

Energy Tag and Lockout

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NOTE – Seqwater have updated their processes and procedures that support Energy Tag and Lockout. This Standard replaces the Energy Tag and Lockout Procedure (PRO-00014).

This new standard takes effect from 2 November 2026.

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1. Purpose

The purpose of this Standard is to establish Seqwater's minimum requirements and processes for the safe isolation and control of hazardous energy so that workers are not exposed to uncontrolled:

- electrical energy (low and high voltage, excluding extra low voltage)
- mechanical, hydraulic, pneumatic and kinetic energy
- process energy (pressure, flow, temperature, chemical/biological hazards)
- potential energy (gravity, stored spring, crushing and entanglement from moving and rotating parts or elastic energy).

2. Scope

This Standard applies to all employees and contractors performing isolations on Seqwater's assets. It applies to all Simple, Complex and Tiered Isolations.

This Standard does not apply to Principal Contractor's (PCs) isolations, however they must still:

- follow Seqwater's Minimum Health, Safety and Environmental Requirements ([GDE-00368](#))
- meet or exceed the isolation standards established by this document and the controls established in Seqwater's Critical Controls Handbook ([MAN-00313](#))

Principal Contractor isolation processes must be confirmed during the contractor engagement, pre-start planning processes and Project Works Permit ([FRM-00777](#)) development. Refer to Seqwater's Contractor Management Procedure (WHS, Env & DWQ) ([PRO-00808](#)) for further information.

3. What is the Risk

Uncontrolled hazardous energy can cause fatal or life-altering injuries including:

- Electric shock, electrocution and arc-flash burns
- engulfment, drowning or toxic exposure from unexpected flow into confined spaces
- crushing, amputation or impact from moving, rotating or falling plant
- chemical exposure from loss of containment.

4. Isolation Critical Controls

There are three critical controls related to isolations:

1. **Critical Control** - Isolation of energy sources (excluding electrical).
2. **Critical Control** - Isolation of all low voltage electrical sources of energy
3. **Critical Control** - Isolation of all High Voltage electrical sources of energy

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The objective of these controls is to ensure all sources of hazardous energy have been de-energised and effectively isolated, secured and verified to allow related work to be done safely.

For these controls to be effective the following performance standards needs to be in place.

- Energy sources have been isolated (including valves, switches, handles, doors, circuit breakers, cabinets) locked in position defined in isolation permits, with isolation hardware, padlocks and tags securely in place.
- Secondary energy sources have been identified and isolated to prevent back feed (including stored pressure, water, mechanical, batteries, backup power supplies and isolated VT circuits if applicable).
- All isolations are documented and approved by an authorised isolator or Seqwater HV Switching Coordinator.
- Functional testing equipment is calibrated and in service/inspection date.
- Signage indicating secondary energy supply is in place where relevant.
- Energy sources, including stored energy, have been dissipated and verified using the correct proving method for the energy type.
- The number of isolation points and locks described in the Isolation Permit matches the number of isolation points and locks used in practice.
- Items of faulty or damaged plant / equipment isolated, locked and tagged 'Out of Service'.
- In addition, for isolation of HV
 - Earthing of HV parts and proving earthing is successful
 - HV switchboards / equipment only opened when isolated, locked, confirmed de-energised and earthed

The following actions must be taken should these performance standards not be met:

Continue Work	• Minor errors or illegibility identified on labelling or diagrams/ P&ID
Pause Work	• Secondary isolation requirements have been identified prior to beginning work - add to plan. • Functional testing equipment is out of inspection/calibration date but alternative equipment can be used. • Tags on locks have faded or are illegible, or do not contain relevant information – replace prior to continuing. • Labelling on plant and equipment, or diagrams/P&ID identifying isolation points, are not accurate. • Equipment is unable to be identified as no label, unidentifiable label or no unique identifiers • Incorrect isolation point has been isolated, identified during test for dead, can be rectified prior to beginning work • Isolation point has been incorrectly isolated, identified during test for dead, can be rectified prior to beginning work • Fault current/incident energy level (Arc flash label) cannot be determined for electrical isolations. A minimum working distance of 455mm must be maintained if test for dead or other live work is approved to continue.
Stop Work	• Area is identified as energised after beginning work. • Isolation cannot be completed or cannot be proven effective.

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5. Minimum Isolation Standards

5.1. Key Principles

The purpose of this section is to define Seqwater's minimum isolation standards for hazardous energy control supported by several key principles

4. Isolation methods must eliminate or minimise exposure to hazardous energy so far as is reasonably practicable and must be selected before any plant is stopped or worked on.
5. Isolation is achieved by positive control of energy sources. Control circuits, SCADA commands, emergency stops, and software interlocks must not be relied on as the isolation method.
6. Each energy source must be verified using a verification method appropriate to the energy type and the work scope (see Control Step 7 in Section 7).
7. Minimum isolation standards are specified according to work scope and isolation assurance levels (Category 1, 2 and 3). It is important to distinguish between "non-electrical work" from "electrical work":
 - a. Non-electrical work: work on mechanical/process plant where electrical isolation is used only to prevent motive power / movement / process hazard, and the task does not expose the worker to electrical hazards (no enclosure access, no approach to exposed conductors, no electrical testing etc).
 - b. Electrical work or working on/near electrical equipment: work that may expose the worker to electrical hazards as defined in [PRO-00006](#) Electrical – High and Low Voltage Procedure (e.g., opening electrical enclosures, removing fuses, racking out breakers, voltage testing, disconnecting supply wiring, working within defined electrical approach/exclusion zones). Isolations related to this work must comply with the minimum standards in Section 5.3, and all requirements within [PRO-00006](#) Electrical – High and Low Voltage Procedure.

