Ia Ara Aotearoa Transporting New Zealand Incorporated

submission to

Maritime New Zealand
on the draft
Approved Code of Practice for loading and discharging cargo at ports and on ships

Email : **consultations@maritimenz.govt.nz**

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Ia Ara Aotearoa Transporting New Zealand Incorporated submission to Maritime New Zealand on the draft Approved Code of Practice for loading and discharging cargo at ports and on ships

1. Representation

1.1 Ia Ara Aotearoa Transporting New Zealand Incorporated (Transporting New Zealand) is made up of several regional trucking associations for which Transporting New Zealand provides unified national representation. It is the peak body and authoritative voice of New Zealand's Road freight transport industry which employs 32,868 people (1.2% of the workforce), and has a gross annual turnover in the order of $6 billion. This is part of a wider transport sector that employs 108,000 people, or 4 percent of the country's workforce and contributes 4.8 percent of New Zealand's GDP[1].

1.2 Transporting New Zealand members are predominately involved in the operation of commercial freight transport services, both urban and inter-regional. These services are entirely based on the deployment of trucks both as single units for urban delivery and as multi-unit combinations that may have one or more trailers supporting rural or inter-regional transport.

1.3 According to Ministry of Transport (MOT) research (National Freight Demands Study 2018) road freight transport accounts for 93% of the total tonnage of freight moved in New Zealand or about 85% of the surface freight activity measured in tonne-kilometres.

2. Introduction

2.1 Transporting New Zealand provides sector leadership and believes we all need to operate in an environment where the following must be managed to ensure:

- The safety and wellbeing of our drivers and other road users
- The minimal impacts of transport on our environment
- The transport of goods by road is economically feasible and viable and it contributes the best way it can to benefit our economy.

2.2 Transporting New Zealand welcomes the opportunity to comment on Maritime New Zealand's draft Approved Code of Practice for loading and discharging cargo at ports and on ships (ACOP).

2.3 A significant number of our members routinely deliver and pick up from ports. While not intending the list to be complete or exhaustive, our members transport products such as ISO shipping containers, logs, and bulk products such as coal, grain and kernel. Consequently, a well-managed and safe working environment is important to us.

2.4 The predominant lens and the scope of our submission are the impacts and risks associated with commercial (road freight) traffic and the economy that traffic serves.

[1] Transport factsheet (mbie.govt.nz)

3. Risks and challenges

3.1 The key health safety and wellbeing risks that road transport operators face while at ports are:

- Collision with pedestrians/workers
- Vehicular traffic collision
- Unplanned detention due to delays and queuing
- Safe area to load and unload cargo
- Loading and relying on documented cargo weight which if incorrect and heavier that declared can adversely affect vehicle stability and consequently increase the risk of an on-road rollover incident occurring.

3.2 The challenges our sector has historically experienced at ports around the country include:

- The complexity of the many policies that need to be taken into consideration make the determination of compliance obligations challenging. For example, section 1.2 of the ACOP refers to 11 specific policies of various types including: Approved Code of Practice, a Best Practice Guideline, a Code of Practice, Good Practice Guidelines, a Tool and a Quick Guide. In addition to these policies are aspects of the Maritime Rule and "any relevant port-specific regulations".
- Another growing challenge is that as ports seek a higher return on investment relative to their respective land use, the areas allocated for loading and unloading trucks are becoming marginalised and more risk and demand is being placed on drivers being required to undertake difficult reversing manoeuvres.
- In an effort to mitigate the risk of trucks experiencing delays and queuing at their ports some ports have recently implemented booking systems. However, rather than reduce the health and safety risk to drivers this is merely shifting the problem off port land.

4. Specific comments

4.1 Transporting New Zealand appreciate "Plant and equipment" is listed as a hazard in section 2.1 of the ACOP however, we recommend that pedestrians and vehicular traffic movements, the latter being differentiated from mobile plant, should also be explicitly listed.

4.2 We are pleased to see traffic management is specifically included in section 4.7. Our recommendation is that the ACOP should advise that signs, markings and delineation be consistent with public road markings and good traffic engineering practice to reduce the risk of confusion for drivers. We also recommend that driver sight distance be considered when determining the pathways for traffic flows.

4.3 We support the reference in section 4.7 regarding minimising the reversing of vehicles. We note the control measures do not include WorkSafe's current good practice regarding the use of a spotter: https://www.worksafe.govt.nz/topic-and-industry/vehicles-and-mobile-plant/site-traffic-management/safe-reversing-and-spotting-practices/ and query why Maritime New Zealand believe such a relaxation is justified. We are concerned that ports prioritise return on investment of their land over safety and are unnecessarily increasing risk by implementing

traffic flows that require reversing. Our recommendation is that the ACOP takes a stronger position on the there being a minimisation of reversing manoeuvres for heavy vehicle combinations.

4.4 In section 4.7 regarding Safe areas - vehicle drivers our recommendation is that when drivers are required to leave their vehicles then access pathways to the safe areas should be well marked. Safe areas should allow for sitting as well as standing and offer protection from natural hazards such as sun, wind and rain, and work environment hazards such as dust, noise and odour.

4.5 In section 5.5 regarding RoRo ships and commentary on ramps, linkspans and gradients we recommend the ACOP include consideration being given to Land Transport Rule Vehicle Dimensions and Mass, particularly in regard to ground clearance, rear overhang and ramp and departure breakover angles. We have seen cases where ramp angles have been excessive which leads to overloading of individual vehicle axles and bottoming out of vehicles on ramps.

4.6 In regard the email of 13 September from Consultations@maritimenz.govt.nz requesting suggestions on how to make the information more accessible, our recommendation is that Maritime New Zealand consider consolidating the information and educational tools relative to respective worker activities. As we refer to in paragraph 3.2 above, the complexities of the many policies involved in managing the risk to health, safety and well-being make it difficult for those people working in the environment and most exposed to the risk of harm to understand all their respective obligations. Some videos or simple effective communication summarising what a truck driver delivering or picking up from a port needs to do. and also what the respective transport business owner of that driver needs to do, would be very useful. Transporting New Zealand would welcome further discussion with Maritime New Zealand on the development and provision of such information.

4.7 In closing, Transporting New Zealand will follow further development of the ACOP with interest and it invites Maritime New Zealand to contact it should there be any questions regarding road freight trucks working around ports.

END

APPROVED CODE OF PRACTICE

Approved code of practice for loading and discharging cargo at ports and on ships

December 2023

Te Kāwanatanga o Aotearoa
New Zealand Government

Nō te rere moana Aotearoa
MARITIME NEW ZEALAND

WORKSAFE NEW ZEALAND | MAHI HAUMARU AOTEAROA

Acknowledgements

Maritime NZ and WorkSafe New Zealand would like to acknowledge and thank the many stakeholders from within industry, unions and government agencies for their time and assistance in developing this guidance. Particular thanks goes to Shane King of Port Nelson and Digby Kynaston of C3 Tauranga.

We would also like to thank our international colleagues at Safework Australia whose 'Model Code of Practice for Stevedoring' was an important foundation for this ACOP, and the Port Skills and Safety Group UK for the use of their 'Hierarchy of Heights' idea and related guidance.

Disclaimer

This Approved Code of Practice has been developed by Maritime New Zealand and WorkSafe New Zealand to provide guidance on compliance with the Health and Safety at Work Act 2015 for dutyholders who load or unload cargo at ports or on ships. Compliance with other relevant legislation can also assist with determining whether HSWA duties have been complied with, therefore this ACOP includes guidance on applicable requirements in the Maritime Transport Act 1994 and the Maritime Rules. It is your obligation to make sure you are operating to current legal requirements and we recommend that you maintain an up-to-date knowledge of relevant law and seek legal advice where appropriate.

Please check www.maritimenz.govt.nz to confirm that you are referring to the current version of this publication.

NOTICE OF APPROVAL

FROM THE MINISTER

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FOREWORD

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1.0 Introduction

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1.1 Scope and application

This Approved Code of Practice (ACOP) provides practical guidance for persons conducting a business or undertaking (PCBUs) on how to manage the health and safety risks associated with loading and discharging cargo at ports and on ships in New Zealand.

This ACOP has been developed to help PCBUs achieve compliance with the Health and Safety at Work Act 2015 (HSWA) and HSWA Regulations, and to reduce the number of serious injuries, illnesses and fatalities among workers who carry out this work.

This ACOP applies to all ports and ships in New Zealand where cargo is loaded or discharged. Out of scope of this ACOP are dangerous goods including liquid chemicals and liquefied gases, and the loading and discharging of livestock.

Maritime NZ will work closely with WorkSafe New Zealand where the ACOP may be usefully applicable to work loading and discharging cargo at inland ports.

ACOPs are admissible in court proceedings under HSWA and HSWA Regulations. Courts may regard an ACOP as evidence of what is known about a hazard, risk or control and may rely on the ACOP in determining what is reasonably practicable in the circumstances. An inspector or maritime officer may refer to an ACOP when issuing an improvement or prohibition notice.

A PCBU may achieve compliance with HSWA and HSWA Regulations by following another method, such as a technical or an industry standard, if it provides an equivalent or higher standard of work health and safety than this ACOP.

1.2 How to use this ACOP

While this ACOP provides examples, every port, ship or cargo is different. PCBUs are expected to consider the specific conditions of the port they work at, the ship (or other transport) they are working with, the cargo they are loading or discharging, and the skills, experience and capabilities of their workers.

This ACOP should be read in conjunction with other guidance on hazards, risks, and control measures relevant to the loading and discharging of cargo at ports and on ships, including:

WORKSAFE NEW ZEALAND

Approved Code of Practice for Cranes

Approved Code of Practice for Load-lifting Rigging

Approved Code of Practice: Management of noise in the workplace

Approved Code of Practice: Operator protective structures [on vehicles and plant]

Best Practice Guidelines for Working at Height in New Zealand

Code of Practice for Manual Handling

Good Practice Guidelines: Managing work site traffic

Good Practice Guidelines: Worker engagement, participation and representation Interpretative Guidelines: General risk and workplace management Part 1 Interpretative Guidelines: General risk and workplace management Part 2

Ports Tool

Quick Guide: Identifying, assessing and managing work risks

OTHER GUIDANCE

International Labour Organization (ILO) Code of Practice: Safety and Health in Ports

This Code should also be read in conjunction with relevant Maritime Rules including:

Maritime Rule Part 24A: Carriage of Cargoes - Dangerous Goods

Maritime Rule Part 24B: Carriage of Cargoes - Stowage and Securing

Maritime Rule Part 24C: Carriage of Cargoes - Specific Cargoes

Maritime Rule Part 24D: Carriage of Cargoes - Convention Containers

Maritime Rule Part 24E: Carriage of Cargoes - Offshore Containers

Maritime Rule Part 49: Ships' Lifting Appliances

and any relevant port-specific regulations such as a harbourmaster's directions.

1.3 A note about managing risks onboard foreign ships

Much of the work undertaken by New Zealand workers who load or discharge cargo at ports is on foreign-flagged ships. HSWA generally does not create legal duties for the foreign operators of foreign-flagged ships in relation to matters onboard ships such as management of their crew.

However, a foreign ship may be a 'workplace' for New Zealanders who go onboard to work. New Zealand PCBUs conducting work onboard foreign ships must comply with all HSWA duties, including eliminating risks to health and safety to workers and other people (such as foreign crew), so far as is reasonably practicable or, if this is not reasonably practicable, minimising those risks so far as is reasonably practicable.

Where a PCBU undertakes work onboard a foreign-flagged ship, this may limit the degree of control that the PCBU has over the hazards and risks on that ship in which case the PCBU will need to determine the extent to which work can safely occur on the ship.

While foreign-flagged ships are not generally subject to HSWA and HSWA Regulations, they are subject to the laws of the state where the ship is registered (the 'flag state'), including any health and safety obligations and international conventions that address health and safety. This means that foreign-flagged commercial ships are likely to be operating to a safety management system (SMS). Under the International Safety Management Code ('ISM Code'), the master is responsible for implementing and periodically reviewing the SMS.

1.4 Key terms or acronyms

For the purposes of this ACOP, the following terms mean the following things:

Cell guide	Containers are commonly stowed below deck and sometimes on deck within fixed vertical cell guides (rather than being secured by lashing) which guide them into place and ensure they do not move during a voyage.
Competent person (except in relation to ship's lifting appliances and loose cargo gear)	A person who has the appropriate skills, training, knowledge, and experience to perform the task or role.
Competent person in relation to ship's lifting appliances and loose cargo gear	As defined in Maritime Rule Part 49: 'Ship's lifting appliances and loose cargo gear'.
Discharge	Unload some or all cargo.
Dogman/dogperson	A person qualified to sling loads and direct the lifting and placing operations of a crane.
GRWM Regulations	Health and Safety at Work (General Risk and Workplace Management) Regulations 2016.
Hatch	The entryway through which cargo is loaded into the hold. The hatch should be kept closed when loading is not in operation.
Hatchman/hatchperson	A person who stands by the ship's hold to assist with loading and discharging of cargo.
Hold	The part of a ship below deck where cargo is stowed. Ships can have more than one hold.
HSE Regulations	Health and Safety in Employment Regulations 1995.
HSWA Regulations	The term used in this ACOP to jointly describe the GRWM Regulations and the HSE Regulations.
Lifting appliance	Has the same meaning as in Maritime Rule Part 49: Ships' Lifting Appliances and Loose Cargo Gear.

Loose cargo gear	Has the same meaning as in Maritime Rule Part 49.
Major hazard facilities	Has the same meaning as in the Health and Safety at Work (Major Hazard Facilities) Regulations 2016 or major hazard facilities as workplaces.
Must	A legal requirement that has to be complied with.
Notifiable event	Has the meaning given in HSWA, s25.
Notifiable incident	Has the meaning given in HSWA, s24.
Notifiable injury or illness	Has the meaning given in HSWA, s23.
Procedure	A procedure is a documented task. A procedure describes the set of steps required to perform a task in a safe manner.
Process	A documented process provides an overall view of an operation by identifying the roles associated with each task, and the sequence in which tasks are to be performed. It should also identify critical lines and methods of communication.
Reefer	Refrigerated container.
Should	A recommended practice or approach.
SOLAS	International Convention for the Safety of Life at Sea 1974.
Task	A piece of work completed by one person.

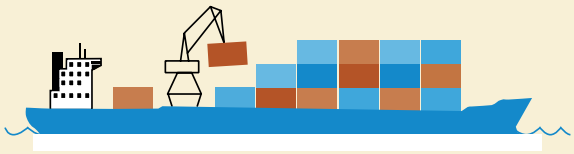
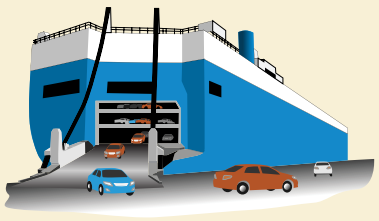
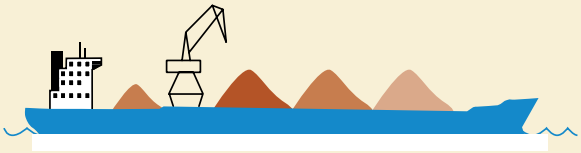
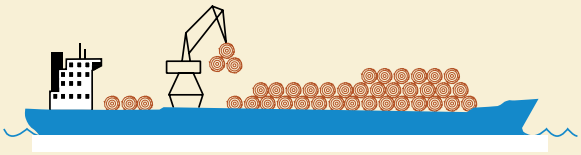
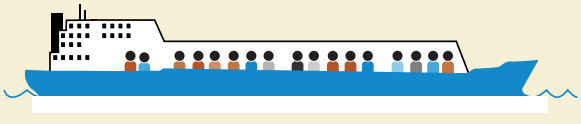
1.5 What type of work does this ACOP cover?

This ACOP covers the loading and discharging of cargo at ports and on ships in New Zealand. This is a broad scope of work that includes:

- loading cargo onto a ship
- discharging cargo from a ship
- stacking and storing cargo at a port
- receiving cargo from road or rail transport at a port
- preparing cargo for export
- preparing cargo for dispatch by road or rail transport.

In New Zealand, the terms ‘stevedore’ or ‘marshaller’ can mean different things depending on the port or cargo-handling company. For this reason, this ACOP uses the term ‘workers’ to describe the people who load or discharge cargo at ports and on ships.

The type of cargo handled at ports and on ships is shown in table 1 below.

Type of cargo	Example
Containers. Discharge import containers, load back export containers, lash (secure) those newly loaded containers onto a container ship.	
Roll on/roll off (RoRo). Loading and discharging of wheeled cargo (such as cars, trucks, heavy machinery) using a ramp to a ship. May also include breakbulk cargo if loaded/ discharged on the back of trailers driven or towed on/off a ship.	
Bulk. A product that is loaded onto a ship in loose, unpackaged form. For example, grain, coal, liquids such as tallow and molasses.	
Breakbulk. Loading and discharging on non-standardised cargo not suitable for containerisation due to size or weight. For example, logs and timber are too big and heavy to put in a container in large quantities. Other examples include rail sleepers, some building materials, paper rolls, and steel coils.	
Cruise ships. Apart from passengers and supplies from ships' providores, may carry some cargo.	

1.6 The dynamic nature of this work

It is important to recognise at the outset that the work of loading and discharging cargo at ports and on ships is dynamic, varied and complex. Workers may carry out their work outdoors at a port or on the deck of a ship, deep inside a ship's hold, or several metres in the air inside the cab of a large crane. They may load or discharge cargo to or from a ship, a rail wagon, a truck, an open storage area or a refrigerated warehouse at the port.

The control measures in place are unlikely to be the 'set and forget' type used by less dynamic industries. Changes in weather, temperature, tides, visibility levels, noise; whether it is day or night; the number of vehicles, plant and equipment onsite; the condition of a ship, its plant and equipment; the type and condition of cargo; the condition of a port or wharf; and the amount and type of labour available are all variables that can quickly change, causing new risks to emerge and requiring control measures to be reassessed at the same time as the work is being carried out.

1.7 Who has health and safety duties for this type of work?

Everyone involved in loading or discharging cargo at a port or on a ship has health and safety duties when carrying out this work.

A PCBU has the primary duty under HSWA to ensure, so far as is reasonably practicable, the health and safety of workers, and that workers and other people are not exposed to health and safety risks arising from the business or undertaking. This duty includes providing and maintaining a work environment that is without risks to health and safety. When loading or discharging cargo at a port or on a ship, this duty means that a PCBU must eliminate risks arising from this work, or if that is not reasonably practicable, minimise the risks so far as is reasonably practicable.

Duty holders include PCBUs who operate a business involved in loading or discharging cargo at a port or on a ship, and PCBUs who have management or control of, or influence over, a workplace where this type of work is carried out, for example, port authorities.

Officers, including company directors and chief executives, have a duty to exercise due diligence to ensure the PCBU complies with HSWA and HSWA Regulations. This includes taking reasonable steps to ensure the PCBU has and uses appropriate resources and processes to eliminate or minimise risks arising from its work.

Workers have a duty to take reasonable care for their own health and safety and must not adversely affect the health and safety of other persons. Workers must comply with any reasonable instruction and cooperate with any reasonable policy or procedure relating to health and safety at the workplace. If personal protective equipment (PPE) is provided by the PCBU, workers must use it in accordance with the information, instruction and training provided.

A worker may be an employee, a contractor or sub-contractor, an employee of a contractor or sub-contractor, an employee of a labour hire agency, an outworker (including a homeworker), an apprentice or trainee, a person gaining work experience or on a work trial, or a volunteer worker.

Other people at the workplace including visitors must take reasonable care for their own health and safety and must not adversely affect the health and safety of others. They must comply, so far as reasonably able, with any reasonable instruction given by the PCBU to allow the PCBU to comply with HSWA.

1.8 Requirements under HSWA Regulations

As well as the duties under HSWA, the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 ('the GRWM Regulations') and the Health and Safety in Employment Regulations 1995 ('the HSE Regulations') include requirements to manage specific risks in areas relevant to the loading and discharging of cargo at ports or on ships.

The GRWM Regulations require a PCBU to use the general risk management process described in Regulations 5 to 8 to manage the risks associated with the following hazards:

- remote or isolated work
- atmospheres with potential for fire or explosion
- ignition sources
- working under raised objects
- falling objects
- loose but enclosed materials, and
- substances hazardous to health.

The HSE Regulations require a PCBU to manage risks associated with:

- noise
- working at heights, and
- self-propelled mobile plant.

Chapter 2 provides guidance on how to apply the general risk management process.

1.9 Engaging with workers

HSWA **s 58**

A PCBU must, so far as is reasonably practicable, engage with workers who carry out work for them who are (or are likely to be) directly affected by a work health and safety matter.

HSWA **s 59**

Relevant information about the matter must be shared with workers in a timely manner. Workers must be given a reasonable opportunity to express their views and to raise work health or safety issues in relation to the matter, and to contribute to the decision-making process relating to the matter. The PCBU must take the views of workers into account and advise workers of the outcome of the engagement in a timely manner. If workers are represented by a health and safety representative, the engagement must involve that representative.

HSWA **s 60**

Engagement with workers is required in relation to the following health and safety matters:

- when identifying hazards and assessing risks to work health and safety arising from the work carried out or to be carried out as part of the conduct of the business or undertaking
- when making decisions about ways to eliminate or minimise those risks
- when making decisions about the adequacy of facilities for the welfare of workers
- when proposing changes that may affect the health or safety of workers
- when making decisions about the procedures for:
  - engaging with workers
  - monitoring the health of workers
  - monitoring the conditions at any workplace under the management or control of the PCBU
  - providing information and training for workers
- when making decisions about the procedures (if any) for resolving work health or safety issues at the workplace
- when developing worker participation practices, including when determining work groups
- when carrying out any other activity prescribed by regulations for the purposes of this section.

Engagement involves sharing information, giving workers a reasonable opportunity to express views and taking those views into account before making decisions about health and safety matters.

When workers are engaged in work health and safety, then everyone benefits. The business is a healthier and safer place for everyone, and performance and productivity increase.

In research carried out by Maritime NZ in 2022, workers said they would like to be more involved in creating and influencing the standard operating procedures that cover their work, and their increased

involvement would lead to more practical standard operating procedures (SOPs) and greater buy-in from workers in reducing their own risk tolerance and tendencies ‘to take shortcuts’.

The research found workers value a manager or company that ‘walks the talk’ on health and safety – that is, their commitment to health and safety at work is visible and consistent and they respond appropriately to workers who raise a health and safety concern. Engaging with workers and their representatives on health and safety matters is an opportunity to demonstrate good leadership and implement good practice.

Ways to engage

Ways of engaging with workers may include workplace inductions, toolbox talks, workplace health and safety committee meetings, phone and email sessions, workshops or events held for a specific purpose. Learning sessions with workers after near misses or events also provide valuable insights on whether controls are operating effectively on the port or need to be changed.

