Procedure

Engineering Standard X-PRO-STD-014 Drawings Management

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

Contents

1. Purpose

This document is part of a suite of Seqwater Engineering Standards which are in alignment with the Seqwater Quality Management System. Their purpose is to provide a consistent approach to the development, modification, and management of Seqwater infrastructure that is fit for purpose and safe so far as is reasonably practicable. Advice must be sought from Seqwater to clarify any ambiguities in relation to this document.

This document describes the Procedure for Drawings Management required to maintain an up-to-date Seqwater drawings database.

Seqwater asset drawings are an essential information resource to support the lifecycle of asset management; from design through delivery and into operations. Seqwater drawings are managed in a single electronic database that is critical to maintain currency and accuracy of drawings. This also supports Seqwater's compliance with the *Public Records Act 2002 (Qld)* and the Queensland State Archives requirement to retain as-constructed drawings as a permanent record of all Seqwater infrastructure.

2. Scope

This Procedure shall apply to all Seqwater employees, contractors, suppliers, 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 per the deviation process noted in *X-PRO-STD-008 Asset Standards Management and Application*.

This Procedure shall apply to all assets owned by Seqwater and represented as a drawing. It shall apply to all Seqwater business functions spanning water storage, treatment and supply assets which includes corporate buildings, information technology systems, recreation assets and the like. It applies to all drawings that may be denoted as schematics, diagrams, plans, details, layouts, general arrangements, and the like. Only Seqwater shall designate what is considered a drawing pertaining to an asset owned by Seqwater.

The Procedure does not apply to:

- Leased assets that are not owned by Seqwater.
- Other organisation's assets or infrastructure that are not owned by Seqwater.

Seqwater undertakes regular updates of its Engineering Standards. Before utilising this Procedure, the complete list of Seqwater Engineering Standards should be reviewed to ensure currency and applicability of standards to be applied to the works.

Advice must be sought from the Seqwater Document Owner, via the Engineering Mailbox, to clarify any ambiguities in relation to this Procedure.

3. Drawings Correspondence

All official correspondence in relation to Drawings Management shall be directed via the Engineering Mailbox (engineering@seqwater.com.au). This assists the Engineering Standards and Assurance Unit (ESA) to manage correspondence and ensure timely response to requests while assisting to manage the workload of the team and assist with resource planning.

4. Drawings Database

When Seqwater was formed in 2013 there were multiple databases kept by various groups of various qualities. It took four years to consolidate these into a single electronic database in REX. This now forms Seqwater's controlled drawings database.

4.1. Location

Drawings are located and managed within the Seqwater corporate document management system, REX. Drawings are stored in containers with each container representing an asset or part of an asset.

Container Record Numbers are "INO/DRA/XXX" where "XXX" is a three or four digit number. Currently these numbers range from 402 to 1016 (as at March 2025), however these will expand as additional Seqwater assets are created.

Drawings can be located in a number of ways:

- **REX Search:** Record number search for relevant Containers (refer Section 4.2 below).
- **Waternet Drawing Index:** Seqwaters intranet, Waternet, functions as a drawings database index. There are two main indexes as summarised in Table 4-1 –.

Table 4-1 – Waternet Drawings Database indexes

Waternet location	Description	Use
On the home page select *Asset Management*, then under the *Asset Information Management* heading select *As Constructed Drawings*	Access to full set of As-Constructed Drawings (*All-ASCON*) as well as links to drawings grouped by asset types e.g., water treatment plants.	Users must manually search further for the required asset.[1]
n the home page select *Asset Management*, then under the *Our Sites* heading is *Location and Assets* *(NOTE - THIS AREA IS CURRENTLY STILL UNDER DEVELOPMENT)*	Each asset is presented as a hyperlink with an *As Constructed Drawings* link under *Key Documents On This Site* on that asset's page.	User can find the most appropriate REX folder pertaining to an asset. Note the asset boundary designations used in the REX folder groupings may not match that used in the Waternet page[2].

Each REX container includes the following:

- **PDF files:** each pertaining to a drawing. The PDF files are accessible to anyone but when downloaded or printed are "Uncontrolled" documents.

[1] Unless the user is confident on where the drawing is located it is recommended to always select "All-ASCON" and then either sort into alphabetical order of "Title" field, or undertake a Refine Search to locate the required drawing.
[2] Asset boundaries can be complicated when multiple assets are located near to or at the same location, often sharing services.

- **Native Drawing Files (e.g., CAD files):** native drawing files where original document creation is undertaken before conversion to PDF. Not all PDF files have accompanying CAD files. CAD files are contained in ZIP folders. CAD files are only accessible to the Coordinator, Plans and Drawings. They can be checked out for use on request.
- **Drawing Index:** An excel spreadsheet listing all drawings relating to an asset. This file is used by the Coordinator, Plans and Drawings to manage drawings status and is view only enabled for everyone else. This can be used for searching for a specific drawing.

For additional information and detailed instructions on locating drawings refer to Procedure *X-PRO-STD-012 Accessing Drawings Stored in REX*.

4.2. REX Functionality

The following are key aspects of REX functionality as it relates to the drawings database:

- Use the wildcard search INO/DRA/* to return all drawing containers in REX. Users can then sort into alphabetical order based on the field “Title”, or undertake “Refine Search” to locate specific asset drawings – for example using a “Title Word” search to search for a container relating to a specific asset”.
- To search within a REX drawing container, the user must double click the container name to open the files. A Refined Search function can be used to search for the specific drawing.
- Project drawing revisions should be stored in ZIP folders to avoid uncontrolled drawings being returned in REX searches.
- The drawings must be individually entered to REX as an author must be added individually, bulk upload is not possible.

