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| **DIO Employer’s Information Requirements**  **DIO Project Reference Number:**  **DIO Project Title:**  **DIO Project Manager:** |

**Version Control**

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# Introduction

***Guidance generally:*** *Throughout this document guidance has been included as blue panels like this, which are to be deleted prior to issue.*

## Document Purpose

This document confirms the Employer’s Information Requirements (EIR) as a sub-set of the Employer’s Technical Statement of Requirement (TSOR) or Works Information and introduces information requirements, reasons and purpose to the Supplier, along with technical and commercial particulars that need to be addressed.

***Guidance 1:*** *This document should be used as a template to generate the Employer’s Information Requirements for a particular DIO Framework and/or DIO Project and Supplier. This document and its contents provides guidance and drafters must take full responsibility for any specific Framework or Project use. DIO’s BIM Implementation / Management Team should be consulted when producing this document.*

An EIR is an important element of a Project BIM Implementation and is used to set out clearly to the Supplier what information (models, documents and data) is required generally at each project stage, via a stage based Information Delivery Plan (IDP).

The EIR relates to all information deliverables (models, documents and data), including traditional project documents, surveys, reports and appraisals, and these are included in the IDP.

The IDP schedules required information deliverables across DIO’s eight stage plan of work, which itself aligns with the pan industry sector unified CIC/APM plan of work (see section 4.1) to enable the Employer to answer project stage Plain Language Questions (PLQ), make project gateway decisions and to engage with the other project stakeholders.

***Guidance 2:*** *For Framework or term contract relationships, the EIR may form two parts; a framework level document modified from time to time through a controlled process, and the Information Delivery Plan forming the project or supply specific component.*

***Guidance 3:*** *If the plan is using the RIBA Enterprises/NBS BIM Toolkit to generate the IDP this should be clearly stated and referenced in the EIR. The BIM Toolkit IDP will have been drafted by the Employer, to be used by the Project Team or Supplier to then cascade the plan down through the supply chain to inform the Master Information Delivery Plan and Task Information Delivery Plan. The BIM Toolkit is available from**NBS.com.*

This document includes bespoke requirements, such as required information. Other standards are also referenced in this document; however, detailed extracts of the standards are not included.

## Responding to this an EIR

An EIR, including the IDP, will be responded to and then implemented by use of a Supplier’s BIM Execution Plan (BEP). A compliant BEP in support of a project tender will demonstrate how the requirements of each section of this EIR and IDP will be met. The BEP and its response to the EIR will form part of tender scoring and hence selection.

***BIM Execution Plan Requirements:*** *Some Supplier specific BEP responses to EIR sections are shown in dashed highlighted boxes like this one. These can be retained/deleted as the author sees fit.*

The Pre Contract BEP will need to include the following content:

* Specific response to this EIR section by section.
* Where appropriate the CPix BEP template documents may be used by those producing their BEP; however, the detailed contents of the EIR should be specifically responded to, for both Pre and Post Contract BEPs. Where in doubt, PAS1192-2 should take precedence over the CPix BEP template.
* Specific response to the Information Delivery Plan, commenting where deliverables are over or under specified at a specific information exchange, or impractical to deliver; with alternative delivery proposals being proposed for acceptance by the Employer.
* A Project Implementation Plan – see section 6.5.3 (PAS 1192-2:2013).
* Project goals for collaboration, coordination and information modelling.
* Major project milestones consistent with the project programme where in variance to the IDP.
* Project Information Model delivery strategy where in variance to the IDP.

In addition to the above, the Post Contract BEP will need to include the following content:

* Master Information Delivery Plan (MIDP), which is shown to be an aggregate of Task Information Delivery Plans (TIDP), that in turn responds to the IDP.

# BIM Vision and Objectives

The Government Construction Strategy of May 2011 (GCS) set out a mandate for ‘collaborative 3D modelling (with all documentation and data being electronic) on all appropriate centrally procured projects by 2016’. DIO are developing their BIM implementation with the aim of enabling significant time, cost and quality improvements to the way that construction and importantly information is delivered in the organisation. BIM processes will also provide the DIO with an approach that enables digital information to become a key enabler of stakeholder engagement, decision making, improved asset knowledge, capability and estate planning.

To ensure that DIO’s BIM Implementation Strategy is properly communicated to the suppliers at project level, it is necessary for DIO to provide a comprehensive EIR document for each project. There are a number of elements that form part of producing an EIR template for DIO, the most important of which is drafting and sign off a project specific Information Delivery Plan (IDP), which will provide full details of project/BIM information/data required against each project stage (project decision gateway) and in what format; this will in turn be based on fully defined Organisational Information Requirements (OIR), which will then inform specific Asset Information Requirements (AIR), as defined in PAS1192-3:2014. The information deliverables are also designed to answer stage Plain Language Questions (PLQ), which in turn enable the stage Gateway decisions, these are also to be developed by DIO.

