



## 2.2. Project stage gate decisions and digital assurance

2.2.1. The Employer's stage gate process, to manage the projects, is 'Pathway'. Table 2 - Alignment of Stages shows how the 'Pathway' stages align to the RIBA Plan of Work Stages' stages.

Pre-Pathway Stages	Pre-RIBA Stages
Benefits Planning & Value Management	N/A
Pathway Stages	RIBA Stages
Stage 1 - Outcome Definition	Stage 0 - Strategic Definition
<b>Stage 2 - Feasibility</b>	<b>Stage 1 – Preparation and Brief</b>
Stage 3 - Concept Design	Stage 2 – Concept Design
Stage 4 - Detailed Design	Stage 3 – Developed Design Stage 4 – Technical Design
Stage 5 - Delivery	Stage 5 - Construction
Stage 6 - Project Close	Stage 6 – Handover and Close out
Post-Pathway Stages	
Benefits Realisation	Stage 7 – In Use

**Table 2 - Alignment of Stages**

2.2.2. Production Information and / or Handover Information is to be delivered, using the Common Data Environment (CDE), at each Pathway Stage and as notified by the Employer, in order to:

- a) provide the requisite level of assurances as set out in the Employer's Assurance Standard.
- b) inform stage gate decisions, to enable gateway sign-off :
  - o Stage Gate 2 – Are the outcomes and benefits achievable? Is there an option that delivers optimum value?
- c) to facilitate the primary uses as set out in Table 1 – Primary Use
- d) deliver the required types of documentation as part of the Handover Information.

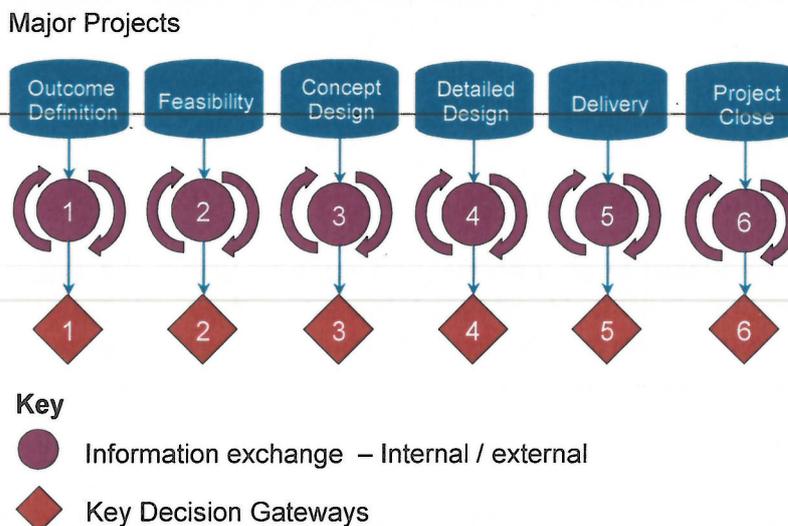


Figure 1- Key Decision Gateways

**2.3. Technical / Design Reviews**

- 2.3.1. Technical / design reviews will be carried out at various stages of the project. Table 3 - Design Review Meetings identifies the types of reviews and Appendix A provides the questions that the Production Information and / or Handover Information need to answer at each review.
- 2.3.2. The Consultant shall invite the relevant Employers discipline lead to all Technical / Design review meetings.
- 2.3.3. The Consultant shall provide a schedule of all planned Technical / Design review meetings in alignment with Table 3 - Design Review Meetings

Pathway Stages	Review
Stage 1 - Outcome Definition	Requirement Output Review
<b>Stage 2 - Feasibility</b>	<b>Feasibility Output Review</b>
Stage 3 - Concept Design	Concept Design Review
Stage 4 - Detailed Design	20%
	60%
	95%



Pathway Stages	Review
	Design Review
	Final Design Review
Stage 5 - Delivery	Validation Reviews

**Table 3 - Design Review Meetings**

2.3.4. The Consultant shall identify (and capture within the MIDP) the Production Information and / or Handover Information they will share in order to support and inform the technical / design review questions, as set out in Appendix A and as notified by the Employer.