5.2. Electrical Energy Isolation – Non-Electrical Worker

The intent of these isolations is to prevent hazardous movement, unexpected start, or process hazards arising from electrically driven equipment (e.g., pumps, mixers, conveyors, actuators, heaters, dosing systems) where the work scope is mechanical or process related and does not create electrical exposure.

Minimum requirements

1. The isolation point must be an approved isolating device that can be operated and locked without opening an electrical enclosure or exposing live parts.
2. Isolation must remove motive power to the equipment and prevent automatic restart.
3. Isolation must be secured using lock and tag at the point of isolation (and controlled through a lock board/lock box for Complex/Tiered isolations).
4. Verification for electrical energy isolation during mechanical and process work (non-electrical work) is a functional verification of "no operation/no movement" (e.g., try-start where safe), not an electrical "test-for-dead" instrument test.

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Isolation assurance categories

Use the following as the minimum hierarchy when selecting an electrical energy isolation point for non-electrical work:

- **Category 1 – Positive isolation** (preferred/ideal)- Physical separation from supply achieved without enclosure access, secured against re-energisation. Examples: unplug and secure plug; remove and secure a removable supply lead/connector where designed for that purpose; withdraw a plug-in module where designed for safe removal without exposure.
- **Category 2 – Proved isolation** (acceptable with conditions) - A lockable isolator that removes motive power and can be secured and verified effective via functional verification. Example: local isolator opened and locked off (with clear OFF indication), followed by try-start / functional test confirming no operation.
- **Category 3 – Non-proved isolation** (variance only) - Not acceptable by default. If effective isolation cannot be functionally verified without enclosure access, then the task must be escalated to an Authorised Isolator who is an Electrical Worker, with any electrical verification or enclosure access performed under Section 5.3 and [PRO-00006](#) Electrical – High and Low Voltage Procedure.

5.3. Electrical Energy Isolation – Electrical Worker

The intent of these isolations is to prevent electric shock, arc flash, and electrical energy hazards during electrical work or work on or near electrical equipment.

Precedence

This section defines the minimum electrical isolation assurance levels used within Seqwater's LOTO system. For electrical work, Queensland electrical safety legislation and Codes of Practice, and [PRO-00006](#) Electrical – High and Low Voltage Procedure, govern the required controls. Where there is any inconsistency, the electrical safety requirements take precedence.

Minimum requirements

1. Electrical isolation for electrical work must be performed by an Electrical Worker who is also a competent Isolation Officer or Authorised Isolator.
2. Isolation must eliminate all credible electrical energy sources and back feeds (including UPS supplies, PV, VSD regeneration paths, multi-feed switchboards, control supplies where relevant to the task).
3. Isolation must be secured by lock-off and tag-out, using lock boards/lock boxes where multiple workers are involved.
4. Verification must be performed using the test-for-dead/prove-for-dead method required by [PRO-00006](#) before touch, withhold points documented in the Isolation Permit.

Isolation assurance categories

Use the following as the minimum hierarchy when selecting an electrical energy isolation point for electrical work or working on or near electrical equipment:

- **Category 1 – Positive isolation** (preferred/ideal) - Physical separation/visible break from all sources of supply, secured against re-energisation.
- **Category 2 – Proved isolation** (acceptable with conditions) - Isolation secured and verified as de-energised at the point of work by a competent person using an approved test-for-dead method (live–dead–live).

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- **Category 3 – Non-proved isolation** - Not permitted for electrical work.

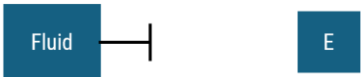
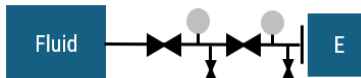
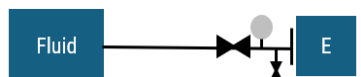
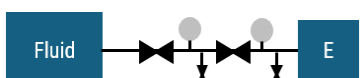
If the circuit cannot be proven de-energised without opening an enclosure or exposing persons to electrical risk, treat it as energised and manage under PRO-00006 (including any required risk assessment and authorisations).

5.4. Non-Electrical Isolations – Mechanical and Process Work

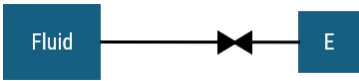
The intent of these isolations is to prevent injury or loss of containment arising from process (non-electrical) hazardous energies during mechanical and operational work. Energy sources applicable in this section could include Mechanical, Hydraulic, Pneumatic, Gravity, Thermal and or Chemical energy.

Isolation assurance categories (see illustrative examples in Figure 1).

