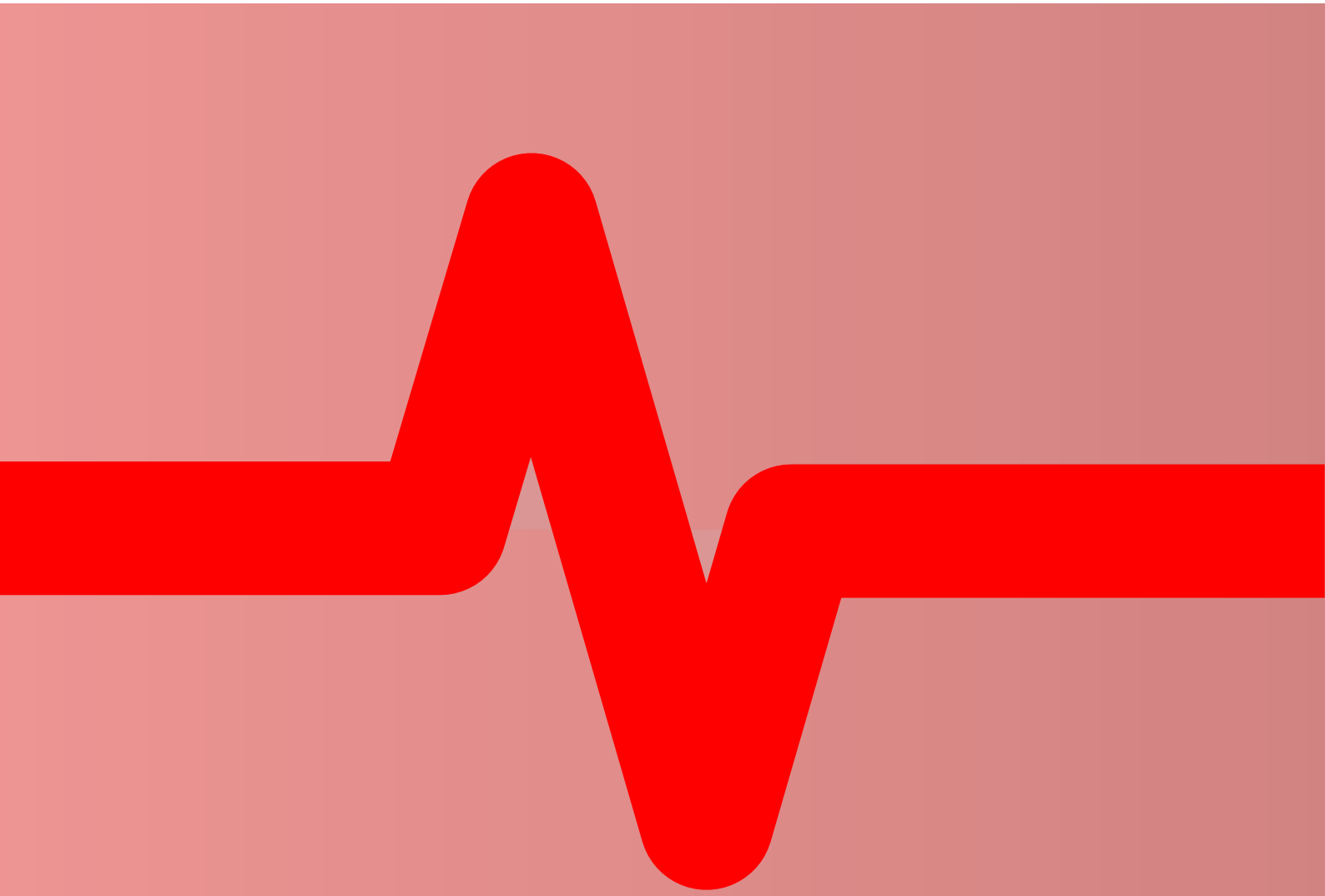
Work Control Procedures

Test Permit

June **2023**

The Test Permit is a Works Management System used to present equipment in an agreed and defined state for testing, using issuer applied safety measures, where testing includes the introduction of primary energy sources, test voltages or potentially lethal hazards.



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Preparation of Work Control Procedures

StayLive Work Control Procedures are prepared by a consensus process involving representatives nominated by major generating companies in NZ. These procedures may be derived from existing industry procedures, from established international procedures and practices or may be developed by the StayLive Work Control Procedures Working Group.

The following companies are represented on the WCP Group:

Contact Energy Ltd
Genesis Energy Ltd
Meridian Energy Ltd
Mercury NZ Limited
Manawa Energy Ltd
Nova Energy Ltd
Pioneer Energy Ltd

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This document has been prepared by a group of representatives of the electricity industry for the purpose of providing principles on safety and other practices for use by the generation sectors of that industry. It sets out standards considered to be appropriate for the electricity industry; in some instances further procedures will need to be developed in order to implement those standards. Although this document is recommended by industry representatives, it is not legally binding; as such, the industry representatives involved in its development can accept no liability or responsibility for any injury, loss, damage, or any other claims caused by or resulting from any inaccuracy in or incompleteness of the document.

1. INTRODUCTION

PURPOSE

StayLive adopts the Safety Manual – Electricity Industry (SM–EI) rules as its essential safety requirements for the control of hazards.

This Test Permit document is one of a suite of generation Work Control Procedures (WCP).

Combined, this suite of documents describes the specifics for the range of WCPs used in the generation industry.

These WCP set out, where necessary, the specific requirements for applying SM–EI rules to generating plant and facilities to ensure consistent interpretation and practical compliance across the NZ generation sector.

These procedures are designed to enable:

- safe access to plant and equipment for the purposes of undertaking any form of maintenance, inspections and/or testing
- contractors moving between different sites and asset owners experience consistent requirements and methods of equipment isolation
- safe and reliable return to service following completion of any works, and
- ensuring other plant and equipment are not affected during the works

OVERALL PHILOSOPHY

Achieving safe work practices on our worksites is conditional upon three key elements:

1. Personnel must fully understand their individual roles and responsibilities and also an understanding of the roles and responsibilities of others.
2. Effective planning will drive efficient and safe work execution.
3. Clear, concise, and effective communication is essential to ensure the correct application of these work control procedures and the safe completion of site activities.

SCOPE AND APPLICATION

These Work Control Procedures are mandatory and apply to all work carried out on generating plant and facilities.

These Work Control Procedures take precedence wherever there is an optional requirement or ambiguity with the SM–EI rules and procedures.

STANDARD OPERATING PROCEDURES

If the implementation of these Work Control Procedures results in sub-optimal or impractical outcomes, then Standard Operating Procedures (SOP) may be developed which provide an equivalent or greater standard of control of the work environment.

THE TEST PERMIT

The Test Permit is a Works Management System used to present equipment in an agreed and defined state for testing, using issuer applied safety measures, where testing includes the introduction of primary energy sources, test voltages or potentially lethal hazards. The process allows for the agreed alteration of IASM's.

Test Permits apply to testing of equipment which is located in its service position and do not apply to equipment removed from this position to another location e.g. workshop or test facility.

Disconnection of equipment does not constitute removal from the service position.

2. PROCESS SELECTION

A Test Permit shall be selected in accordance with the criteria outlined below and in the Test Permit selection diagram.

THE TEST PERMIT

Test Permits are required in the following circumstances;

- any testing on isolated equipment which introduces potentially lethal hazards which could cause harm to employees
- any work involving the use of a **primary energy source** for the work and where hazards must be controlled
- for work which requires movement or rotation of equipment and introduces potentially lethal hazards

A Test Permit can be issued on equipment:

- directly after safety measures are applied; or
- after an Access Permit has been returned

A Test Permit shall be used where a recipient intends to;

- energise isolated equipment for testing
- run, operate and/or energise equipment defined in an Access Permit 'equipment to be worked on' section where that equipment is not ready for return to service
- alter IASMs to facilitate testing

A Test Permit should be issued for tests on in-position equipment, including but not limited to;

- Power Factor testing
- Hi-pot testing
- Core flux testing
- Impedance testing
- VT calibration
- VLF testing
- Rotor pole volt-drop testing
- Stroking unguarded turbine wicket gates
- When required to rotate equipment manually which may introduce potentially lethal hazards

Only one Test Permit shall be applied to a single item of equipment at a given time.

An Access Permit shall not be required as a condition, or pre-requisite, for a Test Permit.

Work that is required to facilitate testing can be completed under that Test Permit e.g., Disconnecting conductors.

Work that is not required to facilitate testing **shall not** be completed under a Test Permit.

A Test Permit shall comprise one work party. Testing may require the work party to be located at multiple work positions.

Where the Test Permit recipient is unable to supervise work at multiple work positions, a work position supervisor may be appointed.

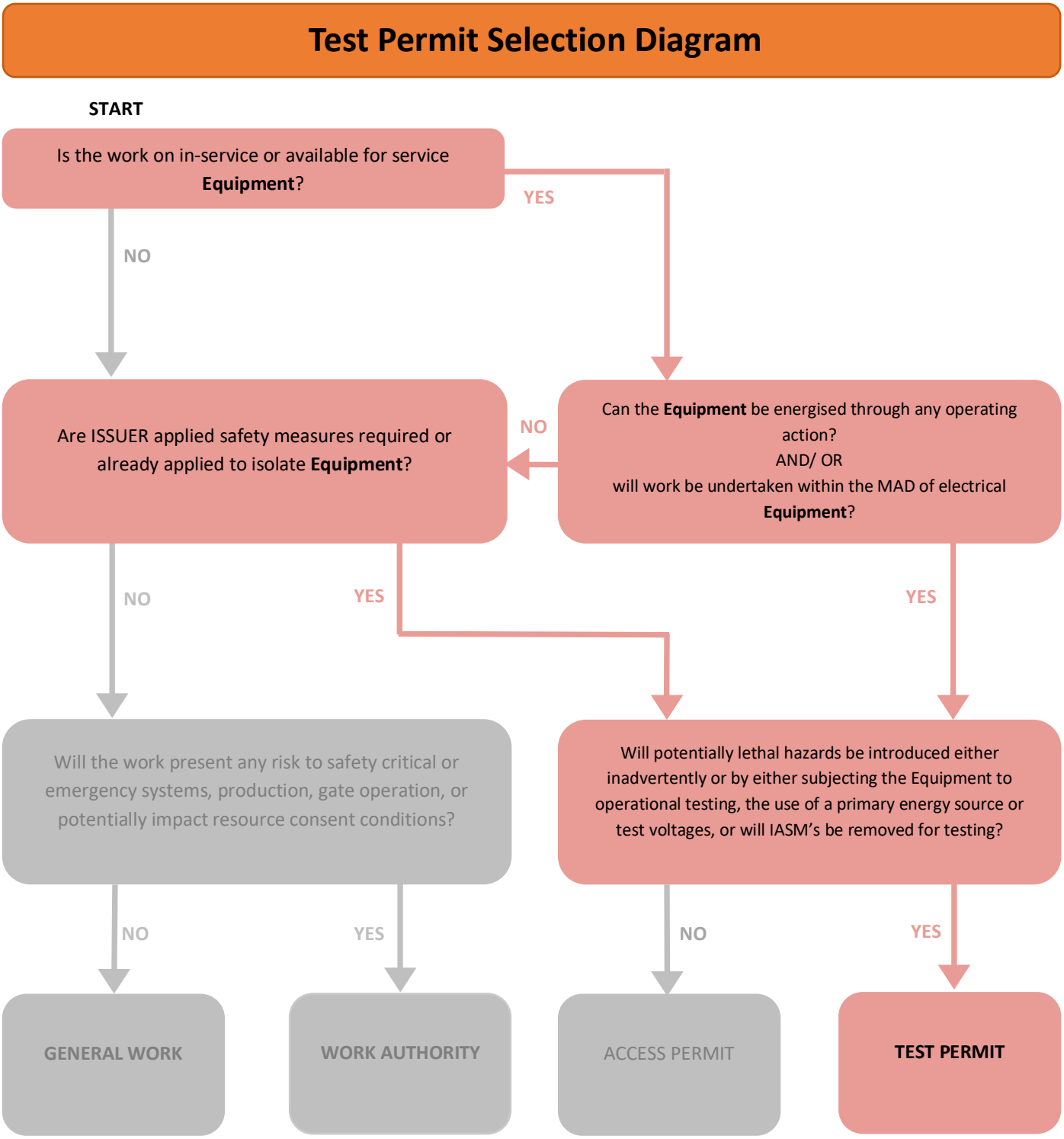
Test Permits are not required for testing equipment which has been removed from its in-service position, however all hazards introduced by the testing shall be controlled e.g. a circuit breaker removed from a switchboard.

