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| http://intranet.ccc.govt.nz/Documents/CCClogo4colblend.jpg  Christchurch Wastewater Treatment Plant Permit to Work (PTW) Procedure | | | |
| **REFERENCE:**  GEN\_HSE\_0003 | **SOP CLASSIFICATION:**  GEN\_HSE\_PTW | **DATE OF ISSUE:**  13/09/2019 | PAGE 1 of 13 |

**BACKGROUND:**

The Permit to Work system is an essential part of CWTP’s safety systems. It is a formal documentation system used to identify specific work activities, the potential hazards, and the associated safety control requirements.

**PURPOSE:**

The purpose of this procedure is to;

1. Define the type of work activities that require a Permit to Work.
2. Describe the CWTP Permit to Work system
3. Define the roles and responsibilities for the Permit to Work system
4. Ensure all staff and contractors that work at CWTP clearly understand the Permit to Work process and the importance of it.

**SCOPE:**

This procedure applies to all Christchurch City Council staff and contractors working at the CWTP site (inclusive of the Oxidation Ponds). It includes but is not limited to;

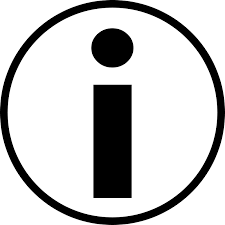
* All operational and maintenance activities with a risk rating of medium or higher; or
* Any works requiring an **Isolations (Lockout Tagout),**
* Any works requiring **Working at Height,**
* Any works requiring **Confined Space Entry,**
* Any works requiring **Hot Work,**
* Any works requiring **Excavations,**
* Any works requiring **Cranage,**
* Any works involving the **Transfer of Safety Controls** to third parties

It excludes routine operational and maintenance tasks which have a low risk rating or tasks that have a documented Standard Operating Procedures (SOPs) which identifies the hazards and stipulates the risk control requirements associated with completing the work safely. Note, SOPs may also stipulate the requirement to obtain a PTW as a precondition.

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**AUTHORITY:** To work outside the requirements of this procedure requires the completion of a formal risk assessment and the authorisation of the Operations Manager Water and Wastewater.

The only other exception is in an **emergency situation that requires immediate action** to render assistance (if it is safe to do so) and / or to make a situation safe.

**REFERENCE DOCUMENTS:**

* CWTP Site Induction
* CWTP Lockout Tagout Procedure GEN\_HSE\_0002
* CWTP Process and Instrument Diagrams
* CWTP Operations Manuals and Standard Operating Procedures

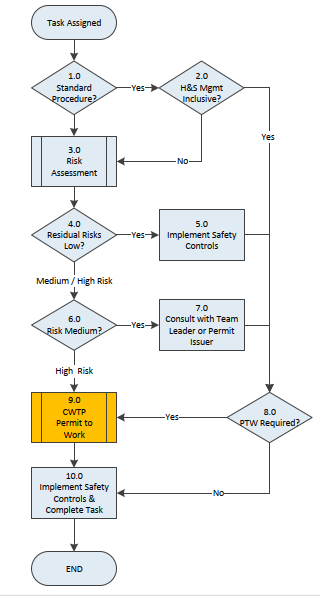
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| **Position** | **Responsibility** |
| **Manager Operations Water and Wastewater** | Overall responsibility for the procedure and its implementation. |
| **CWTP Team Leaders** | To ensure staff and contractors understand the importance and requirements of this procedure.  To ensure staff and contractors comply with the requirements of this procedure.  To ensure appropriate resources are in place to support the effective implementation of this procedure.  To investigate and implement effective corrective actions if there are breaches of this procedure. |
| **CWTP Shift Engineers** | Comply with the requirements of this procedure.  To raise non-conformance notifications (i.e. incident reports) if/when there are breaches of this procedure. |
| **CWTP Maintenance Staff** | Comply with the requirements of this procedure.  To raise non-conformance notifications (i.e. incident reports) if/when there are breaches of this procedure. |

1. **DEFINITIONS:**

|  |  |
| --- | --- |
| **Confined Space** | It is a restricted space, that is enclosed or partially enclosed space that is:   * At atmospheric pressure during occupancy * Is not intended or designed primarily as a regular place of work * Which could have restricted means for entry or exit   AND it is foreseeable that the restricted space may contain a hazardous atmosphere with:   * Potentially harmful levels of contaminants and/or * Oxygen deficiency or excess and/or * Materials that could cause engulfment or drowning   Refer to Appendix B –Special Permit Confined Space Entry |
| **Craneage** | Any appliance equipped with a mechanical, hydraulic, pneumatic, or electrical means for raising and lowering a load by ropes or chains and for transporting a load while suspended.  Refer to Appendix E –Special Permit Craneage |
| **Excavations** | Any job involving trenching, excavation, shafts, drives, demolition, or the risk of penetrations requires excavation certification.  Refer to Appendix D –Special Permit Excavations |
| **Hot Work** | Hot Work is if the work to be carried out involves a source or potential source of ignition.  Refer to Appendix C –Special Permit Hot Work |
| **Isolation Point** | Point of energy supply to equipment than can be isolated to prevent injury  i.e. valves, circuit breakers, etc |
| **Lockout Tagout** | Means to isolate, lock and tag any equipment at the source of energy supply to prevent its operation or an accident associated with its energy sources. |
| **Routine Activities** | A routine task is any commonplace task or duty that is undertaken regularly on demand or at specified intervals (more than once a year). |
| **Transfer of Control** | The responsibility for managing the safety controls for a specified work zone (or project) are transferred to a third party.  Refer to Appendix E –Special Permit Transfer of Control |
| **Working at Height** | Any works where there is potential for a fall of three metres or more.  Refer to Appendix A –Special Permit Working at Height |

1. **Permit to Work Assessment**

One of the initial step of undertaking any activity on the CWTP site is to assess the task, the associated risks, and determining if a Permit to Work is required. The process flow below summarises the steps of this assessment process.



