

Procedure

X-PRO-STD-009

Engineering Design, Construction, Operation and Maintenance

Document Number: PRO-01617

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Ver no.	Description	Owner		Approved for issue		
		Position	Signature	Position	Signature	Date
5	Amended Version	Principal Engineering Standards and Assurance - P6255	See supporting info in REX	Manager Technical Support & Improvement - P7630	See supporting info in REX	24/02/2022
This Engineering Standard was endorsed by an RPEQ on behalf of Seqwater.						

Version History

Ver No	Date	Description	Author	SME	Owner	Approver
5	24/02/2022	Revised Version (Refer Section 13)				
4	27/07/2021	Revised Version (Refer Section 13)				
3	05/04/2018	Review of activities – Appendix A				
2	13/7/2015	Updates from WHS and Legal Review				
1	19/12/2014	First Issue				

(Refer Controlled Document in REX for Author, SME, Owner and Approved details)

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1 Purpose and Scope

This document describes the procedures required to be followed to implement appropriate controls to ensure legal compliance with the requirements of the *Professional Engineers Act 2002 (Qld)* and management of risk when:

- Designing, constructing and installing new Seqwater Infrastructure,
- Modifying existing Seqwater Infrastructure,
- Modifying operation or maintenance practices of existing Seqwater infrastructure and associated systems outside of approved operation or maintenance practices or design envelopes.

Design, installation and modification of Seqwater's Infrastructure can often be undertaken in isolation of experience and knowledge at the facility and should therefore be reviewed for hazards and operability problems in a consistent and structured manner. Implementation of this Procedure also supports this need.

In an important development for those who employ, contract or otherwise provide services for any unit of public administration (such as public sector agencies, including local councils, government-owned corporations, departments and statutory authorities), the Queensland Crime and Corruption Commission has recently formed the view that the provision of professional engineering services when not registered or not directly supervised by a RPEQ could also constitute "corrupt conduct" for the purposes of the *Crime and Corruption Act 2001 (Qld)*. It is also important to note that it is an offence under section 115 of the *Professional Engineers Act 2002 (Qld)* for a person who is not a RPEQ, or directly supervised by a RPEQ, to provide Professional Engineering Services. The BPEQ can and will take prosecutorial action in the Magistrates Court for non-compliance with the *Professional Engineers Act 2002 (Qld)*.

The aim of this Procedure is to provide an efficient and documented process for:

- ensuring that any new Seqwater Infrastructure or changes to existing Seqwater Infrastructure complies with all relevant legislation and follows Good Engineering Practice;
- ensuring that proposed modifications and improvements are technically viable;
- ensuring that health, safety, environmental, quality and operational risks are considered and managed;
- obtaining the required technical and engineering approvals;
- ensuring that all Professional Engineering Services performed by staff or external parties working for Seqwater in relation to Seqwater Infrastructure comply with the requirements of the *Professional Engineers Act 2002 (Qld)* and the associated *Code of Practice* including being undertaken by, or directly supervised by, a Registered Professional Engineer of Queensland.

Examples of Professional Engineering Services requiring Competent Engineer supervision within Seqwater are provided in Appendix A.

2 Application of Procedure

This Procedure applies to all Seqwater employees, suppliers, contractors and consultants working for, or on behalf of, Seqwater unless otherwise stated. Deviation from the requirements in this Procedure requires written agreement from Seqwater as specified in the deviation process detailed in *X-PRO-STD-008 Asset Standards Management and Application (PRO-02205)*.

This Procedure applies to Professional Engineering Services undertaken in relation to existing and proposed Seqwater Infrastructure. It applies throughout the Asset Lifecycle including during

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design, construction, production, operation and maintenance of Seqwater's Infrastructure. It applies to both internal employees undertaking design, construction, production, operation or maintenance of Seqwater Infrastructure and to external parties (e.g. contractors, consultants and suppliers) undertaking design, construction, production, operation or maintenance of Seqwater's Infrastructure.

It also applies in relation to Digital Technology activities and systems (for example, Control Systems and SCADA) that could reasonably be considered to influence the integrity of Seqwater operations where there are potential impacts on water supply, water quality, or human safety.

Seqwater undertakes regular updates of its Asset Standards. Before utilising this Procedure the complete list of Seqwater Asset Standards should be reviewed to ensure currency and applicability of standards to be applied. A full list of current Asset Standards and links to all standards are available on the Engineering Standards page on Seqwater's Intranet, Waternet.

3 Definitions

The following definitions (Table 3-1) apply to this Procedure.

Table 3-1 – Definitions

Term	Definitions
Asset Information Handover	Seqwater procedure for handover of all relevant information, reports, drawings and data pertaining to new, refurbished or upgraded Seqwater Infrastructure from the Project Delivery team to the Seqwater Asset Information Management, Engineering, Operations and Maintenance teams.
Asset Lifecycle	the various stages during the lifecycle of Seqwater's Infrastructure. These including Acquisition, (includes design and construction), Operate and Maintain, Renewal/Upgrade, and ultimately Disposal.
Asset Standards	means Seqwater Engineering Standards set out in https://waternet.corporate.local/AssetMan/Engineeringservices (as amended by Seqwater from time to time).
Code of Practice	Code of Practice (Board of Professional Engineers of Queensland)
Competent Engineer	means a RPEQ responsible for providing a Professional Engineering Service practicing within their discipline and area of expertise.
Concept Design Phase	has the meaning given in Table 7-1 below.
Construction Phase	has the meaning given in Table 7-1 below.
Construction Work	means any work carried out in connection with the construction, alteration, conversion, fitting-out, commissioning, renovation, repair, maintenance, refurbishment, demolition, decommissioning or dismantling of a structure. This includes: - any installation or testing carried out in connection with an activity mentioned above - the removal from the workplace of any product or waste resulting from demolition - the prefabrication or testing of elements, at a place specifically established for the Construction Work, for use in Construction Work

Term	Definitions
	- the assembly of prefabricated elements to form a structure or the disassembly of prefabricated elements forming part of a structure - the installation, testing or maintenance of an essential service in relation to a structure - any work connected with an excavation - any work connected with any preparatory work or site preparation (including landscaping as part of site preparation) carried out in connection with an activity mentioned above - an activity mentioned above that is carried out on, under or near water, including work on buoys and obstructions to navigation.
Contractor	means any person (including consultant), entity or firm engaged by Seqwater under a contract to undertake work (which may or may not include Construction Work) in accordance with an agreed contract and defined scope of work but does not include an employee.
Design	includes both the physical design and the functional design of the infrastructure including its design operating envelope and approved operation and maintenance practices. For Seqwater Infrastructure, Design includes three separate design phases: Concept Design, Preliminary Design and Detailed Design.
Detailed Design Phase	has the meaning given in Table 7-1 below.
Engaging Officer	means the Seqwater worker responsible for engaging the provision of Professional Engineering Services either internally or externally. (Usually the Planner, Project Manager, Engineer, Operator or Maintainer or other staff member responsible for managing the project or change).
Engineering Mailbox	Common Outlook mailbox for internal email correspondence with the Engineering Standards and Assurance (ESA) unit specified as engineering@seqwater.com.au .
Good Engineering Practice	means engineering, technical and safety activities or standards that ensures: - the life and purpose of Seqwater's Infrastructure is not diminished; - the drinking quality of the water contained inside Seqwater's Infrastructure is not diminished; - there are no increases or hindrances in operations or maintenance activities for Seqwater; and - any design is required to be certified by an engineer registered with the Board of Professional Engineers Queensland (i.e. RPEQ) in the relevant area of discipline; - compliance with the relevant safety in design considerations in particular as related to National Construction Code and Work, Health and Safety legislation.
Management of Change	means a procedure used to manage safety, environmental, quality and operational risk when changes are made to Seqwater Infrastructure during the Operate and Maintain phase of the Asset Lifecycle. This assists in demonstrating compliance with applicable legislation and standards and

