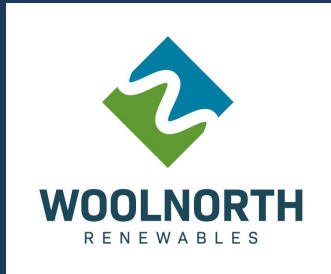


Woolnorth Renewables' Isolation Training



Please contact
your Woolnorth
representative or
inductions@
woolnorth.com.au
for help

Welcome to our **Isolation** training package focussing on the,

- Types of mechanical and electrical isolations we use
- Role of the Authorised Issuing Officers
 - Lock and tag specifications
 - Earthing standards

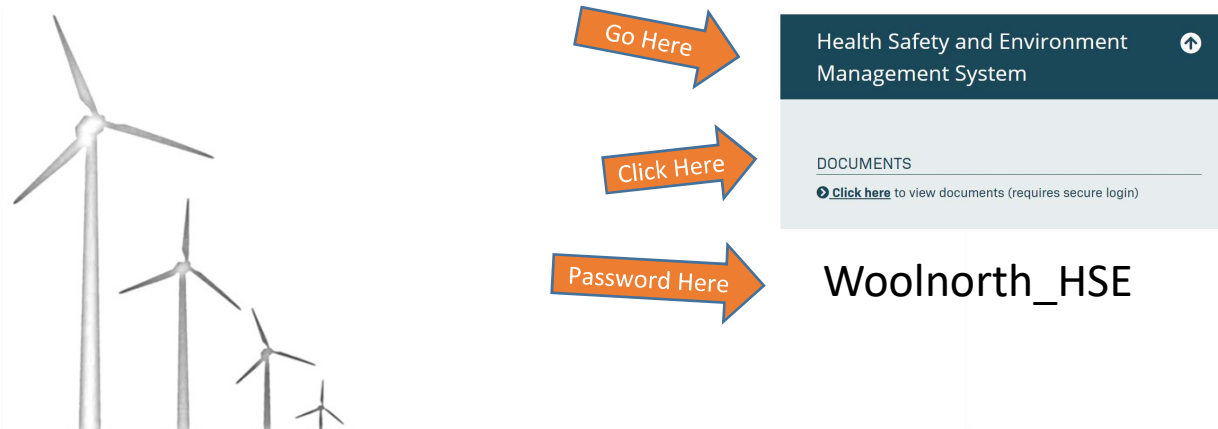
Woolnorth Wind Farm Holding Pty Ltd (Woolnorth) trading as Woolnorth Renewables

Woolnorth's Health, Safety & Environmental System

Our HSE system consists of a Health and Safety Policy, an Environmental Policy, guidelines on risk management and a collection of specific procedures and documents for managing the HSE hazards associated with operating our wind farms, balance of plant, transmission lines and other assets.

As mentioned, to complete this Isolation training you will need to access Woolnorth's HSE system. This can be done at the following website -

<https://www.woolnorthrenewables.com.au/health-safety-environment>



Woolnorth's Isolation Procedure

Woolnorth's Permits To Work (PTW) and Isolation systems and processes are risk controls that are mandatory in certain high risk situations (specifically those related to the maintenance of our wind turbine, transmission line and ancillary infrastructure). Before anyone can apply an isolation or lock onto a group isolation board (explained further in) they must have completed this training and have approval of the Site Supervisor for the particular wind farm. The Site Supervisor will assess the experience and qualifications of each person relevant to the specific plant to be isolated.

**Please
open the
Isolation
Procedure**

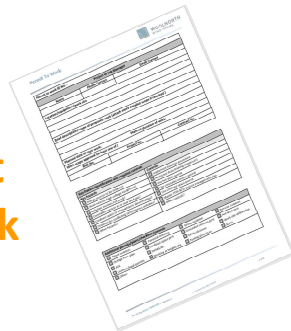


Isolations and Permits To Work

What is a Permit To Work and what are Isolations?

They are two completely different things, one is an administrative control (a bit of paperwork) and one is a physical control that disconnects sources of hazardous energy from plant or equipment and prevents the equipment or plant from being or becoming re-energised (typically an isolation device such as a circuit breaker or valve is operated and locked in the off or closed position using a padlock). These two controls, however, are the highest level risk management tools that Woolnorth uses for hazardous activities. They are often used together but can be used on their own, depending on the work setting. To sign onto a PTW you are required to have completed Woolnorth's PTW training.