- **Category 1 – Positive isolation** - Complete physical secured separation (spool removal, blank/spade, physical disconnection). A single engineered baulk gate with secondary verification and method to secure baulk gate (e.g. wedges placed by divers or spring locks) are equivalent to a Category 1 isolation.
- **Category 2 – Proved isolation** - Isolation which can be secured, and effectiveness is proved via a bleed/vent point or other functional verification (typically double block and bleed, or double-sealed valve body with bleed for process).
- **Category 3 – Non-proved isolation** (variance only) - Isolation with no means to prove functional verification. This category is not acceptable by default and requires variance approval as per Section 5.6 'Variation Pathways when Minimum Standards Cannot Be Met'.

Category	Features	Method	Illustrative Example
Category 1 – Positive Isolation	- Complete separation of the plant/equipment to be worked on from other parts of the system. - Valved isolation of an appropriate standard is required during the installation of positive isolation	Physical disconnection (e.g. spool removal)	
		Double block, bleed and spade.	
		Single block and bleed and spade.	
Category 2 – Proved Isolation	- Valved Isolation. Effectiveness of value closure(s) can be confirmed via vent/bleed points before intrusive work commences. - Within this category the level of mechanical security is greater for DBB and lowest for SBB. - As a general rule, SBB should not be used with hazardous substances.	Double block and Bleed (DBB)	
		Double seals in a single valve body with a bleed in between	
		Single block and bleed (SBB)	
	Valved isolation. No provision to confirm effectiveness of	Double valve	

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Category	Features	Method	Illustrative Example
Category 3 – Non-proved isolation	valve closure prior to breaking into system. Where possible, double valve isolation should be used rather than single valve.	Single valve	



5.5. Confined Space Isolation Standard

For confined spaces the preferred isolation standard is to use Category 1 - Positive Isolation on every line that could introduce hazardous substances or energy into a confined space where possible.

Where Category 1 – Positive Isolations cannot be implemented due to plant infrastructure limitations, the minimum isolation standard is double block and bleed proven isolation with continuous monitoring and zero pressure verification at the bleed clearly documented and approved via the Isolation Permit.

Where the minimum double block and bleed proven isolation cannot be implemented, the Authorised Isolator must follow the variation pathway outlined in Section 5.6.

5.6. Variations Pathways When Minimum Standards Cannot Be Met

Where minimum isolation standards cannot be met the Authorised Isolator will prepare a Control Deviation Approval Form in Protecht supported by a written risk assessment explaining:

- why Category 1 or 2 isolation is not reasonably practicable
- the proposed alternative method
- how equivalent safety will be achieved (compensatory controls).
- the identified Managed Risk Level with compensatory controls in place.

Compensatory controls may include:

- upstream isolations.
- Energex isolations.
- continuous gas monitoring and alarms.
- additional temporary blinds downstream.
- mechanical inhibition of auto-start systems.
- isolation watchers and additional supervision.
- Plant shutdown.

Deviation approvals are time-limited and isolation-specific. Repeated use must trigger consideration of plant modification and captured in the relevant Facility Risk Register in Protecht.

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6. Types of Isolations

Name	Description	Procedure
Simple Isolation	An isolation with no more than one isolation point and the isolation is: • a Category 1 – Secured positive Isolation point, or a Category 2 – Secured Proved Isolation Point; and • Verified by a competent worker (no isolation permit required), with the task risk and controls (including isolation method and verification) documented in the task SWMS.	PRO-02656
Complex Isolation	An isolation used when a Simple Isolation is not sufficient - typically involving multiple energy sources or isolation points, multiple workgroups or shifts, or high consequence work - and which is controlled using an Isolation Permit and lock board / lock box.	PRO-02657
Tiered Isolations	An isolation design where one or more upstream ("master") isolations protect multiple downstream ("child") isolations and job sites, controlled by a structured set of parent and child lock boards / lock boxes and a defined deisolation sequence.	PRO-02658

In addition, specific procedures have been established for the following isolations:

- Electrical Isolations (LV and HV): Electrical – High and Low Voltage Procedure ([PRO-00006](#))
- Network Isolations: Supply System Isolation Procedure ([PRO-01561](#)).