**2.4. Level of Definition**

2.4.1. The Consultant shall provide details of the varying Levels of Definition to be used for all Production Information and Handover Information at each stage of the Rotherhithe and Blackwall Tunnel Refurbishment Scheme.

2.4.2. The Level of Definition of the Production Information and Handover Information must:

- a) continually inform and support decision making (refer to Appendix A) throughout the Project lifecycle
- b) enable acceptance criteria and requisite levels of assurance to be achieved.

2.4.3. Levels of Definition comprise the following:

- a) **Level of Model Detail (LOD) (graphical)** – the detail to which the physical characteristics, of the asset(s), are represented (as graphical data) within model files, at each stage of the project; and
- b) **Level of Model Information (LOI) (non-graphical)** – the type and amount of information (about the assets functional characteristics) which may be included as attributes within model files, at each stage of the project.

2.4.4. Table 4 - Level of Definition provides an overview of the minimum Levels of Definition of the graphical data and information of non-graphical data, at each Level of Definition. Please refer to the Model Production Delivery Table (MPDT) for the Project Requirements.

Graphical Data	Non-Graphical Data	Level Of
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		Definition
Overall massing of construction entities; indicative of area, height, volume, location and orientation.	Project requirements (form, function, cost and schedule).	1
Discipline specific model files. Discipline task team allocated volumes. Architectural form and layout (including that reserved for MEP). Outline structural / civil spatial arrangements. Generic systems, assets or assemblies with approx. size, shape, location and orientation.	General performance criteria (based on assumed asset). System types. Forecast cost data +/- 15%. <b>Note:</b> associated to the applicable modelled elements.	2
Discipline team specific models files. Primary structural / civil elements developed and frozen. Specific systems, assets or assemblies in terms of quantity, form, size, location and orientation.	Specific performance criteria. Forecast cost data +/- 10%. <b>Note:</b> associated to the applicable modelled elements.	3
Discipline team specific models files Graphically represented as a specific system, asset or assembly in terms of quantity, size, shape, location and orientation.	Actual performance criteria. Actual cost data. <b>Note:</b> associated to the applicable modelled elements.	4
Discipline team specific model files. Graphically represented as actual built / constructed / installed system, asset or assembly in terms of quantity, size, shape, location and orientation.		5

**Table 4 - Level of Definition**

## 2.5. BIM Execution Plan (BEP)

- 2.5.1. The Consultant will create a BEP. The BEP will capture how the Consultant intends to meet the requirements set out in the EIR.
- 2.5.2. The Consultant will submit the BEP for acceptance to TfL within 8No. weeks of Contract award.
- 2.5.3. The Consultant will keep their BEP current and up-to-date.
- 2.5.4. The Consultant will resubmit the BEP to the Employer for acceptance if:



- a) Changes are made to the BEP.
  - b) Instructed by the Employer.
- 2.5.5. While not exhaustive, potential reasons the Employer would not accept the BEP include:
- a) It does not meet the requirements set out in the EIR
  - b) It does not meet the requirements set out in standards listed in section 3 Standards, Methods and Procedures.
- 2.5.6. The Consultant will implement the accepted BEP.
- 2.5.7. The Consultant will ensure the BEP aligns with the accepted project programme.
- 2.6. Model Production and Delivery Table (MPDT)**
- 2.6.1. The Model Production and Delivery Table specifies 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 Definition for each Model at each Stage of the project.
- 2.6.2. The MPDT is not an exhaustive list as it contains only the known model deliverable requirements at the point of creation.
- 2.6.3. The Consultant shall work with the employer to define any further models which need to be created at each of the Pathway Project Stage.
- 2.7. Master Information Deliver Plan (MIDP)**
- 2.7.1. In response to the MPDT, the Consultant shall ensure that each Task Team provides (and maintains) a Task Information Delivery Plan (TIDP).
- 2.7.2. The Consultant will submit the MIDP for acceptance to TfL within 8 No. weeks of Contract award.
- 2.7.3. The Consultant shall compile the TIDPs within a MIDP.
- 2.7.4. The MIDP shall capture all data and information deliverables (as set out in the TIDPs) and be aligned to the Programme.
- 2.7.5. The Consultant will resubmit the MIDP to the Employer for acceptance if:
- c) Changes are made to the MIDP.
  - d) Instructed by the Employer.



