Port Marlborough

Hazardous Energy Critical Risk Standard

Contents

1. PURPOSE

PMNZ recognises that the risks associated with Hazardous Energy can result in injury or death. This is typically as the result of electrocution when a human body makes contact with a high voltage electrical source. PMNZ has multiple activities that could expose workers to Hazardous Energy. The purpose of this critical risk standard relates to the prevention and/or mitigation of risks associated with hazardous energy, through the implementation of systemised risk controls.

2. SCOPE

This standard applies to all PMNZ sites and operations involving hazardous energy.

If PMNZ is involved in any Project requiring Hazardous Energy, managed by any third party, PMNZ will ensure that the standards and policies of the controlling PCBU are consistent with those of PMNZ. PMNZ will consult, communicate and coordinate with other PCBUs and stakeholders as required to meet overlapping duties.

3. AUTHORITIES AND RESPONSIBILITIES

Role	Responsibilities
The Company (PCBU) & Officers	The PCBU & Officers of PMNZ have a responsibility to: ▪ exercise due diligence to ensure all duties and obligations under HSWA 2015 are met including eliminating/minimising risks to health & safety so far as is reasonably practicable.
Senior Leadership Team	Senior Managers are responsible for: ▪ ensuring the requirements of this standard are adhered to. ▪ ensuring that adequate resources are available to ensure the full implementation of this standard.
Critical Risk Sponsor	Critical Risk Sponsors have responsibility to: • Report on critical control effectiveness monthly, including critical control performance highlighted by incident data. Ensure all ongoing actions determined by the CRC panel are implemented effectively.
Critical Risk Owner	The Critical Risk Owner is responsible for: ▪ ensuring this standard is implemented, kept up to date, and reported on. ▪ providing coaching to managers as required.
Managers	Managers have a responsibility to: ▪ ensure the requirements of this standard are met within their area of responsibility
Workers	Workers have a responsibility to:

	▪ ensure the requirements of this Standard are applied where relevant to their roles. ▪ seek further information and advice if they do not believe they are competent to participate in work activities involving Hazardous Energy.

4. HAZARDOUS ENERGY OPERATIONS

4.1 PMNZ ACTIVITIES INVOLVING HAZARDOUS ENERGY

The following are activities at PMNZ that involve Hazardous Energy:

- Interislander link span maintenance & repairs.
- Property maintenance.
- Light tower maintenance & repairs.
- Temporary power supply (generators).
- PMNZ vessel maintenance & repairs.
- Ground excavation and/or penetration.
- Working in the vicinity of overhead power cables.
- MPV movements near electrical infrastructure (power & light poles, transformers).
- Vessel power supply.
- Electrical supply for construction sites.
- Portable electrical appliances.
- Electrical Vehicles

4.2 RISKS ASSOCIATED WITH HAZARDOUS ENERGY

The following provides an overview of the key risks associated with Hazardous Energy including but not limited to:

- Electric shock and burns from electrical source contact.
- Electrical fires.
- Electrical explosions.
- Underground service strike.
- Overhead service strike.
- Overloading electrical circuits.
- Operational disruption due to damaged electrical infrastructure.

4.3 General Requirements For Hazardous Energy

The following sets out general minimum requirements for the control of risks associated with Hazardous Energy:

- Comply with the Electricity Act 1992 and associated codes of practice.
- Permit to Work for ground excavation and/or penetration.
- MLL close approach permit to overhead services.
- Safe system of work (SSOW) implemented for work activities involving Hazardous Energy.
- Lock out tag out (LOTO) procedure for isolating electrical circuits.
- Identify & guard electrical infrastructure from MPV movements with: bollards, barriers and high visibility markers.
- Comply with HSWA Electrical safety on construction sites March 2018 and NZS3012 standard (Electrical Installations – Construction & Demolition Sites)
- Ensure that buried electrical service location plans are maintained for all PMNZ sites.
- All electrical products procured or used by PMNZ must have the Regulatory Compliance Mark that confirms the product meets the applicable regulatory requirements in NZ.
- Implement a test & tag service for all PMNZ electrical appliances in accordance with NZS3760:2022 (In-service safety inspection and testing of electrical equipment and RCDs).
- PMNZ Surveyed vessels are required to demonstrate electrical safety in accordance with MTA Maritime Rules Part 46 Surveys, Certification and Maintenance.
- The PMNZ Safety in Design process is followed in relation to any new or changed infrastructure involving the critical risk of Hazardous Energy.
- Ensure minimum training and competency standards are met in relation to the critical risk of Hazardous Energy.

