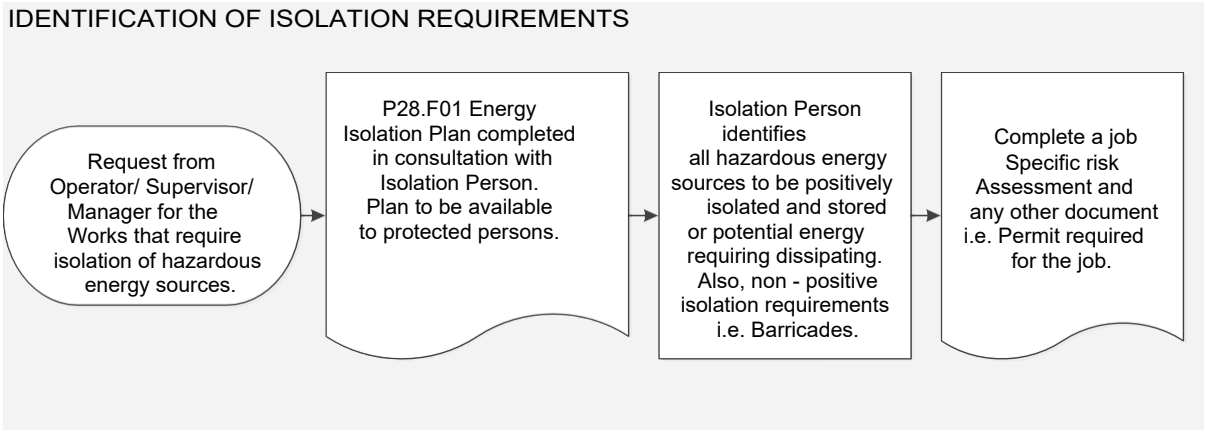
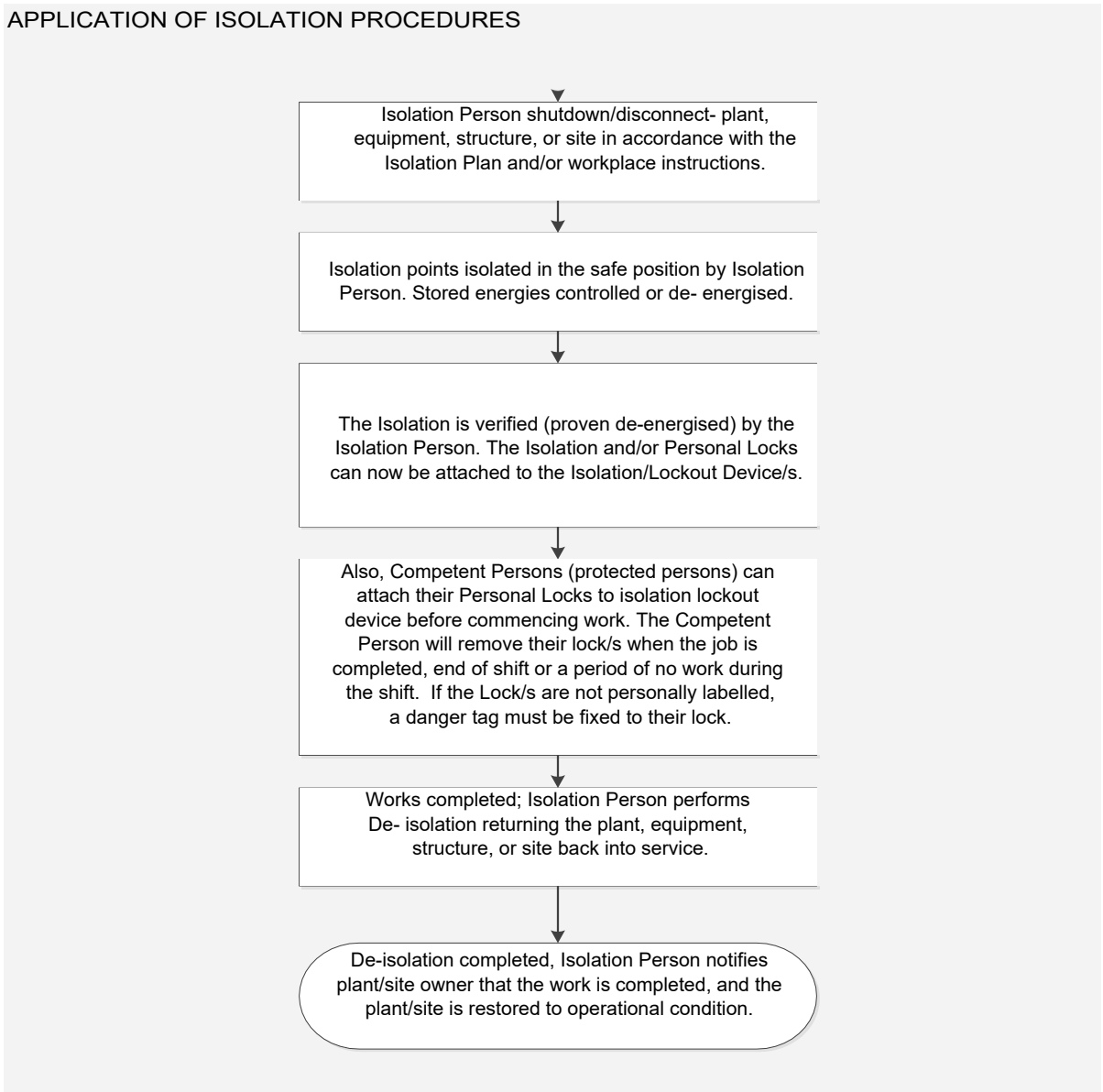
ENERGY ISOLATION & BARRICADING

