11 Electrical and mechanical Isolation

11.1 Purpose

Provide a safe means of isolating sources of harm prior to undertaking work.

Sources of harm may include:

- Inadvertent operation of equipment or process
- Sudden release of pressure
- Temperature
- Chemical substances
- Electrical hazards
- Mechanical energy
- Engulfment

References

Legislation applicable to the country where this manual is being operated covering.

*(Refer to country specific appendix, as listed in the index for legislative references for that country)*

Minimum safety Requirements & General Safety

Rules for Work on Equipment.

Electrical work undertaken within Fonterra shall meet the requirements below:

- Electricians (both Fonterra employees and external contractors) shall provide Fonterra with Certificates of Compliance (CoCs) for changes and additions to electrical systems.
- Electrical contractors are required to supply a CoC for all new electrical work (whether or not a third party inspection is required).
- The CoC must include the relevant Work Permit number in its description and a full and meaningful description of the work done.
- All CoCs shall be placed into the appropriate plant folder in the Services area or the appropriate central location within one week of completing the work.
• Where further copies of the CoC are required (such as by Project Managers), copies of the original shall be provided. (The original shall be placed in the folder as above).

An electrical contractor is required to supply an electrical inspection of electrical works that:

• Install, upgrade or alter any electrical installation in a hazardous environment
• Install, upgrade or alter any High Voltage electrical installation
• Install, upgrade or alter the main earthing system or main earth cables
• Install, upgrade or alter mains cables from a power transformer to the first connected switchboard
• Install, upgrade or alter the main switchboard connected to a supply transformer
• Any other works required to be inspected as defined in legislation applicable to the country where this manual is being operated

(Refer to country specific appendix, as listed in the index for legislative references for that country)

Copies of inspection documentation shall be placed with the corresponding Code of Compliance in the plant folder (as above).

11.2 Definitions

Equipment Isolation

An equipment isolation is where the sequence of placement or de-isolation does not negatively affect people, plant or process. Each isolation must be documented on the permit or Systems Isolation Certificate.

Systems Isolation

Where it is established that damage or an unsafe situation may be caused if the isolation of equipment is not done in a particular sequence, a systems isolation is required. Examples of this may be a boiler or ammonia plant isolation. These types of situations need a controlled shutdown and restart sequence. This must be
documented on the Systems Isolation Certificate, with the isolation steps numbered. For de-isolation, a de-isolation plan may need to be developed for restarting the particular plant.

**Equipment Lock and Tag**

These are for the protection of the plant/equipment. The equipment lock is placed by the Permit Issuer and must be recorded on the permit. The Permit Receiver may be nominated to define isolation requirements – at the discretion of the Permit Issuer. However, if this is the case, the Permit Issuer must oversee the placement of the equipment lock/tag and verify the isolation is effective.

An equipment lock is placed at every isolation point, where possible. An equipment lock shall not be placed in the field without an accompanying equipment tag. Where it is not possible to place an equipment lock, an equipment tag is placed and the tag number recorded on the permit.

The keys for the equipment locks are either placed in an envelope and stapled to the top copy of the permit that remains at the PTW station or placed in a lockbox and the lockbox key stapled to the top copy of the permit that remains at the PTW station. The equipment locks are under the control of the Permit Issuer.

**Receiver Lock/Tag**

This is for the protection of the Permit Receiver and Permit Users. It must be placed by the Permit Receiver at every isolation point, unless a lockbox is used. If a lockbox is used, the Permit Receiver places one Receiver lock/tag on the lockbox that covers
the lockable isolations in the field. For non-lockable isolation points, the isolation will require an equipment tag and a Receiver’s tag to be placed in the field at that isolation point for the job.

The Permit Receiver is responsible for verifying the isolations for those Users working for them. Each Receiver lock must be accompanied by a Receiver tag.

The Receiver lock and tag stay on for the duration of the permit and are under the control of the Receiver. The keys for the Receiver’s lock(s) are placed in an envelope and stapled to the duplicate copy of the permit that is displayed at the worksite.

When the permit is suspended, both copies of the permit and both the equipment lock and Receiver lock keys remain at the PTW station in the suspended slots. For de-isolation, only when the Issuer and Receiver agree, can the isolation be removed. The Receiver’s Lock/Tag numbers don’t need to be recorded on the permit.