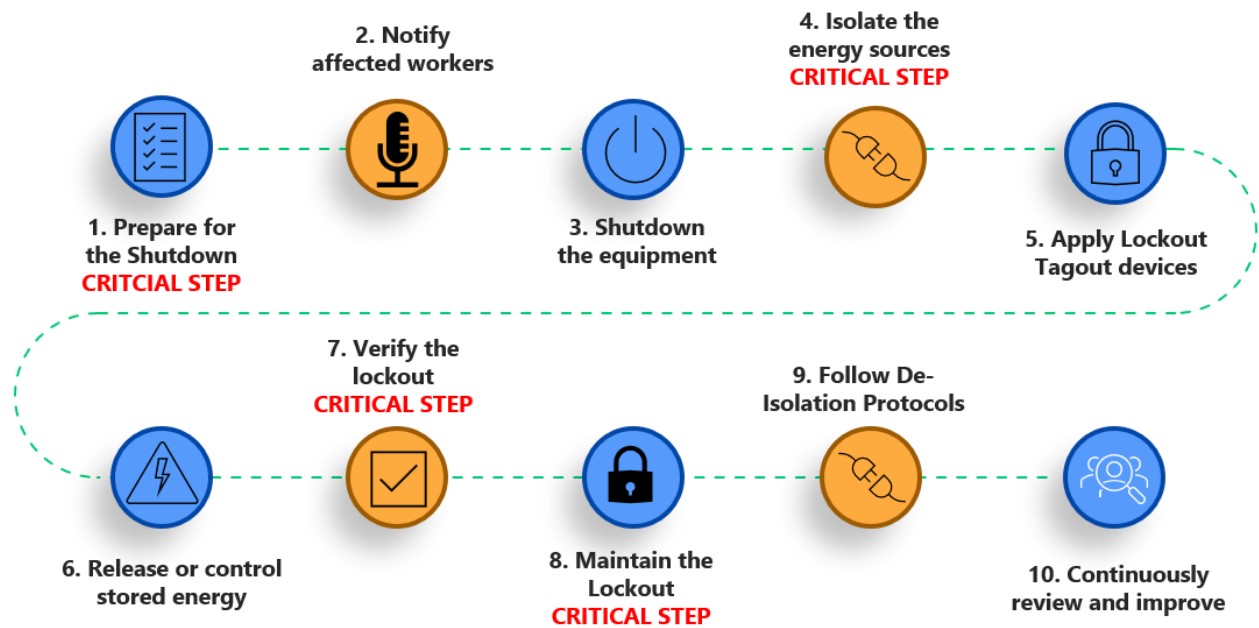
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7. Isolation Steps

All lock out tag out activities must follow the 10 Steps to apply the Isolation Critical Control. These control steps apply to all isolation types (Simple, Complex, Tiered) with depth and documentation scaled to the risk.

Critical steps (strongest controls, highest assurance) are marked **CRITICAL STEP**. They cover planning, isolating, verifying and maintaining the Lockout.



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Control Step 1 – Prepare for the Shutdown

CRITICAL STEP

Outcome: The work and isolation are clearly defined, risks are understood, and the right isolation method is selected before any plant is stopped.

Minimum requirements:

1. Define the work:
 - Clarify work scope, asset boundaries and interfaces (upstream/downstream plant, shared services, back feeds).
 - Confirm whether the task triggers confined space entry, hot work, working at height or other permits.
 - Estimate isolation implementation times and enabling operational conditions.
2. Risk assessment and planning:
 - Develop a Safe Work Method Statement (SWMS) covering hazardous energy, site-specific hazards and interactions.
 - Identify all energy sources to be isolated (electrical, mechanical, process, stored energy).
 - Decide if a Simple, Complex or Tiered isolation is required.
 - Determine minimum isolation category (I–III) for each process isolation point (see Section 5).
Category 1 - Positive isolation must be selected for confined space entry.
3. Isolation Permit:
 - For Complex and Tiered isolations, develop or select an Isolation Permit (with Isolation Permit section complete), using the Isolation Permit ([TEM-00077](#)).
 - Ensure the Isolation Permit:
 - maps every isolation point and energy source
 - nominates isolation category (I/II/III) and method for each point
 - specifies the verification method for each energy type
 - defines any proposed deviations from Category 1 – Positive Isolation/Category 2 - Proved Isolation and the risk assessment/approval path.
4. Approvals at planning stage:
 - Authorised Isolator reviews and approves all Complex and Tiered Isolation Permits.
 - If variations are required as per section 5.6 obtain the required approvals.

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Control Step 2 – Notify Affected Employees

Outcome: Everyone who could be affected by the isolation knows what will happen, when, and how to respond.

Minimum requirements:

1. Notification scope:
 - All workers performing the task
 - Operations / Access Officer and duty operators
 - Other work groups and Principal Contractors whose plant or access may be affected
 - Network operations where system performance may change.
2. Content of notification:
 - Assets and boundaries to be isolated
 - Expected start and finish times, including any Inch-and-Test windows
 - Special conditions (e.g. no remote start; temporary overrides; disabled alarms).
3. Method:
 - Pre-start / toolbox briefing for field teams.
 - Update site status boards/service notifications where used.
 - Electronic communications and log book entries when notifying access operators and control rooms.

No isolation work may start until notification requirements are met.

Control Step 3 – Shut Down the Equipment

Outcome: Plant is safely brought to a controlled stop before isolation begins.

Minimum requirements:

1. Follow the relevant operating procedure for shutting down the plant.
2. Remove loads and process inventory as far as reasonably practicable (e.g. lower levels, bypass flow).
3. Confirm plant has stopped (no rotation, movement, or flow on indicators).
4. Where equipment is capable of automatic or remote start via control systems, the Authorised Isolator shall ensure remote control is inhibited or equipment placed in local control mode. This control does not replace the requirement for physical isolation of hazardous energy sources in the following process step.

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Control Step 4 – Isolate the Energy Sources

CRITICAL STEP

Outcome: All hazardous energy sources are isolated in line with the minimum isolation standards detailed.

Identify what hazardous energies are present and isolate the energy source for the type of work being conducted. Minimum requirements are:

1. Electrical Energy Isolation for Non-Electrical Work:

Apply Category 1 as preferred, or Category 2 electrical isolations if required, to remove motive power from the plant being worked on. Ensure the isolation points selected can be secured and functionally verified that the motive power has been isolated.