The production of OIRs, AIRs, PLQs and IDP for DIO, which will feed into DIO’s EIR template and bespoke project EIRs is now underway; however, it should be recognised that the production of this information is a lengthy process and therefore will be included incrementally over future versions of the standard DIO EIR template. For clarity, it is necessary to state that, due to the fact that many of the above requirements are still being developed, this early draft EIR provides high level information only, with the intention of helping project teams with their short term BIM Implementation.

It is the vision that the use of BIM will enable the Employer to receive the required information deliverables (models, documents & data) at the appropriate time, in the right format, to engage with the appropriate stakeholders, drive project delivery and efficiency, make the right project gateway decisions, to supply appropriate information at handover, in order to operate, maintain and assess the performance of the delivered asset, and then ultimately to integrate the delivered asset and its information into the Employer’s asset estate. To this end future EIRs will become more detailed and comprehensive.

DIO’s initial BIM objectives include:

* delivery of verified (eventually validated) structured information and data to support project gateway decisions, including traditional project documents, surveys, reports and appraisals;
* improved engagement with project stakeholders;
* building the project information into the Employer’s Asset Information Model, and
* linking and/or passing information to operational and line of business systems that will support strategic, operational and asset management decision-making and streamlining following the practical completion of the construction works and installations.

It is anticipated that DIO’s future BIM objectives could at some point include:

* authorisation of Supplier’s Technical Design using BIM tools;
* verification of the proposed scope compared to briefing requirements using BIM tools;
* understanding and confirmation full programme, sequence and logistics implications using BIM tools;
* the basis for post operational performance evaluation and learning, including Whole Life Costs and Sustainability, and
* assessment of safety and security issues using BIM tools.

# Clients Strategic Purpose

***Guidance 1:*** *This section should describe the expected purpose of the information provided as models, documents and data.*

*The table below is an example set, which should be replaced/modified.*

The primary use of the information (models, documents & data) will be for the following purposes:

|  |  |
| --- | --- |
| Ref. | Purpose |
| **01** | **Registration**  To allow accurate audit and reporting based on the assets registered. |
| **02** | **Use and Utilisation**  To support comparison of actual utilisation with records of the intended use, capacity and planned utilisation of the Facility and to support Government Soft Landings usage reviews. |
| **03** | **Operations**  To support the understanding of the anticipated cost of operations based on the normal operations of the Facility and to support Government Soft Landings operations reviews. |
| **04** | **Maintenance and Repair**  To support the understanding of the anticipated resource load & cost of maintenance and repair based on the recommended maintenance tasks. |
| **05** | **Replacement**  To support the understanding of the anticipated resource load & cost of asset replacement based on the expected service life of assets. |
| **06** | **Assessment and Re-use**  To support the assessment of the Facility or Asset at the end of its planned use. |
| **07** | **Impacts**  To support the management of the economic and environmental impacts of the Facility or Asset throughout its lifecycle. |
| **08** | **Business** **Case**  To support the on-going evaluation of the business case, which is dependent upon the continual development of 01 and 07 above. |
| **09** | **Security and Surveillance**  To support the assessment of security and surveillance and a security minded approach. |
| **10** | **Regulation and Compliance**  To support the maintenance of the health and safety of the users of the Facility or Asset. |

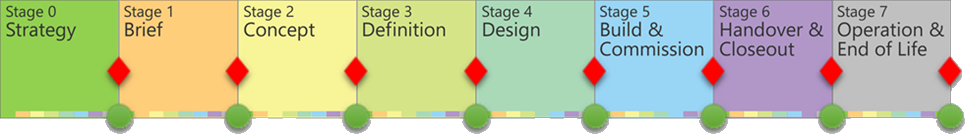
Please note that the Employer owns the Intellectual Property Rights (IPR) for all information, including models, documents and data, and the supply chain use these under license.

Liability shall typically remain with the originator, and they will not be liable for unpermitted modification or amendment, or any transmission, copying or use of the Materials and the Models. This is in line with current procurement contracts, which should be referred to for additional IPR and liability information.

***Guidance 2****: In circumstances on specific projects where the authority intends to use elements of the model for a wider set of purposes e.g. use of elements of design on more than one project or to build a model library, the additional use should be stated, together with the wording of the proposed licence.*

# Information Requirements

# Information Exchanges, Project Deliverables & Information



The purpose of this section is to communicate the timing and content of information exchanges between the Project Team/Supplier and the Employer and how information exchanges are aligned to work stages. Information may flow both ways.