When an Access Permit is to be returned for the issue of a Test Permit all permit recipients with permits that share any common isolation points that need to be removed for the test must be advised and their permits returned.

A System-Operator-approved test plan must be used to control test livening of equipment from the power system.

A Test Permit may be used in conjunction with a System Operator approved test plan.

TEST PERMIT SELECTION DIAGRAM



3. PRIMARY ROLES AND RESPONSIBILITIES

PRIMARY ROLES

Primary roles for a Test Permit are:

- issuer
- recipient
- supervisor (Test Permit)

For a Test Permit:

- the issuer and recipient shall be different people
- the recipient is the supervisor (Test Permit)
- the recipient may appoint additional supervisors (Test Permit Work Position)

RESPONSIBILITIES

It is the responsibility of each person, including members of the work party and those scoping, scheduling, and implementing work to:

- fully understand their respective role and their associated responsibilities to provide safe access to equipment for the purposes of undertaking testing and/or controlled work
- have a practical understanding of SM–EI and the StayLive Work Control Procedures (WCP) to ensure they are implemented correctly
- be aware at all times of what other work is occurring that might affect the safety of themselves and others on site
- be conscious of the hazards associated with, or introduced by, their testing and/or controlled work and have effective mitigations in place for those hazards
- plan and communicate effectively so that intentions are well understood, and risks can be effectively managed

COMPETENCY

Each defined role shall only be performed by persons meeting the competency criteria for that role or by persons undergoing training, or competency assessment, or where they are under the direct supervision of a competent person.

The asset owner is responsible for ensuring the issuer and recipient of a Test Permit are competent.

Competencies required for a Test Permit issuer and recipient are:

- Entry Approval Competence (EAC)
- Hazard ID / Risk Management
- WCP specific Permit Competence
- Safety Measure Competence (as determined by the asset owner)

Competencies required for a supervisor (Test Permit Work Position) are:

- Entry Approval Competence (EAC)
- Hazard ID / Risk Management
- WCP specific Permit Training
- Specific test activity and safety competence
- Safety Measure Competence (as determined by the asset owner)

ISSUER

It is the responsibility of the issuer to ensure:

- they and the recipient hold appropriate and valid competence
- they communicate fully with the recipient and other parties that may be affected by the testing regarding the scope and application of the work control
- where the Generation Controller is not the issuer, the issuer and recipient will agree on who will contact the Generation Controller to advise that the testing and/or controlled work is being carried out, and to forewarn any possible alarms, indications or change in plant status
- IASMs are adequate and appropriate for the testing requested and are correctly applied in accordance with SM-EI and this document
- that all IASMs including those applied under an assurance are referenced on the Test Permit form
- that all appropriate actions allowing safe access to equipment for testing have been taken
- operating order/isolating instructions are used for the isolation/de-isolation of equipment
- that procedures shall be used for the operation and isolation/de-isolation of complex equipment e.g., hydrogen filled generator
- that all additional WCP specific forms and attachments are provided to the recipient and are identified on the Test Permit form
- they retain a copy of the Test Permit and keep it secure (digital or hard copy)
- they log the details of all Test Permits issued

It is the responsibility of the issuer to ensure that they and the recipient discuss, understand, and acknowledge:

- the worksite, the equipment and extent of the testing
- the state of the equipment before, during and after the testing
- the location of adjacent energised or in service equipment
- all points of isolation necessary for the Test Permit
- location of all IASM's, and that they are correctly applied
- that any known hazards, including those introduced during testing and/or any special precautions to ensure recipient/work party safety are identified
- that a hazard identification and risk management process is completed by the recipient as per the asset owners requirements
- that proposed RASM's are agreed with the recipient
- the location of all isolations to which RASMs are to be applied
- that all plant risks and mitigations are agreed with the recipient
- the IASM's to be removed for testing are agreed with the recipient

The issuer and recipient shall be different people.

RECIPIENT

The Test Permit recipient must be on site and with the work party at all times.

The Test Permit recipient can only hold one Test Permit at any one time.

It is the responsibility of the recipient to ensure:

- they hold appropriate and valid competence
- they communicate fully with the issuer regarding the scope and application of the Test Permit
- the work control is adequate for the testing and/or controlled work to be carried out, and it remains adequate throughout for the purposes of maintaining safe access to the equipment being tested
- that RASM's as agreed, are identified, applied and recorded on the RASM register
- that a hazard identification and risk management process is completed in consultation with the work party prior to the commencement of testing, at least daily and as necessary during the testing
- where practicable, they physically check all isolations before accepting the Test Permit
- the appropriate level of supervision is provided at all times
- they shall be present at the worksite while the testing is in progress. If not, then the Test Permit should be transferred to a new recipient
- the safety of the work party, and of others in the vicinity of their workplace
- they establish a Test Permit area, display the Test Permit notices for the equipment to be tested and control access to equipment
- they may also display "Testing in Progress" notices during the testing and remove these immediately prior to the Test Permit return

The recipient shall ensure they understand and acknowledge:

- the state of the equipment to be tested
- the extent of the equipment that is to be tested
- the worksite, and extent of the testing
- the location of adjacent energised, available for, or in service equipment
- the existence of known hazards
- potential hazards at the worksite
- the extent of the tests or controlled work and the hazards that may be created
- all points of isolation necessary for the Test Permit
- locations of all IASM's, including those which can be removed for testing, and that they are correctly applied
- location of all isolations to which RASM's are to be applied

The recipient shall discuss the hazards that may be created by the tests or controlled work with those involved.

While the Test Permit is in force the recipient shall ensure:

- the safety measures listed on the Test Permit that may be removed for testing remain in place until immediately before the test
- the equipment to be tested shall be connected only to test equipment under the control of the recipient
- that the equipment being tested is in a suitable condition to be tested and will not result in risk to the work party, or result in damage or maloperation of the equipment as a result of the testing

- that test equipment used for testing is fit for purpose and has the required safety features to ensure work party safety during the tests
- that RASM's are applied, removed, and recorded on the RASM register
- they monitor the state of the isolations and the integrity of the Test Permit
- they request the modification and/or transfer of Test Permits
- they retain the recipient's copy of the Test Permit under safe custody so that it cannot be signed on to or off without the recipient's knowledge
- that all members of the work party sign on and off the Test Permit as required
- that all changes to the Test Permit, isolations and activity being done under the Test Permit are clearly communicated to the work party
- the testing remains within the boundary of the isolations at all times and is only on the equipment for which the Test Permit has been issued
- they are the only person who arranges for the removal of IASM's for testing

A Test Permit shall allow work party members to be at different work positions. If this is necessary, a work position supervisor shall be appointed for every work position that the recipient of a Test Permit cannot supervise directly. This ensures compliance with Test Permit requirements for supervision.

In this case the recipient shall ensure:

- they verify the competency of each work position supervisor
- they approve any change of work position supervisor
- they always know the identity of each work position supervisor
- that each work position supervisor enters (Supervisor) after their printed name on the work party form
- they instruct the work position supervisor(s) on the extent of the equipment covered by the Test Permit, and the scope of the testing to be done
- they instruct the work position supervisor(s) and work party on remaining hazards identified by the issuer
- they monitor the worksite to ensure that the equipment under the Test Permit remains safe, and the requirements for the Test Permit are being met
- they consult the work position supervisor(s) about any intended changes to the Test Permit and immediately advise the work position supervisor(s)when these changes have been made
- clear, timely and effective communication is maintained between the recipient and the work position supervisor(s) to ensure activity status is understood
- the recipient remains responsible for the integrity of the Test Permit and any modification to the Test Permit, e.g. transfer, status change, safety measure modification, cancellation, and application/removal of RASMs

The recipient may delegate the application/removal of RASM's to the work position supervisor(s).

Before Test Permit return for cancellation, the recipient shall ensure that return to service checks have been completed, including:

- that all test connections are removed from the equipment.
- all applied Test Permit notices are removed
- that the testing is completed, and tools are clear
- the worksite is tidy
- All RASMs are returned in the agreed state and RASM register updated
- IASMs removed for testing are replaced, unless mutually agreed to remain removed with the issuer, and the status is clear on the Test Permit
- Plant is ready for return to service if applicable

The recipient shall also ensure:

- all work position supervisors and work party members are advised the Test Permit is to be returned and have acknowledged by signing off
- that if a work party member is not present, they are informed that the Test Permit has been returned
- they return the Test Permit and all associated and additional documentation once testing is complete
- they advise the issuer of the current status and any modifications made to the equipment as a result of the testing e.g., changing a transformer fixed tap position.

SUPERVISOR (TEST PERMIT)

Every work party shall have a Test Permit supervisor in charge of it.

This Test Permit supervisor has specific responsibilities for the test permit process, safety, and integrity.

For all Test Permits the recipient is the Test Permit supervisor.

The identity of the Test Permit supervisor shall be known to all members of the work party.

A Test Permit shall allow work party members to be at different work positions, if required. An additional supervisor shall be appointed for every working position that the recipient of a Test Permit cannot supervise directly.

In this case it is the responsibility of any appointed work position supervisor to comply with and ensure:

- they liaise with the recipient regarding the scope and application of the Test Permit
- they are identifiable by entering (Supervisor) after their printed name on the work party form
- they remain at the work position whilst the work is being carried out
- that, in consultation with the recipient, they will determine the level of supervision required throughout the work for their work position and work party
- the work remains within the boundary of the isolations at all times and is only on the equipment for which a Test Permit has been issued
- they understand the state of the equipment, risks at the worksite, risks to those in the vicinity of the testing and precautions required to manage these risks
- that a hazard identification and risk management processes is completed in consultation with the work party prior to the commencement of work, at least daily and as necessary during the work
- the quality and completeness of information recorded on the hazard identification and risk management documentation
- they provide clear and effective instruction to the work party and keep the work party fully informed of any changes
- energy is dissipated where this is required
- the controls necessary for entry/access to the equipment under the Test Permit
- they understand the equipment which is isolated, and the boundary within which testing may be carried out

For safety measures

- the recipient may delegate the application and removal of approved RASM's to the work position supervisor
- these RASMs shall be recorded on the RASM's register
- work party earths are applied if they are competent to do so
- an additional RASM lock may be applied to the lockbox as the supervisor deems necessary

Before the Test Permit is returned any appointed work position supervisors shall ensure return to service checks are completed including:

- ensuring that the testing is complete
- that tools are clear
- the worksite is tidy
- All RASMs are returned in the agreed state and RASM register updated
- they advise the recipient of the current status and any modifications made to the equipment as a result of the testing or controlled work e.g., changing a transformer fixed tap position

WORK PARTY

It is the responsibility of the members of the work party to ensure:

- they sign on to the Test Permit prior to commencing work
- they work under the supervision of the Test Permit recipient or the work position supervisor
- they take part in a hazard identification and risk management process before work and during the work as required
- that they shall review and sign on to the hazard identification and risk management documentation at the start of each day or shift before starting work
- they work only on equipment as specified in the equipment to be worked on section of the Test Permit
- they obey all signs associated with the Test Permit and instructions from the recipient
- they enter or leave the Test Permit area through entry points where defined
- they inform the recipient, or the work position supervisor and other work party members of any additional hazards created by the testing or otherwise identified and ensure these hazards are effectively managed

Where the Test Permit is issued for longer than a day, work party members are not required to sign off the Test Permit at the end of each day or shift, unless otherwise instructed by the asset owner.

Under a Test Permit, the work party must sign off when:

- the intent or the purpose of the Test Permit has changed and must be cancelled
- alterations are being made to IASM's other than those listed on the Test Permit that can be removed for testing
- the work party is not readily contactable and will be away from the worksite
- the work party has completed their work and the Test Permit is being returned for cancellation
- when a Test Permit is returned for transfer to a new recipient

Before signing off the work party must ensure they have made their work area safe.