1.10 Worker representation

Workers can be represented by a Health and Safety Representative (HSR), a union representing workers, or a person that workers authorise to represent them (for example, a community or church leader, or another trusted member of the community). HSRs and Health and Safety Committees (HSCs) are two well-established methods of participation and representation.

If workers are represented by an HSR, worker engagement must also involve that representative.

PCBUs must not discriminate or take other negative steps against a worker because of their involvement in work health and safety. For example, a worker who:

- is an HSR
- raises and health and safety issue or concern
- takes part in a resolving a health and safety issue
- notifies the regulator
- ceases work because they believe continuing it would put the health and safety of themselves or other people at risk.

1.11 Consulting, cooperating, and coordinating with other PCBUs with the same health and safety duty

HSWA **s 34**

If more than one PCBU has a duty in relation to the same matter, each PCBU with the duty must, so far as is reasonably practicable, consult, cooperate with, and coordinate activities with all other PCBUs who have a duty in relation to the same matter.

There is often more than one PCBU sharing the workplace at a port or on a ship. These PCBUs will likely also share health and safety duties in relation to the same matter – these are known as 'overlapping duties'. For example, situations may occur when workers for different PCBUs are exposed to the same risks either through contractual agreements, work arrangements or through working in same proximity.

Each PCBU has a duty to ensure, so far as is reasonably practicable, the health and safety of their workers. To achieve this, PCBUs that share overlapping duties are required to consult, cooperate and coordinate activities with each other.

The Port Sector Insights Picture and Action Plan, compiled by the Port Health and Safety Leadership Group in 2022, highlights that workplace culture in the sector varies widely. While this is due to a number of factors, they include how PCBUs partner with other PCBUs operating on ports to deliver collective safety outcomes.

PCBUs should exchange information about planned activities and consider who is best placed to eliminate or minimise the risks, so far as is reasonably practicable. When loading or discharging cargo at a port or on a ship, PCBUs should share their SOPs and discuss between themselves how they will manage the parts of the work where there is a common interface. This will be an ongoing conversation, not a one-off occurrence.

In a work area where more than one PCBU is working (for example, at the same berth), each PCBU should tell each other where it will be carrying out the work, how it will carry it out, the number of workers there will be, where they will be, and what plant or equipment they will be using.

PCBUs should agree on how workers will signal or call for work to stop if they see something unsafe, and agree on how workers will communicate with each other. This may mean involving the health and safety committee of the business and/or cooperating with the health and safety committee of the port.

PCBUs should review how they will work together whenever changes are made to how work is done, new plant and equipment is introduced, or new risks emerge. It is critical that PCBUs clearly communicate **all** changes to processes and schedules to workers as well. Changes from routine ways of working often contribute to work accidents.

The outcome of consulting, cooperating with and coordinating activities with other PCBUs is that each PCBU understands how their activities may affect health and safety and the actions they each take to control risks are complementary.

Example 1

A labour hire agency contracts out workers to a company that loads and discharges cargo at the local port and on ships that visit that port. Both PCBUs have a duty to ensure the health and safety of workers, so far as is reasonably practicable. Before any workers are assigned to carry out the work, both PCBUs agree to meet to:

- identify the health and safety risks that need to be managed
- agree together which PCBU is best placed to control each risk
- plan ahead, by thinking through each stage of the work
- recognise how the work could affect other PCBUs and the public
- clearly define roles, responsibilities and actions, and explain these so everyone knows what to expect
- do reasonable and proportionate monitoring, to make sure the arrangements are working.

Talking things through in detail helps each PCBU to know who is doing what on this particular job. By following this process, the labour hire agency and the cargo-handling company can be confident they are both doing what they can to ensure, so far as is reasonably practicable, the health and safety of workers who will carry out the work.

As mentioned previously, it is the nature of the port environment where one or more PCBUs may hold one or more shared duties under HSWA, regardless of the type of contractual arrangement (for example, a lease-type arrangement) or whether or not direct contractual arrangements exist.

PCBUs need to consider:

- A PCBU isn't only responsible to the workers they employ or contract. They are also responsible to workers they influence and direct, and for other people exposed to risks that arise from their work. PCBUs must cooperate with each other to fulfil these duties.
- A PCBU cannot contract out of its duties.
- It does not mean a PCBU has to duplicate another PCBU's work.
- PCBUs must manage their overlapping duties and risks to the extent of their ability to influence and control the health and safety matter.
- PCBUs may enter into reasonable arrangements with other PCBUs about their overlapping duties to plan how to control and monitor risks, and to ensure risks are not passed on or increased due to the arrangement. This can make risk management more efficient, and improve communication between PCBUs.

PCBUs should be able to explain the steps they have taken to consult, cooperate and coordinate with other PCBUs, and their arrangements to manage risks and to test whether arrangements are working well.

PCBUs and contracting chains

A PCBU at the top of a contracting chain should be a leader in encouraging good and health and safety practices throughout the chain. They should use sound contractor management processes.

For example:

- choosing competent contractors
- exchanging information
- planning and monitoring carefully
- doing post-contract reviews.

A PCBU at the top of a contracting chain should not push risk down the chain.

Example 2

There are several ships expected into port on the same day next week. They will be berthed next to each other and there will be workers from four PCBUs loading and discharging at each ship and sharing the port workspace. Two of the PCBUs will also each have a crane driver onboard one of the ships, operating the ships' cranes.

Each PCBU needs to think about how they will share information with the other PCBUs and how they will plan and coordinate their work activities. All of them need to find out or decide:

- who is doing what
- where and when the work will be carried out (in a designated exclusion zone, for instance), and
- how they will all work together in a cooperative and coordinated way so that risks are eliminated or minimised so far as is reasonably practicable.

The week before the ships arrive, the PCBUs meet to decide and clearly define:

- what each PCBU is doing and when
- the risks to health and safety that must be eliminated or controlled so far as is reasonably practicable
- which of the PCBUs is best placed to manage each risk, and
- what control measures will be put in place for each risk.

The PCBUs also discuss what actions they will take if there is an emergency. They agree to give their workers the same information about what to do in an emergency. Giving a consistent message to all workers in the same workspace reduces the chances of workers and PCBUs becoming confused about what to do if an evacuation is required.

1.12 Provide information, training, instruction and supervision

GRWM r 9

Duty to provide information, supervision, training, and instruction

A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace either:

(a) has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person, or is adequately supervised by a person who has that knowledge and experience, and

(b) is adequately trained in the safe use of:

- all plant, objects, substances, or equipment that the worker is or may be required to use or handle, and
- all personal protective equipment that the worker is or may be required to wear or use.

The PCBU must ensure that the supervision and training provided to a worker are suitable and adequate, having regard to the:

- nature of the work carried out by the worker
- nature of the risks associated with the work at the time the supervision or training is provided
- control measures implemented in relation to the work the worker is doing.

The training must, so far as is reasonably practicable, be readily understandable by any person to whom it is provided.

In this regulation, 'training' includes the provision of information or instruction.

Providing information to workers

Information should be provided to workers in a way that is appropriate for them, taking into account such things as their language and literacy level. PCBUs should satisfy themselves that workers have clearly understood the information delivered, especially information related to health and safety and work procedures.

Information provided to workers who are loading or discharging cargo at a port or on a ship should include:

- the results of any relevant risk assessment
- relevant safe work procedures
- manufacturer's instructions on the safe use of plant and equipment where available
- emerging risks
- changes to processes, schedules and supervision arrangements
- where to find a copy of the SOPs (for future reference after being trained in them). PCBUs should explain their SOPs to workers, be available for questions and answers, and check that workers understand the SOPs. It should not be that the only way workers will learn about the SOPs is to have to read them
- how the port environment operates and how the PCBU's business (and worker's own work) fit into that context.

Procedures should be in place so all workers know what the hazards and risks are of the work they are about to carry out, including at the change of shift.

Training

Training should be provided by a competent person. The content and methods of delivering training material should be tailored to meet the specific needs of each worker or group of workers, including being delivered in a language and learning style that is suitable for them. Some suggested methods for delivering training are:

- on-the-job training
- one-off sessions or events for a specific purpose, and
- training courses.

TOOLBOX TALKS OR PRE-START MEETINGS SHOULD NOT BE USED TO TRAIN WORKERS

Toolbox talks or pre-start meetings should focus on the day's work and how risks will be managed and do not replace the need for training and supervision. They aren't the right setting for delivering training. Introducing new ideas or training on process that aren't relevant to the immediate work requirements and may be a source of distraction and act against the intent of the toolbox talk

Toolbox talks work best when workers are engaged in them rather than just standing and receiving information from management. To make toolbox talks engaging and interactive, encourage questions and use visual aids such as videos, images, infographics. Try using role-plays involving the workers themselves. Workers take notice when one of their work group is called on to demonstrate a behaviour or process.

A training session will require a longer period of dedicated, uninterrupted time than a toolbox talk or pre-start meeting. Also, training may need to be carried out in a different location, such as when learning to operate new or different plant or equipment.

There must be arrangements in place to ensure workers who have English as a second language or low literacy can understand the training. This may mean using interpreters or seeking the skills of a professional in low literacy communications to help develop the training session.

The person giving a toolbox talk may not necessarily be the same person who delivers training. It is more likely that the PCBU will need to seek the services of a professional external trainer - an expert in the subject in which workers are to be trained. This trainer should also be competent in assessing whether or not workers have understood the training and can fully apply the learning back at work.

REFRESHER TRAINING

PCBUs should provide refresher training at regular intervals to make sure workers' skills and knowledge stay up to date. It is a good idea to arrange for the trainer to come back after the initial training to assess whether workers are still using their training correctly and have retained their knowledge - in effect, that their work is up to the required standard.

TRAINING TOPICS

Training should be relevant to the work being carried out and include information or instruction about:

- the health and safety duties of everyone involved in the work
- the relevant legislation and how it is applied in the workplace
- the nature and extent of hazards and risks associated with the work
- what workers should do if there is an incident
- systems for reporting defects in plant or equipment
- arrangements for worker engagement and their participation in health and safety
- safety documents, policies, procedures and plans
- safe work procedures including instruction on:
    - specific cargo management
    - use of communication systems
    - operation of vehicles, other types of plant and associated equipment
    - emergency and first aid procedures

- when and how to use PPE including the selection, fitting, proper care and maintenance of PPE
- other control measures
- accessing health and safety information, and
- access, egress and security.

When training workers to use plant or equipment, they may require both general training and site-specific training. For example, there is general training on how to operator forklifts but site-specific training means to train workers to operate the specific forklift at their workplace.

Supervision

PCBUs must provide adequate supervision to ensure workers can carry out their work safely. Supervisors should have the information, training and authority to competently direct and control their team's work and ensure work is done safely. The level of supervision will depend on the nature of the hazards and risks, the experience and competence of workers, and the effectiveness of control measures. Workers carrying out high-risk or complex work may require greater supervision.

New starters or young workers may require more direct supervision and ongoing instruction until they can demonstrate they have the skills to perform the work safely.

LINKS TO MORE INFORMATION

MARITIME NZ

HSWA and foreign-flagged ships

WORKSAFE

Introduction to the Health and Safety at Work Act 2015 - Special Guide

Worker engagement and participation case studies

Quick Guide to Overlapping Duties

2.0
Risk management

IN THIS SECTION:

2.1 Identify the hazards

2.2 Assess the risks

2.3 Control the risks

2.4 Review control measures

2.5 Risk management - emergency planning

2.6 First aid

2.7 Right to cease or refuse to carry out unsafe work

2.8 Notifiable events

This section offers guidance for PCBUs on ways they can apply good risks management principles at work on ports and on ships.

Ongoing and effective risk management practices are essential in a port environment and must take account of the pressures of the work and schedules at the port and onboard ships, having many PCBUs conducting high-risk work activity in a confined area, the operation of heavy plant and equipment and environmental factors such as the weather and tides. A port is a dynamic work environment so PCBUs must be vigilant in being alert to emerging risks that may not have been anticipated when work was planned or commenced.

What follows below is a description of the suggested risk management process outlined in the GRWM Regulations (Regulations 5 to 8). In some circumstances, PCBUs **must** use this process to manage specific risks.

See also:

1.8 Requirements under HSWA Regulations.

2.1 Identify the hazards

The first step in managing the risks of loading and discharging cargo at a port or on a ship is to find out what could potentially cause harm to workers and other people. This may be done by:

- inspecting the work environment, plant and equipment
- talking to workers about how work is carried out
- reading product labels and manufacturer's instruction manuals
- talking to manufacturers, suppliers, industry associations, and health and safety specialists, and
- reviewing reports of incidents and near misses.

The table below lists some of the common hazards of loading and discharging cargo at a port or on a ship, examples of when they could occur, and the potential harm they can cause. HSWA and HSWA Regulations require PCBUs to consider all risks associated with their work, not only those mentioned in this ACOP.

Hazard	Examples of tasks	Risk
Electricity.	Lashing next to reefers. Jump-starting vehicles. Isolating plant and equipment.	Electric shock. Burns. Fatalities (electrocution).

Failure to follow correct procedures.	Using incorrect lifting gear. Not verifying working load limits. Not checking service history where required.	Crush injuries. Fatalities.
Falling or moving objects.	Working with suspended cargo or unsecured loads. Container being lowered onto a worker not sighted by the crane operator.	Fractures. Crush injuries. Fatalities.
Hazardous manual tasks.	Lashing and unlashing. Fitting or removing twistlocks. Lifting above shoulder height.	Strains and sprains. Cuts and abrasions.
Hazardous substances.	Loading and discharging cargo emitting hazardous gases or fume. For example, carbon monoxide, diesel particulate matter from RoRo cargo. Exposure to chemicals used to fumigate holds or cargo.	Skin conditions. Burns. Respiratory illnesses. Fatalities.
Lighting.	Working with inadequate light. For example, at night or in holds.	Slips, trips and falls. Collisions between plant/plant and plant/person.
Noise.	Using noisy plant or equipment. Ship's engine noise.	Hearing loss.

Obscured plant or equipment.	Operating plant with dirty or dusty windows/windscreens. Driver's blindspots. Obstructions blocking driver's view of workers (for example, workers in the hold obscured by cargo).	Poor visibility Crush injuries. Collisions between plant/ person and plant/plant. Fatalities.
Plant and equipment.	Working in and around mobile plant. Damaged or poorly maintained equipment. For example, ladders, electrical cables, ropes, chains, hooks.	Crush injuries. Fatalities.
Stored energy.	Pressurised liquids and gases. Tensioned cables or ropes. Lithium batteries in electric vehicles.	Serious injuries including 'snapback' from tensioned cables or ropes. Burns. Fatalities.
Ventilation.	Working in holds or on car decks without adequate ventilation. Working with dry bulk cargo.	Fatalities (for example, carbon monoxide poisoning, suffocation through engulfment).
Vibration (whole body).	Working with plant with non-existent, or poor, suspension. Poor driving posture. Driving on rough or pot-holed surfaces.	Injuries to lower back. Pain in shoulder or neck.
Working environment.	Working in extreme weather conditions or temperatures. Working near water.	Fatalities (for example, drowning, hypo- or hyperthermia).

Working at height.	Working at height without adequate harness or fall-restraint system. Slipping or tripping into an open hold. Working on top of containers. Climbing ladders.	Falls. Serious injuries. Fatalities.
Working in restricted or confined spaces.	Working in holds. Working in-between cargo.	Crush injuries. Respiratory illnesses. Suffocation through engulfment.

A number of hazards may co-exist in the workplace, for example, loading or discharging cargo near moving parts and carrying out hazardous manual tasks in an excessively noisy environment.

Hazards may also change as work is carried out. For example, depending on where cargo is placed when it is discharged, entries and exits may become blocked and be unusable in an emergency.

2.2 Assess the risks

A risk assessment involves considering what could happen if someone was exposed to a hazard – the consequences – and the likelihood of this happening. A risk assessment can help PCBUs determine:

- if they need to take further action to control the risk, and
- how urgently the action needs to be taken.

Factors to consider when assessing risks from loading or discharging cargo at a port or on a ship include:

- the type of work being performed
- how many people are exposed to a hazard?
- communication methods and effectiveness
- suitability of vehicles and equipment for the activity, for example, ropes and lifting gear
- time of day and hours of work
- training, experience and competence of workers
- work environment, and
- fatigue management.

2.3 Control the risks

In the hierarchy of controls, the ways of controlling work health and safety risks are ranked from the highest level of protection and reliability to the lowest. The highest level and most effective control is elimination where the risk is completely removed. PCBUs should always aim to eliminate a risk. If this is not reasonably practicable, PCBUs must minimise the risk by working through the other alternatives in the hierarchy.

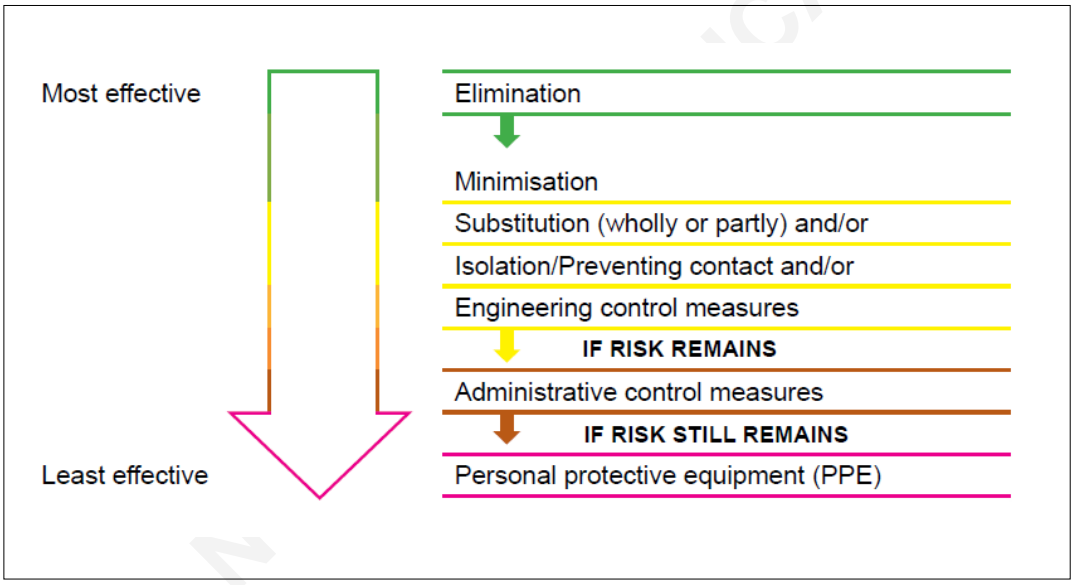


Figure 1: The hierarchy of controls.

Higher-level controls such as isolation and engineering controls give the highest level of protection and reliability. Lower-level controls such as administrative controls and PPE do not control the risk at the source. Lower levels rely on human behaviour and should only be used:

- when there are no other practical control measures available
- as an interim measure until a more effective way of controlling the risk can be used, and
- as a backup to supplement higher-level control measures.

PCBUs should have controls in place that prevent an incident occurring. PCBUs also need to put in place controls that minimise the consequences and reduce the harm **should an incident occur**. For example, a PCBU puts in place controls to minimise, so far as is reasonably practicable, the risks of vehicles colliding with each other at a port. Unfortunately, in spite of these controls and through no fault of the PCBU, later that day, two vehicles collide. What controls did the PCBU have in place to minimise the consequences and reduce the harm in the event of this situation occurring? The higher-level engineering controls often feature here, with plant or equipment having design features such as speed restrictions built into them.

When selecting and implementing a combination of control measures, it is also important to consider whether new risks might be introduced as a result. If new risks are introduced, PCBUs must also control these.

2.4 Review control measures

It is important to review control measures to ensure they remain effective or to replace them with improved control measures. This is especially important:

- after a near miss or incident has occurred
- when there is a change to schedules or timelines for discharging
- when there is a change to work processes
- if new or different plant or equipment is introduced, and
- if there are changes to the work environment or context, such as changes to the layout of the port, economic or environmental factors that may lead to additional pressures and risks.

Common ways to review control measures include:

- workplace inspections
- asking workers for their views about the effectiveness of the control measures
- getting workers' ideas for control measures that may be more effective
- asking other PCBUs that share the same duties for their views about the workability of the control measures
- checking that the controls recommended by Safety Data Sheets (SDS) have been put in place, as appropriate
- testing and analysing records and data, and
- getting an independent assessment through a portal such as WorkSafe's online health and safety improvement toolkit, SafePlus

Reviewing control measures also involves considering whether a higher-level control measure is now reasonably practicable.

PCBUs should engage with workers and their HSRs as part of the review process, and consider the following questions:

- Have all foreseeable hazards been identified?
- Are the control measures working effectively and as intended in both their design and operation?
- Have the control measures introduced new problems?

- Are there competing pressures or incentives which are inhibiting the effectiveness of the controls?
- Has instruction and training provided to workers been successful?
- Is the frequency and severity of health and safety incidents reducing over time?
- If new legislation or information has become available, does this mean the current control measures may no longer be the most effective?
- Have there been any changes affecting health and safety — for example, has new plant or equipment been introduced to the workplace? Are new control measures required?

2.5 Risk management – emergency planning

GRWM r 14

Duty to prepare, maintain and implement emergency plan

A PCBU must ensure that an emergency plan is prepared for the workplace that provides for:

- emergency procedures including:
  - an effective response to an emergency, and
  - evacuation procedures, and
  - procedures for notifying emergency services organisations at the earliest opportunity, and
  - medical treatment and assistance procedures, and
  - effective communication between the person authorised by the PCBU to coordinate the emergency response and all other persons at the workplace
- testing of the emergency procedures, including how often they should be tested, and
- information, training, and instruction to be given to relevant workers in relation to implementing the emergency procedures.

The PCBU must maintain the emergency plan for the workplace so that it remains effective.

The PCBU must have regard to all relevant matters including:

- the nature of the work being carried out at the workplace
- the nature of the hazards at the workplace
- the size and location of the workplacethe number and composition of the workforce at the workplace.

The PCBU must implement the emergency plan for the workplace in the event of an emergency.

Emergency plans should be site-specific, covered in induction training and made known to visitors.

Shore emergency plans should include:

- allocation of roles and responsibilities for specific actions in an emergency to people with appropriate skills, for example, appointment of area wardens
- access and exit for retrieval and escape including a contingency plan for alternative access and exit
- safe and timely evacuation procedures e.g. evacuation checklists and procedures for assisting injured people
- warning systems and what to do when they activate
- shutting down of equipment, for example, cranes
- planning for drills, for example, to ensure alarms are audible to everyone
- fire risks and provision of firefighting and rescue equipment at appropriate locations
- the establishment of a reliable means of communication between workers to ensure effective evacuation of danger areas including a backup communication system in case of a failure of the primary system
- a readily accessible communication system to contact necessary emergency services
- the display of evacuation procedures in appropriate locations, and
- access for emergency services like ambulances.