**Permit
To Work**



**Personal
Isolation
Lock**



Typically a PTW and/or recognised isolations are used to manage work within any of Woolnorth's Restricted Areas. The hazards associated with working in these areas were outlined in your previous training (Woolnorth's Restricted Area Induction). All Woolnorth's HSE training requirements are outlined on the next slide.

HSE Training Requirements for Working on Woolnorth Sites

When you first come to site you can enter as an **Escorted Visitor**



Your specific training requirements may be tailored by your Woolnorth contact/manager depending on your activities and a risk assessment

We'll then get you set up with a **Contract** and some other onboarding tasks e.g. insurances, qualifications & work plans



All sites have a site induction to allow you to work as an **Accompanied Worker**



To be an **Unaccompanied Worker** you'll need to complete our...

General Induction



Health, Safety & Environmental Induction



You Are Here

Isolation Training



Permit To Work Training



Restricted Area Training



All HSE training is valid for **2 years**



Isolation and Permit Roles

There is one area of overlap between the Woolnorth Permit To Work and Isolation systems. That is that they rely on the same roles. These roles are (as a reminder from the PTW training) –

Project Managers/Job Managers (PM/JM) – Administer/schedule/plan/coordinate work at a high level with no direct work-site involvement.

Authorised Issuing Officers (AIO) – Work planning with PM/JM, work site preparation prior to any work activities including the application of all isolation and earthing systems for group isolations (explained in detail further in).

Person In Charge (PIC) – Operational work planning with the AIO, apply personal isolation locks (explained further in), management of personnel and work site during work activities.

Workers – understand and sign onto the PTW and apply personal isolation locks (explained further in), complete all work requirements.



Isolating Plant & Equipment

Before any plant is inspected, maintained, cleaned or repaired, where practicable, it must be shut down and its energy sources isolated, locked-out and tagged in compliance with Woolnorth's Isolation Procedure. This ensures the safety of those doing the work and provides a higher order control. Examples of energy sources include electricity, hydraulic pressure, compressed air or gas, gravity, kinetic spring tension and movable parts.

Before work commences the plant should be stopped, appropriately isolated, locked and a danger-tag applied, and any stored energy should be dissipated. Separate and additional controls not associated with the plant/equipment or the immediate work area must also be isolated or locked and a danger-tag applied i.e. up and downstream of the work point.

The aim of the Woolnorth Isolation Procedure is therefore to:

- isolate all forms of potentially hazardous energy to ensure that an accidental release of hazardous energy does not occur
- control all other hazards to those doing the work
- ensure that access to isolated equipment is tightly controlled.

Woolnorth's isolation procedure is located in the Wind Farm Operations section of its HSE System. This procedure outlines four types of isolations - **Direct, Personal, Group and Remote Isolations**

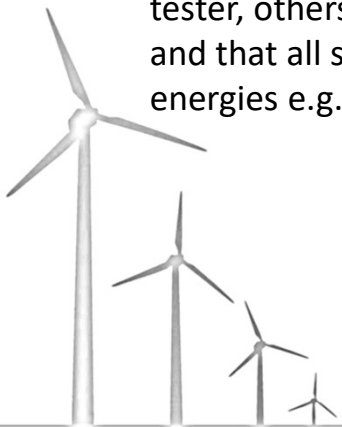


Please open
the Isolation
Procedure on
HSE website

Isolation Process

In the case of the four Isolation techniques (Direct, Personal, Group, Remote), the following general lock-out procedure is mandatory to be conducted:

- shut down the machinery and equipment
- identify all energy sources and other hazards
- identify all isolation points
- isolate all energy sources. In the case of electrical equipment 'whole current isolation', such as the main isolator, should be used instead of 'control isolation' by way of the stop button on a control panel
- control or de-energise all stored energy
- With the exception of direct isolation, lock-out all isolation points, using padlocks, multi-padlock hasps (if required) and danger tags (of required)
- Tag all machinery controls, and lock if possible, energy sources and other hazards.
- Test that the isolation is effective by 'testing for dead' or 'trying' to reactivate the plant without exposing the tester, others or the plant to risk. Failure to reactivate the plant means that the isolation procedure is effective and that all stored energies have dissipated. This may require further measures to safely release these energies e.g. hydraulic or pneumatic pressure, suspended weight or compressed springs.

