

[INSERT NHS BOARD NAME]

[INSERT PROJECT NAME]

**PROTOCOL FOR
BUILDING INFORMATION MODELLING [BIM]**

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BIM Protocol

Introduction & Guidance

1. Introduction

This BIM Protocol has been produced with reference to the CIC Building Information Model (BIM) Protocol 2013. The Protocol has been drafted for use on all common construction contracts and supports BIM working at Level 2.

The Protocol identifies the Building Information Models that are required to be produced by members of the Project Team and puts into place specific obligations, liabilities and associated limitations on the use of the models. The Protocol can also be used by clients, for example Health Boards, to require the adoption of particular ways of working – such as the adoption of a common naming standard.

This introduction and guidance sets out the principles behind the drafting of the Protocol and provides guidance with regards to its completion and use.

2. General principles adopted in the drafting of the Protocol.

The following principles have informed the drafting of the Protocol:

- The Protocol makes the minimum changes necessary to the pre-existing contractual arrangements on construction projects;
- The Protocol ensures that there is an obligation on parties to provide defined elements of their works/services using models;
- The Protocol is a contractual document which takes precedence over existing agreements; and;
- The Protocol is flexible and should be suitable for use on all Level 2 BIM projects.

3. How the Protocol works

3.1 Objective of the Protocol

The primary objective of the Protocol is to enable the production of Building Information Models at defined stages of a project. The Protocol is aligned with Government BIM Strategy, and incorporates provisions which support the production of deliverables for ‘data drops’ at defined project stages such as those noted in the NHS Scotland BIM Process Map. The Protocol also provides for the appointment of an ‘Information Manager’.

A further objective of the Protocol is that its use will support the adoption of effective collaborative working practices in Project Teams. The encouragement of the adoption of common standards or working methods under PAS 1192-2 which includes examples of best practice that can be made an explicit contractual requirement under the Protocol. Such practices will be for the Health Boards to specify based on advice from HFS.

All parties involved in the use, production or delivery of Models on the Project (the “Project Team Members”) are required to have a BIM Protocol appended to their contracts. This will ensure that all

parties producing and delivering Models adopt any common standards or ways of working described in the Protocol and that all parties using the Models have a clear right to do so. The responsibility for ensuring that Protocols are in place is with Health Board named in each agreement.

3.2 Incorporation into contracts

The Protocol is intended to be expressly incorporated into all direct contracts between the Health Board and the Project Team Members (PSCP or separately appointed consultants).

The text of a model amendment which expressly incorporates the Protocol into direct contracts is included as the Model Enabling Amendment and set out below.

MODEL ENABLING AMENDMENT

‘BIM Protocol

- 1 In this Clause, the Protocol is the NHS Scotland ‘Protocol for Building Information Modelling’ December 2014. Terms used in this Clause are those defined in the Protocol.
- 2 Clauses 1, 2, 5, 6 and 7 of the Protocol are additional conditions of contract. Clauses 3 and 4 and Appendices 1 and 2 of the Protocol are [Works Information/Scope].
- 3 The following are compensation events:
 - The [Contractor/Consultant] encounters an event which is outside his reasonable control and which prevents him from carrying out the work specified in Clause 4.1.2 of the Protocol.

3.3 Permitted Purposes

A key area of concern for many information providers is that the wider use of data-rich BIM will make it harder to protect IPR. The Protocol reflects that the Intellectual Property provisions as set out in the Agreement will apply to the use of the Model.

3.5 Electronic Data Exchange

The Protocol aims to remove the need for separate Electronic Data Exchange Agreements between the Project Team Members by addressing the principal risks associated with the provision of electronic data, in particular the risk of corruption following transmission. Clause 5.1 makes clear that, without prejudice to its obligations under the Agreement, the Project Team Member gives no warranty as to the integrity of electronic data. Clause 5.2 excludes liability for any corruption or unintended amendment etc. of the electronic data which occurs after the transmission of a Model by the Project Team Member, unless caused by a failure to comply with the Protocol.