1.0 SUMMARY / FLOWCHART





2.0 RESPONSIBILITY

Organisational Level	Health and Safety Responsibilities
Level 1 *(CEO, Directors)*	Provide adequate resources to ensure that the requirements of this procedure are implemented.
Level 2 *(Section Manager, Team Manager /Coordinator, Project Manager)*	Ensure the effective implementation of the requirements of this procedure.
Level 3 *(Coordinator within a Team, Team Leader, Supervisor, Ganger or Leading Hand or Operator)*	Ensure that all new, second hand, or hired plant has been subjected to a risk assessment prior to acquisition and that any required controls have been established, implemented, and monitored.
	Ensure that all workers operating items of plant and equipment are suitably licensed, trained, and competent prior to unsupervised use of the plant.
	Ensure that all required inspections, maintenance and cleaning of plant and equipment are undertaken by competent workers and that all identified discrepancies are corrected.
	Ensure that plant and equipment is used for tasks for which it is suitable and operated within the normal limits.
	Ensure that records of plant and equipment inspections, maintenance and cleaning are maintained in accordance with the requirements of P04 Document Control and Safety Records.
	Develop and document Safe Work Instructions for the maintenance, repair and cleaning of plant and equipment.
	Monitor compliance with established procedures and take action to correct non-compliance, when required.
Level 4 *(Team Member, Operator Attendant, Trainee, Apprentice)*	Ensure that plant and equipment is used for tasks for which it is suitable and operated within the normal limits.
	Ensure that all workers operating items of plant and equipment are suitably licensed, trained, and competent prior to unsupervised use of the plant.
Level 5 *(Volunteer, Contractor, Other)*	Ensure that all workers operating items of plant and equipment are suitably licensed, trained, and competent prior to unsupervised use of the plant.
	Ensure that plant and equipment is used for tasks for which it is suitable and operated within the normal limits.

3.0 PURPOSE & SCOPE

3.1 Purpose

3.1.1 The purpose of this procedure is to ensure all hazardous energy sources related to plant, equipment, structure, or sites are made safe so that the unexpected start-up, energisation, or release of stored energies that could cause injury does not occur. This procedure does not cover requirements for electrical work on `energised` electrical equipment specified in the NSW WHS Regulation 2011 or for High Voltage Work. This procedure has two parts:

i. Energy Isolation Procedures
ii. Barricading & Tagging Rules

3.2 Scope

3.1.2 This procedure applies to all workers, contractors, and other personnel at workplaces under the management or control of the SCC.