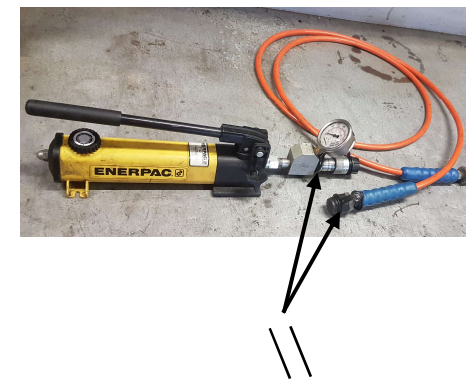
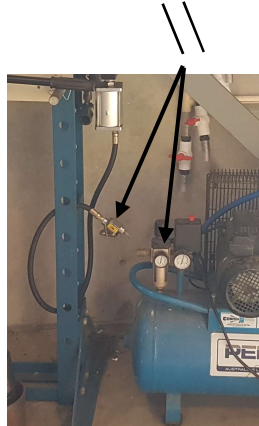


Direct Controlled Isolations

The most basic level of isolation involves no mandatory locking or tagging and is utilised for work on plant where:

- a) isolation, dissipation or restraint of energy sources is carried out by physical removal or separation of plant components.
- b) each worker can keep the means of isolation, dissipation and restraint **under continuous observation and control**.
- c) there is no potential to interrupt generation.

Such work might include the maintenance of power tools and the servicing of light vehicles, or situations where it may not be necessary or practicable to lock and tag energy sources. Isolation can be achieved by unplugging power leads, disconnecting pipelines and hoses, or removing vehicle ignition keys. Re-energisation of the plant can be effectively prevented, without the need for locking and tagging, by coiling up power leads or hoses and relocating keys. Remember the isolation must be **under continuous observation and control of the worker**.



Personal Isolations

Personal isolations involve locking defined isolation points and are conducted by each person involved in undertaking a specific job. They are utilised for work on plant where:

- a) each worker involved does not have direct close control of the means of isolation, dissipation and restraint;
- b) four or less isolations/energy sources are involved;
- c) six or less workers are involved and they can easily liaise with each other during the work;
- d) the work will be completed by the end of the current shift/day;
- e) there is no potential to interrupt generation i.e. less than one circuit of turbines;
- f) there are no high voltage (> 1000 volts) energy sources involved; and
- g) at least one of the workers involved is competent and authorised to personally determine, carry out and check the isolations required.



Personal Isolations

Work requiring personal isolations will often include routine maintenance and more simple tasks carried out by individual workers or by small groups. Note: In these cases, the plant involved should be fitted with isolating switches on electrical power sources, and other suitable devices on all sources of energy, with all being locked.

Where possible **each** worker shall lock every device used for isolating the plant i.e. using a hasp. If an isolation point is not fitted with a built-in provision for locking, an alternative lock or other means of immobilising the point of isolation shall be used. The locking shall be done with red personal isolation locks that have the **name and mobile phone number** of the owners on the back of the locks. Tags are not mandatory for these isolations but the Danger Do Not Operate tags can be used to provide further information at all or some of the isolation points.