**Figure 1. Permit to Work Assessment Process**

**2.1 Process Steps**

|  |  |  |  |
| --- | --- | --- | --- |
| **Step** | **Activity** | **Description** | **Responsibility** |
| 0.0 | **START**  **Task Assigned** | A task has been scheduled and assigned to an individual or work group leader who has been assessed as having the appropriate skills and competencies to undertake the task.  **Work Authority**   * Maintenance tasks must have a **Work Order** * Project tasks must have a **Project Number** or a **Work Order** | All |
| 1.0 | **Standard Procedure?** | Is there a Standard Procedure (Standard Operating Procedure or Maintenance Procedure) which details the requirements of how the task is to be completed?  **Yes**, go to step 2.0 (H&S Mgmt Inclusive?)  **No**, go to step 3.0 (Risk Assessment) | All |
| 2.0 | **H&S Mgmt Inclusive** | Does the Standard Procedure include the H&S requirements of completing the task safety i.e. risk assessment, and controls?  **Yes**, go to step 8.0 (PTW Required?)  **No**, go to step 3.0 (Risk Assessment) | All |
| 3.0 | **Risk Assessment** | Complete a Risk Assessment of the job.  Refer to CWTP risk assessment procedures   * Job Safety Analysis (JSA), or * Take 5 –Risk Assessment Process   Tasks involving any of the following activities shall be deemed as **“High Risk”** and a **PTW is mandatory**;   * Isolations (Lockout Tagout) * Working at Height * Confined Space Entry * Hot Work * Excavations * Cranage * Transfer of Safety Controls to a third party | All |
| 4.0 | **Residual Risks LOW?** | From the risk assessment process, is the residual risk rating after controls are implemented low?  **Yes**, go to step 5.0 (Implement Controls)  **No**, go to step 6.0 (Risk Medium) | All |
| 5.0 | **Implement Controls** | Implement the Controls as determined in the risk assessment process | All |
| 6.0 | **Risks Medium?** | From the risk assessment process, is the residual risk rating after controls are implemented Medium?  **Yes**, go to step 7.0 (Review by Team Leader or Permit Issuer)  **No**, go to step 9.0 (CWTP Permit to Work) | All |
| 7.0 | **Review by Team Leader or**  **Permit Issuer** | Any tasks with a residual risk rating greater than low must be reviewed by either the Team Leader or a Permit Issuer to determine if the controls are appropriate and sufficient. | Team Leader  Permit Issuer |
| 8.0 | **PTW Required?** | Does either the Standard Operating Procedure, Risk Assessment, Team Leader or Permit Issuer review deem a Permit to Work is required?  **Yes**, go to step 9.0 (CWTP Permit to Work)  **No**, go to step 10.0 (Implement Safety Controls and Complete Task) | All |
| 9.0 | **CWTP Permit to Work** | Complete a CWTP Permit to Work, Refer to section 3.0 | Permit Receiver & Permit Issuer |
| 10.0 | **Implement Safety Controls and Complete Task** | Implement the safety controls and complete the assigned task.  Note, if the scope of work changes and/or the work plan changes in a manner which impacts on the initial risk assessments, then work must be suspended and a review undertaken of the risks and controls. Step 3.0 | All |
|  | **END** | Task completion. |  |

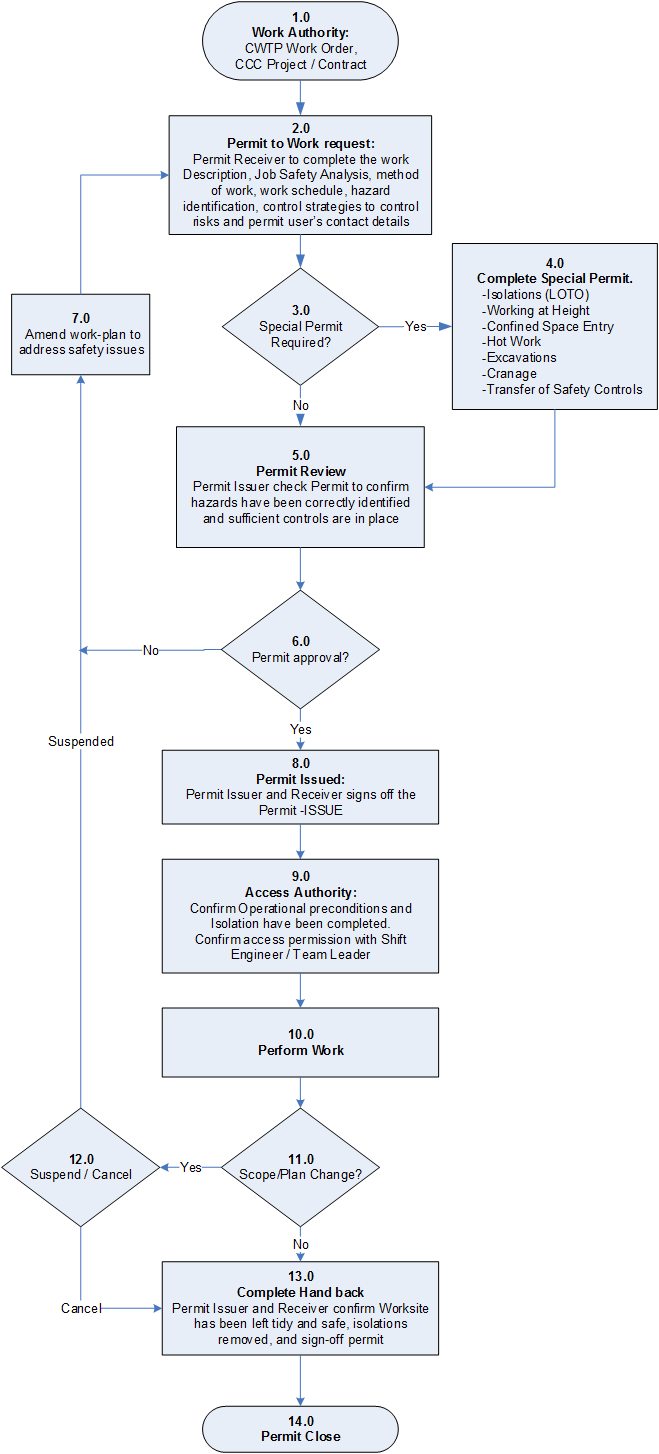
1. **Permit to Work**

The Permit to Work is split into two sections, the main Permit to Work and the attached Special Permits for any activity requiring special safety requirements. The first two pages of the permit are mandatory, but the Special Permit sections may be crossed off if they are not applicable.