To ensure that the industry as a whole adopts a common way of working the unified CIC/APM 8 stage plan is adopted even if the stage names need to be ‘localised’ as with the adoption by the RIBA. This is shown in the figure here.

It is common to apply a stage decision gateway process to formally close a stage and commence another. Some gateways may be more significant in terms of project progression.

Each stage gateway should be advised by a developed set of Employer Plain Language Questions (PLQ). It is common to indicate these gateway decision points as red diamonds. It is not advisable to include the PLQ in the EIR but some Employers may choose to do so.

Whilst information can be shared at any time during the course of a stage, formal published information deliverables should be exchanged prior to the end of a stage to advise the decision gateways. These published exchanges are referred to as Information Exchanges indicated by green circles or ‘footballs’. The logical decision gateways and Information Exchanges are indicated on the above figure. Employers may not require information exchanges at every stage, but they are implied.

Deliverables required to inform the stage PLQ should be scheduled in the Information Delivery Plan (IDP).

The IDP should ideally include:

1. A listing of information deliverables to answer Employers ‘Plain Language Questions’
2. Format requirements, constraints or scope for each deliverable
3. Where discipline native models are required
4. Where open standard formats are required in addition to a pdf format
5. Where federated model visualisations are required to support stakeholder engagement
6. The Level of Definition (Level of Detail and Level of Information) of each deliverable
7. The intended role or appointed supplier for the information deliverable

Level 2 BIM information deliverables consist of 3D models - in their native discipline (un-federated) format, drawings - cut from the models, and other documents, in PDF or other specified open standards format, and structured data - again cut from the models, in COBie UK 2012 format, all exchanged as files and referenced in the COBie file as a transmittal sheet.

Open standard 2D/3D model equivalents such as federated visualisations should also be provided where specifically required, in an agreed format, to assist stakeholder engagement.

Public employers are unlikely to be able to require specific proprietary format files but may state the formats they are able to use/access as a guide to information suppliers.

# Information Delivery Plan

The Information Delivery Plan (IDP) is appended to this EIR. The Supplier should review this plan and confirm their ability to provide the information from the appropriate resources, in the required formats, at the designated stage decision gates. Any variation from or addition to the plan as proposed, should be clearly noted and brought to the Employer’s attention in the responding BEP. It is intended that this Employer’s Information Delivery Plan forms the basis of the Suppliers Master Information Delivery Plan for preparation and submission of information to the Employer at the appropriate stages.

# Level of Definition, Detail and Information

***Guidance 1***: *The Level of Definition indicates the level of maturity required for a particular information deliverable at a particular plan of work stage, this is commonly referred to as LOD (Definition) and hence the level of model definition normally achieved at stage 3 would be referred to as LOD3. This can be used to indicate advanced or deferred maturity requirements for a particular deliverable from the norm. If a whole stage maturity is set in advance or deferred then this is simply saying a stage is missing, this should not occur.*

*This concept can be extended to alternatively indicate level of model detail (geometry) or information (data) development with LOD (Detail) and LOI (Information). This approach is used in the BIM Toolkit and the UNICLASS2015 classification system.*

*This section should clearly reference the standard to be adopted.*

*This approach can also be used in refurbishment, or small works projects, to restrict or omit the required level of model detail whilst maintaining level of information progression in information exchanges. LOD0 might omit model detail say to reference existing space identifiers only and LOD1 might use 2 point bounding box ‘sugar cube’ geo-locators.*

Information delivery requirements are indicated using Level of Model Detail (LOD) and Level of Information Maturity (LOI) aligned to the normal delivery stage, e.g. LOD3 for stage 3 and LOI4 for stage 4, as defined in the RIBAE/NBS BIM Toolkit. This is indicated as D3L4 in the IDP.

# Health & Safety / Construction Design Management (H&S/CDM)

Information deliverables in respect of the Employer’s H&S/CDM duties will be detailed in future Information Delivery Plans and will be used to manage the Employer’s and supplier’s H&S/CDM obligations. The supplier should confirm how these will be used in their BIM Execution Plan.

***BIM Execution Plan Requirements:*** *The Supplier shall confirm how their obligations under the Construction (Design and Management) Regulations 2015 will be supported by implementing a BIM approach for the project.*

The Employer requires BIM model use for H&S/CDM purposes; including, but not limited to, site orientation/welfare, temporary works, designer risk assessment and risk scheduling. If the model is not being used for this purpose clear reasons should be given why not.