4.3. Hardcopy Drawings

A single electronic drawings database establishes a controlled environment that is critical to maintain currency and accuracy of drawings.

Hardcopy drawings exist outside of that controlled environment and are therefore “uncontrolled” documents. It is therefore important to recognise that any such hardcopy drawings are “uncontrolled” drawings and may not represent the latest version of the drawing.

Use of uncontrolled documents such as hardcopy drawings is therefore to be discouraged however, there is a need for hardcopy drawings onsite to meet legislative and operational requirements. Therefore an “Uncontrolled Hardcopy Drawings Set” corresponding to all assets within a geographical region will be maintained by Seqwater Operations at regional site offices as follows:

- Landers Shute WTP
- North Pine WTP
- Capalaba WTP
- Hinze Dam WTP
- Mount Crosby Westbank WTP

Seqwater Operations may maintain additional Uncontrolled Hardcopy Drawings Sets at any site pertaining to the assets at that site if required, however shall implement procedures to keep record the location and contents of all such additional Uncontrolled Hardcopy Drawing Sets.

Uncontrolled Hardcopy Drawings Sets are to be maintained in folder/s which is/are clearly labelled on the front cover with the words:

"UNCONTROLLED DRAWINGS – CHECK SEQWATER DRAWINGS DATABASE FOR LATEST VERSION BEFORE USE"

Users are encouraged to maintain Uncontrolled Hardcopy Drawings Sets as a single hardcopy of each drawing for the region/site in a folder set with plastic sleeves. It is recommended that periodically all hardcopy drawings held in these sets are checked against the database for currency, and any out-of-date versions replaced with the current versions. It is the responsibility of the Site Supervisor at each site to determine the required frequency of these checks.

Before relying on any uncontrolled drawing users shall check the REX Drawings Database controlled copy for currency and ensure they use current version.

4.4. Drawings Standards

Seqwater drawings are subject to corporate standards, with the key standards being:

- X-PRO-STD-002 Engineering Drawing Number Procedure
- X-PRO-STD-007 Drawing & Spatial Data Standards Procedure
- X-PRO-STD-014 Drawings Management
- X-PRO-STD-009 Engineering Design, Construction, Operation and Maintenance
- E-SPE-STD-001 Electrical Design and Construction Standard Specification
- B-SPE-STD-007 Process Flow Diagram and Piping and Instrumentation Diagram Requirements Standard Specification
- B-PRO-STD-003 Piping and Instrumentation Diagram Drafting Procedure

In addition to the requirements contained in the above standards, is the need for a status stamp to administer this Procedure. In the bottom right hand corner of the drawing, above the template box shall be a stamp to indicate the status of the drawing. The following stamps are available for use:

- As Constructed (note that Seqwater uses AS CONSTRUCTED as opposed to AS BUILT)
- Issued For Construction
- Issued For Review
- Preliminary Not For Construction
- As Found
- Issued For Tender
- Issued For HAZOP
- Issued For Information Only

When these stamps are used and what they pertain to is described in the following sections.

The title block, complying with *X-PRO-STD-007 Drawing & Spatial Data Standards*, shall still function as a register of revisions and notes to describe the drawing update undertaken.

5. Drawings Management Process

The drawings management process is represented diagrammatically in the flowchart in Appendix A. (Note – a clearer version is available as REX Document No. D20/134016).

The following sections describe the drawing management process through each phase of the asset lifecycle, as well as other instances where drawings may need to be developed of amended as shown on this flowchart.

5.1. Project Initiation Phase

Project Initiation has been selected as a generic term to represent investigation and design activities early in an asset lifecycle, notionally termed the preliminary design phase, managed by Seqwater planners. The need for drawings would be determined through the preliminary design by those involved.

Initially the drawings database shall be assessed by the planners for drawings requirements, noting drawings that there may be already existing and any new drawings required. This should be done using the drawings index for the relevant REX folders.

Liaison with the Coordinator, Plans and Drawings is required to release existing drawing CAD files for update and / or issue new drawing numbers for any new drawings required. To facilitate this an email should be sent to the Engineering Mailbox (engineering@seqwater.com.au) requesting drawings to be checked out and / or new drawings numbers required, quoting a reference number and a relevant Work Order Number provided so that time for this can be recorded against the project.

. This reference number is required to release drawings for tracking purposes and shall be either:

- a Project PID number, or
- an APMP number, or
- a Management of Change (MoC) number

The person who sends the email shall be a Seqwater employee and is designated as the *Seqwater Drawings Requestor*.

Upon receiving the request the Engineering Mailbox logs it and forwards it to the Coordinator, Plans and Drawings who shall review the request for accuracy and then:

- Check out existing drawing CAD files by noting the requestor's name, date and PID or MoC reference number in the REX CAD file and drawings register.
- Allocate new drawings numbers as per the processes in X-PRO-STD-002 Drawing Number Procedure.
- Email the files and other information to the Seqwater Drawings Requestor.

If a drawing is currently checked out, then the drawing is not available for immediate use due to the *One Drawing; One User* rule (see Section 0).

5.2. Project Planning Phase

Project Planning begins with the receipt of drawings and/or new drawing numbers from the Coordinator, Plans and Drawings. The *Seqwater Drawings Requestor* may then issue these to users as required.

The *Seqwater Drawings Requestor* shall manage the drawings development through the design development and use the appropriate design files storage. The *Seqwater Drawings Requestor* shall assure the technical content of

the drawings and ensure compliance with drawings presentation and template standards such as *X-PRO-STD-007 Drawing & Spatial Data Standards*.