**Personal Lock/Tag**

Personal locks/tags are optional for other Users working under the Permit. The Personal Lock/tag is removed when the User leaves the work area. The Permit Receiver is responsible for ensuring that all Users remove their Personal Locks/Tags prior to the permit being suspended or closed. The User can re-fit their personal lock/tag when they are recommencing work. Personal locks and tags may also be placed on the lock box, however, the lock / tag must be removed prior to leaving the work area.
**Lock Box**

Use of a lockbox is optional, but is recommended for use for isolations requiring numerous locks. When a lockbox is used, all isolations are recorded on the permit, equipment locks and tags are fitted to the field isolation points and their keys are then placed in the lock box. The box is then secured with an equipment lock and equipment tag – this is also recorded on the permit. The Permit Receiver’s lock and tag is placed on the lockbox, for the duration of the permit.

### 11.3 General Rules

- The Permit to Work System is the minimum to be followed at all times. Extra precautions and legislative requirements may require further procedures and controls for some tasks.
- Only the Issuer (or Designate) and Receiver can install or remove isolations.
- The integrity of the isolation shall be checked prior to permit authorisation.
- If an isolation can be locked, a lock complete with tag must be used.
- If an isolation cannot be locked (i.e. airline removed), it will not have a key to put in a lockbox. This isolation will require an equipment tag and Receiver’s tag to be placed in the field at that isolation point for the duration of the job.
- Only the Receiver in control of the permit can remove theReceiver Lock/Tag.
- Nobody, other than the person named on the personal tag, can remove a personal tag/lock (For the only exception to this rule, see Section 11.6)
• The Permit Receiver may also effect isolations. If this is the case, the Permit Issuer must oversee the placement of the equipment lock/tag and verify the isolation is effective.

• If there is a risk of exposure to live electrical terminals in doing the isolation, it must be done by a registered electrician.

• Every time a permit is revalidated, both the Issuer and the Receiver shall check the integrity of the isolations.

• For every permit, the isolations shall stand alone. It is “possible” to have a common lockbox between permits but all the isolation lock numbers shall be recorded on each permit and appropriate equipment and Receiver locks and tags fitted i.e. a second equipment lock and tag and a second Receiver lock and tag is fitted on the lockbox. The second permit number shall be recorded on the second equipment tag on the lockbox. The scope for each permit must be very specific. It is acceptable to record the lock box number on the field equipment tag in place of permit number provided each equipment tag on the lock box has the permit number on it. This allows for a more efficient use of the tags

• If a lockbox is not used, a Receiver lock (and tag) must be placed on each isolation in the field.

• If more equipment isolations are required than space allows on the work permit, the system isolation certificate can be used to record extra isolations but the step number column must be struck through.

• Refer to Section 4.7 for information on managing isolations on ongoing permits

11.4 Hardware Requirements

Numbered Locks: These must have individual keys.

Equipment Tags: Mandatory. Must capture the following information: permit number and date of placement.

Receiver Tags: Mandatory. Must capture the following information: receiver name (printed), date.
Personal Tags: Optional. Must capture the following information: name. Company name and contact number can be recorded on the reverse of the tag.

Multi Hasps: To fit multiple locks to isolation points or lock box. Can be fitted to every isolation point before fitting locks and mandatory for a lock box.

Chains or wire: To lock out manual valves or circuit breakers.

Other hardware not listed here may also be required to effect isolations, according to the specific task/plant.

11.5 Responsibilities

Permit Issuer

- In all cases, the Permit Issuer has ultimate responsibility for ensuring the completeness and accuracy of the isolation. They are able to nominate a competent person as their Designate to carry out the activity on their behalf, however this does not remove the Permit Issuer’s ultimate responsibility.
- The Issuer puts equipment locks/tags in place, which protect the equipment.
- If the Issuer has to leave site while the work is still going on, they hand over their responsibility to another Permit Issuer at the PTW station. The new Issuer has to revalidate the permit at this time.
- Checks the integrity of the isolation.