4.0 DEFINITIONS

Types Of Energy Sources	• Gravity • Motion • Mechanical • Electrical (mains, solar and by generator) • Pressure (pneumatic pressure - compressed air, fluids under pressure, such as water or hydraulic oil) • Sound • Radiation • Biological • Chemical such as gases, fuels • Temperature / heat • Energy storing devices, such as batteries, springs, flywheels, accumulators, and capacitors.
Isolation Person	A person trained and deemed competent to perform isolation and to enact related responsibilities outlined in P28 Energy Isolation & Barricading Procedure.
Competent Person (Protected Person)	Means a person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform the specified tasks i.e. work under isolation as a protected person.
Isolation Plan	An isolation plan includes (but is not limited to) what plant, equipment, structure, or site is being isolated, the workers involved, their roles and responsibilities, a list of actions required to isolate the specific plant, equipment, structure, or site and sign off for each action. Refer to P28.F01 – Energy isolation plan.

Isolation	The disconnection and separation of all energy (including stored) from equipment to prevent the possibility of inadvertent energising of the whole or specified section of that equipment. The de-energising must also prevent the introduction of contaminants or unsafe conditions through equipment such as piping, ducts, vents, drains, conveyors, service pipes and fire protection equipment, into working areas.
Mechanical Isolation	Isolation and de-pressurisation of hydraulic or pneumatic energy, immobilisation of all equipment that has the potential to move. This includes hydraulic arms, fan blades and rollers.
Isolation Boundaries	Work involving plant, equipment, structure or site with several connecting hazardous energy sources, the Isolation/Competent Person must identify and communicate those energy sources being isolated to those persons working under isolation (protected persons).
Short Term Isolation	• Less than one shift • Two or less `Isolators` being isolated. • Two or less person/s being a (protected person/s) • In some cases, a job may not be continuous (a period of no work or work required elsewhere) during the shift, where this occurs all Personal Locks (Red lock) must be removed from the lockout device until the work resumes. • The Isolation Lock (Yellow lock) should remain to protect the integrity of the isolation, a (Caution – Out of Service) tag should be attached to the Isolation lockout device explaining the circumstances.
Short Term Isolation Mobile Plant	• Main isolation source is the ignition start-up/shut-down switch `Key` and/or the plants immobiliser keypad. • The mobile plant is positively isolated by the removal and security of that `Key` and/or activating the plants immobiliser keypad to prevent unauthorised start-ups of mobile plant whilst work is in progress or when the plant is left unattended. • If unsure if plant has an immobiliser contact SSC Mechanical Services. • Start key must be secured to prevent unintentional start-up.
Extended Isolation	• More than one shift • Three or more isolators being isolated. • Three or more person/s being a (protected person/s). • P28.F01 Isolation Plan must be completed and available for inspection by all (protected persons). The Isolation Plan must be left onsite until all work is completed, and all isolations removed. • Positive Isolation rules apply. • For work continuing beyond one shift, those protected persons not working the next shift must remove their Personal Lock (Red lock) before leaving the job. • Where the job discontinues at the end of a shift and will not

	resume until the following day, all protected persons must remove their Personal Lock (Red lock) before leaving the job. • The Isolation person must inform their immediate supervisor of the status of the isolation before leaving the job.
Danger - Do Not Operate Tags	Danger tags are prominently marked 'Danger - Do Not Operate' and are red and white in colour. Danger tags are to be placed only for the protection of personnel working on plant, equipment, structure, or site. They are not to be left on after that person completes their work or finishes their shift. Danger tags must: • Be durable and securely fixed to the point of isolation. • Clearly state the warning, including any warning about the specific hazards relating to the isolation. • Be dated and signed by the worker or workers involved in the carrying out of the work or, where appropriate, by the supervisor in charge of the workers. • Be attached in a prominent position on each isolation point (or one of many points used to isolate) the machine. • When work is finally completed, the tags may only be removed by the signatories to the tag. If unavailable and unable to return, measures must be put in place to manage risk associated with removing the tag.
Out Of Service Tags	Out of Service Tags are used to identify plants, equipment, structure, or site that is not safe to use or fit for purpose and are yellow and black in colour. They are placed for the protection of the operators, maintenance personnel, the public or plant and are to be left attached to the device until the defect listed is remedied. Out of Service Tags should be durable and securely attached, clearly state the nature of the defect or reason the plant is unsafe and be attached in a prominent position on each isolation point. The tag must only be removed by a person trained and deemed competent and verified the defect has been corrected. Any person may fit an Out of Service Tag or combine it with a Danger Tag in preparation to work on the plant.
Information Tags	Information Tags are blue and white, they are to be placed when either an Out of Service or Danger Tag is not required. Can be used for adding additional information in conjunction with other tags, and for instructions etc to be left.
Isolation Lock (Yellow lock)	Isolation Locks (Yellow lock) are used to positively isolate individual isolators and will be fixed to a lockout device before people can work under isolation (protected person).
Personal Lock **(**Red lock)	A personal lock is a lock provided by a PCBU for use by a worker to ensure personal lockout protection so that each lock, when applied, is operable only by a key in the worker's possession, any additional key must be kept secure and under the control of the supervisor / manager in charge. Personal locks should be red locks.