3.6 Definition of the Models covered by the Protocol

Models which are scheduled in Appendix 1, the Model Production and Delivery Table (MPDT), are subject to the Protocol. Models which are not listed in the MPDT do not benefit from the provisions

of the Protocol. Clause 4 introduces an obligation on the Project Team Member to produce and deliver the Models in respect of which it is identified as the “Model Originator” in Appendix 1. The completion of the MPDT is described in more detail in section 6. Appendix 1 indicates a sample MPDT and a specific MPDT should be produced for each project. The MPDT should be drafted accurately, as it is a contractual document, and also because it defines the Models that Project Team Members are expected to produce for a particular stage or data drop and the Level of Detail that is required at this stage.

3.7 Change management

The Protocol and its appendices are contract documents. Any change to the Protocol or appendices will result in a change to the contract terms. Any variations to the MPDT or Protocol should be subject to the Change Management procedure under the Agreement, as they may be a change to the scope of services/works. As the same Protocol and appendices are attached to all Project Team Agreements, the Board should try and ensure such procedures are consistent across all Project Team Agreements if possible.

3.8 Liability for use of Models

Given the concerns associated with the wider use of data on BIM Projects clause 7 excludes liability for any use of the Material/Models which are licensed and/or sublicensed in clause 6 which is not permitted by the relevant licence/sub-licence.

4. Information Manager

The Protocol requires the Board to appoint a party to undertake the Information Management Role. This is expected to form part of a wider set of duties under an existing appointment and is likely to be performed either by the Design Lead or the Project Lead, which could be a consultant or PSCP at different stages of the project. In some circumstances the Board may appoint a standalone Information Manager.

The Scope of Services for the Role of Information Management will need to be defined in the Appointment of the party undertaking the Information Management Role. It is recommended that the scope of the Information Manager is based on the scope of services that have been prepared by the CIC. There are two versions: a detailed version compatible with the CIC scope of services, and another simpler version suitable for incorporation with any appointment, these are published separately on the BIM Task Group website, <http://www.bimtaskgroup.org>. However, for most projects the simpler form will be adequate.

The Information Manager has no design related duties. Clash detection and model coordination activities associated with a ‘BIM Coordinator’ remain the responsibility of the design lead.

The principal responsibilities of the Information Manager can be summarised as:

- Managing the processes and procedures for information exchange on projects;
- Initiating and implementing the Project Information Plan and Asset Information Plan;
- Assisting in the preparation of Project Outputs, such as data drops; and

- Implementation of the BIM Protocol, including the updating of the MPDT.

The initial responsibility for the appointment of the Information Manager lies with the Board, who must ensure that there is an Information Manager appointed (whether by the Board or another party) at all times until completion of the Project, save to the extent that this is the responsibility of the relevant Project Team Member.

5. The Information Requirements

The Information Requirements (IR), which should not be confused with EIRs (Employer's Information Requirements), has been included at Appendix 2 to the Protocol so that Project wide information requirements can be expressly incorporated into all Project Team Member Agreements. As is clear from Appendix 2, some extracts from the EIR document are included in this set of Information requirements. Clause 4.1.2 requires the Project Team Member to comply with the Information Requirements (including any protocols, procedures and processes set out therein). The Information Requirements define how a Model must be developed, although it will not change the substance of what each party must provide. Many of the requirements included in the IR will be taken from tender documents such as the Board's Information Requirements. An exhibit of the Board's Information Requirements, with guidance notes, is available on the BIM Task Group website

Appendix 2 contains an example of what might be included in an IR but the content of the IR is entirely flexible. The Information Requirements should be adapted to suit the needs of the Project. Once prepared, the IR will be appended to the Protocol attached to all Project Team Agreements. It is likely to be an evolving document and will be subject to the change control procedure under the Agreement.

It is the responsibility of the Information Manager to agree and issue the IR, which should be prepared before the Agreements are concluded, as otherwise the parties will have to rely on the other contractual arrangements, which may not address the items covered by the IR.

6. Model Production and Delivery Table

The Model Production and Delivery Table (MPDT) is a key document as it both allocates responsibility for preparation of the Models and identifies the Level of Detail ("LOD") that Models need to meet at the project stages or data drops stated in the table.