Designate

- Acts on behalf of the Permit Issuer in defining and/or placing Equipment or Systems Isolations. The Permit Receiver may also effect isolations. However, if this is the case, the Permit Issuer must physically oversee the placement of the equipment lock/tag.
- A Designate cannot issue, revalidate or close permits.
Permit Receiver

- Responsible for ensuring the integrity of the isolation has been checked and the isolation is effective.
- Places Receiver lock/tag either at agreed isolation point or on Lockbox if used.
- The Receiver’s lock/tag protects them and their team members.
- When the Receiver leaves site (i.e. permit is suspended), the Receiver locks/tags remain in place and the keys remain at the PTW station attached to the copy of the permit that has been brought back from the worksite.
- The Receiver must ensure that all Users remove their personal locks and tags when they leave the work area and prior to permit suspension. (The Receiver’s and equipment locks/tags stay on).
- A new Receiver arriving (e.g. next shift) revalidates the permit, takes control of the Receiver’s keys and verifies that the isolations are still effective.
- When the permit is revalidated, Users can fit their own personal locks and tags, if desired.

11.6 Procedure

Permit Application

1. The Permit Receiver and the Permit Issuer complete a hazard analysis and isolation requirement evaluation.
   This involves:
   - Identifying all sources of harm
   - Visiting the work area
   - Checking the drawings (If possible)
   - Identifying any processes affected by isolations – discuss with Area Supervisor or Operator

2. Permit Issuer identifies the type of isolation required – either an equipment isolation or a system isolation (See Section 11.2).
   - For a system isolation, a Systems Isolation certificate must be completed

3. Permit Issuer determines responsibility for a Designate.
• The Permit Issuer may nominate a Designate to act on their behalf in defining and/or placing isolations.

• The Permit Receiver may be nominated to define isolation requirements – at the discretion of the Permit Issuer. However, if this is the case, the Permit Issuer must oversee the placement of the equipment lock/tag and verify the isolation is effective.

**Isolation**

1. Ensure hazards are controlled/removed, for example:
   • Purge / Flush / Drain all lines
   • Remove Electrical Supplies
   • De-pressurise / vent any systems (pneumatics etc.)
   • Isolate any mechanical / stored energy (e.g. springs / weights)

2. Permit Issuer or Designate to fit equipment isolation clasp / locks / tags at all isolation points.
   • Record all Lock numbers and Tag numbers (and lockbox number, if used) on Permit
   • Record Permit number on all Isolation tags
   • Where unable to fit lock, fit equipment tag only and record the tag number on the permit

3. Permit Receiver fits Receiver lock and/or tag to all isolation points (or to lock box if used). The Receiver’s lock and tag numbers are not recorded. The Receiver places their lock keys in an envelope and staples this to the copy of the permit displayed at the worksite.
   • The Receiver locks/tags remain in place for the entire duration of the permit, even when suspended.
   • Only the Permit Receiver validated on the permit has control of the Receiver tags/locks/keys.

4. Permit Issuer (or Designate) and Permit Receiver to prove all isolations are effective (test all devices).
Permit Issue and Commencement of Work
Any other person commencing work (under the scope of the initial work permit) may also fit their personal lock/tag to the isolation point if they feel it appropriate.

- The Permit Receiver may instruct any other person commencing work under the scope of the original permit, to also fit his or her own personal lock/tag to the isolation point/lockbox.

Completion of Work
Permit Receiver and Permit Issuer (or Designate) must inspect the worksite for safe completion prior to de-isolation.

- Any other worker (User), who fits their own personal lock/tag under the scope of the original permit, must remove their lock/tag prior to leaving the work area. The Permit Receiver is responsible for ensuring this happens.

De-isolation
1. Permit Issuer (or Designate) and Permit Receiver check job site to ensure area and plant/equipment is safe to restart. Also check for any other active permits in area or on plant/equipment.

2. Permit Issuer or Designate and Permit Receiver remove all locks / tags
   - Record or cross check lock/tag numbers on permit document
   - Follow any specific de-isolation procedures where required
   - If using a systems isolation, a step sequence for de-isolation may need to be developed and followed.