Lock-out device	A device that prevents the inadvertent energising of an energy source on installations, plant, or equipment.
Lock Out	Where an energy isolator e.g., electrical power switch is switched to the OFF position and secured in the OFF position by having a physical block fitted such as a padlock with key removed, etc. This stops the plant, equipment, or structure from being turned on accidentally or in an unplanned circumstance.
Loto – Lock Out/Tag Out	Locking out isolation points prevents them being reactivated. There is various lock out and tag out (LOTO) devices, designed for use on many different items of plant and equipment. When locking out plant, equipment, or structure you should ensure: • There is one lock fitted for each person performing maintenance or non-production tasks. • If there is more than one isolation point, each person will require sufficient locks to lock out each isolation point. • If there are multiple workers, there is a lock for each worker attached to isolation points that need to be isolated and, • Locks are to be kept on the isolation points until the work is finished or the work is transferred to another worker. Multiple locks at each point can be avoided by using a lock box. This means each lockout point has one lock and the master key for the locks is placed in a box. Each person working on the plant places their own lock on the lock box as identification they have acknowledged the lock out and are ready to start working on the machine. This also prevents access to the key to unlock the plant while the lock is still attached to the lock box. **Note:** There must only be one key for each lock, apart from a master key that should be given to the responsible person and stored in a secure location for emergencies only.

5.0 ENERGY ISOLATION PLANNING

5.1 Planning the work

5.1.1 Before Isolation (Lockout/Tagout):

5.1.1.1 Scope and timing of the job.

5.1.1.2 Resources required to perform the work and the isolation.

5.1.1.3 Operational impacts.

5.1.1.4 All stakeholders involved in, or impacted by the work (including internal and external stakeholders and the work environment).

5.1.1.5 Location of all the isolation points.

5.1.1.6 Risk controls required to perform the work (isolation devices, work instructions, isolation plan, work permits, SWMS/SSRA etc.)

5.1.1.7 How long the plant and equipment need to be isolated for.

5.1.1.8 Knowing who the Isolating Person / Isolation Co-ordinator is and ensuring they are deemed competent in the Isolation Procedure.

5.1.1.9 Staff must be provided with all the locks, lock out devices, lock boxes, hasps and tags required to be able to fully isolate the equipment.

6.0 ISOLATON METHODS

6.1 Short Term Isolation Procedure

6.1.1 Short Term Isolation

6.1.1.1 For 'Short Term Isolation' ONLY, the details of the Isolation plan maybe recorded in the job's risk assessment. Those details must be available for inspection by all protected persons (if applicable).

6.1.1.2 The person in charge of the works can elect to isolate under 'Extended Isolation' instead of Short Term Isolation.

6.1.1.3 The Isolation Person can attach their Personal Lock (Red lock) directly to the isolator or the lockout device without the need to attach an Isolation Lock (Yellow lock).

6.1.1.4 Short Term Isolation is used when work is less than one shift, isolation of two or less isolators and two or less person/s being a (protected person/s).

6.1.2 Process to positively isolate hazardous energy:

6.1.2.1 Identify and isolate the isolation points in the `safe position` with an Isolation Lock on each isolator.

6.1.2.2 With `Stored Energies', control or de- energise e.g. install ground wires, relieve trapped pressure, block or brace parts that could fall because of gravity etc.

6.1.2.3 LOTO Lock out/Tag out.

6.1.2.4 Verify the isolation (proven de-energised). Note: Testing of the equipment maybe required before De-Isolation and thereafter ensure De-Isolation is carried out on completion of the job. Proven de-energised devices include metres, gauge indicators, test by "trying" to re-activate the plant.