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Term	Definitions
	ensures changes are recorded and asset information is updated.
Manufacturer / Supplier / Vendor / Original Equipment Manufacturer (OEM)	means the entity that manufacturers or supplies equipment to meet the specifications of the Contractor.
Operate and Maintain Phase	has the meaning given in Table 7-1 below.
Owner / Principal / Seqwater	means the entity that engages the Contractor to undertake Construction Work or other engineering work and takes custody of the outcome. The Owner may delegate responsibilities to other entities to act on its behalf (e.g. a consultant).
Registered Professional Engineer of Queensland (RPEQ)	means an engineer registered under the <i>Professional Engineers Act 2002 (Qld)</i> with the Board of Professional Engineers of Queensland. This is the minimum requirement for undertaking and/or supervising Professional Engineering Services in Queensland.
REX	means Seqwater Electronic Document and Records Management System.
Preliminary Design Phase	has the meaning given in Table 7-1 below.
Prescriptive Standard	A document that states procedures or criteria – a) for carrying out a design, or a construction, production, operation or maintenance activity, relating to engineering; and b) the application of which, to the carrying out of the design, or the construction, production, operation or maintenance activity, does not require advanced scientifically based calculations. (Reference: <i>Professional Engineers Act 2002 (Qld)</i>)
Professional Engineering Service	An engineering service that requires, or is based on, the application of engineering principles and data to a design, or to a construction, production, operation or maintenance activity, relating to engineering, and does not include an engineering service that is provided only in accordance with a prescriptive standard. (Reference: <i>Professional Engineers Act 2002 (Qld)</i>) For examples of activities that are, or are not, considered to be Professional Engineering Services at Seqwater, refer Appendix A herein.
Safety in Design	The integration of hazard identification, risk assessment and control methods early in the design process to eliminate or minimise risks to health and safety throughout the construction and life of the structure or plant being designed. (Refer also Section 10)
Seqwater approval / acceptance	Written sign-off gained via the deviation process, as detailed in X-PRO-STD-008 Asset Standards Management and Application.
Seqwater Engineering Statement (For further information refer Section 9 below)	means a confirmation of professional opinion by a Competent Engineer that: • an asset's design or Construction Work has been completed by a person or persons who have the skills to do so; and

Term	Definitions
	an assets design, creation or modification, has complied with the requirements of the Professional Engineers Act 2002 (QLD) and that risks to health and safety have been eliminated or minimised so far as is reasonably practicable.
Seqwater's Infrastructure	means any infrastructure, buildings, built assets (including their operating systems), fixtures or other structures on land, owned or occupied by Seqwater.
Shall / must	Indicates a mandatory requirement
Should	Indicates a recommendation
Site Owner	A Seqwater person holding a position that has overall accountability and responsibility of the day to day operation and maintenance of a site.
Waternet	Seqwater's Corporate intranet.
Worker	means a person who carries out work in any capacity for Seqwater, including work as: - an employee - a contractor or subcontractor - an employee of a contractor or subcontractor - an employee of a labour hire company who has been assigned to work at Seqwater - an outworker - an apprentice or trainee - a student gaining work experience - a volunteer - a worker of prescribed class.

4 Abbreviations

The following abbreviations (Table 4-1) apply to this Procedure.

Table 4-1 – Abbreviations

Abbreviation	Description
TSI	Technical Support and Improvement Team (part of Seqwater Planning Operations and Delivery Group, Seqwater)
ESA	Engineering Standards and Assurance unit (within TSI)
ASP	Asset Strategy and Planning Team (Part of Planning Operations and Delivery Group, Seqwater)
AIM	Asset Information Management Unit (Within ASP)
ES	Engineering Statement
IFC	Issue for Construction (in relation to Drawings)
HAZOP	Hazard and Operability Study
MoC	Management of Change

OEM	Original Equipment Manufacturer
RPEQ	Registered Professional Engineer of Queensland
SiD	Safety in Design
WHSQ	Workplace Health and Safety Queensland

5 Roles and Responsibilities

The following roles and responsibilities (Table 5-1) are applicable in the context of this Procedure.

Table 5-1 – Roles and Responsibilities

Role	Responsibilities
Manager Technical Support and Improvement	Accountable for implementation and management of this Procedure.
Principal Engineering Standards and Assurance	Responsible for preparation, review, and implementation of this Procedure.
Engaging Officer	Responsible for ensuring this Procedure is followed, ensuring their team members and contractors understand what is required in following this Procedure, and seeking clarification from the Principal Engineering Standards and Assurance when required. Responsible for receiving and assessing Engineering Statements and submitting them to the Engineering Mailbox on the completion of the design or construction phase with the associated IFC or As-Constructed Drawings.
Competent Engineer (Refer also further information in Section 9.6)	Responsible for ensuring that due process has been followed in completing any Professional Engineering Service affecting Seqwater's Infrastructure. This includes: - Identifying so far as reasonably practical, engineering risks and hazards relevant to their area of expertise. - Making reasonable enquiries to ensure competent people are tasked with controlling risk outside of their area of immediate competence. - Ensuring that Seqwater infrastructure design, construction, and operation and maintenance processes and procedures developed or modified comply with standards, codes and Good Engineering Practice. Ensuring people completing any Professional Engineering Services in relation to a built asset design, construction, operation or maintenance are RPEQ's, or are directly supervised by a RPEQ, who is practicing within their discipline and area of expertise. Requirements for Competent Engineer - Must be an RPEQ. - For multidisciplinary projects must have access to mixed discipline engineering support to answer queries when providing a professional opinion. - Can be the designer or verifier. - Can be an internal or external engineering resource.

6 Reference Documents

The documents listed in Table 6-1 and Table 6-2, and the requirements therein, are directly relevant to this Procedure. In their latest editions, these documents form a part of this Procedure.

Note that this is not an exhaustive list of documents relevant to the Procedure. There are many other Seqwater Engineering Standards which provide technical input and guidance on engineering requirements for Seqwater Infrastructure which need to be considered during any infrastructure design, construction, operation and/or maintenance undertaken by or on behalf of Seqwater. Please refer to the definition of Asset Standards above for a link to the complete list of current Engineering Standards.

Table 6-1 – Reference Seqwater Documentation

Engineering Document Number	Document Title	Controlled Document Reference
	Enterprise Risk Management Framework	FRA-00014
	HSW Management System Framework	FRA-00018
	Seqwater Cost Estimating Guidelines	GDE-00041
	Guidance for Professional Engineering Services at Seqwater	GDE-00242
	Contractor Management Procedure (HSW, Env & DWQ)	PRO-00808
	Work Health and Safety Hazard Identification and Risk Management Procedure	PRO-00657
	WHS Safe Work with Plant Procedure	PRO-00867
	Corporate Safety – Personal Protective Equipment (PPE) Procedure	PRO-00881
X-PRO-STD-002	Engineering Drawing Numbers Procedure	PRO-01872
X-PRO-STD-001	Asset Standards Document Classification and Naming Structure	PRO-01873
X-PRO-STD-004	Development and Review of Asset Standards Procedure	PRO-01874
X-PRO-STD-013	Engineering Technical Hazard Study Procedure	PRO-02140
X-PRO-STD-007	Drawing & Spatial Data Standards Procedure	PRO-02187
X-PRO-STD-006	Equipment Numbering and Naming Convention Procedure	PRO-02190
	Registered Professional Engineer of Queensland (REPE) Registration Procedure	PRO-02201
X-PRO-STD-008	Asset Standards Management & Application Procedure	PRO-02205
X-PRO-STD-015	Management of Change – Technical Procedure	PRO-02234
B-SPE-STD-003	Commissioning Requirements	SPE-00346
	HSW Risk Assessment Template	TEM-00008
	WHS Site Hazard Register Template	TEM-00023