When returning to site, the work party or individual work party member must follow normal process and contact the recipient to sign back on to the Test Permit to ensure that they understand the boundaries and isolations of the Test Permit as these may have changed in their absence.

DAILY MEETINGS

Site meetings must be held at the start of every day or shift and must include all recipients and work party supervisors who are expected to be on site that day.

Meetings must be consistent and appropriate for the scale, scope and complexity of the work planned or in progress. Additional work party work activity meetings are to be held prior to starting work.

The meetings must cover off, among other things:

- work on site
- contractors on site
- locations and activities of work parties
- nominated issuers, recipients, supervisors
- work controls in place or required
- planned changes to safety measures
- temporary hazards
- shared equipment to be used
- testing activities
- commissioning activities
- any work activities that may impact others

Key decisions are to be recorded on the daily site meeting form.

4. SAFETY MEASURES AND ISOLATION POINTS

Safety measures are those measures taken to ensure work can be safely undertaken under a Test Permit.

Equipment must be removed from service, isolated, and placed in the desired state to ensure safe work can occur. This is achieved through the application of safety measures and isolations. This shall include all sources of energy such as electricity, compressed air, hydraulic pressure, water, gasses.

Safety measures may be either issuer applied, or recipient applied.

Where safety measures are required on equipment under the control of another asset owner, the assurance process shall be used.

Issuer and recipient applied safety measures incorporate isolations applied to equipment. These are referred to as isolation points.

For Test Permits, safety measures are replaced prior to any change in test connections, removed for the testing then immediately replaced after the test(s) or controlled work have been completed.

ISSUER APPLIED SAFETY MEASURES

IASM's are used to ensure equipment and other assets are presented in a defined and predetermined state appropriate for the planned activity.

All IASM's shall be applied or removed using an operating order or isolation instruction. An operating order or isolation instruction is not required for IASMs that may be removed for testing as listed on the Test Permit.

Where practicable all isolation points must be lockable.

When compiling an Operating Order or Isolation instruction the following steps should be completed sequentially to ensure the safest possible application of IASM's and further safety measures.

1. Equipment is removed from service.
2. Equipment is confirmed in a suitable state for IASM's to be applied.
3. IASM's that isolate sources of primary energy are applied and any stored energy dissipated.
4. Where IASM temporary earthing is required, this is applied between the primary energy source boundary IASM's and the out of service equipment.
5. All other IASM's required to make the equipment safe can then be applied between
    a. the primary energy source isolation and the equipment or
    b. IASM earthing and the equipment.

Examples of primary energy source isolations include:

- devices which isolate any live HV source from the equipment being worked on, e.g., disconnectors
- main steam, gas etc isolating valves
- hydro turbine wicket gates, Main Isolation Valve, Headgate or stoplogs

Every endeavour must be made to include all necessary isolations as IASM's, particularly those that are unlikely to change through the course of the works.

Where parts of equipment are removed as part of an isolation then its field location SHALL be locked or tagged to ensure energisation cannot occur.

These isolations could be electrical or mechanical e.g. isolating fuse carrier or blanking flanges. This is to ensure the field location is treated as the IASM, not the equipment part removed. These isolations also ensure that an alternative or equivalent equipment part cannot be used in this location.

Equipment parts removed as above should be secured in the lock box.

This includes small fuses and links. Equipment parts such as spool pieces or large fuses too big for the lockbox must be controlled separately in an appropriate facility to ensure correct restoration.

MANAGEMENT OF COMMON ISOLATIONS FOR MULTIPLE PERMITS

Where there are common isolations for multiple permits, then multi-lock principles shall be used.

This will ensure the IASMs cannot be altered without consultation and agreement with all affected recipients while any permit with common isolations remains in force.

Multi-locking means that the IASM locks for each isolation required are added or removed from the common isolation point using a multi-locking device, lockbox or facility.

A multi-lock is:

- a device applied at the point of isolation or earthing which has provision for a number of locks to be attached, each of which when in place will inhibit the operation of that isolation point, or
- a lockbox or facility for multiple locks

Where common isolation points are likely, the multi-locking device should be applied at the first opportunity to ensure that this facility is available for subsequent IASM locks.

There are multiple ways of achieving multi-locking provided the objective described above is met.

ELECTRICAL ISOLATION

All electrical equipment used as isolation points for sources of energy or, for preventing movement or operation of equipment, must be locked, and tagged.

All disconnectors that form isolation points must be opened, locked, and tagged.

All equipment used as an electrical isolation point must have the operating mechanism energy source removed or otherwise disabled according to the manufacturer's instructions.

Unless used for earthing, indoor circuit breakers of removeable or rackable design used for isolation, must be racked and locked out and/or spout shutters locked closed where possible.

Circuit breakers, fuse switches and distribution or ring main units specifically designed for integral 'no visible break' electrical isolation and or earthing, must be operated according to the manufacturer's instructions, with locks and tags fitted as required.

Any electrical equipment that is designed to be an isolation point and does not have a visible break then the abbreviation 'NVB' no visible break, is to be noted as part of the description of that safety measure in the safety measure section of the Test Permit.

Unforeseen energisation of equipment may occur through livening from other sources. These could include power transformers, instrument transformer secondary windings, capacitors, induced voltages, testing or standby generators.

All possible sources of electrical energisation including back feeds must be identified and isolated.

Where Test Permits are to be issued and electrical supplies must be left energised, or electrical equipment remains operational, details shall be given in the BUT NOTE THAT section of the Test Permit form.

EARTHING

Sufficient IASM earths must be applied to safeguard employees against any inadvertent source of electrical energy.

These include:

- inadvertent connection to supply
- interconnection with other parts of the power system or any other power system, e.g., via transformer secondary circuits, especially in distribution and local service networks
- stored charge in capacitors, power cables and bushings
- induction from adjacent circuits, atmospheric conditions, or direct lightning strike
- back-feed from secondary circuits, e.g., embedded generation

This earthing should be applied as close as practicable at the isolation point, to establish a safe working zone that ensures effective earthing of the equipment under the Test Permit.

All issuer applied earthing shall be recorded as a safety measure on the Test Permit.

A disconnector or circuit breaker used to provide earthing continuity shall be electrically and or mechanically disabled in the closed position, locked, and tagged.

Earth Switches including those on metal clad switchgear shall be electrically and or mechanically disabled in the closed position, locked, and tagged.

Issuer applied earths that are removed under a Test Permit shall only be removed for the duration of the test(s).

Where IASM' temporary earths are removed for testing only the head clamps shall be removed. The tail clamps must remain in place.

CONTROL & PROTECTION SYSTEMS ISOLATION

If remote operation of equipment under a Test Permit is possible and where provision exists, control circuits shall be switched/ isolated, locked and tagged as appropriate.

Where such provision does not exist and where equipment status can be changed through remote access, operation, or alteration of a controlling device or controlling device software, the issuer shall remove and tag control or communication cables or agree with the recipient what isolations they will manage.

Where alteration of equipment controlling device software is part of any work programme under a Test Permit, the issuer and recipient shall agree on the safety measures required.

Any work that could cause inadvertent operation of a protection system shall require the protection system and/or the equipment to be isolated to ensure that the equipment does not operate.

The isolation of other controls and power supplies to equipment under a Test Permit is managed by the RASM process to ensure the application and removal is recorded.

MECHANICAL ISOLATION

All mechanical mechanisms used as isolation points for sources of energy or, for preventing movement or operation of equipment, must be locked, and tagged.

This could include gates, valves, blanking plates, or other mechanical devices which inhibit operation of equipment.

This also applies to gates, valves and other facilities used as an IASM controlling the diversion, dispersion or release of solids, liquids, and gasses.

All necessary gates, valves, doors, etc. on mechanical, hydraulic and gas filled equipment must be opened or closed (as required), locked and tagged. The equipment is, then where necessary, de-watered, disconnected, drained, purged, vented, or otherwise made safe for work.

The workplace safety in an area protected by a gas release system, shall be determined by the asset owner and measures implemented to manage the associated risks. (e.g., early warning systems, segregation, PPE).

Where this cannot be done and work is required in any area in which gas may be automatically released, the gas release mechanism must be isolated locked and tagged.

Where equipment which retains stored energy such as air receivers, gas filled vessels, mechanical or hydraulic mechanisms or turning gear on horizontal generators remains operational, awareness of these risks must be communicated to all affected parties and details shall be recorded in the BUT NOTE THAT section of the Test Permit form.

TESTING ON POINTS OF ISOLATION

Testing on equipment that is a point of isolation for a safety measure shall not be undertaken unless the **integrity of the isolation remains unaffected** by the testing activity itself, or inadvertently during the testing.

Risk controls must be in place to ensure that the testing is being undertaken on the non-energised side of the isolation only and that the isolation is firmly locked in position to prevent the inadvertent release of energy.

Testing on disconnectors used as a point of isolation is not permissible.

MANAGEMENT OF ISOLATIONS IN TRANSPOWER SWITCHYARDS

Isolations applied in Transpower switchyards shall be managed in accordance with Transpower's isolation procedures.

This process applies only where the issuer has operational control of the Transpower equipment, otherwise an assurance applies.

The key elements of the Transpower lockout procedure are as follows:

- Once all safety measures have been locked, all switchgear keys and fuses that form issuer-applied safety measures shall be secured in a switchyard lockout box
- A Transpower issuer lock (identified with a yellow bead) shall be used to lock the lockout box and the key to the issuer lock shall be returned to the key safe
- The issuer shall then apply the Transpower recipient lock (identified with a blue bead) to the lockout box
- The Transpower recipient lock key shall be placed in the generation plant permit lockout box

Transpower lockout box showing yellow issuer lock and blue recipient locks.

Picture 1:Example of lock box

RECIPIENT APPLIED SAFETY MEASURES

Recipient Applied Safety Measures (RASM) are those safety measures applied by or on behalf of the Recipient.

RASM's are safety measures additional to IASM's applied to isolation points to make equipment or systems safe to work on.

RASM's shall not be applied to major boundary isolations.

RASM's may comprise both personnel safety measures and plant control measures.

RASM's shall be recorded on a RASM register.

The purpose of the RASM register is to ensure that:

- the work party is aware of what isolations are in place
- the work party is aware of the current status of equipment, and
- the equipment isolations are correctly restored at the conclusion of the works

The RASM register must be kept with the work control document at all times.

When the work control document is being returned for cancelation and no other work control is required then the recipient must check and sign off that all RASM's have been removed.

If a new or amended permit is necessary, all RASMs required to remain in place are transferred to the new permit RASM register.

The issuer and recipient must discuss and agree on any RASM's to be applied.

RASM's include;

- additional earths
- bonding connections
- Isolation of a low-risk supply which is required to be isolated to enable specific work to take place, e.g., instrument air, low pressure water, power supplies etc
- removal of equipment communications connections
- disconnection of control cables or wires

Other measures may be required for managing the status of plant rather than personnel safety, e.g., isolating valves to prevent loss of hydraulic oil, disconnecting a section of pipework or installing/removing blanking flanges.

Unless these are managed by a specific procedure or process, they shall be noted on the RASM register to ensure that the plant is returned in the correct state.

Where RASM's will be applied and removed multiple times during the course of the intended works the RASM register is to be updated:

- as required to effectively ensure the safety of the work party
- at the end of the working day

5. TEST PERMIT HARDWARE & DOCUMENTATION

LOCKS AND TAGS

Issuer-applied safety measure (IASM) and recipient-applied safety measure (RASM) locks and tags must:

- be applied and removed only by authorised and competent persons
- not be used for any purpose other than to lock and tag out isolation points, earthing, lockboxes, and plant status control
- be able to be tracked back through to the work control document to which they relate

No spare keys shall be held for any IASM or RASM lock.

FORCED REMOVAL OF LOCKS

Forced removal of locks is permissible in the following circumstances only:

- if the key to that lock is missing
- if the key fails to open the lock due to damage
- if it can be confirmed that the key holder has left site and it is not practical to expect them to return, e.g., time factors, distance, production, plant integrity, personal safety
- in the case of a missing key, every endeavour should be made to locate the missing key

If a lock needs to be removed or replaced complete the following steps:

1. All work must stop, and the safety of plant and people is confirmed.
2. Issuer and recipient must correctly identify the lock that is to be forcibly removed.
3. At the conclusion of the above steps, if the lock is safe to remove, the following steps must be taken:
    a. Asset owner approval obtained.
    b. The lock can now be forcibly removed.
    c. If required, apply the correct replacement lock, and update any work control procedure lock reference detail.
    d. Return the destroyed lock and update records as required.