***Guidance 1****: for example, against information exchanges for specific projects the following could be specified:*

*Stage 2*

* *Pre-construction information (PCI) document (collated and issued by CDMC using client team information, sent out with tender documents)*
* *Outline risk assessments from design team members (included in PCI)*
* *The supplier is to provide an outline but project specific construction phase health and safety plan (maximum five pages), Including but not limited to:*
  + *Project overview / description of works*
  + *Project’s site specific risks for contractor’s design*
  + *Contractor design team details*
  + *Safe systems of work and person responsible for their coordination*
  + *Site compound location and arrangements (e.g. stacking of site huts)*
  + *Traffic management plan identifying access arrangements (refer to other section if included elsewhere)*
  + *Construction plant or equipment to be used in project.*

*Stage 3*

* *Contractor is to provide project construction phase health and safety plan on their appointment at least two weeks before agreed start on site date.*
* *Contractor is to supply relevant information to update F10*

*Stage 4*

* *Contractor is to:*
  + *Collate information for operation and maintenance manuals throughout the construction period*
  + *Provide completed operation and maintenance manuals in the timescale dictated by handover procedures (starting six weeks before completion)*
  + *Provide information in accordance with prescribed format*
  + *Provide the CDM coordinator with relevant information*

*Stage 5 (post occupation)*

* *Contractor is to:*
  + *Ensure that all relevant documents including commissioning certificates and record drawings have been provided and indexed within the building manual*
  + *Upload the Building Manuals onto XXX and provide 1 electronic and 1 hard copy to the Establishment*

*These can all be scheduled in the bespoke project Information Delivery Plan.*

# Management

This section deals with setting the standards to be used for the definition and delivery of the project, along with how the co-ordination and review processes will be managed.

5.1 Standards

***Guidance 1****: The purpose of this section is to define the BIM Standards that are incorporated into the Information Requirements.*

The Employer expects BIM to be delivered on projects in line with the UK’s Level 2 BIM standards, the core parts of which include:

* PAS1192-2:2013 (BIM Information Management Capital Phase)
* PAS 1192-3:2014 (BIM Information Management Operational Phase)
* Both the above supported by BS1192:2007
* BS1192-4:2014 (COBie Production)
* PAS1192-5:2015 (Specification for Security-Minded Building Information Modelling)

***Guidance 2****: Adoption of other standards related to Building Information Modelling can be encouraged if specifically relevant (this list is not exhaustive):*

* *BS 7000 series (Design Management Systems)*
* *BS 8534:2011 (Construction Procurement policies)*
* *BS 10012:2009 (Data Protection)*
* *ISO 55000 series (Asset Management)*

## 5.2 Roles and Responsibilities

The purpose of this section is to bring to the attention of the Supplier the allocation of roles associated with the management of the model and project information.

***Guidance 1:*** *At the start of each project it will be necessary to define BIM specific roles that apply to client and suppliers, including BIM Coordination (supplier), Information Manager (client and supplier) and Security Manager (client). It should be noted that there will be responsibilities associated with these roles, which need to be defined in sufficient detail. Please reference roles as required under PAS1192-2 and PAS1192-5. References to existing documentation should be given, which define the responsibility and scope of appointments associated with roles.*

PAS 1192-2:2013 provides a useful cross-tabulated summary of the roles as they apply to Suppliers, including:

* Client’s Technical Adviser (TA)
* Project Delivery Manager (PDM)
* Supplier Information Manager (IM)
* Lead Designer (BIM Coordinator) (LD)
* Task Team Manager (TTM)

The following roles in connection with BIM will be taken on directly by the Employer:

* Employer Information Manager (EIM)
* Employer Project Manager (EPM)
* Security Manager (SM) (see PAS1192-5)

***BIM Execution Plan Requirements:*** *The Supplier shall confirm the details of how any BIM-specific roles will be delivered and coordinated in the BIM Execution Plan (BEP), including the details of the parties and persons who will be responsible for Information Management and Lead Design for the project.*

***Guidance 2****: Roles associated with the management of information on BIM-enabled projects are described in outline in PAS 1192-2:2013.*

***Guidance 3****: An outline scope of service for the role of Information Management has been published by CIC.*

***Guidance 4****: All of the roles described in PAS 1192-2:2013 are expected to be undertaken within the scope of existing appointments.*

***Guidance 5****: Any drafting of roles and responsibilities in the EIRs should be aligned with drafting published in pre-existing appointment documentation.*

## 5.3 Collaboration Process

The purpose of this section is to define how, where and when project information will be shared.

The Supplier is expected to manage the Project Common Data Environment for each stage of the project, through the Supplier Information Manager (IM) and in liaison with the Employer’s Information Manager (EIM). Although it is recognised that the management and system providing this service may change with the appointment of different Suppliers for different stages or phases, there will only be one Project CDE in operation at any one time managing one version of the truth.