4.4 Critical Controls For Managing the Risks of Hazardous Energy

4.4.1 Permit to Work – Excavation & Penetration

Prior to ground excavation or penetration an excavation permit to work must be completed and issued. The excavation permit won't be authorised until:

- Excavation is completed in accordance with Worksafe (Guide for safety with underground services).
- Underground service plans are obtained, and services are marked on the surface.
- Services conflicting with the excavation are located. Excavation within 1m of the service must be located by hydro excavation.

- If necessary, arrange for an electrical safety disconnection by MLL. Minimum notice period 72 hours.
- If the excavation is within 5m and >750mm deep or within 2.2m and >300mm deep of a power pole a MLL close approach permit is required.
- PMNZ engineers provide approval in writing.
- The PMNZ manager for the operational area has been notified a minimum of 24 hours before the excavation is planned.
- Safe system of work such as a SWMS/RAP or SOP has been developed and briefed.
- Perimeter fencing is in place to restrict access to the excavation.

4.4.2 MLL Overhead Service Close Approach Permit

New Zealand Electrical Code of Practice 34 (NZECP:34) sets out the minimum safe distances for working near overhead lines or underground cables, which must be legally complied with at all times. The Code of Practice:

- Requires any person who carries out any work near power lines or poles to maintain safe distances (5m and >750mm deep or within 2.2m and >300mm deep).
- States a minimum overhead service safe approach distance of 4m for MPV, scaffolding, person or other equipment. MLL may permit a lesser distance when satisfied that safety will not be compromised.
- Seek advice from MLL before attempting any tree work in the vicinity of power lines, a close approach permit will be required if any part of the tree or equipment could come within 4m of power lines.
- If necessary, arrange for an electrical safety disconnection by MLL. Minimum notice period 72 hours.
- C3 high stackers are prohibited from travelling on the port access road underneath any overhead power lines.
- Transport providers travelling through the port with an over dimension load must carry out an assessment in advance and obtain a close approach permit if the load is within 4m of an overhead service.

4.4.3 Safe System of Work

A safe system of work (SOP, SWMS, RAP, JSA) is required for all work activities involving hazardous energy. All SSOWs for ground excavation/penetration must be task and site specific and not of a generic nature. The safe system of work will include a risk assessment and work methodology.

4.4.4 Electrical Work & Lock Out Tag Out Procedure

Only persons registered with the Electrical Workers Registration Board (EWRB) and holding an annual practising licence can work on mains grid supplied electricity circuits. For PMNZ vessel electrical circuits including low voltage DC and up to 400V AC circuits a Marine Engineer Class 3 (MEC 3) can maintain the vessels electrical system providing it is not connected to shore power supply. The isolation of PMNZ vessels electrical circuits for maintenance and repairs is undertaken in accordance with the PMNZ Lock out Tag out Procedure (LOTO).

4.4.5 Guarding of Electrical Infrastructure

PMNZ maintain a register and map of electrical infrastructure and where there is a risk of MPV collision with the electrical infrastructure a suitable barrier, bollard or fence is installed. Overhead services that intersect with MPV areas are identified with high visibility markers. The environment surrounding electrical infrastructure must be kept clear of hazards such as flammable substances, stacked materials, unstable ground and ponding surface water.