The LODs are to be defined in Appendix 1 and it is expected that this will be done by reference to a separate document/standard. A definition of LODs can be found in PAS 1192-2. It is important that the LODs are defined appropriately as they determine both the content of a Model and the Permitted Purpose for which the Model can be used. Ideally the Models included in the MPDT will have been identified in schedules to the Board's Information Requirements.

The project specific MPDT is to be included at Appendix 1 and should be prepared before the Agreement is concluded. The same MPDT should be included in the Protocol appended to all Project Team Agreements. The MPDT should be completed carefully on a Level 2 project, so as not to impose additional obligations than intended, or to omit models from the scope of the Protocol.

Should any variations to the MDPT be introduced at a later date, the change will be subject to the same procedure as required under the Agreement.

BIM Protocol

1. Definitions

Comments

- 1.1 In this Protocol unless the context otherwise requires, the following words and phrases shall have the following meanings:
- 1.1.1 **Agreement** means either the Scheme Contract or the Consultancy Contract as the case may be between the Employer and the Project Team Member to which this Protocol is attached.
- 1.1.2 **Employer** means the person appointing the Project Team Member and any valid assignee of the Employer's rights and obligations pursuant to the Protocol, subject to the terms of such assignation
- 1.1.3 **Federated Model** means a Model consisting of connected but distinct individual models
- 1.1.4 **Information Management Role** means a role in connection with the Project which includes, inter alia, the establishment and management of the processes, protocols and procedures set out in the Information Requirements.
- 1.1.5 **Information Manager** means the person appointed, initially by the Employer, to perform the Information Management Role.
- 1.1.6 **Information Requirements** means the document attached to this Protocol at Appendix 2 setting out the way in which Models shall be produced, delivered and used on the Project, including any processes, protocols and procedures referred to therein.
- 1.1.7 **Level of Detail** means the level of detail required for a Model as specified in Appendix 1 attached to this Protocol.
- 1.1.8 **Material** means all information in any electronic medium prepared by or on behalf of the Project Team Member comprised in:
- a the Specified Models; and
 - b the Federated Models, to the extent that these comprise Specified Models or to the extent that the Project Team Member owns any additional rights in any Federated Model, excluding any material forming part thereof which is provided to the Project Team Member by or on behalf of the Employer.

- 1.1.9 **Model** means a digital representation of part of the physical and/or functional characteristics of the Project.
- 1.1.10 **Model Production and Delivery Table** means the table attached to this Protocol at Appendix 1 specifying the subject matter of each Model, the person who is to produce and deliver each Model (described in the table as “Model Originator”) at each Stage and the Level of Detail for each Model at each Stage.
- 1.1.11 **Other Project Team Member** means any person having responsibilities in relation to the production, delivery and/or use of Models and appointed by the Employer in relation to the Project, excluding the Project Team Member.
- 1.1.12 **Permitted Purpose** means a purpose related to the Project (or the construction, operation and maintenance of the Project) which is consistent with the applicable Level of Detail of the relevant Model (including a Model forming part of a Federated Model) and the purpose for which the relevant Model was prepared.
- 1.1.13 **Project** means the project to which the Agreement relates
- 1.1.14 **Project Agreement** means any agreement entered into between the Employer and an Other Project Team Member in relation to the Project.
- 1.1.15 **Project Team Member** means the person appointed by the Employer pursuant to the Agreement.
- 1.1.16 **Project Team Models** means any Models which Other Project Team Members produce and deliver as specified in the Model Production and Delivery Table and any Federated Models (or any part thereof) produced and delivered by Other Project Team Members.
- 1.1.17 **Protocol** means this building information modelling protocol including Appendix 1 and 2.
- 1.1.18 **Specified Models** means the Model or Models which the Project Team Member is to produce and deliver as specified in the Model Production and Delivery Table.
- 1.1.19 **Stage** shall have the meaning stated in Appendix 1.

2. Priority of Contract Documents

- 2.1 This Protocol forms part of the Agreement. In

the event of a conflict or inconsistency between the terms of this Protocol and any other documents contained in and/or forming part of the Agreement, except where the Protocol states otherwise, the terms of this Protocol shall prevail.