Personal Lock



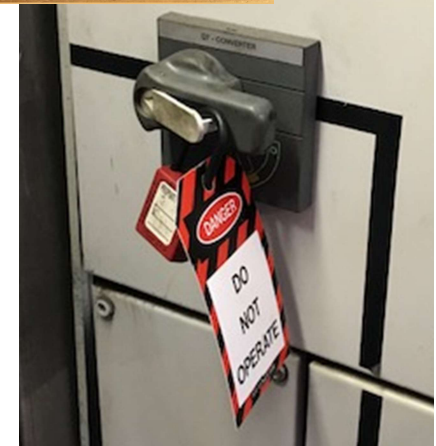
Tag



Hasp



Examples of Personal Isolations

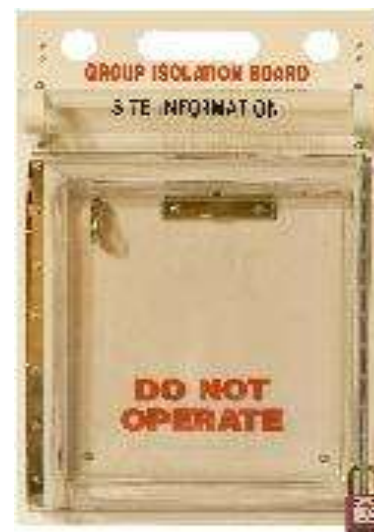


Group Isolations

Group isolations are utilised for our high risk and complex work on plant and involve mandatory locking AND tagging procedures. All isolations (to plant and equipment) are conducted by a single person (an Authorised Issuing Officer) on behalf of a PIC and a group of workers. They are utilised for work on plant where:

- a) More than four isolations are involved;
- b) More than six workers are involved;
- c) The work will take longer than one shift to complete;
- d) The work has the potential to interrupt production; or
- e) None of the workers have the specialised technical competence and authorisation to personally determine, carry out and check the isolations required.

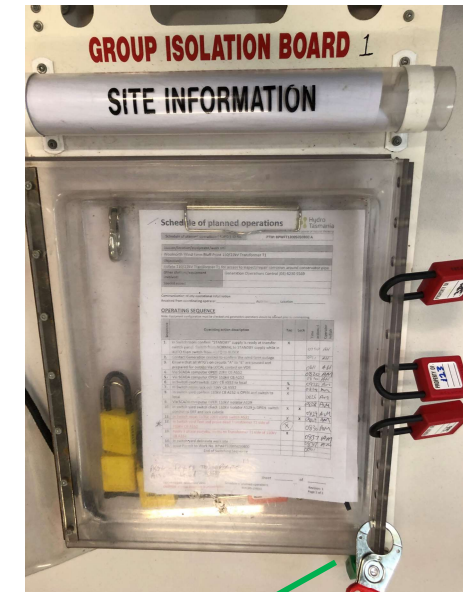
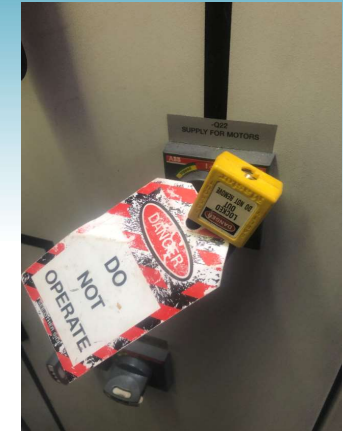
Then a group isolation process following the steps outlined in this procedure will be used. The group isolation will be a requirement of a permit to work.



Group Isolations

Under a Group Isolation the isolations are completed by the AIO, following an approved schedule of planned operations (SOPO), using yellow group isolation locks (all keyed-alike) AND mandatory Danger Do Not Operate Tags. The keys for those locks (and any additional locks) are then stored in a group isolation board/box (which is also locked as described later). All workers relying on those group isolations prior to work commencing add their personal locks to that box to prevent the isolations being unlocked prior to them finishing the task reliant on those isolations for safety. This includes the red personal lock of the Person In Charge. The personal lock of the AIO, which is green, is also attached to the lock box as the control to prevent any person from altering or removing an isolation.

