ANNEX A – SAMPLE BIM HANDOVER CLAUSES

   "BIM" means building information modelling and is the process and technology used to create a Model.

   "BIM Model" means a digital representation of the Project or part of the Project, and used to describe a two dimensional representation, three dimensional representation, as well as other data representations, including Drawings derived from it.

   "BIM Deliverable" means a set of digital representations of the Project in two dimensional, three dimensional or other representations that describe the physical, functional and performance characteristics of the Project for the purpose of drawing production, visualisation, construction sequencing simulation, cost estimation, collaboration, planning and documentation throughout the project lifecycle.

   "CDE" means common data environment for purposes of facilitating the integration of activities and collaboration of stakeholders throughout the construction and building life cycle.

   "Contract Model" means BIM Models furnished during tender by the Employer, which are included as part of the Contract Documents.

   "Drawing" means two dimensional representations, perspective views or other graphical outputs printed physically or electronically.

   "Essential Model Content" means a list of essential BIM elements and corresponding attributes to form part of contract requirements as set out in the BIM Handover Technical Guide.

   "IDD" means Integrated Digital Delivery that integrates work processes and connects stakeholders through digital data, innovation and technology across the whole project life cycle from design, fabrication, construction to asset management.

Sample Clauses for use in the Consultancy Agreement

*4. Please insert the provisions below into an appropriate section of the **Consultancy Agreement** between the Employer and the Consultant. It aims to assist the Employer to clearly specify what the Consultant is required to deliver and enable BIM Models to be issued as part of Contract Documents^ between the Employer and the Contractor. These clauses should be read in conjunction with the Employer's Information Requirements (EIR) and Client's IDD Requirements (CIR) where applicable.*

A.1   The Consultant shall be responsible for the accuracy and consistency in the production of BIM Models, the associated model content and drawings. As a minimum requirement, BIM Models should contain the following Essential Model Content (as defined under Part I) and 2D drawings (as defined under Part IIA). Other information not generated from BIM Models but essential to supplement BIM Models to explain the design intent can be presented in 2D drawings (as listed under Part IIB).

   List* of Essential Model Content and 2D Drawings:

   Part I - Essential Model Content including list of essential BIM elements and attributes

   Part IIA – 2D drawings generated from BIM Models

   Part IIB – 2D drawings not generated from BIM Models

   Note:
   ^ Scope of Contract Documents to be defined in the Construction Contract.
   * List of Essential Model Content and 2D Drawings to be set out by Employer in detail. Reference may be made to the BIM Handover Technical Guide.

A.2   The Consultant shall submit their proposed modelling and data management, compliance procedures and any other BIM related information to the Employer for acceptance. The accepted proposals including any proposed deviation to the Employer's Requirements shall be documented in the BIM Execution Plan (BEP), including but not limited to the following:

   a. proposed exception or amended Essential Model Content and 2D drawings both generated and not generated from BIM Models,
   b. additional Model Content within the BIM Models used for reference,
   c. model quality checklist and inter-disciplinary coordination matrix, and
   d. list of BIM Models with specific model breakdown structure and formats.

A.3   The BEP is a live document and shall be updated and revised periodically by the Consultant. Any modifications to the approved BEP shall be discussed and agreed by all parties within the Contract and approved by the Employer.

A.4   The Consultant shall develop BIM Models in accordance with the latest BEP version that has been approved by the Employer ("Approved BEP").

   a. The BIM Models shall be accurate and complete in accordance with the model quality checklist as stated in the Approved BEP.
   b. The Architectural, Structural, Mechanical, Electrical and Plumbing (MEP) BIM Models shall be coordinated in accordance with the inter-disciplinary coordination matrix as stated in the Approved BEP.

A.5   The Consultant shall provide the BIM Models in native and/or read-only format* to Construction Tenderers at tender stage, and in native format to the Successful Tenderer upon award of the Construction Tender.

Sample Clauses for use in the Consultancy Agreement

Note:
* The Employer should decide the model format to be issued to tenderers. As a minimum requirement, the chosen model format should contain both Essential Model Content and 2D Drawings generated from BIM, and allow the tenderers to use the BIM Models to extract and export information for quantities take-off and construction planning purposes.

A.6 The Consultant shall organize a model briefing for Construction Tenderers to explain, including but not limited to, the following:

    a. The Employer's BIM Requirements for construction stage and As-built submission;
    b. The list of BIM Models with specific breakdown structure and formats, its content and naming convention used for development of the model used for tender,
    c. Essential Model Content defined in the Approved BEP but not included in the respective BIM Models,
    d. For what purposes the model can be used for.

A.7 Upon award of the Construction Tender, the Consultant shall organize a post-tender workshop to brief the Successful Tenderer, including but not limited to the following:

    a. Contract Models as modified by tender addendum and corrigendum (if applicable)
    b. Timeline for handover,
    c. Mode of handover (e.g., using an agreed project Common Data Environment (CDE) platform)

A.8 The Consultant shall provide the Approved BEP to the Successful Tenderer to aid their understanding and preparation of the BEP for Construction Stage and As-built submission.