If Category 1 or 2 isolations cannot be implemented for non-electrical work, the isolation task must be escalated to an Authorised Isolator who is an Electrical Worker and be treated as electrical work.

2. Electrical Energy Isolation for Electrical Work:

Apply Category 1 as preferred, or Category 2 electrical isolations if required, to de-energise the plant. Ensure the isolation points selected can be secured and be subjected to an approved test-for-dead method to verify de-energisation.

If Category 1 or 2 isolations for electrical work cannot be implemented, treat it as energised work and follow requirements specified in [PRO-00006](#) Electrical – High and Low Voltage Procedure. Category 3 isolations for electrical work are not permitted.

4. Non-Electrical Isolations for Mechanical and Process Work

Apply Category 1 non-electrical isolations as preferred, or Category 2 non-electrical isolations if required, to prevent exposure to the hazardous energy. Ensure the isolation points selected can be secured and be subjected to functional verification suitable to the hazardous energy (e.g. Mechanical, Hydraulic, Pneumatic, Gravity, Thermal and or Chemical energy).

If Category 1 or 2 isolations for mechanical and process work cannot be implemented, the Authorised Isolator must follow the deviation pathway outlined in Section 5.6.

5. Confined space isolations:

Apply Category 1 – Positive Isolation on every line that could introduce hazardous substances or energy into the space by default.

Where Category 1 – Positive Isolations cannot be implemented due to plant infrastructure limitations, the minimum isolation standard is double block and bleed proven isolation with continuous monitoring and zero pressure verification at the bleed clearly documented and approved via the Isolation Permit.

- Where the minimum double block and bleed proven isolation cannot be implemented, the Authorised Isolator must follow the deviation pathway outlined in Section 5.6.

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Control Step 5 – Apply Lockout and Tag Devices

Outcome: All isolation points are individually secured and traceable to the Isolation Permit or SWMS.

Minimum requirements:

1. Securing isolations:

- Use isolation locks directly, or lockable devices to physically secure isolation points based on isolation type:
- Simple isolation: hasps and personal locks permitted.
- Complex and Tiered isolations: equipment isolation locks with keys secured in a lock board / lock box.
- SCADA, control circuits or emergency stops must not be used as isolation methods.
- Where an non isolation cannot initially be secured, the isolation lockout work should be escalated by the Isolation Officer to an Authorised Isolator, or to their Supervisor. If a non-electrical isolation still cannot be secured after this escalation, the variation pathway in Section 5.6 should be followed. If an electrical isolation still cannot be secured after initial escalation, the isolation should not proceed until a securable isolation point upstream can be implemented.

2. Lock colours (standard across Seqwater):

- Red – Personal lock (individual worker protection).
- Orange – Equipment isolation lock.
- Yellow – Out-of-Service lock.
- Black – Isolation Permit Issuer lock (utilised in Control Step 8)
- Green – Isolation Permit Recipient lock (utilised in Control Step 8)

3. Application rules:

- Every worker exposed to a simple isolation must apply their red personal lock directly on the isolation point for Simple Isolations.
- Equipment Isolation locks (Orange) must be applied as defined in the relevant isolation procedure and Isolation Permit.
- Isolation Tags must clearly state: asset, isolation point ID, date/time, name and role of person who applied the lock, and reference to the Isolation Permit.

4. Lock boards and key control:

- For all Complex and Tiered isolations, isolation keys must be secured in a lock board / lock box located as close as practicable to the work area or in a designated secure location.
- Lock boards must display the Isolation Permit.

5. Ownership and removal:

- Personal locks may only be removed by the person who applied them.
- Where this is not possible the Forced Lock Removal Form ([FRM-00424](#)) must be used.

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Control Step 6 – Release or Control Stored Energy

Outcome: All stored or residual energy is safely dissipated or restrained.

Minimum requirements:

1. Identify and control stored energy sources:
 - pressure in lines and vessels (including trapped pockets)
 - gravitational energy (raised loads, suspended items)
 - rotating or moving components (flywheels, agitators, fans)
 - springs and tensioned components
 - Stored electrical energy within capacitors and batteries
2. Remove or control stored energy by:
 - draining, venting, purging or flushing process lines and vessels to safe points (bund, drain, flare, etc.)
 - chocking, blocking or mechanically securing moving parts
 - releasing or safely containing stored pressure or tension
 - grounding/discharging electrical energy.
3. Document on the Isolation Permit:
 - what stored energy controls were applied
 - any residual energy that must be monitored during the work.

Control Step 7 – Verify the Lockout

CRITICAL STEP

Outcome: All isolations are proven effective before work starts; there is objective evidence of verification.

Individual verification of each isolated energy source must follow the minimum requirements specified for the energy type and work type:

A. Electrical Energy Isolation for Non Electrical Work:

Apply a functional verification test to ensure all motive power has been removed. Try-start testing should be performed for each start mode available for the plant (local, remote, auto starts). Ensure the isolation point is appropriately secured during the functional verification test.