Engineering Document Number	Document Title	Controlled Document Reference
X-TMP-STD-008	Technical Hazard Study Record Sheet	TEM-00213
X-TMP-STD-005	Engineering Statement Template – ES1 Design	TEM-00216
X-TMP-STD-006	Engineering Statement Template - ES2 Construction	TEM-00217
X-TMP-STD-022	Asset Standards Deviation Request Form	TEM-00224

Table 6-2 – Reference Legislation, External Standards, Specifications and Codes

Document Number	Document Title	Location
	<i>Crime and Corruption Act 2001 (Qld)</i>	www.legislation.qld.gov.au
	<i>Work Health and Safety Act 2011 (Qld)</i>	www.legislation.qld.gov.au
	<i>Work Health and Safety Regulation 2011 (Qld)</i>	www.legislation.qld.gov.au
AS ISO 31000	Risk Management – Guidelines	www.saiglobal.com.au/online
	<i>Professional Engineers Act 2002 (Qld)</i>	www.legislation.qld.gov.au
	Code of Practice(Board of Professional Engineers of Queensland)	www.bpeq.qld.gov.au
AS IEC 618823	Hazard and operability studies (HAZOP studies) – Application guide	www.saiglobal.com.au/online
	Safe Design of Structures - Code of Practice 2013 (Qld)	https://www.worksafe.qld.gov.au/data/assets/pdf_file/0008/58193/safe-design-structures-cop-2013.pdf
	<i>Managing the risks of plant in the workplace Code of Practice 2021 (Qld)</i>	Managing the risks of plant in the workplace Code of Practice 2021 (worksafe.qld.gov.au)
	Plant Design Registration	https://www.worksafe.qld.gov.au/licensing-and-registrations/plant-design-registration
NCC	National Construction Code	https://ncc.abcb.gov.au/ncc-online/NCC

7 Seqwater Engineering Phases

Seqwater uses the following terms as outlined in Table 7-1 to describe the engineering phases undertaken during the Asset Lifecycle of its infrastructure.

Table 7-1 – Engineering Phases during the Seqwater Asset Lifecycle

Seqwater Engineering Phase	Description	% Design Complete ⁽¹⁾	Typical cost est. accuracy ⁽²⁾
Concept Design Phase	An identified need is examined, requirements for potential solutions are defined, potential solutions are evaluated and a preferred solution is identified.	10% - 30%	± 50%
Preliminary Design Phase	Sub-systems that perform the preferred infrastructure solution are identified and their performance requirements are finalised. Key technical specifications are identified.	40%-50%	± 30%
Detailed Design Phase	Initial design work is integrated between disciplines and technical specifications and drawings related to the infrastructure change are finalised to Issue for Construction (IFC).	60% - 100%	± 10%
Construction Phase	The asset is created or modified in accordance with the requirements specified in the Detailed Design and associated technical specifications, including commissioning, updating of IFC drawings to As-Constructed, and completion of Asset Information Handover.	100%	± 0%
Operate and Maintain Phase	Asset operations and/or maintenance modifications are assessed, reviewed and documented as part of any change.	n/a	n/a
Decommissioning Phase	The infrastructure is removed from service, demolished or dismantled and unsafe or environmentally hazardous materials are disposed of in accordance with the requirements specified in the Decommissioning Plan.	n/a	n/a

1. The % Design Complete are indicative and will vary between projects. Refer project documentation.
2. For more detailed information refer [GDE-00041](#) Seqwater Cost Estimation Guideline.

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8 Certification of Engineering Documents

Seqwater requires that all engineering documents produced as deliverables in undertaking Professional Engineering Services for Seqwater must be certified by the responsible Competent Engineer/s by including their signature, name, RPEQ Registration Number and discipline of registration to demonstrate compliance with the *Professional Engineers Act 2002 (Qld)* and Good Engineering Practice.

9 Seqwater Engineering Statements

As well as requiring Certification of engineering documentation Seqwater uses Engineering Statements provided by Competent Engineers at key points in the development and modification of its infrastructure to document that appropriate engineering controls have been implemented during its design, construction, or modification.

There are two forms of Engineering Statements used by Seqwater. These are:

- ES1 – Design ([TEM-00216](#))
- ES2 – Construction ([TEM-00217](#))

9.1 Seqwater Engineering Statements Purpose

'ES1 – Design' and 'ES2 – Construction' are strictly intended for use by a Competent Engineer as a statement of professional opinion. The professional opinion, to be based on reasonable grounds, is to the effect that if the asset creation or modification is, or has been, undertaken in accordance with the referenced documentation (e.g. engineering design drawings, specifications, functional descriptions etc.) then:

- the asset will comply with the requirements of the *Professional Engineers Act 2002 (Qld)* and the associated Code of Practice for Registered Professional Engineers (2008),
- the persons who have undertaken Professional Engineering Services during asset creation or modification have the necessary competency to do so, including being, or being supervised by, an RPEQ of an appropriate discipline and area of expertise, and
- risks to health, safety and the environment have been eliminated or minimised so far as is reasonably practicable.

Therefore, in preparing Seqwater Engineering Statements, the certifying registered professional engineer:

- 1) should, through appropriate investigations, satisfy themselves that the project work being certified meets appropriate standards,
- 2) takes responsibility for the project work in terms of compliance with the *Professional Engineers Act 2002 (Qld)*,
- 3) takes responsibility for the work of unregistered engineers that they have supervised.
- 4) May rely on work performed by other registered professional engineers who practice in the relevant area, and
- 5) Should be able to identify all registered professional engineers who provided Professional Engineering Services on the project.

The Engineering Statements described in this Procedure have no statutory status and do not replace any other necessary certificates, statements or approvals required to meet regulatory or contractual obligations of the designer or constructor. An Engineering Statement's purpose is not to act as a risk transfer mechanism. Importantly, the Engineering Statement is not a product warranty or guarantee of compliance. It is a confirmation of professional opinion.

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9.2 Engineering Statements Application Guideline

The table below (Table 9-1) indicates how Engineering Statements are to be applied to the Engineering Phases during the Seqwater Asset Lifecycle.

Table 9-1 – Engineering Statements Application Guide

Seqwater Engineering Phase	Engineering Statement		Application Guide
	ES1	ES2	
Concept Design	✓		ES1 – Design: Attached to preliminary business cases where concept design has included Professional Engineering Services.
Preliminary Design	✓		ES1 – Design: Attached to business cases where preliminary design has been performed involving Professional Engineering Services.
Detailed Design	✓ ^M		ES1 – Design: Attached to engineering design documentation at the completion of Detailed Design.
Construction	✓	✓ ^M	ES1 – Design: Use to document engineering supervision of any changes to the approved design during construction. Attach to ES2 - Construction. ES2 – Construction: Use to record engineering supervision of construction. Attached to “As Constructed” engineering documentation at the completion of Construction.
Operate and Maintain	✓	✓	ES1 – Design: Use to document engineering supervision of infrastructure change which involves changes to the approved design, changes to operations which extend the infrastructure outside of the approved design envelope, or changes to approved maintenance practices or procedures. ES2 - Construction: Use to document engineering supervision of any Construction Work required to implement infrastructure changes during the Operate and Maintain Phase.
Decommissioning Phase	✓	✓	ES1 – Design: Use to document engineering supervision of the design of an infrastructure decommissioning plan. ES2 – Construction: Use to document engineering supervision of the decommissioning, demolition or dismantling of a structure.