The development of the drawings shall follow the revisions flowchart as shown in Figure 1.

If a new drawing is created, it should start at "Rev A" and progress through alphabetical revisions until it reaches Issue for Construction (IFC) when numerical revisions shall commence starting from Rev 0. If an existing drawing is modified, it should start with the last number suffixed with an "A" e.g. REV 1A, and also progress through alphabetical revisions, only proceeding to the next numerical revision on achieving Issue for Construction. The scope of the design development in the design phase will determine how many alphabetical revisions there are and if indeed a REV numerical is achieved. These requirements are summarised below:

<u>New Drawings (IFC)</u>

1. "Issued for Construction" stamp applied to the bottom right hand corner of the drawing.
2. Revision history table put in as "Revision 0", "Issued for Construction", with all preliminary revision history deleted. All fields in the Revisions Description to be completed with details added in the CAD file.
3. The relevant Revision Number, Name, Date, Signature & RPEQ Number of the RPEQ Responsible Engineer plus the Name, Date & Signature of the person approving the issue in the relevant revision boxes within the drawing template. The signatures are not to be added in the CAD file but shall be added to the PDF file as either a digital or wet-signed signature – scanned images are not acceptable.
4. No revision clouds or triangles to be shown on the drawings at IFC.
5. Changes made to the drawings post-IFC are to be clouded and are to remain on the As Constructed drawings
6. Deliverables – signed .pdf and AutoCAD .dwg file saved in 2018 format (E-transmit/bound) as per the requirements in *X-PRO-STD-007 Drawing & Spatial Data Standards Procedure*.

<u>Modification of Existing Drawings (IFC)</u>

1. "Issued for Construction" stamp applied to the bottom right hand corner of the drawing.
2. Preliminary revision history table line items to be deleted. E.g. Existing drawing is Revision 6 – 6A, 6B preliminary IFR lines to be removed. Drawing issued as "Revision 7", "Issued for Construction". All fields in the Revisions Description to be completed with details added in the CAD file.
3. The relevant Revision Number, Name, Date, Signature & RPEQ Number of the RPEQ Responsible Engineer plus the Name, Date & Signature of the person approving the issue in the relevant revision boxes within the drawing template. The signatures are not to be added in the CAD file but shall be added to the PDF file as either a digital or wet-signed signature – scanned images are not acceptable.
4. Existing revision clouds from project preliminary revisions to be up-revved effectively acting as a scope cloud. All clouds indicating changes made to this drawing by the project team since the last As Constructed issue are to remain on the drawing for the life of the project, up to and including the As Constructed issue for this project as these clouds indicate the scope of the work under this project for which the project team is responsible for.
5. Deliverables – signed .pdf and AutoCAD .dwg file saved in 2018 format (E-transmit/bound) as per the requirements in *X-PRO-STD-007 Drawing & Spatial Data Standards Procedure*.

The Business Case / Handover milestone represents the end of the Preliminary Design phase. At this point the drawings are packaged up and emailed to the Engineering Mailbox (engineering@seqwater.com.au). Upon receiving the request the Engineering Mailbox will log it and forward it to the Coordinator, Plans and Drawings.

The Coordinator, Plans and Drawings shall:

- Review the drawings pack for accuracy, then
- For existing drawings, a note is added to reference the location of the CAD marked up file. The modified drawing, not representing a constructed asset will not be stored in the drawings database. However, the As Constructed drawing complete with reference note will be added to the database as a new revision.
- For new drawings, as a drawing number has been allocated, the drawing shall be stored in the drawings database. It shall be stamped with a “Not Constructed” status.

Drawings should remain checked out as a default. Only if the *Seqwater Drawings Requestor* advises the project is not progressing further to execution would the drawings be checked in.

If the drawings are deemed to be inaccurate or non-compliant with drawings standards, they shall be sent back to the *Seqwater Drawings Requestor* for correction.

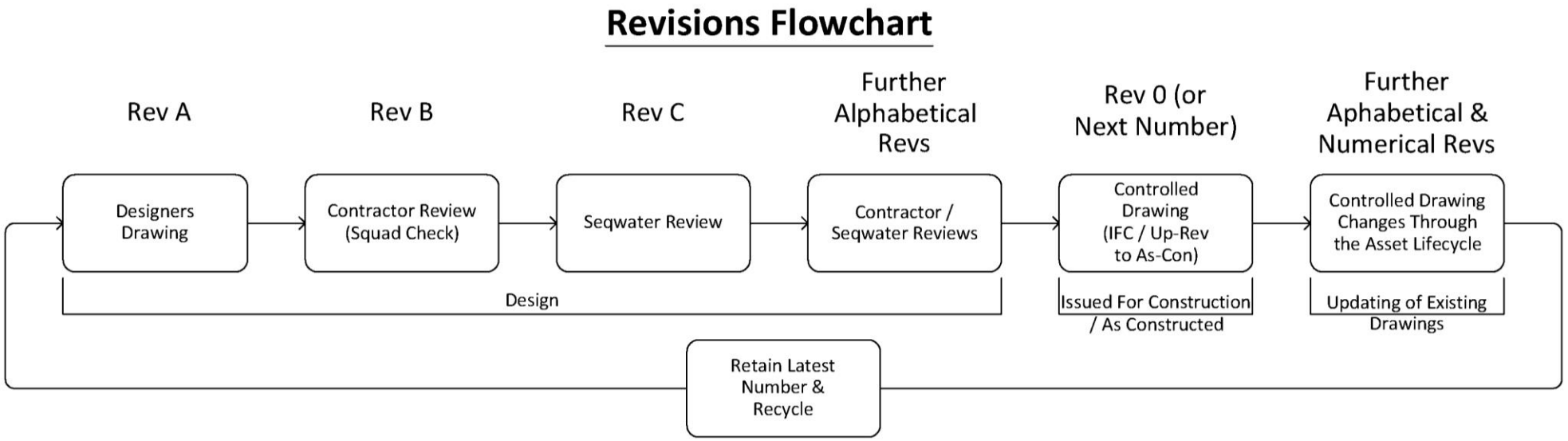


Figure 1 – Drawings Revisions Flowchart

Legend:

IFC: Issued For Construction

As-Con: As Constructed

5.3. Project Execution Phase

The Project Execution phase may or may not directly follow-on from the Project Planning phase. Nonetheless, the Project Manager should assess the drawings database for drawings requirements, noting drawings that are existing and new and those checked out. This should be done using the drawings index for the relevant REX folders.

Drawings that are still checked out to the planner associated with the project would be readily identified. For the Coordinator, Plans and Drawings to change the person who these drawings are checked out is administrative, following the process described subsequently in this section. There may however be other drawings that are checked out and impacted by the One Drawing; One User rule (see Section 0).

The Project Manager should send an email to the Engineering Mailbox requesting drawings check out and / or new drawings numbers and quoting the relevant PID, APMP, or MoC number. The Project Manager is now designated as the *Seqwater Drawings Requestor*.

Upon receiving the request the Engineering Mailbox logs it and forwards it to the Coordinator, Plans and Drawings. The Coordinator, Plans and Drawings shall review the request, check out the drawings, allocate drawing numbers and issue to the *Seqwater Drawings Requestor*.

The Project Manager (*Seqwater Drawings Requestor*) shall manage the design and construction in project files until REV numerical designations for IFC and “As Constructed” as per the flowchart shown in Figure 1 is achieved. This should correspond to just prior to Practical Completion or Gateway 4 (corresponding to the last approval point in MoC, see *X-PRO-STD-015 Management of Change – Technical* for details. All drawings shall be fully compliant with the drawing standards requirements noted in Section 4.4.

The IFC and As Constructed drawing pack shall be submitted via the procedures outlined in X-PRO-STD-010 Asset Information Requirements. The drawings are then forwarded to the Coordinator, Plans and Drawings. The Coordinator, Plans and Drawings shall review the drawing pack for accuracy and then check in the drawings and update the drawings index.

Changes to the As Constructed asset can still occur after practical completion. The Defects phase can result in drawings modifications. Drawings that are altered during Defects shall utilise the ”Operate and Maintain Phase” methodology (Section 5.4). The difference is that any approved changes would be done by the Contractor’s own drafters rather than Seqwater’s. The Coordinator, Plans and Drawings relies on the Project to provide updated drawings during this phase.

The End of Defects milestone represents the end of the project delivery phase of the asset lifecycle. The asset then moves into the Operate and Maintain Phase of the asset lifecycle.

5.4. Operate and Maintain Phase

Drawing modifications during the Operate and Maintain phase of an asset that are not associated with Project Delivery may be required for any number of reasons, but typically to correct errors found on site in the existing As-Constructed Drawings, or as a result of an asset modification being implemented on site outside of a project. Note that all such asset modifications during the Operate and Maintain phase that are not like-for-like shall follow *X-PRO-STD-015 Management of Change – Technical* procedure and associated workflow. These changes would typically include engineering design, engineering construction supervision, and updates to As Constructed drawings.

When drawing changes are identified as being required, initially the drawings database should be assessed for applicable drawings by the relevant personnel who have identified the issue, noting those that are checked out. This should be done using the drawings index for the relevant REX folders. If a drawing is currently checked out, then the drawing is not available for immediate use due to the *One Drawing; One User* rule (see Section 0) and the Coordinator, Plans and Drawings should be consulted.

The PDF As-Constructed drawing shall be redline marked with the required change. All changes shall be clouded up in red as follows: (refer example in Appendix B)

- Clouding around the change/s, with a numbered triangle representing the next drawing revision number within each clouded area.
- A note provided on the Revisions schedule in the drawing title block indicating the purpose of the drawing revision against the next revision number.
- Named, signed and dated by the person authorising the change in the bottom right hand corner (Minimum Level 5 Supervisor).

An email should then be sent to the Engineering Mailbox with the marked up and signed PDF attached requesting the drawing revision, together with Management of Change authorisation if appropriate.

Upon receiving the request the Engineering Mailbox logs it and forwards it to the Coordinator, Plans and Drawings who shall:

- Check that the appropriate level of authorisation (including Management of Change where appropriate) has been received;
- Liaise with other users if the drawing is checked out (see One Drawing; One User rule in Section 6);
- Arrange for CAD mark-up of the drawing utilising Seqwaters drafting standing arrangements; and
- Once the CAD mark-up is complete, send a revised PDF through the Engineering Mailbox to the operations / maintenance personnel who requested the revision for checking and acceptance.

This process can continue until a satisfactory revised PDF is achieved at which time the person who authorised the change shall send an email to the Engineering Mailbox with the accepted drawing attached and advising of its acceptance.

Upon receiving the request the Engineering Mailbox logs it and forwards it to the Coordinator, Plans and Drawings, who shall:

- update the CAD file to include the approvers initials and date approved in the Revisions schedule of the drawing title block;
- load the final revised drawing files (CAD and PDF) into REX; and
- send a PDF of the final revised As-Constructed drawing to the operation/maintenance personnel who requested the change.