6.1.2.5 Isolation lockout devices must be suitable for the type of energy being isolated, examples include:

- Electrical - hasps, circuit breaker, universal wall switch lockouts
- Mechanical - hasps, disc brake locks, rotating gate valve lockouts
- Gases - lockouts, remove a valve and blank/cap open end of pipe

6.1.3 Perform the work:

6.1.3.1 The planned works can now be undertaken once the isolation and stored energy verification tasks are complete, and the Isolating Person/Isolation Co-ordinator has confirmed the plant, equipment, structure, or site is isolated and safe.

6.1.3.2 Once all isolation and LOTO steps have been completed, the Isolating Person may commence work on the plant, equipment, structure, or site in line with the agreed scope of work.

6.1.3.3 If the scope of work changes, the work shall be suspended until the isolation and LOTO has been reviewed and determined if any amendments are required to ensure the plant and equipment remains at zero energy state.

6.1.4 De-Isolation:

6.1.4.1 Returning the plant, equipment, structure, or site back into service, the

Isolation/Competent Person must perform de-isolation on completion of the job.

6.1.4.2 Remove from the work area all unwanted materials and any blocks, wedges, props etc used during isolation to prevent parts from moving. Also, any removed guards are replaced.

6.1.4.3 All Personal Red locks will be removed from the Isolators lockout device.

6.1.4.4 After deeming it safe, remove all Isolation Yellow locks, LOTO devices/tags.

6.1.4.5 Return all isolators/switches to the neutral or OFF position and emergency devices reactivated and tested.

6.1.4.6 Notify the person responsible for the plant, equipment, structure, or site that the work is completed and operational condition is restored.

6.3 Short Term Isolation - Mobile Plant

6.3.1 This method of isolation is specific to maintenance work associated with mobile plant by i.e. Mechanical Services at SCC Depots /other sites.

6.3.2 The mobile plant`s main isolation source is the ignition start-up/shut-down switch `Key' and/or the plants immobiliser keypad. The mobile plant is positively isolated by the removal and security of that `Key' and/or activating the plants immobiliser keypad to prevent unauthorised start-ups of mobile plant whilst work is in progress or when the plant is left unattended.

6.3.3 Isolation and Personal Locks in these cases are not required unless other parts of the mobile plant have hazardous energy sources requiring different type of positive isolation methods.

6.3.4 The start-up /shut-down `Key' must be kept secured by e.g. a locked box located is a safe location. If multiple keys common machine keys are on the type of equipment to be isolated. Tagging should also be used on the start point.

6.3.5 In circumstances where trucks fitted with mobile cranes and the crane is used specifically for rescue purposes via the emergency rescue anchor point located on the cranes jib i.e. for confined space work. Use a positive Isolation method and tagging.

6.4 Extended Term Isolation Procedure

6.4.1 Extended Term Isolation

6.4.1.1 Extended Isolation involves work that extends beyond one shift, isolation of three or more isolators and generally involves several workers working under isolation (protected persons).

6.4.1.2 For Extended Isolation, persons working under isolation (protected persons) must have their personal lock attached to the isolation lockout device and an Isolation Plan must be completed and available for inspection by all (protected persons).

6.4.2 Process to positively isolate hazardous energy:

6.4.2.1 Complete Isolation Plan and notify all personnel impacted by the

shutdown.

6.4.2.2 With `Stored Energies', control or de- energise e.g. install ground wires, relieve trapped pressure, block or brace parts that could fall because of gravity etc.

6.4.2.3 LOTO Lock out/Tag out Isolation yellow locks used on all Isolation points and Personal red locks (protected persons) attached by individual workers.

6.4.2.4 Place all the keys to the locks in a lock box controlled by the Isolation Supervisor.

6.4.2.5 For work continuing beyond one shift, those protected persons not working the next shift must remove their Personal Lock (Red lock) before leaving the job.

6.4.2.6 Verify the isolation (proven de-energised). Note: Testing of the equipment maybe required before De-Isolation and thereafter ensure De-Isolation is carried out on completion of the job. Proven de-energised devices include metres, gauge indicators, test by "trying" to re-activate the plant.

