocols along with the frequency and form of data exchange.
- **Project Review Dates**: Sets out key dates for reviews of the BIM which all teams buy in to (both internal to the company and externally with the full design team).

The project should regularly review its BIM process and update the BIM Execution Plan accordingly.

A Project BIM Execution Plan pro-forma and a complementary Project BIM Execution Plan Guidance Note are available and shall be used to ensure consistency between projects. Larger and more complex projects may warrant additional clarification; the strategy document will expand accordingly.

3.3 Project BIM Meetings

3.3.1 BIM Kick-Off

At the outset of the project the lead consultant/client/contractor shall initiate the BIM Kick-Off meeting.

The purpose of the meeting is to determine the BIM goals and aspirations for the project and define the project-wide BIM Execution Plan.

The BIM kick-off meeting should engage with all key stakeholders and should consider early on the BIM requirements for the full lifecycle of the project.

The agenda for the kick-off meeting can be based around the headings covered in the Project BIM Execution Plan as a basic measure.

3.3.2 BIM Reviews

Efficient and regular communication is essential to the running of a BIM-based project. To facilitate this regular BIM project meetings are to be encouraged. The frequency of these meetings may vary as the project progresses.

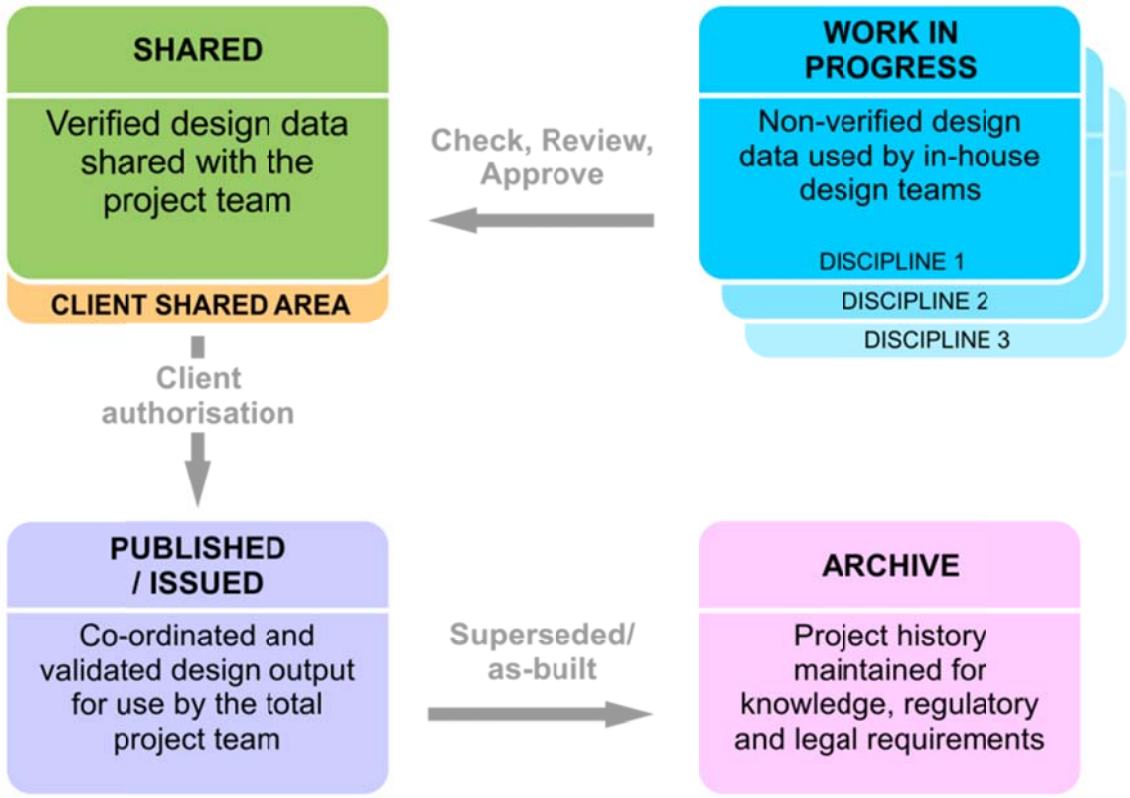
4 Collaborative BIM Working

This summarises the principles outlined in **BS1192:2007**, which defines the collaborative working process for project collaboration and efficient data sharing. A major constituent of collaborative environments is the ability to communicate, re-use and share data efficiently without loss or misinterpretation.

4.1 Common Data Environment (CDE)

A **Common Data Environment (CDE)** approach allows information to be shared between all members of the project team.

There are four areas relevant to a **CDE** as illustrated below:



4.1.1 Work In Progress (WIP)

Data described as Work in Progress is that which is currently in production and has not yet been checked and verified for use outside of the authoring team.

- WIP model files shall be developed in isolation and contain information for which each stakeholder is responsible.
- These shall be stored in, and worked on from the team's WIP section of the filing system.

4.1.2 Shared

To facilitate co-ordinated, efficient working, each party shall make their design data available for project-wide formal access through a shared repository or exchange protocol. These files shall be accessible by all from a central location, or replicated in the **Shared Area** of the project folder structure of each party. Prior to sharing, the data shall be checked, approved and validated in line with the BS1192 workflow.

- Only BIM data or files that have been checked, approved and given the appropriate status code (refer to BS1192:2007 and PAS1192-2) shall be transferred to the Shared Area (see section 4.2 for checking process).

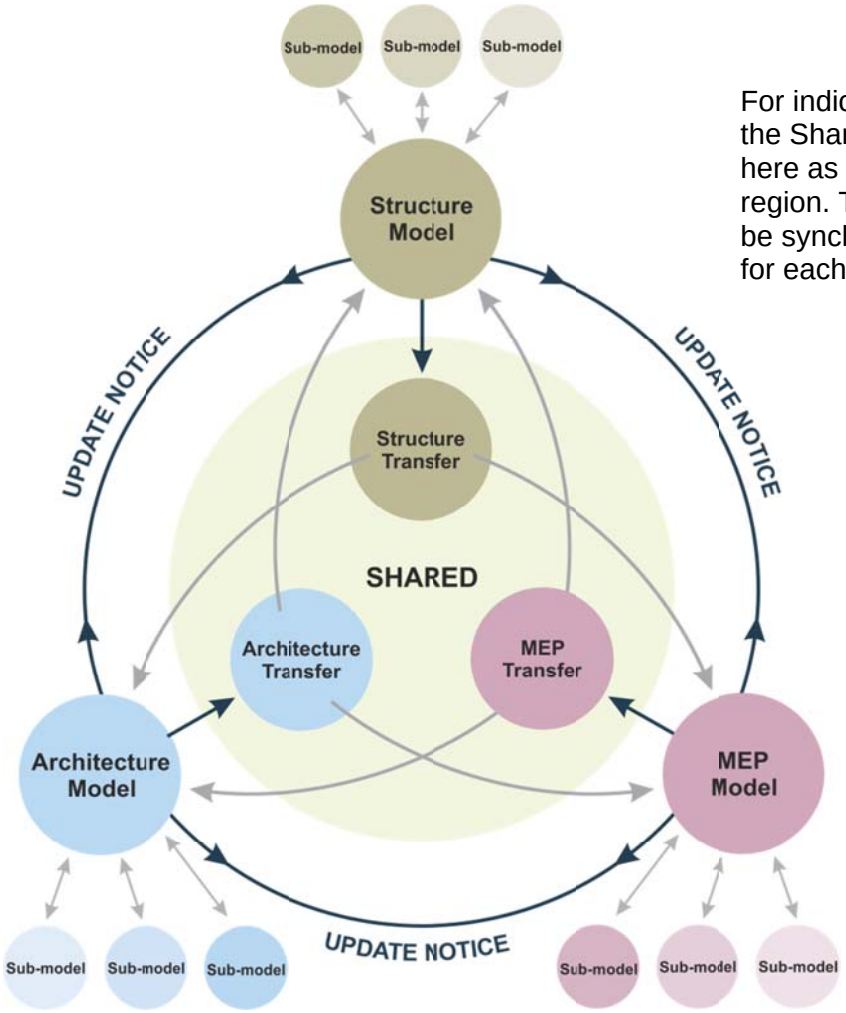
- Sharing of models shall be carried out on a regular basis in order that other disciplines are working to latest validated information as defined in the Project BIM Execution Plan.

