



Te Kaunihera-ā-Rohe o Ngāmotu

# New Plymouth District Council

## Isolations Procedure

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## 1.0 Introduction

The purpose of this procedure is to define the requirements for isolations, the use of the isolation certificate (IC), the isolation and de-isolation processes and methods.

Isolations are a key component of the permit to work process that allows a task to be completed in a safe manner and without unplanned loss of containment. Lock out and tag out (LOTO) of plant and/or equipment provides a clear indication that plant and/or equipment should not be activated, energized or started up while work is being undertaken, which could potentially result in harm to people, undesired effects on a treatment process, and damage to assets and/or the environment.

The following types of isolation can be managed through the use of the Isolation Certificate and these procedures:

- Process isolation (refer to section 9)
- Isolation of safety/emergency systems (refer to section 11)
- Extended period isolation (refer to section 13)

## 2.0 Scope

The requirements specified in this procedure apply equally to all persons working for and on behalf of NPDC, i.e. workers, contractors, subcontractors etc.

This document must be read and used in conjunction with the [NPDC Permit to Work Procedure](#).

This procedure will not apply to the Reticulation Maintenance and Resource Recovery Contractors as they carry out work, as required, as part of their contract with NPDC using their own agreed risk management and PTW procedures.

## 3.0 References

- [Health and Safety at Work Act 2015](#)
- Electricity (safety) regulations 2010
- [Worksafe – Safe use of Machinery](#)
- [The safe isolation of plant and equipment](#)

## 4.0 Definitions

<b>Close proximity</b>	Locations on installations, where deliberate, accidental or inadvertent contact with electrical equipment is possible, either direct or indirect through tools, long objects, drills, cutting blades, etc. For the purposes of this practice ‘close proximity’ is taken to be 500mm.
<b>Competent person</b>	An individual possessing adequate qualifications such as suitable training and sufficient knowledge, experience and skills for the safe performance of the specific work scope.
<b>Complex isolations</b>	These may include, but are not limited to, work requiring isolation of dual energy sources, multiple sources of energy requiring isolations, isolation



	required by multiple trades. Consider all sources, not just electrical when assessing the complexity of isolations required to safely execute the work
<b>De-energised</b>	Disconnected from all sources of supply but not necessarily isolated, earthed or out of commission.
<b>Endorse</b>	To support or approve the permit.
<b>Lock-out</b>	The use of locks and/or locking devices (e.g. chains and locks, clasps and locks) to ensure energy sources and energy control devices such as electrical breakers and valves are secured in a safe position.
<b>LOTO</b>	Lock out, Tag out
<b>MCC</b>	Motor Control Centre
<b>PICWS</b>	Person in Control of the Work Space
<b>Positive Isolation</b>	Positive isolation is defined as either: a) Spool removal – removal of a pipework section or spool piece and blanking the live end, also called ‘air gapping’. b) Blind isolation – insertion between flanges of a blind (spade); the swinging closed of a spectacle blind (plate) or; replacement of a spacer (slip-ring) with a line blind (spade)
<b>Personal Lock</b>	A lock applied by a person that is undertaking the actual work on the isolated equipment in addition to the NPDC locks applied in accordance with the process described in section 9.1 by the NPDC Operations team. The intention of the personal lock is to enable that person to be in control of the isolation to protect their own safety.
<b>Testing of LOTO</b>	The act of confirmation that plant and equipment is isolated and de-energised by checking the integrity of the local energy control device (e.g. valve, isolator) and that plant and equipment is de-energised (e.g. by trying to start equipment or confirming de-pressurisation/drain down. It is critical that all bleeds, vents and drains are checked to be free from blockage prior to testing

## 5.0 Responsibilities

In addition to the responsibilities listed in the NPDC Permit to Work Procedure, the specific responsibilities in relation to Isolations are:

### Competent Persons

- They are responsible for planning the isolation through consultation with the Permit Issuer. They ensure the requirements of the isolation and this procedure prior to work commencing has been communicated with the Permit Receiver (PR) and that the PR has been provided with the opportunity to apply their own lock.
- Detail the isolation process in section 5 of the Isolation Certificate, and apply locks/tags.

### Permit Issuer or delegated Area Technician (AT)

- The Permit Issuer (PI) or delegated AT shall ensure the requirements of this procedure and conditions of the risk assessment for the task and any associated work permits (as applicable) are followed.
- Ensure there are 2 points of isolation where possible.