✓ = Use of Engineering Statement to document Professional Engineering Services

✓^M = Mandatory use of Engineering Statement to document Professional Engineering Services

Engineering Statements may be completed by external consultants and contractors Competent Engineers or internally by Seqwater Competent Engineers.

Further guidance on the use of, and timing requirements for providing Seqwater Engineering Statements is provided in Sections 9.3 and 9.4 below.

The Seqwater Principal Engineering Standards and Assurance can provide further guidance on when and how Seqwater Engineering Statements should be applied.

9.3 Engineering Statements for Design and Construction Phases

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An '*ES1 – Design*' statement must be prepared at the completion of Design. It must accompany the "Issue for Construction" (IFC) drawings when submitted to the Seqwater Engaging Officer at the completion of the Detailed Design Phase. Construction Work shall not commence on Seqwater Infrastructure until the RPEQ Certified IFC drawings and the ES1 – Design form has been received by Seqwater for the relevant infrastructure.

An '*ES2 – Construction*' statement must be prepared at the completion of the Construction Phase. It must accompany the "As-Constructed" (ASCON) drawings when submitted to the Seqwater Engaging Officer during Asset Information Handover prior to, or at, Practical Completion of construction.

An '*ES1 – Design*' statement must also be prepared for any engineering changes made from the approved IFC design during the Construction stage. All "*ES1 – Design*" forms prepared during the Construction stage shall be referenced on the "*ES2 – Construction*" statement, and submitted to the Seqwater Engaging Officer with the "*ES2 – Construction*" statement during Asset Information Handover.

Once an Engineering Statement is received by the Seqwater Engaging Officer, that officer is then responsible for assessing the Engineering Statement/s as detailed in Section 9.7 and submitting them, together with the associated drawings, to the Coordinator, Plans and Drawings in the ESA unit via the Engineering Mailbox. The minimum requirements for these documents to be submitted to the Engineering Mailbox are detailed in *X-PRO-STD-007 "Drawing and Spatial Data Standards"*, and detailed in Table 9-2 below.

Table 9-2 – Provision of Drawings and Engineering Statements to the Engineering Mailbox

Minimum Timing Requirements	Drawing Revision	Documentation Requirements
Completion of Detailed Design (prior to construction / installation of the works).	IFC	- Signed PDF drawing files. - Signed <i>ES1 – Design</i> Engineering Statement/s.
Practical Completion (within 20 business days).	As-Con	- Signed PDF & eTransmitted DWG files - Signed PDF <i>ES2 -Construction</i> Engineering Statement/s
End of Defects Liability Period (within 20 business days)	Updated As-Con	- Signed PDF & eTransmitted DWG files of updated drawings - Signed PDF <i>ES2 -Construction</i> Engineering Statement/s

9.4 Engineering Statements for Operate and Maintain Phase

Technical changes made to Seqwater's Infrastructure during the Operate and Maintain Phase (i.e. not as part of a capital project to upgrade or modify an asset) are managed through the Management of Change procedure "*X-PRO-STD-015 Management of Change – Technical*" and the associated internal on-line Management of Change workflow. As part of that procedure any engineering change is required to be supervised by a Competent Engineer. This includes changes to operations and/or maintenance practices which may affect the functional design of the asset, are outside of the assets design operating envelope, or departures from approved operation and maintenance practices.

An '*ES1 – Design*' Engineering statement is used to document any engineering design of the proposed change including its supervision by a Competent Engineer. This must be stored in REX in accordance with Section 9.8 herein and uploaded to the Management of Change Design Phase Workflow as evidence of compliance.

An 'ES2 – Construction' Engineering Statement must also to be prepared to document the supervision by a Competent Engineer of any Construction Work associated with the change. This must be uploaded to the Management of Change Implementation Phase Workflow as evidence of compliance and provided to Asset Information Management as part of the Asset Information Handover process.

9.5 SCADA and PLC Change Management

SCADA configuration changes that do not modify process control should be undertaken by following the *X-PRO-STD-015 Management of Change – Technical Procedure* ([PRO-02234](#)).

SCADA changes related to software updates and patches should be performed following the [PRO-01613](#) *Operational Technology and Energy - Control System Patch Management Procedure*.

These two types of SCADA change do not require an Engineering Statement under this Procedure.

9.6 Information and Guidance for Competent Engineers Completing Engineering Statements

In deciding on a “reasonable grounds” basis, whether an assets design, creation or modification complies with the requirements of the *Professional Engineers Act 2002 (Qld)*, Seqwater elects to place weight on the professional opinion of a Competent Engineer. An Engineering Statement, along with any supporting documents, is a means by which that opinion can be expressed. To assess what level of reliance they can place on an Engineering Statement, Seqwater may elect to:

- Assess the nature, complexity, risk and importance of the Design and/or Construction Work, including its impact on Seqwater's Infrastructure and operations.
- Assess an Engineering Statement's content and accuracy.
- Confirm the competence of the Engineering Statement author.
- Confirm the competencies of other Competent Engineers whose work the author has relied upon in preparing the Engineering Statement.

Prior to issuing an Engineering Statement the Competent Engineer should be mindful that:

- responsibilities and potential liabilities may arise from signing an Engineering Statement;
- all work should be subject to an appropriate quality assurance process (checking and review);
- it will most often be appropriate for complex work to be subjected to an independent peer review.

The following notes are to further guide Competent Engineers who complete Engineering Statements 'ES1 – Design' and 'ES2 – Construction':

- The author of an Engineering Statement must be a natural person (rather than a company). For large or multidisciplinary projects involving numerous Competent Engineers, Engineering Statements may to be completed by a senior member of the company engaged to provide the Professional Engineering Services.
- Competent Engineers must only sign Engineering Statements for work which they can attest to and which is within their technical competence, or within the technical competence of other Competent Engineers who have undertaken or supervised work on the project and are referenced on the Engineering Statement.

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- Competent Engineers may rely on other Competent Engineers of different competencies in signing an Engineering Statement – e.g. for a large complex project the total required “competence” may come from a range of engineers, whose details are included on the Engineering Statement.
- Competent Engineers may need to supply separate Engineering Statements for different stages or parts of a project.
- Authors of an Engineering Statements should always provide or reference Detailed Design documentation (drawings, calculations, details, specifications, document register, design features report, other reports, investigation/test results etc) sufficient to enable their approval methodology to be understood and checked by an engineer of equivalent competence.
- Authors should consider what information they have relied upon in reaching their opinion expressed in the Engineering Statement. They should clearly state any qualifications/ limitations that may apply as a result.
- The Engineering Statement ‘ES2 – Construction’ shall include reference to inspection records, including instructions given during the construction phase and any drawings amended during construction, as well as any ‘ES 1 – Design’ Engineering Statements for such amendments made during Construction Phase.

The Competent Engineers may be the designer or design reviewer or they may have carried out construction review of all or part of an asset change.

The Competent Engineer who signs the Engineering Statement will not necessarily have carried out all the design work or construction supervision work themselves. Rather, they may be relying on the work of many Competent Engineers, including others directly supervised by the Competent Engineers in undertaking these services.

9.7 Guide to Accepting Engineering Statements

The following information is provided to guide Seqwater representatives who are required to review and, if appropriate, accept Engineering Statements ‘ES1 – Design’ and ‘ES2 – Construction’ that have been issued to Seqwater by Competent Engineers.