- Model files shall be issued in conjunction with verified 2D document submissions to minimise the risk of errors in communication.

- It is recommended that Model files should be issued exactly as produced with no additional merging, or editing. All necessary references and linked files should also be issued.

- The Shared Area shall also act as the repository for formally issued data provided by external organisations that is to be shared across the project.

- Changes to the shared data shall be effectively communicated to the team through traditional drawing issues, change register or other suitable notice, such as e-mail, as defined in the Project BIM Execution Plan.



For indicative purposes, the Shared area is shown here as a single shaded region. This may, in truth be synchronised locations for each stakeholder.

4.1.3 Publication and Document Issue

Alongside other project documentation, exported data and 2D electronic drawings produced from the BIM shall be stored in the **Published Area** of the project once formally checked, approved and authorised in accordance with the project review procedures or BS/PAS1192 requirements.

- Revision/Issue control shall follow the Document Control systems established for the project.
- A record of all issued deliverables shall be maintained in both softcopy and hardcopy where appropriate.
- Information within a BIM is inter-dependent and changes in one view may affect other views. As such the BIM files and all associated views shall be treated as **Work In Progress** or shared as un-controlled documents until such time as they leave the BIM environment in a non-editable format.
- Only data and drawings which it has been deemed necessary to revise will be re-issued following modification work.

4.1.4 Archiving

- Archiving of all approved output data from the BIM shall be stored in the Archive section of the project folder, including published, superseded and 'As Built' drawings and data.

- Additionally, at key stages of the design process, a complete version of the model, exported data and associated drawing deliverables should be copied into an archive location.

- Archived data shall reside in logical folder repositories that clearly identify the archive status *e.g. 09-12-11 Stage D Design.*

4.2 Preparation for publication

Prior to the transmittal of the model, the file contents and structure need to be agreed. Sheets from the BIM shall be published to PDF (preferred), DWF or other non-editable format, where they can be checked, approved, issued and archived as traditional documents.

Key Points

- Does the drawing border and title block need amending for work-in-progress?

- Is there a need for a model matrix to explain the file structure?

- If Phasing and Design Options are utilised these will require an explanation.

The current sheets when viewed in the BIM are classed as "work-in-progress" and so it is preferable to remove them from the model to stop any confusion over what is validated information.

For very large and complex projects it may be necessary to split the model up into zones or packages of works. When this is occurs a model matrix should be created to document the file structure. See the supporting document "AEC(UK)BIMProtocol-ModelMatrix"

To aid the validation process a check list should be utilised to confirm what has been checked and validated. The "AEC(UK)BIMProtocol-ModelValidationChecklist" document provides a check list as a guide for preparing the model file for issue, the intention being that the recipients of the model know that the file is fit for use and will not require additional work to fit within the project framework.

A model publication checklist should contain as a minimum:

- It is advised that all drawing sheets and extraneous views be removed from the BIM.

- If contractually pressured to deliver a model containing sheets then the sheet borders should be swapped for a transmittal border.

- Model file has been audited, purged and compressed;

- File format and naming conventions conform to project Data Exchange protocols,
- Data segregation conforms to the agreed project BIM methodology,
- Model files are up-to-date, containing all users' local modifications,
- Model files are all independent,
- Any linked reference files have been removed and any other associated data required to load the model file is made available,
- Model is correctly assembled through visual inspection,
- Any changes since the last issue are communicated to the project team.

4.3 Legal Stuff

Not included in this release.

4.4 Data Security & Saving

- All BIM project data shall reside on network servers which are subject to regular back-ups.
- Staff access to BIM project data held on the network servers shall be through controlled access permissions.

4.5 Reviewing BIM Data

People not directly involved in delivering production information should use appropriate viewing software to access a non-editable version of the model.

The software to be used and review procedures shall be defined in the Project BIM Execution Plan.

5 Interoperability

5.1 Introduction

Interoperability between software products is of paramount importance for successful BIM working. Whether it is output to 2D CAD for subsequent drawing production or output for 3D visualisation or analysis, the preparation and methods adopted to compose the BIM will ultimately determine its successful application within other software packages and technologies.

5.2 Incoming CAD/BIM Data Management

- All incoming CAD/BIM data shall be logged in accordance with the project's data management procedures.
- A copy of incoming CAD/BIM data shall be stored in its original format within the project Incoming sub-folder.
- The suitability of incoming data shall be confirmed prior to making it available project-wide through the project Shared area.
- Modifications of incoming CAD/BIM data shall be kept to the absolute minimum and only be carried out where the received data format prevents design progress. Modifications shall only be carried out with the approval of the person responsible for co-ordination.
- Data shall be cleansed prior to importing, referencing or linking to the main model to remove any irrelevant or extraneous data that is not approved.
- CAD data may need be shifted to 0,0,0 prior to import. (See section 7.4.)
- Details of the changes made in cleansing a file shall be fully documented in the Project BIM Execution Plan.
- Ownership of this cleansed data is transferred from the originator to the cleansing discipline. Cleansed data is stored within the discipline's **WIP** area unless deemed appropriate to share project-wide, in which case it is stored in the Shared area.

5.3 Intended Use of Model

Modelling and the collation of associated metadata shall be carried out to the level of detail required to produce each discipline's plans and elevations accurately at the defined scale, or to deliver the Employer's Information Requirements if they exist. BIM data will only be provided for specific purposes, which need to be agreed and confirmed for each project prior to commencement of work, which should be clarified in the Project BIM Execution Plan, including:

- Geometric coordination
- Information & design development

- Drawing production
- Data export through COBie or another method
- Schedule production
- Clash detection & resolution
- Procurement & performance/specification purposes, subject to details listed in the BIM Project Execution Plan.