B. Electrical Energy Isolation for Electrical Work:

Ensure a competent person (Electrical worker) applies an approved test-for-dead (live-dead-live) method to verify the plant has been de-energised.

C. Non-Electrical Isolations for Mechanical and Process Work

Apply a functional verification test to ensure the specific hazardous energy exposure is removed. For valving isolating hydraulic, pneumatic or chemical energy, functional verification is proven via a bleed between the live system and equipment which is being isolated.

Documentation and evidence:

- Record verification on the Isolation Permit (or SWMS for Simple Isolations) including:

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- test methods
- gauge readings or meter results
- where practicable, photos or supporting evidence.

Hold point:

- No intrusive work may commence until the Isolation Officer and Isolation Permit Recipient have confirmed and signed that verification requirements have been met.

Re-verification triggers:

- after any Inch-and-Test phase
- after break-in-work
- after any changes to plant configuration or work scope.

Control Step 8 – Maintain the Lockout

CRITICAL STEP

Outcome: The isolation integrity is preserved for the full duration of work, including shift handovers and break in work.

Minimum requirements:

1. Lock and key control:

- Maintain lock boards and key custody in line with relevant isolation procedures.
- Isolation Permit Issuer Lock (Black) is only applied when the isolation instructions within the permit (Section 2) and isolation proving procedures (Section 3, 3a) are completed, and it is safe for the work to begin. The black lock ID number is recorded on the permit.
- Isolation Permit Recipient Lock (Green) is only applied after a Permit Issuer Lock is placed on the lock board, and the Isolation Permit Recipient is satisfied the completed isolation permit allows the workgroup to complete their scope of work safely.
- Every worker exposed to complex and tiered isolations must apply their red personal lock onto the lock board controlling that isolation only after a Permit Issuer Black Lock and Permit Recipient Green Lock have been applied and the permit recipient has communicated it is safe to do so.
- Important Note: Out of Service locks are not used as an isolation method or for management of break-in-work on active isolations. They are only used where plant is removed from service and not under an active isolation.

2. Continuous Shift handover:

- All outgoing workers remove their red personal locks after confirming the job site is clear.
- If the permit recipient remains the same for the next continuous shift they leave their permit recipient lock on the lock board, and perform the handover with the incoming shift
- Incoming workers attend the handover, review the Isolation Permit, and apply their own red personal locks before recommencing work.

3. Break in Work

- Workers remove their red locks and sign off before leaving.
- The Isolation Permit Recipient confirms:
 - work status

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- condition of plant and work area
 - that all workers are clear of the plant.
 - The Isolation Permit Recipient may remove their green lock once satisfied that work has ceased and the plant will remain isolated.
 - The Isolation Permit Issuer leaves their black lock in place on the lock board / lock box and stores the key in the allocated secure key cabinet allocated for Isolation Permit Issuer Locks.
 - Before work resumes, the new Isolation Permit Recipient (or returning Isolation Permit Recipient) reviews the Permit, risk assessment and any other permits.
 - The Isolation Permit Recipient and Isolation Officer jointly inspect the plant and work area for changes (conditions, operations, other work, weather).
 - The Isolation Officer re-verifies critical isolation points if there is any doubt
 - The Isolation Permit Recipient applies their green lock to the lock board / lock box.
 - Each worker applies their red personal lock and signs back on before commencing work.
4. Plant and worksite monitoring:
- The Isolation Officer or nominated supervisor checks for signs of leakage, pressure build-up or unauthorised changes.
 - Any suspected compromise of isolation must trigger immediate stop-work and re-verification.
5. Forced lock removal:
- May only be carried using the Forced Lock Removal Form ([FRM-00424](#)).

Control Step 9 – Follow De-Isolation Protocols

Outcome: Isolations are removed in a controlled, verified sequence; plant is reinstated safely.

Minimum requirements:

1. Confirm:
 - all work is complete and inspected
 - all mandatory testing has been completed and any required documents or certificates issued e.g. pressure testing, electrical mandatory tests and certificates of electrical conformity issued
 - all tools, materials and temporary devices are removed
 - guards and safety devices are re-installed
 - all workers have removed their red personal locks and signed off.
2. De-isolation sequence:
 - Follow the steps in the Isolation Permit / SWMS for removing isolation locks and devices.
 - Manage Inch-and-Test through the planned sequence (remove locks, test, re-isolate, re-verify, then proceed).
3. Notifications:
 - Notify affected workers, operations control and PCs that plant is being returned to service.
4. Post-start checks:

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- Verify correct operation of plant and critical controls (e.g. trips, alarms, interlocks) after re-energisation.

Control Step 10 – Continuously Review and Improve

Outcome: LOTO performance is monitored; the system is continually improved.

Minimum requirements:

1. Assurance and audits:
 - Conduct control testing to validate the effectiveness of isolation processes, with particular focus on critical steps 1, 4, 7 and 8, and on any use of Category 3 – Non-Proved isolations or variations.
2. Learning from events:
 - Record and investigate incidents, near misses and verification failures involving hazardous energy in accordance with the Incident Reporting and Investigation Procedure ([PRO-00793](#)).
 - Feed learnings into updated Isolation Permits, training and plant modification plans.
3. Template and standard updates:
 - Maintain and periodically review standard Isolation Permits for common tasks.