IASM LOCKS AND TAGS

Issuer-applied safety measures (IASM) will be used for any isolations and earthing that are required to be applied by the issuer, or on behalf of the issuer, under a Test Permit.

IASMs include all main boundary and major isolations and issuer-applied earths.

IASMs may include other isolations as identified at the time of preparing the Test Permit.

IASMs shall be locked with an IASM lock.

Where it is not practicable to use an IASM lock, a tag must be used and must be uniquely identifiable to the permit.

Where tags cannot be applied, e.g., fuse holders, then yellow DO NOT OPERATE or DO NOT REMOVE tape shall be used.

The IASM locks shall be yellow with a unique identifier to track the safety measure to the permit(s) to which it relates.

The IASM locks should be labelled with DO NOT OPERATE or DO NOT REMOVE in black text.

If the lock is labelled DO NOT OPERATE or DO NOT REMOVE, then no accompanying tag is required.

All IASM locks shall be uniquely keyed and identifiable to the correct key.

Where utilised, the IASM tags shall be a yellow tag with DO NOT OPERATE or DO NOT REMOVE in black text.

Issuer-applied earths should be locked where practicable, if not practicable, the earths shall have an IASM tag applied AT THE TAIL.

Where it is not practicable to physically lock a main boundary or major isolation then an agreed and approved control shall be documented and implemented to ensure equivalent or better protection.

Any systems that are required to remain operational in order to provide a safety measure must be managed and controlled.

Picture 2: IASM lock, tag, and tape

RASM LOCKS AND TAGS

RASM's shall comprise a lock and or tag. Where it is not practical to use a lock, a tag or tape must be used and must be uniquely identifiable.

RASM locks, keys and tags are issued to the recipient by the issuer.

In general, all RASM locks shall be uniquely keyed and identifiable to the correct key. However, a small number of RASM locks may be commonly keyed provided they are issued to only a single recipient and only one key exists for these locks.

- no spare keys shall be held for any RASM lock
- all RASM locks shall be red
- if the lock is labelled DO NOT REMOVE and is uniquely identifiable, then no accompanying tag is required unless specified by the asset owner.
- RASM tags shall be red and white with DO NOT REMOVE in black text
- where tags cannot be applied then red and black RASM tape shall be used

RASM locks and tags must:

- be applied and removed only by authorised and competent persons
- not be used for any purpose other than to lock and tag out isolation points, earthing or Plant Status Control
- be able to be tracked back through to the work control to which they pertain

No work shall be conducted on an isolation point, where that work may compromise the integrity of any isolation.

Picture 3: RASM lock, tag, and tape

THE LOCKBOX

The keys to all issuer-applied safety measures must be locked in a lockbox or lockboxes.

For an access permit lockbox the issuer and recipient must apply their respective IASM and RASM locks to the test permit lockbox.

If agreed with the recipient, the work position supervisors and members of the work party may apply a RASM lock on the lockbox.

The lockbox shall be secured at a location agreed by the issuer and recipient.

The issuer's IASM lockbox key must be kept secure by the issuer.

The recipient's RASM lockbox key must be kept secure by the recipient.

GUIDANCE FOR DEFINING TEST PERMIT AREAS

Refer also to:

- EEA Guide to the Marking of Equipment for access for Work
- EEA Guide to Principles for Permit Areas

SWITCHYARDS

All Test Permit areas within a switchyard require boundary marking.

Only continuous permit area, yellow and green boundary rope, shall be used.

Switchyard permit area boundary marker rope must be formed to provide defined points of entry.

More than one point of entry may be provided when necessary.

Members of a work party must enter and leave only through points of entry. The recipient must strictly enforce the correct use of the point of entry.

A Test Permit identification notice must be displayed at each entrance to indicate the recipient's name, Test Permit number, and the work being done.

Where a Test Permit is in force, additional warning signs shall also be displayed within the permit area.

The permit area boundary marker rope should be positioned to allow sufficient working space around equipment covered under the Test Permit.

The rope must be sufficiently taut and supported by posts or fixed support members so it cannot be blown into live equipment.

The rope must not be fastened to switch handles and/ or equipment covered by the Test Permit.

Where equipment is enclosed by or partially enclosed by a fence, that fence may replace the use of the continuous permit area boundary marker rope.

Where the fenced section includes a personnel gate, it may be used to gain entry to work on the equipment provided that:

- The personnel gate is kept secure against unauthorised access at all times and kept locked immediately work ceases under a Test Permit
- A Test Permit identification notice is placed at the personnel gate
- Where possible, other gates are made available for access to the switchyard

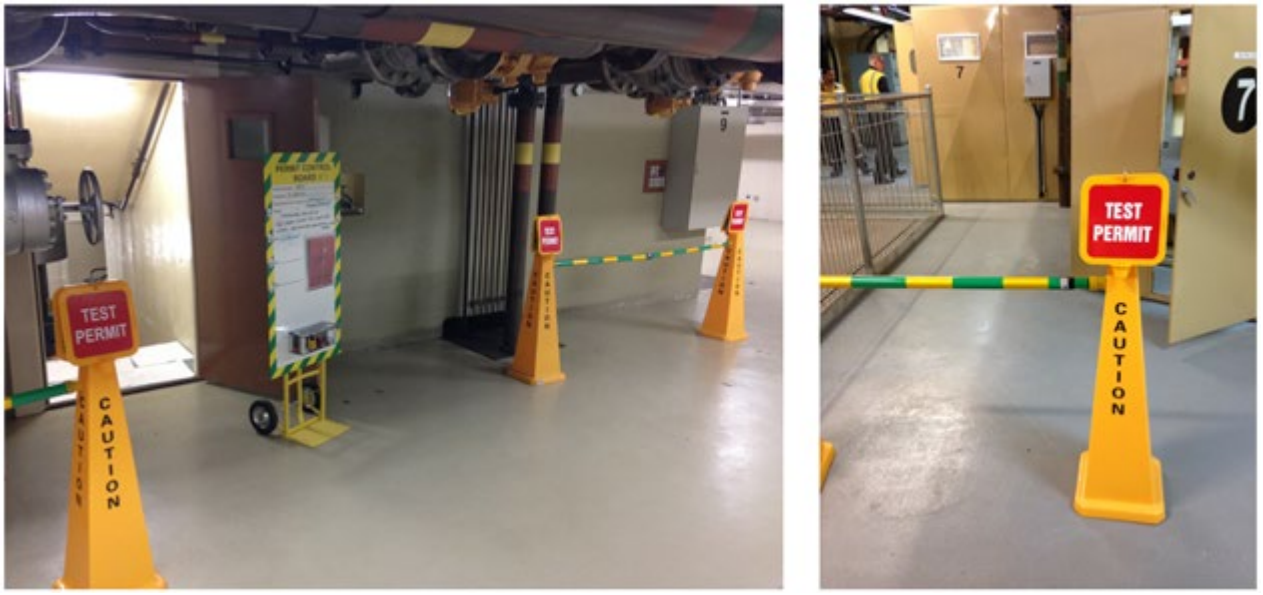
The Test Permit area must be easily identifiable from any direction that the area could normally be approached from.

GENERATION FACILITIES

Where practical the switchyard practices as above should be followed.

At generation facilities where this is not practicable, the Test Permit area will be identified by the appropriate Test Permit signage complemented with additional signage, cones, yellow and green barriers, or rope as necessary.

Yellow and green striped identification shall be used on metal-clad switchgear and panels under permit.



Picture 4:Examples of barrier equipment in place

Examples of barrier equipment in place

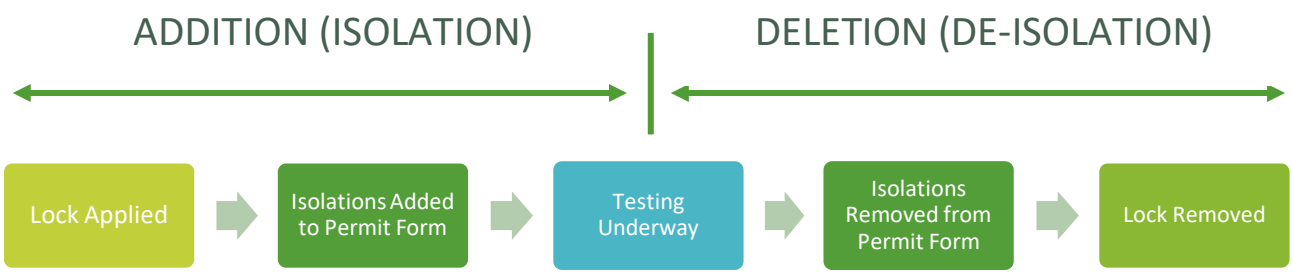
TEST PERMIT FORMS

A Test Permit shall be documented on a standard form using a process approved by the asset owner.

- a Test Permit form (either paper or digital) may be used for issuing a Test Permit
- all fields on the form should be filled in. If an entry is not required, then that section should be crossed out, or in the case of digital formats the word ‘N/A’ shall be added to identify fields which are not applicable
- it shall be possible at any time to determine the status of a Test Permit
- Test Permit forms must be retained as part of the operating log

SAFE MANAGEMENT OF ADDITION AND DELETIONS OF SAFETY MEASURES

These guidance notes apply to additions and deletions of IASM's OTHER THAN THOSE IASM's ABLE TO BE REMOVED FOR TESTING.
The forms and permits must state the safest state of the equipment; to achieve this, the process is.



ISOLATING EQUIPMENT

The process for the application of any IASM requires the physical isolation to precede the updating of any forms or permits.

DE- ISOLATING EQUIPMENT

The physical isolation can only be removed once the permits and safety measure registers have been updated to show the isolation has been removed.

Following this process and order of activity will ensure that the physical state of the plant is always in a safer state than that indicated on the permit.

ALTERATIONS TO ISSUER APPLIED SAFETY MEASURES

Under a Test Permit, IASM's specifically agreed between the issuer and recipient and documented on the Test Permit may be removed and reapplied as required by the recipient.

When an Access Permit is to be returned for the issue of a Test Permit all permit recipients with permits that share any common isolation points that need to be removed for the test must be advised and their permits returned.

For all other IASM's the following applies:

Any alteration to Test Permit safety measures other than those that may be removed for testing as stated on the test permit will require the test permit to be returned while the alterations are made.

If there are planned alterations to the IASM's during the course of the works, then these should be identified, planned, and communicated at the morning site meeting.

IAMS's may be altered provided the purpose and intent of the Test Permit remains the same. If retention of purpose and intent cannot be achieved, the Test Permit must be returned for cancellation and a new Test Permit issued.

If alterations of safety measures require a modification to the Test Permit boundary marking, the work party(s), and any recipients of permits with common safety measures must be informed in advance.

Any modification to the defined Test Permit area boundary marking must be made under the direction of the recipient, but will be done by the issuer, unless the issuer and recipient agree otherwise.

For these alterations:

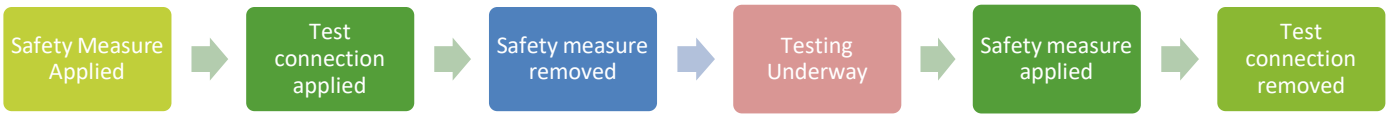
- operating orders and isolation instructions must be compiled and checked
- the work party members who have signed on must sign off
- the Test Permit is returned
- the issuer will initiate the required changes and record those changes on the affected permits

Other than IAMS's which may be removed for testing, where the addition or deletion of safety measures is required, the following sequence and procedures must be used for each permit that is affected:

- each permit issuer and recipient(s) must agree that the proposed amendment(s) will not reduce safety
- new safety measures are added on the equipment as agreed and recorded in the safety measures section of the permit
- if any safety measures are removed, the relevant line in the safety measures section is ruled through while ensuring the underlying text is still legible
- each permit issuer and recipient shall initial the appropriate additions/ deletions line in the safety measures section of the respective permit form(s)
- the recipient(s) must inform all work party members affected by the change

TEST CONNECTIONS

Under a Test Permit, test connections should be made and removed only while safety measures are in place.