***BIM Execution Plan Requirements:*** *Details of the collaboration process sufficient to demonstrate competence and capability must be provided in the Pre Contract BIM Execution Plan. It is also expected that full details of the process will be included within the completed Post Contract BIM Execution Plan.*

Pre BEP details of the process will include:

* Cross referenced index providing details of where each EIR requirement is answered in the BEP.
* Form and process of sharing information between Project Team members
* Form and process of publishing information to the Employer
* How the requirements of the Information Delivery Plan will be met and tracked
* Extent, form and frequency of model coordination and federation.
* Frequency of collaboration and information exchange
* Details of model review workshops and other collaborative working practices e.g. use of model federation and coordination at design and/or site meetings

It should be noted that:

* Depending on the stage of the project and the Level of Definition (LOD) of the BIM model, the Employer requires the federated model to be made available at all design team meetings, so that it can be used to demonstrate the proposed design, progress and coordination. The Employer also expects the federated model to be used for stakeholder engagement.

***Guidance 1****: Processes will be fully defined in the Post Contract BIM Execution Plan (BEP) which should be an early deliverable in the Information Delivery Plan (IDP).*

**BIM Execution Plan Requirements:** *The Supplier shall confirm their proposed collaboration tool and how they intend it to operate in support of the Common Data Environment in accordance with PAS 1992-2:2013 and BS 1192:2007. Details shall be included to confirm how the Archive information will be transferred to the Employer upon the Practical Completion of the construction works and installations.*

* The Employer, as an interim position, requires the Design Lead (PSP) supplier to maintain Employer issued, shared and published information, in the Designer’s Supplier CDE, with Client Shared and Client Published states for access, mark-up and use, until the Employer CDE and AIM are available.
* Construction phase Employer issued, shared and published information, should similarly be maintained in the Constructor’s Supplier CDE, with Client Shared and Client Published states, but also issued to the Designers Supplier CDE Client Shared and Client Published, which will act as Employer CDE in the interim position.

The Employer will require access to the information which is held on their behalf.

## 5.4 Planning the Work and Data Segregation

The purpose of this section is to set out requirements for the management of the modelling process. Information should be managed in accordance with the processes described in PAS 1192-2:2013 and BS 1192:2007.

The Information Delivery Plan confirms the information delivery, information packaging and information exchange requirements for models, documents and data. All published transmittals will be accompanied by a COBie spreadsheet, confirming the included exchange files in the documents tab.

The following are required:

* Model Management
  + Detail of procedures co-ordinated by the Information Manager
* Volumes, Zones and Areas
  + Definitions of zones and the management of adjacency within the discipline models
  + Confirmation of the definition of the project volume structure
* Naming Conventions

There will be a single project file name convention based on the BS1192:2007 & PAS1192-2:20013 but extended to include reference to the IDP deliverable and LOD as follows:

1. **Project Number**: the Employer project reference will be used in all cases
2. **Originator**: as assigned by the Employer in the Information Delivery Plan
3. **Volume**: Supplier assigned as PAS1192-2:2013 optional Volume/Zone or 00 for all volumes or if omitted
4. **Location**: Supplier assigned as PAS1192-2:2013 optional Level/Region/Location or zz for multiple, or xx if omitted
5. **Type**: Supplier assigned as PAS1192-2:2013 document/model/information type
6. **Role**: Supplier assigned as PAS1192-2:2013 Role
7. **Document** **Number**: Supplier assigned unique & sequential file alphanumeric document number
8. **Status**: Supplier assigned as PAS1192-2 Status/Purpose of Issue but see below
9. **Rev**: File revision
10. ***IDP Ref****: IDP Delivery Ref*
11. ***LOD****: Level of Definition as LOD.LOI e.g. D3L4 (see section 4.3 above)*
12. ***Title****: Supplier assigned and optional free text descriptive title or name*

Note: fields 8-12 are an extension to BS1192/PAS1192-2. Fields 1 & 2 are Employer assigned.