- Should physically check the integrity of the isolation, by attempting to start the driven equipment.
- Identify all plant and/or equipment and methods for isolation required with the Permit Receiver and other relevant personnel as part of the initial site inspection and record on the IC.
- Complete section 6 of the isolation certificate once an isolation procedure has been compiled and checked, and the isolations are ready to be applied.
- Complete section 7 once it has been confirmed that all associated permits, as recorded on the Master Isolation Register (section 2) of the IC, have been cancelled and it is safe to proceed with the de-isolation process in accordance with section 9 of this procedure.

### Permit Receiver / PICWS

- Is responsible for completing section 1 of the Isolation Certificate and informing the Permit Issuer that an isolation is needed, well in advance of when the work is required to be carried out. Permit receiver is to provide the details of the equipment to be isolated and by when.
- Applies their own personal lock as and when required.
- Is to request the de-isolation process when work on the isolated equipment is complete.

## 6.0 Training & Competency

Only Council Approved Contractors and personnel are allowed to work on any NPDC owned or operated plant and/or equipment.

- For electrical work personnel must hold current New Zealand Practising Licences for Registered Electricians.
- For non-electrical, work must be undertaken by a competent person.
- The Permit receiver must supply evidence of such licences, registrations or other assessment of competency.
- All permit issuers must also have formal internal training on the objectives and key controls of the PTW and this Isolation procedure on a bi-annual basis.

## 7.0 Isolation Certificate (IC)

The Isolation Certificate is used to record all details for a specific isolation. It includes 7 sections covering the following:

1. Application
2. Master Isolation Register (IR)
3. Extended Period Isolation (EPI)
4. Isolation of Safety/Emergency Systems
5. Isolation Procedure
6. Approval to proceed with the application of isolations
7. Approval to remove isolations

### 7.1 Application

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This is section 1 of the Isolation Certificate and is completed by the PR. It is the PR’s responsibility to inform the Permit Issuer that an isolation is needed well in advance of when the work is required to be carried out.

The Permit Reciever is to provide the details of the equipment to be isolated, the reasons for the isolation and when the isolation is required by, by completing the IC application section.

### 7.2 Master Isolation Register (IR)

This is section 2 of the Isolation Certificate and records all permits issued for work involving the specified isolations. This section records the details of when a permit is registered as issued associated with the IC. It records the date of registration, type of permit, permit number, PICWS’s name and if applicable the PICWS/PR lock number applied to a lock box. This section is also used to record when a permit is cancelled and is therefore no longer registered on the Master Isolation Register.

Only once all permits that were registered on the Master Isolation Register have been cancelled, and it is safe to do so, can the de-isolation process then be applied in accordance with the procedures in section 8 of this procedure.

This is one of the fundamental purposes of this isolation process under the PTW System; to ensure all work happening, that relies on an isolation to ensure there is no harm to people, process, an asset or the environment is recorded and completed prior to the isolations being removed.

### 7.3 Extended Period Isolations

This is section 3 of the Isolation Certificate and is used to record isolations that are in place with no permits issued against them. Refer to section 13 for more detail on the extended period isolations process.

### 7.4 Isolation of Safety/Emergency Systems

This is section 4 of the IC and is used by the relevant Lead/Manager with responsibility for the asset to demonstrate their awareness of the actual isolation of any Safety or Emergency Systems. Refer to section 11 for more details on the isolation of safety or emergency systems process.

### 7.5 Isolation Procedure

This is section 5 of the Isolation Certificate and is where the details of the Isolation Procedure are recorded. This is a statement signed by two competent personnel that the equipment to be worked on has been isolated from energy sources and/or that appropriate measures have been taken to ensure containment of any process streams.

The details may be written in this section of the IC or a reference may be made to an attached work instruction (WI) or standard operating procedure (SOP).

The procedure should follow a standardised format: Action – Identification – Method

There SHALL be only one action for each item; e.g. “isolate inlet valve MX610 at local control point”

### 7.6 Approval to proceed with the application of isolations

This is section 6 of the Isolation Certificate and is completed by the Permit Issuer once an isolation procedure has been compiled and checked, and the isolations are ready to be applied.

### 7.7 Approval to remove isolations

This is section 7 of the Isolation Certificate and is completed by the Permit Issuer once it has been confirmed that all associated permits, as recorded on the Master Isolation Register (section 2) of the

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IC, have been cancelled and it is safe to proceed with the de-isolation process in accordance with section 8 of this procedure.

