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Project Information Requirements

Pr10360

Document Owner	Head of Asset Management
Document Author	Infrastructure Standards Manager
Subject Matter Expert	Infrastructure Standards Manager
References	Refer to Section 5 of this document

Version Review

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1. Purpose

Unitywater is continuously improving its operational and maintenance activities. These processes rely on the Delivery Team, delivering quality asset information in line with Unitywater standards.

This asset information, produced by the Delivery Team, includes Building Information Model's (BIM/s), smart Process and Instrumentation Diagrams (P&ID), drawings, schedules, specifications, Operation and Maintenance manuals (O&M) and other asset-related data defined as Level of Information (LOI). This data is collectively known as the Project Information Model (PIM).

The Project Information Requirements (PIR) document defines Unitywater information requirements when using Building Information Modelling (BIM) and Digital Engineering (DE). The PIR must be used by the Delivery Team (Designers/Contractor/Trades) as the basis for determining how, when and what information shall be created using Digital Engineering (DE) processes.

The PIR explains how information must be structured, managed and delivered by each Appointed Party within the broader Delivery Team. The Lead Appointed Party must (and must ensure that the Delivery Team) apply all appropriate Digital Engineering methodologies to achieve the objectives and uses set out in this document. Unitywater or their representative will audit the Project Information Model to ensure compliance.

Typically, the Contractor, as the Lead Appointed Party during construction, holds the responsibility of ensuring the final BIM/s and other asset information deliverables align to the PIR and other Unitywater project documents and standards.

This document is structured into four main sections:

- Purpose/Scope
- Commercial
- Management Details
- Technical.

Unitywater requires the organisation and digitisation of information for buildings, and civil engineering works using BIM (ISO 19650 series) are implemented for the design, construction and commissioning phases of the Project. Those unfamiliar with the ISO 19650 series, are advised to read those standards before proceeding.

Unitywater shall provide guidance on this PIR to prospective tenderers during the Tender, EOI/RFQ phases and to the successful Lead Appointed Party and Delivery Team, post-award.

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1.1 Unitywater Digital Engineering Requirements

Unitywater is focused on the following Digital Engineering uses outcomes and benefits.

Unitywater requires the Delivery Team to maximise the use of BIM during design, construction and commissioning for:

a) **Stakeholder engagement** – the use of 2D drawings with 3D BIM/s, static renders and interactive walk-through of the proposed asset/ facility/ development to explain the Project.

b) **Coordination and design change management** – the use of a Common Data Environment (CDE) to manage information and exchanges. The 3D BIM/s must be used to detect, document and resolve design, construction and coordination issues before and during construction.

c) **Safety in Design/Hazard identification** - use the 3D BIM/s as the centrepiece of the safety and hazard reviews, tracking and resolution.

d) **Asset status identification** – use the 3D BIM/s to document which assets are:

    a. existing (to be retained) and clearly marked as operational, abandoned (no future use) or preserved (for future use).

    b. decommissioned (to be removed/demolished).

    c. new (proposed to be built/new works).

e) **Optimised handover** – information exchanges (i.e. drawings, 3D BIM/s and data) must be documented in the Task Information Delivery Plans (TIDP's) and a central Master Information Delivery Plan (MIDP) during design and construction phases. These plans provide Unitywater with the types of asset information that will be delivered at handover.

f) **Reliable, integrated and complete as-built information** – the integration of 3D BIM/s, Level of Information (LOI), smart P&ID's, drawings, schedules, specifications and construction programs including critical asset data including the capture, tracking, addressing and management of defects.

Any other Unitywater project-specific requirements for BIM/DE, as outlined in the relevant project Principal Project Requirements (PPR) or Concept Business Case (CBC), must have an approach documented in the DEXP.

1.2 Internal Digital Engineering uses by the Delivery Team

The use of Digital Engineering processes can also benefit the design and construction teams. Once collaboratively agreed, the DEXP is a contractually binding document, so any use of BIM/DE not available to Unitywater must be noted in the DEXP by the Delivery Team.

The BIM/DE uses nominated in Section 1.1 of the PIR cannot be excluded from the DEXP.

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1.3   Process

As part of the Lead Appointed Party's response to the PIR, PPR, CBC or other briefing documents, a pre-contract award DEXP must be created from the Unitywater Pr10382 - Digital Engineering Execution Plan, i.e. as part of the tender submission or Expression of Interest (EOI).

This enables Unitywater to assess the approach to DE, by each of the Tendering Parties in a standardise form using the compare function in Microsoft Word.

No other form of DEXP is acceptable.

A compliant pre-contract award DEXP, created by the Lead Appointed Party, will demonstrate how each Appointed Party will achieve the requirements outlined in this PIR (and other Unitywater documents). The pre-contract DEXP must include the following:

a) Assigned information management roles, responsibilities and relevant company authorities.

b) Standards, methods and procedures including collaboration practices.

c) Task Information Delivery Plans (TIDP's).

d) Capability, capacity and competence including the nominated Project DE Manager.

e) Software, versions and information exchange formats.

f) Proposed staged approach for delivery of the Information Exchanges and PIM.

g) Data security protocols/procedures.

h) Reporting requirements (e.g. content and frequency of status updates).

Figure 1: DEXP development

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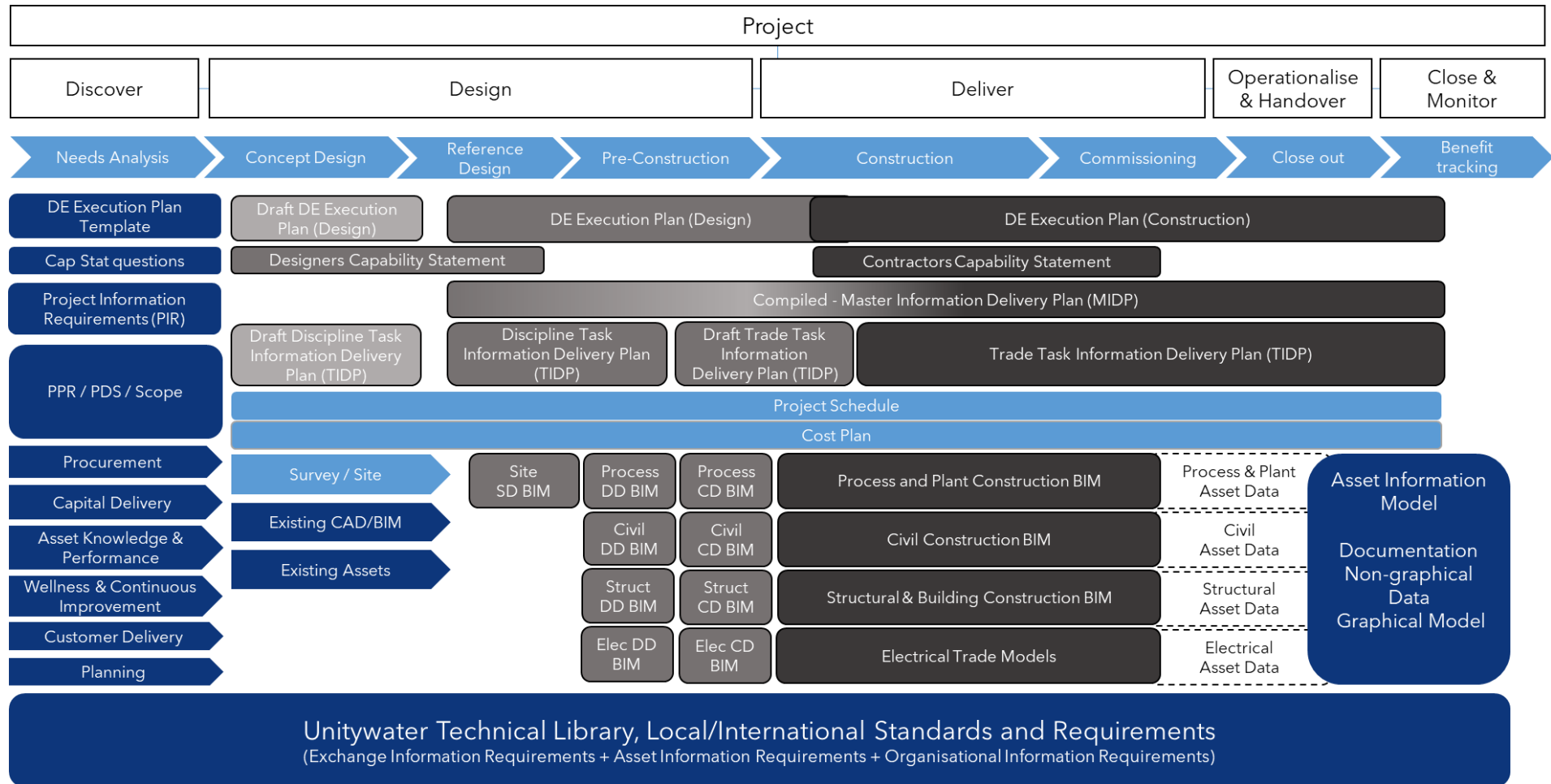
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Changes during project delivery are inevitable, such as new Delivery Team members joining the Project (i.e. Contractor appointment), the Project DE Manager shall revise the DEXP prior to each new project stage.