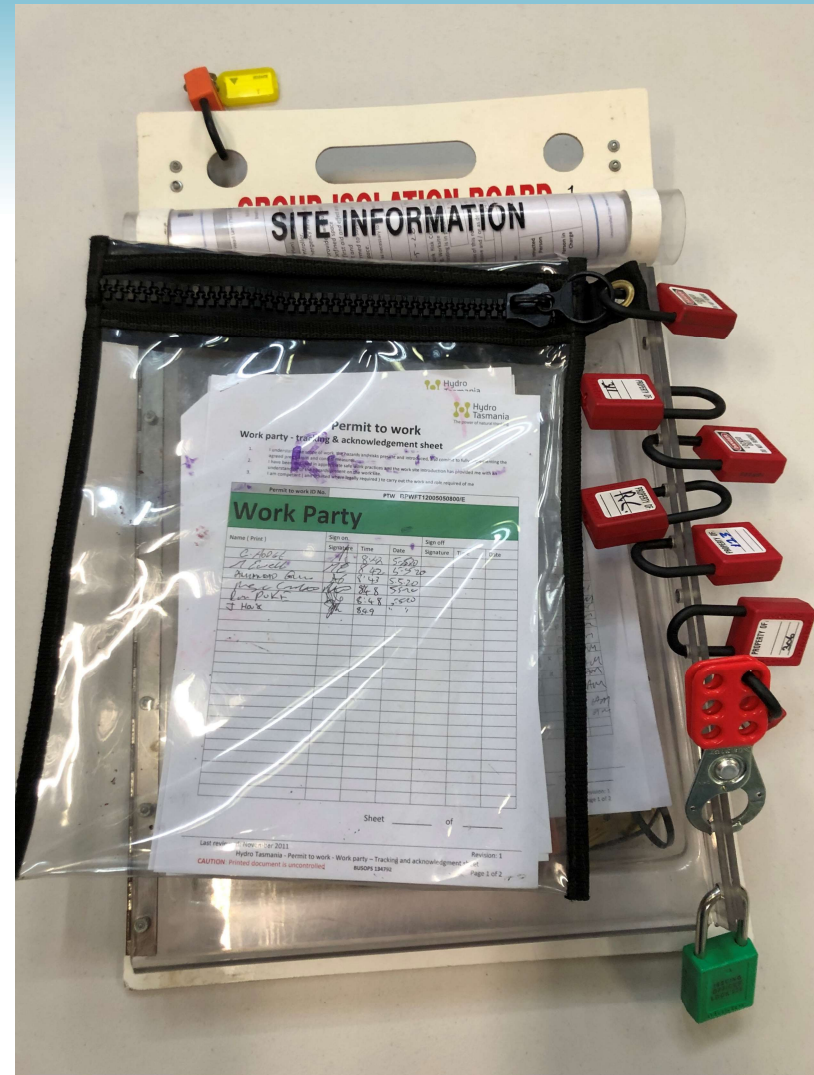
SOPO is also stored by the AIO in the lock box/ group isolation board.



Green AIO lock

PIC's Role in a Group Isolation

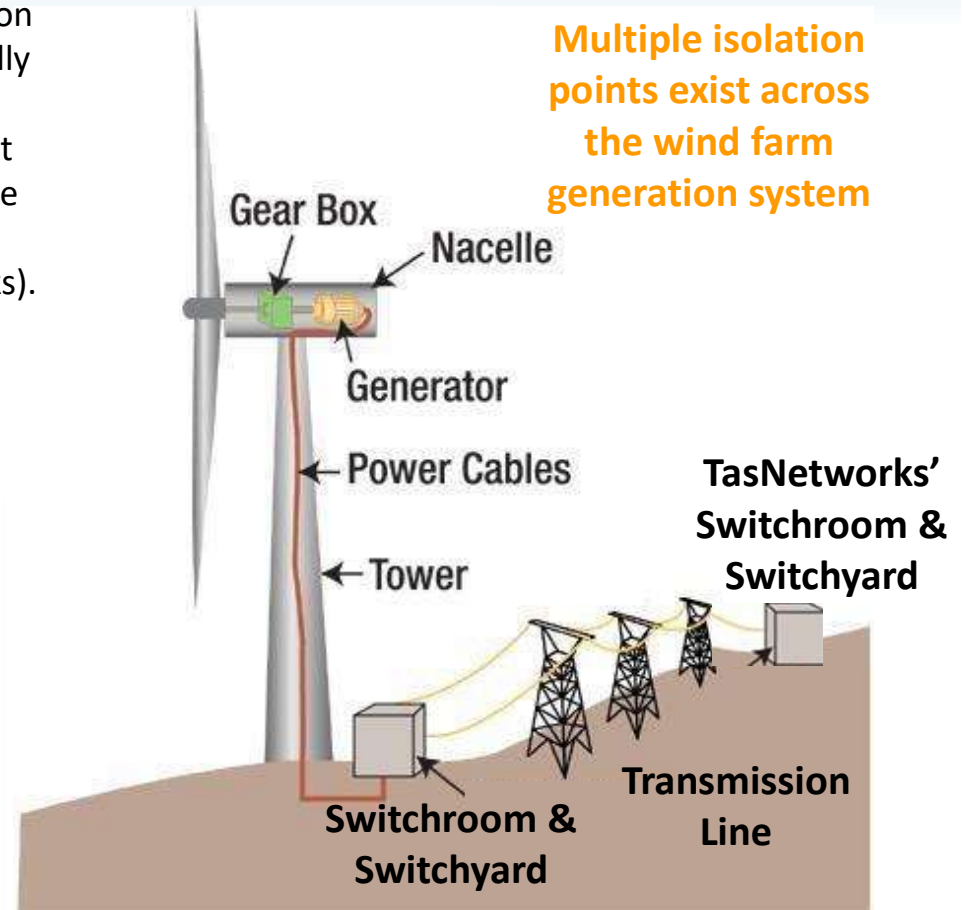
As highlighted earlier, the Person In Charge's role under a group isolation is the management of the worksite and the workers, during the period of activities outlined in the Permit To Work. Part of this role requires STRICT management of access into the worksite and management of the workers including and focussing on risk management. To that end, a core responsibility of the PIC is to manage the PTW and the signing on and off of workers from the permit, including ensuring all workers understand the tasks, hazards and controls relevant to the work. The PIC therefore places the permit in a sleeve that is locked, using his red personal lock, to the group isolation lock box.