6.4.2.7 Isolation lockout devices must be suitable for the type of energy being isolated, examples include:

- Electrical - hasps, circuit breaker, universal wall switch lockouts
- Mechanical - hasps, disc brake locks, rotating gate valve lockouts
- Gases - lockouts, remove a valve and blank/cap open end of pipe.

6.4.3 Perform the work:

6.4.3.1 The planned works can now be undertaken once the isolation and the release of stored energy verification tasks are complete, and the Isolating Person/Isolation Co-ordinator has confirmed the plant, equipment, structure, or site is isolated and safe.

6.4.3.2 Once all isolation and LOTO steps have been completed, the Isolating Person, protected person/s & competent person/s may commence work on the plant, equipment, structure, or site in line with the agreed scope of work.

6.4.3.3 Where the job discontinues at the end of a shift and will not resume until the following day, all protected persons must remove their Personal Lock (Red lock) before leaving the job.

6.4.3.4 The Isolation Locks (Yellow locks) may remain on the isolators with a out of service tag attached to each lock prescribing the name, contact details of the Isolation Person and prescribe the reason for the attached out of service tag.

6.4.3.5 The Isolation person must inform their immediate supervisor of the status of the isolation before leaving the job.

6.4.4 De-Isolation:

6.4.4.1 Returning the plant, equipment, structure, or site back into service, the Isolating Person/Isolation Co-ordinator must perform de-isolation on completion of the job.

6.4.4.2 Remove from the work area all unwanted materials and any blocks, wedges, props etc used during isolation to prevent parts from moving. Also, any removed guards are replaced.

6.4.4.3 Persons working under isolation (protected persons) must remove their personal red locks attached to the isolation lockout device/s.

6.4.4.4 After deeming it safe, remove all Isolation Yellow locks, LOTO devices/tags.

6.4.4.5 Return all isolators/switches to the neutral or OFF position and emergency devices reactivated and tested.

6.4.4.6 Notify the person responsible for the plant, equipment, structure, or site that the work is completed and operational condition is restored.

7.0 LOCK RULES

7.1 Personal Locks

7.1.1 Personal Locks (Red lock) used by persons working under isolation (protected person).

7.1.2 For an extended isolation Personal Locks (Red lock) can only be attached to a lockout device that has an Isolation Lock fixed to it.

7.1.3 For a short-term isolation Personal Locks (Red lock) can be attached directly to the isolator or lockout device.

7.1.4 Where a Personal Lock is not labelled with the owners' details, a danger tag must be attached to the lock with your name, contact details and the SCC Group you belong to.

7.1.5 Each person working on the plant, equipment, structure or site should have their own PERSONAL LOCK and key. There should be no duplicate key available for any lock on site, the master or duplicate key can be securely kept off site for use in the event of an emergency.

7.1.6 On completion of the work or leaving the site remove your Personal Lock.

7.1.7 Personal Lock (Red lock) owner must always attach your own lock, where Personal Locks or keys are lost report it to your Isolation Person and Supervisor.

7.1.8 Where a protected person has left their Personal Lock (Red lock) on the lockout device and has left the site, the Isolation Person can only remove their lock after contacting the person and the person is not able to return to the site to remove their lock prior to the end of shift and authorisation has been achieved by the section manager. An investigation will follow to determine the reasons for the protected person leaving the site without removing their lock.

7.1.9 Personal Lock (Red lock) owner must not:

- Leave your key in the lock.
- Attach a lock to another lock.
- De-face or paint Personal Locks
- Depend on someone else`s Personal Lock for your own personal protection.
- Remove another person's lock.

7.2 Isolation Locks

7.2.1 Isolation Locks (Yellow lock) are used to positively isolate individual isolators when an extended isolation is required.

7.2.2 Isolation Locks (Yellow lock) must be attached to the individual isolators before

people can work under isolation (protected person).

7.2.3 Isolation Locks owner (Isolation Person) must ensure locks are attached and removed by them and are used to secure the isolators in the safe (isolation) position.

7.2.4 Where an isolation Lock is not labelled with identifying markers for the isolation plan, an out of service tag must be attached to the lock with your name, contact details and the SCC Group you belong to.