4.4.6 Electrical Safety on Construction Sites

This section focuses on the supply and use of electricity to temporary workplaces or construction sites and does not include the risk of underground or overhead service strikes which is included in sections 4.4.1 and 4.4.2. In accordance with the Worksafe *Electrical Safety on Construction Sites* guide the following requirements apply to construction sites and/or temporary workplaces:

- For construction sites without an electrical connection and exceeding 3 months in duration, where possible a builder's temporary supply switchboard should be installed by a registered electrical worker.
- Relocatable buildings connecting to a special socket outlet, the socket outlet must be protected by an RCD.
- All relocatable buildings supplied with electricity must have a current Electrical Warrant of Fitness (EWOF) issued by an electrical inspector.
- All hand-held appliances, light sources and other electrical equipment used on a construction site must have protection against electric shock. All equipment must be supplied electricity through a residual current device (RCD).
- Portable and non-portable RCDs should be tested everyday (test button).
- Portable RCDs must be compliant with NZS3012 and tested by an electrician at least every 3 months.
- Extension leads are a temporary solution and should not be used for long term electrical connection. Extensions leads on a construction sites must be of the heavy-duty sheathed type.
- Domestic multi-boards, double adaptors, piggy-back plugs and hard plastic plugs must not be used on a construction site.

- Whenever possible substitute main corded power tools with battery operated equipment. Workers using power tools should be able to work under cover from rain whenever possible.

4.4.7 Electrical Service Location

The infrastructure team ensures that current buried service location plans are made available for all PMNZ sites. These plans may consist of as-built plans, plans provided by MLL as the electrical distributor, and/or a GIS asset mapping system that includes all utility services. Service location plans are requested during the excavation permit to work process. In addition to PMNZ service plans a Beforeudig application should be made prior to excavation to obtain all utility service provider plans. Once all service plans are obtained and services must be located and marked.

4.4.8 Testing & Tagging Electrical Appliances

To meet the requirement of ensuring that equipment is electrically safe and is maintained in a safe condition a Test & Tagging service is provided by either an internal or external provider in accordance with NZS3760:2010 *In Service Safety Inspection and Testing of Electrical Equipment*. This system includes a tiered testing frequency for types of electrical equipment as described below:

- New equipment – start of service
- Construction & Demolition – 3 months
- Workshops & Vessels - 6 months
- Offices - 12 months – 5 years.
- Portable RCDs – 3 months

4.4.9 Building Warrant of Fitness

A Building warrant of fitness will be maintained for each applicable PMNZ building and will be displayed in a prominent area along with the buildings specified systems. Describe system to manage.

4.4.10 Electrical Warrant of Fitness

In accordance with the Electricity Act 1992 connectable installations for mobile accommodations such as caravans, porta-coms, and pleasure vessels up to 50m must hold a current Electrical Warrant of Fitness in accordance with NZS3001 and NZS3004.2 for pleasure vessels. Commercial vessels are not subject to this requirement. Marlborough Sounds Marinas require

all berth holders to hold a current EWOF and are required under the Electricity ACT 1992 to monitor and enforce compliance. PMNZ manages 5 yearly EWOF inspections through the TechOne asset management system.

4.4.11 Electrical Safety - Commercial Vessels

Surveyed vessels are required to demonstrate electrical safety in accordance with MTA Maritime Rules Part 46 Surveys, Certification and Maintenance. In addition to the annual survey which assesses the vessels electrical system PMNZ vessels carry out six monthly in-service electrical appliance test and tag.

4.4.12 Temporary Power Supply

Temporary power supply in the form of generators should be installed in compliance with the Worksafe guidance for connecting generators Connecting a generator to the wiring of a house or building following an emergency | WorkSafe. Some of the key guidance includes the following:

- The maximum demand of the electrical installation must not exceed the maximum rating of the generator.
- Connecting a generator to the wiring of an installation must be carried out by a licenced Electrical worker that is authorised by the Board to carry out this work.
- If the generator is for larger three phase connections, an electrical engineer or inspector must be used to provide a design for this supply configuration.
- The generator must be in a well-ventilated place and that exhaust gases are funnelled away from any internal or confined space. The generator must never be used in an indoor space where people are present; this includes areas such as an internal garage.