## 8.0 Pre isolation requirements

Any isolation procedure should generally reflect the following constraints:

- To be in accordance with associated NPDC safety manuals and procedures.
- All depressurising, draining and pressurising SHALL be done within plant design criteria (temperature, pressure limitations)
- Isolation spaces, blind/blank flanged plugs and caps SHALL be of the same class/rating as the pipe work they are being fitted to. Procedures are to specify the required class or rating.
- New gaskets are to be fitted upstream of isolation spaces and blind flanges.
- When a major project, with multiple isolations are performed, a formal debrief is to take place which includes a review of all isolations.

## 9.0 Isolation/De-isolation process.

### 9.1 ISOLATION PROCEDURE

Prior to work being undertaken under the isolation the following must occur:

1. The Permit Issuer nominates/agrees a competent person to plan for and carry out the isolation. The Permit Issuer, competent person and the Permit Reciever shall discuss the details of the isolation and agree on the points and method of isolation and record on section 5 of the Isolation Certificate.
2. The Permit Issuer will check existing isolations to determine any isolation points that may be in conflict with the proposed isolation. If an individual point is already isolated an additional lock/tag will be applied in the field and the permit number will be added to the appropriate Isolation Certificate.
3. Any isolation/de-isolation process that exceeds 10 lines shall be attached to the Isolation Certificate as a separate document. They will then assign an isolation lock/tag to each isolation point where each lock has a unique number to be recorded on the isolation procedure on section 5 of the Isolation Certificate.
4. Permit Issuer to review and approve the isolation procedure and sign section 6 of the Isolation Certificate, approving the isolation process to take place.
5. When undertaking the isolation, the persons who installs and checks the isolation shall initial at each step on the isolation procedure to acknowledge that it has been completed correctly. **Note:** Isolations must be placed and installed as close to the worksite as possible to assist with security and ease of monitoring.
6. Tests shall be conducted on all points of isolation to confirm that equipment is isolated and that plant/equipment is de-energized/depressurized and/or cannot be started.

**Note: If the isolation is required to be changed for any reason, the ‘Valid Change’ process shall be followed. See section 9.3.**

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7. The Permit Issuer is to then check that the isolations have been signed for (installed-Initialled and Checked) on the isolation procedure in section 5 of the Isolation Certificate.
8. The IC shall then be filed in the ISOLATION section of the permit rack. This indicates the isolation is complete and they can now authorise permits relating to the isolation.
9. The PI can now “Endorse” permits that are applicable to that isolation. The Permit Issuer must ensure the following is complete:
  - a. The permit number is recorded in the Master Isolation Register section of the IC.
  - b. The Isolation Certificate number is recorded in section 2 of the applicable permit as a cross reference.
  - c. Provide the PR/PICWS working under the isolation the opportunity to apply their own personal lock, signed and initialled, documented on section 2 of the IC.

All permits that are approved under the same set of isolations will have their Permit Numbers, Date, and name of PICWS recorded on the Master Isolation Register of the IC.

Isolations must stay in place until all Permits issued working under these isolations have been cancelled on the Master Isolation Register, unless -

- The need arises to relocate an isolation, e.g. the scope of work changes; or
- A piece of equipment carrying an isolation tag has been removed from the plant. In this case, the isolation is to be cancelled.

**Work on the equipment shall not begin until tests have confirmed it is safe to do so.**

## 9.2 DE-ISOLATION PROCEDURE

1. The person requesting the de-isolation is to inform the Permit Issuer of their requirement for the equipment to be de-isolated.
2. Prior to allowing de-isolation of the equipment, the Permit Issuer SHALL check that the ‘Permit Cancelled’ section of the IC has been completed, i.e. all permits listed on the IC have been returned and cancelled.
  - a) If there is more than one Permit operating under an isolation, the Permit Issuer SHALL only sign and date the ‘permit cancelled’ section of the IC (section 2) for the Permit applicable to the job that has been completed. The isolation locks/tags **are not removed** until all permits applicable to that IC have been returned and signed off on the Master Isolation Register.
3. Upon completion of ALL jobs operating under an isolation, the Permit Issuer SHALL have a competent person inspect the worksite to ensure all work is complete and no other work is proceeding under the isolation.
4. The Permit Issuer then grants approval to start the de-isolation process by signing Section 7 of the IC.
5. A competent person undertakes the de-isolation, initialling each step in the removed column to acknowledge it has been completed. This is to also be checked and initialled by another competent person.
  - a) If an isolation point is to be de-isolated and it is also common to another isolation, only the isolation lock/tag applicable to the relevant Isolation Certificate is to be removed.
6. Once the de-isolation is complete the IC and the locks/tags are returned to the Permit Control Facility.