- When dealing with Competent Engineers, Seqwater may directly contact or use the Board of Professional Engineers of Queensland search register (available at www.bpeq.qld.gov.au) to confirm the currency of registration and area of practice for RPEQ’s.
- An Engineering Statement should not be the sole means upon which Seqwater satisfies itself as to compliance of work.
- Seqwater may require Engineering Statements to be accompanied by full Detailed Design or construction documentation (e.g., drawings, details, calculations and specifications, Design Report, Safety in Design report, other reports, investigation/test results etc). However, it is acceptable to provide reference to these documents if they already exist as part of a project file or report, providing these are accessible to all staff.

9.8 Engineering Statements Record Keeping

For asset creation or modification, the completed forms ‘ES1 – Design’ and ‘ES2 – Construction’ are to be provided to the Seqwater Engaging Officer responsible for managing the asset creation or modification. This shall include as a minimum the ES1 relating to the Issue for Construction (IFC) drawings and the ES2 relating to the As-Constructed Drawings.

The Seqwater Engaging Officer is then responsible for ensuring these are provided to the Asset Information Management team as part of the Asset Information Handover process for saving in REX.

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For Operate and Maintain Phase changes Engineering Statements are also uploaded to the Management of Change Workflow as evidence of compliance as outlined in Section 9.4 above and submitted to Asset Information Management as part of the Asset Information Handover process.

10 Seqwater Engineering Process and Deliverables

Engineering of infrastructure is a Professional Engineering Service and must be performed by, or directly supervised by, Competent Engineers in appropriate disciplines for the work being undertaken. The following sections set out key steps and deliverables that Seqwater considers to be required to ensure Good Engineering Practice is achieved in the engineering of Seqwater Infrastructure.

10.1 Design Phases

The Design of Seqwater Infrastructure shall include consideration of Seqwater Engineering Standards and consultation with key stakeholders, including those to be involved in their operation and maintenance, using design review workshops at appropriate milestones during each Design Stage. Safety in Design considerations must be incorporated into this process (Refer Section 11 below).

Outcomes from Design Review Workshops and key decisions made during each Design Stage shall be documented and included in a Design Report.

At each of the identified project milestones the designer shall submit the required design documentation as set out in the project requirements to Seqwater for review, including a complete set of drawings and associated technical documents (electronic copy). All comments raised by Seqwater shall be addressed and actions / measures taken shall be recorded for inclusion in the Design Report. At least 10 business days shall be allowed for review and comment by Seqwater upon receipt of the design documentation, or otherwise as set out in the project requirements.

At the conclusion of the Design Stage the engineering deliverables shall include, as a minimum:

- Design Report including Safety in Design;
- Issue for Construction Drawings;
- Engineering Statement ES1 – Design.

Further project specific deliverables will be set out in project documentation.

All Design Stage engineering deliverables are to be certified by a Competent Engineer.

10.2 Construction Phase

Construction of Seqwater's Infrastructure often requires the application of engineering principles and data. This may be in interpreting and implementing technical specifications or field data, or in considering design amendments required due to unforeseen site conditions. These are all Professional Engineering Services as defined in the *Professional Engineers Act 2002 (Qld)*.

Seqwater requires all Construction Work on Seqwater Infrastructure to be supervised by a Competent Engineer registered in an appropriate discipline and area of expertise. This may include supervision by persons with appropriate experience and/or qualifications, as determined by the Competent Engineer, who are directly supervised by the Competent Engineer. However, at the completion of the Construction Work the responsible Competent Engineer must be able to complete an Engineering Statement 'ES2 – Construction' to certify that the Construction Work have been completed in accordance with the approved design including any approved design amendments made during the course of the Construction Work, and that all Professional Engineering Services undertaken during the Construction

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Works have been undertaken in accordance with the requirements of *Professional Engineers Act 2002 (Qld)* and this Procedure.

All design amendments implemented during the course of the Construction Works must have an associated Engineering Statement '*ES1 – Design*' completed, which is to be referenced in, and attached to, the Engineering Statement '*ES2 – Construction*'.

At the conclusion of the Construction Phase, engineering deliverables shall include, as a minimum:

- Commissioning Deliverables as per Standard B-SPE-STD-003 "Commissioning Requirements ([SPE-00346](#)).
- As-Constructed Drawings.
- Engineering Statement ES2 – Construction (inc. any Construction Phase ES1 - Design)

Further project specific deliverables will be set out in project documentation.

All Construction Phase engineering deliverables are to be certified by a Competent Engineer in accordance with this Procedure.

10.3 Operate and Maintain Phase

Technical changes made during the Operate and Maintain Phase of Seqwater's Infrastructure can include Professional Engineering Services. Such engineering changes may include:

- Changes are made to the infrastructures design, including its functional design, or new assets, components or controls are added or removed.
- Changes are made to operational parameters or controls which extend the operation of Seqwater's Infrastructure beyond its design operating envelope;
- Changes are made to operations or maintenance practices which are not consistent with approved operations or maintenance practices for the infrastructure.

Such engineering changes must be undertaken under the supervision of a Competent Engineer in a relevant discipline and area of expertise. This process is managed by Seqwater using the Management of Change process as outlined in Section 9.4 herein.

At the conclusion of any engineering change during the Operate and Maintain phase, engineering deliverables shall include, as a minimum:

- Engineering Statement '*ES1 – Design*'.
- Where construction work is involved – Engineering Statement '*ES2 – Construction*'.

Further project specific deliverables will be set out in project documentation.

All Operate and Maintain Stage engineering deliverables are to be certified by a Competent Engineer.

11 Safety in Design

Safety in Design (SiD) means the integration of hazard identification, risk assessment and control methods early in the design process to eliminate or minimise risks to health and safety throughout the construction and life of the structure or plant being designed. It involves:

- identification of risks
- use of a systematic risk-based approach to determine the right solution and reduce risks so far as reasonably practicable
- ensuring the asset owner and operators are aware of any important safety features and residual risks, including identifying any required training or competencies.

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A process of continual safe design monitoring must be integrated from the initial stages of business case development, project planning and predesign throughout the Asset Lifecycle.

11.1 SiD Legislative Obligations

The *Work Health and Safety Act 2011 (Qld)* requires that Seqwater ensure, so far as reasonably practicable, the health and safety of Workers while at work for Seqwater, including ensuring that so far as is reasonably practicable, any plants or structures are designed to be without risks to health and safety.

The *Work Health and Safety Regulation 2011 (Qld)* specifically requires that plant or structures are designed so that:

- the need to carry out any hazardous manual task is eliminated, or if it is not reasonably practicable to eliminate the need, minimised, with adequate information about the features that eliminate or minimise the need for any hazardous task to be carried out being provided,
- its noise emission is as low as reasonably practicable, with adequate information about noise emission values, operating conditions when noise emission is to be measured and methods used to measure noise emission being provided,
- any guarding to plant prevents access to dangerous areas of the plant,
- operational controls for the plant are suitably identified and located,
- emergency stop controls are fitted and adequate for the operational or attendant requirements of any plant,
- warning devices are positioned on plant to ensure the device works to best effect.

Further guidance in the application of the requirements of the *Work Health and Safety Act 2011 (Qld)* and *Work Health and Safety Regulation 2011 (Qld)* associated with design work is also available from the *Safe Design of Structures Code of Practice 2013 (Qld)* and the *Managing the risks of plant in the workplace Code of Practice 2021 (Qld)*.

In addition, it is expected that any safety requirements identified in a relevant Australian Standard are identified and implemented as part of the design process.

11.2 Seqwater SiD Expectations

At all stages of the design process work health and safety hazards must be identified and managed in accordance with the WHS Hazard Identification and Risk Management Procedure ([PRO-00657](#)). This includes identifying any hazards associated with:

- the intended purpose of the plant or structure
- how the plant or structure will be used by Workers
- location the plant or structure will be used or installed
- materials to be used
- possible methods of construction
- maintenance
- demolition, dismantling and disposal.