7.2.5 Isolation lock keys must be placed in a lock box or isolation device that protected workers will be locking onto. Report any lost keys to your supervisor.

7.2.6 Where a master key/s exists, it must be securely kept off site e.g. at SCC work depots under management of supervisor.

7.2.7 Isolation Locks owner (Isolation Person) must not.

- Attach an Isolation Lock to another lock.
- Use an Isolation Lock for personal protection.
- Leave an Isolation lock keys in a lock.
- De-face or paint Isolation Locks.

8.0 TAGGING RULES

8.1 Out Of Service Tags

8.1.1 The type of safety tag used at SCC, is an Out Of Service tag.

8.1.2 Out Of Service tags are used to avert the operation of plant and equipment that may be faulty, damaged, or out of service to provide protection for people, equipment, and environment. Also, they provide information about non-standard settings, conditions, or safety information.

8.1.3 Out Of Service tags must not be used in place of a Danger Tag or relied on for personal protection. The tag should be secured so that it is not easily dislodged and be attached in a prominent position easy for people to view.

8.1.4 Out Of Service tags can only be removed by:

a) An authorised competent person after the item has been serviced / maintained / repaired and is being returned to service**.**
b) An Isolation Person when used as part of an energy isolation.

8.1.4 The person removing the Out Of Service tag must ensure that there are no risks or hazards to people, plant, or environment, if the Plant / Equipment was operated.

8.1.4 There is no limit to the length of time that an Out Of Service tag may remain attached to Plant / Equipment, however it must be replaced if deteriorated or unreadable.

8.1.4 An Out Of Service tag must have the person's name, date, signature, Group contact number they belong too, description (purpose for attaching the tag).

8.1 Danger Tags

8.1.1 Danger Tags are only used for personal protection, the hazardous energy supply must not be switched on and to do so may endanger the life of workers.

8.1.1 Danger tags are also to be used to advise workers that a piece of plant or equipment if operated will pose (Danger life threatening hazard) to the safety of workers/others in the vicinity.

8.1.1 **Note:** A Danger Tag does not perform the isolation function and is not an effective isolation device by itself and should not be relied on for personal

protection. The tag only acts as a means of providing information to others at the workplace of `Danger life threatening hazard'

8.1.1 The tag should be durable and fixed to an isolator clearly stating the warning and any specific hazards related to the isolation. Also, the person's name, date, signature, Group contact number they belong to. The tag should be secured so that it is not easily dislodged and be attached in a prominent position on each isolation point and only be removed by signatories on the tag.

8.3 Information Tags

8.3.1 Information tags are used only to provide instructional information.

8.3.1 It should clearly describe the equipment it is referring to and be attached in a conspicuous situation for its intended purpose.

8.3.1 It should be placed by the Isolation person, Competent person or person directly responsible of the equipment or asset at the time of attaching the tag and needs to supply information to other users.

9.0 ISOLATION PERSON AND PROTECTED PERSON TRAINING

9.0.1 All Isolation Persons who are required to isolate potential hazardous energy sources at workplaces under the management or control of SCC must be trained / assessed as competent.

9.0.2 All workers who are required to work under isolation (Competent Person) associated with hazardous energy sources at workplaces under the management or control of SCC must be trained and deemed competent.

9.0.3 The training will include a method to verify the person's understanding of the training which includes theory and practical assessments against defined criteria that demonstrates understanding and application of isolation and LOTO principles and practices.

9.0.4 Training programs should be practical and 'firsthand' and consider the needs of workers and the associated hazards and risks.

9.0.5 Compulsory training will be:

- SCOLAR Course – Energy Isolation PowerPoint
- SCOLAR Course – OJT Safe Work Instruction
- P28 Energy Isolation & Barricading Procedure
- Energy Isolation Training (Classroom Practical)

9.0.6 PCBU's must provide the necessary safety information and training to persons who are involved in installing, commissioning, testing, maintaining, or repairing plant, as well as decommissioning, dismantling, or disposing of plant.

10.0 BARRICADING RULES

10.1 Introduction - Barricading

10.1.1 These Barricading and Tagging rules are designed to provide protection to people and equipment from hazards and other nearby tasks.

10.1.1 All workers, contractors, and other personnel at workplaces under the management or control of the SCC must comply with the rules prescribed in this procedure.