A hardcopy of the revised As-Constructed drawing shall then be added to the onsite Uncontrolled Hardcopy Drawings Set by the operations / maintenance personnel who requested the change, where one exists.

5.5. Third Party Works

Third Party Works are works undertaken by persons or organisations that are not Seqwater, nor engaged by Seqwater, which have the potential to impact on Seqwater assets or their safe operation and maintenance.

Consent to undertake Third Party Works is managed by the Seqwater Third Party Works Consents team within the Engineering Standards and Assurance Unit as detailed in *X-PRO-STD-003 Third Party Works Consent Management*.

When Third Party Works are completed the Third Party is required to submit as-constructed drawings of the works to the Third Party Works Consents team. It is the Third Party Works Consents teams responsibility to ensure these As-Constructed Drawings are received in a timely manner, and then to liaise with the Coordinator, Plans and Drawings to capture the relevant As-Constructed Drawing information into the drawings database. This shall include undertaking the redline mark-up procedure as described in Section 5.4 "Operate and Maintain Phase" herein to capture the Third Party Works details onto existing asset drawings.

5.6. New Drawing of Existing Asset

Assets may have been constructed but the drawings are lost or have not been maintained such that new drawings are needed. These drawings should be stamped as per Section 4.4 with "As Found".

Although As-Found drawings can be prepared by non-RPEQs, the drawings will require RPEQ verification/certification prior to anyone using any information shown on them for future designs or modifications to the infrastructure or systems they represent. This is as detailed in Appendix A of Engineering Standard *X-PRO-STD-009 Engineering, Design, Construction, Operation and Maintenance* which requires verification of the existing state of assets and systems prior to using the information as a Basis of Design. While it is preferable that RPEQ verification is done when the drawing is prepared, if this is not done then a red stamp shall be included on the drawing clearly documenting that there has been no RPEQ verification of information on the drawing and stating that RPEQ verification will be required prior to using any information on the drawing as the basis of design for any modifications or upgrades to the infrastructure/systems depicted or changes to their operation or maintenance.

Required wording of stamp to be as follows:

"**CAUTION: The information shown on this As-Found drawing is based on available information and observation of the existing state of the infrastructure and systems depicted at the time of preparation, however, this information has not been verified by an RPEQ and is therefore not suitable to be used as the basis of design for any modifications or upgrades, or changes to the operation or maintenance practices of the infrastructure/systems depicted without verification by an appropriate RPEQ**".

5.7. New Drawing of PDF record

In the drawings database there are a number of entries that are only available as PDF only. This can be due to the age of the drawing & when CAD was not available, was supplied before the current procedures & standards were introduced and the CAD may be corrupted or incomplete.

- If a minor change is required, the PDF will be marked-up using Adobe Acrobat Pro (or similar) with normal drawing practices such as revisions and clouding being applied.
- If a more substantial change is required, the drawing needs to be re-created in CAD. A new CAD drawing requires a new drawing number and the original PDF drawing will be superseded. Over time, the aim is that PDF only drawings will be replaced with modern day CAD versions.

For all such drawings re-created in CAD from an existing PDF, the RPEQ responsible for the changes is also responsible for ensuring that the information from the existing PDF drawing is captured accurately on the new CAD drawing. In addition, all such drawings shall be submitted via the Engineering Mailbox for review by the Plans and Drawings Coordinator or their delegate.

6. One Drawing; One User Rule

To manage drawing quality the O*ne Drawing; One User* rule shall apply. This rule means that if a AutoCAD drawing is checked out to a person, no other person user can use it.

There can be extended timeframes where a drawing is checked out, particularly associated with long term projects or planning. This has led to a backlog of operational / maintenance changes, in particular, while a project reaches completion.

In all instances, where a drawing has been identified as checked out but is required, the Coordinator, Plans and Drawings shall assess when the drawings are requested. In most instances, it is expected that temporary check in is possible to allow the change to proceed. However, in some instances work cannot progress until the drawing is checked in by the user.

It is imperative that all drawings users do not allow drawings to be checked out for more time than is needed. Therefore users should only request drawings when their project is sufficiently advanced to need specific drawings. Users should aim to keep drawings available for operations and maintenance changes.

7. Drawings Management Health

To maintain quality of drawings management, health checks are required.

7.1. Key Roles

Drawings management relies on the Coordinator, Plans and Drawings as the key role. Back-up for this role is from engineers within the Engineering Standards and Assurance (ESA) unit. Normal workforce planning activities are used to manage leave time. The Owner of this Procedure is responsible to ensure workforce planning is adequate to facilitate this Procedure requirement.

7.2. Drawings Update, Supersede & Obsolete

The Coordinator, Plans and Drawings can alter the drawings database by adding an updated drawing, superseding or obsoleting a drawing.

There is no health metrics to measure whether drawings have been superseded / obsoleted when assets are obsoleted. Users should advise the Coordinator, Plans and Drawings when superseding or obsoleting is necessary.

All superseded or obsoleted drawings are maintained in a separate REX container.

7.3. Key Health Indicators

A sample set of drawings will be selected each year and assessed for:

- Requests for check out via Engineering Mailbox
- Checked out drawings are still in use

The goal is to achieve 100% compliance. These are considered key indicators that the Procedure is being followed as intended.

7.4. Database Yearly Reviews

The Coordinator, Plans and Drawings will undertake yearly database reviews including:

- Verifying that all checked out drawings are in use and should not be checked in.
- Visiting sites with hardcopies to check for accuracy against the database.
- Spot checks with Project Managers that new drawings all have drawings numbers issued by the Coordinator, Plans and Drawings.
- Cross check against project close outs that drawings have been received.