3. Sign off de-isolation on Permit Form

4. Permit ready for closure
If a lock has been left on an isolation, preventing the starting of equipment, use the following procedure:

When a lock has been left on an isolation and the owner is not present to remove it, the **lock may only be removed** after all of the following:

- Every endeavour is made to locate the person and have them return to site.
- If this is not possible then the Site Manager (or their delegate), after ascertaining that no risk to people, plant, or process exists, shall authorise in writing the removal of that lock.
11.7 Isolation Flowchart

**Step 1** = Inspect area and identify isolation point(s). Decide on multiple isolation or single isolation.

- Air connections in conjunction with electrical isolations.
- Electrical isolation tag number that matches MCC cell.

E-stop is not an isolation!

**Step 2** = Issue permit & hardware (Personal locks and tags are at the Receiver’s or User’s discretion)

- Receiver tag
- Issuer copy
- Receiver copy
- Equipment tag
- Personal tag
- Permit sleeve to be displayed at work site

**Step 3** = Place isolation. Both Issuer and Receiver place padlock on

- Receiver tag (mandatory)
- Personal tag (optional)
- Multi Hasp
- Equipment tag (mandatory)
Step 4 = Use all isolation points

Using all isolation points will ensure a failsafe mode is active

Example of valve isolation

Chain attached to pipe so that the valve cannot be opened

Step 5 = Test isolation point to ensure it is isolated

Test isolation to ensure equipment is isolated
**Step 6** = When both parties are happy with the isolation, place key(s) for the Receiver lock(s) in an envelope and staple to the copy of the permit displayed at the worksite and key(s) for the equipment lock(s) in an envelope stapled to the copy of the permit that remains at the PTW station.

- **Issuer copy of permit** – stays at PTW station.
- **Receiver’s copy of permit** – displayed at worksite while the permit is open. Returned to PTW station when the permit is closed or suspended.

**Step 7** = Display permits at work site - Issuer copy at PTW station and Receiver copy at work site. (Note the two copies of the permit will not come together until job is closed or suspended.)

- **Issuer’s permit** in open permit slot
- **Receiver’s permit** displayed at work site

Uncontrolled copies of this manual are only valid on the day of printing. The correct version can be checked on the Milky Way.
11.8 Isolation for the purpose of testing, cleaning, fault finding or adjusting.

Scope
It is recognised that, under some operational situations, carrying out minor testing/cleaning/fault finding/adjusting is required.
To enable this to occur safely, and before the testing/cleaning/fault finding/minor adjustments are started, the Permit Issuer for the area concerned must be consulted and the permit assessment and hazard identification process completed. All controls for hazards must be put in place.

The Permit Issuer has the sole discretion to decide if the work can be done under the procedures “Isolations for testing/cleaning/fault finding/adjusting” or if a full Permit must be completed.

Procedure
• Single point Isolation allows the person doing the work (Receiver) to access equipment and allows for starting and stopping of live equipment, accessing equipment to carry out cleaning, fault finding or making minor adjustments providing adequate/safe single point isolations occur before the task is started.
• This can be done under a verbal permit where the PAS is 4 or less.
• For a “single point” of isolation associated with testing/cleaning/fault finding/adjusting, a Receiver tag/lock must be used. It shall be fitted and removed by the person doing the work, named on that tag.
• In this situation the Receiver tag allows the person named on the tag, to control the isolation. In this situation, the Receiver lock and tag cannot be left on when the owner is not in the area.
• If it is ascertained by the fault finding that the equipment is in need of repair or major adjustment/repair, then a permit with the appropriate scope will be written and full equipment isolation will be performed with equipment and receiver locks and tags (and personal lock and tags, if desired).

11.9 Standard Operating Procedure for operational activities

• For a PAS of 4 or less (verbal permit), a Receiver lock and tag only may be used to effect an isolation for an SOP task. The SOP must be part of an approved
procedures/training manual for that area/department. The Permit Issuer must be aware that the SOP task is taking place to ensure no conflicts with other permitted work.

- Only people trained and assessed as competent against the SOP can do the isolations associated with that SOP. All hazards and isolations are to be documented in the SOP.
- The person doing the task would fit their receiver tag/lock to the isolation point, carry out the SOP task and then remove the tag/lock.