Where the BIM is required to deliver all of these purposes, the Project BIM Execution Plan or SCIEP needs to define at which stages of work and for which packages these purposes will be delivered.

BIM data shall be prepared, checked and exchanged taking into account the requirements of any recipient software applications, to ensure that error free, reliable data is exchanged (e.g. link to analysis packages or interface with GIS).

Example:

When modelling structural frames, some analysis software may dictate that columns need to be stopped at each floor level regardless of whether, in reality they continue as a single length.

5.4 Data Transfer between Software Platforms

Prior to data transfer between different software platforms, the following tasks shall be carried out:

- Requirements and limitations of the target software/hardware system shall be understood in order that BIM data can be prepared appropriately for exchange.
- 2D output from the BIM shall be constructed in a manner that is usable to the team, reasonably complies with project CAD Standards, and allows easy manipulation of the data held within the file, e.g. layering.
- Data exchange protocol between different software/hardware systems shall be verified through sample testing to ensure data integrity is maintained.
- The appropriate export layer tables shall be used during export to CAD.

6 Data Segregation

6.1 General Principles

A number of methods exist which enable collaborative working in a BIM environment, including working practices and team management as well as the technological solutions covered by the remit of this document.

This section deals with the principles of subdividing a model for the purposes of:

- multi-user access,
- operational efficiency on large projects,
- inter-disciplinary collaboration.

The following practices shall be followed:

- The methods adopted for data segregation shall take into account, and be agreed by, all internal and external disciplines to be involved in the modelling.
- No more than one building shall be modelled in a single file.
- A model file shall contain data from one discipline / project stakeholder only (although exceptions may apply for Building Services where multiple disciplines converge).
- Further segregation of the geometry may be required to ensure that model files remain workable on available hardware.
- In order to avoid duplication or co-ordination errors, clear definition of the data ownership throughout the life of the project shall be defined and documented. Element ownership may transfer during the project time-line – this shall be explicitly identified in the Project BIM Execution Plan Document.
- Where multiple models make up a single project, a container model should be considered, whose function is to link the various assemblies together for coordination/clash detection purposes.

Example of Data Segregation:

Discipline	**Breaks in design**
Architecture	Floor by floor or groups of floors
Structure	Major geometry splits, such as east-wing or west-wing, or movement joints between sections.
Mechanical	Construction joints such as podium and tower.

Electrical	Work packages and phases of work.
Civil	Document sets
	Work allocation such as core, shell and interiors.

6.2 Division

Division of a model allows multiple users to simultaneously work on a model. Properly utilised, division of a model can significantly improve efficiency and effectiveness on projects of any size, but in particular multi-user projects.

- Appropriate model divisions shall be established and elements assigned, either individually or by category, location, task allocation, etc.
- Division shall be determined by the lead designer in conjunction with the person responsible for co-ordination.
- How and when the model is split shall be defined in the Project BIM Execution Plan document.
- To improve hardware performance only the required models should be opened. It is better to utilise only required models as opposed to opening/referencing them and turning their display off.
- Model division shall be carried out in a logical manner that allows for other members of the design team to collaborate and/or assist with the model development without recourse to complicated introductions to the project methodology.
- A project shall be broken into a sufficient number of models to avoid congestion in workflow.
- Where required, access permissions and model ownership shall be managed to avoid accidental or intentional misuse of the data.
- All models and sub-divisions shall be named following the conventions defined in section 8.5.

6.2.1 Saving on Multi-user Projects

- All team members shall save their models regularly to ensure all users have access to up-to-date information and that risk of data loss is reduced. In normal circumstances this period should be at least once per hour.
- Users shall not save without consideration for and resolution of any issues which arise to avoid delays to other team members.

6.3 Referencing

Referencing enables additional geometry and data to be used within a project. This may be either other parts of a project which are too big to manage in a single file, or data from another discipline or external company.

Some projects require that models of single buildings are split into multiple files and linked back together in order to maintain manageable model file size.

In some large projects it is possible that all the linked models may never be brought together as one. Various container files will exist to bring model files together for different purposes.

- Task allocation shall be considered when dividing the model so as to minimise the need for users to switch between models.

- When referencing, the models must be positioned relative to the agreed project origin:

    - The real-world co-ordinates of a point on the project shall be defined and coordinated in all models,

    - The relationship between True North and Project North is correctly established.

6.3.1 Inter-Disciplinary Referencing

Each separate discipline involved in a project, whether internal or external, shall have its own model and is responsible for the contents of that model. A discipline can reference another discipline's Shared model for coordination.

- Agreed project coordinates and direction of North shall be agreed and documented at the outset. No deviation from these shall occur without the permission defined in the Project BIM Execution Plan.

- Details of any discipline-specific requirements, such as the difference between Finished Floor Level (FFL) and Structural Slab Level (SSL), shall be fully documented in the Project BIM Execution Plan.

- Ownership of elements shall be properly communicated and tracked through the project time-line (e.g. floors may be created by the Architectural team, but are then adopted by the Structural team to form part of the load-bearing structure).

- Each discipline shall be conscious that referenced data has been produced from the perspective of the author and may not be modelled to the required specification for other purposes. In this case, all relevant parties shall convene to discuss the potential re-allocation of ownership.

- Should a team develop a 'starter model' for a partner discipline, such as defining the structural model in conjunction with the architecture, this shall be done in a separate model which can then be referenced as required to allow development of the continued design.

- With models produced for Building Services, several disciplines may be collated in a single model, as a single piece of equipment may require connection to various services. In this scenario, the model may be split in various ways. This project-specific strategy must be defined in the Project BIM Execution Plan.

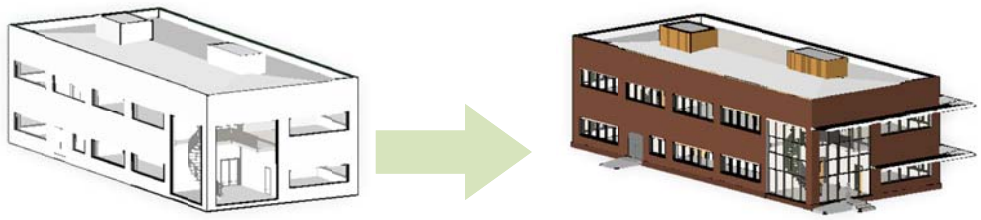
7 Modelling Methodology

This section defines the methodologies for BIM working that enables efficient use and re-use of BIM data.

7.1 Model Development Methodology

A “Model Development Methodology” shall be used to develop projects in early stages as it enables rapid model development and allows for very large models to be created with low hardware requirements.

- Concept (Grade 1 - *see section* 7.2) elements shall be used to form categorised place-holders in the model.
- As the design develops, and precise materials and components are chosen, data will be added to the objects. These concept objects can be swapped, individually or en-masse, for more specific Grade 2 or Grade 3 variants should a higher level of modelling detail be required.
- For structural components, indicative members which are representative of steel or concrete elements shall be used. The frame shall be constructed from these placeholders. If the section size is known from an early stage it can be chosen from the libraries, but no assumptions shall be made by opting for a default section.