- 2.2 In the event of any conflict or inconsistency between a Model prepared and delivered in accordance with this Protocol and any document or information extracted from such Model, except where the Information Requirements states otherwise, the Model shall prevail.

3. Obligations of the Employer

3.1 the Employer shall:

- 3.1.1 arrange for a protocol in substantially the same terms as this Protocol and for the obligations set out herein to be incorporated into all Project Agreements; and *the Board to action and to align with their governance rules*
- 3.1.2 save to the extent that such obligations are within the scope of the Project Team Member's obligations under any other part of the Agreement:
 - a ensure that until the end of the Project the Information Requirements and the Model Production and Delivery Table are reviewed and updated at each Stage; and *To align with the Board project route map*
 - b ensure that the appointment of the Information Manager shall be changed or renewed as necessary to ensure that there is at all times until the end of the Project a person performing the Information Management Role. *The Board to ensure that Information manager is appointed*

4. Obligations of the Project Team Member

4.1 The Project Team Member shall:

- 4.1.1 produce the Specified Models (excluding any material forming part of the same which is provided to the Project Team Member by or on behalf of the Board) to the Level of Detail specified in the Model Production and Delivery Table using the level of skill and care required under the Agreement; and *The Board to ensure that EIR gives clear and concise requirements for models and LOD*
- 4.1.2 subject to events outside its reasonable control, (including the acts or omissions of the Employer, Other Project Team Members and any third party but excluding the Project Team Member's sub-contractors), use reasonable endeavours to:

- a deliver the Specified Models at the Level of Detail specified in the Model Production and Delivery Table at the Stage specified therein and in accordance with the Information Requirements;
 - b use the Project Team Models in accordance with any procedures therefor in the Information Requirements; and
 - c comply with the Information Requirements; and
- 4.1.3 Arrange for this Protocol to be incorporated into any sub-contracts that it enters into in relation to the Project to the extent required to enable the Project Team Member to comply with this Protocol.

5. Electronic data exchange

- 5.1 Without prejudice to the Project Team Member's obligations under this Protocol and the Agreement, the Project Team Member does not warrant, expressly or impliedly, the integrity of any electronic data delivered in accordance with this Protocol.
- 5.2 The Project Team Member shall have no liability to the Employer in connection with any corruption or any unintended amendment, modification or alteration of the electronic data in a Specified Model which occurs after it has been transmitted by the Project Team Member, save where such corruption, amendment, modification or alteration is a result of the Project Team Member's failure to comply with this Protocol.

6. Use of Models

- 6.1 The Employer and the Project Team Member agree that the intellectual property provisions set out in the Agreement shall apply to use of the Material, the Federated Models, the Project Team Models, any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf of the Employer and any proprietary work contained therein.

7. Liability in respect of a model

- 7.1 The Employer and the Project Team Member agree that any provisions in the Agreement concerning the use of the Material, the Federated Models, the Project Team Models, any material forming part of the Specified

Models which is provided to the Project Team Member by or on behalf of the Employer and any proprietary work contained therein shall be varied to the extent necessary to give effect to clauses 7.2 and 7.3 but if there are no such provisions clauses 7.2 and 7.3 shall apply.

- 7.2 The Project Team Member shall have no liability to the Employer arising out of any modification or amendment to, or any transmission, copying or use of the Material, or any proprietary work contained therein, by the Employer, an Other Project Team Member, or any other third party, other than that permitted by clause 6.1.
- 7.3 The Employer shall have no liability to the Project Team Member arising out of any modification or amendment to, or any transmission, copying or use of the Project Team Models, or any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf by the Employer, or any Federated Models, or any proprietary work contained in the same, sublicensed or licensed by the Employer pursuant to clauses 6.1, by the Project Team Member or any third party, other than that permitted by clause 6.1.

8. Termination

- 8.1 Clauses 1, 2, 3, 5, 6 and 7 of this Protocol shall continue to apply following termination of the Project Team member's employment under the Agreement.