Regular refresher training in emergency procedures should be provided to workers and a process established and maintained to ensure there is effective communication between ship (the master) and shore (PCBU and workers carrying out the loading or discharging).

See also:

3.8 Emergency management

6.9 Crane-lifted work platforms - entering and exiting in an emergency

2.6 First aid

GRWM r 13

Duty to provide first aid

A PCBU must ensure that:

- adequate first aid equipment is provided for the workplace, and
- each worker at the workplace has access to the equipment, and
- workers have access to facilities for the administration of first aid
- an adequate number of workers are trained to administer first aid at the workplace, or workers have access to an adequate number of other person who have been trained to administer first aid.

The PCBU must have regard to all relevant matters including:

- the nature of the work being carried out at the workplace
- the nature of the hazards at the workplace
- the size and location of the workplace
- the number and composition of the workforce at the workplace.

First aid kits must be accessible at the workplace.

2.7 Right to cease or refuse to carry out unsafe work

HSWA s 83

Right of worker to cease or refuse to carry out unsafe work

(1) A worker may cease, or refuse to carry out, work if the worker believes that carrying out the work would expose the worker, or any other person, to a serious risk to the worker's or other person's health or safety arising from an immediate or imminent exposure to a hazard.

(2) A worker may continue to refuse to carry out the work if—

(a) the worker attempts to resolve the matter with the PCBU as soon as practicable after first refusing to do the work; and

(b) the matter is not resolved; and

(c) the worker believes on reasonable grounds that carrying out the work would expose the worker or any other person to a serious risk to the worker's or other person's health or safety arising from an immediate or imminent exposure to a hazard.

(3) Without limiting subsection (2)(c), reasonable grounds exist if a health and safety representative has advised the worker that carrying out the work would expose the worker or any other person to a serious risk to the worker's or other person's health or safety arising from an immediate or imminent exposure to a hazard.

(4) A worker who ceases work under subsection (1) must, as soon as practicable, notify the PCBU that the worker has ceased work.

(5) Subsection (1) does not authorise a worker to refuse to do work that, because of its nature, inherently or usually carries an understood risk to the worker's health and safety, unless that risk has materially increased beyond the understood risk.

(6) To avoid doubt, nothing in this section limits or affects an employee's right to refuse to do work under any other enactment or the general law.

Under HSWA, a worker has the right to stop work or refuse to carry out work if they believe that doing the work would expose them, or anyone else, to a serious risk to health or safety from an immediate or upcoming hazard. If a worker has stopped work, they must let the PCBU know as soon as possible.

Once the worker has tried to resolve the issue with the PCBU, the worker does not have to start work again if they still reasonably believe that they or another person would be in danger.

2.8 Notifiable events

HSWA s 56

Duty to notify notifiable event

(1) A PCBU must, as soon as possible after becoming aware that a notifiable event arising out of the conduct of the business or undertaking has occurred, ensure that the regulator is notified of the event.

(2) A notification under subsection (1)—

(a) may be given by telephone or in writing (including by email, or other electronic means); and

(b) must be given by the fastest possible means in the circumstances.

(3) For the purposes of subsection (2), a person giving notice by telephone must—

(a) give the details of the incident requested by the regulator; and

(b) if required by the regulator, give a written notice of the incident within 48 hours of being informed of the requirement.

(4) Notice given in writing under subsection (2) or (3) must be in a form, or contain the details, approved by the regulator.

(5) If the regulator receives notice by telephone and a written notice is not required, the regulator must give the PCBU—

(a) details of the information received; or

(b) an acknowledgement of having received notice.

PCBUs must notify Maritime NZ or WorkSafe New Zealand of any notifiable event that arises from their work. Notifiable events include a death, a notifiable injury or illness or a notifiable incident.

LINKS TO MORE INFORMATION

WORKSAFE

For details of what injuries, illnesses or incidents must be notified

General risk and workplace management Interpretative Guidelines parts 1 and 2

Quick guide: First aid at work

SafePlus

3.0
Pre-arrival planning

IN THIS SECTION:

3.1 Load and discharge sequences - the order of work

3.2 Lifting and rigging plans

3.3 Pre-arrival documents

3.4 Pre-work inspections

3.5 Vessel type, cargo type

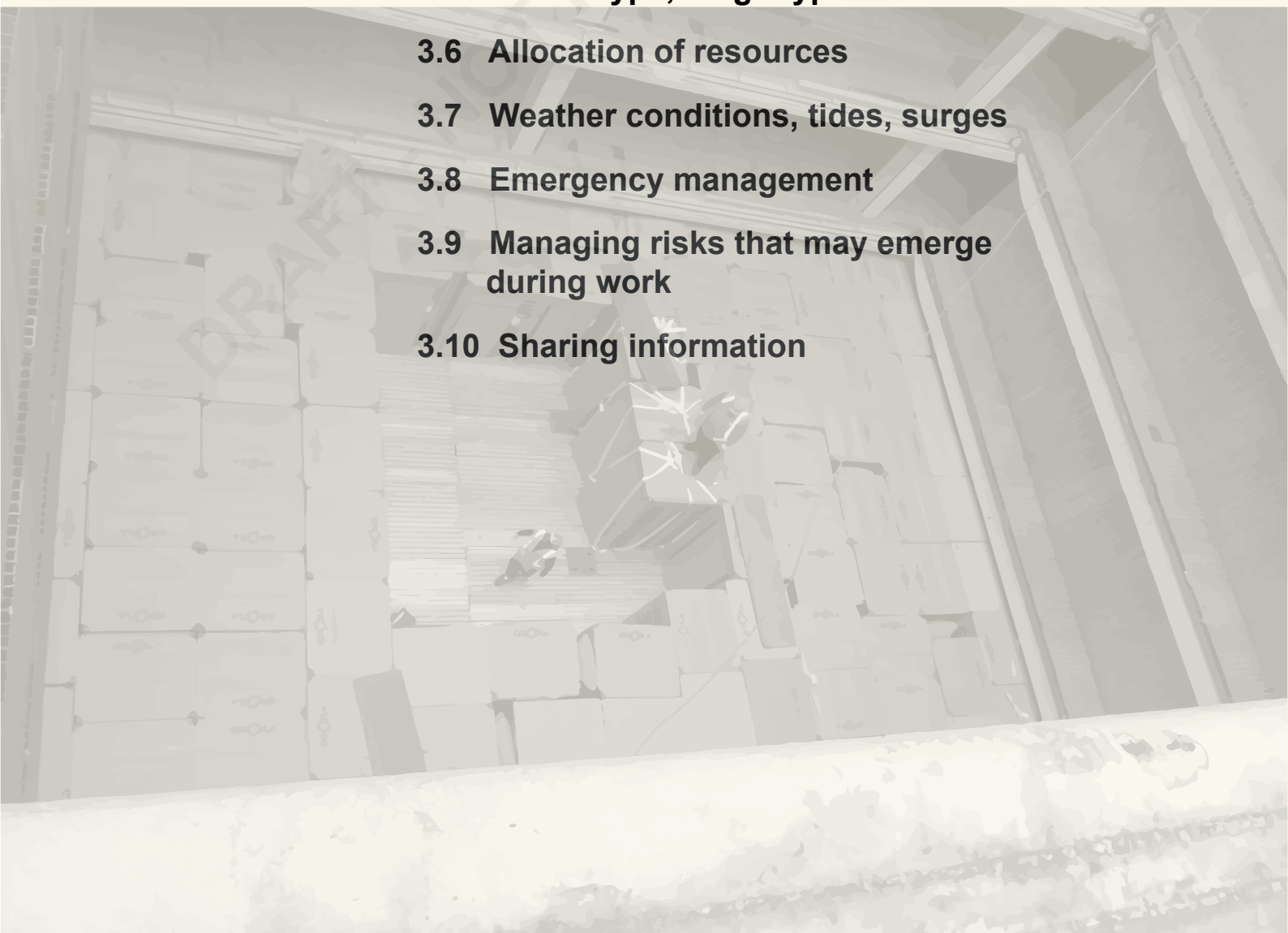
3.6 Allocation of resources

3.7 Weather conditions, tides, surges

3.8 Emergency management

3.9 Managing risks that may emerge during work

3.10 Sharing information



This section offers guidance for PCBUs on pre-planning for the safe loading and discharge of cargo.

Cargo operations should be planned before the cargo arrives to identify potential hazards, assess risks and determine appropriate control measures in consultation with relevant parties. This may include the port authority, shipping agents or companies, transport companies and other duty holders in the supply chain.

In the planning stage, PCBUs should consider:

1. Load and discharge sequences - the order of work.
2. Pre-work inspections.
3. Vessel type, cargo type. For example, heavy lifts and presentation.
4. Allocation of resources. For example, people, plant and skills.
5. Weather conditions, time of day, tide levels and surge impact.

3.1 Load and discharge sequences – the order of work

These items should be considered in advance of the ship's arrival:

- Cargo manifest (for details such as the type of cargo, weight, number of items, any special conditions of the cargo).
- Stowage plans.
- Proposed load/discharge plans.
- Lifting and rigging plans.
- Location and condition of any hazardous substances or dangerous goods, including SDSs.
- Treatment or gas-free certificates for cargo which may have been fumigate on the way to New Zealand.
- Simultaneous operations planned nearby. For example, other PCBUs that may be planning to conduct cargo operations on the same ship or on an adjacent berth, or to perform operations which may increase the risk of the operation (such as hot works).

See also:

1.11 Consulting, cooperating, and coordinating with other PCBUs with the same health and safety duty.

3.2 Lifting and rigging plans

Lift plans

Lift plans provide a systematic approach to preparing for a lift. A good lift plan is an appropriate resource that will help determine the complexity of the lift and in turn will help to ensure the lift is managed well, with all workers clear on their roles and responsibilities.

Lift plans may range from SOPs for lifts that are performed frequently, to a custom plan that is developed to account for factors that make the lift complex.

PCBUs should ensure that lift plans supplied:

- by the ship's owner or master are verified by a competent person from the PCBU as being fit for purpose
- by the PCBU are developed by a competent person, or similarly competent people, on the day.

Ideally, lift plans should be developed by the PCBU's foreman, crane driver and ship's chief officer. Simpler plans may be developed by the PCBU and verified by the ship's chief officer.

PCBUs should ensure lift plans:

- are discussed with and understood by all workers who will be involved with the lift, before work starts. This information could be shared with them at a pre-work meeting or toolbox talk, for example
- include details of the control measures to be used
- be adjusted where necessary to manage new or emerging risks
- include a rigging plan for complex or irregular lifts
- be kept on-hand during the lift, and
- be kept as a record of the left.

RIGGING PLANS

A rigging plan is developed every time a heavy load is being lifted. Rigging plans provide detail on:

- how the rigging of a load will work
- calculations, and
- checks taken for the rigging of a load.

PCBUs should ensure rigging plans supplied:

- by the ship's owner or master for use with ship-based cranes and equipment are sufficiently detailed and include relevant information necessary to permit the safe rigging of the crane and associated gear
- by the PCBU for use with shore-based cranes and equipment are developed on the day by a competent person, or similarly competent people, such as the hatchman, dogman or rigger.

PCBUs responsible for loading and discharging cargo may choose to use their own equipment instead of the ship's equipment.

Regardless of who develops the rigging plan, PCBUs should ensure rigging plans:

- are discussed with and signed off as part of the lift plan by all members of the team
- specify the lifting or slinging methods to be used to manage the risk of a load slipping - for example, double-wrap or single-choke with sliding ring - and take into account the condition of plant and equipment, including age and wear
- where relevant, include a rigging chart to ensure lifting techniques are appropriate. For example, the safest lift angles are used
- indicate the use of taglines where taglines are required.

It is helpful if PCBUs have plans that can be used repeatedly with little or no modification, and plans that need to be tailored for a specific complex lift. For example, a simpler plan or set of SOPs may be suitable where:

- a crane will be operating below or around 75% of its rated capacity
- the lifts are repetitive or of a similar nature, and
- the crane is in the same position.

PCBUs should be alert to factors that may make the lift more complex, and adjust the plan accordingly.

NON-ROUTINE OR COMPLEX LIFTS

When planning a lift, PCBUs should consider factors of the lift that may put the health and safety of workers and other people at risk.

Some examples include:

- the load weight is 75% or more of the crane's rated capacity
- the load's dimensions are oversized (for example, special project cargo, wind turbines, railcars)

- the load is unbalanced. That is, it has an unusual weight distribution (centre of gravity)
- the lift requires the transfer of ballast
- the leg spacing of slings is unequal
- more than one crane is to be used to lift a load (union-purchase or married falls)
- a work platform is to be used, in which case the crane should not operate at more than 75% of its rated capacity
- the load cannot be seen by the crane operator at any time during the lift (blind lift)
- hazardous materials are involved
- the centre of gravity can change
- rigging arrangements are likely to be technically difficult
- a pre-engineered lifting configuration is required
- the lift gear to be used is unfamiliar, specialised or not ordinary, or
- the crane operator considers the lift to be complex.

A complex lift may require planning by an engineer or similarly competent person.

3.3 Pre-arrival documents

Some of the documents related to the examination and testing of lifting appliances can be requested before the ship arrives. These documents are not a replacement for thorough visual inspection once the ship is alongside. However, they will give PCBUs advance notice if any examinations by a competent person are required before using the appliance.

These documents include:

- excerpts from the Ship's Register of Lifting Appliances:
    - Part 1 – Dates of last annual examination and 5-yearly testing by a competent person (in this instance, 'competent person' is as defined in Maritime Rule Part 49)
    - Part 2 – Dates of last visual inspection prior to use by a responsible person (typically the chief mate). 'Responsible person' is as defined in Maritime Rule Part 49
- certificate of test and thorough examination of lifting appliances
- certificate of test and thorough examination of loose gear
- certificate of test and thorough examination of wire rope
- dates that the wire rope was put into service on each crane
- records of any cargo inspections from previous ports.

3.4 Pre-work inspections

PCBUs have a responsibility to ensure, so far as is reasonably practicable, the health and safety of workers while at work. Before work begins, PCBUs should arrange for a visual safety inspection to be carried out on the ship, its lifting appliances and loose cargo gear to make sure they are safe to use. Suitably qualified people should complete these inspections before any cargo operations begin. Ideally this person would be an independent marine surveyor at first port of call. When this is not possible, a worker delegated by the PCBU may conduct pre-work inspections, provided they have been adequately trained and have the skills and experience to carry out a conscientious safety inspection of a ship.

At a minimum, the following areas should be inspected before work commences:

SAFE ACCESS

- Means of access to the ship are placed to ensure no loads pass overhead. If this is not practicable, the access should be supervised all times during cargo operations, and be clearly marked.
- Gangways or accommodation ladders should be properly fitted with a safety net which is usable during all states of tide and freeboard encountered.
- On Ro-Ro ships, safe pedestrian access, separate from vehicle access ramps, should be provided. If this is not practicable, the ramp should be controlled at all times to prevent pedestrians from using the ramp while vehicles are doing so.
- Hatchway ladders/stairs and their handrails are safe and in serviceable condition.
- All walkways are safe, accessible, and in serviceable condition.
- Safe access to cargo is provided as required. For example, on-deck logs, breakbulk in holds.

DECKS AND HOLDS

- There should be proper guarding/marking of danger areas. For example, handrails near edges, around deck openings, and portable fencing around tween-deck openings and under loads.
- Decks are clear of obstructions.
- Decks are in reasonably good condition. For example, non-skid coatings are adequate, there are no holes or excessive rust present, and walkways are clearly marked.
- There is adequate lighting and ventilation on deck and in holds.

- Hatch-cover locking devices should be in serviceable condition and engaged when holds are in the open position.

LIFTING APPLIANCES

HSWA does not apply to foreign ships However, under various IMO Conventions and Maritime Rules, the ship's master must make sure the ship is safe to work on and its plant and equipment are safe to use. It may be useful for PCBUs to keep in mind the following requirements that all ships' masters and owners have under Maritime Rule Part 49: Ships Lifting Appliances:

Ship's responsibilities under Maritime Rule Part 49: Ships' Lifting Appliances

- The owner and master of a ship must ensure that a certificate of test is obtained for every lifting appliance and every item of loose gear carried on the ship and that the validity of the certificate of test is maintained.
- The owner and the master of a ship must ensure that every lifting appliance and every item of loose cargo gear carried on the ship is maintained in good repair and working order.
- Each item of loose cargo gear must have been proof load tested by a competent person before being brought into use, and in response to any repairs to an item of loose cargo gear.
- Under this Rule, the results of tests, examinations, and certificates of tests on the ship's lifting appliances and loose cargo gear must be recorded in the ship's Register of Equipment. The tests, examinations, and certificates of tests must be carried out at the following times:
  - at least once in every five-year period, every lifting appliance on the ship is retested by a competent person (in this instance, a class surveyor)
  - at least once in every 12 months, the owner or master of a ship must ensure that every lifting appliance on the ship and every item of loose cargo gear carried by the ship is thoroughly examined by a competent person (in this instance, a class surveyor).
- Before it is used, the master of a ship must ensure that every item of loose cargo gear is inspected by a responsible person
- The control guards, locks, gates, limit switches and other safeguards have been tested and can be used according to the manufacturer's instructions.

See also:

1.3 A note about managing risks onboard foreign ships

6.2 Pre-work inspections

CARGO

- Slings around pre-slung cargo are certified and are safe to discharge cargo.
- Lashing gear is suitable, in a safe condition and compatible with the cargo to be lashed.
- Ships may encounter rough weather at sea, causing cargo to move. Cargo areas to be worked should be inspected to ensure the cargo has not shifted during the voyage and that all adjacent cargo remains adequately secured.
- Where changes in the condition are cargo are identified, such as damaged or unsecured cargo, these should be notified to the ship and suitably rectified whenever possible. When correcting unsecured or damaged cargo is not practicable, these conditions should be communicated to the relevant people in subsequent ports.

3.5 Vessel type, cargo type (example: heavy lifts & presentation)

Specific considerations for the loading and discharge of various cargo types are detailed in Chapter 5. However, adequate pre-planning also requires due consideration for the specific ship and cargo type.

For example:

- Cargo holds on a bulk carrier may be considered a confined space.
- Additional PPE requirements for dusty cargoes, such as grains or palm-kernel oil (PKE).
- How certain cargoes may affect worker safety – for example, if a previous cargo was fumigated or if cargo in an adjacent hold can create a hazardous atmosphere.
- Heavy-lift cargoes may require special consideration for maintaining ship stability.
- Cargoes requiring specialty lifting equipment, such as custom spreaders, or use of a union-purchase derrick.

3.6 Allocation of resources (example: people, skills and plant)

- Number of workers required and for how many hours or shifts.
- Will work be carried out during day, night, or both?
- Work start and finish times.
- Skills or experience workers need for specific jobs.
- Instructions and job-specific training to be provided.
- Supervision (such as who will supervise? What skills or experience will they need to make sure work is carried out safely?)

- Inductions (such as who will carry out inductions? how will inductions be delivered? what content will inductions cover? For example, the health and safety risks of the work and the control measures in place to minimise these, emergency plans, worker facilities such as toilets and drinking water supplies, what a worker should do if they reasonably believe the work is unsafe).

3.7 Weather conditions, time of day, tide levels and surge impact

Environmental factors which may affect cargo operations include weather, tides, time of day, and sea state. Operating instructions should include the actions to be taken by specified persons in the event of adverse weather or other environmental conditions.

Cargo operations should only be carried out in conditions that are suitable for the type of cargo and within the operating limits of the equipment. Adverse weather conditions such as high winds, lightning, impaired visibility due to, for example, rain, snow, fog; adverse sea states or significant ship movement may affect certain cargo operations, including the use of lifting appliances.

Some factors to be considered include:

- Warning of adverse weather should not rely solely on anemometers on cranes - weather forecasts should be monitored regularly so that appropriate steps can be taken well in advance.
- Tidal conditions, including times of high and low tides and any unusual tidal conditions, such as king tides, should be reviewed in advance.
- Seasonal impacts on daylight should be considered and arrangements for supplementary lighting made as needed.

3.8 Emergency management

Ship emergency plans affecting cargo operations should be checked during the ship inspection and followed in an emergency. Assembly points where people can safely go in an emergency should be identified during the inspection.

3.9 Managing risks that may emerge during work

Risks that arise from work, including those identified through a pre-work inspection, must be effectively managed. PCBUs should advise workers of what to do if risks emerge while they are carrying out their work and they reasonably believe conditions are unsafe.

For example, if:

- ship’s crew carrying out work may infringe on the loading/discharging work area
- there is an incident or near miss

- there is an emergency
- plant or equipment breaks down or malfunctions
- a hazardous atmosphere occurs in the hold or on deck.

Information about what to do in these instances should form part of the content of a pre-work toolbox talk or site induction.

3.10 Sharing information

PCBUs should keep a written record for each ship visit including:

- the results of safety inspections of the ship, its plant and equipment
- the ship's stowage plan
- shoreside stowage arrangements for the ship's cargo. These may be relevant to the condition of the cargo. For example, organic cargos such as coal or grain can develop toxic gases or self-ignite if they are loaded with excessive moisture.
- plant and equipment required to load or discharge the cargo (including shore-based equipment)
- any specific traffic management routes required, for example, exclusion zones required to be put in place
- any hazards or risks presented by working onboard the ship.

These are suggestions of some of the things that should be considered, not an exhaustive list.

This information should be shared with the supervisor/foreperson who should then pass it on to other managers and workers involved in loading/discharge of the cargo, including other New Zealand ports that the ship is due to call at.

Over time, these records will help to show any patterns of particular ships arriving in New Zealand that continually present with the same hazards or risks which have not been attended to. PCBUs may in turn choose to forward these records to Maritime NZ for follow-up action.