### 11.10 carrying out work on live or operational equipment

When carrying out “live testing” or “machine jogging” under this procedure, all practical steps and controls must be considered and be in place to allow the task to be done safely. A written permit is required for all work on live or operational equipment with a PAS of 5 or greater.

The minimum safety requirements for electrical testing as prescribed in Legislation applicable to the country where this manual is being operated shall be followed.

(Refer to country specific appendix, as listed in the index for legislative references for that country)

1) Maintenance personnel will at all times work in a manner that controls the risk of injury to themselves or others, and controls the risk of damage to plant.

2) Where it is deemed that a Maintenance person is required to work on an operating machine or process with a guard open or removed or work within a locked off area;
   - Then, a ‘safety watch / operator’ remains with the Maintenance person during the whole course of the work.
   - The ‘Safety Watch / Operator’ must monitor the Maintenance person continually, and be in a position to safely intervene appropriately in the event of a problem occurring.
   - Full and completed hazard ID present at work site.
   - Emergency procedures must be identified i.e. E-stops, rescue plan, isolation points.
3) The ‘Safety Watch / Operator’ shares equal responsibility for the safe completion of the required task with the Maintenance person undertaking it.

4) As appropriate, all other personnel in the area and those that are immediately responsible for the area are to be made aware of the work proceeding, whether verbally, through the use of signs, or other notification.

5) No other work or work permits can be issued and work started on any equipment that is subject to “testing, cleaning, fault finding or adjusting” covered under this procedure (conflict of work).

Work on or around live electrical switchboards should not occur. Where there is concern regarding the impact on production requirements, suitable windows to undertake the work should be established. If such an approach is not practicable (the exception), minimum requirements that shall be adhered to are:

1. Two personnel undertake the task, with the second person in attendance at the worksite as a Safety Observer.
2. Suitable personal protective equipment is to be worn by the electrical personnel involved. This would include low voltage or high voltage electrician safety gloves, safety glasses full arm covering as a minimum.

11.11 Utilising isolations associated with other permits via a Lockbox

*Standard isolation protocols apply unless specifically stated below*

This procedure is used when an Issuer and Receiver can use isolations already effected through another existing permit by securing their locks and tags to the existing lockbox. This can be carried out across multiple permits and lockboxes.

**General Rules**

- Receiver must raise a permit specific to the task they plan to undertake.
- Isolations are effected by locking into the existing permit lockbox using Equipment and Receivers lock and tags.
- Keys shall be placed into the new lockbox specifically attached to the new Work Permit.
  - Where no lockbox is used the keys shall be attached to the relevant copies of the permit.
• These locks, tags and lockbox number shall be recorded on the new Work Permit or its own Systems Isolation Certificate (if used).
• The Systems Isolation Certificate(s) from the existing permit must be copied and attached to the new Work Permit being opened.
• Issuer and Receiver are responsible for highlighting the isolations on the Systems Isolation Certificate(s) that are relevant for their specific permit.
• De-isolation follows standard protocol.

Remote Isolation Permits

In this situation, an isolation permit can be specifically set up for effecting isolations which are remote from the primary location of where the work will be carried out.

General Rules

• The scope shall be clearly written for that purpose only.
• The isolations shall be secured through a lockbox using Issuers and Receivers locks and tags and be recorded on a Systems Isolation Certificate.
• The permit is then suspended until the de-isolation is required.
• Before the Remote Isolation Permit, can be closed the Isolation Permit shall be closed

Isolation Permits.

In this situation, permits can be specifically set up for the purpose of effecting multiple isolations.

General Rules

• The scope shall be clearly written for that purpose only.
• The permit shall be revalidated each day prior to work being conducted on isolated plant.
• Permits associated to the isolation permit can only be revalidated or opened after the isolation permit has been revalidated.
• Integrity check of the isolations must occur as part of each revalidation.
• The permit shall be suspended at the close of each day.
• The isolations shall be secured through a lockbox using issuers & receivers lock & tags and be recorded on a Systems Isolation Certificate.
• Before the Isolation Permit can be closed all associated Work Permits shall be closed.

**Work Permits associated with Isolation Permits.**

Isolation permits allow contractors to undertake work on plants already isolated through an isolation permit.