This ensures the equipment is maintained in the safest state possible throughout the test process.

ASSURANCES

The notes detailed below are intended to provide guidance for the assurance process specifically for issuing a Test Permit.

When sending a connected party an assurance, the person in operational control is responsible for ensuring that the isolations required for that assurance are treated as IASM's, the keys secured in a lockbox and lockbox protocols applied.

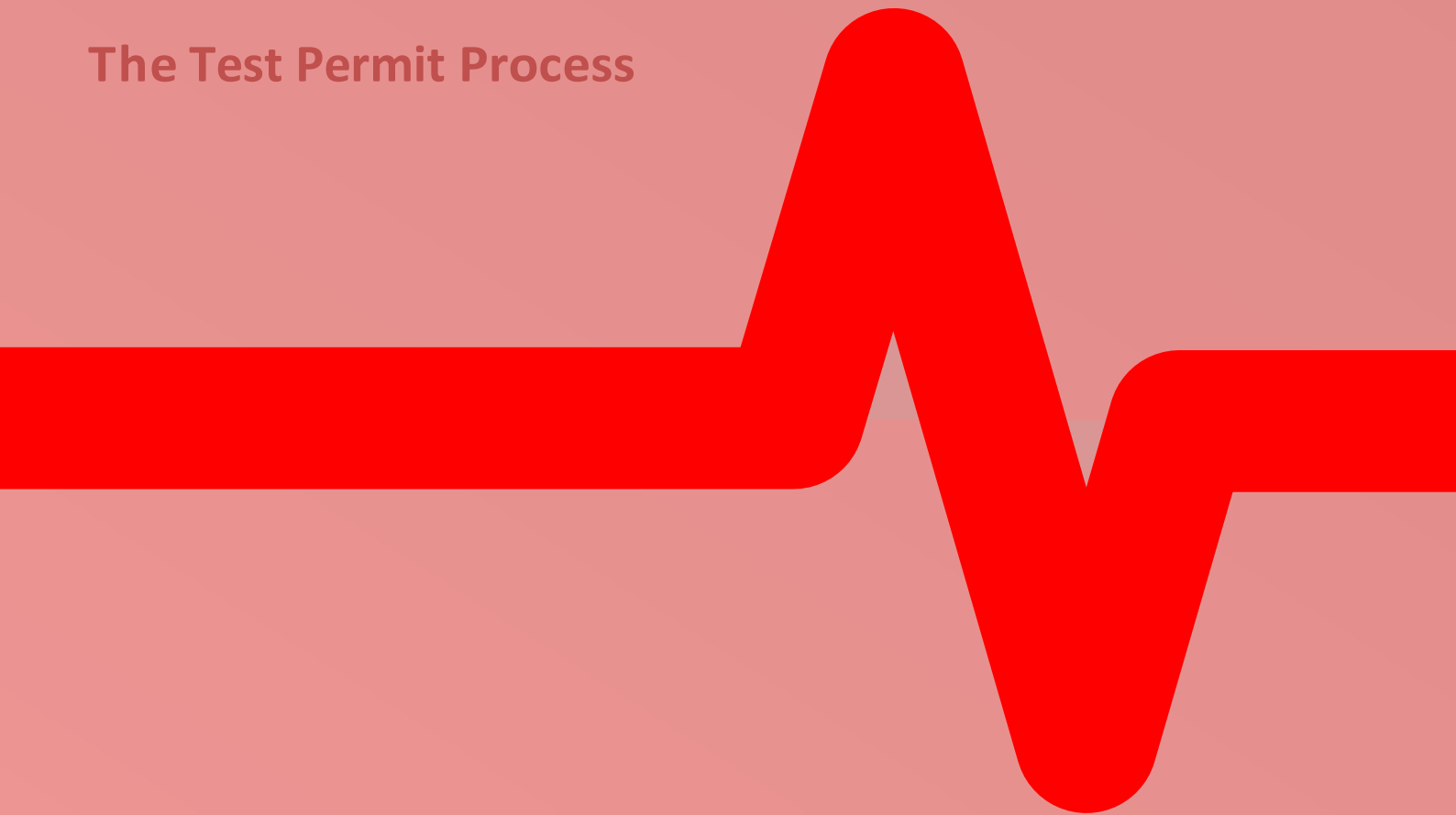
When receiving an assurance, the Test Permit issuer must treat the assurance as a IASM and reference the assurance statement in the Test Permit IASM section.

The accepted assurance shall be locked in the lockbox.

The assurance sender and the receiver must always maintain control of their copy of the assurance form.

No additional copies shall be made of any active assurance.

The Test Permit Process



PLANNING FOR A TEST PERMIT

Pre-work planning must be completed for any intended work.

Pre work planning is essential to ensure that all aspects of the work and any related work are considered and identified.

This ensures adequate consideration is taken for the isolation of plant, and the safety of people working on equipment.

Where the scope and nature of the work requires, planning for management and compliance with regulatory and other safe work requirements must be completed. For example;

- notifiable work
- civil works/Excavations
- mobile crane usage
- confined space

Pre-work planning must be held ahead of the intended work with sufficient lead time to ensure all planning, communication and logistical aspects required for the safe and efficient implementation of the tasks is completed.

This must be a scalable process relative to the complexity and risk of the intended work.

Typically, breakdown pre-work planning will be completed within a compressed timeframe.

Documentation required will be specified by the asset owner but at minimum the following information must be captured

- intended work scope and expected timeframe
- work control selection
- isolations/safety measures required
- identify issuers, recipients, supervisors
- identify other work fronts potentially affected
- the nature and objective of the tests
- Test Permit scope and timing
- requirement for a Transpower approved test plan
- identification of any other permits in force at the time. If any are affected, then the recipient of these permits should attend this meeting and these permits must be returned
- identification of whether any assurances are required from third parties
- identification of what, if any, other work will be affected and confirmation that the supervisors of these works attend this meeting
- identification of what hazards are introduced by the testing and how these hazards will be controlled
- agreement between issuer and Test Permit recipient about which issuer-applied safety measures can be removed for testing and who will be responsible for making the changes to the issuer-applied safety measures
- identifying and confirming work that is required to facilitate testing can be managed under that Test Permit e.g., disconnecting conductors prior to testing and replacing these when testing is completed
- ensuring that work that is not required to facilitate testing shall not be completed under a Test Permit

The pre-work planning meeting is to be attended by the;

- issuer
- recipient
- any Test Permit work position supervisor(s)
- recipients of other affected permits

Additional attendees as required depending on the scope may include;

- asset owner
- technicians
- engineers
- project managers
- trades staff
- planning function
- other SME as needed (Safety/Environmental)

The record of the pre-work meeting or equivalent including key decisions should be kept and made available.

GUIDANCE FOR THE MANAGEMENT OF MULTIPLE PERMITS WHEN TESTING

Where a Test Permit is required for testing equipment, no other permit shall be issued on the same equipment.

- the Test Permit may share common isolation points with other permits
- these shared isolation points shall not include any that are identified as safety measures that maybe removed for testing

Where practicable there should only be one issuer for all permits with common isolation points.

PRELIMINARY REQUIREMENTS FOR A TEST PERMIT

The following steps must be completed before issuing a Test Permit;

- plan/schedule plant outages, including any notifications required
- complete the pre-work planning process, and discuss the requirements with all key stakeholders
- compile and check operating orders/isolation instructions are adequate for the planned work
- confirm that it is appropriate to issue a Test Permit for the intended work. Refer to the work control selection diagram
- identify any other work occurring on site or planned for the period the Test Permit will be in force and confirm that the intended work will not adversely affect this other work
- identify if there are any permits currently in force or planned, whether they will be affected, and what actions are required to manage any risks

COMPILING THE TEST PERMIT

The issuer shall ensure the Test Permit is compiled in full, ready for issue.

- the Test Permit section ‘Equipment to be tested’, must clearly identify the equipment to be tested
- the Test Permit section ‘Testing to be done’, must clearly identify the testing activity
- the Test Permit section ‘But Note That, must clearly identify any equipment that may remain energised

TEST PERMIT ISSUE

Before issuing the Test Permit, the issuer must ensure the recipient holds recipient competency and that they understand all of their responsibilities.

For a Test Permit the issuer shall provide the keys for any IASM's that maybe removed for testing to the recipient.

Before accepting the Test Permit, the recipient must ensure that:

- the equipment listed on the Test Permit is as requested
- they are satisfied with the safety measures applied and that they are correctly applied
- they are satisfied with the agreed RASM's to be applied
- the minimum approach distances to exposed live conductors as set out in NZECP 34:2001 for employees and/or mobile plant can be maintained at all times.

After the recipient has acknowledged and accepted the extent of the IASMs, the agreed RASMs and the location of any hazards/risks, the recipient signs acceptance of the Test Permit form or digital equivalent.

TEST PERMITS NOT ISSUED IN PERSON

When a Test Permit cannot be issued in person, several methods can be used to ensure relevant and correct information is included, acknowledged, and confirmed. For example

- an issuer completed copy can be sent to the recipient remotely. The recipient would then confirm the details with the issuer and sign the acceptance section using a direct verbal communication process
- a blank Test Permit form can be used to populate each field by issuer and recipient using a direct verbal communication process

GUIDANCE FOR TEST PERMIT RETURN

A Test Permit can be returned for the following three reasons.

1. For Cancellation of the Test Permit

This means the testing is completed or stopped and the TP is returned for cancellation and no further testing required.

Testing could be stopped because of unforeseen problems, a change in test scope, further work is required etc.

2. For Transfer to new recipient

The existing recipient needs to leave the work site or is unable to meet their responsibility's.

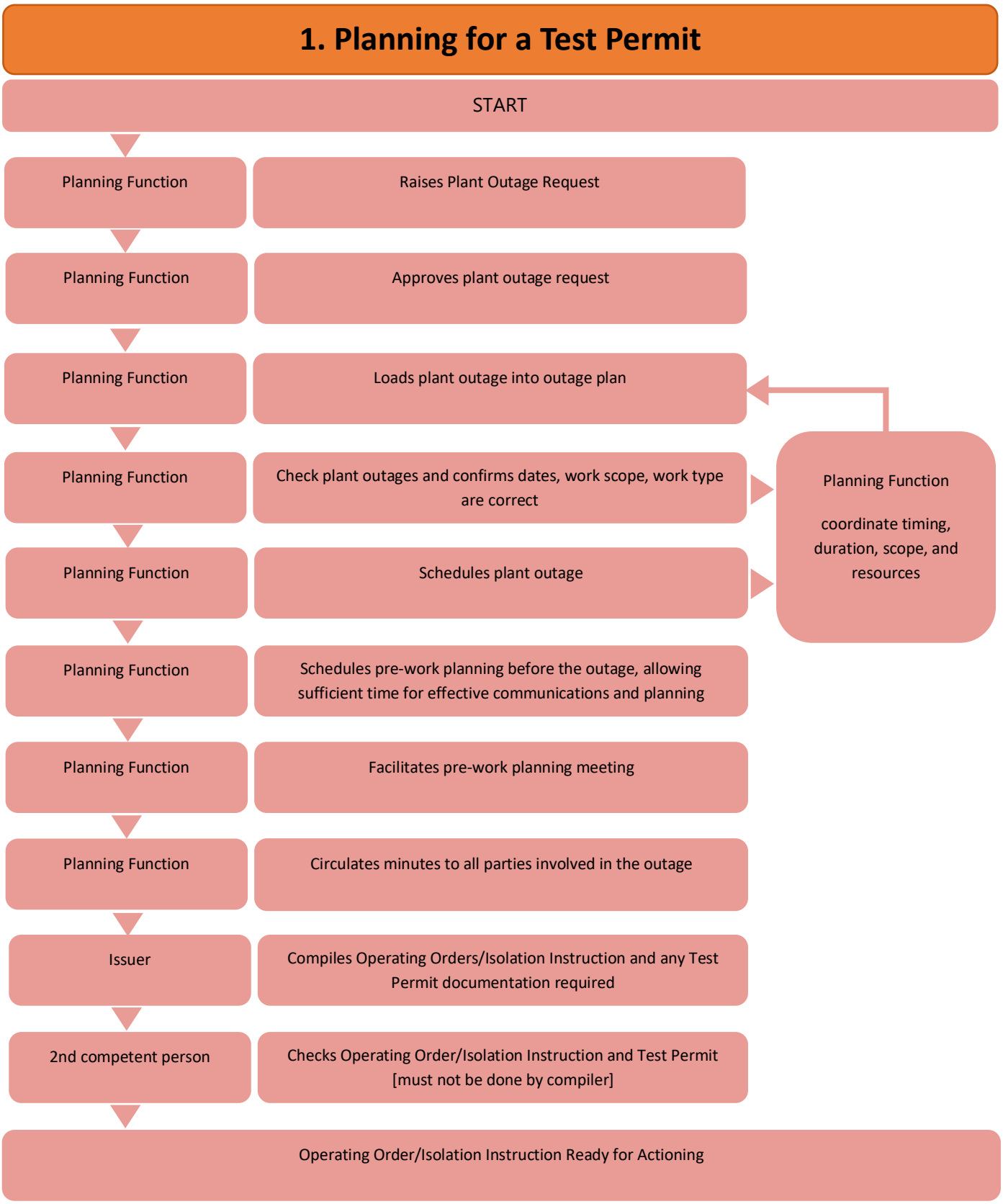
3. For alteration of IASM's (excluding those which may be removed for testing)

For example if the area of the testing needs to be expanded and the IASM's moved further out to ensure safety is maintained.