4.5 Safety In Design

Safety in design is about changing the health and safety outcomes throughout the lifecycle of a project or asset. This is achieved by embedding safety concepts at the earliest stages of project management. The Health and Safety at Work Act requirement is the designer must, so far as is practicable, ensure that the plant, building or structure is designed to be without risks to the health and safety of persons.

A Safety In Design (SID) process must be followed when changing or creating any infrastructure or equipment involving the critical risk of Hazardous Energy. This may include buildings, roads, yards, light towers, wharfs, jetties. Long term planning for the redevelopment of MPV areas should consider burying overhead services.

4.6 Emergency Response Plan

Appropriate emergency response protocols reflecting the nature of potential incidents associated with Hazardous Energy shall be identified and established, including but not limited to:

- Electrical Fire.

- Overhead service strike.
- Buried service strike.
- Electrical shock/burn.
- Earthquake – damage to electrical infrastructure & temporary power supply.

Exercises for each of the emergency response protocols must be performed as per the PMNZ Emergency Response Plan.

5. Training & Competency

All people involved in the planning, permitting, carrying out, and monitoring of work activities involving Hazardous Energy must have the skills and knowledge to understand the hazards and associated risks of Hazardous Energy, and the control measures required to be implemented to effectively manage the risks associated with these activities.

Appropriate training must be completed by workers who:

- Plan work activities involving Hazardous Energy, including those who undertake hazard identification or risk assessment.
- Set up and/or carry out work activities involving Hazardous Energy.
- Issue Excavation permits.
- Receive Excavation permits and/or MLL close approach permits.

All persons with work activities involving Hazardous Energy shall be trained and assessed as competent to perform those activities. The following sets out minimum training requirements for Hazardous Energy:

Permit Issuers	PMNZ Permit to Work system/issuers training. PMNZ Risk management
Permit Receiver	PMNZ Permit to Work system/receivers training.
SSOW Developer & Reviewers	PMNZ Developing and reviewing SSOWs
PMNZ Vessel Engineer	Self Generating – Marine Engineer Class 3 (MEC 3) Battery/Shore Power Reliant – Marine Engineer Class 5 (MEC 5)
Portable Appliance Tester	1 x Day Test & Tag Training (External) in accordance with NZS3760

6. Monitoring and Review of Application

Monitoring and review of application of this standard will be performed on a regular basis. The frequency of these will be dictated by the nature of the Hazardous Energy and associated activity. The PMNZ Permit to Work System and Permit Issuer will determine the nature and frequency of

this for work carried out under a Water Entry Permit. The Critical Risk Management Framework will also provide guidance on critical control monitoring.

7. ASSOCIATED DOCUMENTS

- PMNZ Critical Risk Management Framework
- PMNZ Hazard and Risk Management Procedure
- PMNZ Permit to Work Procedure
- PMNZ Health and Safety Management System (HSMS)

8. REFERENCES

8.1 RELEVANT LEGISLATION

Legislation available at http://www.legislation.govt.nz

- Electricity ACT 1992
- Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
- Health and Safety at Work (Worker Engagement, Participation and Representation) Regulations 2016
- Health & Safety at Work Act 2015
- MTA 1994 – Maritime Rules Part 46
- Electrical Safety Regulations 2010

8.2 OTHER DOCUMENTS

- Electrical Codes of Practice (ECPs) issued by Worksafe under Section 36 of the Electricity Act
- Electrical Warrant of Fitness in accordance with NZS3001 and NZS3004.2 Maritime New Zealand Interim Technical Notice ITN-11-18: Standard for the inspection of wire rope used on ship's lifting appliances in New Zealand.
- Worksafe - Electrical safety on construction sites March 2018
- NZS3760:2010 Electrical Test & Tagging

9. REVIEW

This document will be reviewed every two years or after any critical event associated with it. The Review will be performed by the Critical Risk Owner in consultation with key stakeholders, and any changes agreed by the Critical Risk Panel.

10. REVISION HISTORY

Version	Date	Brief Description of Changes	Owner
V001	04/08/2024	New Document	GM-HSW