LINKS TO MORE INFORMATION

What to inspect on a ship, see chapters 4 and 7 of the
International Labour Organization (ILO) Code of Practice: Safety and Health in Ports

4.0
Work environment

IN THIS SECTION:

4.1 Safe access and egress

4.2 Working with ladders

4.3 Housekeeping

4.4 Lighting

4.5 Air quality

4.6 Weather

4.7 Traffic management

4.8 Rail operations

4.9 Working at height

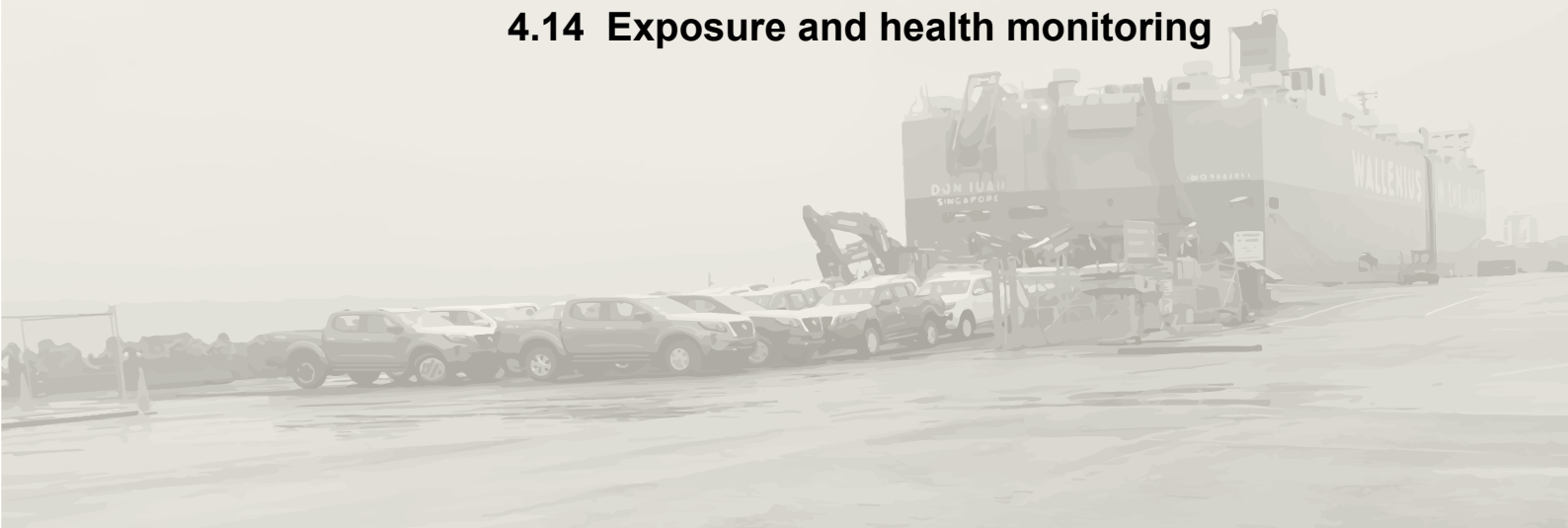
4.10 Falling objects

4.11 Noise

4.12 Vibration (whole body)

4.13 Fatigue

4.14 Exposure and health monitoring



This section offers guidance for PCBUs on how to manage many common health and safety hazards in a port or ship environment.

GRWM **r 10**

Duty in relation to general workplace facilities

A PCBU must ensure, so far as is reasonably practicable, that:

- the layout of the workplace allows, and is maintained to allow, persons to enter and exit the workplace and move within it safely, both under normal working conditions and in an emergency
- work areas have sufficient space for work to be carried out safely
- floors and other surfaces are designed, installed, and maintained to allow work to be carried out safely
- lighting enables workers to carry out work safely, persons to move around safely, and safe evacuation in an emergency
- ventilation enables workers to carry out work safely, and
- workers exposed to extremes of heat or cold are able to carry out work safely.

GRWM **r 11**

Duty to provide certain workplace facilities

A PCBU must ensure, so far as is reasonably practicable, that adequate facilities are provided for workers at a workplace, including:

- toilets
- drinking water
- handwashing facilities
- facilities where workers can eat and take breaks
- if it is not reasonable for workers to leave the workplace if they become unwell, facilities where workers can rest.

In addition, a PCBU must ensure that the following facilities are provided for workers at a workplace if the work is of such a nature that the facilities are reasonably likely to be required:

- facilities for washing the body
- a place in which to change clothes that become contaminated or wet
- facilities for keeping clothes that will not be used at work clean and dry
- if it is reasonable for workers to perform work while seated, facilities for sitting
- if it is not reasonable for workers to perform work while seated, facilities for sitting that enable workers to take any reasonable opportunity for rest that may occur in the course of the work
- facilities that prevent workers from becoming wet from a wet floor, whether by way of drainage of the floor or otherwise
- facilities that enable any airborne contaminants to be controlled as closely as possible to their source and to be treated or carried off.

4.1 Safe access and egress

GANGWAYS, WALKWAYS AND SAFETY NETS

The means of access from the wharf to the deck of a ship may be provided by the ship or the port. Before work begins, PCBUs should check that all means of access that workers will use are correctly positioned and in good working order. As well as access to and from the ship, this includes access to and from the ship's hold and onto deck cargo.

Gangways and walkways between shore and ship should have safety nets, strung from ship to shore and, where practicable, fastened from top rail to top rail.

Safety nets should be placed:

- so no loads pass over them
- where access to them will not be obstructed, and
- where they cannot be struck by moving traffic on a crane track, rail track, or other route.

If it is not practicable to have safety nets strung while cargo is loaded or discharged, the means of access should be supervised while workers are using it.

Gangways, walkways and hand rails should be in good condition and free from obstructions and build-up of residue. They should remain rigged while cargo is loaded or discharged.

See also:
4.9 Working at height - safety nets

GETTING IN AND OUT OF SHIPS' HOLDS

There must be safe access and egress for workers to get in and out of the hold. Entry and exit points should be kept clear of cargo or other obstructions. When cargo is being loaded or discharged to/from the hold, the entry and exit to the hold should be monitored (by, for example, the hatchperson) to ensure they remain clear throughout the operation.

If a crane-lifted work platform is used to place workers in the hold, PCBUs should check the platform is of suitable design, well maintained and inspected before use. The platform should remain attached to the lifting appliance as a means of escape or until an alternative means of escape/egress can be arranged.

PCBUs should check hatches and openings to holds to ensure:

- they are protected by coamings
- there is adequate clear space around the coamings to allow easy access

- hinged and pontoon hatch covers are secured, or removed if not adequately secured, to prevent them from accidentally closing while being accessed
- approaches to holds and access hatches are kept clear of obstructions to reduce the risk of falls and to enable holds to be evacuated quickly in an emergency
- hatch covers are closed when the hatch is not in use.

See also:

6.9 Crane-lifted work platforms - entering and exiting in an emergency

ACCESS IN AN EMERGENCY

In an emergency, workers must be able to get out of the hold safely or alert other workers that they need help. If a worker is unable to get out by themselves (due to being injured, for example), other workers or other people (such as emergency services) must be able to safely access the worker.

4.2 Working with ladders

Workers using a ladder should:

- have both hands free for climbing up and down
- ensure any bulk cargo is cleared away so the ladder rungs are exposed
- face the ladder when climbing up and down
- wear suitable non-slip footwear, and
- use a belt or other suitable means to carry any necessary items.

SHIPS' LADDERS

Where the primary means of access to a ship is the ship's ladder, PCBUs should ensure it is inspected before use for defects (for example, brittle or rusty welds) and that it is adequately secured. If the ladder is defective or is not properly secured, PCBUs should report this to the ship's master or the chief mate who should then arrange for the defect to be repaired or provide safe, alternative access for workers.

SHORE-BASED LADDERS

Shore-based industrial-use ladders should be compliant with AS/NZS Standard 1892.

PORTABLE LADDERS

Where a portable ladder is used in a hatchway, cargo should not be loaded or discharged through that hatchway.

When used in holds, portable ladders should be:

- not more than six metres long
- in good condition
- placed on a firm and secure surface at an angle of between 70 and 80 degrees to the horizontal, and
- secured at their upper resting position, which must be at least one metre below the top of the ladder.

4.3 Housekeeping

Good housekeeping practices should be put in place to control the risks of trips, slips and falls on shore and on ships. Designated storage areas should be provided for loose items, for example, twistlock bins, to ensure these are correctly stored. Goods and materials not in containers or vehicles should be kept in stable and orderly stacks or piles on firm and level surfaces.

4.4 Lighting

Lighting may include external lighting towers, portable lights and crane lights. Adequate lighting must be provided and maintained to ensure cargo loading and discharging can be carried out without risks to health and safety.

There should be suitable deck and under-deck lighting on ships, particularly for:

- access routes, including access to lifting equipment
- ladders providing access to the ship, and
- working areas onboard and adjacent to the ship.

Lighting should be sufficient for work carried out at night as well as enabling good visibility in ships' holds, taking into account glare, reflections or shadows. If portable lighting is used on ships, electrical cables should be protected from accidental damage and positioned to prevent trip hazards.

4.5 Air quality

HOLDS, STAIRWELLS AND ACCESSWAYS

The ship's master is responsible for ensuring that all accessways and ship's working spaces are safe to enter. However, it is good practice for a PCBU to conduct their own checks before letting their workers on board the ship, and to ensure any defects have been repaired before work begins in that area.

The atmosphere within ship's holds, stairwells and accessways can become hazardous in several ways including having:

- dangerously low levels of oxygen
- a build-up of flammable and/or explosive atmospheres, or
- a build-up of toxic or corrosive gases and/or substances.

As such, they should be treated as confined spaces. Before work begins, PCBUs should arrange for the atmosphere to be tested by a competent person to make sure it is safe for work to be carried out in that space.

Control measures for working in holds include but are not limited to:

- providing natural or mechanical ventilation to prevent the accumulation of harmful concentrations of gases, fume, vapours and fumigants
- eliminating the use of combustion-powered plant or equipment in poorly ventilated spaces. For example, using electric forklifts instead of forklifts powered by fossil fuels
- switching off engines when the plant is not in use
- limiting the amount of plant operating at the same time
- providing appropriate PPE such as respiratory protective equipment (RPE), ensuring it has been fit-tested to individual workers, and ensuring workers know how to wear or use it correctly.

Workers should be trained in how to respond to emergencies involving hazardous atmospheres.

Ventilating the space

Ventilating a hold, accessway or stairwell may be as simple as opening a hatch or a door and allowing time for the atmosphere within the space to return to normal.

During the period of ventilation, no person should enter the space. If this is not practicable, the space should at least have access to it restricted. Work should not be carried out within the space until the atmosphere has been tested to ensure it is safe.

PCBUs should set a chain with appropriate signage or a flashing light across the entrance of the space and ensure workers know the space is off limits until the atmosphere within it has been confirmed to be safe.

Ventilating a space does not replace the need to test and monitor the atmosphere.

Testing the atmosphere

Emissions from plant and substances in ships' holds and storage areas may create hazardous atmospheres. Where there is a likelihood of reduced air quality that may affect health and safety, for example contaminated, oxygen-deficient or explosive atmospheres, a risk assessment should be carried out and relevant control measures implemented.

Control measures may include:

- providing measures for detecting hazardous atmospheres
- providing natural or mechanical ventilation to prevent accumulation of harmful concentrations of gases, fumes, vapours and fumigants
- eliminating use of combustion-powered plant or equipment in poorly ventilated spaces, for example, by using electric forklift trucks
- managing the length of time plant is used, for example, switching off engines when not in use or limiting the number of vehicles allowed to run at one time
- providing access to SDSs for hazardous chemicals
- training workers in emergency response related to hazardous atmospheres, and
- providing appropriate PPE such as respiratory protective equipment and ensuring this is properly fitted, worn and maintained.

Where fumigation has been carried out, control measures include checking workers do not enter fumigated areas until these areas have been ventilated and are assessed as safe to enter.

Carcinogens and airborne substances hazardous to health

PCBUs have a duty to manage work-related health risks and to monitor the health of workers and workplace conditions to ensure workers are not injured or made ill by their work, so far as is reasonably practicable.

Workers exposed to carcinogens and airborne substances hazardous to health may develop cancer, respiratory diseases and other illnesses.

Common carcinogens at ports and on ships include: asbestos and fume from vehicle engines, ships'

exhaust, paint and welding. Workers may also be exposed to carcinogens from damaged cargo.

Airborne substances that are hazardous to health include: dust, mists, vapours, gases and fume. These may or may not be able to be seen in the air.

FUME, VAPOURS, LIQUIDS AND SOLID PARTICLES

Exhaust fume can contain vapours such as carbon monoxide, carbon dioxide, polycyclic aromatic hydrocarbons (PAH), oxides of nitrogen, sulphur oxides, aldehydes, and solid particulate matters, for example, diesel particulate matter (DPM). Paint fume can contain acetone, styrene, ethanol, and benzene. Welding fume contains a complex mixture of metallic oxides, silicates and fluorides.

Control measures for managing carcinogens and airborne substances hazardous to health include but are not limited to:

- ensuring plant cabs are adequately sealed and replacing damaged or ineffective seals
- regularly cleaning plant and equipment
- ensuring any requirements of the SDS (if applicable) have been put in place
- providing workers with appropriate RPE for the task (for example, PAPR — powered air-purifying respirators — when loading or discharging palm kernel extract (PKE), making sure the RPE is fit-tested and workers know how to correctly use and maintain it.

DUST

Workers loading or discharging cargo may be exposed to many sources of dust including but not limited to:

- dust from the rubber tyres on forklifts
- dust from logs and PKE
- coal dust
- cement dust
- flour dust
- wheat dust
- fertiliser dust, and
- dust released through air vents inside RoRo cargo (such as vehicles) when air-conditioning is turned on.

Control measures specifically for dust include but are not limited to:

- using an industrial vacuum cleaner to vacuum up dust once it has settled, to prevent dust build-up
- using power tools connected to a portable dust extractor or to a fixed local exhaust ventilation (LEV) system. This is an effective way to capture and remove dust from the point of generation as it is generated
- regularly changing the filters in cabs of plant
- spraying or misting water over the cargo where safe and appropriate. This should be done well in advance so there is enough time for cargo to dry before being loaded or discharged
- designing tasks to reduce the amount of dust generated
- restricting workers' entry to dusty areas
- **never** sweeping or using compressed air to remove dust. These methods cause dust to become airborne and spread.

4.6 Weather

When carrying out a risk assessment, PCBUs should consider how changes in weather may affect safe working practices. The following factors are some that may cause PCBUs to consider stopping work until conditions improve.

For example:

- operating near refrigerated containers (reefers) in wet conditions
- if there is lightning operating cranes in high winds
- vessel movements due to storms or unusual wave motions
- poor visibility, for example, in fog or heavy rain
- in periods of extreme low or high temperatures, and during periods of high solar UV radiation.

Control measures include but are not limited to:

- checking the weather forecast when planning work
- moving vessels to another berth if high seas and swells are forecast
- fitting equipment and infrastructure with devices to manage the risk of lightning strikes
- measuring wind speed (for example, anemometers on plant such as cranes) and stopping work when safe levels are exceeded
- ensuring containers are stacked so they are stable

- providing drinking water, appropriate breaks and shelter in extreme heat, and suitable PPE such as wet weather gear and sun protection such as wide-brimmed hats, long-sleeved shirts, long pants, sunglasses and sunscreen.

See also:

6.7 Managing unplanned events - lightning and high winds

4.7 Traffic management

There is a risk of death or serious injury in workplaces where vehicles, trains, mobile plant and people share the same work areas. Where reasonably practicable, the work environment should be designed so that the types of transport used at the port are separated from pedestrians.

When managing traffic risks, PCBUs should consider:

- the types of transport and pedestrian movements:
    - on the wharf
    - on and off ships
    - on decks and in cargo storage, receival and delivery areas at the port
- when trucks are arriving and departing, being loaded and discharged, reversing, queuing and parking
- when trains are arriving and departing, being loaded and discharged, and shunting
- work being carried out, or planned to be carried out, nearby by other PCBUs
- controlling contractor and visitor movements onsite, and
- the condition of road and wharf surfaces and rail tracks.

See also:

1.11 Consulting, cooperating, and coordinating with other PCBUs with the same health and safety duty

Traffic management plans

A traffic management plan (TMP) can assist with managing the risks of a busy port environment and communicating how these risks will be managed. PCBUs should engage with workers when developing a TMP. Inductions should provide workers with information, instruction and training on how to apply the TMP when they are working.

A TMP should provide details about:

- the desired flow of types of transport and pedestrian movements including give way rules
- how often and when types of transport and pedestrians are expected to interact
- traffic controls for each expected interaction including:
    - illustrations of the layout of barriers, walkways, signs, and
    - general arrangements to warn and guide traffic around, past, or through a worksite or temporary hazard
- exclusion zones
- safe zones for drivers of vehicles to stand while waiting for a load
- whether there are any shared roadways, main haul roads and potential high-risk areas where congestion may be more likely
- roles and responsibilities of workers managing traffic
- instructions or procedures to control traffic, including in an emergency.

When there are changes in traffic movements, TMPs should be updated and the changes communicated to workers.

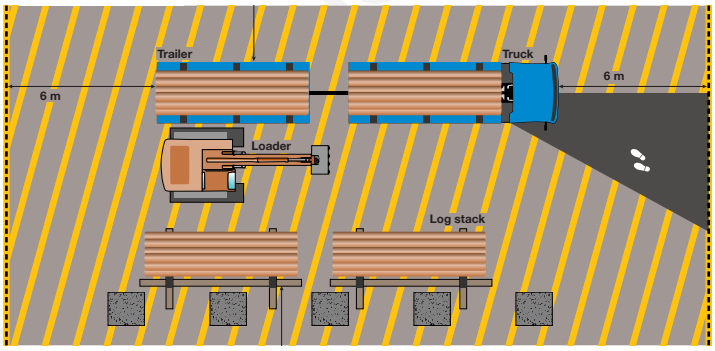


Figure 2: Example of an exclusion zone for discharging logs.

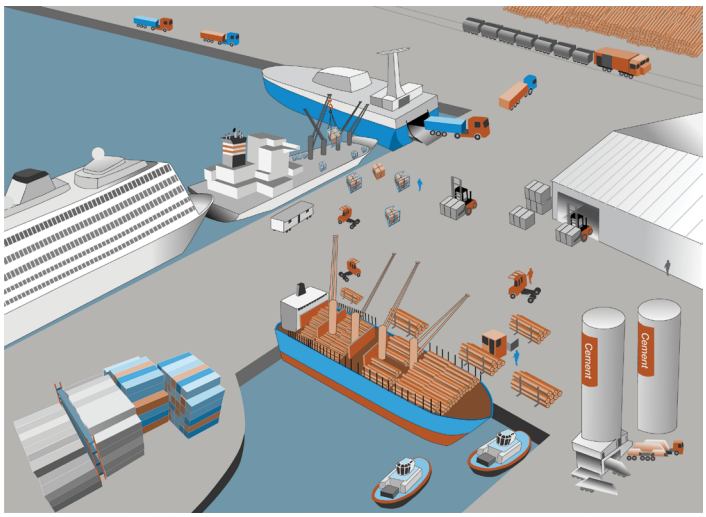


Figure 3: A traffic management plan can assist with managing the risks of a busy port environment.

See also:

4.7 Traffic management - safe areas: vehicle drivers

Common-user facilities

The common-user operator (in this case, the port operator) should develop a TMP in consultation with the relevant PCBUs working onsite.

PCBUs that load or discharge cargo should develop their own TMP that is specific for their work and traffic movements (rather than relying only on one TMP produced for the entire port).

See also:

1.11 Consulting, cooperating, and coordinating with other PCBUs with the same health and safety duty

Truck movements at a port

Truck routes and loading and discharging points should be marked out or otherwise indicated using physical barriers and signs.

Loading and discharging areas should be kept clear of all other traffic (vehicles, trains, mobile plant, pedestrians) not involved in the activity.

Trucks should not be loaded or discharged in any other position without the permission of the supervisor or foreperson.

Vehicle twistlocks should be released after entry and locked before exit from the site.

Truck drivers should follow site safety rules and TMPs, including being aware of exclusion or no-go zones when loading or discharging.

There should be safe zones for drivers exiting the cab to allow for the release of twistlocks.

If there are no site rules, PCBUs should carry out a risk assessment to determine the safest location for the driver and other workers.

Reversing vehicles

Where practicable, design the flow of traffic to minimise reversing. Where it is necessary to reverse vehicles, control measures include but are not limited to:

- helping drivers detect movement around the vehicle through mirrors, reversing cameras, sensors and alarms
- using visual warning devices such as flashing lights
- having high-visibility markings for powered mobile plant, and
- providing an effective communication system. For example, between signallers and drivers, and between plant operators including straddle carriers and truck drivers.

Landside – straddle carriers

Straddle carriers often operate in proximity to other vehicles, mobile plant and pedestrians. PCBUs should ensure:

- workers have adequate knowledge and experience to ensure they can safely operate the straddle carrier, or that they are supervised by a person who has that knowledge and experience
- the straddle carrier is certified and regularly maintained
- a straddle carrier grid is maintained for the safe movement of vehicles and loading and discharging operations, and
- safe areas are designated within the grid to allow safe manoeuvring of straddle carriers, other vehicles, mobile plant and pedestrians.

GRIDS

Loading and discharging containers from road vehicles should be carried out on identified straddle carrier exchange grids. Grids provided for straddle carriers to load or discharge containers from road vehicles should be clearly marked and not used as general waiting areas for road vehicles.

Where possible, a straddle carrier should:

- approach a road vehicle from the rear during loading or discharging and then leave the vehicle by moving away from the vehicle's rear, and
- approach a grid slot in the opposite direction to road vehicles.

Ample space should be provided for road vehicles to reverse into a slot on a grid safely if this manoeuvre is necessary. Any oversized container or problem container that cannot be handled safely at the grid should be moved to a suitable designated area where it can then be handled.

Safe areas – vehicle drivers

A designated safe area where drivers of road vehicles can stand while containers are being lifted onto or off the vehicles should be provided and clearly marked. The safe area should be located so people in it are clearly visible to drivers of straddle carriers as they approach.

If the area is located between slots, the size of the area should be determined for the grid layout, the width of the straddle carriers and other relevant operational factors.

When loading or discharging a road vehicle, the driver should leave the cab of the vehicle and stand in a clearly marked area before the approach of a straddle carrier. This area should be forward of the cab of the vehicle, a safe distance from the vehicle, and visible to the straddle carrier operator.

The driver should remain in the marked area throughout the loading or discharging operation and not return to the cab until the straddle carrier has left the grid. The straddle carrier operator should not approach the grid if they cannot see the driver of the truck.

4.8 Rail operations

Loading and discharging rail wagons at ports

Workers loading or discharging cargo to/from rail wagons should know which hand signal to use, or radio signal to give (if applicable), to stop the train in an emergency.

All workers working on or near rail lines should wear high-visibility clothing.

Locomotives passing through a port area where people are working should move at dead slow.

When wagons are pushed through such areas, the front wagon should be accompanied or preceded by a person on foot who is clearly visible to the locomotive driver at all times.

No goods or other obstruction should be placed within two metres of the nearest rail of a track.

Wagons and other vehicles should not be parked close to road or pedestrian crossings or other places where they may cause an obstruction or obscure the view of road or locomotive drivers.
No person should pass under, over, through or between rail vehicles, unless required as part of a controlled operation.

When opening wagon doors, workers should check the door fastenings are in good order and stay clear of the door and any cargo that may fall as the door is opened.

Workers should not be inside open wagons (gondola cars) when bulk material is handled by grabs or magnetic lifting devices.

Danger signs should be placed at either end of sections of passageways or walkways near which open wagons with swinging side doors are being emptied.