Once an agreement between Appointed Parties has been reached, Unitywater will review and either:

a) Endorse the DEXP revision.

b) Require changes to the DEXP and reissue.

The DEXP revisions can only occur at the following decision points:

c) When a newly Appointed Party joins (or leaves) the Delivery Team.

d) Before the start of any project stage (Reference Design, Pre-Construction, Construction, Commissioning) and at the end of the Project (Handover).

e) When a change (client, design, or contractor/vendor initiated) occurs that has a material impact on the previously agreed time, cost and/or information deliverables.

The successful Delivery Team, post-award, must continue to develop the DEXP in consultation with Unitywater (strictly within fifteen (15) days for the first draft). The DEXP forms the primary instrument to manage Digital Engineering on the Project and is contractually binding.

Unitywater will review the capability, capacity and competence of the Delivery team through the completion of the Digital Engineering – Previous Experience section of the pre-contract DEXP, before award.

1.4   Key Information and Capability Principles

Unitywater requires the Delivery Team to adhere to and demonstrate throughout project delivery the following:

a) A Common Data Environment (CDE) for the Project must be set up and hosted by the Lead Appointed Party. This shall be secure and structured with managed access. Data and information shall be clearly categorised as per Unitywater Level of Information (LOI) requirements.

b) Object-based design and construction BIM/s shall be created to satisfy the provisions of this document and to drive efficiency and predictability throughout the Project. BIM shall be scalable, interoperable and available for review using complimentary Federated Model reviewing software.

c) The Lead Appointed Party must nominate a dedicated Project Digital Engineering Manager to manage the information requirements and Digital Engineering processes for the Project.

d) The responsibility for the production, development and implementation of the DEXP lies with the Lead Appointed Party. They shall ensure that the contents of the DEXP are collaboratively developed with their supply chain. These parties shall agree to the requirements and have sufficient capacity to meet the criteria outlined in the DEXP and PIR.

e) If there are any requirements of this PIR that cannot be met due to capability or technical reasons, these must be clearly stated in the returnable pre-contract DEXP. Post-award these items will be addressed and negotiated with the Unitywater Project Manager before final acceptance of the DEXP as a contractually binding document.

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2. Scope

This document intends to provide Unitywater Project Information Requirements (PIR) to support the implementation of Digital Engineering across most of the asset portfolio, including those assets gifted to Unitywater by developers (where possible).

This use of Digital Engineering will support the creation of the Project Information Model (PIM) and Asset Information Model (AIM) as defined in the ISO19650 series. For clarity, the PIM is defined as all the information needed to design and construct the asset, including relevant asset information.
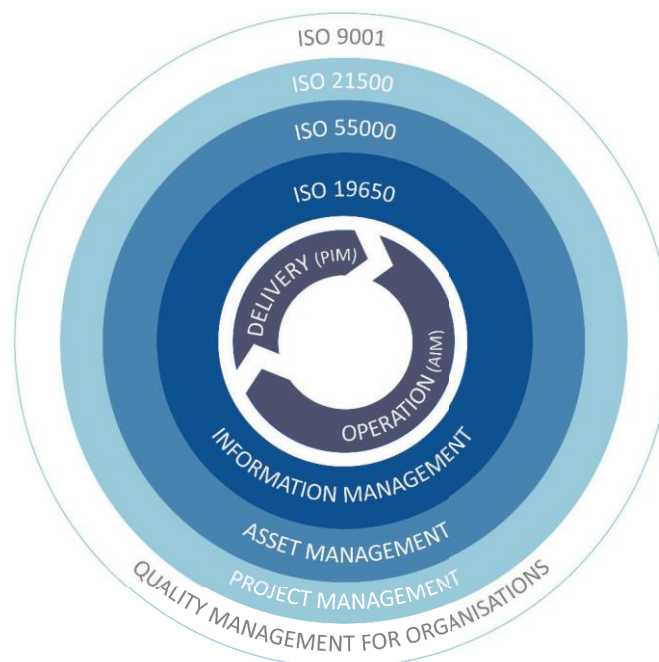
Figure 2: Project Information Model & Asset Information Model

(source: ANZ Guide to ISO 19650)

Digital Engineering information will be communicated through graphical geometric BIM/s, P&ID, 2D documents (e.g. drawings, schedules, specifications) and tabular data.

Terminology relating to Digital Engineering is following the terms used in the relevant national and international standards (see Section 6). This document shall be read in conjunction with other Unitywater requirements documentation and the specific Project Description Statement, Project Brief or Principal Project Requirements (PPR).

Unitywater intends to utilise the Digital Engineering information developed for the Project for future upgrades of the asset. It is, therefore, important that this information is scalable and enables enhancement over time.

Unitywater utilises Maximo for asset management and seeks to progressively extract information from the Digital Engineering processes during the design and construction of the Project (defined as a data drop). Ultimately, the BIM will be connected to Maximo for ongoing operational management for the life of the asset.

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3. Responsibilities and Authorities

Position title	Roles and responsibilities
Head of Asset Management	As Document Owner responsible for: • Conducting and/or delegating regular reviews to ensure this document and related resources (e.g. forms, website content) remain fit for purpose, consistent and current. • Approving this document for publication. • Ensuring all relevant stakeholders and team members have been consulted and feedback is captured and actioned (where applicable). • Ensuring appropriate communication and/or training is provided to relevant team members when implementing a new, amended or obsolete document (where applicable). • Monitoring compliance with internal/external requirements (e.g. monitor legislation changes and assess/update this document when required).
Team members	• Working in accordance with this document. • Advising the Document Owner if this procedure is not consistent with current practices. • Where possible, minimise printing and/or avoid creating duplicate copies of this document. Ensure current versions are sourced from the Document Centre.

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4. Commercial

Unitywater approach to Digital Engineering is outlined in this document. Refer to the main contract documentation for project information and proposed project schedule. The Lead Appointed Party will be required to submit data (as a minimum) to support the information requirements in Section 5, and key activities set out below.

Nothing in this document is intended to relieve the Delivery Team of their responsibility to comply with Unitywater and local standards (and embedded standards) such as SEQ Water Supply and Sewerage Design and Construction Code.