Special Permit sections must be completed for;

* Confined Space Entry
* Working at Height
* Hot Work
* Cranage
* Excavation
* Transfer of Control

The Permit to Work flowchart below summarises the steps required for completing and issuing a Permit to Work.



**Figure 2. Permit to Work Process Flow**

**2.1 Permit to Work Flow**

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| --- | --- | --- | --- |
| **Step** | **Activity** | **Description** | **Responsibility** |
| 1.0 | **Work Authority** | **Work Authority**   * All Maintenance work must have an approved **Maintenance Work Order** * Project works must have a **CCC Contract**   Note, All contracted services must be by an approved CCC contractor**.** | Team Leader  Shift Engineer  Project Manager |
| 2.0 | **PTW Request** | Permit to Work Request  The Permit Receiver is responsible for completing the PTW Form -Description, work plan/method, Job Safety Analysis, Schedule, hazard ID, and control strategies to effectively manage the risks. | Permit Receiver |
| 3.0 | **Special Permit Required?** | Does the work plan involve   * **Working at Height** * **Confined Space Entry** * **Hot Work** * **Excavations** * **Cranage** * **Transfer of Safety Controls** to a third party   If, **Yes**, go to step 4.0 (Complete Special Permits)  **No**, go to step 5.0 (Permit Review) | Permit Receiver |
| 4.0 | **Complete Special Permit/s** | Complete the details of special permit requirements. Ensure specific controls and appropriate sign-offs are obtained for each Permit Certificate. | Permit Receiver |
| 5.0 | **Permit Review** | The Permit Issuer will review the PTW work plan, JSA, hazard ID, special permits, and the associated proposed safety controls. | Permit Issuer |
| 6.0 | **Permit Approval** | The Permit Issuer will determine if the PTW satisfactorily cover the details of the work plan, hazards / risks ID, and has the appropriate safety control requirements?  **Yes**, go to step 8.0 (Permit Issue)  **No**, go to step 7.0 (Amend) | Permit Issuer |
| 7.0 | **Amend** | Amend the work plan and permit to address safety concerns / issues identified by the Permit Issuers. | Permit Receiver |
| 8.0 | **Permit Issue** | Date and Sign the Permit ISSUE | Permit Issuer  Permit Receiver |
| 9.0 | **Access Authority** | CWTP Plant/Equipment Access Authority must be obtained from the Duty Shift Engineer.  The duty shift engineer is responsible for ensuring that the planned work will not adversely impact on the safe operation of the plant or personnel, and that any operational preconditions and isolations have been completed. | Duty Shift Engineer |
| 10.0 | **Perform Work** | Complete the tasks/ as per the work plan and Permit to Work requirements | All |
| 11.0 | **Scope/Plan Change** | If the scope of work changes and/or the work plan changes in a manner which impacts on the initial PTW risk assessments, then work must be stopped and the Permit Receiver must confirm with the Permit Issuer as to whether the current Permit needs to be suspended whilst the permit is reviewed and amended, or cancelled. | Permit Receiver & Permit Issuer |
| 12.0 | **Suspend or Cancel Permit** | The Permit Issuer will review the proposed change in scope / work plan and associated risks, then determine if the current permit is to be Suspended until the PTW is amended and reissued, or Cancelled.  **Suspend**, go to step 12.0 (Amend)  **Cancel**, go to Complete Handback 13.0 (Amend) | Permit Issuer |
| 13.0 | **Complete Handback** | Confirm the worksite and plant have been left tidy and safe state, all isolations removed, and permit sign-off completed. | Permit Receiver & Permit Issuer |
| 14.0 | **Permit Close** | Cancel Permit and update status. | Permit Issuer |

**3.0 Permit Responsibilities**

The Permit to Work Procedure has two key roles with specific responsibilities –A **Permit Issuer** and a **Permit Receiver**.

**The Permit Issuer cannot be the Permit Receiver i.e cannot self-issue Permits**

**3.1 Permit Issuers**

The Permit Issuer must be competent and experienced with the specific plant / equipment, the permit issuing process, and the safety control requirements.

* The Duty Shift Engineer is responsible for issuing “Operational” Permit to Works for any work that has a potential to impact on the normal operation of the plant or services.
* The Team Leader Shift Engineers Team Leader and Process Engineer (or delegate) are responsible for issuing “Non-Operational” Permit to Works i.e. Projects and work that will not impact on normal operations such as buildings and grounds.
* The management of safety and controls can be delegated for specific works via the Special Permit - Transfer of Control. Transfer of Control must be authorised by the Team Leader Shift Engineers.

**Permit Issuers Responsibilities**

* 1. The Permit Issuer is responsible for reviewing the scope of work, job safety analysis, and confirming with the Permit Receiver that the hazards to personnel, environment, or operations have been identified and are either eliminated, isolated, mitigated or sufficiently low risk to accept.
  2. Noting any work requiring formal notification to the Department of Labour and confirm as a prerequisite with the Permit Receiver.
  3. Confirm that any necessary Special Permits (eg, hot work, confined space, etc) are attached and completed.
  4. Confirm that additional “sign-offs” have been completed.
  5. Coordinating all operational aspects of the Permit and JSA i.e. draining and flushing lines / vessels, etc.
  6. Coordinating isolations and lockouts as per CWTP Lockout Tagout (LOTO) Procedure
  7. Ensuring permits issued and/or changed are reported and communicated across shifts via the Shift Changeover Log and the PTW register.

A Permit Issuer may reject / postpone any work if there is insufficient proof that the work will not adversely impact on the plants effective operation, cannot be performed safely, or will adversely affect other works.

* 1. **Permit Receivers:**

The Permit Receiver must be competent and experienced to undertake and/or coordinate the work specified within the Permit.