Control measures to prevent workers' fingers from being crushed should be in place when drop doors on hopper wagons or open wagons with hopper bottoms are opened.

Before wagons are moved, all hinged doors should be properly fastened, and insecure and overhanging stanchions or metal straps should be removed and placed at least two metres clear of the rails.

Suitable tools should be provided and used for unfastening metal straps.

Lift trucks should not be used inside rail wagons unless the floors of the wagons are in a safe condition and the lift truck is designed to take the load imposed on it.

Double-deck wagons to be loaded or discharged should have handrails at the sides of the top deck.

Walkways adjacent to the handrails should have a non-slip surface.

Adequate clear space should be allowed between rail tracks and structures, piles of cargo or material traffic routes and walkways. This should allow for the width of rail wagons and should not be less than two metres.

Prohibited actions

Unauthorised persons should never ride on locomotives or rail wagons.

Workers should never climb above a footplate or floor level on any locomotive or wagon while under overhead electrified lines.

When it is necessary to move wagons without mechanical power, workers should **never**:

- push wagons when standing between the buffers of two coupled wagons
- press on buffers with shoulders or hands to push vehicles
- push a vehicle by putting hands on slideways of doors, frames of open doors or open doors
- stand in front of a moving vehicle, or
- slow down a vehicle by pulling on the buffers.

Cranes, ships' winches, and derricks should not be used to move rail wagons.

Locomotives or wagons should not be used as a ram to adjust a load on a wagon.

Crossing a rail line

No person should cross rail lines within 15 metres of a stationary rail vehicle, unless it has been positively established that it will not move.

Particular care should be taken when crossing behind a train that has just stopped. Braking may have taken up slack between vehicles and compressed couplings and buffers. Wagons may then roll back several metres after the train stops.

Where buildings have exits opening directly onto port rail tracks, at blind corners and at other places where the field of vision is particularly restricted, there should be suitable barriers and warning signs to protect workers from stepping onto the rail tracks in front of moving trains.

Trains moving off

Locomotive whistles should be sounded or other appropriate warning devices activated before locomotives or trains move off, and on approaches to level crossings and other hazardous places.

Shunting

Level crossings and unprotected openings near the track should be supervised during shunting operations.

All trains should be brought to a full stop before any wagons are uncoupled.

4.9 Working at height

Working at height — including accessing the hold of a ship or working on top of containers — involves the risk of a fall. PCBUs must ensure workers who work at height have been trained or have the skills and experience to do the work safely.

HSE Regs **r 21**

Heights of more than three metres

Every employer must, so far as is reasonably practicable, ensure, in relation to every workplace under the control of that employer, that, where any employee may fall more than three metres:

- means are provided to prevent the employee from falling, and
- any means so provided are suitable for the purpose for which they are to be used.

A NOTE ABOUT REGULATION 21

Regulation 21 of the HSE Regulations is the source of the often-quoted ‘three-metre rule’. It is mistakenly believed that no controls are needed where a person faces a fall of less than three metres. That belief is wrong and ignores the overarching duties in HSWA. HSWA requires that if there is potential for a person at work to fall from **any** height, reasonable and practicable steps must be taken to prevent harm from resulting. **Doing nothing is not an option**.

Hierarchy of heights

The hierarchy of heights may be used by PCBUs to help with managing and selecting equipment for work at heights and when determining how to work at height safely. The hierarchy should be followed systematically. Only when one level is not reasonably practicable should the next level be considered.

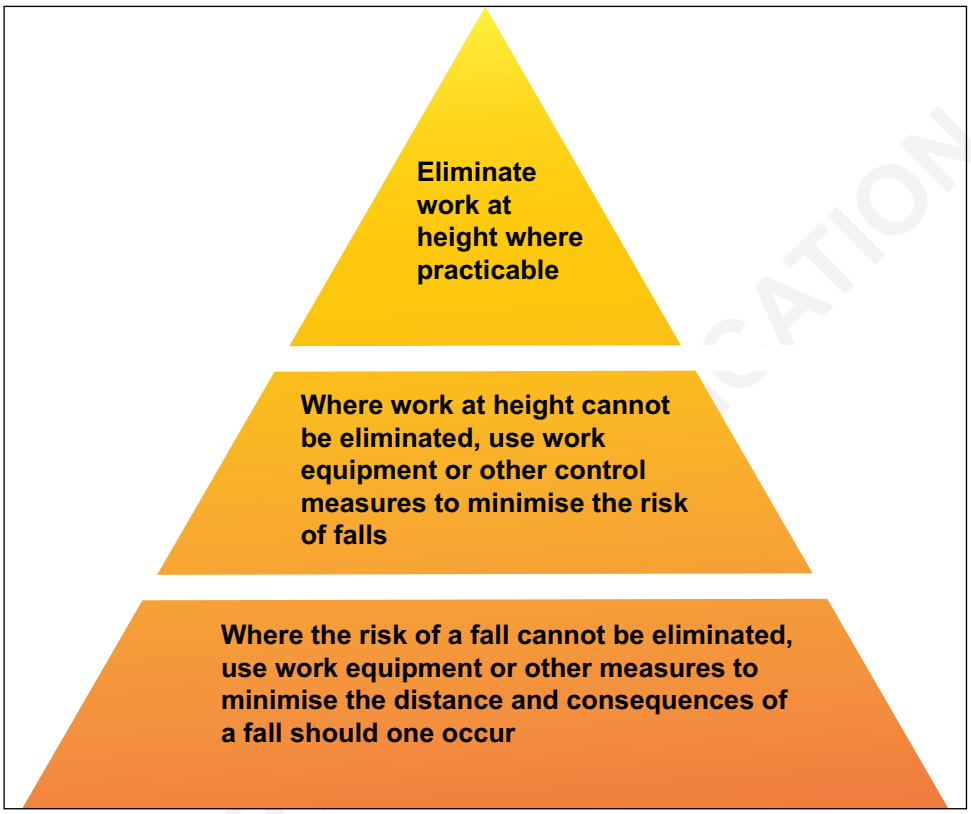


Figure 4: The hierarchy of heights. Courtesy of Port Skills and Safety, UK.

PCBUs should ensure workers are trained in the selection and use of work at height equipment and rescue methods.

Consider minimising the amount of time and number of people exposed to work at height.

Discussions with customers and ships' agents at the early planning stage can often reduce or eliminate the risks from work at height. Consideration should be given to the type, shape and size of ship, and the configuration of cargo stows at point of loading and splicing cargo to eliminate gaps at the end of stows.

A suitable onsite rescue plan detailing actions to be taken in emergencies must be in place to ensure a prompt response to an incident. The plan should not solely rely on the emergency services. The plan should ensure that those involved in the rescue are not put at risk.

Managing the risk of falls in a dynamic environment

The ship should be loaded or discharged in a way that eliminates the risk of falls or, where this is not reasonably practicable, reduces the risk of falls so far as is reasonably practicable.

The height and configuration of the cargo stow is constantly changing and therefore so are the risks. As work is being carried out, control measures may need to change or new control measures introduced to manage these changing risks.

Work areas where control measures for preventing falls are required include:

- gangways, walkways and accessways to a ship's decks, hatchways and holds wherever ladders are used
- when work is carried out in the vicinity of holes or cavities onboard ship. For example, near hatchways or on top of cargo where voids are created during loading and discharge
- working on top of containers or other cargo
- working on raised work platforms with no guard railings or other protective barriers, or where the railings/barriers are not fit for purpose, and
- accessing the cabs of cranes.

If it is necessary for workers to work from the top of a container, safe means of access such as a crane-lifted work platform should be provided.

If a crane-lifted work platform is not available, a total restraint system should be used. A total restraint system (TRS) is preferred over a fall arrest system — a TRS protects the worker from approaching an unprotected edge, thereby preventing them from falling over the edge.

A fall-arrest system is designed to support and hold a person in the event of a fall. Fall arrest is a minimisation measure as it does not prevent the fall from occurring. Only when total restraint is impractical should PCBUs consider using a fall arrest system.

See also:

6.9 Crane-lifted work platforms

SAFETY NETS

Safety nets should be inspected, tested and certified to ensure they are fit for purpose. Anchor points (the fixing on the structure that the net is attached to) should be tested and certified.

The tension required and fall height of the net is determined through calculation. If necessary, PCBUs should seek expert advice and not exceed the manufacturer's specifications.

PCBUs should know how to adjust the height of the net if cargo is being built up or discharged.

PCBUs must have a plan in place to rescue workers if they fall into the net.

Working near water

PCBUS should ensure that workers who work within one metre of the edge of a wharf — for example, when recovering a fallen log from open water or handling ship mooring lines — wear a personal flotation device (PFD), know how to wear it correctly and how to use it in an emergency.

Where workers are raised above the water (using, for example, a work platform lifted by crane or forklift), workers may wear a PFD instead of a safety harness and lanyard. A risk assessment must be carried out taking into account the hazards presented by the work and the work environment, for example, structures, changing water levels, currents and wind.

PCBUs should make sure workers are aware of the location of lifesaving equipment such as lifebuoys and wharfside ladders in case they or another person falls into the water.

PCBUs should make sure PFDs and other lifesaving equipment are regularly maintained, fit for purpose and safe to use.

Edge protection

PCBUs must eliminate the risk of falls or, where this is not reasonably practicable, minimise them so far as is reasonably practicable. This includes openings where there are sudden changes in level, such as the tops of steps and open edges (such as on a wharf, where practicable) from which it is possible to fall more than two metres or into water. Other places include the sides of gangways, ramps or brows giving access to ships, pontoons or landing stages.

Where vehicles or mobile plant are within one metre of the edge of a wharf, there should be a continuous coping wall or robust rigid barrier of sufficient strength to prevent vehicles and mobile plant from falling into the water. The height of the wall or barrier should be as high as practicable but not less than 300 mm.

Instructing workers to stay away from the edge

Systems of work where a worker is simply instructed to stay away from an edge (for example, of a wharf or deck, or on top of a container) sit at the bottom of the hierarchy of controls and should only be considered where there is a foreseeable risk of a worker falling from height and other control measures are not reasonably practicable.

If using instruction as a method of control, PCBUs must be able to clearly demonstrate that the risk was fully assessed and no other control measure higher in the hierarchy was reasonably practicable.

4.10 Falling objects

GRWM **r 25**

Managing risks associated with falling objects

A PCBU must manage, in accordance with regulations 5 to 8, risks to health and safety associated with a falling object if the object is reasonably likely to fall on and injure a person.

If it is not reasonably practicable to eliminate this risk, the PCBU must minimise the risk by providing and maintaining a safe system of work that includes:

- measures for preventing an object from falling freely, so far as is reasonably practicable, or
- if it is not reasonably practicable to prevent the object from falling freely, a system to arrest the fall, or
- if it is not reasonably practicable to comply with either of these measures, providing an exclusion zone that persons are prohibited from entering.

Falling objects pose a significant risk when loading or discharging cargo at a port or on a ship.

Control measures include but are not limited to:

- ensuring loads (grabs) and equipment are not lifted over the heads of any person
- using the appropriate equipment to raise and lower cargo including ensuring that the working load limit is not exceeded
- providing overhead protective structures to operators of self-propelled mechanical mobile plant
- stacking containers and other cargo so they are stable
- establishing exclusion zones where loads are being lifted overhead
- setting up safe zones for workers to work or wait while loads are being lifted, and
- instructing workers to stand clear of loads.

Working load limits are based on equipment being in ‘as new’ condition and can degrade over time depending on factors such as age, exposure, ongoing maintenance.

4.11 Noise

HSE Regs **r 11**

Every employer must, so far as is reasonably practicable, ensure, in relation to every workplace under the control of that employer, that no employee is exposed to noise above the following levels:

(a) a noise exposure level, LAeq,8h, of 85 dB(A), and

(b) a peak noise level, Lpeak, of 140 dB

whether or not the employee is wearing a personal hearing protection device.

Where an employer has [...] not eliminated the risk that any employee may be exposed to noise above those levels, the employer shall communicate clearly, by way of signs, labelling of machinery, or other appropriate means —

(a) the fact that noise levels at the workplace are or are likely to be hazardous, and

(b) the sort of personal hearing protection device that is suitable to protect against the noise levels, and

(c) where such a device may be obtained.

Excessive noise levels on car decks, wharves, and in holds due to mobile plant, engines and transmission equipment are a hazard that must be controlled. Noise monitoring provides a means of assessing noise levels and length of exposure. PCBUs can use the data obtained to determine suitable control measures to minimise the risk of hearing loss in workers.

Where personal hearing protection is used, PCBUs must ensure workers are still able to hear communications and warning signals such as whistles and vehicle horns.

4.12 Vibration (whole body)

Whole-body vibration (WBV) occurs when vibration (including bumps, shocks and jolts) pass through someone's body from the surface they are sitting or standing on. Workers can be exposed to WBV if they regularly drive, ride in, or operate machines that travel over rough surfaces or have a vibrating function.

Examples include:

- reach stackers
- mobile cranes
- straddle carriers, and

- forklifts driven on wharves, decks of ships, or over the uneven surfaces of cargo such as logs.

Long-term exposure to excessive WBV could harm workers. Lower back, neck or shoulder pain or other discomfort could be signs that workers are being exposed to excessive WBV. However, there can be other work and non-work factors that could contribute to these symptoms.

There are many factors that can influence the effects of exposure to WBV.

These include:

- the condition and age of the machine
- intensity of vibrations
- the duration of exposure (time/day, frequency)
- the design of the cab and seat, or the standing surface
- the type of tyres or tyre pressure
- operator skill
- operator health and medical history.

To work out whether their workers are at risk, PCBUs should think about:

- the machine and where it will be operated (for example, the condition of the surface)
- how the work is organised
- the task.

4.13 Fatigue

Fatigue is more than feeling tired and drowsy. In a work context, fatigue is a state of mental and/or physical exhaustion which reduces a person's ability to perform work safely and effectively. Fatigue increases the chance of workplace injuries and, if prolonged, can negatively affect a person's health and well-being.

Control measures for managing fatigue include but are not limited to:

- ensuring there are enough workers per shift to carry out work safely and minimise the risks of fatigue
- providing workers with fixed rostered hours and adequate breaks between shifts. Some cargo-handling companies and ports have a policy that there must be a break of at least 12 hours between each worker's shifts. If this rule is broken, a message is instantly sent to the executive team or board who send the manager of that worker a request to explain why
- a rostering system with an algorithm that looks at the pattern of a worker's past four weeks of work

and prevents them from being ‘over-rostered’ and building up consecutive days of missing out on good-quality sleep (a ‘sleep debt’)

- including a worker’s travel time to and from work when considering hours of work that may contribute to fatigue
- putting in place a system to pick up workers by car or bus and transport them to and from work
- providing quiet areas for rest breaks
- clearly explaining to workers about the need to rest during rest breaks and not do other work such as administrative or maintenance tasks
- educating workers about shiftwork and fatigue management
- providing a variety of tasks to prevent workers getting mentally fatigued
- not scheduling work between the hours of midnight and 4am
- ensuring workers stay hydrated at work by providing ‘water breaks’ of five to 10 minutes (it needs to be enough time for workers such as crane drivers to be able to get out of the cab, climb down from the crane, and walk to a safe zone to get fresh water)
- providing counselling services offsite such as an Employee Assistance Programme (EAP) so workers can confidentially talk through any work or personal issues.

Fatigue risk management plan

A fatigue risk management plan may help control the effects of fatigue. It should include the procedures that are in place (or which need to be put in place) for managing conditions that may contribute to fatigue. For example, hours of work, rostering patterns, repetitive work activities such as continually getting in and out of vehicles for the entire shift, and working in extreme heat.

Workers must cooperate with any reasonable policies or procedures relating to health and safety, such as managing fatigue at the workplace. For example, policies on fitness for work, or second jobs. Workers’ duties in relation to fatigue do not mean they must never work extra hours. However, they should be able to talk to their manager or supervisor to let them know when they are fatigued.

Workers should be able to avoid working extra hours and carrying out safety-critical tasks when they know it is likely they are fatigued. If a worker is fatigued to the point of being a risk to the health and safety of others, PCBUs should have a process in place to take appropriate action. For example, supporting the worker to get home and recommending they take a day or so as sick or special leave.

4.14 Exposure and health monitoring

PCBUs must eliminate the health risks to workers and others that arise from being exposed to the work carried out by their business. If this is not reasonably practicable, these risks must be minimised so far as is reasonably practicable. In some circumstances, this could mean monitoring worker exposure (exposure monitoring) and monitoring the health of workers (health monitoring).

Exposure monitoring measures and evaluates what workers are being exposed to at work.

Exposure monitoring can:

- identify, assess and confirm health risks
- identify where new control measures are needed
- monitor how well current control measures are performing, and
- identify when control measures need to be reviewed, updated or removed.

Examples of exposure monitoring are measuring the level of noise or the amount of a substance hazardous to health that workers are being exposed to.

Biological monitoring (which requires worker consent) which measures the concentration of a substance or its metabolites in a worker's blood, urine, exhaled air or even in hair, is also an example of exposure monitoring.

Health monitoring (which also requires worker consent) looks at whether a worker's health is being harmed because of what they are being exposed to at work. Health monitoring can tell a PCBU if its workers are experiencing health effects from potential exposures. Health monitoring can also confirm that control measures are preventing harm.

Examples of health monitoring are carrying out hearing tests to check for hearing loss from being exposed to noise or checking for nerve, muscle or circulation damage from being exposed to vibration.

Monitoring is not a control measure — no monitoring, whether it is exposure or health monitoring, will control risk. Monitoring does not replace the need for control measures to eliminate or minimise worker exposure to harm.

WHEN MONITORING MUST BE CARRIED OUT

Under the GRWM Regulations, there are specific circumstances when monitoring must be carried out:

- if the work involves substances hazardous to health and the PCBU is not certain whether the concentration of the substance exceeds its prescribed exposure standard, and
- if the work involves a substance hazardous to health that is specified in a Safe Work Instrument (SWI) as requiring health monitoring, and there is a serious risk to worker health from exposure to that substance.

SEEK SPECIALIST ADVICE FIRST

PCBUs should seek specialist advice before implementing a monitoring programme or exposure control as professional judgement is required when deciding on what is an acceptable level of exposure to chemical and physical agents in the workplace.

Prescribed exposure standards and workplace exposure standards – what's the difference?

A prescribed exposure standard is a workplace exposure standard that has the purpose of protecting persons in a workplace from harm to health and that is **prescribed** in:

(a) regulations

(b) a safe work instrument.

A workplace exposure standard, unless it is also a prescribed exposure standard, is a **guidance** value intended to be used as risk criteria for health risk assessment and risk management purposes, and applied or interpreted only by people with appropriate training and experience, such as those qualified in occupational health practice.

Sharing monitoring duties with other PCBUs

At times, more than one PCBU may share a duty to monitor the same worker's exposure or health. PCBUs should talk with each other and decide who will organise the monitoring, how information will be shared, and how costs will be split.

See also:

1.11 Consulting, cooperating, and coordinating with other PCBUs with the same health and safety duty

EXAMPLE

A labour hire PCBU supplies workers to two PCBUs working at the local port – the port operator and a cargo-handling company. All three PCBUs meet to discuss the problem of workers being exposed to noise at the port, whether the risk can be eliminated or, if not, what control measures to put in place to minimise the risk so far as is reasonably practicable, who should organise exposure monitoring, and who should pay.

The PCBUs come to an agreement that as the labour hire PCBU has an ongoing relationship with the workers, it would coordinate the monitoring, make sure workers receive the monitoring results, make sure any recommendations are actioned, and keep records. They all agree that the labour hire PCBU will pay 60% of the monitoring costs and the other two PCBUs will each pay 20% of the costs.

LINKS TO GUIDANCE:

MARITIME NZ

Fatigue risk management system

KIWIRAIL

Rail operations: Kiwirail's Freight Handling Code

WORKSAFE

Carcinogens and airborne substances hazardous to health

Confined spaces

Exposure monitoring and health monitoring

Extracting hazardous dust

Hazardous substances

Ladders

Noise

Respiratory protective equipment

Safety nets

Vibration

Work site traffic

Working at height

Working safely in extreme temperatures

5.0

Loading and discharging cargo

IN THIS SECTION:

5.1 Managing the risks of loading and discharging cargo

5.2 Dry bulk cargo

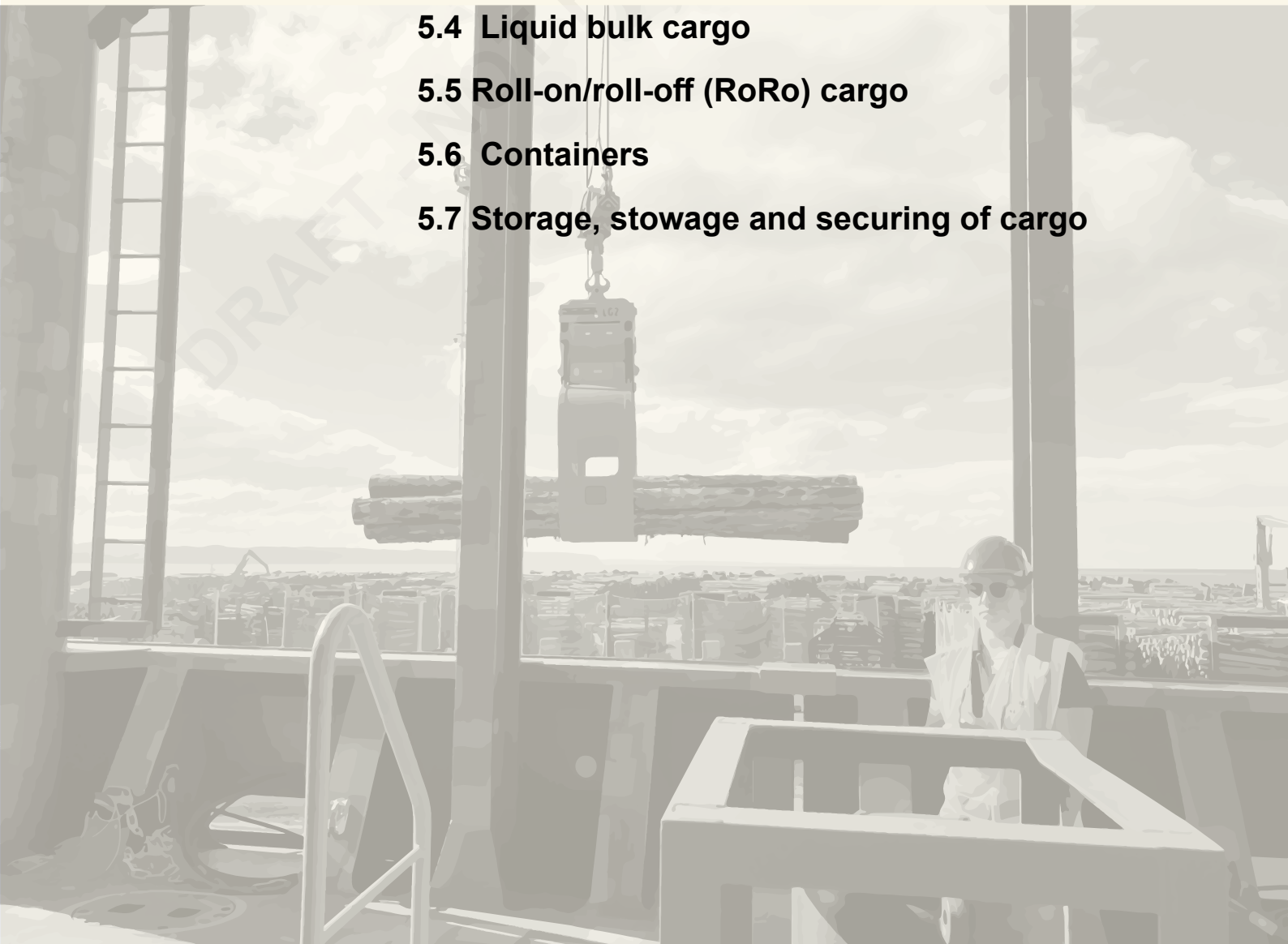
5.3 Breakbulk cargo

5.4 Liquid bulk cargo

5.5 Roll-on/roll-off (RoRo) cargo

5.6 Containers

5.7 Storage, stowage and securing of cargo



This section offers guidance for PCBUs on managing some of the most common hazards to health and safety of working with specific types of cargo.