* Purpose of Issue (Field 8 of standard file name)
  + For WIP & Shared issues use PAS1192-2:2013 Table 3 WIP & Shared status codes
  + For Published use the following purpose codes for publishing of stage exchanges

|  |  |
| --- | --- |
| A0 | Published Stage 0 Strategy |
| A1 | Published Stage 1 Brief |
| A2 | Published Stage 2 Concept |
| A3 | Published Stage 3 Definition |
| A4 | Published Stage 4 Design |
| A5 | Published Stage 5 Build |
| A6 | Published Stage 6 Handover |
| A7 | Published Stage 7 Operation |

* Publishing processes
  + The contents of stage Information Exchanges will be defined in the Information Delivery Plan
  + The stage Information Exchanges will be published by the Supplier Information Manager from the Supplier CDE to complete the particular delivery stage.
  + All published file packages will be accompanied by a COBie file which will be used to verify the delivery.
  + The Supplier Information Manager will upload all information packages to the Employer CDE (PSP provided) notifying the Employer Information Manager.
  + The Employer Information Manager will verify the package and produce a Red Amber Green (RAG) acceptance report to the Supplier Information Manager.

***Guidance 1****: Employer Information Management to be provided by the PSP. In the short term this role may involve manual visual checking, until such time as the verification, and then validation, process is enabled.*

* + Green packages will be published into the Employer CDE AIM Published file area and the COBie data and file linkages published into the Employer CDE AIM data area for onward use.
  + Amber or Red package should be remedied in the Supplier CDE and resubmitted for retest.

Confirmation of use of these procedures should be confirmed in the Pre Contract BEP, with specific definitions and details added in the Post Contract BEP.

## 5.5 Security

The purpose of this section is to communicate client specific security measures required in order to secure the information, information access and information exchanges. Reference should be made to the DIO BIM Security Guidance Note version V3.0 dated 15 February 2015.

In line with PAS1192-5:2015 the Supplier should consult with the Employer regarding the security requirements of the project and then respond appropriately. All documents should be marked with the appropriate baseline security. Particular attention must be given to ensuring any Common Data Environments (CDEs) used meet the security requirements in terms of both cyber security and access controls/protocols for users. An appropriate procedure must be established to ensure information transmitted outside of CDEs is done so as per the relevant security requirements. Any file when uploaded to the Supplier CDE or otherwise disclosed, shared, published or exchanged is to be secure to the standard required.

Security is defined in accordance with Government Security Classifications (2014) as follows:

* OFFICIAL  (and its sub-set OFFICIAL – SENSITIVE)
* SECRET
* TOP SECRET

The Information Security Strategy, including the Security Triage for the project, will be completed as part of the early stage information delivery by the Employer and made available, as appropriate, to the Project Security Manager and Supplier Information Manager.

The Supplier Information Manager should ensure that all files held within the CDE are held with the appropriate visible security meta-data markings and not disclosed, distributed, downloaded or otherwise accessed by CDE members with inappropriate security and justified need. The supplier CDE system will be procured and maintained to the appropriate security level, as required by the Employer for the project.

***Guidance 1****: The EIR should include details of the security standards that apply to information used on the project, including the requirements of PAS1192-5:2015 (Specification for Security-Minded Building Information Modelling)*

*DIO should appoint or give access to a Security Manager for each project, who will be the person who oversees Information Security for the project.*

## 5.6 Coordination and Clash Detection Process

**BIM Execution Plan Requirements:** The submission should demonstrate the supplier’s compliance with mandated security systems. The completed BIM Execution Plan will set out compliance processes and the means by which compliance is monitored and managed.

The purpose of this section is to ask the supplier to define their co-ordination process, in order to meet employer requirements for quality control.

***BIM Execution Plan Requirements***

*The Supplier shall confirm coordination and clash avoidance processes, with reference to:*

* *Volume strategy*
* *Tolerance strategy*
* *Technical query workflows*
* *Clash resolution*
* *Responsibilities for coordination and clash avoidance*
* *Software to support coordination and clash avoidance*
* *Outputs from coordination and clash avoidance processes*

***Guidance 1****:*

*The following should be considered in detail:*

* *Details of the clash detection process including:*
  + *Software*
  + *Process overview*
  + *Responsibilities*
  + *Outputs*
* *Technical query workflow*
* *Tolerance strategy*
* *Clash resolution process*

*How this process will align with the employers contractual and process requirements, such as on-going / periodic technical review. Please note that the Employer will expect the most recent Clash Detection Report to be included with monthly project progress reporting.*

## 5.7 Compliance Plan

The purpose of this section is to enable the supplier to communicate how the integrity and hence quality, of the model and other data sources will be maintained.

All published information exchanges will be verified against the Information Delivery Plan for the stage information exchange, using the included COBie file. Only compliant exchanges will be accepted. For this reason all data provided is to be complaint with BS1192-4:2014 & COBie UK 2012.

The supplier should confirm his own internal model file, data standards and compliance procedures, including references to standards and compliance software, in the BIM Execution Plan (BEP).

The BEP should refer to:

* Quality assurance/control procedure
* Associated software
* Level of assurance
* Period of aftercare (the number of years that the model should be managed for)

The Employer’s Information Manager should be given access to the Supplier CDE to enable compliance monitoring and audits.