Where hazards are identified these should be eliminated so far as is reasonably practicable through the design process.

If elimination of the hazard is not reasonably practicable, designers must minimise the risk using a hierarchy of controls by:

- substituting (wholly or partly) the hazard giving rise to the risk with something that gives rise to a lesser risk
- isolating the hazard from any person exposed to it
- implementing engineering controls.

If a risk then remains, minimise the remaining risk, so far as is reasonably practicable, by implementing administrative controls.

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If a risk then remains, minimise the remaining risk, so far as is reasonably practicable, by identifying requirements for the provision and use of suitable Personal Protective Equipment (PPE). Further information on PPE is available in the WHS PPE Procedure ([PRO-00881](#)).

Consideration of risk for Seqwater assets needs to be undertaken in accordance with the “Seqwater Risk Management Framework” for which further information is provided in Section 12 “Seqwater’s Risk Management Framework” herein.

11.3 Seqwater SiD Management Practices

Referral to a designer

Seqwater Engaging Officers engaging a designer must ensure that as part of the referral process designers are provided with any information that Seqwater has in relation to:

- known hazards and risks at the site where the construction or installation work is to be carried out. As a minimum the WHS Site Hazard Register must be provided to the designer. All registers are available via searching the controlled documents page on Waternet ([link here](#)) or using the “Search for WHS Registers” function on the Waternet “Incidents and Safety” page. Any additional information relating to site hazards should be discussed with the relevant Site Owner.
- relevant Seqwater Engineering Standards;
- any interactions that our assets have with the environment;
- how the plant or structure will be operationally used;
- existing as constructed documentation.

To ensure a designer has all the information required to complete their design a site inspection may need to be considered as part of the referral process.

Any queries or support required for a referral to a designer should be directed to the ESA Unit via engineering@seqwater.com.au.

Completing the design

Designers must ensure that any design work undertaken, including modification to existing designs, complies with applicable legislation and meets Seqwater’s operational and risk management expectations.

To ensure all hazards and risks are eliminated or effectively controlled through the design, either:

- a WHS risk assessment must be completed using the Seqwater WHS Risk Assessment Template ([TEM-00008](#)); or
- a Technical Hazard Study

must be completed. These must be undertaken in consultation with Workers who will be operating and maintaining the infrastructure.

Guidance on the need, and requirements, for Technical Hazard Studies can be found in X-PRO-STD-013 “Engineering Technical Hazard Study Procedure” ([PRO-02140](#)) and the associated X-TMP-STD-008 “Technical Hazard Study Record Sheet Template” ([TEM-00213](#)). This template includes various hazard identification tools that may be used at various stages of phases of the project. The ESA Unit can assist the project manager or designer in determining when, and what level, of Technical Hazard Study is required.

Upon the completion of the design:

- a completed Engineering Statement: ‘ES1 – Design’ and supporting Technical Hazard Study or completed risk assessments must be provided,
- relevant legislation, codes of practice and/or standards that have been referenced during the design must be documented within the ‘ES1-Design’ Engineering Statement,
- persons performing design work for Seqwater must provide RPEQ certification of design (IFC) drawings prior to construction commencing,

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- any risks that have not been eliminated (residual risks) must be transferred into a risk register and provided to the Seqwater Engaging Officer, along with all other completed design documentation. The WHS Risk Register Template ([TEM-00023](#)) should be used for this purpose.
- The completed Risk Register Template with residual risks documented shall be forwarded by the Seqwater Engaging Officer to the relevant Seqwater Site Owner to gain confirmation that they are willing to accept all residual risks prior to implementation of the design (i.e. prior to construction commencing).

Any queries or support required by a designer in relation to safety should be directed by the designer (for internal designs), project manager or engaging officer to the ESA Unit via the Engineering Mailbox: engineering@seqwater.com.au.

Implementing the design

Once the design work has been completed:

- any item of plant must be installed in accordance with the WHS Safe Work with Plant Procedure ([PRO-00867](#))
- any construction work must be undertaken in accordance with the Contractor Management Procedure (HSW, Env & DWQ) ([PRO-00808](#)).

Once the design has been fully implemented any outstanding risks (residual risks) must be transferred into the WHS risk register for the workplace. This is completed by the Seqwater Engaging Officer responsible for the installation or construction work by emailing safety@seqwater.com.au and requesting an amendment to an existing WHS risk register, and including in the email a copy of the WHS Risk Register Template ([TEM-00023](#)) detailing residual risks, together with the evidence of the Seqwater Site Owners acceptance of those residual risks.

Any queries or support required to support the safe installation or construction of the design should be directed to the Work Health and Safety Team via safety@seqwater.com.au.

11.4 Seqwater SiD Consultation Requirements

Consultation is a legal requirement for managing work health and safety risks and an essential part of ensuring a design is fit for purpose. A safe workplace is more easily achieved when people involved at the Design Stage communicate with each other about potential risks and work together to find solutions. By drawing on the knowledge and experience of other people, including Workers, more informed decisions can be made about how the building, plant, or structure can be designed to eliminate or minimise risks while ensuring that it meets the needs of the business.

As a minimum, Workers who will be operating and maintaining Seqwater's Infrastructure must be consulted at all stages of the design process. It is the responsibility of the Seqwater Engaging Officer engaging a designer to ensure this consultation is undertaken using the procedures as outlined above.

11.5 Registration of Plant and Plant Designs

The *Work Health and Safety Regulation 2011 (Qld)* requires that certain plant designs and certain items of plant are registered with Workplace Health and Safety Queensland (WHSQ).

Design registration with Workplace Health and Safety Queensland (WHSQ) ensures that plant listed in Schedule 5 of the *Work Health and Safety Regulation 2011 (Qld)* is designed and verified to appropriate technical standards prior to being supplied. If the design of such plant is altered so that new risk control measures are required, the altered design must also be registered.

An application for plant design registration is required before supplying the items listed in Part 1 of Schedule 5 of the *Work Health and Safety Regulation 2011 (Qld)*. The application for registration of designs is the responsibility of the designer who is undertaking work for

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Seqwater. Registration should be completed through the submission of *Form 14 - Application for registration of plant design* which is available from www.worksafe.qld.gov.au.

The designer or registration holder must provide the design registration number with each item of plant that is supplied to Seqwater. The Seqwater Engaging Officer engaging a designer for relevant plant must ensure that the plant design registration has been submitted and the design registration number is provided to the AIM Unit (asset.information@seqwater.com.au) and made available to the Maintenance Coordinator responsible for the region in which the plant is located.

Items of plant listed in Part 2 of Schedule 5 of the *Work Health and Safety Regulation 2011* (Qld) (registerable plant) are also required to be registered with WHSQ. Such items of plant are registered, managed and maintained in accordance with the WHS Safe Work with Plant Procedure ([PRO-00867](#)). This procedure ensures that registered plant is routinely inspected by a competent person to ensure it is safe to operate.

12 Seqwater's Risk Management Framework

Application of appropriate controls for engineering during the Asset Lifecycle, as documented in this Procedure, is an important risk management tool for Seqwater. To ensure a consistent and coordinated approach to the management of risk when applying this Procedure, and to understand Seqwater's broader position on risk, the requirements herein must be used in conjunction with the requirements outlined in the Seqwater Risk Policy Statement ([POL-00013](#)), the Seqwater Enterprise Risk Management Framework ([FRA-00014](#)) and the associated Seqwater Risk Matrix contained therein.