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- 7. Permit Issuer verifies that, the number of locks/tags returned correlates with the number issued, the record of the de-isolation is complete, i.e. all signatures are present, and signs the IC where applicable. Should locks/tags be missing, an investigation to determine the reason as to why shall be undertaken.

### 9.3 Valid Change Process

Once the Permit has been issued, changed to the Permit may only be made under the following conditions:

- A) The work description stated on the permit may only be amended if:
  - a. The signatories who authorised the Permit agree to the changes
  - b. The permit change does not extend to include work on worksites that are not covered by the original permit.
- B) Precautions and controls may be added to, but not deleted from the form.

To make an amendment to the work-scope, the PR is to make the amendment in the work description section of the permit, clearly stamped 'VALID CHANGE". After making any changes to the precautions and controls, Authorised permit signatories are to indicate their acceptance by initialling and dating the permit adjacent to the change.

**NOTE: Where changes are significant, the permit shall be cancelled and rewritten.**

## 10.0 Process isolations

A process isolation SHALL be required for opening any vessel or tank, breaking flanges or connections on pipelines or process equipment.

Process isolations may be carried out under a verbal permit at the discretion of the Permit Issuer. In this case the tasks to be carried out must have a written risk assessment and the verbal permit must be listed on the permit register.

## 11.0 Work on isolated equipment

Prior to starting any work at the start of each working day, the isolation SHALL be checked using approved methods and this SHALL include a check to ensure that all isolation locks/tags are attached.

For electrical work requiring the use of Hold cards/Personal Locks/Do not Operate Tags (as described in detail in section 13.0 of this procedure): the Permit Issuer or designated AT SHALL ensure that the person who is to work on the isolated equipment has sufficient knowledge of the site to enable them to place the Hold Cards/Do Not Operate Tags and/or Personal Locks on the correct isolations points and stop/start stations. The Permit Issuer (or delegate) SHALL assist as required.

Regular monitoring and testing of isolations shall be stipulated in the work permit, risk assessment, or procedure for the task.

This should be done by a competent person who understands the complexity of the equipment and associated plant including control stations and computers remote from the plant as applicable.

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## 12.0 Isolation of Safety /Emergency Systems

Section 4 of the Isolation Certificate is a signed statement by the relevant Site Lead/Manager that they are aware of any isolation that directly affects the operation of safety and/or emergency systems. This requires a Work Permit together with an Isolation Certificate to cover the isolation.

Examples of its use are:

1. Work requiring the isolation of shutdown trips/interlocks in production process systems.
2. Work requiring the isolation of automatic emergency shutdown devices.
3. Hot work requiring the isolation of automatic detectors for flame, heat and smoke.
4. Routine maintenance of Fire and Gas detection equipment.

The following systems and equipment are classified as Safety and Emergency systems. Work which incapacitates any of them must be carried out under a permit.

Safeguarding systems:	Emergency shutdown, Process shutdown and control logic systems. (also known as integrity valves, relief valves and associated interlocks)
Alarms:	Annunciator panels, safety system/EDP monitor, Emergency sirens, Fire alarms, status lights
Fire & Gas detection:	Heat, smoke, flame and gas detectors
Fire Control:	Firewater distribution system, hydrants, backup systems, monitor and sprinkler systems extinguisher systems, pressurisation fans etc,

The isolation, or inhibiting of safety systems, requires a different approach to that or normal isolation and de-isolation of process and electrical systems for maintenance or repair. During the time a Safety/Emergency system is isolated or inhibited, the installation is without the safety protection of that system or equipment. This may limit the operability of the equipment that is being protected.

If the isolation is a safety system isolation, the PR will tick the appropriate box and entre the system/area to be isolated. They will then obtain the relevant Lead/Manager signature to ensure that they are aware of the proposed isolation.

**Isolations which have been in place for more than one week will be formally reviewed by the Site Lead/Manager.**

## 13.0 Hold Cards/ Personal Locks/ Do Not Operate Cards

Hold cards/ Do Not Operate Cards and/or Personal locks are placed by an individual at the point or points of isolation to indicate that the individual is currently working on that isolated equipment and could be injured if the isolation were removed. Hold Cards/ Do Not Operate Cards and/or Personal locks maybe applied by individuals to any isolation that could have an impact to their work area.