10.1.1 Persons requiring a need for barricading an area are responsible for notifying the appropriate persons of the intent to set-up a barricade, select the correct type of barricade for the hazards, safely erect thereafter dismantle the barricade and supervise the access to the barricaded area.

10.1.1 The barricading rules prescribed in these procedures relate to temporary barricading only.

10.2 Purpose Of A Barricade

10.2.1 To restrict access to a defined area containing hazards and risks i.e. a hole in the ground.

10.2.1 To provide protection to workers within the defined area from e.g. being struck by a vehicle whilst the work activity is in progress.

10.2.1 Temporary separation of pedestrians from the work activity.

10.3 Danger Tape Barricade

10.3.1 Danger tape should not be used to barricade high risk activities i.e. construction work, unless it is not possible or practicable to use other types of barricades (prescribed below) and should be restricted for short periods in an emergency e.g. around fallen tree limbs or access to gross pollution traps in conjunction with a support vehicle and spotter.

10.4 Barricading On Or Adjacent To RMS Roads

10.4.1 For construction work, for example roadworks, on or adjacent to RMS roads, only approved RMS barricading types should be used. i.e. safety concrete barriers.

10.5 Barricading Other Than On Or Adjacent To RMS Roads

10.5.1 SHORT TERM WORK 3 DAYS OR LESS for construction / maintenance work i.e. curb and guttering, acceptable barricading for excavations of a maximum depth of 200 mm and (where applicable) on low volume 60km or less roads.

- Barrier boards with one end angled towards the ground with a sufficient number of sandbags affixed for prevailing weather conditions at 90 degrees to the longitudinal direction of the road. Where necessary each barrier board will also be fixed with a star picket and end cap at the high end of the barrier board pegged into the ground.
- Maximum spacing between barriers boards of 5 m, minimum two traffic warning lamps fixed to the barrier boards at both ends of the barricaded section. Outside of those end barricade boards, one or more interlocking water barricades be placed in the same direction as the barrier boards. Also, advance warning signs and any required delineation (traffic cones) be erected as determined by the risk assessment and or TCP.
- Where there is a pedestrian thoroughfare on the nature strip along the outside of the excavation, a plastic fencing mesh or high strength netting barricades must be erected sufficient distance away from the excavation wall to ensure the barricades structure integrity. The mesh should be woven around each alternative star picket, fixed to the star pickets (by cable ties) as close to the ground as possible, Maximum space between

barricade supports (star picket) of 5 m, star pickets must have end capes.

- Full perimeter plastic fencing mesh or high strength netting barricades may be used as an alternative to barrier board type barricade.

10.5.2 LONG TERM WORK MORE THAN 3 DAYS for construction

10.5.2 /Maintenance work, acceptable barricades for excavations of more than 200 mm in depth and (where applicable) on low volume 60km or less roads. Plastic fencing mesh or high strength netting barricades must be erected around the full perimeter of the excavation.

10.5.2 An access gate (for plant / workers) may form part of the barricade provided it is supervised when opened and designed so it can be easily closed off to prevent unauthorised entry.

10.5.2 One or more sides of the meshed barricade may be substituted with plastic interlocking water barricades installed as per manufacturer's specifications. An example where this may be required is on one side of the excavation parallel to the edge of a road.

10.5.2 Site steel temporary fencing i.e. to barricade around a site shed or four-sided mesh pit guards may be used for e.g. a hole in the ground.

10.5.2 For both short- and long-term work, where possible / practicable a trench cover plate (made of suitable material to support the load) should be placed over the excavation.

10.5.2 Interlocking water barriers may also be used as both a barricade and for delineation purposes e.g. for working on road islands or for a pedestrian barricade around or through a worksite.

Note: Excavation of 1.5 m or more, a safe work method statement must be completed prior to the commencement of work.

10.6 Barricading Inside or around Buildings

10.6.1 Include retract-belt or expandable barricades, post and chain/danger tape or rope barricades also traffic cones. Barricading responsibilities prescribed in 8.1.3 (above) must be complied with and advance warning signs for the barricaded area must also be considered.

11.0 ISOLATION COMPLIANCE

11.0.1 The WHS Team will conduct periodic - Isolation Compliance Audits against this procedure and P22 Safety Audit Program.