2.7.6. While not exhaustive, potential reasons the Employer would not accept the MIDP include:

- a) It does not meet the requirements set out in the MPDT
- b) It does not meet milestones stated in the accepted Project Programme

2.7.7. The Consultant shall identify and capture within the MIDP the Production Information and / or Handover Information they will deliver to support and inform the stage gate decisions and assurances, as set out in Appendix A (and as notified by the Employer).

## 2.8. Value Engineering

2.8.1. The Consultant shall provide details of how they will utilise the Production Information to show the effectiveness (and provide assurance and evidence) of value engineering.

2.8.2. Value engineering must be integrated into the design review process. A representative from the Employer Operations Representative must have access to all relevant Production Information and attend all value engineering reviews. The Consultant shall provide details of how the Production Information will be presented and approved during the review process.

## 2.9. HSE & CDM

2.9.1. The Consultant shall provide details of how the Production Information will be utilised to support their health and safety and CDM obligations; identifying, eliminating and reducing hazards and risks and providing better safety management.

## 2.10. Asset Information

2.10.1. Table 5 - Asset Information Systems provides details of the Employer's corporate solutions for the management of Asset Information and the vehicle for delivery of the required information.

System	Data / Information	Delivery Vehicle
NAMS	Non-Graphical Data	
BridgeStation	Non-Graphical Data	
Confirm	Non-Graphical Data	

*Table 5 - Asset Information Systems*



2.10.2. If required at the Project Stage the Consultant shall provide details of how the required data / information will be extracted from the Production Information and / or Handover Information into the appropriate delivery vehicle and provide assurance that it is complete and current.

## **2.11. Training Arrangements**

2.11.1. The Consultant is responsible for ensuring their staff (and that of their Sub-contractors of any tier) is sufficiently trained to undertake the Information Management aspects of the project.

2.11.2. The Consultant shall provide details of how they will ensure (and manage and maintain) their staff (and that of their Sub-contractors) have the capability and competency to provide verified and coordinated Production Information and Handover Information in accordance with the EIR.

2.11.3. The Employer shall train a nominated champion within the Consultant organisation, in the use of (and associated processes and requirements of) the Employers CDE if deployed. It is the responsibility of the nominated champion to subsequently train the Consultant and their Sub-contractors and Sub-Consultants of any tier.



## 3. Standards, Methods and Procedures

### 3.1. Standards

3.1.1. All Production Information and Handover Information, as specified in the MPDT and defined in the MIDP, shall be produced and managed in accordance with the specified standards referenced within Table 6 Standards:

Standard Ref	Title	Revision
<b>Surface Standards</b>		
TBC	File Naming Convention	TBC
TBC	CDE Standard	TBC
S1037	Computer Aided Design (CAD) Data	A4
<b>Industry Standards (include but not limited to), can be used as guidance</b>		
BS 1192:2007	Collaborative Production of AEC Information	N/A
BIP2207	Standard Framework and Guide to BS1192:2007	N/A
PAS 1192-2:2013	Specification for Information Management for the capital/delivery phase of construction projects using building information modelling	N/A
PAS 1192-3:2014	Specification for Information Management for the operational phase of assets using building information modelling	N/A
BS 1192-4:2014	Collaborative production of information – Part 4: Fulfilling Employers information exchange requirements using COBie – Code of practice	N/A
PAS 1192-5:2015	Specification for security-minded building information modelling, digital built environments and smart asset management	N/A
BS 8541-1:2012	Identification and classification – Code of practice	N/A
BS 8541-2:2011	Library objects for AEC.	N/A
BS 8541-3:2012	Shape and measurement – Code of practice	N/A
BS 8541-4:2012	Attributes for specification and assessment – Code of practice	N/A