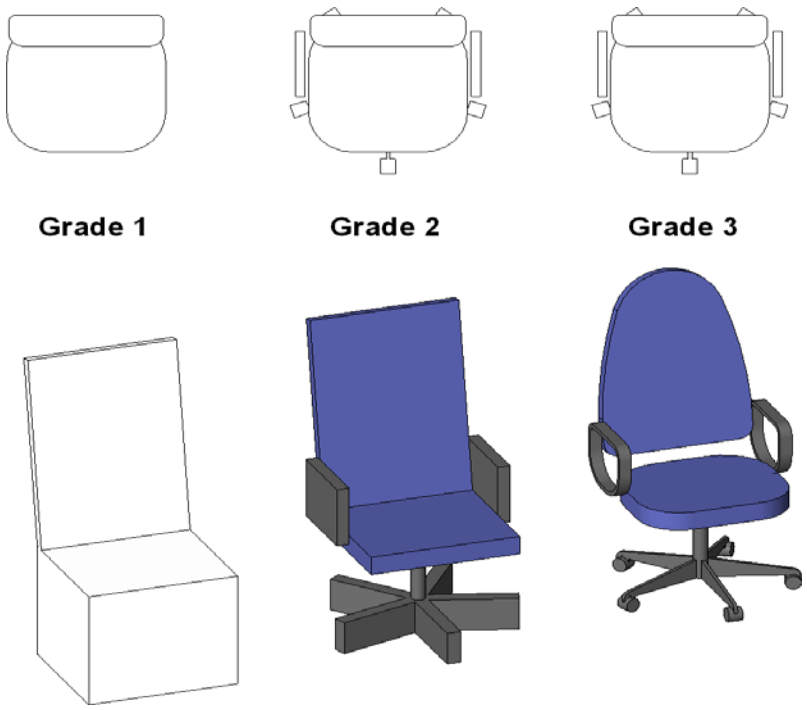
Model initially created using concept grade components.

Concept components substituted for Grade 2 or 3 components as design progresses.

7.2 Graded Component Creation

In line with the Model Development Methodology, all components created, or otherwise obtained shall be graded, named and stored accordingly in the project or central folder structure.

The graphical appearance is completely independent to the metadata included in the object. For example, it is possible to have a Grade 1 (Concept) object with full manufacturer’s data, cost and specification attached.



Elements shall be graded as follows:

Component Grade 0 (G0) – Schematic

- Symbolic place-holder representing an object which may not be to scale or have any dimensional values.
  This is particularly relevant to electrical symbols which may never exist as a 3D object.

Component Grade 1 (G1) – Concept

- Simple place-holder with absolute minimum level detail to be identifiable, e.g. as any type of chair.
- Superficial dimensional representation.
- Created from consistent material: either ‘Concept–White’ or ‘Concept–Glazing’.

Component Grade 2 (G2) – Defined

- Contains relevant metadata and technical information, and is sufficiently modelled to identify type and component materials.
- Typically contains level of 2D detail suitable for the “preferred” scale.
- Sufficient for most projects.

Component Grade 3 (G3) – Rendered

- Identical to the Grade 2 version if scheduled or interrogated by annotation. Differs only in 3D representation.

- Used only when a 3D view at a sufficient scale deems the detail necessary due to the object's proximity to the camera.

- Components may appear more than once in the library with different grades and the naming must reflect this.

Important!

When in doubt, users should opt for less 3D geometry, rather than more, as the efficiency of the BIM is largely defined by the performance of the components contained within.

Adherence to the above grading and Model Development Methodology may result in multiple versions of the same element existing at different grades. This is accommodated in the object naming strategy defined in Section 8.6.

- Further purposes of the BIM will lead to additional specifications of the content, which should be built to suit the purposes of the deliverables.

- Objects generated in the development of a project will be stored in the WIP area of the project folder structure.

- The person responsible for co-ordination will assess and verify minimum quality compliance before submitting new objects to the corporate library stored in the central resource folder.

- The intended purpose of the components shall be considered and the results checked and verified prior to large scale use. For instance, structural analysis applications may require elements with certain naming conventions or other criteria, without which they will not be recognised. Different applications may have different requirements.

7.2.1 Model / Draughting Detail

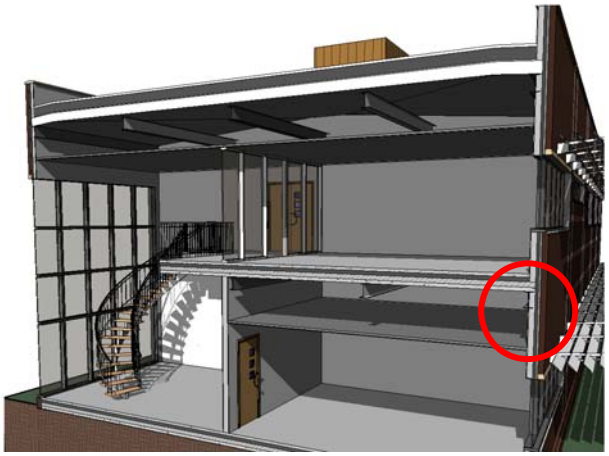
At the outset of the project, consideration shall be given to the maximum level of detail to be included in the BIM. Too little and the information will not be suitable for its intended use; too much and the model may become unmanageable and inefficient.

- It shall be dictated in the Project BIM Execution Plan the point at which 3D geometry ceases and 2D detailing is utilised to prepare the published output.

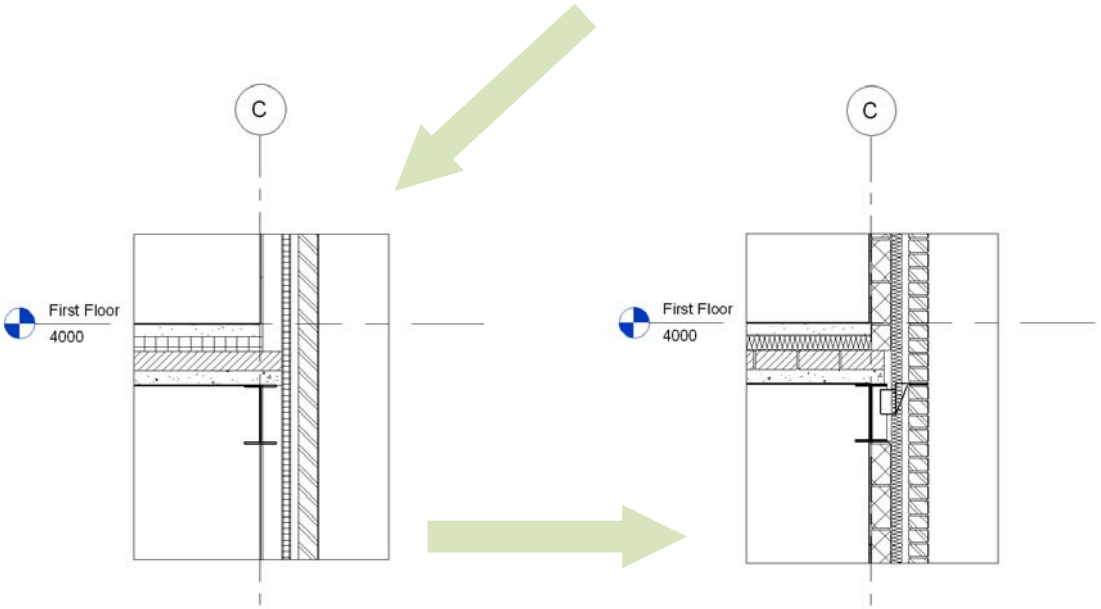
- Intelligent 2D linework shall be developed to accompany the geometry and enhance the required views without undue strain on the hardware. 2D linework is not exclusive to detailed/fabrication information.