**General Rules**

• The isolation permit must be open prior to any other permits being opened.
• Receiver must raise a permit specific to the task they plan to carryout.
• Isolations are effected by locking into the isolation permit lockbox using issuers & receivers lock and tags.
• These locks, tags and lockbox must be recorded on the specific Work Permit.
• The Systems Isolation Certificate(s) from the isolation permit must be copied and attached to each specific Work Permit.
• Issuer & receiver are responsible for highlighting the isolations on the Systems Isolation Certificate(s) which are relevant for their specific permit.
• De-isolation follows standard protocol.

**11.12 Specific Isolation Examples**

**Single point lockable type**

• Equipment turned off in field
• Isolation, including lock number, recorded on Permit
• Equipment lock + tag put in place by Issuer
• Key in envelope stapled to copy of permit that stays at PTW station
• Receiver lock + tag in field

Receiver key stays in envelope with the Receiver copy of the permit in the field.
**Single point non-lockable type**

- Equipment has energy taken away e.g. break pipe, pull fuse, remove and blank airline.
- Isolation, including unique Equipment tag number recorded on Permit.
- Equipment tag put in place in field by Issuer (or Designate).
- Receiver tag put in field by Receiver.

**5 lockable type**

- 5 pieces of equipment turned off in field e.g. motors.
- Isolations, including lock numbers, recorded on Permit.
- 5 equipment locks + 5 tags put in place by Issuer (or Designate).
- 5 keys put in lock box.
- Issuer fits 6th equipment lock + tag to lockbox. The lockbox number is recorded on the permit.
- The key for this lock is stapled to the copy of the Permit that stays at the PTW station.
- Receiver lock + tag fitted on lockbox. Receiver key stays in envelope with the Receiver copy of the permit in the field.

**Note:** This is an efficient method for all multiple isolations (not just 5). Alternatively, it can be treated as 5 single point isolations (i.e. lockbox not mandatory). In this case, there will be the requirement for the Receiver to fit 5 Receiver locks plus tags in the field.

**5 non-lockable type**

- 5 pieces of equipment have energy taken away e.g. break pipe, pull fuse.
- Isolations including Unique Equipment tag numbers are recorded on Permit.
- 5 equipment tags put in place in field by Issuer (or Designate).
- Receiver puts 5 Receiver tags in field.
3 lockable and 2 non-lockable type

- 3 pieces of equipment turned off in field e.g. motors.
- Isolations recorded on Permit.
- 3 equipment locks + 3 tags put in place in field by Issuer (or Designate).
- 3 keys placed in lock box.
- Issuer fits 4th equipment lock + tag to lockbox. The lockbox number is recorded on the permit.
- The lockbox key is stapled to the copy of the Permit that stays at the PTW station.
- Other 2 pieces of equipment have energy taken away e.g. break pipe, pull fuse.
- Isolations including Unique Equipment tag numbers also recorded on Permit.
- 2 equipment tags put in place in field by Issuer (or Designate).
- 2 Receiver tags put on isolation points in field by Receiver.
- Receiver lock + tag onto lockbox.
- Receiver key stays in envelope with the Receiver copy of the permit in the field.

Example of use of remote isolation permit

Powder plant required to carryout maintenance which requires the Energy Centre, situated some 400m away to isolate some of their motors and valves, the remainder of isolations will be carried out locally.

Procedure:-

Remote Isolation permit

(1) Energy Centre to raise a permit (Remote Isolation Permit) for the purpose of isolating the agreed motors and valves.
(2) Isolations to be recorded on Systems Isolation Certificate.
(3) Keys for isolations placed in lockbox to be kept at Energy Centre..
(4) Lockbox secured using issuer and receiver locks & tags, keys are attached to permit which is suspended.
Isolation Permit

(5) Powder Plant to raise a permit (Isolation Permit) for the purpose of effecting isolations to enable the maintenance to take place.

Note:- If there were no isolations required other than those at the Energy Centre, the permit would be raised purely for the purpose of carrying out the integrity check on the Energy Centre isolations, steps (6) & (7) would not be required.

(6) Powder Plant isolations to be recorded on new Systems Isolation Certificate.