Ensuring Unitywater has accurate as-built information is critical to ongoing operations of assets. The below is required for all projects regardless of scale.

a) Providing as-built documentation (2D Drawings, BIM/s Asset Data and O&M Manuals) are to be supplied at commissioning. See SEQ Asset Information Specification[1].

b) The Lead Appointed Party is responsible for enabling, creating and progressively delivering information that increases in detail (geometric and attributed data) from design through construction to an as-built status.

c) Asset data must be progressively delivered to Unitywater as the project documentation develops for use with Unitywater's Asset Management Systems. This is termed Level of Information (LOI) as defined in Section 8.11.

d) Unitywater will audit the Delivery Team information deliverables at defined project hold points to ensure compliance with the PIR, PPR and other Digital Engineering related documents such as Digital Engineering Execution Plan (DEXP). The Delivery Team must remedy errors and omissions before proceeding to the next project phase.

e) All trade/engineering disciplines shall create 2-dimensional drawings that are derived from the dimensionally accurate BIM. P&ID's must be linked to the BIM to ensure consistency of information. Documentation and data cannot be created using separate 2D processes and detached data. Any drawings (e.g. typical details) that are developed outside of the BIM are to be clearly identified in the DEXP and approved by Unitywater.

f) Existing assets being abandoned or preserved must also be incorporated into the BIM. The level of detail for these existing assets is limited to the outline geometry extents. Refurbished, retained, abandoned and preserved existing assets must include an attributed field for this status (see Level of Information LOI).

g) As a minimum, the Lead Appointed Party shall provide a pre-contract DEXP as part of the RFP or EOI response using Unitywater DEXP template provided within fifteen (15) days of award. The DEXP will document the Digital Engineering process, procedures, standards and information deliverable.

h) The Lead Appointed Party must nominate a dedicated resource to manage Digital Engineering, the Project DE Manager. They will oversee, coordinate and report to Unitywater (minimum fortnightly) on the Digital Engineering process employed and upcoming deliverables, ensuring that the consultants, contractor and subcontractors (collectively the Delivery Team) engaged for the Project conform to the content of the DEXP which must directly respond to this PIR.

i) The Lead Appointed Party is responsible for creating smart P&ID's that are linked to the 3D geometric BIM/s/s.

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[1] www.seqcode.com.au/standards

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4.1 Auditing and Validation

Unitywater Project Manager (or a representative) will audit the information created by the Delivery Team at major delivery stages as defined in the contract documentation.

a) An audit report will be created highlighting any errors or omissions based on the requirements of this document and the post-award DEXP.

b) The Lead Appointed Party will nominate the time required to remedy these issues to Unitywater (maximum is five (5) business days).

c) Unitywater will not allow the Project to progress through project gates until all information has been validated as complete to the standards nominated in Section 5.

5. References

5.1 General

The following reference materials shall be reviewed in conjunction with this document. Nothing in this document is intended to relieve the Delivery Team of their responsibility to comply with Unitywater Standards and Specifications and local standards (and embedded standards) such as:

a) Pr8843 - Specification for Drawing, Document and Equipment Tag Numbering.
b) Pr11211 - Specification for Commissioning and Handover of Active and Passive Assets
c) Pr9080 - Specification for CAD/BIM Drafting and Modelling Standards
d) Pr10382 - Digital Engineering Execution Plan
e) Pr10017 - Maximo Data Configuration Standard
f) SEQ Water Supply and Sewerage Design & Construction Code - Asset Information Specification
g) Unitywater Asset Data Digital Template (see Annex A).

5.2 Codes of Practice (ratified by Legislation)

a) SEQ WS&S D&C Code – Water Supply, Sewerage and Sewage Pumping Station Codes, including the Design Criteria and Infrastructure Products and Materials Lists (IPAM)[2]

b) SEQ WS&S D&C Code – Asset Information Specification[3].

5.3 International and Australian Standards

a) AS 5488-2013 Classification of Subsurface Utility Information (SUI)[4]
b) ISO 55000[5]
c) ISO 19650 – Part 1[6]

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[2] http://www.seqcode.com.au/
[3] http://www.seqcode.com.au/standards/
[4] https://infostore.saiglobal.com/en-au/standards/as-5488-1-2019-1148524_saig_as_as_2724404/
[5] https://www.iso.org/standard/55088.html
[6] https://www.iso.org/standard/68078.html

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d) ISO 19650 – Part 2[7].

5.4 Other References

a) BIM Forum - Level of Development Specification October 2019[8].

6. Definitions/Abbreviations

Term	Meaning
3D	The task of modelling using BIM enabled tools to produce a 3D representation of the asset.
4D	The task of producing animations or graphically representing the BIM with an electronic version of the project schedule to illustrate the sequence of installation. To be performed by the Contractor
5D	The task of linking the BIM to an electronic version of the cost plan.
6D	The task of linking to or embedding the BIM with asset information. This information can be exported to input into the Asset Information Model.
ADAC	Asset Design As Constructed information
AIM	Asset Information Model – as per ISO19650. Final coordinated and verified asset information deliverables including graphical and non-graphical data used for management reporting and data exchange with other systems
AIR	Asset Information Requirements – as per ISO 19650 - data and information requirements of the organisation in relation to the asset(s) it is responsible for. The AIR is a subset of the Organisational Information Requirements
AM	Asset Management – A systematic process of deploying, operating, maintaining, upgrading, and disposing of assets cost-effectively
Appointing Party	Typically, Unitywater appoints all appointed parties as the Client entity. The term Unitywater is used throughout documentation to reflect this
Appointed Party	Provider of information concerning works, goods or services to the Appointing Party – typically the designers/engineering, contractor and it's sub-contractors
BIM	Building Information Model – means all models (including, without limitation, native BIM/s) which the Delivery Team are required to produce and deliver in accordance with the Digital Engineering Execution Plan.
CapEx	Capital Expenditure – A one off cost / expense
CDE	Common Data Environment – A single source of information for any given project, used to collect, manage and disseminate all relevant approved project documents for multi-disciplinary teams in a managed process
CAD	Computer Aided Design/Drafting – The process of creating a technical drawing with the use of computer software
CAFM	Computer Aided Facilities Management – The support of facility management by information technology
DE	Digital Engineering – the process of using digital tools to develop information and data rich deliverables when designing and constructing assets (e.g. BIM, GIS, CAD, Project Controls, Cost, Time)

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[7] https://www.iso.org/standard/68080.html
[8] https://bimforum.agc.org/lod/

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Term	Meaning
Delivery Team	Lead Appointed Party and their appointed parties. The size and structure of each delivery team are in response to the scale and complexity of the asset management or project delivery activities.
DEXP	Digital Engineering Execution Plan – A detailed plan that documents the use of BIM, GIS and CAD on a project. It outlines who is responsible for what in the Digital Engineering process, when in the process they are responsible for it, and how they will execute Unitywater requirements
EOI	Expression of Interest
FM	Facility Management – Field devoted to the coordination of space, infrastructure, people and organisation, often associated with the administration of buildings
Federated Model	A combined Building Information Model containing multiple discipline and trade BIM/s to facilitate coordination and data integration
GIS	Geographic Information Systems – A computer system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data
Gifted Assets	Assets that are built by a developer and passed to Unitywater for ongoing maintenance
IFC	Issued For Construction documentation
.ifc	Industry Foundation Classes – Open BIM file format that can be read by the majority of BIM authoring tools
Key Decision	A decision that the business values as a priority and must be answered through the delivery and ongoing operations of the asset
Laser Scanning	The process of capturing digital information about the shape of an object with equipment that uses a laser to measure the distance between itself and the object
Lead Appointed Party	A lead Appointed Party should be identified for each Delivery Team. This role may change, dependant on the procurement route chosen (i.e. transfer from the engineer (design) to the contractor (construction)
LOD	Level of Development – The progressive development of the objects data and geometric accuracy within the BIM
LOI	Level of Information – the specific data associated with the individual objects within the BIM. This must be transferred to Unitywater through Asset Data Template
MIDP	Master Information Delivery Plan
OIR	Organisational Information Requirements – all the information requirements that Unitywater needs to run its business – a subset of these are the Asset Information Requirements which form part of the Project Information Requirements.
Operate and Maintain / Operations and Maintenance	The care and minor maintenance of assets or facilities using procedures that do not require detailed technical knowledge of the asset's function and design.
OpEx	Operational Expenditure - An ongoing cost/expense
PIM	Project Information Model – as per ISO 19650. An Information model developed during the design and construction phase of a project, consisting of documentation, non-graphical information and graphical information, defining the delivered Project typically using BIM, CAD & GIS