5.1 Managing the risks of loading and discharging cargo

PCBUs must eliminate risks to health and safety (in this case, from loading and discharging cargo) so far as is reasonably practicable. If it is not reasonably practicable to eliminate these risks, PCBUs must minimise the risks so far as is reasonably practicable.

5.2 Dry bulk cargo

GRWM **r 22**

Managing risks associated with atmospheres with potential for fire or explosion

A PCBU with management or control of a workplace must manage, in accordance with regulations 5 to 8, risks to health and safety associated with an atmosphere with potential for fire or explosion.

GRWM **r 23**

Managing risks associated with ignition sources

A PCBU with management or control of a workplace must manage, in accordance with regulations 5 to 8, risks to health and safety associated with an ignition source in an atmosphere with potential for fire or explosion.

Maritime Rule Part 24C Carriage of Cargoes: Specific Cargoes sets out the requirements which ships carrying dry bulk (solid bulk) must comply with.

Hazards and risks of dry bulk cargo

Dry bulk is cargo shipped in large unpackaged amounts. Examples are fertiliser, grain, gravel, sand, salt, concentrates, wood chips, coal, mineral ores, PKE (palm kernel extract).

Dry bulk cargo often has characteristics that make it dangerous to handle. For example, dry bulk cargo can spontaneously combust or explode, develop hot spots, emit dangerous gases, liquefy, develop biological hazards, and become unstable, causing multiple injuries and fatalities. A stockpile of coal, for example, even if it is wet, generates its own heat. Once the coal reaches its ignition point, it is at risk of self-combusting.

Dry bulk cargo will move/flow until it reaches its ‘angle of repose’. This is the steepest angle at which a sloping surface formed of loose material becomes stable.

The cargo may become unstable due to factors including but not limited to ship movement, the design of the hold, and grabbing and loading/discharging operations. This may create a risk of

workers in the hold being buried or crushed.

Control measures for dry bulk cargo include but are not limited to:

- storage and stack management
- temperature monitoring and thermal imaging in the hold to detect hot spots in the cargo
- control of ignition sources
- ventilation of explosive/flammable gases
- regular cleaning of work surfaces, plant and equipment to eliminate build-up of dust and other substances such as grease and oil
- suitable fire-fighting equipment should be readily available at work and workers trained in when and how to use it correctly.

5.3 Breakbulk cargo

Hazards and risks of breakbulk cargo

Breakbulk cargo includes logs, construction steel, steel sections, pipes, coiled steel products, drums, cases, pallets and bundles of manufactured goods or raw materials, project cargo (or 'special cargo'). Hazards associated with the loading and discharging of breakbulk cargo include but are not limited to:

- being struck by work equipment such as lifting equipment, moving cargo, vehicles and mobile plant
- being crushed against a fixed object such as a ship's bulkhead, a deck support pillar, or the cargo stow itself by shifting/falling cargo or moving vehicles
- slips, trips or falls while working on surfaces which may be uneven, unstable or slippery due to the presence of substances such as cargo residue, oils, ice, water, or protective wrapping
- falls from heights:
    - during ship or cargo access/egress
    - through gaps between adjacent cargo stows
    - from cargo stows at varying heights
    - when working near the edge of cargo stows
    - when working on top of platforms to inspect, audit or ticket breakbulk cargo during marshalling
- falls on the same level into voids between cargo and bulkheads or wells formed in the

cargo stowage

- collapse or shifting of the cargo stow, either before or during handling
- a potential explosive or hazardous atmosphere caused by, for example, carbon monoxide, oxygen deficiency, dust, fume from machinery or cargo
- contact with hazardous substances such as chemicals
- being struck by falling or moving objects such as dunnage or the cargo itself
- lifting, carrying, handling
- temperature
- noise
- vibration
- fatigue.

WALKING ACROSS CARGO

Walking across cargo may present a risk of slips, trips, or falls.

For example:

- cargo — for example, logs — that has been exposed to snow, ice, sea spray and rain
- cargo wrapped in plastic sheets that become slippery when wet.

PPE for workers required to walk across cargo should include shoes or boots with studs.

When working on breakbulk cargo with a curved or uneven surface such as pipes, rails or constructional steel, PCBUs should use wooden staging boards, aluminium walkways or other suitable measures that provide workers with a firm, level surface to walk on.

Workers should **never** step into or jump over gaps in cargo.

Slinging and lifting loads

PCBUs should ensure lifting operations are planned by a competent person with adequate practical and theoretical knowledge and experience.

Lifting equipment and gear should be suitable for the task.

Before work begins, a competent person should carry out a visual check of all lifting equipment and gear to be used. Equipment and gear that show signs of damage should not be used. It should be reported to the ship's master or chief mate (if it belongs to the ship) or the supervisor/foreperson.

Work should not proceed until replacement fit-for-purpose gear is provided.

Slingers should be competent in the selection and use of equipment and safe slinging methods appropriate to the cargo. PCBUs should instruct slingers that if there is any doubt about the integrity of any sling, it should not be used and they should report this to their supervisor/foreperson.

Supervisors/forepersons should be trained, competent and experienced in the safe lifting and slinging of loads or have access to relevant competent advice and assistance.

A suitable landing site for the load should be prepared as part of the pre-planning stage of any lifting operation. The site should be kept free of debris to minimise the risks of slips, trips and falls during loading/discharging.

Workers involved in slinging should be positioned safely away from the load when it is being lifted.

A person should **never** stand on or under a load at any time.

If the crane operator or hatchperson is not sure if workers are positioned safely away from the load, the lift should be stopped and not continue until workers are confirmed to be safe.

Loads should **never** be suspended over occupied areas.

PRE-SLUNG LOADS

When choosing control measures to manage the risks of pre-slung loads, it is important to consider that the condition of the load and equipment may be uncertain. For example, lifting gear such as slings may have been certified but damage may have occurred and be concealed under the load.

If a ship cannot produce the required certificate for its lifting gear or its lifting gear is damaged, PCBUs should not use the gear.

Control measures for pre-slung loads include but are not limited to:

- maintaining and documenting a system of inspection of gear to be used. Inspections should be done by a competent person and completed before any gear is used
- removing and appropriately tagging out-of-service or damaged gear. If the damaged gear belongs to the ship, PCBUs should bring this to the attention of the ship’s master or chief mate. Work should not proceed until replacement fit-for-purpose gear is provided.
- putting in place exclusion zones in the vicinity of the lift
- providing workers with information, training and instruction to select the right gear
- supplying information before a ship’s arrival and including pre-work inspections and checks as part of the inspection regime
- putting in place an auditable system of certification of the working load limit of the gear used, and

- using gear only with reference to actual marked working load limit and not basing selection on colour-coding.

It is good practice to consider how the cargo will be discharged in the receiving port. It may be necessary to provide a ‘key’ so that cargo handlers at the next port of discharge can break into the stow to allow efficient and safe discharging. This is often a section of cargo that has been pre-slung to enable safe ‘breaking in’.

Communication when lifting loads

There should be clear lines of communication between all workers involved in the lifting operation. Visual and/or voice communications (via radio) from the person directing the lift to the crane driver should be clear, agreed and understood. Where radio communications cannot be established, an agreed system of hand signals should be followed, such as the hand signals on pages 82 to 86 which have been adapted from the Approved Code of Practice for Cranes.

ROLE OF THE DOGMAN

Mainly used in shoreside cargo operations, the ‘dogman’ has traditionally been the term used for a person who guides a crane operator to make sure they safely place the load in the right spot. At some ports, the dogman may also be actively involved in slinging/unslinging. However during the actual lift, it is important that they focus solely on the lifting operation.

COMMUNICATION BETWEEN DOGMAN AND CRANE DRIVER

The dogman should stand in a secure position where they can see the path of the load and, wherever possible, they can be seen by the crane driver especially in situations where the lifting operation requires the use of hand signals.

Where the crane driver cannot see the dogman, radio communications or two dogmen should be used.

The dogman should be clearly identified to the crane driver so there is no confusion as to who it is.

ROLE OF THE HATCHMAN (OR HATCHPERSON)

On board ships, a hatchman/hatchperson has various functions including guiding the crane driver or assisting the crane driver to position the hook or land the load safely if the crane driver’s visibility is obscured. When carrying out this task, the hatchman/hatchperson should not be engaged in any other activity during any part of the lifting operation.

The hatchman/hatchperson is also a pair of eyes looking out for workers when they are working under the hook on the wharf.

The hatchman/hatchperson on container ships carries a cargo plan and is also responsible for ensuring the correct containers are discharged and the containers being loaded are placed in the correct position. They are also responsible for the safety of workers on the deck lashing containers, to keep them safe from incoming containers, for example.

On log or general cargo ships, the hatchman/hatchperson is typically a qualified crane driver and the two workers may alternate roles for fatigue management purposes.

The hatchman/hatchperson on a log ship may operate from the wharf when logs are loaded on deck, and is there to help keep workers on the wharf safe from logs that may fall from the ship or when logs may be moving near to them.

[TEXT CONTINUES PAGE 87]

Hand signals

STOP
Extend one arm and hold palm of hand vertical.

EMERGENCY STOP
Extend both arms and hold palms of hands vertical.

STOP (B)
Arm extended, palm down, move hand right and left. Usually for different level operations.

HOLD EVERYTHING
Clasp hands in front of body.

MOVE SLOWLY
Place one arm motionless across chest in conjunction with or before giving any other directional signal (’Hoist slowly’ shown as example).

HOIST
With forearm vertical, forefinger pointing up, move hand in horizontal circles.

LOWER
With arm extended downward, forefinger pointing down, move arm in horizontal circles.

USE MAIN HOIST
Tap fist on head, then use regular signals.

USE FLYLINE (AUXILIARY HOIST)
Tap elbow with one hand, then use regular signals.

RAISE BOOM (LUFF UP)
Arm extended, fingers closed, thumb pointing upward.

LOWER BOOM (LUFF DOWN)
Arm extended, fingers closed, thumb pointing downward.

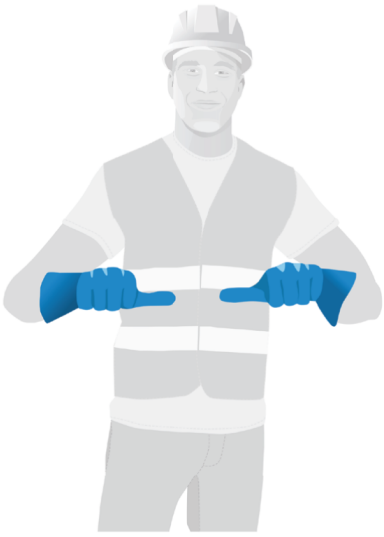
SLEW
Arm extended, point with finger in direction of swing of boom.

OVERHEAD GANTRY CRANE
Arm extended, point with finger in the long-travel or cross-travel direction.

RAISE THE BOOM AND LOWER THE LOAD
One arm extended, fingers closed, thumb pointing upward. Other arm extended downward with forefinger pointing down, move arm in horizontal circles.

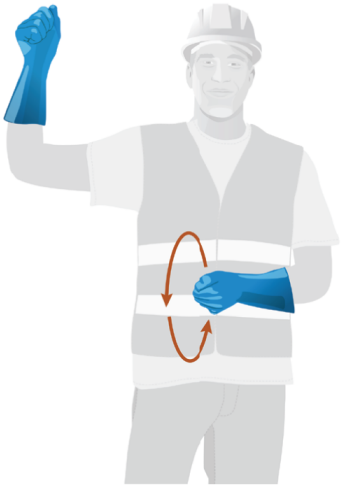
LOWER THE BOOM AND RAISE THE LOAD
One arm extended, fingers closed, thumb pointing downward. Other arm vertical with forefinger pointing up, move arm in horizontal circles.

EXTEND HYDRAULIC BOOM OR TROLLEY OUT (TOWER CRANE)
Both fists in front of body with thumbs pointing outward.



RETRACT HYDRAULIC BOOM OR TROLLEY IN (TOWER CRANE)
Both fists in front of body with thumbs pointing towards each other.

TRAVEL
Arms bent at the elbows, fists clenched, rotate both forearms around each other, then point in the direction of travel.



TRAVEL (ONE-TRACK CRAWLER CRANES ONLY)
Lock the track on the side indicated by the closed fist. Travel opposite track in the direction indicated by the circular motion of other fist rotated vertically in front of body.

FINISHED WITH CRANE
Place arms above head and cross hands.

5.4 Liquid bulk cargo

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Containers of liquids

A PCBU must ensure, so far as is reasonably practicable, where any container that contains liquids at the workplace presents a risk of drowning:

- the container is securely covered, or
- the container is enclosed by a secure fence that:
- extends at least one metre above the adjoining floor, ground, or platform, and
- is in a position that will provide adequate protection for any person who is near the container.

Container:

- means any enclosure, fixed vessel, pit, structure, sump, vat, or other container of a similar kind:
- that contains any liquid, and
- the edge of which is less than one metre above the adjoining floor, ground, or platform, but
- does not include any drinking troughs for animals or any system of water collection, disposal, distribution, or storage.

Liquid bulk is cargo shipped in large unpackaged amounts on specially designed ships. For example, vegetable oils, tallow, molasses. Liquid bulk includes fuel (such as petroleum and oil) however, due to their highly specialised nature, petroleum and oils are out of scope of this ACOP.

Maritime Rule Part 24A Carriage of Cargoes: Dangerous Goods sets out the requirements for the carriage by sea of dangerous goods in bulk including liquid chemicals and liquefied gases.

What follows is general guidance. PCBUs should consult a competent person if they require assistance to manage the risks of liquid bulk cargoes.

Hazards

There are five main hazards which individually or jointly have the potential to cause significant harm to workers or other people. These are shown in the table below.

Hazard	**Example**
Fire	- ignition following a spill or release - hazardous activities such as welding, smoking - external events such as unsafe equipment, adjacent fires, falls from height.

Explosion	- ignition following a spill or release - slips, trips and falls.
Release of a toxic substance	- containment failure.
Release of an environmental pollutant	- containment failure - impact - human error.
General hazards and risks associated with operations such as:	- manual handling injuries due to the nature of the transfer equipment used - slips, trips and falls due to the potentially congested work area.

Hose management

Portable hoses, fixed-loading arms, and any other device connecting to ships manifolds should be fit for purpose, inspected at appropriate intervals and safe for use in an environment where liquid bulk cargoes are handled.

PCBUs should ensure that flexible hoses are not left lying around where they may become a trip hazard to workers and other people.

Transfer equipment and operations

Equipment such as pumps and vapour return units should be fit for purpose and suitable for use in an environment where liquid bulk cargoes are handled.

Safety data sheets

For information about the properties of specific liquid bulk cargo, PCBUs should ensure they read the SDS that accompanies the cargo. If there is no safety data sheet with the cargo, PCBUs should contact the sender or manufacturer of the cargo.

The SDS provides comprehensive information about the properties of the cargo, how it may affect health and safety, and how to manage these risks. It also provides information about first aid treatment and what to do in an emergency, such as a spill or a fire.

5.5 Roll-on/roll-off (RoRo) cargo

Maritime Rule Part 24B Carriage of Cargoes: Stowage and Securing sets out requirements for ships' masters to ensure RoRo cargo is adequately stowed and secured.

RoRo cargo is wheeled cargo. For example, cars, trucks, farm vehicles, heavy machinery, trailers.

Hazards of RoRo cargo include but are not limited to:

- being struck by moving vehicles and plant, or lashings that may spring back when being applied, tightened, released or loosened
- being crushed against a fixed object such as the ship's structure or between moving vehicles
- slips, trips or falls while working on surfaces which may be:
- uneven (for example, due to deck lashing points, frames or deck gratings)
- unstable or slippery (for example, due to the presence of substances such as cargo residue, spilt oil and loose lashing gear)
- falls from height:
    - when working or passing near to unprotected edges such as lift shafts, voids, deck openings and ships' internal access ladders
    - due to a failure to provide and maintain a safe means of access/egress to/from and onboard the ship
- exhaust emissions from the ship or RoRo cargo
- noise
- handling and storage of fuel
- leakage of hazardous cargo
- hazards associated with breakdowns and jumpstarts
- electrical hazards related to plug-in units
- lithium batteries in electric vehicles
- extreme temperatures
- fatigue
- manual handling injuries from handling trestles and lashing gear
- reduced levels of lighting.

Vehicle movements on ships

Factors to take into consideration when assessing the risks of RoRo cargo include but are not limited to:

- vehicle speed
- the driver's restricted visibility
- lighting
- noise
- availability of visual aids and warning devices
- safe stowage and positioning
- any other work activities being carried out at the same time.

GUIDING DRIVERS AND USING SIGNALS

Only authorised people should be on deck while RoRo cargo is loaded or discharged.

All workers involved in loading or discharging RoRo cargo should wear high-visibility clothing.

Before work starts, workers should agree on and make sure they understand the signals to be used for guiding drivers.

A competent person such as a signaller should direct all vehicles being reversed or manoeuvred into stowage positions on deck. This person should be identified to drivers.

The signaller should stand a safe distance from moving vehicles and be visible to drivers at all times either directly or via vehicle mirrors. Where this is not possible, the signaller should position themselves clear of the vehicle movement (and trailer, if applicable) and away from the risk of being trapped or crushed.

Before signalling a driver to proceed, the signaller should ensure it is safe to do so. Generally a loud, long blast on a whistle or the hand signal below indicates emergency stop.

TRAFFIC MANAGEMENT

When preparing a traffic management plan for RoRo cargo, PCBUs should consider:

- speed limits
- coordinating RoRo activities across multiple decks
- separating pedestrians from vehicles on ramps by using separate walkways or separate access times

- drivers' restricted visibility
- safe stowage or positioning, and
- what other activities may be being carried out at the same time in the same work area.

PCBUs should keep workers handling RoRo cargo informed of the TMP and any changes to it.

KEEP PEDESTRIANS AND VEHICLES SEPARATE

PCBUs should put in place a traffic management plan to control vehicle and pedestrian movements for each entrance and exit ramp, and for ramps within the ship.

IDENTIFY, MARK AND EXCLUDE HAZARDOUS ROUTES

Before work to load or discharge RoRo cargo begins, hazardous routes or areas that workers or other people (such as ship's crew) could mistake for normal drive-on or drive-off routes should be identified, clearly marked and barricaded.

Suitable warning notices should be posted on the ramps.

Ramps, linkspans and gradients

Only workers specifically engaged in the manoeuvring of plant or vehicles should be on the linkspan or ramp during RoRo cargo movements.

Ramps used by vehicles should not be used for pedestrian access unless there is suitable segregation of vehicles and pedestrians. For example, by providing a suitable protected walkway or ensuring pedestrians and vehicles do not use the ramp at the same time.

A system should be in place to safely manage the movement of vehicles on gradients, paying special attention to unbraked units and taking into consideration speed, load configuration, angle and trailer weight based on tractor and equipment specifications.

Where Mafi and gooseneck trailer attachments do not offer an interlock, they should never be used on gradients.

It is industry good practice that no plant or other heavy vehicle should use a ramp with a slope of more than 10 degrees.

Lashing/unlashing

Workers carrying out lashing/unlashing Ro-Ro cargo onboard ships should:

- always work in pairs

- stand clear of trailers being coupled, uncoupled or moved that could put them at risk of being struck, crushed or trapped
- be able to signal a vehicle to stop in an emergency or attract attention if they see a potential incident emerging. For example, using a whistle or vehicle horn.

Ventilation

Before work begins on an enclosed car deck, PCBUs should ensure the ship's ventilation system is operating, including ventilation fans used to control the build-up of exhaust emissions.

Loading/discharging work should be organised to minimise the number of vehicles with engines running at any one time.

Engines should not be started or left running on car decks until the vehicle is ready for discharge.

Dust

Dust on RoRo decks generally consists of soil dust from vehicles, rust from the ship's deck, or dusty cargos. Control measures include but are not limited to decks being damped down and vehicles being washed. Dry sweeping and compressed air should **never** be used to control dust – these methods serve only to move the dust into the air and spread it throughout the workplace.

Non-starters and breakdowns

A safe procedure for dealing with vehicles that will not start or which have broken down should be in place and agreed with the ship's master.

The procedure should include but is not limited to:

- safe arrangements for refuelling vehicles, particularly on RoRo decks or in ships' holds. For example, LPG-powered vehicles should be refuelled in a safe, well-ventilated area not in a confined space
- towing operations
- punctures and wheel changes
- jumpstarting/safe use of batteries
- seeking expert mechanical assistance when required.

Where multiple work gangs are working in the same area or at the same time, for example, one gang carrying out lashing and one gang driving vehicles off the ship, control measures should be in place so that one gang does not adversely impact the safety of the other.

5.6 Containers

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Managing risks associated with working under raised objects

(1) A PCBU must manage, in accordance with regulations 5 to 8, risks to health and safety associated with work being done under any object that has been raised or lifted by any means.

(2) If it is not reasonably practicable to eliminate the risk referred to in subclause (1), the PCBU must minimise the risk by, so far as is reasonably practicable, providing supports or other devices to be placed or used under the raised object so that the object cannot fall or be lowered while a worker or other person is under it.

Maritime Rule Part 24D Carriage of Cargoes: Convention Containers sets out the requirements for any container that is to be loaded/discharged to/from a ship at a port in New Zealand.