- Detailing and enhancement techniques shall be used whenever possible to reduce model complexity, but without compromising the integrity of the model.

3D modelling is carried out to an accuracy of approximately 1:50



.



2D information contained within model

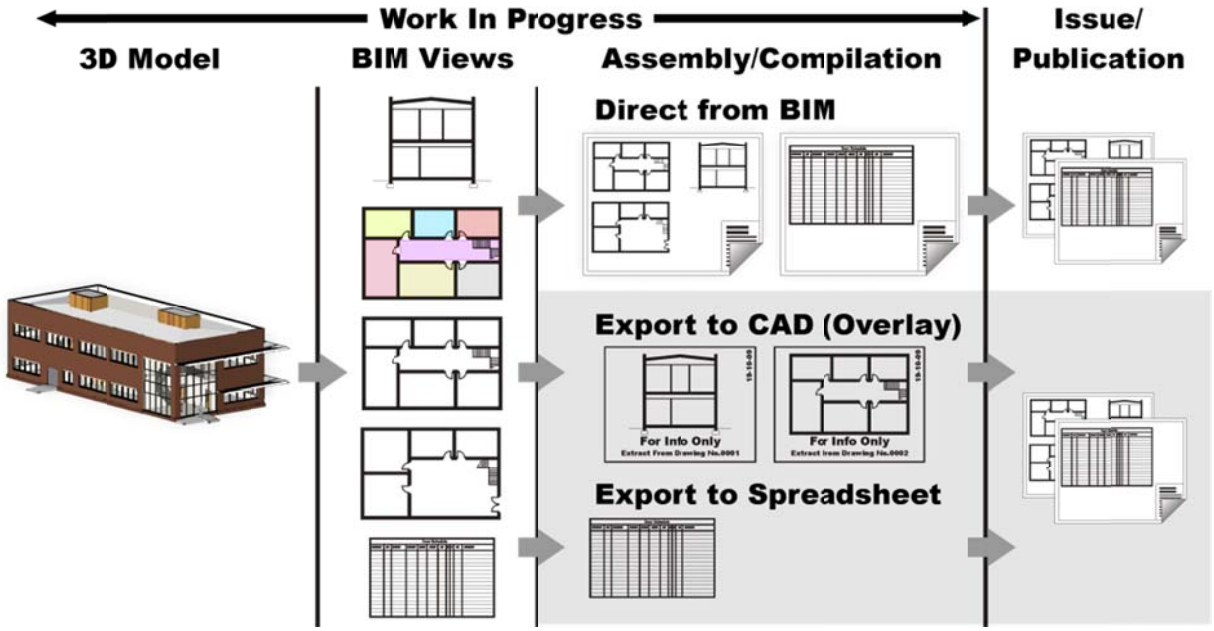
Detail Components, Repeating Details, Filled / Masking Regions, Tags, Keynotes, Text and Detail Lines are used to enhance the finished image

7.3 Drawing Compilation

Drawing compilation and preparation for publication can be carried out in two ways:

1. Fully assembled compilation of views and sheets within the BIM environment (preferred).

2. Export views in the form of output files for assembly and graphical enhancement using 2D detailing tools within a CAD environment.



- Exporting data in order to 'finish off' in CAD negates the advantages of the BIM data for coordination purposes and should be avoided where possible.
- Whichever methodology is chosen, the 3D model shall be developed to the same maximum extent before 2D techniques are applied.
- When CAD or BIM data is referenced into a project, the design teams shall ensure that the latest validated / checked design information is accessed directly from the project Shared area when composing drawing sheets.

7.3.1 Sheet composition direct from within the BIM

Drawing sheet composition from within a BIM environment shall be established through the linking of views, callouts, elevations and drawing sheets fully within the BIM authoring software.

Care shall be taken to ensure that any referenced data is available and visible prior to the publication of documentation from the BIM.

7.3.2 Sheet composition from Views/Output files

Views exported from the BIM for sheet compilation in CAD, or for use as a background to other drawings in CAD, shall be placed on a plain border which clearly indicates the following:

- The status and intended use of the data
- Details of the origin of the data
- The date of production or issue

Where output files are exported from the BIM for further 2D detailing in CAD, originators shall ensure that changes occurring within the BIM are correctly reflected and updated within the CAD files used to produce the final drawing.

If it is a requirement to export data from the BIM authoring software in 'Real-World' co-ordinates, then the export operation must be performed from a model view (such as a floor-plan) and not from a compiled sheet view which will be scaled and/or rotated.

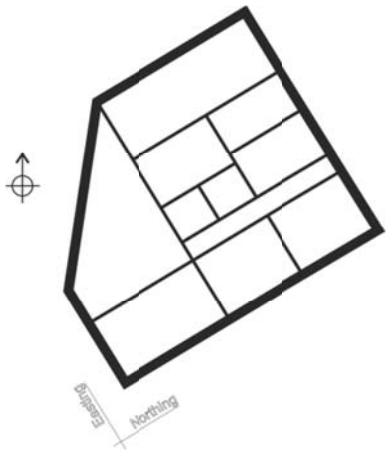
Warning:

The integrity of exported views/output files from within a BIM environment must be checked for accuracy and content prior to drawing compilation.

7.4 Spatial Location & Co-ordination

As defined in **BS1192:2007**, shared BIM project data shall:

- Use real world co-ordinate systems.
- Be produced to true height above project datum.
- Adopt the established project coordinate system across all BIM files to allow them to be referenced without modification.



In order to comply with these rules, models should always be constructed close to the "centre point" (0,0,0) of the file, as information becomes less accurate and may cause significant errors the further it is from this location. Real world coordinate values shall then be assigned to a known point of the model using the relevant BIM authoring software tools.

Files that do not use this methodology and are drawn in "true space" need to be shifted closer to 0,0,0 prior to import into the BIM. This shift shall be agreed, consistent and documented in the Project BIM Execution Plan.

Data exported from the BIM can then be either real world or local and whilst the majority of data will need to be delivered in OS co-ordinates for the purposes of collaboration and cross-referencing, some software (e.g. certain structural analysis software) requires data to be located at 0,0. For export to such software, local coordinate systems can be utilised.

7.5 Units and Measurement

- Models shall use consistent units and measurement across the project. Default **project units** for design shall be millimetres with two decimal places in order to employ a sufficient level of accuracy.

- Other uses of the BIM may require a higher level of accuracy, for example fabrication. In these instances consideration should be given to the expected accuracy, but not to the detriment of efficient design modelling.