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PIR	Project Information Requirements – Unitywater's Information requirements for BIM/DE to enable the creation and management of the Project Information Model
P&ID	Piping and Instrumentation Diagrams
PPR	Principal Project Requirements – Unitywater requirements for a specific project.
Project Manager	Unitywater assigned resource to ensure the Delivery Team compiles with the PIR and DEXP enabling the creation of the PIM and AIM
Project DE Manager	A Lead Appointed Party provided resource to manage the Digital Engineering and asset information processes on the Project in collaboration with the Unitywater Project Manager and Asset Manager
CBC	Concept Business Case – smaller projects typically use a simplified briefing document
RPEQ	Registered Professional Engineer of Queensland
RFP	Request For Proposals
SiD	Safety in Design
STP	Sewage Treatment Plant
TIDP	Task Information Delivery Plan

7.   Management Details

7.1   Digital Engineering Execution Plan Pre-award

The Lead Appointed Party must prepare, develop and manage the DEXP for the Project.

The pre-award DEXP must use the Unitywater DEXP template Pr10382 - Digital Engineering Execution Plan.

The Lead Appointed Party must ensure that the DEXP addresses the requirements of this PIR and other contract documents.

The DEXP will reference the relevant sections of this PIR for ease of tender award assessment by Unitywater. The following must be addressed in the pre-award DEXP:

a)   The objectives and goals for the Project, aligned with this PIR and project scope.

b)   The specific uses of Digital Engineering by the Delivery Team.

c)   The DE experience of the tendering parties on previous projects, with client referees.

d)   Management requirements (roles, responsibilities and obligations).

e)   Software selections, file format, file exchange requirements (which are consistent with the conditions set out in this Section 8.1).

f)   Specify relevant industry standards which have been applied (and will be used) in the development and execution of BIM/DE for the Project.

g)   Task Information Delivery Plans (TIDP) of each information container, separated out by discipline/trade, which includes milestones and submittals. These TIDP's are to be combined into a Master Information Delivery Plan (MIDP) by the Lead Appointed Party, post award.

h)   The process to communicate the design to project stakeholders in 3D and 2D (both internal and external).

i)   Information structure, naming and numbering conventions (nomenclature) and any shared resources used.

j)   Plan for sharing, storage and retrieval, and data security of the Delivery Team CDE.

k)   Methodology for ensuring the validation of BIM and CAD files, project-wide.

l)   Communication and collaboration strategies amongst the Lead Appointed Party, Appointed Parties, Project DE Manager and Unitywater Project Manager (or representative).

m)   Model and information development requirements (LOD and LOI levels).

n)   Required elements and outcomes for clash avoidance and detection.

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7.2   Digital Engineering Execution Plan Post-award

It is the responsibility of each Appointed Party to collaboratively and jointly develop the post-contract award DEXP, TIDP and MIDP with Unitywater. Within fifteen (15) days of award, the successful Lead Appointed Party will collaboratively update the pre-award DEXP, TIDP's and create a Master Information Delivery Plan in consultation with Unitywater stakeholders.

These documents form the contractual obligations for Digital Engineering on the Project and ensure a common understanding of the requirements and deliverables, such that project objectives are achieved.

The DEXP will need to be endorsed and signed by each of the relevant Appointed Parties authorised representatives as a contractual deliverable. Any changes to the DEXP must be documented and agreed to by all parties, prior to endorsement by Unitywater.

Unitywater expects the DEXP (including any TIDP's and MIDP) shall be updated at specific project milestones. This includes:

a)   prior to any design or construction activities taking place

b)   prior to the next major milestone taking place (i.e. from design to construction)

c)   prior to commissioning

d)   Post-construction and commissioning – as a record of the final BIM/DE approach taken by the design and construction teams to design, develop and construct the Project in BIM/DE.

7.3   Quality Control

The pre-contract DEXP shall detail BIM/s and data quality control, consideration shall be given to:

a)   quality assurance/control procedures

b)   software used to support quality control procedures

c)   retaining data integrity/accuracy in BIM/s format and resultant 2D output

d)   the Lead Appointed Party shall provide evidence to Unitywater Project Manager that the activities identified in this PIR and in the DEXP are taking place throughout the Project.

7.4   Roles and Responsibilities

For information to be managed effectively for the Project, roles and responsibilities of the Delivery Team must be clearly defined in the DEXP. Depending on the scale, complexity and Project type, this will vary on every Project.

The Lead Appointed Party shall ensure the following roles and responsibilities as they relate to Digital Engineering are committed to the Project:

a)   Project DE Manager

b)   Consultant (Discipline) Model Managers

c)   Trade Modellers.

The pre-contract DEXP shall define the Delivery Team proposed Digital Engineering roles and responsibilities for each discipline and trade. This must detail how these roles will enable the delivery and coordination of the Project to meet this PIR.

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It is therefore required that each discipline must allow for a nominated Model Manager to coordinate the development of the discipline-specific Digital Engineering in close consultation with the Project DE Manager.

The Lead Appointed Party must nominate an overall resource, the Project DE Manager for design and construction phases. Two different individuals may resource this role – one for design (lead consultant) and a different resource for construction (contractor) however there must always be an allocated resource undertaking this role and sufficient handover time as the resource changes.

The Project DE Manager will oversee and report on the Digital Engineering process to Unitywater (minimum fortnightly), ensuring that the Delivery Team conform to the content of the DEXP.

The following conditions apply:

a) any replacement of the Project DE Manager must have prior written approval by Unitywater

b) if the resource changes a written handover plan shall be submitted to Unitywater for approval

c) the Digital Engineering management experience of the resource must be provided within the DEXP stating the years, projects, experience, technical and communication abilities

d) the DEXP shall nominate the anticipated time this resource will spend per week, by stage, by deliverable on Digital Engineering related tasks.

7.5   Digital Engineering Meetings

The Lead Appointed Party shall allow sufficient time for Digital Engineering meetings which shall be incorporated into traditional design meetings. These shall be documented in the pre-award DEXP. As a minimum Unitywater anticipates the following meeting requirements.

Table 1: Digital Engineering Meetings

Meeting Type	Frequency / Stage
Digital Engineering Execution Planning	Post contract award, a review cycle until each party agrees with its contents. Final DEXP required 15 days post award. Revisions only as additional Appointed Parties (i.e. contractor award) become involved with the Project and subsequent to Unitywater approval.
Safety in Design Workshops	As per Project delivery schedule.
3D Coordination / Clash / Issue Resolution	As a minimum, this shall be a standing agenda item on the design review meeting agenda and prior to each project delivery milestone from the end of reference design onwards to handover.
3D Design Review Meetings	It is expected that the Federated Model will be used in Unitywater and design team meetings in accordance with the Project delivery schedule.

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7.6   Model Review Platform

The Project DE Manager must combine discipline and trade BIM/s into a single Federated Model. This federating process must be documented in the pre-contract DEXP. This Federated Model will form the basis for all design reviews and must remain in alignment with project progress and match any associated discipline drawings.

It is expected that the Federated Model is used internally by each Consultant/Trade and Contractor to coordinate and as such should be well organised with useful viewpoints and search sets, relevant to the specific project needs.