Lashing containers to the ship

To ensure stability during the ship's voyage, containers must be stowed and secured to the ship's structure according to the ship's cargo securing manual.

Containers stowed on deck and not in cell guides are secured to the ship's structure by way of lashing. Lashing involves using equipment such as turnbuckles, twistlocks and lashing bars. Before loading a container onto a ship, twistlocks are manually fitted in each of the four bottom castings of the container. The container is loaded onto the ship's deck or into its hold. Metal lashing bars are then hooked into these corner castings of the container. The lashing bars are then connected to a threaded turnbuckle or bottle screw which is attached to the ship's structure. Tension can then be introduced into the lashing by rotating the turnbuckle which secures the container to the ship.

LASHING HAZARDS AND RISKS

Hazards and risks that workers may be exposed to when lashing and unlashing include but are not limited to:

- manual handling injuries and falls from height due to lifting and manipulating heavy and long lashing bars, often in awkward positions. Lashing bars are generally between 2.5 metres and 4.5 metres long and about 13 kilograms to 20 kilograms in weight
- falls from height when working or passing close to unprotected edges (for example, off the wharf or through an open hatch/hold; when working on top of a container)
- falls from height when unlocking twistlocks from above (such as on top of a container)
- being struck by falling lashing bars or other lashing gear (such as twistlocks)

- being struck by moving containers or other loads if a crane is operating on a ship at the same time as lashing work is taking place, or if the lashers are working on containers shoreside
- slips, trips and falls. For example, when working on unlevel and/or slippery surfaces due to leaking cargo residues, oils, ice or water; tripping over lashing gear not safely stowed out of the way
- electrical hazards from damaged power cables to reefers
- pinches, cuts, skin abrasions and bruising when assembling multi-part lashing bars.

Lashing bars are designed for the stowage of containers about 2.5 metres high. 'Hi-cube' containers of about 3 metres high are becoming more common, but lashing bars for these containers may be too short to reach the turnbuckle. If this is the case, workers should **never** stand on handrails or go without fall protection to complete lashing activities.

CONTROL MEASURES

Control measures for lashing/unlashing include but are not limited to:

- working from a stable level base or surface
- visual safety inspections by a competent person of lashing equipment and containers before work begins
- maintaining awareness of other work being carried out in the area including crane movements and exclusion zones
- ensuring at least one worker maintains control over the lashing equipment when it is elevated
- ensuring lashing bars are not left partially attached and hanging
- eliminating, where practicable, the practice of learning lashing bars against containers during lashing
- eliminating, or if not reasonably practicable, minimising double-handling of lashing bars and other lashing equipment to minimise manual handling risks.

PCBUs should also consider:

- how many workers are required to carry out lashing/unlashing work safely. Generally, lashing activities require a minimum of two workers – one to handle the lashing bar and one to operate the turnbuckle
- the size of the work area and the layout of the ship.
- Where lashing equipment is to be reused in the same work area, PCBUs should ensure it is stored safely on the side of a walkway to minimise the risk of workers tripping over it.

Position of workers in relation to suspended loads

When discharging containers, they should be unlashed from the wharfside of the ship first, working to seaward. This ensures that suspended loads do not pass over or in proximity to workers carrying out lashing. The opposite should be applied for lashing when containers are being loaded. There should be defined and clearly signposted exclusion zones to prevent workers accidentally working in the vicinity of a suspended load.

Effective communication

Workers carrying out lashing/unlashing should not work alone. If there are teams working near each other, such as one lashing and one loading, PCBUs should ensure effective communication (for example, radio or hand signals) is maintained between them, managers, supervisors/forepersons, and ship's crew. This ensures each team is aware of what the other is doing and safe areas of work are identified and made known to workers.

Toolbox talks can be used to inform workers at the change of shift about health and safety issues related to the work and to remind workers of relevant safe work procedures.

Ship's responsibilities when containers are being lashed

Before loading containers, the ship's master should ensure that container weights are declared as per SOLAS requirements and the maximum stack weight and height limits are not exceeded. See Containers need a verified weight for more information.

The ship should provide a lashing plan. Instructions for lashing the containers correctly should be provided in each bay of the ship.

Faulty lashing equipment

Lashing equipment is generally supplied by the ship. All lashing equipment should be suitable, in a safe condition and compatible with the cargo to be lashed. If equipment is faulty or its condition has clearly deteriorated (for example, there are fractures or signs of excessive corrosion), workers should not use it.

The supervisor/foreperson should report faulty equipment to the ship's master or chief mate and this equipment should be taken out of service. The ship should supply replacement equipment according to the specifications in the ship's cargo securing manual.

Twistlocks

There are three types of twistlocks commonly used when lashing containers:

1. Manual twistlocks. These are often used to secure containers to the deck of the ship. When used above the first tier, manual twist locks are fitted on the wharf into the bottom corner castings before the container is loaded into the stow. The container should be held at a height above the wharf which allows workers to easily insert the twistlock into the corner castings, while eliminating the possibility that someone can pass under the lifted container. They are then locked and unlocked and removed before discharge of the next container from the ship. The twistlock is locked/unlocked by pushing a lever from one side to the other. The twistlock may be either left or right-handed in its operation. Manual twistlocks of the newer style can be used in the same way as semi-automatic twistlocks. That is, inserted into the bottom corner casting of the container, on the wharf.

2. Semi-automatic twistlocks. These are unlocked by operating wire toggles or a handle on the unit. They lock automatically when a container is landed onto it or the container in which it is inserted is landed onto a container stow. Semi-automatic twistlocks should not be used inserted unless specifically designed to be used in that manner safely.

3. Fully automatic twistlocks. These twistlocks remain in the bottom corner castings of a container being discharged and do not require unlocking before the container is discharged. Both fully automatic and semi-automatic twistlocks are fitted before loading and removed before the container is landed. This may take place onboard the ship but more typically occurs on the wharf, either at the crane or at a ‘station’ remote from the crane. PCBUs should not use a combination of manual, semi-automatic and fully-automatic twistlocks in the same stowage unless this is approved in the ship’s cargo securing manual.

SAFE SYSTEM OF WORK WHEN USING TWISTLOCKS

Factors to consider when developing a safe system of work for using twistlocks operations on the wharf include but are not limited to:

- safe positioning of workers handling twistlocks on the wharf from vehicular traffic flows
- position of workers in relation to suspended loads
- interaction between mobile plant and equipment when removing/replacing gear bins
- techniques for safe handling/fitting/removal of twistlocks, including procedures for removing defective twistlocks and isolating them from further use
- PPE requirements
- safe access to storage of twistlocks within gear boxes/bins.

JAMMED TWISTLOCKS AND STORED ENERGY

Defective twistlocks or twistlocks that have not been fitted correctly may jam and not release correctly. Any system of work for freeing jammed container fittings such as twistlocks should take into account the additional hazards of tension being built up in the crane hoist system due to ship or tidal movements, and the potential for the jammed fitting to free itself without warning.

A note about stored energy

Stored energy can be mechanical, gravitational, hydraulic, chemical or pneumatic and refers to the energy stored under tension in machines and equipment. Stored energy hazards exist because stored energy can be released accidentally and without warning, and potentially cause serious injury. The US Department of Labour estimates that almost 10% of that country's serious accidents at work are associated with a failure to control stored energy.

In the port and ship environments in New Zealand, examples of where stored energy could be a hazard are winches and coiled steel cables or mooring ropes — if the stored energy is suddenly released, it can cause the winch, cable or rope to 'snap back' and hit a person, resulting in serious or fatal injuries.The most common types of injuries associated with stored energy hazards are:

- electrocution
- burns
- crushing
- cutting
- lacerations
- amputations
- fractures.

FREEING JAMMED TWISTLOCKS

Factors to consider when freeing jammed twistlocks include but are not limited to:

- communication between all workers carrying out the process
- access to assess the situation
- removal of all tension in the crane system
- means to free the jammed fitting, for example, by use of limited crane power or hand tools.

Some ships may supply twistlock clamps, which are attached between each of the bottom corner castings of the container to be discharged and the top corner castings of the container to which it is jammed. These clamps should only be used if they are marked with a working load limit and

accompanied by an ‘in date’ certification.

USING HEAT TO RELEASE A JAMMED TWISTLOCK

If heat needs to be applied to a jammed twistlock to release it, prior approval should be obtained from the ship’s master and/or the port. A hot works permit system should be used.

Permit to work systems are often implemented for the safety of hot work tasks and take into account factors such as the:

- location and nature of hot work
- nature/hazards of the cargo within the container and any adjacent containers that may also be affected by the application of heat
- proposed time and duration of the work
- limits of time for which the permit is valid
- means to prevent/extinguish any fire
- person in direct control of the work.

Working on top of containers

Working on top of containers can create a risk of falls. When work on top of containers cannot be avoided, PCBUs should ensure workers have safe means of access. Wherever possible, this access should be part of the ship’s permanent superstructure, such as lashing platforms. When such access is not possible, safe access should be provided by the use of a crane-lifted work platform.

Work on top of containers should cease when there are high winds.

See also:

4.8 Working at height

6.9 Crane-lifted work platforms

Housekeeping before the ship departs

After the completion of lashing and unlashing, excess lashing gear should be safely secured in designated stowage compartments, where available, in accordance with the ship’s master’s requirements.

5.7 Storage, stowage and securing of cargo

Maritime Rule Part 24B Carriage of Cargoes: Stowage and Securing sets out requirements for ships' masters to ensure cargo is adequately stowed and secured.

Cargo not in containers, for example, coils, pipes and beams, should be stored or stowed in stable stacks. This cargo may be moved repeatedly during loading, discharging and storage which may create new risks or change already identified risks. Ongoing risk management is required to ensure these risks are eliminated or minimised.

Storage of cargo at a port

Any plan for storing cargo at a port should take into account the:

- floor capacity of the storage area
- stability and ability of, the ground to support the cargo (and any mechanical equipment if required)
- type, dimensions and weight of cargo and the methods of storage
- potential for stored energy due to stacking arrangements
- safe access and egress for workers
- mechanical handling equipment and ability to operate it safely
- exclusion zones to separate mobile plant and workers
- storage or separation requirements of hazardous substances or dangerous goods
- length of time the cargo will be stored, and
- stability and securing devices for different types of cargo.

Control measures for safe storage include:

- ensuring cargo stacks remain stable – the maximum height of the stack is determined by the need to ensure stability - ensuring coils are:
    - used with end stops where there are pedestrian walkways nearby
    - supported by coil collapse arrest systems when near to amenities or offices
- using racking systems where appropriate
- using jersey curbs
- using dunnage correctly, including:
    - using means other than hands to place dunnage under loads

- avoiding placing hands or limbs under loads during glutting

using correct chocking measures such as:

- fixed chocks at the end of walkways
- ensuring materials used for chocking and dunnage are fit for purpose and adequately withstand the weight of the load

- using bolsters at the end of walkways. Bolsters should be designed by an engineer, inspected regularly and maintained as required
- identifying and communicating the load-bearing capacity of floors, and
- maintaining exclusion zones where identified.

LINKS TO GUIDANCE:

MARITIME NZ

Containers need a verified weight

WORKSAFE

Maintaining air quality in enclosed cabins

Workplace Exposure Standards

6.0 Plant and equipment management

IN THIS SECTION:

6.1 Plant and equipment management plan

6.2 Pre-work inspections

6.3 Working with suppliers

6.4 Risks to health and safety

6.5 Engaging with workers to develop processes

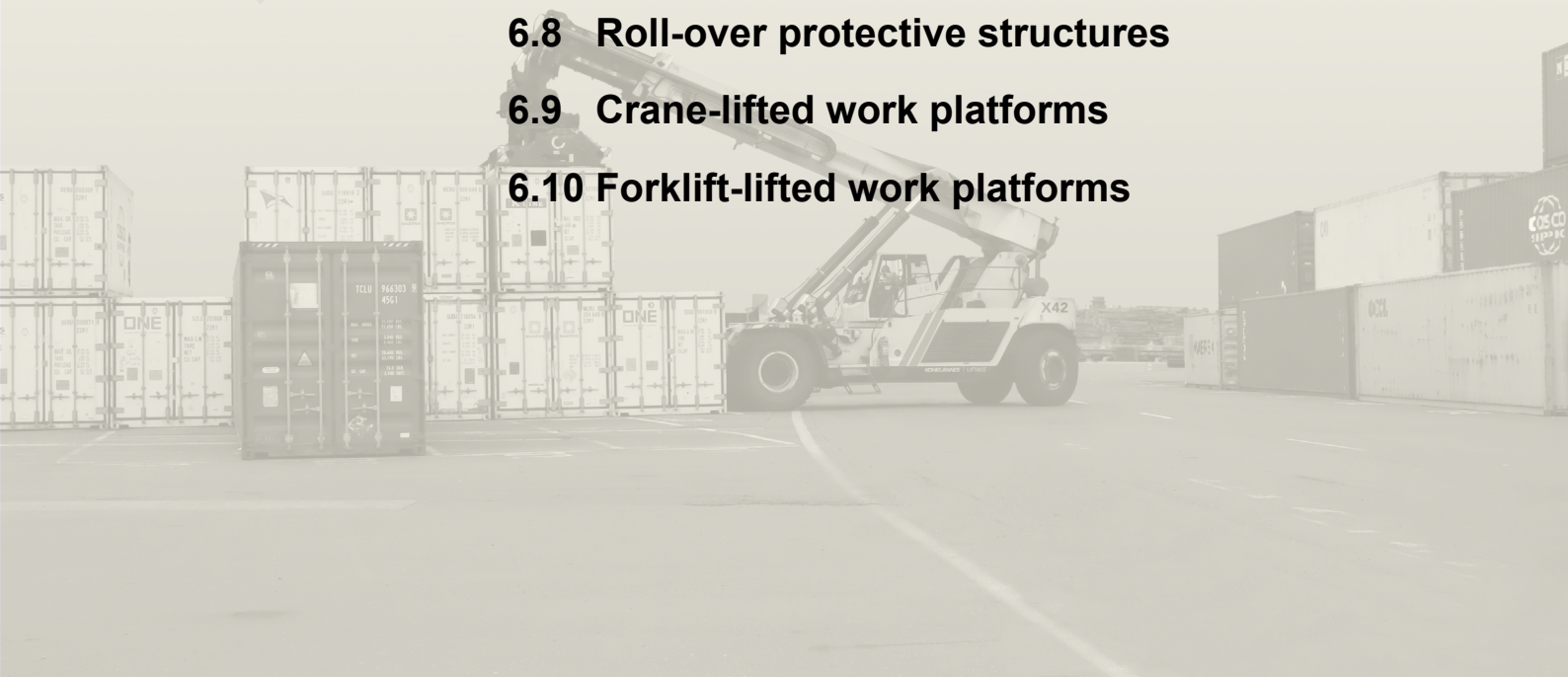
6.6 Emergency stops, lockout/tagouts, energy isolation

6.7 Managing unplanned events

6.8 Roll-over protective structures

6.9 Crane-lifted work platforms

6.10 Forklift-lifted work platforms



This section offers guidance for PCBUs on ways they can apply good risk management practices when working with plant and equipment. Plant and equipment includes machinery such as cranes, other lifting appliances, mobile plant, and loose cargo gear.

6.1 Plant and equipment management plan

PCBUs must eliminate risks to health and safety, so far as is reasonably practicable. This includes risks associated with plant and equipment used by the PCBU's workers. If the risks cannot be eliminated, the risks must be minimised so far as is reasonably practicable. A plan to manage the purchase, lease and maintenance of plant and equipment will help to minimise these risks.

An effective management plan will help ensure plant and equipment is:

- fit-for-purpose
- in serviceable condition
- clearly marked with the item's working load limit
- certified, and
- going to remain in optimal working condition over its expected lifespan.

The plan should include a schedule of regular inspection, maintenance and testing. This ensures the availability, performance and reliability of plant and equipment, and reduces the risks to:

- operators of plant and equipment
- other workers, for example, hatchmen and riggers who are involved in a lift
- other PCBUs and their workers who are involved in a lift, for example, forklift operators who deliver cargo for loading
- other PCBUs and their workers performing other operations nearby (overlapping duties), and
- ships' crew.

See also:

1.11 Consulting, cooperating, and coordinating with other PCBUs with the same health and safety duty.

Inspections, maintenance, testing and certificates

PCBUs should confirm that cranes, self-propelled mobile mechanical plant and lifting equipment such as spreaders, beams, slings, chains and hooks used on shore and on board vessels to raise, suspend and lower loads, are regularly inspected, preventatively maintained, tested and certified.

For ship-based plant and equipment, inspections, maintenance, testing and certificates of test must be in accordance with Maritime Rule Part 49.

For shore-based plant and equipment, inspection, maintenance and testing should be in accordance with the Approved Code of Practice for Load-Lifting Rigging.

PCBUs should confirm that shore-based plant have valid certificates of inspection issued by an inspection body recognised by WorkSafe New Zealand. An exception to this is when an item of plant has been granted an exemption from requiring a certificate of inspection by WorkSafe New Zealand.

Shore-based cranes should be certified, well maintained and fit for purpose in accordance with AS 1418.1:2021 – Cranes, Hoists and Winches General Requirements. Also refer to the Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999 for more information on the issuing of certificates of inspection for cranes.

Managing the risks of plant and equipment

PCBUs must, so far as is reasonably practicable, perform a risk assessment on each item of plant and equipment used by the PCBU's workers. The risk assessment should be completed in consultation with workers, and with reference to acts and regulations, maritime rules, codes of practice, standards and manufacturer requirements.

The risk assessment should:

- identify the purpose of the plant and equipment
- identify how the plant and equipment will be used and the hazards related to use
- identify the work environment where the plant and equipment will be used and the hazards related to the work environment
- consider other workers working close to the plant or equipment
- identify the competency, skills and experience of the workers operating the plant and equipment
- identify whether supervision is required and if so, the scope of supervision.

Training and supervision

PCBUs must ensure, so far as is reasonably practicable, that workers who operate or use plant and equipment:

- are knowledgeable and experienced in using the plant and equipment so as not to adversely affect the health and safety of, or cause harm to, themselves or any other person, or
- are adequately supervised by a person who has the required knowledge and experience.

PCBUs must ensure, so far as is reasonably practicable, that workers who operate or use plant and equipment are adequately trained in the safe use of all:

- plant and equipment they are required to use or handle, and
- personal protective equipment they are required to wear or use.

See also:

1.12 Providing information, training, instruction and supervision

Maintenance

PREVENTATIVE MAINTENANCE

The purpose of preventative maintenance is to reduce incidents by carrying out regular inspection and overhaul of plant and equipment, including changing parts as required by the maintenance schedule, to ensure the plant and equipment remains fit for purpose.

A preventative maintenance system should be put in place to:

- ensure pre-work checks are completed at the start of each shift by the plant operator
- schedule regular inspections and maintenance.

The frequency at which inspections are undertaken and regular maintenance is carried out should be guided by manufacturer instructions or a competent person's recommendations based on technical standards and engineering principles. Risk assessments and breakdown/failure rates should also be taken into account, and ensure, for example, adequate contracts, service-level agreements, and procedures are in place to repair or replace parts in a timely manner.

REACTIVE MAINTENANCE

While preventative maintenance improves productivity, and reduces repair costs and risks to workers, there is still a need to plan for reactive maintenance. Reactive maintenance means repairing plant

and equipment when it fails. For example, repairing or replacing a damaged tyre.

If maintenance or repair work is required during loading or discharging, PCBUs must ensure they have assessed the risks associated with the work and put in place controls to eliminate them, or if this is not reasonably practicable, minimise the risks so far as is reasonably practicable.

The risk assessment should take into account:

- the safety of people who may be affected by maintenance or repair work; not just those carrying out this work
- hazardous substances and substances hazardous to health, for example, noxious gases, fumes or dust
- noise from the repair work or that workers carrying out repairs will be exposed to, and
- whether the repair work is likely to obstruct, interfere with or distract workers involved in loading or discharging or other nearby operations.

MAINTENANCE PROCEDURES AND CONTRACTUAL ARRANGEMENTS

PCBUs should:

- have a clear set of procedures for carrying out maintenance
- have people available to carry out the maintenance, on-call if necessary, whether they be in-house engineers and mechanics, or contractors, and
- regularly monitor the performance of plant and equipment.

Performance can, for example, be measured by comparing the item's condition at regular intervals, comparing breakdown costs, or comparing the number of near misses, wear, damage and incidents of harm associated with plant or equipment.

Any maintenance work must, so far as is reasonably practicable, be conducted in a work environment that is without risks to health and safety.

Records

For each item of plant and equipment, the following details should be recorded:

- each item's unique identification number
- the type of plant or lifting equipment
- for each item's certificate, the date of expiry
- risk assessment results

- faults and damage to plant and equipment as they occur
- repairs and modifications to plant or equipment. PCBUs should ensure any modifications to plant are planned so that new risks are not introduced. If new risks are introduced, PCBUs must eliminate them or if this is not reasonably practicable, minimise them so far as is reasonably practicable
- variations from normal operation and any trends that may emerge
- control measures that have been put in place to eliminate or minimise harm so far as is reasonably practicable
- near misses and incidents involving plant or equipment
- the names of the plant or equipment operator and any other people involved in a near miss or incident.

The following details relating to inspections should also be recorded:

- the name of the inspector and inspection body
- standards against which plant should be inspected
- frequency of inspections
- procedures for performing inspections
- critical safety instructions to be followed during inspection, for example, the energy isolation procedure, and
- tests specific to the plant or equipment being inspected.

6.2 Pre-work inspections

The PCBU responsible for the operation of plant and equipment should ensure the operator carries out appropriate checks of the plant and equipment before each shift and confirms it is safe to use. These pre-work inspections will vary depending on the type and manufacturer of the plant or equipment.

Examples of what to include in a pre-work inspection are:

- visual inspections, looking for leaks, tyre wear and other hazards
- engine inspections, including, for example, fluid levels and filters
- checking that the controls are functioning properly and mechanical parts are moving smoothly, for example, the ignition, lights, fuel gauge, headlamps, wipers and horn.

- safety systems, such as limits or load cut-outs are functioning correctly
- any faults, wear or damage, and
- checks on the condition of the operator's seating and confirm unobstructed access to all relevant controls.

PCBUs should ensure workers have a way of recording checks of plant and equipment. For example, a machine log book or a book of pre-work inspection forms may be used for recording the results of pre-work inspections, raising faults and requesting repairs.

CRANES

PCBUs should ensure pre-work inspections of cranes (and other lifting appliances as appropriate) are conducted by a competent person before each shift. These inspections are suggested as fairly quick visual checks and walk-arounds, where appropriate.