- Dimension styles shall be created to override project settings, so whilst a measurement might read **3000.00**, the permanent dimension will read **3000**.

- 2D input/output files shall conform to the unit and measurement protocols designated for specific drawing types e.g.

    - 1 unit = 1.000 metre — Site layout drawings relating to the project coordinate system to an accuracy of 3 decimal places.

    - 1 unit = 1 millimetre — Elements, details, sections, elevations and building structure outlines to an accuracy of 0 decimal places.

- Switching between Imperial / Metric units shall be avoided where possible in order to maintain proper or conventional measurements, such as 50mm rather than 50.8mm.

- CAD data shall be scaled to the appropriate units prior to linking into the BIM environment.

8 Folder Structure and Naming Conventions

8.1 Introduction

This section defines storage of BIM data within the project filing system along with the naming conventions associated with aspects of BIM working.

8.2 Project Folder Structure

The defined structure shall follow the principles of **BS1192:2007's '**Work In Progress (WIP)', 'Shared', 'Published' and 'Archived' segregation of data within a designated set of folders (see section 0). An example is provided in Appendix 11.2.

Where a project comprises of a number of separate elements such as multiple buildings, zones or areas, the BIM structure shall be maintained within a set of designated sub-folders representing the various project elements.

All project data shall be held within the standard project folder structure located on central network servers or appropriate Document Management technology. This includes all WIP components or assemblies.

8.2.1 Central Resource Folder Structure

Standard templates, drawing borders, object definitions and other non-project-specific data shall be held within the server based Central Resource Library, with restricted write access.

The Central Resource Library shall be organised by software and version.

- <SERVER NAME>\Resources\
  - Autodesk
    - Revit
      - + 2012
      - + 2013
  - Bentley
    - + V8i
    - + V8iSS3

Resources for each product and version, the Central BIM Resource Library, shall be maintained within each folder. For further details, refer to section 10.3.2.

8.2.2 Local Project Folder Structure

Where it is a requirement of the BIM authoring software to store files on each local workstation, a strict folder convention shall be defined and employed throughout.

8.3 General Naming Conventions

- Use only letters A-Z, hyphen, underscore and numbers 0-9 for all fields.
- All fields shall be separated by a hyphen character “-” Do NOT use spaces.
- Within a field, either CamelCase or an underscore “_” shall be used instead of a space to separate words.
- A single period character "." shall be used to separate the file name from the extension. This character should not be used anywhere else in the file name.
- The file extension shall not be amended or deleted.
- An “XX” shall be used if the file does not refer a single specific zone or level.
- The scheme for zone and level sub-division shall be agreed with the other project professionals at the outset and defined in the Project BIM Execution Plan document.
- For code examples for discipline, zone and level refer to Appendix 11.1
- Elements where a naming convention is not explicitly defined by this Standard shall adopt the naming convention of existing elements and prefix with a 3-character abbreviation to identify corporate author.

8.4 Model File Naming

Naming of model files shall be based on BS1192:2007. For full compliance, recommended character restrictions should be adopted.

For a more accessible and simpler naming convention, all fields are optional. To maintain compliance, any variations should be clearly stated in the Project BIM Execution Plan.

Field 1: **Project**

An abbreviated code or number identifying the project.

Field 2: **Originator Code** *(Recommended 3 characters)*

An abbreviated code identifying the originating stakeholder.

Field 3: **Zone/System** *(Recommended 2 characters)*

Identifier of which building, area, phase or zone of the project the model file relates to if the project is sub-divided by zones*)*.

Field 4: **Level** *(Recommended 2 characters)*

Identifier of which level, or group of levels, the model file relates to if the project is sub-divided by levels.

Field 5: **Type** *(Recommended 2 characters)*

Document type, which will be **M3** for 3D model files.

Field 6: **Role** *(Recommended 2 characters)*

2 character discipline identifier code. Refer to Appendix 11.1.

Field 7: **Description**

Descriptive field to define the type of data portrayed in the file. Avoid repeating information codified in other fields. Can be used to describe any part of the previous fields, or to further clarify any other aspect of the contained data.

Full BS1192 Examples:

Model File Name	Description
FTR-ACM-XX-XX-M3-S-School_Stage_E.rvt	Acme structures model for School project at Stage E – no zones or segregation of floors.
102-ACM-Z1-XX-M3-ME-School.dgn	Acme Building Services model for job 102, Zone 1 all levels.
37232-AAA-Z6-01-M3-S-Main_Model-LOCAL.rvt	Job No. 37232, Structural model of Zone 6, Level 1. Revit User local file.

Abbreviated Examples:

Model File Name	Description
1234-01-M3-A-Partition.dgn	Job No. 1234, Architectural partition model of Level 1. No zones.
862-B1-XX-M3-W-Coordination.nwd	Contactor's full coordination model for project 862, Building B1.

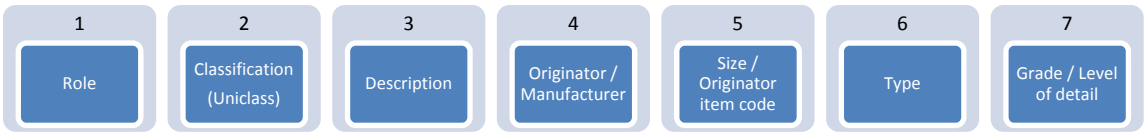
8.5 Division Naming

For software that requires non-file-based divisions (e.g. Revit Worksets) the divisions should be named in a consistent and logical manner to aid navigation through the project.

8.6 Library Object Naming

Library object naming provides a unified approach to the identification of objects across the dataset and associated tools.

Each field should be separated by a hyphen character "-". Hyphens should not be used anywhere else in the object name.



Field 1: **Role** *(Optional)*

Identifies the owner of the object. Normally this would be omitted as objects are generic; ownership is inferred by file/layer containing the object.

Field 2: **Classification**

Uniclass code to classify the object. This is positioned at the start of the name to allow easier listing of all specific object types. e.g. all furniture regardless of manufacturer.

Note: where the classification is applied as a property of an object, it can be omitted from the object name. However, the ability to search and organise objects should be carefully considered before dropping this field. The classification must be included in either the object name or its metadata.

Field 3: **Description**

CamelCase description based on Uniclass/AEC descriptions e.g. ExternalFinishCladdingConcrete.

Field 4: **Originator/Manufacturer** *(Optional)*

Used if a proprietary object is required to represent specific manufacturer.

Field 5: **Size** / **Originator item code** *(Optional)*

Used to further define the object type by specifying dimensions or the manufacturer's item code. The latter can be used to help link objects directly to a specification, brochure or procurement.

Field 6: **Type**

This field uses a code to describe the intended "view" of the object. Basic codes to use are:

M3	3D model
E	2D elevation
P	2D plan

R 2D reflected ceiling
S 2D section

Field 7: **Grade / Level of detail**

Specifies the intended graphical scale and how much detail is contained in the object (e.g. 1:100, 1:20).