These IASM's shall be reinstated by the recipient at the conclusion of the testing.

A TP cannot be returned for suspension.

Process Flow Charts



2. Issue a Test Permit. 1 of 2

Continue from 1 or Test Permit IASM Alteration Chart 5

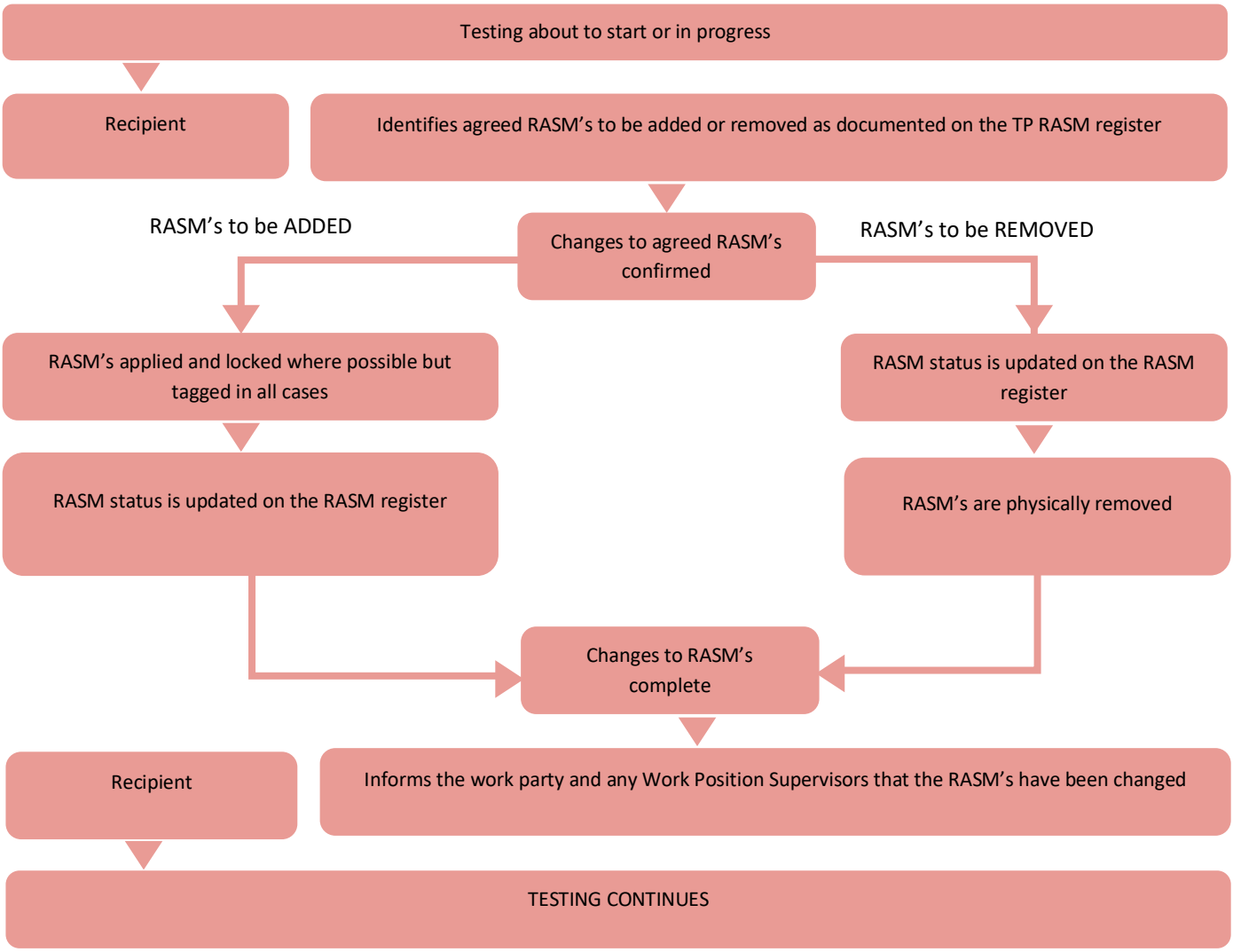
Issuer	Requests return of any Access Permit that could be affected
Issuer	Completes point of control (POC) handover from generation controllers as required. Actions Operating Order/Isolation Instruction. Applies and records Issuer Applied Safety Measures (IASM)
Issuer	Places Permit Board (if used) at worksite and defines the permit area using permit rope, signage or barriers as required
Issuer	Places IASM keys, any fuses, and any assurance etc in the lock box and locks the lock box with an IASM lock
Issuer & Recipient	Meet to discuss detail of the Test Permit, confirm Recipient Applied Safety Measures (RASM) required and issuer issues RASM locks and keys. Confirm IASM's that may be removed for testing
Recipient	[Preferably with Issuer] physically checks that all IASMs are correctly applied and identifies equipment to be worked on
Issuer	Applies IASM lock to the lockbox and issues the Test Permit. Updates log and retains an available copy (paper or digital) of the Test Permit
Recipient	Places RASM lock on the lock box and accepts the Test Permit.
Issuer	Hands over any keys/fuses to Recipient to enable IASM modifications to be made as stated on the Test Permit
Issuer/Recipient	Updates the Work in Progress (WIP) board (or equivalent) and retains a copy (paper or digital) of the Test Permit. Ensures Test Permit and Testing in Progress notice is displayed at the worksite
Recipient	Meets with all members of the work party and steps through the complete detail of the Access Permit. Ensures work party signs onto the Test Permit, applies RASMs as required and records this in the permit RASM section
Next Page	

2. Issue a Test Permit. 2 of 2

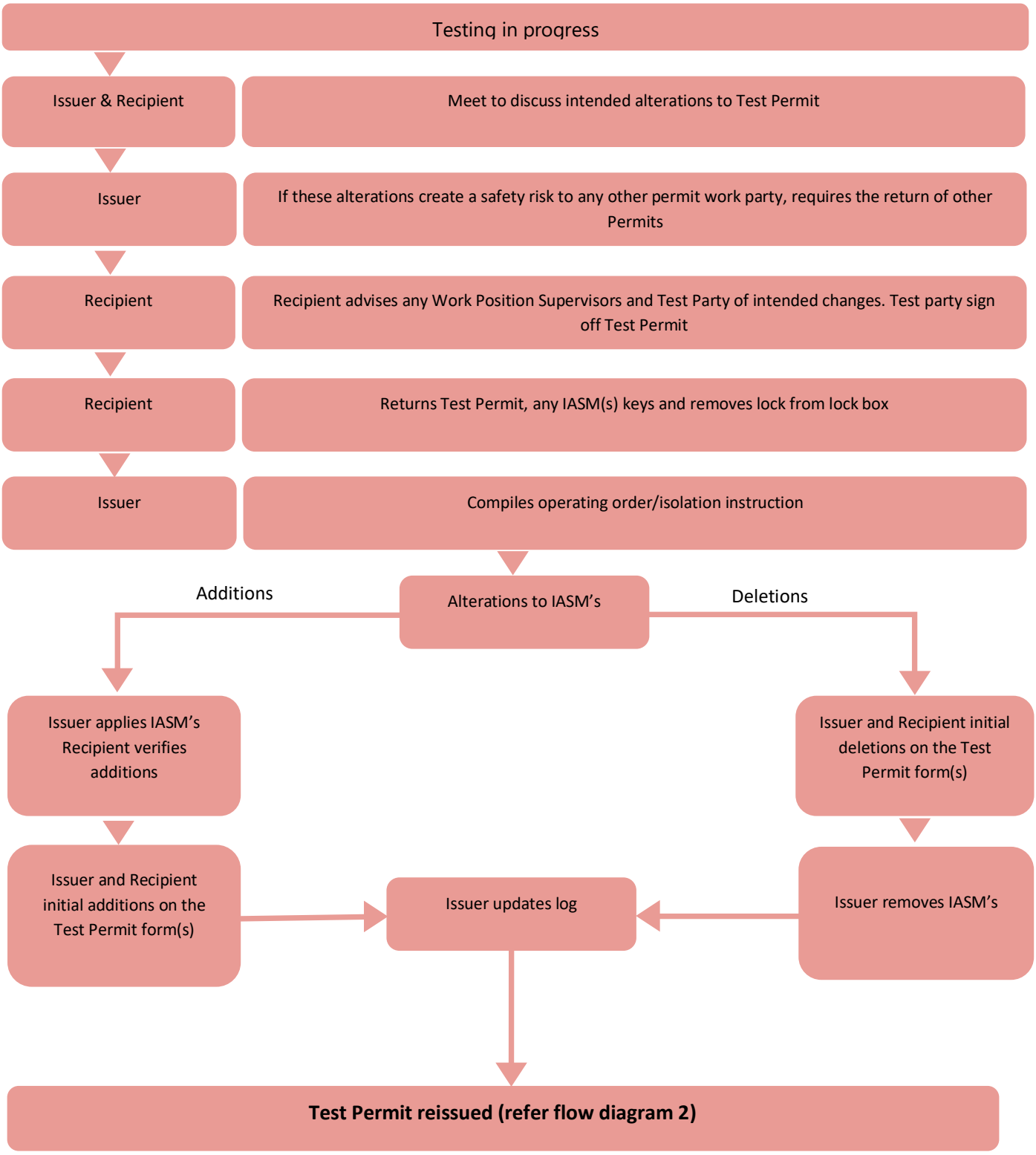
Continue from 1 or Test Permit IASM Alteration Chart 5

Recipient	Ensures work party complete and sign on to the hazard identification and risk management documentation Determines need for Work Position Supervisors and appoints these as required.
Recipient	Removes isolations and/or earthing for the purposes of testing or work in accordance with allowable modification of IASM's stated on the Test Permit
Recipient	Informs work party of any changes to IASM's. WORK PROCEEDS