Permit Receivers will be:

* + Members of the CWTP Maintenance Team,
  + Members of the Networks IE&C Team
  + Shift Engineers performing maintenance tasks while on the support shift
  + Contractors (maintenance, capital works and major maintenance projects, etc)

**Permit Receiver Responsibilities**

* 1. The Permit Receiver is responsible for the planning and execution of the job and completes the majority of the Permit to Work form (non-grey sections) on behalf of the Permit Users.
  2. For planned project work, the Permit Receiver must aim to apply for a Permit to Work at least five working days prior to the intended start date.
     + The Permit to Work must be completed.
     + Submits the Permit to Work form to the Permit Issuer for review.
     + After review, incorporates any additional requirements specified by the Permit Issuer into the Job Safety Task Analysis and work plan.
  3. Must notify the Department of Labour of any notifiable work at least 24 hours prior to starting work.
     + The Permit Issuer will not issue the Permit to Work before the Department of Labour is notified.
     + Shall confirm on the Permit to Work form that any required notifications to the Department of Labour have been made.
  4. Ensures all Permit Users (Work Party) have completed the CWTP Induction Process.
     + The induction register is stored electronically on TRIM (11/649554) and may be checked directly from the Control Room or by contacting CWTP Reception.
     + The Permit Receiver shall contact CWTP Reception to book an induction session if required.
  5. Agrees to the conditions of the Permit to Work and ensures full compliance with them by:
     + Clearly communicating Permit to Work requirements to all Permit Users prior to starting work.
     + Ensuring that Work Site preparation and all job steps are performed in accordance with Permit conditions.
     + Keeping everybody on the Work Site fully briefed as to the known hazards on site and the control methods and rescue plans in place.
  6. Responsibility for the safe behaviour and good housekeeping practices on the work site.
  7. Work site team meeting by the Permit Receiver should at a minimum:
     + Involve all the people involved with the job.
     + Clarify the job – objectives, plans, and procedures.
     + Identify individual responsibilities.
     + Focus on the hazards associated with the job.
     + Outline all hazard controls and emergency plans in place.
     + If there is a change to the agreed work procedure for the day, the job should be stopped and discussed with the team. Concerns from staff should be raised and corrective actions agreed upon.
  8. Notifies the Permit Issuer whenever there is a change to the person identified as Permit Receiver or Person in Charge of Work Site. This must be recorded on the Permit.
  9. Ensures all Permit Users understand the Lockout Procedure and install their own personal locks on all control points identified by the Shift Engineer before commencing work.
     + Reference copies of the Lockout Procedure are available at all times from the Permit to Work Station by the Control Room.
  10. Have copies of Material Safety Data Sheets (MSDS’s) for any chemicals used for the permitted work on-hand.
  11. If the scope of work or work plan changes in any way that changes the risks and/or safety controls associated with the work then work must be suspended until the JSA has been updated and the Permit has been reviewed and re-issued by the Permit Issuer.
  12. Immediately notify the Permit Issuer if an accident, near miss, or harm incident occurs within the work site.
  13. Any hazards discovered during the work and not listed in the JSA must also be reported, and reviewed by the permit issuer.
  14. Ensures the work site has been left in a safe and tidy state upon completion or suspension of work.
  15. Ensures that the permit is closed out and signed off once the job has been completed.

1. **Permit to Work Form**
2. The Permit Receiver should collect a Permit to Work Form from the Control Room, or obtain an electronic version by contacting CWTP reception.
3. The Permit Receiver must complete all white sections on the Permit to Work form. Grey sections on the form should be left for the Permit Issuer to complete.

Page 1:

A description of the job, contact details for the person/s “in charge” of doing the work and the work site are required.

* Indicate what additional controls / special permits are attached.
* List of the isolations and/or group lockouts.
* Signoffs for the Permit Issuer (on behalf of CWTP) and Receiver will be recorded here for job approval and on job completion.
* List members of the work party including sub-contractors

Page 2:

Complete a Job Safety Analysis for the Job Activity.

* Break the Job down into a series of basic Job Steps, and list all significant hazards that are encountered during each job step. .
* Describe the control method to be used for each significant hazard.
* Attempt to apply sufficient controls to reduce all Risk Ratings to the ‘Low.’ The Permit Issuer may request additional controls to be put in place when he reviews the Permit to Work Form.
* A contractor may attach their own standard Job Safety Analysis for the Job Activity with the prior approval of CWTP Management.
* Any PPE required by the Permit Users is to be recorded here
* Any impacts to the worksite, operations, other personnel or the environment due to the job is to be listed.
* WorkSafeNZ notifications.

Pages 3-7:

Appropriate Special Permit must be filled out if any activities involve:

* Working at Heights
* Confined Space entry
* Hot work (welding, cutting, etc)
* Excavations
* Cranes (mobile or manual, does not apply to fixed/permanent cranes)
* Transfer of Control (management of risks and safety controls to a third party)

All special permits require a safety observer, who will confirm that the extra safety requirements have been met. The safety observer may be CWTP personnel or the Permit User. For confined space entry the safety observer will be the standby person.

After the work was been completed, the Permit must be signed off to state that the work has been completed, and the worksite is left in a safe and tidy manner. The completion signoff may be done by a person nominated by the Permit Issuer.

**VERSION CONTROL**

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| **Created By:** L Liaw  **Reviewed By:** Bruce Cassidy  **Issued by:** B Cassidy  **Issue Date:** TBC **Version 1.0**  **Updates** | | | | | | |
| **Version**  **No.** | **Reason for change** | **Date** | **By** | **Designation** | **Check & Approved**  **(Name / Date)** | **Staff Notified**  **(Name/Date)** |
|  | Reviewed, updated | 23/8/2019 |  |  |  |  |
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**Appendix A**

**Special Permit - Work at Heights Certificate**

1. Any works where there is potential for a **fall of three metres or more requires Work at Heights** Certification. The Permit Issuer may require a Work at Heights Certificate where there is a potential for a fall of less than three metres at his/her discretion.
2. Any work where there is potential for a fall of **five metres or more must be notified to the Department of Labour** by the Permit Receiver prior to a Permit to Work being issued.
3. Where there is a potential for a fall of three metres or more:
   1. Suitable means must be provided to prevent a person from falling.
      * Details of the type of fall protection to be used must be made in the Job Safety Task Analysis.
      * PPE and other Safety Equipment specified must be summarised in the summary section of the Permit to Work.