8. Approval process

Where noted in this Procedure that Seqwater approval, attention or input shall or should be sought, the methodology to do this is via Seqwater's Engineering Mailbox (engineering@seqwater.com.au). The Principal Engineering Standards and Assurance delegates shall be responsible for responding on behalf of Seqwater.

9. Definitions and Abbreviations

The following definitions in Table 9-2 apply to this Procedure.

Table 9-2 – Definitions

Term	Definitions
As-Con	As Constructed (as opposed to As Built).
Contractor	The Contractor is the entity that, dependent on contracted scope, is responsible for the management and / or execution of the design, construction, commissioning and operation of the asset for the duration of a project (i.e. the "work"). Seqwater can undertake the role of the Contractor.
DWG	AutoCAD Drawing.
Employees	Means persons employed directly by Seqwater in a permanent, temporary or casual capacity.
Engineering Mailbox	Microsoft Office mailbox engineering@seqwater.com.au used to manage engineering correspondence with ESA, including all official correspondence relating to drawings management in Seqwater. The Engineering Mailbox is managed in accordance with X-PRO-STD-016.
Engineering Standards and Assurance unit (ESA)	Team within IPCD that develops and manages Engineering Standards and provides engineering support to the Seqwater business.
GIS	Centralised Spatial (Geographic) Information System program.
IFC	Issued For Construction.
IFR	Issued For Review.

Term	Definitions
Infrastructure Planning & Capital Development (IPCD) - Engineering	Provides Engineering and Technical Support to the Seqwater business.
Leader	Means any Level 1, 2, 3 and 4 Leader with responsibility for managing a functional area of the business, including people management responsibilities within their functional area.
Manufacturer / Supplier / Vendor / Original Equipment Manufacturer (OEM)	The entity that manufacturers or supplies equipment to meet the specifications of the Contract.
MoC	Management of Change – a system and processes to manage changes to reduce the risk and increase the quality and safety of change.
Owner / Principal / Seqwater	The entity that engages the Contractor to undertake the work and takes custody of the outcome. The Owner may delegate responsibilities to other entities to act on its behalf (e.g. a consultant).
PDF	Portable Document Format.
PID/APMP	Seqwater's internal project identifier numbers.
REX	Seqwater Electronic Document and Records Management System.
RPEQ	Registered Professional Engineer of Queensland.
Shall / must	Indicates a mandatory requirement.
Should	Indicates a recommendation.
Worker(s)	Includes all permanent, temporary, and casual employees of Seqwater, and: • vocational and work experience placements • volunteers contractors and consultants employed by another entity but temporarily assigned to do work for or on behalf of Seqwater.
WTP	Water Treatment Plant.
ZIP	Compressed Archive File Format. AutoCAD can create a ZIP file of a drawing using the eTransmit feature, ensuring that all plot table files, font files, reference files and data links are included with the drawing.

10. Roles and Responsibilities

The following roles and responsibilities in Table 10-3 are applicable in the context of this Procedure.

Table 10-3 – Roles and Responsibilities

Role	Responsibility
Coordinator, Plans and Drawings	• Main contact for all drawings database queries. • Coordinates record keeping of Engineering Drawings in REX including checks in / out drawings, issues new drawing numbers, supersedes / obsolete drawings, co-ordinates internal redline mark-up drawing updates, and any other drawings management activities.
Engineering Mailbox Coordinator	• Manages correspondence received by the Engineering Mailbox.
General Manager Engineering (IPCD)	• Accountable for implementation and management of this Procedure.
Operations / Maintenance personnel	• Redline drawings. • Maintain a regionalised hardcopy drawing set.
Others	• Redline drawings. • Access for drawings for information purposes.
Planner / Project Manager	• Assesses the drawings database for requirements. • Would typically take on the role of Seqwater Drawings Requestor.
Principal Engineering Standards and Assurance (ESA)	• Responsible for development, implementation, and management of this procedure. • Manages the Engineering Standards Naming Convention Structure. • Manages the record keeping of Engineering Standards and Engineering Drawings in REX.
Seqwater Drawings Requestor	• Requests existing drawings or new drawing numbers from the Coordinator, Plans and Drawings via the Engineering Mailbox. • Liaises with external drawings users. • Ensures the technical accuracy of drawings.

11. Training and Competency

Table 11-4 – Learning and Development Requirements

Requirement	Description	Refresher Timeframe	Target Audience
Drawings Management Procedures	Overview of Seqwater Engineering Drawings Management Procedures for creation, provision, revision and searching of drawings so that they meet required standards and ensure Seqwater meets its obligations under the *Public Records Act 2002* and Qld State Archive requirements.	On commencement of employment and as required	Project Managers, Engineers, Scientists, Technical Officers, Operations, Maintenance,

12. References and Related Materials

The documents listed in Table 13-6 below, and the requirements therein, are 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.

Seqwater undertakes regular updates of its Engineering Procedures and Standards. Before utilising this document the complete list of Seqwater Engineering Procedures and Standards should be reviewed to ensure currency and applicability for the proposed works.