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8. Definitions

Term	Definitions
Category 1 - Positive Isolation	A physical separation that is lockable which eliminates the possibility of hazardous energy reaching the work area, providing the highest level of isolation protection.
Category 2 - Proved Isolation	A lockable isolation that can be tested and proven effective, ensuring hazardous energy has been removed before work.
Category 3 - Non-Proved Isolation	A lockable isolation where effectiveness cannot be reliably verified; used only under specific approved variance conditions for non-electrical work. Not permitted for use for Electrical Work.
Complex Isolation	An isolation used when a Simple Isolation is not sufficient - typically involving multiple energy sources or isolation points, multiple workgroups or shifts, or high consequence work - and which is controlled using an Isolation Permit and lock board / lock box.
Isolation Officer	The person who physically applies and verifies isolations, ensuring hazardous energy sources are locked out, stored energy is controlled, and field conditions match the approved isolation design.
Authorised Isolator	The competent person who plans complex and tiered isolations ensuring correct methods are used and documented within the isolation permit, leading risk assessments where any variance requests are required and ensures compliance to the isolation standards specified in Section 5.
Isolation Permit	The formal document that defines how hazardous energy will be isolated and verified, ensuring the correct isolation points, categories, variances, and hold points are planned and recorded.
Isolation Permit Issuer	The person responsible for controlling the lock board and verifying all isolation controls are in place as per the isolation permit (including being maintainable for the duration of the work), before placing their black lock on the lock board and issuing to the isolation permit to the isolation permit recipient.
Isolation Permit Recipient	The person who leads the work group working under the isolation. They ensure workers are protected by the isolation by confirming controls are in place, applying the recipient lock, and managing worker sign-on/off.
Managed Risk	The level of risk after considering the effectiveness of existing controls.
Simple Isolation	An isolation with no more than one isolation point and the isolation point is a Category 1 – Positive Isolation point, or a Category 2 – Proved Isolation Point and verified by a single competent worker without an Isolation Permit and documented in a SWMS.
Tiered Isolation	An isolation design where one or more upstream (“master”) isolations protect multiple downstream (“child”) isolations and job sites, controlled by a structured set of parent and child lock boards and a defined de-isolation sequence.
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.

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9. Roles and Responsibilities

Role	Responsibility
Access Officer (or Duty Operator)	- Coordinate plant operating status with planned isolations. - Manage system impacts (water quality, supply, environmental) - Agree on lock board storage locations. - Confirm when de-isolation and plant start-up can proceed.
Authorised Isolator	- Selects isolation categories and methods. - Develops Isolation Permits. - Approves Isolation Permits that have not been developed by an Authorised Isolator. - Leads risk assessments and variance requests. - Ensures compliance with isolation standards specified in section 5.
Isolation Officer	- Perform complex and tiered isolations under the direction of an Authorised Isolation and in accordance with the requirements of Isolation Permit. - Completes verification and documentation when performing isolations. - Manages isolation point security and co-signs critical steps in Isolation Permit where required.
Isolation Permit Issuer (Black Lock)	- Maintain Authorised Isolator competency. - Issues and controls the Isolation Permit. - Confirms critical steps in Isolation Permit are met before authorising work with application of Black Lock to lock box.
Isolation Permit Recipient (Green Lock)	- Receives isolation on behalf of the work group. - Responsible for ensuring isolations planned and delivered align with scope of work being completed. - Accountable to verify isolation effectiveness at job site, accept permit and apply Green Lock to allow workers to lock on to isolation and begin work. - Can not hold the dual role of Isolation Permit Issuer for the same Isolation Permit and scope of work.
Site Owner	Ensures site isolation arrangements, infrastructure and lock/board hardware meet this Standard.
Workers (Red Lock)	- Apply their own red personal locks when working under an isolation. - Follow the 10-step isolation workflow. - Stop and escalate if isolation integrity is in doubt.

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10. Training and Competency

Requirement	Description	Refresher Timeframe	Target Audience
Perform Simple Isolations	Completion of eLearn, followed by face-to-face training. After training is completed, they will need to be assessed as competent by a Subject Matter Expert (SME). This competency will enable workers to plan, apply, verify, and maintain a Single-Point Simple Isolation safely and autonomously.	Nil Assessment of competency every two years.	Any person that will be performing simple isolations.
Isolation Officer	Completion of eLearn, followed by face-to-face training. After training is completed, they will need to be assessed as competent by a SME. This competency will enable workers to correctly install, verify, document and maintain isolations in the field - executing the physical controls (locks, tags, stored energy management, verification and re-verification) exactly as required by the approved Isolation Permit.		Any person required to perform the role of Isolation Officer for a complex isolation.
Authorised Isolator / Permit Issuer	<u>Pre-requisite</u> - Isolation Officer Completion of face-to-face training followed by a competency assessment by a SME. This competency will enable workers to independently design, approve and lead complex isolation, including selecting correct isolation categories, validating energy source mapping, authorising Isolation Permits, and applying permit-level hold points in accordance with the 10 Isolation Steps.		Any person required to plan an isolation, develop an isolation instruction, then become accountable for issuing an isolation permit for a complex isolation.
Perform Tiered Isolations	<u>Pre-requisite</u> - Authorised Isolator/Permit Issuer Completion of coaching sessions, followed by a competency assessment with an SME. This competency will enable workers to plan, execute and manage multi-board, parent/child Tiered Isolation schemes, ensuring correct board linkages, sequencing, verification and dependency management across all tiers.		Any person accountable for planning and managing Tiered Isolation.
Permit Recipient	eLearning creating an outcome where participants will be able to assume control of the workgroup's safety by validating the isolation against field conditions, applying the green lock, managing personal lock-on/lock-off processes, and coordinating verification and handover activities throughout the job.	Nil	Any person required to perform the role of Permit Recipient.
Working under an isolation	eLearning creating an outcome where participants will be able to safely interact with existing isolations by correctly verifying effectiveness, applying and removing red personal locks, recognising breakdowns in control, and stopping work when isolation integrity is uncertain.		Any employee or contractor required to work under the control of an isolation performed by Seqwater.