G0 Symbolic (not representative of the physical object)
This might be used for electrical symbols or an object which is modelled the same regardless of scale

G1 Low resolution conceptual placeholder (e.g. 1:500, 1:200)

G2 Medium resolution detailed component for design/construction (e.g. 1:100, 1:50 max)

G3 High resolution, fully detailed object. Typically only used for visualisation.

Examples:

Object File Name	Description
G25-WallBrick-102.5-M3-G2	Brick wall, 102.5mm wide, 3-dimensional, grade suitable for up to 1:50 models (e.g. no brick bond defined or wall ties)
DoorInternal-M3-G1	Generic internal door, not specifically sized, 3-dimensional, grade for schematic modelling purposes of ~1:200. Classification included as a property of the object.
G322-DoorInternal-826-P-G2	Internal door of 826mm wide, intended for plan use at up to 1:50 scale.
Premdor-63990-838x1981x35-M3-G3	Internal door made by Primdor, model reference 63990 (838 x 1981 x 35mm), 3-dimensional, fully detailed with ironmongery. Classification included as a property of the object.
S-G2613-B01-Westok-1160x267x134CUB-M3-G2	Structural owned steel beam, described as a “B01” (structural engineering naming for a beam type 1), made by Westok, with a section size of 1160 x 267 x 134 CUB, 3-dimensional, grade suitable for 1:50 models.
E-G6432-PowerOutlet-P-G0	Electrical symbol representing a plug socket, intended for plan use.

8.7 Object Property Naming

Parameters, or object properties, should be named in a consistent and logical manner to aid clarity and usability. Unique names should always be used.

8.8 View Naming

Conventions in the naming and use of views are necessary to coordinate team activity and prevent inadvertent changes in the output documents.

- View naming shall be consistent across all references to that view. Renaming of views shall be carried out with care as any changes will be automatically reflected across all documentation.

Field 1: **Level** *(Optional)*

Concise description of the content and purpose of the view

Field 2: **Content**

Where appropriate, further clarification of the location of information shown

Examples:

Name	Description
01-Plan	First floor plan
01-CeilingPlan	First floor reflected ceiling plan
Level3-DetailPlanElevator1	Third floor detail plan at elevator 1
AA	Section A-A along gridline 4
BB	Section B-B along gridline 7
NS-BuildingSection	North-South full building section
EdgeSection	Typical edge section showing slab, beam and wall
SouthElevation	South Elevation

8.9 View List Scheduling

Refer to software-specific supplements

8.10 Data Organisation

Well-organised project data both within project folders and internally within your BIM authoring software will help to identify, locate and efficiently use the information you need. Maintaining separate folders for WIP, Shared and Published data is part of a best approach even if they are not named exactly in this manner. Structure and label your files, models and data according to requirements outlined in the software-specific supplements.

8.11 Sheet Naming

Sheet naming shall be based on the document and drawing numbering protocols established for the project. These names automatically match the text as it appears in the titleblock and any schedules.

9 Presentation Styles

9.1 Introduction

This section defines the criteria which ensure the plotted appearance of drawing output from the BIM is consistent and of the highest quality. It is not the remit of this standard to dictate aspects covered by existing national and corporate draughting standards. Most of the aspects covered in this section are software-specific and should be obtained from those supplements.

9.2 AEC (UK) Compliant Materials

Templates and other source files are available to help construct AEC (UK) compliant projects. They can be obtained from the www.aec-uk.org web site and are maintained by the AEC (UK) BIM committee.

Where client requirements deviate from those expressed in this standard, project-specific templates shall be created. These shall be stored within the Project BIM Resources Library (refer to suggested folder structure, Appendix 11.2).

9.3 Annotation

Where no pre-defined text standards exist, the Text Style shall be **ARIAL NARROW** using font file **ARIALN.TTF**

- The appearance of text shall be consistent across a set of drawings.
- Annotation shall be legible, clear and concise.
- An opaque background should be considered as an aid to clarity.
- Text shall remain legible when drawings are plotted at reduced size. Wherever practical lettering shall not be placed directly on top of lines or symbols.
- Dot style arrowheads shall be used instead of closed filled arrowheads when calling up hatched/shaded areas.

9.4 Text Assignment

All text shall be restricted to the following sizes:

Text height (mm) Plotted full size	Usage
1.8	General text, dimensions, notes – used on A3 & A4 size drawings
2.5	General text, Dimensions notes

3.5	Sub-headings,
3.5	General text, dimensions, notes – A0 drawings
5.0	Normal titles, drawing numbers
7.0	Major titles

Alternative text sizes shall not be used without clarification in the Project BIM Execution Plan.

9.5 Line Weights

Line weights control the graphical display of on-screen data as well as all published output.

- The plotted appearance of modelled components shall be consistent across the project.
- The plotted appearance of modelled components shall be represented in a manner that provides ‘depth’ to the drawing and allows for adequate differentiation of elements cut in section, profile view and priority elements.

9.6 Line Patterns

Refer to software-specific supplements

9.7 Line Styles

Refer to software-specific supplements

9.8 Hatching and Filled Regions

Refer to software-specific supplements

9.9 View Templates

Refer to software-specific supplements

9.10 Dimensioning

Default dimension styles should be provided for the consistent appearance of dimensions across all project documentation. New styles shall be added only if authorised.

- Where practical, all dimensioning shall be created using relevant software dimensioning tools. The dimension text shall not be exploded or overridden, but can be appended, e.g. “1200 (Typ.)”.

- Where practical avoid duplicate dimensioning either within a drawing or within a set of drawings.
- Where practical, dimension lines shall not be broken and shall not cross other dimension lines.
- In general, dimensions shall be placed on a drawing so they may be read from the bottom or right-hand side of the drawing.
- In general, dimension text shall be placed above the dimension line and shall be clear of other lines so that they are legible.
- In general, dimension styles shall adopt standard engineering style dimensioning using:
  - Closed filled 3:1 / 20º arrow head for unconfirmed dimensions
  - 45º diagonal tick/slash for confirmed dimensions
- Default dimension styles shall not be overridden.

9.10.1 Dimension Style Naming Convention:

Field 1: **Text Size**

Size of text used on the dimension in the appropriate units. By default this shall be 2.5mm Arial Narrow.

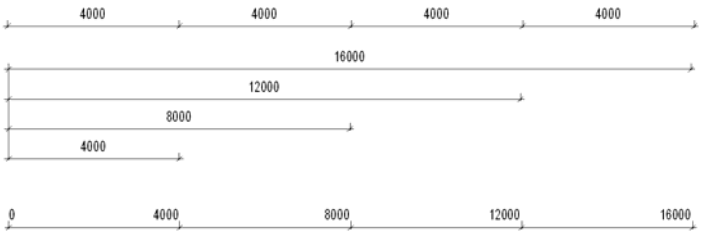
Field 2: **String Type** *(Optional)*

Dimension String Type

CON Continuous

BAS Baseline

ORD Ordinate



Field 3: **Tick Mark**

Description of the tick mark used on the dimension style such as Dot, Arrow or Diagonal tick marks.

Field 4: **(Units)**

The reporting units of the dimension style.