***Guidance 1****: Over time the above will be populated with appropriate DIO requirements, indicating where specific detail is required in a Supplier’s BIM Execution Plan as part of a bid submission. Given that it is envisaged that Supplier aftercare will be required in terms of CDE/Asset Information Model (AIM) provision, the period for which it is required should be stated. Please consult with DIO’s BIM Implementation / Management Team for details.*

## 5.8 Delivery Strategy for Information Exchanges and Asset Information

This section defines the information exchange standard for asset information and enables the Employer to obtain proposals with regards to asset information delivery into the Employer’s FM environment?

Eventually, the information exchange format for provision to the Asset Information Model (AIM), including documents, will be as defined in the Information Delivery plan, transmitted and contained in the Employer’s published information exchange COBie file, together with associated exchange information files.

Currently the Employer requires all BIM Information Exchanges to include:

* Native authorised files – un-federated and attributable to the supply chain author.
* 2D pdfs – standard drawing outputs from the BIM, as defined at tender issue stage
* Federated models in IFC or other agreed format, including reference to constituent authored models and other content.
* COBie data as defined by an agreed project Information Delivery Plan (IDP) and Supplier Master Information Delivery Plan (MIDP), confirming delivery. The single COBie exchange spreadsheet should contain data relating to the exchanged models and other project files, which should each be referenced in the spreadsheet and to a two point geo positioned containing box/cube of Facility, Floor or Space object.
* Other files e.g. surveys, reports etc., in pdf or other agreed open standard format.

Designers and Constructors should align their model attribute data to be consistent with the data exchange format COBie UK 2012; however, the COBie data takes precedent. The BEP should confirm the process of data compilation between models and COBie. Individual authored model COBie sheets should be coordinated and combined into a single COBie sheet for submission to the Client CDE by the Lead Supplier.

## 5.9 Template Provision (MIDP and Project Plan)

The following templates should be used by the Supplier to ensure information coordination and consistency.

### 5.9.1 Project Plan (PP)

A Project Plan, which includes key deliverables included in the IDP, will be provided to the Supplier to allow an appreciation of the strategic programme intent for the delivery of information for the project and to enable the development of the Supplier’s programme proposal.

In the absence of a Project Plan the Information Delivery Plan will be used by all team members to manage and monitor information progress delivery for the duration of the project.

The project team are responsible for the production of the Project Plan, with support from DIO’s BIM Implementation / Management Team.

### 5.9.2 Master Information Delivery Plan (MIDP)

The Master Information Delivery Plan should be prepared by the supplier and included in the Post-Contract BEP. This should be in response to the Information delivery Pan and should follow a similar or related format, but should detail the models, documents and data to be provided for each deliverable, in what stage, to what required level of detail and information and by which author.

The supplier may produce a Task Information Delivery Plan (TIDP) for their own purposes, but the Employer will not require this to be included in the BEP.

## 5.10 Training

The purpose of this section will be to provide suppliers with details of training which they will be required to deliver as part of their appointment/contract.

The supplier will be responsible for maintaining and delivering appropriate information handling and access training to all interfacing parties, including the Employer’s staff, for the operation and access to the Supplier CDE.

Information should be progressively shared and published from the Supplier CDE to the nominated PSP/ Employer CDE, so that in normal circumstances the PSP/ Employer will not need access to the Supplier CDE other than for compliance purposes.

***Guidance 1:*** *Again guidance should be sought from the**from DIO’s BIM Implementation / Management Team when completing this section.*

***Guidance 2:*** *The EIRs should communicate clearly that the responsibility for training associated with other modelling and analysis tools rests with the Supplier.*

***BIM Execution Plan Requirements***

*The Supplier shall confirm the training that they will provide for the use of their systems and tools that the Employer, and others, will be expected to use. This will include, but not be limited to:*

* *Key parts of the BIM Execution Plan*
* *The Supplier’s collaboration tool*
* *Clash detection process and reporting*
* *Model viewers*
* *CDE*

# Technical

This section establishes technical information requirements, including the software, information exchange contents and level of detail.

All project team members should agree their collective strategy regarding IT systems performance. It is acknowledged that due the Employer’s current IT limitations, their members of staff may be excluded from accessing many software’s and files; so for this reason the team should consider ways of accommodating this best they can, especially when it comes to reviewing, sharing and issuing BIM information to the client.

## 6.1 Software Platforms and Programs

The purpose of this section is to communicate software platforms and versions where these are known and where they might influence the preparation of a bid. As yet the Employer’s software platforms are not known and as a public body, OJEU rules preclude specification and selection based on proprietary systems use.