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11. References and Related Materials

Description	Location
FRA-00014 Enterprise Risk Management Framework	REX
FRM-00424 Forced Lock Removal Form	REX
FRM-00777 Project Works Permit Form	REX
PRO-00006 Electrical – High and Low Voltage Procedure	REX
PRO-00793 Incident Reporting and Investigation Procedure	REX
PRO-00808 Contractor Management Procedure (HSW, Env & DWQ)	REX
PRO-00867 Safe Work with Plant Procedure	REX
PRO-01561 Supply System Isolation Procedure	REX
PRO-02656 Simple Isolation Procedure	REX
PRO-02657 Complex Isolation Procedure	REX
PRO-02658 Tiered Isolation Procedure	REX
TEM-00077 Isolation Permit	REX

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Appendix A – Seqwater Locks and Tags

The following details the Isolation Locks and supporting tags used by Seqwater. All locks must have a tag attached to support communication of the lock purpose.

Personal Lock Personal Locks are attached to an isolation point / hasp (simple isolations only) or lock board / lock box while a worker is performing a work activity under the control of the isolation. Personal locks are keyed individually to ensure only the worker who applies them can remove them. Personal lock owners control their keys. A Personal Danger Tag must be attached to all personal locks to identify who the Personal Lock belongs to.	 The image shows a red personal lock and a red personal danger tag. The tag has a 'DANGER' header, 'DO NOT OPERATE' instructions, and fields for the worker's name and phone number. It also includes a 'PERSON WORKING ON EQUIPMENT' section with fields for name, date, and planned completion date.
Equipment Lock Use to physically lock a device that is isolating an energy source. Equipment Isolation locks are keyed individually, or keyed alike if using a registered lock set, with in-use keys secured inside the isolation lock board / lock box. An Equipment Isolation Tag must be attached to all locks identifying the isolation reason, date and isolating officer. External attachment of an Equipment Isolation Lock to a lock board is only permitted for board-to-board control in a Tiered Isolation.	 The image shows an orange equipment lock and an orange equipment isolation tag. The tag has a 'DANGER' header, 'DO NOT OPERATE' instructions, and fields for equipment type, isolation point location, date, time, and isolating officer name. It also includes a 'REASON FOR ISOLATION' section with checkboxes for electrical, mechanical, and other reasons.
Out-of-Service Lock Used when an item of plant is removed from service and not under an active isolation. Out of Service Locks are keyed alike with keys stored in a dedicated key secure cabinet for Out of Service lock keys located in the operating area with control of the equipment. Out of Service Tags must be attached to all out of service locks to identify what plant is out of service, why it's out of service and who placed it out of service.	 The image shows a yellow out-of-service lock and a yellow out-of-service tag. The tag has a 'CAUTION' header, 'OUT OF SERVICE' instructions, and fields for equipment name, location, date, and time. It also includes a 'REASON FOR ISOLATION' section with checkboxes for electrical, mechanical, and other reasons.

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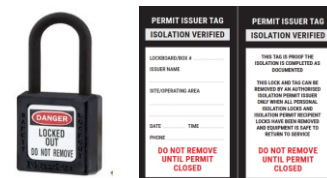
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Isolation Permit Issuer Lock (Complex and Tiered Isolations only).

Applied by the Isolation Permit Issuer to control the lock board / lock box and equipment isolation keys once the isolation is fully completed.

Isolation Permit Issuer Locks are keyed alike using a registered lock set, with keys stored in a dedicated key secure cabinet for Isolation Permit Issuer locks which only authorised Isolation Permit Issuers for the plant and operating area are given access.

A Permit Issuer Tag must be attached to identify the person who issued the permit.


Isolation Permit Recipient Lock (Complex and Tiered Isolations only).

Applied by the Isolation Permit Recipient once they are satisfied that all energy sources have been effectively isolated. The Isolation Permit Recipient maintains their green lock while their work group is performing work under the isolation.

Isolation Permit Recipient Locks are keyed individually. Isolation permit recipients control their own keys.

A Permit Recipient Tag must be attached to identify the person responsible for leading the work party performing work under the isolation.