Appendix 1

Sample Production and Delivery Table for BIM Protocol user Guide

	Drop 1 Initial assessment		Drop 2 Outline Business Case		Drop 3 Outline Business Case		Drop 4 Full Business Case		Drop 5 Handover and Close Out	
	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail
Overall form and content										
Space planning	Architect	1	Architect	2	PSCP	2	PSCP	3	PSCP	6
Site and context	Architect	1	Architect	2	PSCP	2	PSCP	3	PSCP	6
Surveys							PSCP	3		
External form and appearance			Architect	2	PSCP	2	PSCP	3	PSCP	6
Building and site sections					PSCP	2	PSCP	3	PSCP	6
Internal layouts					PSCP	2	PSCP	3	PSCP	6
Design strategies										
Fire			Architect	2	PSCP	2	PSCP	3	PSCP	6
Physical security			Architect	2	PSCP	2	PSCP	3	PSCP	6
Disabled access			Architect	2	PSCP	2	PSCP	3	PSCP	6
Maintenance access			Architect	2	PSCP	2	PSCP	3	PSCP	6
BREEAM					PSCP	2	PSCP	3	PSCP	6
Performance										
Building	Architect	1	Architect	2	PSCP	2	PSCP	3		
Structural	Architect	1	Str Eng	2	PSCP	2	PSCP	3		
MEP systems	Architect	1	MEP Eng	2	PSCP	2	PSCP	3		
Regulation compliance analysis							PSCP	3	PSCP	6
Thermal Simulation							PSCP	3	PSCP	6
Sustainability Analysis							PSCP	3	PSCP	6
Acoustic analysis							PSCP	3	PSCP	6
4D Programming Analysis										
5D Cost Analysis										
Services Commissioning							PSCP	3	PSCP	6
Elements, materials components										
Building			Architect	2	PSCP	2	PSCP	3	PSCP	6
Specifications			MEP Eng	2	PSCP	2	PSCP	3	PSCP	6
MEP systems					PSCP	2	PSCP	3	PSCP	6
Construction proposals										
Phasing							PSCP	3		
Site access							PSCP	3		
Site set-up							PSCP	3		
Health and safety										
Design							PSCP	3		
Construction							PSCP	3		
Operation							PSCP	3	PSCP	6

LOD definitions (from PAS 1192)

- 1 Brief
- 2 Concept
- 3 Developed Design
- 4 Production
- 5 Installation
- 6 As constructed
- 7 In use

Stage definitions (RIBA plan of work)

- 0 Strategic Definition
- 1 Preparation and Brief
- 2 Concept Design
- 3 Developed Design (production information)
- 4 Technical Design
- 5 Construction
- 6 Handover & Closeout
- 7 In Use

Model Originators identified by name

Appendix 2

Additional information

This is a framework of a generic Information Requirements. Parties may choose to include further detail if they require.

Information Requirements

1. Standards

The following standard(s) shall apply: _____

2. Parties

2.1 The parties involved in the Project are:

2.2 The role of Information Manager shall be performed by the following person or persons for the following stages:

Stages	Person
_____	_____
_____	_____

3. Employer's Information Requirements

3.1 The Common Data Environment shall be _____

3.2 The Models shall be developed using the following versions of the following software:

3.3 The Models shall be delivered by the persons listed below in the following formats:

Person	File format
_____	_____

3.4 Files and layers shall be named and numbered in accordance with

3.5 The following units, annotation, dimensions, abbreviations and symbols shall be used in developing a Model

3.6 The following co-ordinate system shall be used

3.7 The zoning requirements are as follows

3.8 Data drops shall take place in accordance with the [Employer's Information Requirements/Execution Plan]. To the extent that the [Employer's Information Requirements/Execution Plan] requires a particular piece of information to be extracted from a Model in more than one format at any particular Stage, all such formats shall be extracted from the same Model.

4. Project Procedures

4.1 The following protocols/procedures shall apply to the Project:

4.1.1 Spatial Co-ordination protocol;

4.1.2 Model approval/information exchange protocol;

4.1.3 Archiving procedures;

4.1.4 Security requirements and access rights procedures;

4.1.5 [Other]

4.2 Resolution of conflicts

specify any circumstances in which information extracted from a Model will take precedence over the Model.