Platforms, programs and versions used by the employer across the programme of projects include the following:

* The Employers CDE is available at [URL] and provided by [ABC SAAS Solutions].
* The BIM to date has been produced using [X].
* [XYZ Professional MODEL Viewer] is currently used for model federation and visualisation.

***Guidance 1:*** *In accordance with an open approach to software solutions, EIRs should not dictate a software solution to the supply chain. However, depending on the stage of the project, the Employer will be able to state the versions and platforms used to prepare information exchanges that the supplier will receive. The employer will also be able to define the versions and platforms used for employer collaboration and facilities management.*

***BIM Execution Plan Requirements***

*The Supplier shall confirm how data and information from their authoring tools will be prepared and published so that it can be used with the software platforms outlined.*

*The ability of the bidder to work with any specified platforms should be made clear.*

## 6.2 System Performance

The purpose of this section is to communicate to bidders any constraints in the employer’s systems or specific IT requirements which may need additional resources or non-standard solutions.

The following employer-side IT system restrictions and requirements need to be taken into account when developing the BIM Execution Plan:

* Model size no physical size restriction, but practically 150Mb max, depending on

project specific performance

* Software uses How IFC federated model visualisation can be accesses
* Access to free viewers [XYZ] files can be viewed and federated by the Employer
* Security issues As required in the security section of this document

***Guidance 1****: The above requirements of the contractor’s should be populated with appropriately based on the PSP’s platforms, software’s and constraints, indicating where any specific detail is required in a contractor’s interim BIM Execution plan as part of a bid submission.*

***BIM Execution Plan Requirements***

*Refer to sections 5.4, 6.1 and 6.3 of this document should be made when considering system performance.*

## 6.3 Data Exchange Format

The purpose of this section is to define the formats used to deliver the Information Exchanges. Information will be required as defined in the Information Delivery Plan, in the following formats:

* Native – 3D discipline (un-federated) model files for all design and analysis models
* COBie – COBie-UK-2012 version 2.4 complete with reference to the exchanges files
* PDF files – no older than version 7.0 as a defaulting addition other open standard files as defined in the Information Delivery Plan

***Guidance 1****: Government Employer Requirements mandate information in a COBie format (a relative of IFC) for all information exchanges. This is a standards based structured data container and used to provide an open standard for information exchange between parties irrespective of publishing or receiving system. The Construction-Operations Building Information Exchange (COBie) format facilitates the delivery of project and asset information (files and data) to support Employer and Stakeholder decisions and information transmittal during planning, design, construction, and commissioning for delivery to facility owners and operators.*

***Guidance 2****: A project member undertakes to generate data provided in all three formats from the same data set.*

***Guidance 3****: The COBie file will be used to verify (eventually validate) the information (files & data) published to the Employer at each plan of work stage. See section 5.4 for details of the validation and acceptance process using COBie and the Information Delivery Plan.*

* NOTE: Drawings and Data should be generated from a single authored model. Drawings should state the model ref they are generated from and note any non-derived or additional data.

## 6.4 Co-ordinates

This section defines requirements for a common coordinate system for all BIM data.

The minimum requirement is spatial coordination stated as follows:

* Intersection of grids XX and YY - [xxxxxx.xxxE and xxxxxx.xxxN]
* Intersection of grids AA and BB - [xxxxxx.xxxE and xxxxxx.xxxN]
* Ground floor FFL = [xxx.xxx]

Other coordination standards defined in the BIM Execution Plan should include:

* Origin rotation
* Offsets
* Datum information
* Units to be used

3D geo-location co-ordinates to be shown to no less accurate than 10mm (0.01m) in all directions.

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# Commercial

This section looks at the information requirements, defines purposes for data and the content of key deliverables.

## 7.1 BIM Execution Plan

The Supplier shall prepare, deliver and maintain a BIM Execution Plan (BEP) for the project that responds to this Employer Information Requirements.

The Supplier shall review their BEP regularly, and additionally when there is any change to their contract.

### 7.1.1 BIM Execution Plan Requirements

Pre and Post Contract BIM Execution Plans are to be provided in response to the Employer’s Information Requirements identifying the Supplier’s proposals. Where CPix templates are used, the subsections of the EIR response section should be deleted and the clause by clause response included. The Pre Contract BIM Execution Plan will be scored as part of the tender submission.

***BIM Execution Plan Requirements***

*Certain BEP Requirements are detailed throughout this document in highlighted panels like this one; please note that these are far from exhaustive. The Supplier shall respond to the requirements and include any further information within the BEP that they deem necessary to outline their delivery of BIM on the project.*