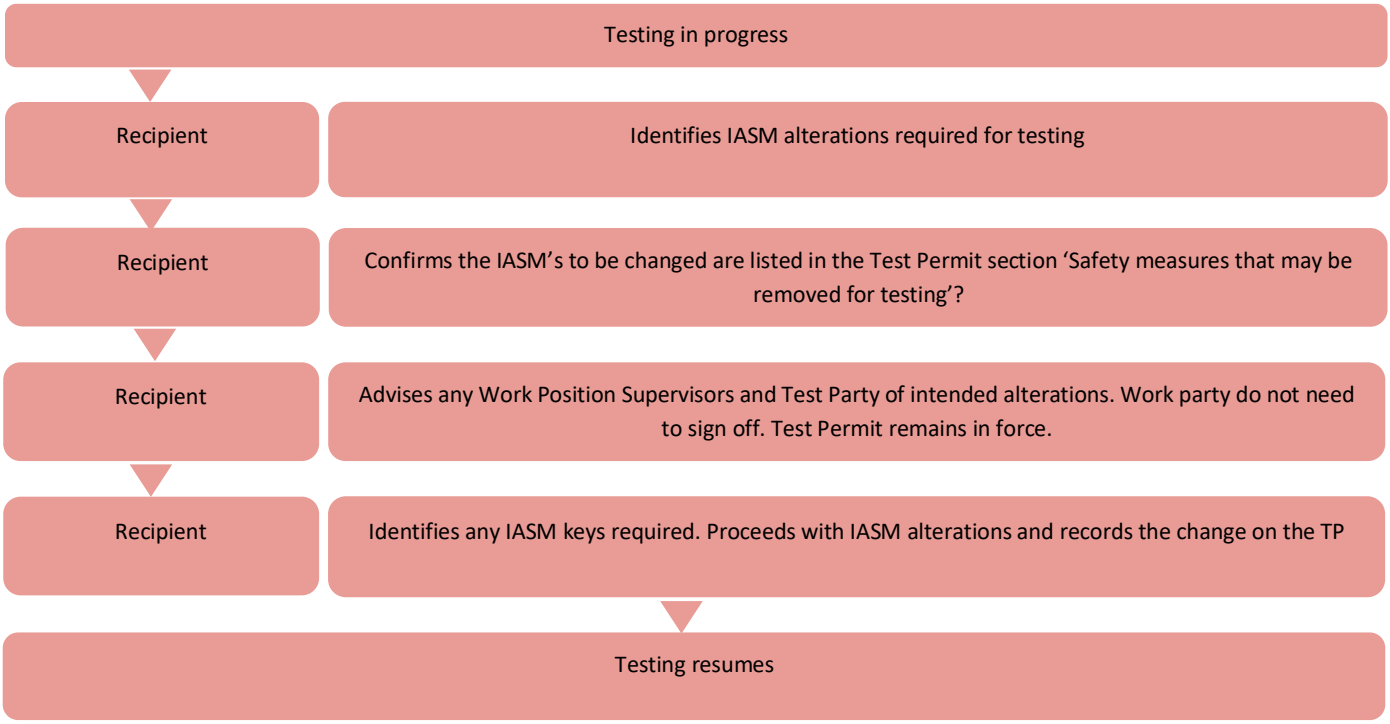
3. Management of Recipient Applied Safety Measures (TP)



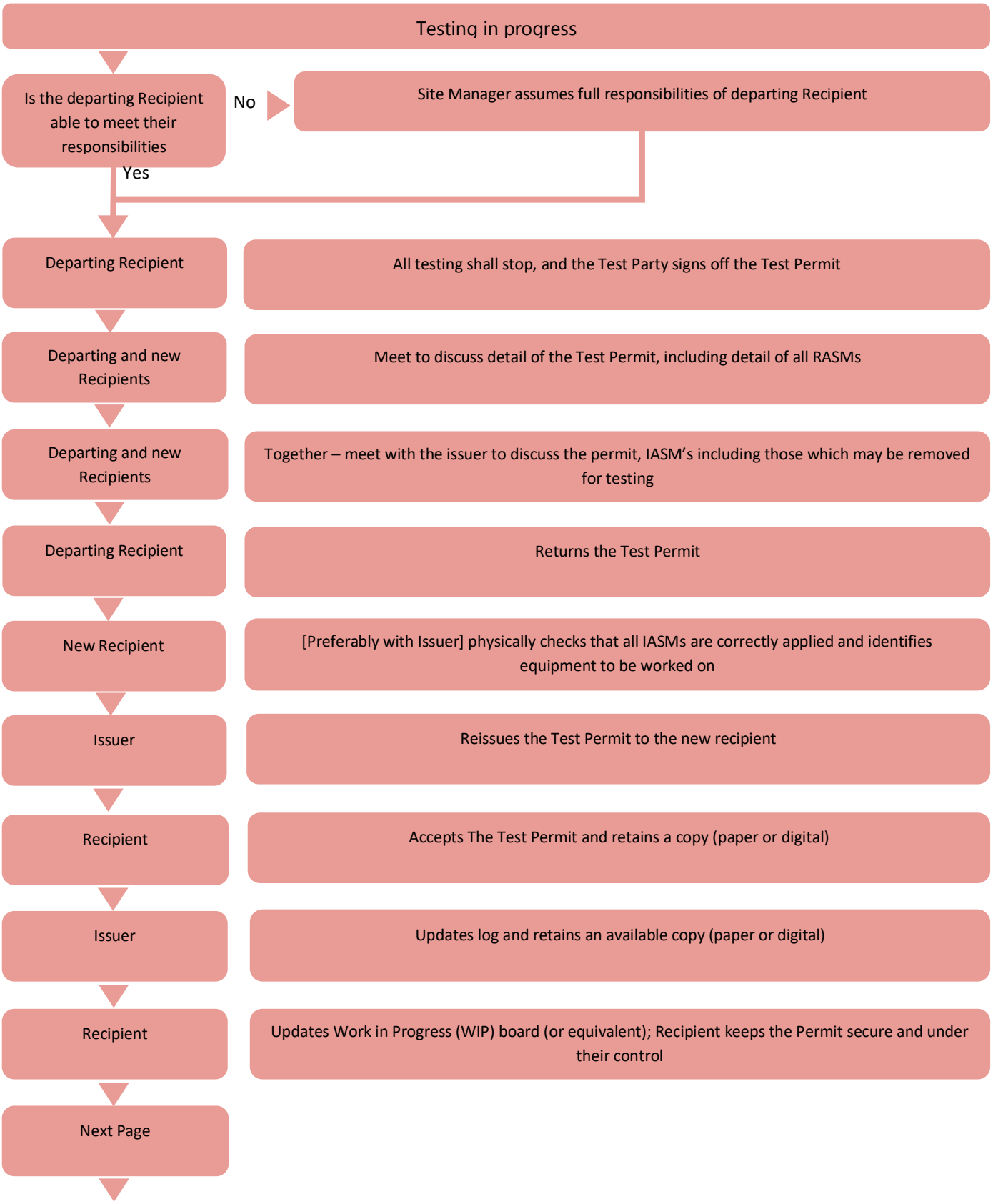
4. Alterations to Test Permit IASM's



5. Test Permit IASM's that may be removed for testing



6. Transfer a Test Permit. 1 of 2



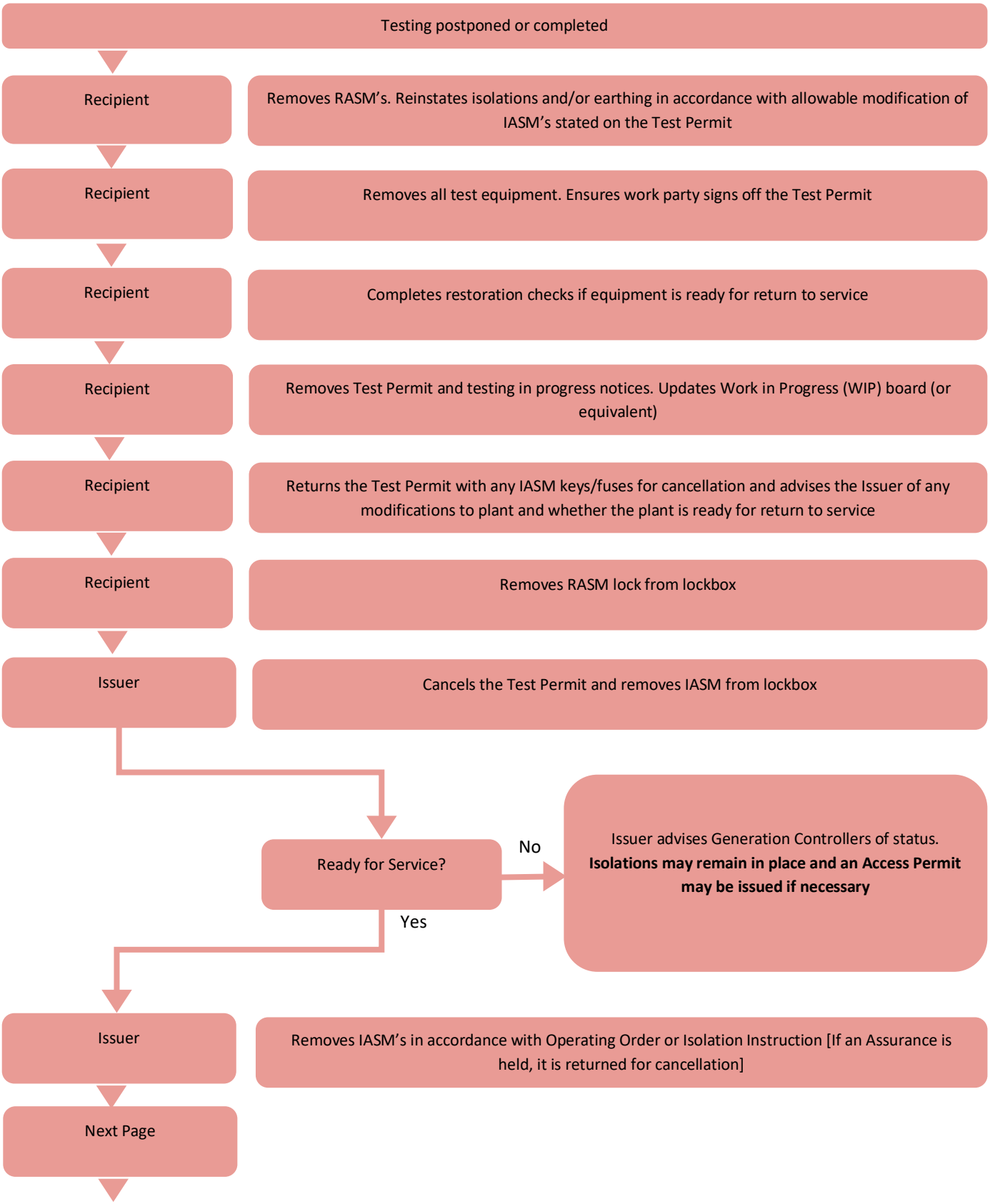
6. Transfer a Test Permit. 1 of 2

Continue

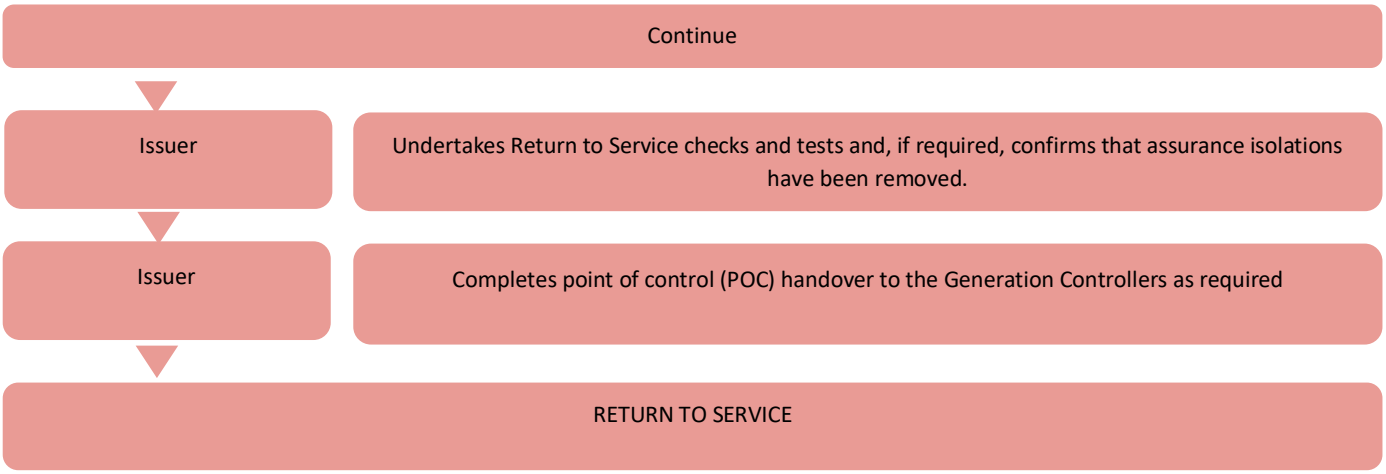
Recipient	Informs any Work Position Supervisors and Test Party that transfer complete. If required, work party signs back on to the Test Permit
Recipient	Discusses Test requirements with any Test Permit Work Position Supervisors