A.9 Prior to project completion, the Consultant shall review and approve the Contractor's As-built BIM Models before it could be submitted to the Employer for acceptance.

A.10 All BIM Deliverables developed for the Contract shall be the property of the Employer. The Employer shall have the ownership and exclusive rights to disclose, copy, duplicate, reproduce, modify and otherwise use all BIM Deliverables of the Contract unless agreed otherwise. The Employer shall have the rights and full discretion to grant its appointed party the right to disclose, copy, duplicate, reproduce, modify and/or otherwise use the BIM Deliverables.

Sample Clauses for use in the Construction Contract

B.1 The following Essential Model Content (as defined under Part I) and 2D Drawings (as defined under Part IIA & IIB) shall form part of the Contract Documents.

List* of Essential Model Content and 2D Drawings:

Part I – Essential Model Content including list of essential BIM elements and attributes, organised in the list of BIM Models with specific model breakdown structure and formats

Part IIA – 2D drawings generated from BIM Models

Part IIB – 2D drawings not generated from BIM Models

Note:
^ Scope of Contract Documents to be defined in the Construction Contract.
* List of Essential Model Content and 2D Drawings to be set out by Employer in detail. Reference may be made to the BIM Handover Technical Guide.

B.2 Model content not listed under Part I are provided for reference only. In addition, dimensions and positions of openings and pipe penetrations shown in the BIM Models are indicative only. The actual size and position of openings and pipe penetrations shall be coordinated by the Contractor and submitted to the Consultant for approval.

B.3 Upon contract award, the Contractor will be issued with the released BIM Models in native format and/or OpenBIM format as deemed fit for purpose.

B.4 In the event of discrepancy between BIM Models or between BIM Models and drawings, the Contractor shall highlight such discrepancies to the Employer. The Employer has the sole discretion to determine the resolution of discrepancy, and no claims for cost and time shall be entertained where the Contractor's resolution of the discrepancy is to comply with any of the Contract Requirements.

B.5 After contract award, the Contractor shall develop BEP in full detail for execution of the Works and submit it to the Employer within mutually agreed timeframe for approval.

B.6 During the course of work, the Contractor shall further develop the BIM Models and ensure they are well coordinated and updated to remain as the single source of truth throughout the contract period. The Contractor shall use the outputs from BIM Models for drawing production, visualisation, construction sequencing simulation, cost estimation, collaboration, planning and documentation throughout the project life cycle.

B.7 Prior to project completion, the Contractor shall submit As-built BIM Models to the Consultants for verification and approval prior to submission to the Employer for acceptance.

B.8 All costs incurred for BIM modelling and producing BIM Deliverables shall be deemed to be included in the Contract Price.

6. Please insert the provisions below into the __Instructions to Tenderers__ for Construction Tender. It lists down the tender submission requirements and assist the Tenderers to make use of BIM Models and drawings issued for tender preparation.

C.1   Tenderers shall submit a preliminary BEP to demonstrate their understanding of the BIM Scope of Work and the proposed processes and procedure in developing the BIM model to support project delivery needs as part of their Tender Proposal.

C.2   As a minimum requirement, the preliminary BEP scope shall include the following:

    a.   Tenderer's BIM objectives and BIM uses,

    b.   Tenderer's proposed BIM and IDD toolset, including but not limited to BIM authoring tools, CDE platform and other software tools for IDD,

    c.   Governance, roles and responsibilities,

    d.   Model development approach,

    e.   Collaboration procedures to produce, manage and deliver the BIM Deliverables,

    f.   Tenderer's manpower resources to support BIM implementation (Please indicate clearly if the manpower resources are internally sourced and/or outsourced),

    g.   Tenderer's past track record in delivering IDD projects of similar scale and complexity,

    h.   Subcontracted supply chain track record in producing BIM Deliverables.

C.3   Tenderers will receive BIM Models in native and/or read-only format*, which consist of Essential Model Content and drawings (generated from BIM), in addition to a set of 2D drawings (not generated from BIM). Tenderers shall extract the information necessary from the BIM Models and 2D drawings for the preparation of the Tender proposal. No additional drawings will be provided at the time of Tender.

Note:
* The Employer should decide the model format to be issued to tenderers. As a minimum requirement, the chosen model format should contain both Essential Model Content and 2D drawings generated from BIM, and allow tenderers to use BIM to extract and export information for quantities take-off and construction planning purposes.

C.4   The released BIM Models prepared by the Consultants describe the design intent at the time of tender. The Tenderers shall point out any issue or discrepancy in BIM Models or drawings for clarification.

C.5   The following lists** of Essential Model Content and 2D drawings shall form part of Contract Documents.

    Part I – Essential Model Content including list of essential BIM elements and attributes, organised in the list of BIM Models with specific model breakdown structure and formats.

    Part IIA – 2D drawings generated from BIM.

    Part IIB – 2D drawings not generated from BIM.

Note:
** Lists of Essential Model Content and 2D Drawings to be set out by Employer in detail. Reference may be made to the BIM Handover Technical Guide. Consultant's modelling

Sample Clauses for use in the Instructions to Tenderers

methodology and useful information in assisting Tenderers to navigate models can also be included under the Instruction to Tenderers.