Remote Isolations

Remote isolations are utilised when it is not possible for the primary AIO managing a group Isolation to complete all the individual isolations. This situation arises when isolation points are remote or spatially isolated from the main points of isolations (e.g. isolations at two ends of a transmission lines or at the top and bottom of a wind turbine), or because the isolation points are managed by another company (e.g. switchyards owned by TasNetworks). Remote Isolations shall only be utilised as an adjunct to a group isolation.

Multiple isolation points exist across the wind farm generation system



Remote Isolations

Remote isolations involve the following,

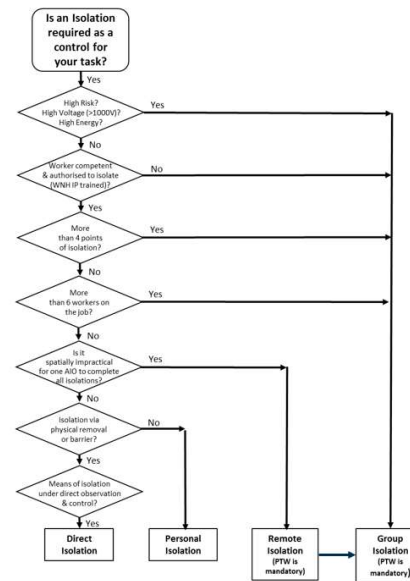
- the use of separate keyed-alike group (yellow) lock sets at the sites that are remote to the coordinating AIO (or a lock set of another company).
- The personnel authorised to apply the remote isolations shall only be approved AIOs (or equivalent if different company).
- The keys for the lock sets utilised by the remote AIOs will be kept secure by these personnel, which may include locking them away in group isolation boards if work under a PTW is to be completed at their end of the electrical circuit.
- A strict set of verbal assurances will be managed by the coordinating AIO with the remote AIO/s during each step of their isolations (outlined in an approved schedule of plant operations).
- The isolations at the site of the coordinating AIO shall always be managed as a standard group isolation.



The Isolations Flow Chart

Please go to
Figure 1 of
the Isolation
Procedure

As described, particular types of isolations are mandatory for particular work settings. These are summarised in the flow chart shown in Figure 1 of the Isolation Procedure. Please review this flow chart.



Use of Permits To Work

Any work involving a group or remote Isolation shall utilise a Permit To Work and the appropriate sections completed within the permit for the isolation.

Details on any Coordinating and Remote AIOs

What type of isolations are involved in the work

[illegible]

Personal Isolation Locks In Detail

Personal isolation locks attached to isolation devices signify that personnel are currently engaged in work on the plant, and that it is likely that those people will be injured if the isolating devices are not maintained in the safe position. As mentioned, personal isolation locks are red in colour and issued to individuals who need to lock out energy sources or on to a group isolation board. Personal isolation locks are uniquely keyed and have the name and employee number of the holder (short term contractors personal details will be at the contractor's lock sign out area and on an accompanying tag/sticker).

These locks have only one key and no master key. They are registered locks, thus preventing duplication.