Table 12-5 – References and Related Materials

Description	Location
PRO-01617 X-PRO-STD-009 Engineering Design, Construction, Operation and Maintenance Procedure	REX
PRO-01872 X-PRO-STD-002 Engineering Drawing Numbers Procedure	REX
PRO-01873 X-PRO-STD-001 Asset Standards Document Classification and Naming Structure Procedure	REX
PRO-01874 X-PRO-STD-004 Development and Review of Asset Standards Procedure	REX
PRO-02187 X-PRO-STD-007 Drawing and Spatial Data Standards Procedure	REX
PRO-02190 X-PRO-STD-006 Asset and Equipment Identifier Procedure	REX
PRO-02205 X-PRO-STD-008 Asset Standards Management and Application Procedure	REX
PRO-02218 X-PRO-STD-016 Engineering Mailbox Task Management Procedure	REX
PRO-02234 X-PRO-STD-015 Management of Change (Technical) Procedure	REX
PRO-02252 X-PRO-STD-003 Third Party Works Consent Management Procedure	REX
PRO-02320 B-PRO-STD-003 Piping and Instrumentation Diagram Drafting Procedures	REX

Description	Location
SPE-00351 Engineering Standard B-SPE-STD-007 Process Flow Diagram and Piping and Instrumentation Diagram Requirements	REX
SPE-00352 Engineering Standard E-SPE-STD-001 Electrical Design and Construction	REX
TEM-00224 Engineering Standard X-TMP-STD-022 Asset Standards Deviation Request Template	REX

13. Changes from Previous Version

This Procedure will be regularly reviewed in accordance with the requirements of the Seqwater Controlled Document Management Procedure. Reviews will include consideration of suggestions for alteration or improvement made in accordance with *X-PRO-STD-004 Development and Review of Asset Standards*. Changes made from the previous version of this document are summarised in Table 13-6 below.

Table 13-6 – Changes from Previous Version

Section Number	Change
5.7 (last paragraph)	Additional paragraph clarifying RPEQ responsibility for CAD drawing created from existing PDF and also requiring Drawing Review by Plans and Drawings Coordinator.

14. Verification

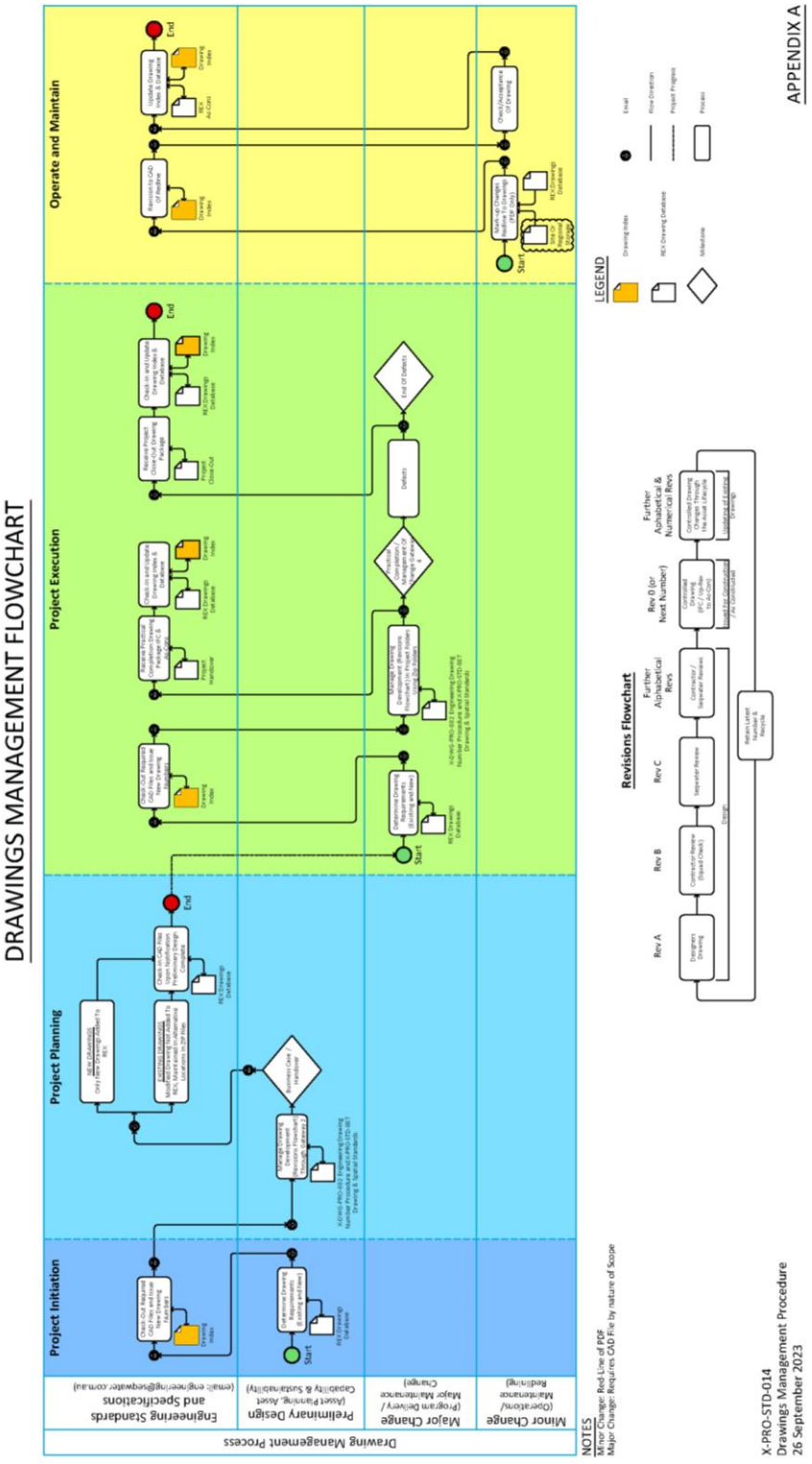
Compliance with this document may be verified by internal audit.

15. Further Information

For further information please contact the owner of this document.