The person placing the Hold Card/Do Not Operate Card at an isolation point is to fill in the following information on the card:

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- Name and signature
- Team or Company
- Equipment details
- Isolation Cert No.
- Date and time the card is placed.



### 13.1 Locking/Tagging

Two methods of securing and identifying isolation points are used within the PTW system, **Locks and/or Tags**.

General rules:

1. Isolations will only be applied or removed by a competent person (within the NPDC operations team as the asset owner) with the direct authority of the Permit Issuer to be an installer or checker. Anyone interfering with an NPDC isolation will be subject to disciplinary action. Personal locks shall be removed by the person that applied the lock (see section 13.2 below).
2. No isolation will be removed without the authority of the Permit Issuer.
3. Blinds, spades etc are isolations and must be identified as such by the use of a numbered tag.
4. The Permit Issuer is to check that the number of locks/tags returned to the permit coordination centre match the number (and colour) issued.

Lockout stations are located in secured areas under the control of the Permit issuer, usually in the control room or close vicinity and will be used to manage the use and control of lockout equipment. These stations are equipped with all lockout items such as uniquely keyed and numbered lockout padlocks, tags, lockout jaws and kits.

### 13.2 Personal Locks

A Personal lock refers to the individual lock applied by the Permit Receiver, PICWS or other persons working on the isolated equipment, this is in addition to the NPDC lock that has been applied by NPDC Operations.

### 13.3 Removal of personal locks if a person is unavailable.

If a personal lock and tag cannot be removed by the person who applied the lock and tag, e.g. they have left the workplace and the equipment is safe and must be reinstated for operation, the following steps shall be followed and documented:

1. All attempts shall be made to contact the owner of the personal lock and tag in order for them to return to the worksite and remove their lock and tag.
2. Where a person has placed and left personal lock and tag and is not available to remove the isolation, the person in control of the equipment shall advise the Permit Issuer of the person who applied the personal lock.
3. The Permit Issuer must satisfy themselves that the person who applied the lock and tag is not available on site and/or every attempt to contact that person has been made and this has

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been documented. The Permit Issuer must personally investigate the isolation including the area where the person was working and if they conclude that no person is in danger or potential danger and no equipment is in an unsafe condition they will contact the plant relevant Lead/Manager to advise them of the situation.

4. The Permit Issuer shall explain the situation to the relevant Lead/Manager and seek approval to remove the personal lock and tag.
5. If approval is given to remove the personal lock and tag the Permit Issuer may remove the lock and tag. The circumstances relating to the removal of the personal lock and tag must be recorded and signed by all involved.

## 14.0 Extended period isolation

Extended Period Isolations (EPI's) are isolations which are left in place after the work permit has been cancelled, e.g. when awaiting spares for a repair. They are not intended to be used for decommissioned equipment. In this instance close the permit and leave the isolation in place until the equipment is removed. If equipment is to be out of service for longer than 2 months, review the status weekly to ensure the reason is current.

The procedure for documenting EPI's is as follows:

1. When it becomes apparent that the work cannot be restarted within the validity period of the Permit, the associated Permit is to be cancelled by the PICWS who indicates on the Permit that the work has not been completed, but that the isolation is to be retained under the relevant IC. The Permit Issuer also then registers on the permit by counter-signing in the cancellation section.
2. The PICWS/PR is to indicate in the appropriate box of the EPI section of the IC:
  - a. The reason for the isolation and the type of systems that are to remain isolated
  - b. The type and number of the Permit being signed off.
3. The Permit Issuer is to sign the EPI section of the IC. Retain in the EPI section of the Permit rack at the coordination centre. The details of the EPI is documented on the register for quick reference purposes.

When it becomes possible for the work to restart again within the EPI boundary:

1. The PR is to raise a new Permit, entering the IC number of the EPI in the appropriate box of the Permit, and the new Permit number in the Isolation Register section of the IC.
2. The Permit Issuer will record the fact that the EPI has been cancelled by signing the appropriate box in the EPI section of the IC.
3. The IC is then to be filed in the ISOLATION section of the Permit rack and the new permit is handled in the normal manner.

Extended period isolations that have been in existence for a period exceeding 3 months, are to be reviewed by the Site Lead/Manager. The review should aim to either return the equipment to its normal condition, or decommission and permanently isolate the equipment, or to remove the equipment permanently.

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## 15.0 Attachments

[Isolation Certificate](#)

[Hot work Certificate](#)