Personal isolation lock holder responsibilities include -

- Ensuring the lock is maintained in good condition.
- Ensuring their key is in their possession or control at all times.
- Ensuring the lock has their name and phone number displayed.
- Ensuring their lock is placed on equipment isolation points, multiclass or group isolation board after signing onto a permit to work when required.



A personal isolation lock shall only be applied and removed by the person who owns it. The only time a personal isolation lock may be removed by another person is if it has been identified that a worker has left site and it is not practicable to recall the worker to remove them, the lock may be removed by an AIO following authorisation by the Woolnorth General Manager. The removal of locks through this process shall only be used as a last resort – a worker having to drive back to site is practicable no matter how inconvenient. If a lock is removed it will be treated as an incident and reported through the HSE system.

Recap On Roles & Lock Colours

Project Managers/Job Managers – Administer, schedules, plans, coordinates work at a high level with no direct work-site involvement.



No locks due to no involvement in job site or isolations

Authorised Issuing Officers – Work planning with PM/JM, SOPO preparation, work site preparation prior to any work activities including the application of all isolation and earthing systems.



Personal Lock (AIO)



Isolation Lock (AIO)

Person In Charge – Operational work planning with the AIO, management of personnel and work site during work activities.

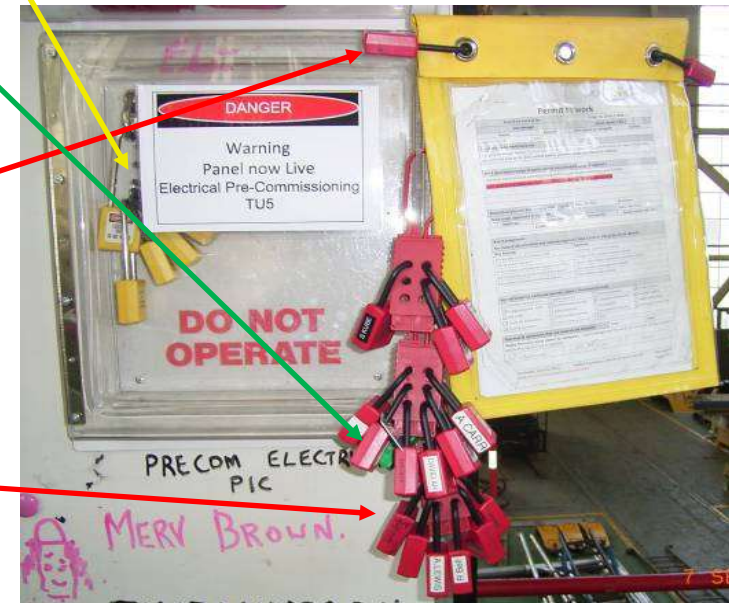


Personal Lock (PIC)

Workers – understand and sign onto the PTW and apply personal isolation locks, complete all work requirements.



Personal Locks (worker)



Work Not Completed

If work has not been completed or the equipment needs to be left out of service during a group isolation, all personal isolation locks will be removed by their owners at the end of the shift/day. The green AIO lock will, however, remain in place to ensure safety until the work has been complete and the equipment is ready to be brought back into service. The person in charge shall also attach an orange 'Defect/Restriction' lock and 'Hazardous or Unusual Condition' tag, and remove their personal isolation lock.

This same lock and tag combination is to be used for personal isolations when plant is left out of service.



Earthing

Earthing is carried out to ensure that an effective discharge of electrical energy to the general mass of earth is maintained for the protection of the work party from inadvertent energisation, induction and capacitive discharge. Operational earths are applied as part of an isolation process prior to accessing the isolated equipment. Work earths are applied as the work progresses to maintain an equipotential work site when disconnecting and reconnecting equipment.



Final Notes

If you are in doubt about our expectations of you when you are planning to apply isolations or work under a group isolation, ask the PIC, the Site Supervisor or review the Isolation Procedure. There are a number of topics covered in the procedure that you may still need to review, particularly the details in regards to lock administration, lock & key management, schedule of planned operations.

Well done, you are now officially trained to apply a personal lock or sign onto a group isolation PTW, once the Site Supervisor has given you the go-ahead.

Remember, Woolnorth Renewables are committed to having a safe and healthy workplace. If you are working for us, you have a duty or care to support us in achieving this.

We're looking forward to working with you.