Types of fall protection and specific conditions associated with the use of each are documented in Items 4-8 below.

* 1. Any fall protection equipment must be checked prior to each use and shown to be functioning correctly.
  2. Tools and equipment liable to fall shall be suitably constrained or restrained.
  3. Barriers and signs must be erected to prevent the passage of other personnel into the area.
  4. A Rescue Plan must be documented on the Permit to Work form when Working at Heights is required.
     + All possible circumstances that would require a rescue should be considered.
     + Specific PPE, standby rescue equipment and first aid equipment should be documented.
     + The means by which medical help can reach an injured worker, and how the injured worker can be removed to medical help must be documented.
     + The means to communicate safety information to emergency services personnel must be documented. This includes clear statements of what they will be told and how to get to the work site.
  5. Issue of a Permit to Work is subject to the condition that work will not commence until the named Safety Observer has completed the Work at Heights Certificate checklist and signed off that the required precautions are in place.
  6. All required precautions must remain in place for the entire duration of the Job Step that requires Work at Heights.

1. **Safety Harnesses**:
   1. Fall protection systems and their related safety harness, lines, etc are designed to catch and hold a person in the event of a fall.
   2. They are not designed to hold a person in a working position.
   3. Safety Harnesses should only be used when there is no other form of fall restraint available.
      * Fall arrest systems only provide protection once the person using the harness has already fallen.
      * They do not prevent falls.
   4. Only trained and competent persons shall use safety harnesses and/or rig fall arrest systems and related static lines, anchorages and other equipment associated with use of a safety harness.
      * The Permit Issuer must sight proof of completion of training to a NZQA unit standard before issuing a Permit including Working at Heights Certification.
   5. Anchor points must be certified by a qualified engineer.
   6. Safety harnesses must be certified as safe to use within the last six months.
   7. A Safety Observer is compulsory when a person is using a safety harness.
      * Safety Observers must maintain a continuous means of communication with workers.
2. **Power-Operated Elevated Work Platforms**:
   1. Power-Operated Elevated Work Platforms must be appropriate for the job, and set up and used by a competent person. This type of equipment includes, but is not restricted to:
      * Cherry Pickers
      * Scissor Hoists
   2. The Power-Operated Elevated Work Platform must have valid certification
   3. A Safety Observer is compulsory when a Power Operated Elevated Work Platform is in operation.
      * The Safety Observer must maintain a continuous means of communication with all those on the work site.
   4. Safety Harnesses are not compulsory when using this type of equipment, so long as the worker remains within the safety railings.
3. **Forklifts or Similar with Safety Cages:**
   1. Work Platforms/Safety Cages should only be used on forklifts when designed specifically for the purpose.
   2. The tilt lever on the forklift must be locked out.
      * If the model does not have a tilt lever, another means of ensuring the safety cage cannot be tilted may be employed eg turning the forklift motor off.
   3. The Safety Cage shall have current certification.
   4. The Safety Cage shall be attached securely to the forklift.
   5. The forklift driver shall remain seated in the forklift at all times when a worker is inside the safety cage, even if the motor is switched off.
   6. A safety harness is compulsory for the worker in the safety cage for the purposes of fall restraint.
   7. The forklift may not be moved while there is a worker in the safety cage. This applies in both the raised and lowered positions.
4. **Scaffolding:**
   1. Scaffolding must be designed and erected to suit the type of work to be carried out, the site conditions and the anticipated workload.
   2. The erection or dismantling of scaffolding from which any person may fall 5 metres or more is Notifiable Work and the Permit Receiver must notify the Department of Labour prior to a Permit to Work being issued.
   3. A person erecting scaffolding to a height of 3 metres or more must be a registered and competent scaffolder.
   4. The scaffolding must be tagged as being safe before it may be accessed by workers.
   5. If working around live process equipment, all equipment must be protected from falling objects or suitably safeguarded to prevent damage. No loose items should be left unsecured.
   6. Ground stability must be checked before erecting a scaffold.
   7. Safety harnesses are compulsory for the purpose of fall restraint for persons erecting the scaffold, when not within the confines of the scaffold.
5. **Ladders:**
   1. Ladders are not designed as working platforms and are only suitable to be used for access, or to carry out minor or routine work.
      * Other methods of completing the job must be considered before planning to use a ladder as the work platform
   2. Only one person shall use a ladder at any one time.
   3. Check that the ladder is in a safe condition to use.
   4. Use the ladder at a safe angle
   5. Secure the ladder at the top and bottom, allowing at least one metre extension above the step-off point.

**Appendix B**

**Special Permit -Confined Space Entry Certificate**

1. There are two parts to the definition of a Confined Space:

It is a **restricted space** that is enclosed or partially enclosed space that is:

* + At atmospheric pressure during occupancy
  + Is not intended or designed primarily as a regular place of work
  + Which could have restricted means for entry or exit

AND it is foreseeable that the restricted space may contain a **hazardous atmosphere** with:

* + Potentially harmful levels of contaminants and/or
  + Oxygen deficiency or excess and/or
  + Materials that could cause engulfment or drowning
  1. Frequently accessed Confined Spaces at CWTP are clearly identified at their entry points as being confined spaces.
  2. Not all confined spaces are identified / labelled. A restricted or previously unidentified space can be classified as a Confined Space at the Permit Issuer’s discretion. This may depend on the task that is being carried out in the space.

