Watercare
An Auckland Council Organisation

Exchange Information Requirements (EIR)

Ver. 1

Date: 20 April 2020

Revision	Description	Released By	Date
0.1	First draft	J de Villiers	3/12/2019
1	First release	J de Villiers	20/4/2020

Definitions

Appointing party	Watercare as the employer
Asset information model	The AIM is a single source of validated and approved information that relates to a built asset that comprise of models, data, documents and other records required for the operational phase of an asset
BIM	A process supported by various tools and technologies to generate, share and manage the digital representation of physical and functional characteristics of infrastructure

Acronyms

AIM	Asset information model
AIR	Asset information requirements
BIM	Building information modelling
BEP	BIM execution plan
CDE	Common data environment
CAD	Computer aided design
EIR	exchange information requirement
IDP	Integrated design process
LOD	Level of development
LOI	Level of information
OIR	Organisational information requirements
PIM	Project information model
PMF	Watercare's project management framework

Exchange Information Requirement overview

The Exchange Information Requirement (EIR) specifies the base requirements of Watercare for Building Information Modelling in line with ISO19650 and Watercare's associated standards.

Watercare's associated standards are:

- Data and asset information standard, doc no. AI (Watercare's AIR and OIR)
- CAD manual, doc.no. 7363

This document has a number of sections that must be tailored by the Appointing Party (Watercare representative, BIM advisor, Consultant lead) to the specific project by completing the templates within to identify any project specific requirements. These include, but are not limited to:

- General project information
- Project schedule
- Key contacts
- Responsibility matrix

EIR authority

This document shall be submitted as completed during tender as part of the employer's requirements or project information pack and is required to be agreed and accepted as the employer's Exchange Information Requirements (EIR) in the terms of engagement to the contract.

The relevant supply chain as part of the project shall also have read and understood the requirements of the EIR.

This document provides the structure for the development of the following documents by the appointed parties:

- BIM execution plan (BEP)
- Master information delivery plan
- Task information plan associated with specific information activities

Table of contents

1. General project information

Project name	
Project number	
Project address	
Type of asset	
Project description	
Phasing	
Form of contract	
Project number	
Design start	
Site construction start	
Site completion/handover	
Project brief	
Project execution plan	

2. BIM procurement and employing party engagement

2.1 BIM vision and goals

To provide structured information and a defined process for collaborating in the delivery of BIM to Watercare that can be relied on for life of the asset.

Priority	Goal/vision description	How	BIM uses
High	Optimising the design	Visualisation of the design and 3D rehearsals. Clash detection. Sustainability and carbon footprint reduction	• Phase planning • Design authoring • Design review
High	Stakeholder engagement	Virtual walk-throughs as a communications aid	• 3D coordination • Design review
High	Support safety in design	3D visual aid, HAZOP reviews	Design review
Medium	Optimise commissioning	Digital rehearsal of commissioning, scheduling. Performance verification and recording	• 3D coordination • Record modelling
Medium	Optimise handover	Digital as-built model with site verified information.	Record modelling
High	Respect overall budget to deliver the infrastructure	Reduced errors and rework. Improved construction coordination and construction rehearsal	• Cost estimation • Progress payment and variation management • 3D coordination

Priority	Goal/vision description	How	BIM uses
			• Risk management
Medium	Operational excellence	Operator training, maintenance planning and rehearsals. Replacement and upgrade simulation and management. Digital twin and asset performance optimisation	• Record modelling • 3D coordination

2.2 BIM competency requirements

The purpose of this table is to identify the value, experience and competencies required of the parties responsible for delivering the BIM enablement.

BIM use	Value to Watercare	Responsible parties	Value to parties	Competencies required to implement
Design authoring	Medium			• Proficient in creating and managing a AIM • Design and construction experience using BIM
Design review	High			• Manipulate, navigate and review in 3D model space • Strong understanding of Watercare facilities and system processes • Communication with stakeholders
3D Coordination	High			• Manipulate, navigate and review in 3D model space • Clash detection • Digital rehearsal of construction activities / sequences
Cost estimation	High			• Output quantities form the model for accurate cost estimation • Adjust cost plan as design evolves

BIM use	Value to Watercare	Responsible parties	Value to parties	Competencies required to implement
Record modelling	High			• 3D model manipulation • Updating design and construction records
Digital rehearsal	Medium			• Knowledge of, and using in 4D software: • Construction planning • Health and safety in construction and operation planning • Maintenance planning
Progress claim handling	Medium			3D model updates in construction and overlaying model in construction to accurately reflect progress for claim management
Other:				

2.3 Applicable standards

Standard	Applicable
ISO 19650	Yes
BS1192-4 – COBie	Yes
ISO 55000	
Other:	

2.4 Document delivery in response to EIR

Document deliverable as part of response to the EIR:

- BIM execution plan (BEP)
- Master information delivery plan
- Task information plan associated with specific information activities

3. Project schedule

Record proposed major milestones during the project life cycle:

Project phase	Est. start date	Est. completion date	BIM meetings
Project establishment			
Concept design			
Development design			
Detailed design			
Procurement			
Construction			
Handover			
Operation			

4. Key project contacts

Role	Discipline	Company name	Contact name	Contact e-mail
Watercare representative				
Project manager				
BIM Lead				
Lead consultant				
Other:				

5. Responsibility matrix

Role	Responsibilities
Watercare representative (PIM receiver)	Define the EIR, OIR and AIR and structured data requirements
	Define the IDP – Watercare's design delivery process is defined in the PMF
	Establish the CDE
	Authorise information sharing and publishing
	Accept or reject information exchanges to the CDE
	Validate the AIM
Project manager	Assure delivery of information exchanges
	Confirm suppliers' ability to deliver the information requirements
	Accept or reject information exchanges within the CDE
BIM Lead	Facilitate use of the BEP
	Ensure model files are developed in accordance with the BEP
	Validate LOD and LOI
	Perform model audits and communicate issues the model element authors
	Manage the BIM execution planning and coordinate model review meetings
Lead designer	Co-ordinate delivery of all design information

	Manage information development and information approvals with Watercare
	Confirm design deliverables
	Confirms status of information within the CDE
Other:	

6. Information management

6.1 Common data environment (CDE)

CDE platform	Responsible party	Project phase
Bentley ProjectWise	Watercare	Project establishment

6.2 Data exchange

The supplier must confirm their ability to use the below platforms in the BEP and identify any additional resources to meet these outputs.

BIM use	Approximate due stage	Format	Comments
Cost estimation		IFC	
Design authoring		IFC	
3D co-ordination		IFC	
2D graphical		PDF and DWG	
Documentation		PDF, DOC	
Non-graphical asset data		COBie	The supplier must align their model to be consistent with BS1192-4
Other:			

6.3 Levels of information need

6.3.1 Model element authoring (Levels of development)

LOD 100	Conceptual
LOD 200	Approximate geometry
LOD 300	Design specific / precise geometry
LOD 350	Precise geometry and interfaces
LOD 400	Fabrication and assembly
LOD 500	Field verified

Phase Model Element	**Concept**	**Preliminary design**	**Developed design**	**Detailed design**	**Construction**	**Operation**	**Notes/comments**
Spatial / Site							
Boundaries	100	500	500				
Topography, grids and levels	100	500	500				
Landscaping	100	200	200	200			
Roads	100	300	300	300	500		

Phase Model Element	Concept	Preliminary design	Developed design	Detailed design	Construction	Operation	Notes/comments
Parking	100	300	300	300	500		
Paths	100	300	300	300	500		
Fences	100	200	300	300	500		
Civil structure							
Excavation	200	200	200	200	500		
Foundations	200	200	300	350	500		
Retaining walls	200	200	300	300			
Walls		200	300	300			
Subsoil drainage		200	300	300			
Floors	200	200	300	350			
Columns	200	200	300	350			
Beams	200	200	300	350			
Framing	200	200	300	300			
Penetrations		200	300	300			

Phase Model Element	Concept	Preliminary design	Developed design	Detailed design	Construction	Operation	Notes/comments
Stairs, ladders and ramps	200	200	300	400	500		
Platforms and landings	200	200	300	400	500		
Roof	200	200	300	350			
Seismic bracing		200	300	400	500		
Chambers and manholes	200	200	300	400	500		
Maintenance and access zones	200	200	300	300			
Building services							
Plumbing systems	200	200	200	300		200	
Electrical systems	200	200	200	300		200	
Security system	200	200	200	300		200	
Firefighting system	200	200	200	300		200	
Lifts and escalators	200	200	200	300		200	
Mechanical plant and field							

Phase Model Element	Concept	Preliminary design	Developed design	Detailed design	Construction	Operation	Notes/comments
Valves and actuators	200	200	300	350		300	
Pumps	200	200	300	350		300	
Pipework and ducting	200	200	300	350	500	300	
Pipe fittings	200	200	300	350		300	
Fixings and brackets	200	200	300	350	500	300	
Cranes and hoists	200	200	300	350		300	
Machinery	200	200	300	350		300	
Safety equipment	200	200	300	350	500	300	
HVAC	200	200	300	350		300	
Electrical plant and field							
In-cabinet control and electrical equipment	200	200	200	200		200	
Electrical and control circuitry/cables outside cabinets	200	200	300	350	500	300	
Electrical and control cabinets (exterior)	200	200	300	300		200	

Phase Model Element	Concept	Preliminary design	Developed design	Detailed design	Construction	Operation	Notes/comments
Field emergency buttons	200	200	200	300	500	300	
Motors	200	200	200	300		300	
Lighting	200	200	300	300		300	
Cable trays	200	200	300	300	500	300	
Instrumentation plant and field							
All instruments	100	200	300	300		300	

6.3.2 Level of information

The level of information shall be supplied as specified in the following Watercare documents:

Document name	No.
Data and asset information standard	AI
CAD manual	7363