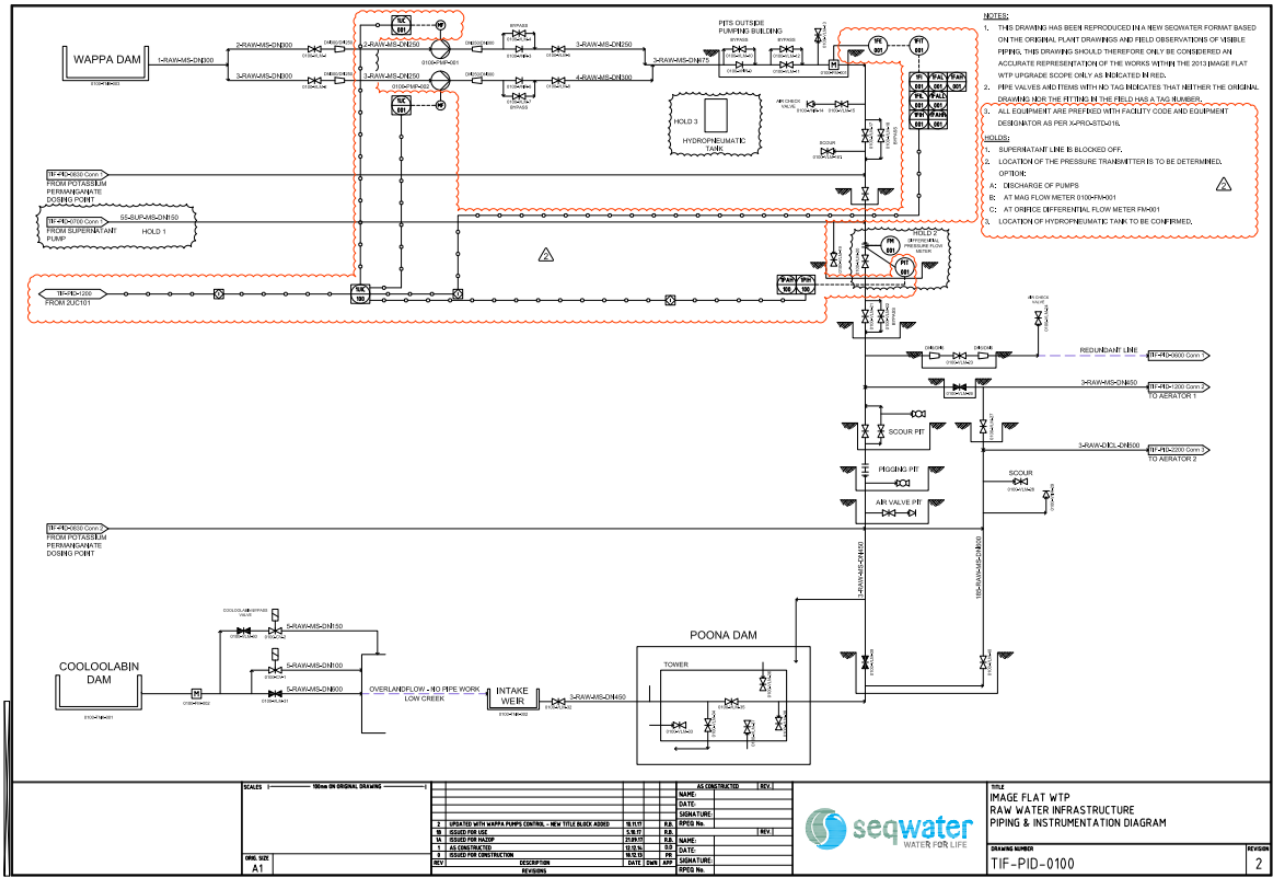
Appendix A Drawings Management Flowchart

(Refer REX Document D20/134016)

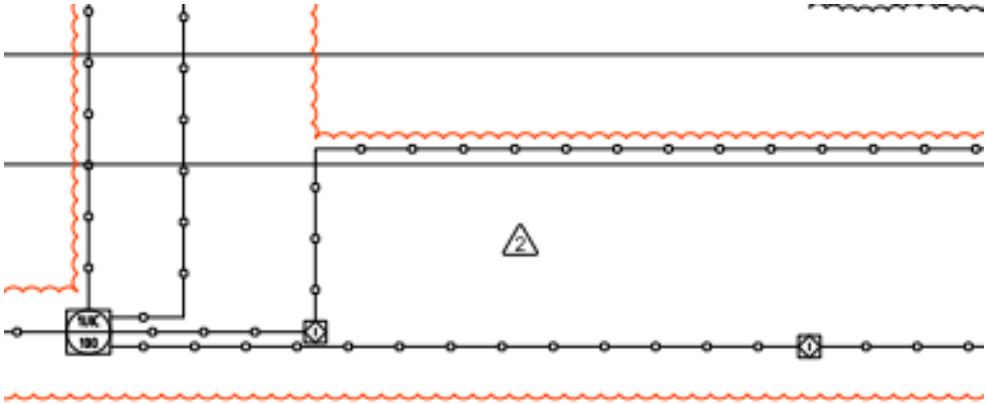


Appendix B Example Redline Mark-up

Example Operate & Maintain Phase Update:



Note the revision cloud with revision number:



Note the updated title block:

REV	DESCRIPTION	DATE	DWN	APP
	REVISIONS			
2	UPDATED WITH WAPPA PUMPS CONTROL - NEW TITLE BLOCK ADDED	10.11.17		R.B.
1B	ISSUED FOR USE	5.10.17		R.B.
1A	ISSUED FOR HAZOP	21.09.17		R.B.
1	AS CONSTRUCTED	12.12.14		D.D
0	ISSUED FOR CONSTRUCTION	16.12.13		PR