Unitywater intends the Delivery Team to use the Federated Model as a tool for communication and as such shall track comments and issues through the use of a collaboration tool.

At a minimum, the Project DE Manager must submit to Unitywater fortnightly Federated Model. These will be used primarily for progress tracking, data validation against this PIR and general scope review.

7.7   Coordination and Clash Detection

Design and Construction clash detection reviews shall be carried out intermittently as required to satisfy design development and to minimise project risk and waste. As a minimum, this shall take place twice per month, from the end of Concept Design onwards.

The focus shall be on hard clashes, construction tolerances and safe working/maintenance zones.

The pre-award DEXP shall identify details of the clash detection process, including:

    a) proposed software to be used for model federation and clash detection/management

    b) the clash detection/management/resolution process

    c) responsibilities

    d) outputs

    e) tolerance strategy

    f) clash resolution process.

7.8   Validation

The Delivery Team is required to provide evidence that an element and field validation process has been implemented and adhered to. Element validation includes proof that the individual elements contained within the BIM/s represent the corresponding element that has been installed. Field Validation describes how as constructed information from site is recorded and documented back into the BIM/s.

Asset Validation will comprise of a process which cross-references the asset in the BIM/s against the assets on-site; this may also include adding the barcode to the asset register and data field in the Federated Model. This process also needs to include a gap analysis and closeout procedure.

7.8.1   Works as Executed - Measured vs Visual

There is a requirement during the 'Works as Executed' modelling process to record specific elements as measured 'Works as Executed'. These specific elements and the validity of their associated 'Works as Executed' information will typically be considered critical to future capacity upgrades, critical pieces of maintainable equipment, or dense maintenance areas with specific maintenance safety requirements.

Alternatively, certain elements that Unitywater and the Contractor may agree to, within the built asset, may only require a visual 'Works as Executed'. This is a process that the Contractor should define as part of their Tender submission through the DEXP; it must be explicit, transparent and auditable. An example of this could be a reporting mechanism whereby a photograph of the 'Works as Executed' state is compared against a view of the BIM/s.

7.8.2   Measured

For measured 'Works as Executed', specified elements shall be surveyed using traditional survey techniques or 3D laser scanning and compared against modelled elements. Deviations between modelled elements and the 'Works as Executed' condition shall be updated in the 'Works as Executed' BIM to reflect any deviations +/-20mm unless a higher Level of Accuracy (LOA) is required, such as pipes, walkways and equipment. Timing of a measured 'Works as Executed' is also to be specified in the DEXP, for example pre-pour, post-pour.

7.8.3   Visual

For visual 'Works as Executed', specified elements shall be visually checked for correct position, orientation, and alignment, with any recognisable deviations from the modelled element recorded and updated in the BIM/s to reflect the 'Works as Executed' condition. Visual 'Works as Executed' may include some basic measurement for position, alignment and level.

The requirement for visual or measured 'Works as Executed' is to be recorded in the DEXP during the Tender Submission stage.

7.9   Existing Assets

All existing assets being replaced, refurbished or retained in the proposed brownfield project must be incorporated into the Federated Model by the Delivery Team and "verified". A licenced surveyor must capture these existing assets by means of laser scanning, ground-penetrating radar (GPR) or similar, with a point spacing of no less than this specified in the Unitywater - Specification for CAD/BIM Drafting and Modelling Standards (Pr9080).

Level of Information (LOI) requirements for existing assets are as follows (across all asset classifications).

Table 2: Existing Assets LOI 1

Attribute	Data Type	Char Max Length
ASSETNUM	UPPER	12
DESCRIPTION	ALN	100
LOCATIONNUM	UPPER	12
LOCATION DESCRIPTION	ALN	100
FACILITYNUM	UPPER	12
FACILITY DESCRIPTION	ALN	100
PROCESS LOCATIONNUM	UPPER	12
PROCESS LOCATION DESCRIPTION	ALN	100

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7.10 Concept Design

The Delivery Team must utilise Digital Engineering during concept design to:

a) Define the concept design, allowing Unitywater to understand the proposed options.

b) Define existing assets to be retained, decommissioned or abandoned as per Section 7.8.3 and provide to Unitywater in Unitywater Asset Data Digital Template.

c) Prepare a 'live' Federated Model that may be reviewed by Unitywater and their key stakeholders. All parties are to utilise the Federated Model for comments and closure.

d) Review preliminary clash avoidance strategies, set-up the coordination rules, search sets and Federated Model for future stages.

e) Develop a design BIM/s to Level of Development (LOD) suitable to represent the Concept Design. Typically, the Model Elements are graphically represented within the Model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information shall also be attached to the Model Element (e.g. LOD100 and up to LOD200).

f) Prepare an integrated BIM/s with smart P&ID's having asset information, if applicable by project type.

g) Level of Information (LOI) requirements are as follows (across all asset classifications).

Table 3: Concept Design Assets LOI 2

Attribute	Data Type	Char Max Length	Selectable Values (varies by stage)
ASSET CLASS CODE	UPPER	12	
ASSET CLASS CODE DESCRIPTION	ALN	100	
STATUS	ALN	20	NOT COMMISSIONED OPERATIONAL ABANDONED CARE AND MAINTENANCE DECOMMISSIONED

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7.11 Reference Design

The Delivery Team must continue to use BIM during the Reference Design stage, building on the requirements of Concept Design to:

a) Demonstrate that all elements of this PIR and PPR will describe the physical aspects of equipment and infrastructure and how the design will meet these.

b) Integrate process and mechanical equipment into the civil and structural BIM/s.

c) Provide piping, cable ladder and conduit locations in BIM.

d) Using a model federation tool (e.g. Navisworks, BIM 360, Revizto), prepare Federated Model and issue/clash reports that will be reviewed and resolved by all Appointed Parties.

e) Use BIM for design and coordination decisions, including construction sequencing, commissioning, staging and programming by linking the BIM to the schedule (4D).

f) Incorporate the Federated Model into all Safety in Design, HAZID, HAZOPS, CHAIR and operational reviews.

g) Develop the design BIM/s to a Level of Development (LOD) whereby the Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information shall also be attached to the Model Element. Generally defined as up to LOD300 by the BIM Forum Level of Development Specification.

h) The Project DE Manager must prepare a Federated Model regularly for progressive review by Unitywater and Unitywater's key stakeholders. A Federated Model must be submitted to Unitywater in work lots as part of the formal, detailed design review process. The frequency of this submission is outlined in Section 7.7.

i) No vendor "digital blocks" will be accepted as they typically are too detailed (fabrication level) and do not integrate natively with the designer's BIM authoring toolset. All elements in all vendor packages shall comply with all the requirements of the contract documents concerning LOD and LOI.

j) Level of Information (LOI) requirements are as follows (across all asset classifications).

Table 4: Reference Design Assets LOI 3

Attribute	Data Type	Char Max Length
P_IDTAG	ALN	64
SCADAID	ALN	20

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7.12   Issued for Construction (IFC) documentation

The Delivery Team must utilise Digital Engineering to produce the IFC documentation, building on the requirements from the Reference Design stage to enable the following:

a) Assist with the coordination of trades, prior to construction. This shall be performed in a collaboration tool accessible to both Unitywater and the Delivery Team.

b) The final construction BIM/s must incorporate all geometry and information relevant to the components that will be constructed.

c) All existing, new and augmented assets to be identified in Unitywater Asset Data Digital Template and this to be issued to Unitywater Asset Management team for compliance and testing.

d) Develop the IFC Federated Model to a Level of Development (LOD) whereby the Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information shall also be attached to the Model Element. Generally defined as up to LOD300 by the BIM Forum Level of Development Specification.

e) No vendor "digital blocks" will be accepted as they typically are too detailed (fabrication level) and do not integrate natively with the designer's BIM authoring toolset. All elements in all vendor packages shall comply with all the requirements of the contract documents concerning LOD and LOI.

k) Level of Information (LOI) requirements for all previous stages, plus those nominated below, must be populated in the BIM (across all asset classifications) before IFC being achieved by the Delivery Team.