TESTING CONTINUES

7. Returning a Test Permit for cancellation. 1 of 2

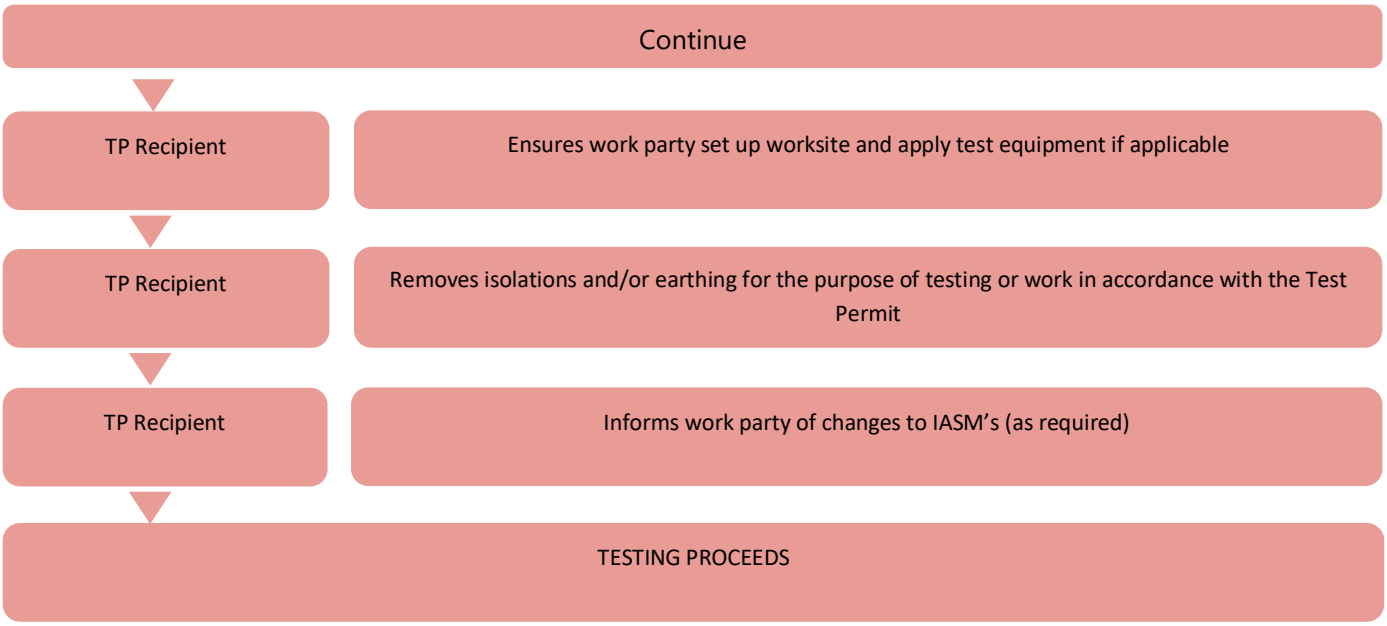


7. Returning a Test Permit for cancellation. 2 of 2



8. Change from Access Permit (AP) to Test Permit (TP). 1 of 2

8. Change from Access Permit (AP) to Test Permit (TP). 2 of 2



WCP GLOSSARY

Terms	Definition
Access Permit [AP]	A Works Management System used to present out of service equipment in an agreed and defined state for work, using issuer applied safety measures, where the work does not include the introduction of primary energy sources, test voltages or potentially lethal hazards
Approved	Having an asset owner's or employer's endorsement for a specified function or purpose.
Asset Owner [AO]	A participant in the electricity supply industry who owns plant or equipment used for generating or conveying electricity ultimately responsible for safety at site.
Assurance	The Assurance is an administrative system between different asset owners used to confirm the agreed and defined state, of equipment not under the control of the Issuer, necessary for access or test permits.
But Note That:	Field on a permit where the Issuer indicates any remaining hazards.
Competent	Has the necessary ability, knowledge, and skill to carry out work safely and to the quality and standard required.
Conductor	Material used for the conveyance of electricity.
Daily Meetings	A meeting to communicate the key aspects for the intended work
De-energised	Not connected to or containing a source of energy, e.g., electrical, steam, compressed air, hydraulic.
Departing Recipient	The Recipient of a Permit that is to be transferred to a New Recipient
Entry Approval Competence	Competence for unsupervised access to a site.
Earthed	Effectively connected to the general mass of earth.
Earthing Device	An approved device to effectively connect equipment to the general mass of earth.
Earth switch	A switch that when closed provides an electrical connection between equipment and the general mass of earth.
Energised	Connected to or containing a source of energy, e.g., electrical, steam, compressed air, hydraulic.
Equipment	Electrical and mechanical apparatus and civil infrastructure, which is typically fixed in location, and used for generation, transmission, or distribution of electricity.
Extra Low Voltage [ELV]	Any voltage normally not exceeding 50 volts AC or 120 volts ripple-free DC
Gate	Spillway, sluice, headgate, control gate or valves performing the same (or similar) function
General Work	A Minor Works Management System, applied to manage work that presents no risk to equipment operation, or resource consent compliance.
Generation Controller (Function)	An employee at a Generation Control Centre with Point of Control for plant operation within their area of responsibility.
Hazard	Anything that can cause harm, including a person's behaviour, that has the potential to cause death, injury, or illness to a person.
High Voltage [HV]	Any voltage exceeding 1000 V ac. or 1500 V dc.
In Service	The state of equipment that is not isolated: and is in a state to perform its designated function.

Isolated	Deliberately disconnected from external sources of harm, e.g. energy (electrical or mechanical) or asphyxiating, toxic or flammable gas, and rendered incapable of being reconnected without deliberate action.
Isolation (De-isolation) Instruction	A list of operating instructions (not sequenced) compiled in an approved format required to isolate or de-isolate a defined asset or equipment.
Isolation Point	A location designed as a facility to safely disconnect, separate, or provide a barrier between an energy source and intended work area for any work management system'
Issuer	A competent worker that administers WA/AP/TP and Assurance documentation as prescribed within Issuer responsibilities.
Issuer Applied Safety Measures [IASM]	Safety measures under a Work Management System applied by, or on behalf of the issuer for work or testing on equipment presented in a defined state, removed from and unavailable for service
Hazard ID and Risk Management Process	Summary of work scope, associated hazards and their controls and work party acknowledgement, understanding and compliance with these controls. Includes Job Safety Analysis and Worksite Safety Plans
Limited Testing	Limited testing is permitted under an AP, but only after a risk assessment has been completed to ensure such testing has insufficient capacity to cause harm.
Live	Connected to a source of electrical supply or subject to hazardous induced or capacitive voltage.
Live Work	Work performed inside the minimum approach distance of equipment that is live.
Lock Box	A lockable facility for securing keys, fuses etc. associated with safety measures controlled under a Works Management System.
Low Voltage [LV]	Any voltage exceeding 50 V ac. or 120 V ripple free dc. but not exceeding 1000 V ac. or 1500 V dc.
Main Boundary Isolation	IASM's on energy sources that form the main perimeter of isolations for a permit. These are of a nature that if altered, would introduce a safety risk to a work party.
Major Isolations	IASM's that isolate a primary or significant energy source or are of a nature that if altered would introduce a safety risk to a work party. Can be a main boundary isolation or within the perimeter.
Minimum Approach Distance [MAD]	The minimum approach distances when approaching live conductors not insulated to full working voltage that applies to workers, and conductive material carried by them, vehicles, and mobile plant.
Minor Works Management System [MWMS]	A system used to manage work where an access permit, or test permit is not required, and the supervisor manages the control measures. General work or a work authority is used in this context.
Daily Meeting	Meeting for all work party supervisors to meet with the asset owner to discuss and document the nature and location of each party's work and the hazards that may be created through their work.
New Recipient	A Recipient accepting a Permit via the Recipient transfer process.
Operating Action	An action that changes the status of equipment. Achieved automatically, manually, remotely, or actioned though an operating order or isolation instruction.
Operational Control	The assigned authority and ability to change the status of equipment.
Operating Order [OO]	A planned sequence of operating actions (or a single action) that has been compiled in an approved format
Outage	The release of equipment or plant via a formal request and approval process.
Permit Area	The defined work area for an Access Permit or Test Permit
Permit Competency	An employer recognition of training and experience stating a person is competent to be an AP/TP recipient, issuer, or both.

Planning Function	Roles that support planning and coordination of work.
Plant	Additional to equipment, infrastructure at or associated with a generation facility.
Plant Outage Request [POR]	Formal request for an outage on generation equipment.
Point of Control [POC]	The responsibility from which operational control of equipment is held within an organisation.
Portable Earth	An approved portable earthing device for temporarily earthing isolated equipment.
Pre-Work Planning [PWC]	The process of developing a work plan prior to work commencing.
Primary Energy Source	The main source(s) of energy used to energise equipment e.g., live high voltage, high pressure steam, penstock pressure water
Production	Continuity of planned generation
Receiver	The person receiving an assurance that safety measures have been applied as requested to assets under the control of the sender.
Recipient	A competent worker that receives and manages work authorities, access, or test permits.
Recipient Applied Safety Measures [RASM]	Safety measures applied by or on behalf of the work site Supervisor for General Work, or Recipient for Work Authorities, Access, and Test Permits.
Recipient Applied Safety Measures Register	Formal record of all recipient-applied measures to ensure safe management of isolation points or plant status.
Remote Access	Access to plant and equipment systems (e.g., control, protection, communication) via a network when physically located elsewhere.
Risk	Potential exposure to situations that may affect people's health and safety, plant and equipment operation or the environment.
Safety Manual - Electricity Industry [SM-EI]	Guidance on safety practices published by the electricity supply industry.
Safety Measures	Actions taken to present equipment in an agreed state.
Safety Measure Competence	Competence to apply safety measures as specified in the applicable WCP
Sender	The person sending an assurance that safety measures have been applied as requested to assets under the control of the sender.
Standard Operating Procedures [SOP]	A documented and approved procedure or instructions for an established routine or specific operational activity.
State of Equipment	A description of the current status of the equipment.
Supervisor (Access Permit)	A role performed by the Recipient, or competent person(s) agreed with the Recipient, with specific responsibilities for the access permit process, safety and integrity.
Supervisor (Test Permit)	A role performed by the Recipient with specific responsibilities for the test permit process, safety, and integrity.
Supervisor (Test Permit Work Position)	An additional role appointed by the Test Permit Recipient with specific responsibilities for work position process, safety, and integrity for every working position that the recipient of a test permit cannot supervise directly.
Supervisor (Work Party)	A role performed by a competent person at the worksite responsible for the safety, quality, and control of the work activity.
Suspension	Status of an AP when it is returned by the Recipient to the Issuer but not reissued or cancelled. A TP shall not be returned for suspension.
Switchyard	A restricted area, enclosed by a security fence or other secure boundary, containing normally energised conductors and equipment.

Tag	A label used to visually identify a safety measure or isolation point.
Test Permit [TP]	A Works Management System used to present equipment in an agreed and defined state for testing, using issuer applied safety measures, where testing includes the introduction of primary energy sources, test voltages or potentially lethal hazards. The process allows for the agreed alteration of IASM's.
The Log	A complete record of all operating actions and events, time stamped as they occur.
Work Authority [WA]	A Minor Works Management System, for work on or near in service or available for service equipment where that work may present a risk to equipment operation or affect resource consent compliance.
Work Authority Competence [WAC]	An employer recognition of training and experience stating a person is competent to be a work authority recipient, issuer, or both.
Work Management System	A documented system to control risks for work on or near equipment which is presented in an agreed and defined state. An access permit, test permit or assurance is used in this context.
Work Position	The location(s) where work activity is taking place.