These inspections should confirm:

- safe access is provided. For example, ladders or stairs, surfaces and lighting
- any visible dents, rust or deformations
- emergency escape/access is provided and suitable
- appropriate firefighting equipment is available
- items such as lights, windscreen wipers, washers and other attachments are properly secured and operating
- there are no obstructions impairing safe operation, for example, oil, debris or structures like a cable trench, rollers and rail tracks
- there are no internal access hazards. For example, there are guards on moving equipment such as fans in the crane's cab
- in the cab there is adequate weather protection, emergency egress, a fire extinguisher, adequate visibility, adequate ergonomics, and all controls work as they are supposed to.
- relevant levels and/or components show no loss of fluids, for example, lubricating oil or coolant
- electrical equipment is not exposed to contamination by oil, grease, water or dirt
- all ropes are correctly positioned on their sheaves and drums, and are not displaced
- the working load limiter is correctly set and the manufacturer's daily test is carried out
- the radius is varied without load to check the correct movement of the radius indicator and working load limiter

- if separate from the working load limiter, the radius indicator is appropriate to the jib configuration fitted.

A competent person should check loose cargo gear is in good condition, certified and tagged. For example, wires, sheaves, blocks, hooks, swivels. Each item of loose cargo gear should be clearly marked with its working load limit.

INSPECTIONS DURING OPERATIONS

Regular visual checks of lifting appliances should be carried out during the operation by a competent person, for example, a rigger. Slings should be protected from sharp edges.

For ship's equipment, PCBUs should notify the master of any unsatisfactory inspection results so that these details can be attended to, and recorded in the ship's register of lifting appliances.

6.3 Working with suppliers

PCBUs operating plant and equipment must, so far as is reasonably practicable, ensure the plant and equipment is without risks to health and safety. Where the PCBU is intending to use plant or equipment that it does not own, the PCBU must confirm with the supplier of the plant or equipment that it is fit for purpose, in good condition, of adequate capacity to do the work, and is safe to use.

PCBUs should be aware that suppliers of plant and equipment must:

- ensure any calculation, analysis, testing, or examination required for use, storage, inspection, maintenance or repair, is carried out
- give to each person to whom the plant is supplied, adequate information concerning:
- each purpose for which the plant was designed or manufactured
- the results of any calculations, analysis, testing, or examination
- any conditions necessary to ensure the plant is without risk to health and safety when used as intended, stored, inspected, cleaned, maintained or repaired
- on receiving a request from a person who uses, stores, inspects, cleans, maintains or repairs the plant, make reasonable efforts to reply with current relevant information. This may be information relating to:
    - the purpose for which the plant was designed or manufactured
    - the results of any calculations, analysis, testing, or examination
    - any conditions necessary to ensure the plant is without risk to health and safety when used as intended, stored, inspected, cleaned, maintained or repaired.

Ship-based cranes and loose cargo gear

PCBUs should request access to the ship's register of lifting appliances to confirm the testing and certification of the ship's cranes and items of loose cargo gear. Where practicable, this can be requested before the ship arrives.

The crane manufacturer's instructions should be located in the rigging plan or accompanying booklets, and be available on board the ship. Any item noted in the ship's register of lifting appliances as being unsatisfactory or defective, must not be used until the defect is remedied to the satisfaction of a competent person.

See also:

3.4 Pre-work inspections

6.4 Risks to health and safety

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Duty of PCBU who manages or controls fixtures, fittings, or plant at workplaces

(1) A PCBU who manages or controls fixtures, fittings, or plant at a workplace must, so far as is reasonably practicable, ensure that the fixtures, fittings, or plant are without risks to the health and safety of any person.

There are many risks from working with plant and equipment that PCBUs must eliminate so far as is reasonably practicable or minimise.

Some of these risks are:

- workers being subjected to long hours of sedentary work in constrained positions
- workers being exposed to hazardous substances and substances hazardous to health, for example, noxious gases, fumes or dusts
- workers being exposed to noise, including noise from repair work, and
- repair work that obstructs, interferes with or distracts workers who are carrying out loading or discharging.

PCBUs should ensure:

- work hours include time that supports positive health outcomes
- workers know of, are empowered to, and have the tools to manage the risks associated with sedentary work and constrained postures
- appropriate guarding is in place to protect people who are working in and around plant from harm

- faults and damage are reported and repaired in a timely manner, and
- records are kept as evidence of, for example, pre-work inspections, maintenance and repairs.

PCBUs must ensure, so far as is reasonably practicable, that the health of workers and the conditions at the workplace are monitored for the purpose of preventing injury or illness of workers arising from the conduct of the business or undertaking.

PCBUs must ensure, so far as is reasonably practicable, the safe use, handling, and storage of plant, to prevent, for example:

- workers being hit by falling or moving objects
- the plant overturning
- workers being ejected from plant
- the plant colliding with any person or object
- mechanical failure resulting in the release of fluids that pose a risk to health and safety.

See also:

4.5 Air quality

4.10 Falling objects

4.11 Noise

4.13 Fatigue

6.5 Engaging with workers to develop processes

PCBUs must, so far as is reasonably practicable, engage with workers:

- who carry out work for them, and
- who are (or are likely to be) directly affected by a work health and safety matter.

This could mean the PCBU engages with workers to develop and agree documented processes, procedures, training programmes and supervision that enable them to, for example:

- perform tasks safely with a clear understanding of the plant's capabilities and limitations
- understand the plant's safety features, why they are installed, how they are fitted, checked, and how they function. For example:
    - the tripping of safety relays, for example, safety gates, and electrical or mechanical faults
    - identifying and using emergency stop devices on machinery, and
    - stopping a self-propelled mobile mechanical plant in an emergency without causing harm, or damage to plant or cargo

- perform pre-work inspections
- effectively identify, review, manage and confidently communicate the risks associated with operating plant and equipment
- report faults, wear and damage at any time (pre-work, during operation and after operation)
- determine whether safe operation or the operator's safety will be compromised
- identify safety critical faults and where relevant, remove plant or items of equipment from use
- implement and follow lock out / tag out procedures to prevent harm
- have ready access to documentation and the time to observe, discuss and plan any changes to the operation, and
- safely adapt to changing conditions.

See also:

1.9 Engaging with workers

6.6 Emergency stops, lockout/tagouts, energy isolation

Emergency stops

An emergency stop is a manual control device. It is used to immediately stop machinery when there is a risk of harm to one or more persons or a risk of damage to machinery or product (cargo).

Emergency stops should not be:

- used to routinely stop machinery, nor
- relied on as a method of lockout.

For locking out machinery, always use an effective lockout/tagout system.

Lockout/tagout and energy source isolation

Lockout is the use of a lock to:

- render machinery or equipment inoperable, or
- isolate an energy source so as to establish a state of 'zero energy'.

Zero energy is the state where all sources of energy including electrical, pneumatic, hydraulic, mechanical and stored energy are isolated to prevent activation of moving parts on equipment or machinery that could otherwise cause harm when the parts are in motion.

Machinery that is locked out should also be tagged out. Tagging out involves attaching a tag to the machinery warning other workers that it is locked out and is not safe to use.

LOCKOUT PROCEDURE

PCBUs must, so far as is reasonably practicable, have a safe and effective lockout procedure to isolate and de-energise parts of any plant and equipment that could cause harm to workers.

PCBUs must ensure, so far as is reasonably practicable, that workers:

- have adequate knowledge and experience or training in the procedure, or
- are adequately supervised by a person who has that knowledge and experience.

PLANT AND EQUIPMENT ISOLATION AND LOCKOUT

Lockable isolation switches should be fitted to all plant that will be used within a crane's operating area. The isolation system should include lock-off facilities if the plant can be started remotely.

ISOLATING AND LOCKING OUT BRIDGE AND GANTRY CRANES

Ensure bridge and gantry cranes can be isolated or locked out, for example when:

- workers or operators are performing maintenance on the crane
- the crane is not being used, that is, to prevent unauthorised use, and
- the crane is deemed unfit for use either:
    - before commissioning, or
    - after an incident or inspection.

6.7 Managing unplanned events

Plans may need to change owing to, for example, insufficient plant, the absence of a crew member, extreme weather, and productivity pressure. These changing circumstances may introduce new risks that PCBUs must also manage.

Two examples of this type of situation, involving plant and equipment, are:

- lightning, and
- high winds.

Lightning

Any crane struck by lightning must be thoroughly examined by a competent person before being returned to service.

High winds

When high wind speeds are expected, cranes should be secured in their appropriate out-of-service condition. If this requires the raising or lowering of a jib, PCBUs should have a planned procedure in place to ensure there is adequate time and space to do so. Cranes secured at picket points should be travelled against the wind to the nearest picket position and the storm anchor inserted.

Rail-mounted cranes taken out-of-service in high winds should be secured using securing devices designed for the purpose, for example, storm pins or bolts that can be inserted into a socket in the quay surface, rail clamps, wheel scotches and chains.

Brakes should be maintained in a safe and serviceable condition and able to prevent unpredictable movement in high winds. For example, the crane's slewing brake should be capable of holding the jib stationary, with the maximum working load limit suspended at its maximum radius when a maximum in-service wind acts in the most adverse direction.

See also:

3.9 Managing risks that may emerge during work.

6.8 Roll-over protective structures

PROTECTION FROM OVERTURNING

Self-propelled mobile mechanical plant must be fitted with a roll-over protective structure and seat belt that is fit for purpose.

Exemptions

A roll-over protective structure is not required where:

- Worksafe New Zealand has issued a certificate in writing that, subject to conditions, the certificate exempts a mobile mechanical plant from requiring a roll-over protective structure
- the mobile mechanical plant's mass is 700 kilograms or less, or
- the mobile mechanical plant:
    - is a forklift with a telescopic boom

- is a crane
- is a power-operated elevated work platform
- is a car, bus, truck or van, or
- was designed for and operates on level ground.

The following are not considered level ground:

- wharves, owing to different road surfaces and the presence of railway tracks
- ships or ship cargo, for example, layers of logs.

Damage

Roll-over protective structures can be damaged if the plant tips over, rolls over, or is hit by a falling object.

Where there is damage to the plant's roll-over protective structure, the plant must not be used until the roll-over protective structure is:

- replaced, or
- restored to a strength and effectiveness that is equal to the original structure.

A restored roll-over protective structure must be approved (recertified) by the manufacturer, manufacturer’s principal agent, or a chartered professional engineer before the plant can be used.

Seat belts and passenger seats – protection from being ejected

PCBUs must ensure that every self-propelled mobile mechanical plant has a seat belt that is fit for purpose. If carrying a passenger, the passenger should have, as a minimum, the same protections as the operator. To carry a passenger, a manufacturer approved passenger seat and seat belt should be fitted.

PCBUs should set policies around who may ride as a passenger, including workers (employees, contractors, trainees 15 years of age and older), people under 15 years of age, and visitors.

6.9 Crane-lifted work platforms

A crane-lifted work platform is a piece of equipment from which one or more workers can carry out their work. The work platform is either attached to the crane's hook or the head of the crane's boom and is lifted or suspended to allow one or more workers to work from the safety of the platform.

It is important that workers working on or from the platform can communicate clearly with the crane operator at all times.

PCBUs must provide personal protective equipment to workers working from a crane-lifted work platform, and ensure they know how to wear or use it and maintain it properly.

When the platform is operated above water, personal protective equipment should include:

- a safety harness that is suitably attached via an approved lanyard, or
- if required by the risk assessment, a personal flotation device.

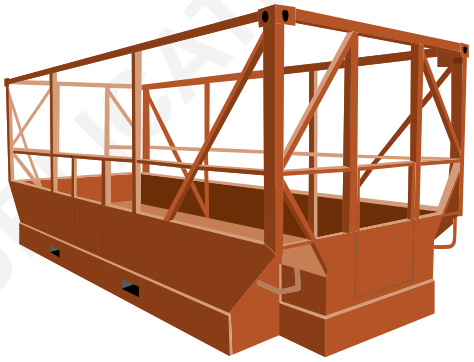

Figure 5: Crane-lifted work platform.

Design, manufacture and test

PCBUs responsible for the operation of crane-lifted work platforms should ensure the work platform is:

- specifically designed to lift or suspend people
- designed and certified by a Chartered Professional Engineer (CPEng)
- designed, manufactured and tested in accordance with approved standards using a minimum impact factor of 1.5, and
- load tested to 1.5 times of the platform's working load limit.

Fixtures and fittings

PCBUs responsible for the operation of crane-lifted work platforms should ensure the work platform:

- has slip-resistant flooring
- if not electrically insulated, has a free-draining floor
- has inwardly opening or sliding self-closing gates that can be secured in position to prevent unintentional opening

- is fitted with sidewalls, and guardrails or barriers no less than 900 mm and no greater than 1100 mm above the platform's floor, and
- has fall-arrest anchorage points fixed to the platform.

PCBUs responsible for the operation of crane-lifted work platforms should, before using the platform, ensure the following information is displayed on the working platform and is clearly visible:

- working load limit, and
- CPEng design certificate. This should be issued and fixed to the platform by the Chartered Professional Engineer with the certificate stating the:
    - design code
    - impact factor
    - class of utilisation, and
    - state of loading.

Inspections

PCBUs responsible for the operation of crane-lifted work platforms should confirm the:

- work platform has been inspected and tested annually by a competent person with records kept of the inspections, and
- platform, lifting attachments and records are inspected by a competent person before use, and confirmed as safe to use.

Suitability for operation

PCBUs responsible for the operation of crane-lifted work platforms should ensure the work platform:

- is securely attached to the plant
- if moved, is only moved at slow speeds with minimal acceleration and deceleration
- has slip-resistant access
- if electrically insulated, is dried before use
- is not used in high winds or harsh weather conditions like electrical storms, and
- is only used to lift workers and the materials used to carry out the work.

Entering and exiting in an emergency

As explained at 2.5 'Risk management - emergency planning', PCBUs must ensure that an emergency plan is prepared for the workplace.

More specifically, when considering how workers will enter and exit a crane-lifted work platform in an emergency, the PCBU should carry out a risk assessment to ensure:

- an alternative safe means of access and exit is available if workers need to immediately evacuate the platform, and
- the landing area is structurally adequate and clear.

Emergency procedures should be written.

When a crane is used to lift a work platform

The PCBU responsible for the operation of the crane used to lift a work platform should ensure:

- the crane has power-lowering capability
- if the crane is fitted with a free-fall facility, the free-fall function is positively locked out to prevent inadvertent activation
- where a crane has multiple work drums and a hoist system that allows either hook block to fall free, the hook block that is not in use is removed and the wire rope is stowed
- where a crane operates suspended or fixed/pendulum platforms, the crane is operated at no more than 75% of its working load limit
- where a crane is being used with suspended platforms, the crane has anti-two-block devices fitted, unless they have a fixed hook
- when operating suspended work platforms from a hook, all hook safety latches are fully operational
- the braking efficiency of the hoisting drive train is tested each day before using the lifted work platform. This should be done by hoisting and holding a load not less than twice the maximum hoisted load of the loaded working platform
- the crane is equipped with a secondary back-up system to prevent the load from falling if the primary lifting device fails
- the crane has levers and foot pedals fitted with a constant pressure system that stops the crane’s motions when the operator removes pressure from the controls.

Where a crane has automatically-applied brakes to the hoist or is twin-lever operated, the crane may operate with two hooks.

Crane operators

The PCBU should ensure the crane operator:

- remains in attendance while the work platform is in use
- operates the crane and platform within the manufacturer's recommendations
- does not suspend the work platform over people
- does not use the crane to simultaneously raise, lower or suspend another load while the work platform is suspended from it.

Where the crane operator lands the work platform on the edge of a structure, PCBUs should ensure:

- the maximum gap between the work platform and landing does not exceed 100 mm
- the work platform is secured to a suitable point on the landing
- fall arrest harnesses are properly worn and attached to suitable anchorage on the structure.

Fire preparedness

The PCBU responsible for the operation of a crane-lifted work platform should ensure the work platform:

- carries a fire extinguisher suitable for extinguishing fires caused or spread by flammable substances associated with the work to be carried out, and
- where used to carry flammable liquids, oxygen and acetylene cylinders, that these substances will only be carried:
    - where they are needed to carry out the work
    - only in quantities adequate to carry out the work, and
    - only when they are correctly secured to the work platform.

6.10 Forklift-lifted work platforms

Work platforms lifted using forklifts are sometimes known as personnel cages or man cages.

PCBUs must assess the risks associated with operating a forklift and the tasks carried out by workers who will be working from the fork-lifted work platform, and put in place effective control measures.

Forklift-lifted work platforms should:

- be made in accordance with Australian Standard AS 2359.1 Powered Industrial Trucks

- be fitted with guardrails, mid-rails and kickboards
- only have self-closing gates that open inwards and that are installed with a spring-loaded latch
- have a two-metre-high guard that is adequately wide to prevent any contact with the lifting mechanism fitted to the back of the platform
- be operated with the tilt lever on the forklift controls locked out or made inoperable
- have operating instructions available
- have the working load limit and maximum number of persons displayed in a prominent position

Figure 6: Forklift-lifted work platform.

- have the platform secured to the forks in such a way that it cannot tilt, slide or be displaced
- have the park/hand brake applied when elevating persons
- not be used to move people around the port
- only be used by a competent forklift operator
- only be used while an operator is at the controls of the forklift or there is an independent means of access to and egress from the platform
- maintain a safe distance from the edge of the wharf, ramps, platforms and other similar working surfaces.

LINKS TO MORE INFORMATION:

A range of checks that may be relevant before using a crane, see section 5.1.4.2 Daily Checks of the International Labour Organization (ILO) Code of Practice: Safety and Health in Ports

For a comprehensive list of what must be included in certificates of inspection for cranes and self-propelled mobile mechanical plant, see the Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999, Regulation 33 (4)

The Australian Standard for Cranes, Hoists and Winches is AS 1418.1:2021.

WORKSAFE

For seatbelt specifications, see the Approved Code of Practice for Operator Protective Structures on Self-Propelled Mobile Mechanical Plant

Appendix 1

Example checklist for vessel inspection: container operations

Vessel:

Date and time:

Inspection conducted by:

Vessel representative:

Terminal representative:

Inspection areas	Yes	No	N/A	Comments
1. Access and egress				
Gangway in a suitable position, secured and netted				
Gangway kept clear of quay cranes and not impede crane travel				
Gangway signage in place and secure at the wharf side access point				
Gangway kept fully lowered				
Hatchway covers above ladders in place & can be secured				
Handgrips present at top of ladder				
Access hatches are of suitable size to access freely				
Working space is clear of obstructions				
Walkways are in good condition and free of obstructions, with excess lashing gear suitably stacked to remove slip and trip hazards				
Lashing points accessible				
Vertical ladders >3 m have safety hoops—bottom hoop is at least 2 m from the base of the ladder				
Provision of safe access and egress to under deck stows				
2. Edge protection				
Outboard cells are provided with safety rails sufficient to prevent a person falling overboard				

Provision of 2 parallel railings—top and mid-rail—around open hatches and outboard cells including safety chains				
Continuous rails—rope or wire—are taut and in good condition				
Metal stanchions are 1 m in height and no more than 2.5 m apart and secured in position				
3. Housekeeping				
Lifebuoy accessible and visible				
Hazardous substance containers checked for leaks				
Fire and emergency equipment including warning alarms functional and in suitable positions				
4. Lashing and twistlocks				
Lashing gear, unlashing poles, bars, spanners etc are accessible and appear to be in serviceable condition				
High lashing bars can be handled using appropriate manual handling technique				
Are lashings and twistlocks of a consistent type and style?				
Are twistlocks compatible with plant and equipment?				
Bins and racks for stowage of lashing gear are provided and accessible at point of work				
Walkways are clear of excess lashings, loose gear and other trip hazards				
Cell guides in good condition				
Do the 20’ containers loaded on deck need to be lashed in the centres?				
Does the vessel’s container stowage and configuration—20’/40’—cause a change in the lashing and fall protection on the outboard cells regarding protective fencing?				
5. Lighting				
Adequate lighting is provided at points of work for lashing and unlashing and cargo operations				
6. Ship's gear and cranes				

Inspection and maintenance logs kept and available for wires and lifting gear, only where applicable e.g. chains, slings				
Ship's crane stowed to waterside and boom below the top of crane pedestal—only where required				
Slings for pre slung cargo are accessible with SWL displayed				
7. Reefers				
Cables are stowed away clear of walkways and work areas				
Power can be isolated at the board in vicinity to lashing activities				
Reefer cables of import boxes are unplugged & rolled up by crew and placed in storage compartment of container before discharge				
8. Deficiencies or non-conformities				
Outstanding deficiencies or non-conformities from the previous pre-work inspection.				

Appendix 2

Example checklist for vessel inspection: bulk and general operations

Facility name:

Vessel:

Date and time:

Person responsible for inspection:

Signature:

Item		Yes	No	Comments
1	Safe access from wharf to vessel			
2	Safe onboard access, clear alleyways to and from work areas			
3	Safe access to cargo gear operating areas			
4	Safety rails rigged in work areas and lashing platforms			
5	Confirmation ship's gear conforms with Maritime Rules			a) Date of last four or five-yearly: (indicate four or five as applicable) Surveying authority: b) Date last annual: c) Random gear item check: Item ID Sited endorsement i) YES NO ii) YES NO
6	Are fire hoses and firefighting equipment on board and ready with international shore connection			
7	Work spaces are adequately ventilated and atmosphere is safe			

8	Information has been provided on hazardous or dangerous goods cargos and confirmation this cargo is intact with no flammable or toxic spillage			
9	Confirmation an adequate mooring watch will be maintained			
10	Confirmation of emergency procedures			
11	Vessel and wharf operational areas adequately lit			
12	Agreement regarding order of load, discharge and cargo placement			
13	Specific advice regarding abnormal stow conditions or special requirements e.g. lashing, tomming off, dunnaging, glutting, securing requirements			
14	Vessel advised of person responsible for stevedoring operations, contact numbers, structure and allocation of workforce			
15	Start with and maintain a clear and uncluttered wharf face operational area			
16	Confirm machinery to be used onboard and on wharf for practicality and suitability			
17	Stevedoring equipment to be used, with specific consideration given to suitability, condition and SWL of slings and rigs. This includes consideration of ship and shore gear SWL in regard of lifts to be taken			
18	Establish traffic flow patterns to deliver cargo, or remove cargo from the wharf landing area— under hook. Crossing of machinery paths shall be minimised and controlled. Ensure traffics way are clear and unobstructed			
19	Wharf landing area—under hook—prepared with appropriate gluts, landing platforms or safe means by which carg			

20	Workers equipped with the skills necessary to carry out the intended operation and fitted out with the appropriate PPE			
21	Workers have a clear understanding of gear and rigs to be used and how cargo is slung or unslung			
22	In the case of bulk cargoes, wharf face personnel will have clear instructions regarding cargo receival e.g. backing trucks loaded with coal into dump bins before lifting on board or delivery e.g. operating a hopper to load product into a truck			
23	Have wharf face operations been assessed and barricades established separating operational aspects to maintain safe work areas?			