Table 5: Issued for Construction Assets LOI 4

Attribute	Data Type	Char Max Length
MAKE	ALN	50
MANUFACTURER	UPPER	12
MODEL	ALN	50

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7.13 Construction

The Delivery Team must continue to utilise Digital Engineering during the construction stage to:

a) Assist with their design and co-ordination decisions, including clash detection and issue resolution. This shall be performed in a collaboration tool accessible to both Unitywater and the Delivery Team.

b) Undertake construction sequencing, staging and programming.

c) Input commissioning information to ensure the BIM is progressively updated to assist in timely handover of information.

d) Develop the Construction Federated Model to a Level of Development (LOD) whereby the Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information shall also be attached to the Model Element. Generally defined as up to LOD300 by the BIM Forum Level of Development Specification.

e) No vendor "digital blocks" will be accepted as they typically are too detailed (fabrication level) and do not integrate natively with the designers BIM authoring toolset. All discreet elements in all vendor packages shall be comply with all the requirements of the contract documents.

f) Level of Information (LOI) requirements are as follows (across all asset classifications).

Table 6: Construction Assets LOI 5

Attribute	Data Type	Char Max Length
INSTALLDATE	DATE	4

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7.14 Commissioning/As Built documentation

The Delivery Team must provide all as-built documentation (including the Federated Model) following the general conditions of contract and the requirements described in SEQ Water Supply and Sewerage Design & Construction Code - Asset Information Specification. The as-built documentation must:

a) Be checked and signed by a Registered Professional Engineer of Queensland (RPEQ) and a suitable representative of the Lead Appointed Party.

b) Be identified by the drawing numbers assigned by the Delivery Team according to the Unitywater's document control protocols described in Pr8843 - Specification for Drawing, Document and Equipment Tag Numbering.

c) Be in electronic format and in the latest version of the adopted Digital Engineering environment including the validation process (see Section 7.8).

d) Comply with the Contract (including the PPR), including all drawings, irrespective of the source of the drawing and including drawings from vendors, third parties, and the like. It is not acceptable to submit as-built documentation as part of vendor manual and no vendor "digital blocks" will be accepted. All elements in all vendor packages shall comply with all the requirements of the contract documents concerning LOD and LOI.

e) Develop the As Built Federated Model to a Level of Development (LOD) whereby the Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. The elements in BIM shall be field verified and carry such attribution, Non-graphic information shall also be attached to the Model Element. This Level of Development is defined as LOD500 by Unitywater.

f) Provide all asset information as per the requirements of the Unitywater Asset Data Digital Template.

g) RPEQ certification must be provided for all designs, drawings, details, checking of shop drawings, any alterations from the original design or where otherwise required for any purpose (including any purpose prescribed by the Contract).

Level of Information (LOI) requirements are as follows (across all asset classifications).

Table 7: Commissioning / As Built LOI 6

Attribute	Data Type	Char Max Length	Num Precision	Num Scale	Selectable Values
SERIALNUM	UPPER	64			
DEFECTSLIABEXPIRY	DATE	4			
COMMISSIONINGDATE	DATE	4			
MAINTENANCERESPONSIBILITY	ALN	50			ISD OTHER FACILITIES
MAKE	ALN	50			UW_MAKE
MANUFACTURER	UPPER	12			
MODEL	ALN	50			
VENDOR	UPPER	12			
MANUFACTUREDATE	DATE	4			
OWNER	ALN	10			UW (default) OTHER

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Attribute	Data Type	Char Max Length	Num Precision	Num Scale	Selectable Values
PROJECTNUMBER	ALN	30			
REGION	ALN	20			NORTH (default) SOUTH
DISPOSAL METHOD	ALN	20			DISPOSED RELOCATED ABANDONED
WARRANTYEXPDATE	DATE	4			
PLUSSLATITUDE	DECIMAL	0	18	10	
PLUSSLONGITUDE	DECIMAL	0	18	10	

7.15 Practical Completion

Before, and as a pre-requisite to, the date for practical completion being achieved, the following is required:

a) All as-built discipline/trade BIM/s, including all associated 2D documentation.

b) The nominated LOI from all previous stages included within each as-built discipline/trade BIM.

c) Federated Model.

d) Asset Data Digital Template.

e) Updated DEXP, reflecting the actual BIM/DE approaches used on the Project.

f) The Appointed Parties have verified all information containers (listed in the updated Task Information Delivery Plans and Master Information Delivery Plan) with acceptance from Unitywater Project Manager (or representative).

g) Data showing all field verification, of physically constructed assets, is reflected in the Federated Model and the level of accuracy that has been achieved. See Section 7.8 for Field Validation/verification approaches.

This data/documents shall be issued to Unitywater for final acceptance in accordance with the Conditions of Contract.

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8. Technical

This section establishes technical information requirements, including the software, information exchange contents and relevant Level of Development (LOD) and Level of Information (LOI).

8.1 Software Selection Matrix

Table 8 is the preferred software to be used in conjunction with Unitywater projects. Other software will be considered. The pre-award DEXP must nominate any departures from this list and explain in the comments field the reason for the departure. The pre-contract DEXP shall indicate additional proposed file formats for other deliverables, e.g. visualisations, cost estimating, project scheduling, etc.

The Delivery Team shall use the most recent version of software nominated in the table below. Where the Lead Appointed Party is aware of any compatibility issues between the various software packages, the Lead Appointed Party shall notify the principal at the time of tender and propose solutions to rectify software compatibility issues. Any time/cost/quality issues relating to the proposed solution shall be outlined to the Principal at the time of tender.

Table 8: Software Selection

Discipline	Software	Comments
Architectural	Autodesk Revit	
Fixtures	Autodesk Revit	
Structural	Autodesk Revit	
Process Mechanical	Autodesk Plant3D	
HVAC	Autodesk Revit	
Plumbing	Autodesk Revit	
Fire Protection	Autodesk Revit	
Electrical	Autodesk Revit	
Civil	Autodesk Civil3D	
Landscape	Autodesk Revit	
Piping and Instrumentation Diagrams, Plant Flow Diagrams, and Process and Piping Schematics	Autodesk AutoCAD P&ID and Plant 3D	
Standard 2D Drawings	Derived from BIM	
Visualisation, Collaboration and review	Navisworks Manage	Clash Detection and resolution
Model Sharing	Native authoring software file format or IFC	To be defined in the DEXP
Data Exchange during design and construction	Maximo Excel template	Staged delivery of asset data through all project stages
Data Exchange on completion	Federated BIM containing the Plant 3D BIM/s and associated object data. All authoring software project files. Maximo Excel template	For future use by Unitywater
Contract submittal documents	Portable Document Format (.PDF)	

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8.2 Coordinates

All spatial data submitted to Unitywater shall be in accordance with the following requirements:

a) The Horizontal Datum of all engineering surveys shall be MGA Zone 56 (Map Grid Australia) 3rd order accuracy (not based on DCDB co-ordinates) with appropriate scale factor, using RTK (Real Time Kinematic) or Static GNSS (Global Navigation Satellite System).

b) The Vertical Datum for all levels will be AHD (Australian Height Datum) 3rd Order accuracy.

Some Digital Engineering platforms have limitations when dealing with large coordinates. If this is the case, a local coordinate must be set-up when the existing conditions are surveyed. It is recommended a "master container file" be setup to locate the coordinate in each individual discipline BIM/s to ensure an accurate geolocated environment. The Lead Appointed Party nominated Project DE Manager will coordinate the aggregation of these BIM/s into this environment and document the approach as per Section 8.5.