1. A Confined Space is **considered to be entered** if the head of the worker enters the Confined Space.
2. An atmosphere is considered safe for entry when concentrations are:
   1. Oxygen: 19.5 – 23.5% vol
   2. Flammables: < 5% LEL (lower explosive limit)
   3. Toxic Substances: < 50% workplace exposure standard. The Department of Labour sets workplace exposure limits in its publication ‘Workplace Exposure Standards’[[1]](#footnote-1), effective from 2002. The publication has detailed information on how the standards are set and how they should be used.
3. A Confined Space Entry Certificate must be completed and the pre-work checklist signed off by the Safety Observer prior to entering any identified Confined Space.
   1. Prior to entry, document on the Confined Space Entry Certificate:
   * The reason for entry
   * The maximum allowed entry duration
   * The maximum number of people allowed in the space
   * The pre-entry atmospheric testing results
   1. Upon entry and for the duration of work, document on the Certificate: The Safety Observer shall also maintain the Entry Register with;
   * Records of Permit Users entering and leaving the Confined Space
   * Records of routine atmospheric testing results.
4. The following rules apply to working in a Confined Space:
   1. All Confined Space entries require a competent Safety Observer to be present at the entry point while Permit Users are inside the Confined Space. The Safety Observer:
   * Never, under any circumstances enters the Confined Space.
   * Never, under any circumstances leaves their post while an entry is in progress
   * May not fulfil any other duties that interfere with the role of Safety Observer.
   * Controls the entry/exit point and records the names and times of all Permit Users who enter and exit the Confined Space, verifying at the end of the day and at breaks, that no one remains inside the Confined Space (without themselves entering the Confined Space)
   * Maintains constant communication with, and regularly verifies the status of those working in the Confined Space. (This could be by voice, radio or pull line)
   * Maintains a means of communication with the emergency services. (This could be by being in telephone or radio contact with the Pumps Controller in the CWTP control room, who is in a position to initiate an emergency response)
   * Maintains continuous monitoring of the atmosphere inside the Confined Space for oxygen and flammables using calibrated atmospheric test equipment. The atmospheric conditions should be read from the continuous monitoring instrument and recorded on the Confined Space Entry Certificate at intervals not exceeding than 30 minutes.
   * Withdraws Permit Users from the Confined Space if the atmosphere deteriorates below the acceptable levels for entry.
   * Initiates the planned rescue procedure if communication with those inside the Confined Space is lost, or if communications indicate that assisted withdrawal is necessary.
   1. Continuous atmospheric monitoring of the Confined Space must take place while a Permit User remains inside.
   * Entry is not permitted if the atmosphere is outside the limits described in Item 2 above.
   * Permit Users in the Confined Space must be withdrawn if the atmosphere is outside the limits described above.
   1. No Hot Work is permitted in a Confined Space where the atmosphere contains flammable contaminants in excess of 0% of the Lower Explosive Limit (LEL).
   2. All hazardous (flammable or toxic) liquids and residues will be removed from the Confined Space prior to work commencing. Appropriate PPE will be worn or work procedures used to protect Permit Users from wastewater or wastewater residues inside the Confined Space.
   3. All physical hazards in the Confined Space must be identified and controlled.
   4. All vessels will be isolated from process pipework in such a manner as to allow for natural ventilation and the free draining of all liquids.
   5. Internal and external access ways shall remain clear at all times.
   6. Prior to entry, vessels shall be purged either by natural or forced ventilation until the atmosphere is confirmed as safe.
   * Acceptable methods of forced ventilation are a venturi or air-driven fans placed as far as practical from the entrance to the confined space.
   * Care should be taken to position diesel generators or similar equipment used to power the ventilation system so that fumes do not enter the Confined Space.
   1. A Rescue Plan must be documented on the Permit To Work form when Confined Space entry is required.
   * All possible circumstances that would require a rescue should be considered.
   * Specific PPE, standby rescue equipment and first aid equipment should be documented.
   * The means by which medical help can reach an injured worker, and how the injured worker can be removed to medical help must be documented.
   * The means to communicate safety information to emergency services personnel must be documented. This includes clear statements of what they will be told and how to get to the work site.
   1. Issue of a Permit to Work is subject to the condition that work will not commence until the named Safety Observer has completed the Confined Space Entry Certificate checklist and signed off that the required precautions are in place.
   2. All required precautions must remain in place for the entire duration of the Job Step that requires Confined Space Entry.
   3. On completion of work, the Safety Observer must sign the Confined Space Entry Certificate to confirm that all Permit Users authorised to enter have vacated the Confined Space before the Permit Issuer may close the work permit.

If a contractors Confined Space Entry Record forms meet or exceed the requirements of the CWTP form, then the contractor may use their own standard forms for the Entry Register and for recording the results of atmospheric monitoring. In this case the contractors standard forms should be attached to the Permit to Work, as CWTP must retain Confined Space Entry records for one month (AS/NZS 2865-2001).