13 Changes from previous version

This Procedure will be regularly reviewed and updated, including the consideration of requested alterations, in accordance with Seqwater Procedure X-PRO-STD-004 Development and Review of Asset Standards ([PRO-01874](#)).

Table 13-1 – Changes from previous version

Section Number	Change
Section 1	Further details added regarding requirements for compliance with the Professional Engineers Act and reference to Appendix A for examples specific to Seqwater.
Section 3	Definitions for Code of Practice and Engineering Mailbox added.
Section 5 (Table 5-1)	Responsibilities of Engaging Officer updated to include responsibility for receiving, assessing and submitting Engineering Statements to the Engineering Mailbox with the IFC and As-Constructed Drawings.
Section 6 (Table 6-2)	Reference to the Board of Professional Engineers of Queensland's Code of Practice updated to reference the new version title published by the Board on 29/11/2021.
Section 9 (Table 7-1)	Construction phase updated to include completion of As-Constructed Drawings.
Section 9.3	Requirements for submission of Engineering Statements and associated drawings to the Engineering Mailbox, consistent with Engineering Procedure X-PRO-STD-007 Drawing and Spatial Data Standards.

14 Verification

Compliance with this document may be verified by internal audit.

15 Further Information

For further information please contact the owner of this document.

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Appendix A – RPEQ Requirements and Activity Examples

The Seqwater Engineering Design, Construction, Operation and Maintenance Procedure provides a framework to ensure compliance with the *Professional Engineers Act 2002 (Qld)*. The main objects of the *Professional Engineers Act 2002 (Qld)* are to:

- Protect the public by ensuring engineering services are provided by a registered professional engineer in a professional and competent way.
- Maintain public confidence in the standard of services provided by professional engineers.
- Uphold the standards of practice of registered professional engineers.

The *Professional Engineers Act 2002 (Qld)* requires persons performing a “professional engineering service” in Queensland to be registered as an RPEQ for the type of service being provided, or to be supervised directly by an RPEQ registered for that type of engineering service.

This means that all work deemed to be a ‘professional engineering service’ will either be performed directly by a Registered Professional Engineer of Queensland (RPEQ), or be directly supervised by a Registered Professional Engineer of Queensland (RPEQ) who is practicing within their discipline and area of expertise.

The *Professional Engineers Act 2002 (Qld)* defines a ‘professional engineering service’ as ‘an engineering service that requires, or is based on, the application of engineering principles and data to a design, or to a construction, production, operation or maintenance activity, relating to engineering, and does not include an engineering service that is provided only in accordance with a prescriptive standard.’

Note: The relevant supervisor or project manager is still accountable in ensuring that asset modifications are completed to scope, budget, quality and schedule; the RPEQ only has technical responsibility for those areas that are defined as “professional engineering services”.

The table shown in Appendix A is an indicative list intended to provide guidance on activities where RPEQ responsibility either are, or are not, required under the *Professional Engineers Act 2002 (Qld)*. This is not an exhaustive list; other circumstances may require review.

When doubt exists on whether a task is considered a professional engineering service an RPEQ should be consulted. Case specific circumstances may require engineering judgement, knowledge, skills and experience to determine if a task is a professional engineering service (e.g. repair scope to equipment may depend on amount of damage, risks and failure modes).

At Seqwater, the Principal ESA or their delegate may be consulted to provide guidance on the classification of tasks and the need for RPEQ involvement.

Refer to the guideline document [GDE-00242](#) *Guidance for Professional Engineering Services at Seqwater* for further details.

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Activity		Professional Engineering Service?	Comments
Type of Work	Details	(Yes or No)	
Asset management	Extension or modification of inspections /refurbishment schedule outside specified limits	Yes	For any extension or modification to a maintenance activity, a documented justification must be provided by an RPEQ.
Asset management	Strategic level asset plans	No	High level asset management strategies and philosophies.
Asset management	Asset objectives, targets and requirements.	No	Preparing water supply strategy, policy direction, establishing service needs and providing investment direction is not a professional engineering service. This includes pre-design work to establish demand drivers or legislative-driven requirements. It also includes statistical analysis or probabilistic modelling applied to water balances.
Asset management	Asset class plans	Yes	The technical basis of the asset class plan must be the responsibility of an RPEQ(s) if any interpretation of applicable standards and/or the application of any kind of engineering judgement is required. The scope of RPEQ involvement may vary between different asset classes.
Asset management	Implementation of asset management plans	No	The application of an asset class plan or OEM manual may be considered undertaking work to a prescriptive standard. Any modification (e.g. frequency) is a change to asset plans and engagement of an RPEQ will be required.
Asset management	Statutory compliance auditing	No	If auditing against a prescriptive code, standard or procedure and RPEQ is not required. For example, Residual Current Device (RCD) inspection may not require RPEQ.
Asset management	Auditing of compliance with asset management plans	No	The management and governance of asset management strategies and plans does not require an RPEQ.
Asset management	Plant condition assessments where no prescribed procedure exists	Yes	Where no procedure is available to define the assessment criteria or approach to inspection and reporting and RPEQ must be involved to determine if a professional engineering service is required.
Asset management	Plant condition assessments where a procedure is followed.	No	Routine condition assessments where a procedure is followed that defines the assessment criteria does not require an RPEQ. Suitably qualified inspection and testing personnel may still be required (e.g. Non-Destructive Testing NDT certified).

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Activity		Professional Engineering Service?	Comments
Type of Work	Details	(Yes or No)	
Asset management	Plant condition assessment – resulting actions based on prescriptive standards	No	Where the application of engineering judgement, skills and experience is not required.
Asset management	Plant condition assessment – actions are not based on prescriptive standards	Yes	Specialist fitness-for-service inspections without prescriptive procedures or documentation require an RPEQ.
Commissioning	Development of commissioning plans	Yes	Development of commissioning plans and test procedure and test sheets is considered a professional engineering service.
Commissioning	Implementation of commissioning plans	No	The execution of a commissioning or testing procedure does not require an RPEQ if it is performed in accordance with a prescriptive standard.
Commissioning	Deviation from or change to a commissioning plan or testing procedure	Yes	Development of commissioning plans and testing procedures is considered a professional engineering service, therefore a change to them is also a professional engineering service.
Design	Design and implementation of plant, systems and processes by Seqwater.	Yes	For design work completed internally by Seqwater staff where the application of engineering principles are used to create a plan and solution an RPEQ is required.
Design	Design, supply and implementation of plant, systems or processes from “Third Party” companies, including overseas suppliers.	Yes	For “third party” design work not done or supervised by Seqwater staff, the provider of the design/service/equipment (OEM) is responsible for RPEQ sign-off. Seqwater staff shall make the supplier aware of the requirements of the <i>Professional Engineers Act 2002 (Qld)</i> , and the need for the supplier’s RPEQ sign-off.
Design	Design review	No	Performing a design review is not considered a Professional Engineering Service. This assumes single point accountability for a design and that the designer receiving review feedback remains responsible for providing that design as a Professional Engineering Service. The accountable designer is responsible for accepting or rejecting design review feedback.