8.3 Information Containers and Formats

The discipline/trade BIM/s shall be developed in consideration of the most reliable and appropriate means of communicating data and information. For each of the information exchanges, information containers will be required in the following formats:

a) Native design authoring tool format for individual design BIM/s.

b) Model collaboration format for individual design BIM/s (e.g. .nwd, .ifc).

c) Model collaboration format for Federated Models (e.g. .nwd, .ifc).

d) 2D CAD files (.dwg).

e) A tabular asset dataset - the dataset will be derived from BIM and imported into Maximo. Refer to Pr10017 - Maximo Data Configuration Standard.

f) PDF 2D files.

g) Excel (.xlxs).

As part of any Tender submission, RFQ or EOI, each discipline/trade is to define in a Task Information Delivery Plan (TIDP) the information containers they will create for the Project. These TIDP's will be updated by the Appointed Party and combined into a Master Information Delivery Plan by the Lead Appointed Party, post-award.

8.4 Coordination and Collaboration

A Federated Model must be used as the primary method for coordination and review. Models generated from the relevant authoring packages must be provided to the Lead Appointed Party Project DE Manager as soon as significant changes are made to the Federated Model.

The clash detection feature of the Federated Model review platform must be used by the Project DE Manager and in accordance with the DEXP. Clash detection and resolution reports must be provided to Unitywater with the milestone issues.

Evidence of coordination must be visible through the comment/issue thread and saved viewpoints; these reviews are to remain in the Federated Model for the issue to Unitywater demonstrating the use of the Federated Model and identify the decisions that affect the design.

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8.5 Model Topology

The Delivery Team pre-contract DEXP shall consider the format of the required information and the extent to which the individual discipline BIM/s will be developed. Consideration shall also be given to file sizes, BIM/s file structures, cross-referencing and federation approach ensuring that information can be accessed in a timely manner, with the consistency of data extraction.

Individual discipline BIM/s required for setting out the design, such as (as a minimum) site, building fabric, building structure, plant and process equipment and building services equipment shall be documented in a proposed BIM/s topology diagram such as Figure 3. The individual discipline BIM must be in a format that supports model federation and design coordination.

Model files shall be exchangeable, interoperable and readable. For indicative purposes, the Shared area of the CDE (in Figure 3) is shown here as a single shaded region. This may, in truth, be synchronised locations for each stakeholder.
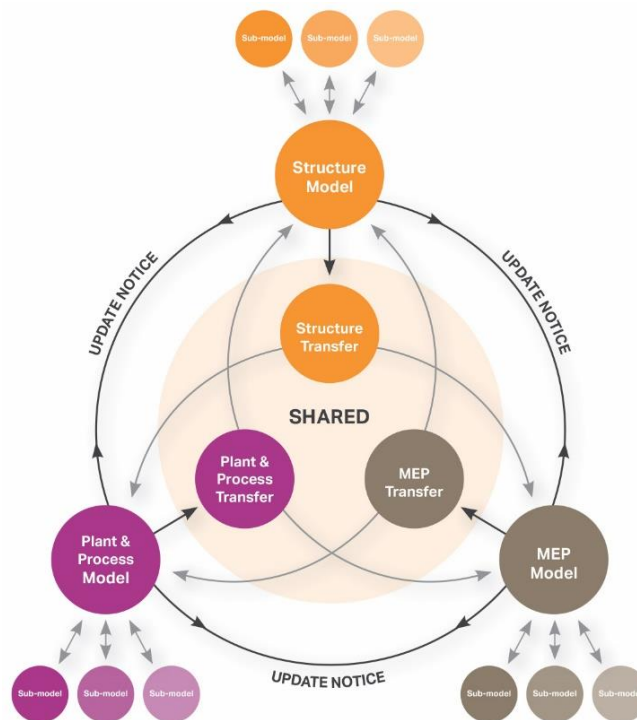
Figure 3: Model topology diagram (derived from AEC UK BIM Protocol)

8.6 Computer Aided Facilities Management

The CAFM system currently in use by Unitywater is Maximo. Data must be provided in a structured format for upload into these systems as per Pr10017 - Maximo Data Configuration Standard.

8.7 Geographic Information System (GIS)

The GIS system currently in use by Unitywater is ArcGIS. If GIS Data is a project deliverable, it must be provided in a structured format for upload into these systems as per SEQ WS&S D&C Code - Asset Information Specification.

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8.8   Common Data Environment (CDE)

The Common Data Environment is defined as the central source of information for any given project. It is to be commissioned, managed and maintained by the Lead Appointed Party and specified in the DEXP.

The CDE will function as a digital hub within which internal and external stakeholders can collect, manage and disseminate all relevant approved project data in a managed environment.

All Work in Progress BIM/s are to be transmitted and saved to a shared area on the Lead Appointed Party CDE, replacing the previously issued BIM/s; therefore, model naming can remain consistent. Unitywater shall have access to the "Published" data area.

Unitywater currently uses Objective and Teambinder as their internal CDE's. If access is required to Unitywater information, this will be accessed through either Objective Connect or Teambinder, web-based environments for external parties. Neither of these applications are setup as an archive site for the Delivery Team, so each party is responsible for the downloading and saving of transmitted BIM/s to their own company servers for archive purposes.
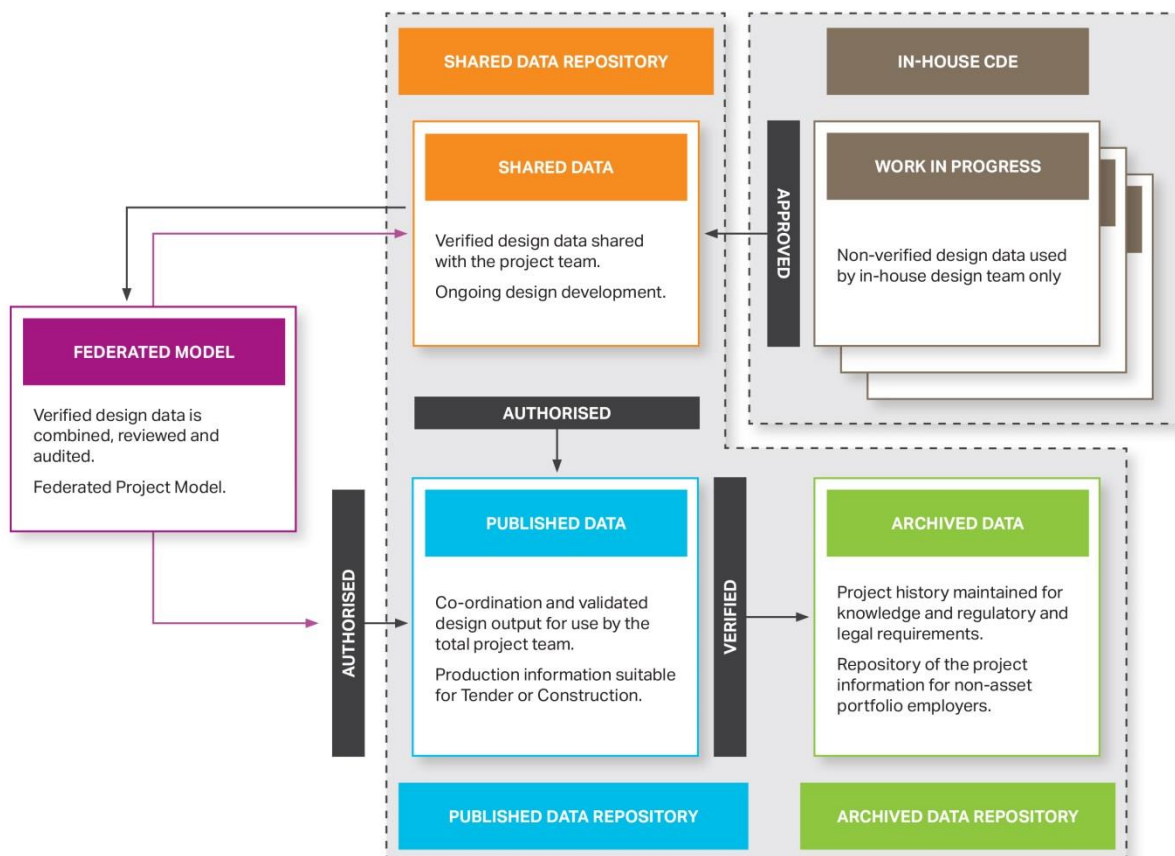