(7) Keys for isolations placed in lockbox to be kept at Powder Plant

(8) Powder Plant Issuer and Receiver place locks and tags on the lockbox held at the Energy Centre, keys are placed in the Powder Plant lockbox and the Systems Isolation Certificate of the isolation permit is completed for those locks and tags.

(9) Copy of Energy Centre Systems Isolation Certificate attached to Powder Plant permit.

Permits associated with Isolation Permit

(10) Receiver to raise a permit specific to the task to be undertaken.

(11) Issuer checks to ensure the Powder Plant isolation permit has been opened for that day.

(12) Both Issuer and Receiver are responsible for ensuring that copies of the Systems Isolation Certificates associated with the Powder Plant Isolation Permit are attached to the work permit, highlighting the isolations which are relevant to the task.

(13) The Issuer and Receiver of the associated permit place locks and tags on the lockbox held at the Powder Plant and these isolations are recorded in the isolation section of the permit.

(14) De-isolation follows standard protocol.
11.13 Permits for High Voltage Work

Purpose

- To ensure safe operation of Fonterra high voltage assets through compliance with Fonterra Permit to Work systems and electricity supply industry standards Safety Manuals – Electricity Industry.
- To ensure controlled communication between all affected parties at each critical step of switching operations.

References

- Safety Manuals – Electricity Industry
- Permit to Work Procedures Manual

Definitions

- PTW - Fonterra’s Permit to Work system

General

Hazard Management
The effective management of hazards is vital to the success to all health and safety, product safety, environmental safety and asset management systems or processes.

It is recognised that the Electricity Supply industry has long standing methods of controlling works in and around high voltage equipment. These systems and processes should be developed to meet legislation applicable to the country where this manual is being operated.

(Refer to country specific appendix, as listed in the index for legislative references for that country)

Electricity Supply industry participants, network owners and operators, contractors, etc should have experience with the processes detailed above in an effort to;

- Make it simple for Electricity Supply industry participants, notably contractors, to work on Fonterra high voltage systems, and
• To avoid replicating or inventing an alternative system

Fonterra will adopt as much as possible the systems and processes for managing high voltage works.

In particular the introduction of High Voltage Access Permit and High Voltage Test Permit as these terms would be understood by an Electricity Supply industry participant and as detailed in the systems and processes. Fonterra Access and Test Permits are now stock items 155470 and 155469 respectively.

High Voltage Access and Test permits shall be used for work as defined in the systems and processes. Typically for Fonterra this is maintenance tasks being conducted after switching for isolation is complete and prior to switching for restoration commences.

High voltage Access and Test permits are an internal high voltage control document that is an addendum of the Fonterra Permit to Work. A strong analogy can be drawn between Fonterra High Voltage Access or Test permits and existing Fonterra Confined Space Certificate.

The Fonterra Permit to Work is the head permit document for high voltage work. The first document to be raised and the last to be returned shall be the Fonterra Permit to Work.

Process
• The Site Responsible Person or the Acting Site Responsible Person shall raise a Fonterra PTW in accordance with the Fonterra Permit to Work Procedures Manual prior to any work on the high voltage system being undertaken.
• All high voltage switching has a PAS score of at least 16, and therefore requires Plant Manager sign off to proceed.
• Switching can then be undertaken using the Fonterra switching sequence form and process as defined in Section 6.4 Switching Code of Practice of this standard.
• On completion of switching for isolation an Access or Test permit can then be issued to the working party in accordance with Safety Manuals Electricity Industry.

• Access permits and Test permits are required for work as defined in systems and processes.

• Management of the work site through out maintenance, installation, or decommissioning works shall be in accordance with systems and processes.

• On completion of works the Access or Test permit shall be returned in accordance with systems and processes.

• Switching can then be undertaken to return the equipment to service. Switching shall be controlled as defined in Section 6.4 Switching Code of Practice of this standard.

• On completion of switching, and all other works, the Fonterra Permit to Work shall be returned and cancelled in accordance with Fonterra Permit to Work Procedures Manual.

**High Voltage – Safety Observer Responsibilities**

• Appointed by Permit Receiver – specialist training required
• Ensure the switcher follows the switching sequence in correct order.
• Confirm each switching action against the switching sequence.
• Maintain a safety watch over the switcher's actions.