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Activity		Professional Engineering Service?	Comments
Type of Work	Details	(Yes or No)	
Design	Design verification	Yes	Verification of a design is a Professional Engineering Service if it involves calculations or a role as technical advisor. This includes verification of the existing state of assets and systems.
Design	Design basis	Yes	Preparing a basis of design for further engineering work is a professional engineering service. This includes verification and use of the existing state of assets and systems to establish current and future performance requirements.
Documentation	Development or update of O&M manuals & procedures	Yes	Any deviation from original OEM procedures or creation or significant update (for complex plant in particular) must be the responsibility of an RPEQ. Prescriptive standards or procedures for simple plant (e.g. common mechanical equipment) that do not contravene OEM instructions may not require RPEQ involvement.
Documentation	Drawing approval (technical)	Yes	RPEQ sign-off is required for any technical updates to new drawings or existing drawing updates. (Note – this excludes “as-found” drawings which are a drawing recording existing Seqwater’s Infrastructure, so have not involved the undertaking of a Professional Engineering Service in their preparation).
Documentation	Drawing approval (non-technical)	No	Non-technical updates to drawings (e.g. title blocks, logos) do not require an RPEQ.
General	Interpretation of an Engineering Standard	Yes	The interpretation of an engineering standard is a Professional Engineering Service.
General	Preparation of technical specifications including engineering standards.	Yes	Where the preparation of these specifications requires the application of engineering knowledge, judgement, skills and experience an RPEQ must undertake or supervise the work.
General	Technical risk assessment facilitation (e.g., facilitating HAZOPs)	No	Technical hazard studies may be facilitated by a non-RPEQ engineer.

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Activity		Professional Engineering Service?	Comments
Type of Work	Details	(Yes or No)	
General	Technical risk assessments (e.g. technical plant issues, HAZOP mitigations)	Yes	Any changes or additions to a design that may be incorporated as a result of a technical hazard study should be undertaken or supervised by an RPEQ. This approval may be part of the boarder approval process for the project.
General	Technical investigations	No	Facilitation of a technical investigation is not a professional engineering service if undertaken to a prescribed procedure (for example, ICAM).
General	Technical investigation – using engineering specialist services	Yes	Technical investigations that require subject matter expertise as a Professional Engineering Service should be performed by an RPEQ. Examples of specialist services requiring Professional Engineering Services include arc-flash or material science failure analysis.
General	Technical investigation – using non-engineering specialist services	No	When specialist services are applied to a technical investigation an RPEQ is not required if the subject matter expertise is outside the definition of Professional Engineering Service. Examples of specialist services not requiring professional engineering services include water quality analysis or review of control system software.
General	Scientific services	No	Gathering and analysing a set of data to provide an understanding of system performance and to make conclusions is not a Professional Engineering Service. For example, gathering environmental samples, testing, documenting results, identify the sources of pollution and developing a strategy to treat polluted areas does not require an RPEQ.
General	Application of scientific services	Yes	Using engineering principles to create a plan of action using information provided by a scientist is a Professional Engineering Service. Once provided with data, an analysis, and a recommendation by a scientist, engineering begins with the application of engineering principles that are used to create a plan and solution. For example, planning, designing or implementing measures to prevent, control, or remediate environmental hazards by use of a chemical bund or drainage system.

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Activity		Professional Engineering Service?	Comments
Type of Work	Details	(Yes or No)	
Digital Technology (traditionally grouped into ICT)	Activities that could reasonably be considered to influence the integrity of operations that could impact water supply, water quality or human safety.	Yes	Technologies such as Internet of Things (IoT) should be assessed as may require engineering depending on the application. Design of Wide Area Network (WAN) should be assessed for engineering activities particularly if operational data is transferred from one site to another and used in operational decisions.
Digital Technology (traditionally grouped into ICT)	Activities that could reasonably be considered NOT to influence the integrity of operations that could impact water supply, water quality or human safety.	No	Typically, corporate systems such as email, data warehouses, data analysis, configuration and upkeep of software used in operations and maintenance such as ERP systems (i.e. CIS), etc.
Maintenance	Protection configuration or setting change (outside prescribed limits)	Yes	'Prescribed limits' are those set by OEM or other competent authorities. Any change outside of a prescribed limit must involve an RPEQ.
Maintenance	Plant return to service after major maintenance activity	Yes	Return to service approval after a major maintenance activity is considered a Professional Engineering Service unless a like-for-like replacement has been performed.
Maintenance	Plant return to service after minor refurbishment	No	Return to service after minor repairs, following prescribed standards, does not require RPEQ.
Maintenance	Major asset, plant or high risk equipment maintenance activities.	Yes	Maintenance activities not performed to a prescribed standard are a Professional Engineering Service. It is essential to ensure safety, statutory and engineering requirements are considered when performing major maintenance activities. Preparation of a lifting plan for a maintenance activity to remove a motor is an example of where an RPEQ is required.
Maintenance	Minor, like-for-like maintenance activities.	No	When performing maintenance using the same parts applied to the same configuration of equipment an RPEQ is not required. For example, replacing a valve of same type, model and specification without modifying any piping or other ancillary systems.
Maintenance	Minor maintenance activities to a prescribed standard.	No	The execution of maintenance activities to a prescribed standard does not require an RPEQ. For example, equipment lifts to a lifting plan

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Activity		Professional Engineering Service?	Comments
Type of Work	Details	(Yes or No)	
			prepared by an RPEQ or using a gantry crane in accordance with OEM instructions.
Modelling	Modelling and analysis of plant equipment or systems	Yes	Any modelling tasks involving the application of engineering knowledge, judgement and skills are a professional engineering service. For example, using transient analysis to size a pump or pipe is an engineering service.
Modelling	Network demand modelling for long term planning	No	Assessment of demand forecasts, early planning options and economic factors is not considered a Professional Engineering Service. Gathering and analysing data to provide an understanding of system performance and to make conclusions is not a Professional Engineering Service. For example, undertaking a transient analysis where it is not applied to create a plan and solution.
Operations	HACCP plans	No	Creation of HACCP limits by analysing water quality data and using industry guidelines to provide a recommendation on system operating parameters is not a Professional Engineering Service.
Operations	HACCP operational controls	Yes	Developing a design that achieves the requirements of HACCP or other operating parameters where it involves interpreting data and applying it to a solution is a Professional Engineering Service.
Operations	Operating strategy changes outside prescribed limits or conditions specified in plant plans	Yes	Operating a water treatment plant above or below the capacity to which it was designed must have engineering approval by an RPEQ of an appropriate discipline.
Operations	Operating strategy changes within prescribed limits or conditions specified in plant plans	No	Starting, stopping and operation of an asset in accordance with its design is not a professional engineering service.
Operational Technology	Temporary logic change (including interlocks) outside prescribed limits	Yes	A temporary change does not remove the requirement for Professional Engineering Services to be applied.
Operational Technology	Temporary logic change (including interlocks) within prescribed limits	No	When within a design or prescribed limit temporary logic changes may be made without needing to involve an RPEQ however appropriate change management process must be followed.

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Activity		Professional Engineering Service?	Comments
Type of Work	Details	(Yes or No)	
Operational Technology	Process control change. Control logic change that modifies the process (e.g. Modifying pump speed to perform outside prescribed limits)	Yes	Any changes to process control must have engineering approval by an RPEQ in an appropriate area of competence. A functional description must have engineering approval by an RPEQ of an appropriate discipline before implementation of programming.
Operational Technology	Control system configuration change (Non-Process) Logic change that does not modify the process (e.g. Adjustment of trend range)	No	These changes should be undertaken using the X-PRO-STD-015 Management of Change – Technical Procedure (PRO-02234).
Operational Technology	Control system programming without a prescriptive standard.	Yes	All programming should be performed to a prescriptive standard. However, without a prescriptive standard approved by a RPEQ of an appropriate discipline control systems programming must be performed by an RPEQ.
Operational Technology	Control system programming performed to a prescriptive standard.	No	A prescriptive standard may be a functional description that has engineering approval by a RPEQ of an appropriate discipline.
Operational Technology	Control system patch management (e.g. Update of firmware)	No	These types of changes should be performed following the Seqwater Corporate ICT Change Management Policy (POL-00118).

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