Field 5: **Description** (Optional)

Provision for distinguishing specific dimension styles

Examples:

1.8-Con-Arrow-(mm)

2.5-Con-Diagonal-(mm)-Centreline

2.5-Arrow-(deg)

9.11 Drawing borders and Titleblocks

- Project-specific titleblocks shall be created and stored in the Project BIM Resources folder (refer to suggested folder structure, Appendix 11.2).

9.12 Symbols

Standard symbols such as North point, section marks and call-ups shall be made available from within the project or central Resource folder.

9.12.1 Section and Detail Marks

- All **Sections** shall be numerically labelled.
- All **Details** shall be alphabetically labelled.
- Where practical, sections shall be listed consecutively, from left to right and from top to bottom on the drawing on which they are drawn.
- All sections and details shall be correctly cross-referenced in both directions i.e. cross reference to where the section/detail is actually drawn.
- Drawing cross referencing shall not include the revision code.

9.13 Copyright

All drawings, sketches or figures containing copyright information shall display the relevant permission to use that data.

For example with Ordnance Survey mapping:

10 Resources

10.1 Introduction

To increase efficiency of BIM working, and to ensure a consistent and high quality output, resources and content shall be shared across the practice.

Certain projects may require deviations from this standard: these shall be defined in the Project BIM Execution Plan document.

10.2 Software

- A consistent software platform will aid the collaboration potential of BIM projects and is recommended. Interoperability between applications should be checked and verified at the outset of the project.
- Where 3rd party applications are used, originators shall ensure the standards defined within this document are complied with, unless situations make this impractical.
- Any potential implementation of software upgrade during the course of a live project shall be reviewed for its appropriateness. Formal approval must be obtained prior to any upgrade.
- Implementation of any upgrade shall be in line with corporate CAD / BIM software strategy.

10.3 BIM Content / Resource Libraries

Content libraries hold objects and other items for use within the BIM.

- Creation of project-specific content is encouraged but shall be coordinated to ensure it is developed in accordance with this standard and the associated best practice guidelines.
- No content shall be stored on users' own hard-drives, but shall be shared in a controlled manner through the Project BIM Resource Library to provide access across the project team (refer to suggested folder structure, Appendix 11.2).
- Project content shall be reviewed periodically for inclusion in the Central BIM Resource Library which is read-only.

10.3.1 Project BIM Resource Library

This shall be the repository for the storage of project-specific standards where deviation from this standard is required due to project or client requirements.

- Standards, templates, titleblocks, and other data produced in the process of completing the project shall be held within the Project BIM Resource Library.

- Additions or modification to content held within this resource shall be carried out in a controlled manner and be approved prior to use.

- A suggested folder structure is included in Appendix 11.2.

10.3.2 Central BIM Resource Library

- Standard templates, titleblocks, families and other non-project-specific data shall be held within the server based Resource Library, as defined in Section 8.2.1.

- Additions or modification to content held within this resource shall be carried out in a controlled manner and be approved prior to use.

- Content shall be segregated by software product and version.

- When content is updated for use in newer product version:

  - The original data shall be maintained,

  - The updated version of the content shall be created in the appropriate location for that product & version. This avoids ‘forwards incompatibility’ when using content with the version of the software for which it was originally created.

10.4 Keynotes

Refer to software-specific supplements

10.5 Custom metadata

Refer to software-specific supplements

10.6 Keyboard Shortcuts

Only approved keyboard shortcuts shall be used.

11 Appendices

11.1 Model File Naming Codes

Discipline Codes BS1192:2007 codes shown in **bold** Additions shown feint	
A	**Architects**
B	**Building surveyors**
C	**Civil engineers**
CB	Bridge engineers
CR	Road / highway engineers
CW	Water / dam engineers
D	**Drainage**
E	**Electrical engineers**
EC	Cable Containment
EF	Fire Alarms
EL	Lighting
EP	Protection
ES	Security
F	**Facilities Manager**
G	**GIS, land surveyors**
GA	Aerial surveyors
H	**Heating and Ventilation**
I	**Interior designers**
K	**Client**
L	**Landscape architects**
M	**Mechanical engineers**
ME	Combined Services
MW	Chilled Water
MH	Heating
MV	Ventilation
P	**Public health**
PD	Drainage
PF	Fire Services
PH	Public Health Services
PS	Sanitation and Rainwater
PW	Water Services
Q	**Quantity surveyors**
R	Rail
RS	Railways signaling
RT	Railways track
S	Structural engineers
SF	Façade engineers
SR	Reinforcement detailers
T	**Town & country planners**

Project Zone Code Examples	
01	Building or zone 1
ZA	Zone A
B1	Building 1
CP	Car park
A2	Area Designation 2

Project Level Code Examples	
RF	Roof
01	Level 1
00	Ground floor
B2	Basement 2
M1	Mezzanine 1
PL	Piling
FN	Foundation

Discipline Codes cont…	
W	**Contractors**
X	**Sub-contractors**
Y	**Specialist designers**
YA	Acoustic engineers
YE	Environmental engineers
YF	Fire engineers
YL	Lighting engineers (non-building services)
Z	**General (non-specific)**

11.2 Project Folder Structure

The following folder structure is provided as an example arrangement, designed to encourage compliancy with the strategies contained within this standard.

This is provided as an example only and should not be used in preference to or replace any internal company quality assured standard folder structures. Always consider your company processes and procedures, especially if ISO accreditation is involved before adopting change.

- 🗀 ***[Project Folder]***	
- 🗀 BIM	[BIM data repository]
- 🗀 **01-WIP**	**[WIP data repository]**
- 🗀 CAD	[CAD files (incl. 'Modified')]
- 🗀 BIM	[Design models (incl. 'Modified')]
- 🗀 SheetFiles	[Sheet/dwg files]
- 🗀 Export	[Export data e.g. gbXML or images]
- 🗀 Families	[Components created during this project]
- 🗀 WIP_TSA	[WIP Temporary Shared Area (TSA)]
- 🗀 **02-Shared**	**[Verified Shared data]**
- 🗀 CAD	[CAD data/output files]
- 🗀 BIM	[Design models]
- 🗀 CoordModels	[Compilation models]
- 🗀 **03-Published**	***[Published Data]***
+ 🗀 YYYYMMDD-Description	[Sample submission folder]
+ 🗀 YYYYMMDD-Description	[Sample submission folder]
- 🗀 **04-Archived**	**[Archived Data repository]**
+ 🗀 YYMMDD-Description	[Archive folder]
+ 🗀 YYMMDD-Description	[Archive folder]
- 🗀 **05-Incoming**	**[Incoming Data repository]**
- 🗀 Source	[Data originator]
+ 🗀 YYYYMMDD-Description	[Incoming folder]
+ 🗀 Source	[Data originator]
- 🗀 **06-Resource**	**[Project BIM Resources Library]**
+ 🗀 Titleblocks	[Drawing borders/titleblocks]
+ 🗀 Logos	[Project logos]
+ 🗀 Standards	[Project standards]

No spaces are to be used in the folder naming as this can potentially interfere with certain file management tools and collaboration across the internet.