**Appendix C**

**Special Permit - Hot Work Certificate**

1. A Hot Work Certificate is required if the work to be carried out involves a source or potential source of ignition.
2. The term “Hot Work” include (but not limited to):
   * Gas cutting
   * Welding
   * Rotary disc cutting and grinding
   * Soldering
   * Paint stripping (hot air and flame gun)
   * Roof repair (bitumen boilers)
   * Any other operation that uses flames or produces sparks.
3. A Responsible Operations Supervisor (ROS) must co-sign with the Shift Engineer, all Permits to Work requiring Hot Work Certification.
4. The following rules apply to the execution of Hot Work at CWTP:
   1. Hot Work shall not take place under a verbal permit.
   2. Usually, Hot Work should not take place concurrently with work that requires the fire protection system for that same work area to be disabled.
      * If hot work must occur when the fire protection system is disabled, extra controls should be put in place.
   3. A Safety Observer may be assigned as a control measure where otherwise the Risk Rating would be above ‘Low.’ The Permit Issuer may require a Safety Observer to be assigned to other Hot Work jobs at his/her discretion.
      * The Safety Observer shall maintain a continuous watch throughout the work and remain at the work site continuously for 30 minutes after completion of the work.
   4. All escape routes must be confirmed to be clear before work commences.
   5. Portable hand-held fire extinguishers of the appropriate type are required for carrying out Hot Work and must be available at the working site. Minimum requirements for fire extinguishers are:
      * 2 x 2.0 kg CO2 extinguishers for Hot Work inside buildings OR
      * 2 x 4.5 kg multipurpose dry powder extinguishers for any outside Hot Work.
   6. Fire extinguishers used for protection during Hot Work shall be in addition to those provided for the normal protection of the building and shall not be relocated from other CWTP site locations.
   7. Any discharged extinguisher must be replaced prior to work continuing. Partially discharged cylinders shall not be left in the workplace.
   8. The location of hose reels within the immediate area must be identified, and where available, run out to the working area during Hot Work.
   9. The construction of the building in the immediate area of work should be investigated prior to starting work. Look for:
      * Cavities
      * Cable runs
      * Pipework
      * Polystyrene sandwich panels (Polypanel). There shall be no direct welding or hot cutting onto any Polypanel cladding as this represents a significant fire risk.
   10. Ensure a safe and stable working platform (where applicable).
       * Working from a ladder is not best practice.
       * Ensure scaffolding boards (if in use) are not in contact with a heat source.
   11. Ensure adequate lighting is available in the work area.
       * When using grinding machines under fluorescent lighting, additional precautions are required to prevent a strobe effect.
   12. Ensure pipework and vessels that have contained flammable liquids or gases have been made inert and have been certified ‘gas free’ by a competent person. All combustible materials must be removed or made safe.
       * Steam clean and then fill with an inert gas such as carbon dioxide or nitrogen OR
       * Fill with water, leaving a small vented space at the point where the repair is to be made (allow for expansion of water in small bore pipes)[[2]](#footnote-2)
   13. Keep the area of operations clean, free of combustible materials and where possible, dampened down.
   14. Cover areas of flammable materials that cannot be cleared with a fire- resistant blanket.
   15. All sparks must be contained by use of fire blankets or other means to prevent transfer into unprotected areas.
   16. Ensure the appropriate controls (screens etc.) are put in place to safeguard others from exposure to arc flash where applicable.
   17. Ensure barriers are in place to prohibit passage of other personnel within the work area.
   18. Isolate sensitive electronic equipment (eg flow meters) from welding current or conducted heat.
   19. Ensure the Hot Work area is ventilated sufficiently to remove any toxic fumes generated.
   20. Ensure correct controls are identified and followed when using any chemicals (eg pickling paste). Refer to the Material Safety Data Sheet (MSDS) where appropriate.
       * The Permit Receiver or Person in Charge shall have a copy of any applicable MSDS available on the work site at all times.
   21. Equipment must be in good condition and fit for purpose:
       * Ensure all rotary cutting and grinding discs are in good condition and suitable for the grinder and work to be conducted.
       * Ensure all gas cutting equipment is in good condition and suitable for the work to be conducted. Gas cutting equipment should have:
         + - Hoses kept in good condition.
           - Have anti-flash devices fitted to valve set.
           - Have the valve key attached to the valve set and readily available.
           - Have gas cylinders secured in the upright position, both in use and in storage.
           - All the equipment shall be in accordance with the relevant New Zealand Standards.
   22. Issue of a Permit to Work is subject to the condition that work will not commence until the Safety Observer has completed the Hot Work Certificate checklist and signed off that the required precautions are in place.
   23. All required precautions must remain in place for the entire duration of the Job Step that requires Hot Work.
   24. When the work is complete the Safety Observer must maintain a continuous close watch for at least 30 minutes after work has ceased.
       * Sparks from Hot Work can create smouldering fires, which do not show themselves immediately.
       * The Safety Observer must sign the Hot Work Certificate to confirm that the fire watch is completed before the Permit Issuer may close the Permit to Work.

**Appendix D**

**Special Permit - Excavation Certificate**

1. Any job involving trenching, excavation, shafts, drives, demolition, or the risk of penetrations requires excavation certification.
   1. **Trenches** are defined as long narrow excavations where the horizontal width at ground level is less than the vertical depth of the deeper side.
   2. **Excavations** are defined as greater than 150mm deep and are wider than trenches. 
      * Digging of foundations on a building site is considered to be an excavation.
   3. **Shafts** are defined as vertical excavations of variable depth of section.
   4. **Drives** are defined as small tunnels cut in to the sides of trenches or shafts.
   5. **Demolition** is defined as the dismantling, wrecking, pulling down or knocking down of any building or structure or part thereof.
      * Demolition does not include work of a minor nature which does not involve structural alterations.
   6. There is a risk of **Penetration** when work has the potential to break through into a wall cavity or through the wall thickness.
2. All Permits to Work that require Excavation Certificates must be reviewed and co-signed by the Maintenance Team Leader prior to Issue of the Permit.
3. The following rules apply when undertaking an excavation:
   1. The Permit Receiver must notify the Department of Labour at least 24 hours prior to commencement of any excavation activity that meets any of the following criteria:
      * Any trenching or shaft more than 1.5m deep and which has a depth greater than the horizontal width at the top.
      * Any excavation in which workers are required to work with a ground cover overhead.
      * Any excavation in which any face has a vertical height of more than 5 metres, and an average slope steeper than a ratio of 1 horizontal to 2 vertical.
      * The Permit Issuer will not issue the Permit to Work until notification to the Department of Labour has been made.
   2. An Excavation Certificate is required when breaking ground of a depth greater than 150 mm
      * Exception: No Excavation Certificate is required for digging in designated garden areas where the work is carried out using hand tools and depth of the work activity does not exceed 500 mm.
   3. A Safety Observer must continually check the excavation face during periods of mechanical digging.
   4. All excavations left unattended must be barricaded or securely covered. Portable flashing warning lights must be erected during hours of darkness in any area that is otherwise unlit.
   5. An Excavation Certificate DOES NOT allow entry into, or allow other work to occur in the excavation. It only permits the activity of the excavation work itself.
      * A Confined Space Entry Certificate must be obtained in addition to the Excavation Certificate where any excavation greater than 1.5 m deep requires entry by personnel.
   6. Access and egress to excavations must be via secure ladders, steps or scaffolding.
   7. The Permit Receiver must clearly mark a copy of the CWTP underground services drawing with the position of the intended excavation. The CWTP Maintenance Team Leader must review this and attach the drawing to the Permit to Work.
      * The Maintenance Team Leader may require services to be identified with detection equipment and/or positively identified by hand digging where there is doubt as to the accuracy of the drawing.
      * Excavation within 500 mm in any direction of positively identified (visual) underground services must be carried out by hand.
      * Excavation within 2 m in any direction of indicatively identified (on drawings or by locator) underground services must be carried out by hand.
      * If unidentified services are located, work must cease until the Permit Receiver or Person in Charge has notified the Permit Issuer and an investigation has indicated it is safe to continue.
      * The Permit Issuer or Maintenance Team Leader may require that further excavation within 500 mm of the unidentified service is carried out by hand.
   8. Issue of a Permit to Work is subject to the condition that work will not commence until the Safety Observer has completed the Excavation Certificate checklist and signed off that the required precautions are in place.
   9. All required precautions must remain in place for the entire duration of the Job Step that requires Excavation.