Figure 4: Common Data Environment

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8.9   Smart Piping/Process and Instrumentation Diagrams

Database files must include tables that predefine and label fields or tags from P&ID or BIM/s data. All databases formats and both data input and report output and index files to optimise performance must be provided in the DEXP, prior to commencing preparation of the P&ID. The Delivery Team must develop smart P&ID's that meet the following:

a) Utilise database rich symbology, and will be linked to an SQL or similar database having open database connectivity.

b) Have a customisable database, using readily available proprietary or open-source software, that has been specifically developed for asset management, record modelling and facilities management by the operator of a process plant.

c) All symbols and elements will include database fields populated with a unique identifier and fully populated with information fields specified in Pr10017 - Maximo Data Configuration Standard. This includes existing assets being either refurbished or retained in the augmented Project.

d) Facility data and equipment data (LOI) must be reflected in symbol properties and database fields and shall be bi-directionally linked to the BIM.

e) All smart P&ID's must meet the same requirements for P&ID's as that specified in the PPR or other project briefing documents.

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8.10   Level of Development (LOD)

The Delivery team pre-contract DEXP shall specify the LOD for each element that will be generated at each project milestone and information exchange to meet the specified Digital Engineering uses. The LOD and LOI determine the extent and nature of geometry and data to be included within BIM objects.

The different Levels of Development are defined below based on the US BIM Forum Level of Development Specification – 2019.

Table 9: LOD Definitions

Level of Development	Model Element
LOD 100	The Model Element may be graphically represented in the Model with a symbol or other generic representation but does not satisfy the requirements for LOD 200. Information related to the Model Element (i.e. cost per square metre, volumes etc) can be derived from other Model Elements. *Note: LOD 100 elements are not geometric representations. Examples are information attached to other model elements or symbols showing the existence of a component but not its shape, size, or precise location. Any information derived from LOD 100 elements must be considered approximate.*
LOD 200	The Model Element is graphically represented within the Model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element. *Note: At this LOD elements are generic placeholders. They may be recognisable as the components they represent, or they may be volumes for space reservation. Any information derived from LOD 200 elements must be considered approximate.*
LOD 300	The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element. *Note: The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the BIM/s without referring to non-modelled information such as notes or dimension callouts. The project origin is defined, and the element is located accurately with respect to the project origin.*
LOD 500	The Model Element is a field verified representation in terms of size, shape, location, quantity, and orientation. Non-graphic information may also be attached to the Model Elements. *Note. Since LOD 500 relates to commissioning and field verification and is not an indication of progression to a higher level of BIM/s element geometry. The elements shall show an increase in non-graphic information e.g. commissioning and asset information (LOI 6). The US BIM Forum LOD specification does not define or illustrate LOD 500.*

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8.11 Level of Information (LOI)

Information shall be generated and exchanged to support specific purposes/activities at each design stage in accordance with Unitywater project lifecycle phasing. The Lead Appointed Party must manage this in close collaboration with Unitywater.

It is a key requirement of Unitywater that Level of Information about an asset is progressively developed in the design and construction phases of the Project so it can be incorporated into Unitywater Asset Management System, Maximo. This is often referred to as an "information exchange" as information is exchanged with other systems that may or may not use BIM, at nominated asset lifecycle stages.

Asset data will be provided to Unitywater by way of attributes embedded within the BIM objects. The relevant data required by Unitywater at each stage is shown below.

The DEXP Model Element Responsibilities Schedule must be populated with the appropriate LOI value (e.g. LOI 1, LOI 2, LOI 3, LOI 4, LOI 5, LOD 6).

Table 10: Unitywater BIM Asset Data minimum requirements

Attribute	Data Type	Char Max Length	Num Precision	Num Scale	Selectable Values
(LOI 1) Existing Assets					
ASSETNUM	UPPER	12			
DESCRIPTION	ALN	100			
LOCATIONNUM	UPPER	12			
LOCATION DESCRIPTION	ALN	100			
FACILITYNUM	UPPER	12			
FACILITY DESCRIPTION	ALN	100			
PROCESS LOCATIONNUM	UPPER	12			
PROCESS LOCATION DESCRIPTION	ALN	100			
ASSETNUM	UPPER	12			
(LOI 2) Concept Design					
STATUS	ALN	20			NOT COMMISSIONED OPERATIONAL ABANDONED CARE AND MAINTENANCE DECOMMISSIONED
ASSET CLASS CODE	UPPER	12			
ASSET CLASS CODE DESCRIPTION	ALN	100			
(LOI 3) Reference Design					
P_IDTAG	ALN	64			
SCADAID	ALN	20			
(LOI 4) Issued for Construction					
MAKE	ALN	50			UW_MAKE
MANUFACTURER	UPPER	12			
MODEL	ALN	50			
(LOI 5) Construction					
INSTALLDATE	DATE	4			

Attribute	Data Type	Char Max Length	Num Precision	Num Scale	Selectable Values
(LOI 6) Commissioning / As Built					
SERIALNUM	UPPER	64			
DEFECTSLIABEXPIRY	DATE	4			
COMMISSIONINGDATE	DATE	4			
MAINTENANCERESPONSIBILITY	ALN	50			UW OTHER FACILITIES
VENDOR	UPPER	12			
MANUFACTUREDATE	DATE	4			
OWNER	ALN	10			UW (default) OTHER
PROJECTNUMBER	ALN	30			
REGION	ALN	20			NORTH (default) SOUTH
DISPOSAL METHOD	ALN	20			DISPOSED RELOCATED ABANDONED
WARRANTYEXPDATE	DATE	4			
PLUSSLATITUDE	DECIMAL	0	18	10	
PLUSSLONGITUDE	DECIMAL	0	18	10	

The pre-contract DEXP shall set out the proposed approach for how the Lead Appointed Party will deliver this information from BIM into Maximo in line with the project stages using the Lead Appointed Party proposed design and construction platforms. The Unitywater Asset Data Digital Template (see Annex A) is the current preferred data exchange from BIM asset data into Maximo.

8.12 Naming Conventions

Unitywater uses Pr8843 - Specification for Drawing, Document and Equipment Tag Numbering to specify a numbering system to be applied across all Unitywater's Sewage Treatment Plants (STPs). This Specification shall apply to all Unitywater's Sewage Treatment Plants (STPs) except where an existing numbering system is to be retained as directed by Unitywater.

8.13 Digital Engineering Competence

Tendering Parties shall complete a list of three previous BIM/DE projects, with a client referee and their experience. This is to demonstrate the Tendering party competence and understanding of Digital Engineering to Unitywater, pre-contract award. Refer to Annexure B in the Digital Engineering Execution Plan for further information.

8.14 Training

Training of the Delivery Team personnel in the use of BIM, GIS, CAD and other such systems to meet the requirements documented in this PIR remains the responsibility of the Delivery Team. The Lead Appointed Party, shall allow for up to 2 days of training for Unitywater team members (involved on the Project) in the proposed Digital Engineering tools and processes for the Project, enabling close collaboration on the Federated Model.

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Next Review Date: 10/09/2026

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Requirements

Annexure A. Unitywater Asset Data Template

The Lead Appointed Party shall seek the latest version of the Asset Data template from the Unitywater Project Manager or Asset Knowledge and Performance team.