**Appendix E**

**Special Permit - Craneage Certificate**

1. A crane is defined as any appliance equipped with a mechanical, hydraulic, pneumatic, or electrical means for raising and lowering a load by ropes or chains and for transporting a load while suspended. A Hiab (or equivalent) attached to a vehicle is included in this definition. All tackle used in the operation of a crane is included in the definition.
2. A lifting appliance is defined as any machine other than a crane that is used to raise or lower a load, excluding a conveyor, elevator, or an excavator handling soil or a like substance.
3. The following lifting mechanisms are excluded from the definition of cranes and lifting appliances:
   * Hoist block running on a fixed rail or wire.
   * A stacker or conveyor whereby a load is moved by means of a belt or platform.
   * An earth-moving or mineral-moving or excavating appliance not fitted with a grab unless it has been specifically designed to lift loads.
4. The following rules apply when operating cranes and lifting appliances:
   1. Cranes and lifting appliances provided and used by contractors on the CWTP site must be regularly maintained in a safe manner. This equipment must comply with the requirements of the Health and Safety in Employment Act 1992 regulations, and have a current inspection certificate to confirm this.
   * The Permit Issuer or Treatment Plant Manager may request copies of inspection certificates before issuing a Permit to Work, or at any other time.
   * The Safety Observer is required to confirm that all equipment in use has valid certification prior to signing the pre-work checklist to allow work to commence.
   1. All lifting equipment including chains, slings, wire ropes, shackles etc. shall be inspected annually by an approved authority and tagged to show this. The appropriate test and examination certificates shall be available as proof.
   * The Permit Issuer or Treatment Plant Manager may request copies of the appropriate test and examination certificates prior to issuing a Permit to Work, or at any other time.
   * The Safety Observer is required to confirm that all equipment in use has valid certification prior to signing the pre-work checklist to allow work to commence.
   1. Any equipment damaged or suspected of being damaged must be removed from active use immediately, and immediately labelled clearly to avoid accidental use.
   2. Strong wind, rain, poor visibility and other weather or environmental conditions that could compromise safety shall be considered before any lifts are undertaken.
   * The Safety observer must confirm that weather conditions are suitable for executing a lift prior to signing the Craneage Certificate checklist to allow work to commence.
   1. No craneage will be carried out within four metres of any overhead power line, unless the electrical supply authority has been advised in writing.
   * The Safety Observer must confirm that the crane and load will be clear of overhead power lines by at least four metres at all stages of the lift prior to signing the Craneage Certificate checklist to allow work to commence.
   1. Underground services plans shall be checked prior to a crane being set up on site to ensure that no weight-bearing outriggers are positioned over storm water drains, tunnels, or other potential subsidence circumstances.
   * The Safety Observer must confirm that the position of the crane has been reviewed against the CWTP underground services drawing prior to signing the Craneage Certificate checklist to allow work to commence.
   1. Where practical, tag lines shall be used on all loads to ensure that the load is under control at all times with spinning etc. prevented.
   2. Signs and barriers, or personnel must be positioned to prevent the passage of others into the lifting area while the lift is in progress.
   * Where the capacity of a crane is over 75% of its working capacity, barriers to prevent the passage of others into the lifting area are compulsory.
   1. Where the capacity of a crane is over 75% of its working capacity, a lifting plan shall be attached to the Permit to Work. The lifting plan is made up of the following information:
   * A copy of the underground service drawings clearly marked with the position of the crane and its outriggers.
   * The crane’s load chart showing the crane’s capacity at the intended lifting radius.
   * The weight of the load to be lifted taking into account all rigging.
   * A plan showing the direction of the lifting slew and the area to be taped off and controlled.
   1. Issue of a Permit to Work is subject to the condition that work will not commence until the named Safety Observer has completed the Craneage Certificate checklist and signed off that the required precautions are in place.
   2. All required precautions must remain in place for the entire duration of the Job Step that requires Craneage.

**Appendix F**

**Special Permit – Transfer of Control**

1. Transfer of Control is when the responsibility for managing the safety controls for a work zone (or project) are transferred to a third party.
2. The Shift Engineers Team Leader must ensure the following is in place before control is transferred and work commences:
   1. The transfer of control is to an organisation and "responsible person" who have the appropriate systems / procedures and competencies to effectively manage the health and safety risks within the scope of work and the controlled work zone.
   2. The person receiving control clearly understands their personal responsibilities and the organisations responsibilities when accepting control.
   3. The physical boundaries of the transferred control zone are clearly defined and controlled.
   4. The isolations points between the operational plant / services and the control zone are itemised within this PTW's isolation schedule
   5. Operational plant and services within the control zone have been clearly identified.
   6. The demarcations between any operational plant / services and the transfer of control are clearly defined and controlled.
   7. Procedures for CWTP staff entering and/or working within the controlled work area have been defined.
   8. The Transfer of Control is authorised by the Team Leader Shift Engineers.

The permit must also stipulate any limitations / restrictions placed on the Transfer of Control.

1. Available: http://www.osh.dol.govt.nz/order/catalogue/329.shtml [↑](#footnote-ref-1)
2. Health and Safety in Welding (2006), pp13-14 [↑](#footnote-ref-2)