

*Draft*

## **CODE OF PRACTICE**

# **MANAGING RISKS IN STEVEDORING**

### ***Draft for Public Comment***

This draft model Code of Practice for *Managing Risks in Stevedoring* supports the model Work Health and Safety (WHS) Act and Regulations developed by Safe Work Australia under the *Intergovernmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety*.

The model WHS laws have been adopted in all jurisdictions other than Western Australia and Victoria.

This model Code of Practice aims to provide practical guidance to persons conducting a business or undertaking on how to manage health and safety risks in stevedoring. It aims to reflect current industry standards and safety practices.

#### ***Comment sought***

Comment is sought on whether the guidance in this Code:

- is helpful and easy to understand
- reflects current safety standards in relation to managing risks in stevedoring
- has an appropriate level of information
- requires additional examples to provide clarification. If so, please provide relevant examples that you think should be included.

Feedback is also sought on the following specific issues:

#### 1. Code of Practice or Guide

Both codes of practice and guides offer practical advice on achieving the standard of health and safety required under the WHS Act and Regulations. However, a code of practice approved under the WHS Act in a jurisdiction has a special status because it is automatically admissible in court proceedings as evidence of what is known about a hazard, risk or control. Courts may rely on the code in determining what is reasonably practicable in the circumstances to which the code relates.

Other types of guidance documents also help duty holders comply with the law, but they allow duty holders wider discretion to choose the options that best suit their circumstances. Guidance material contributes to the overall state of knowledge regarding hazards, risks and controls and may be tendered as evidence in court proceedings but they are not automatically admissible.

Safe Work Australia may determine that a document is suitable as a code of practice if the majority of the following criteria are met:

- Guidance is a necessary part of enabling compliance with the duties contained in the WHS Act or Regulations, particularly to support legislative provisions that are outcome focussed or do not provide much detail.
- There is clear evidence of a significant risk or widespread work health and safety problem where evidentiary status of a code will elevate the importance of the issue.
- There are certain preferred or recommended methods to be used (or standards to be met) to achieve compliance.
- The information on the hazard, risks and control measures is well-established, reflects the state of knowledge and therefore will not require frequent updating.

Specific comment is sought on whether the measures proposed to manage risks in stevedoring should be addressed in a Code of Practice or in guidance material.

#### 2. Interaction with Marine Orders

Stevedores work on shore and on board ships and are therefore subject to both the WHS Act and Regulations and to Marine Orders under the *Navigation Act 2012*. Although the draft model Code

of Practice is focussed on compliance under WHS laws, it also includes references to relevant Marine Orders and recognises that in some circumstances the WHS laws and Marine Orders operate concurrently. Feedback is sought on how this interaction can be further clarified in the draft model Code of Practice if necessary.

### 3. Guidance on mooring and unmooring

Section 8 of the draft model Code of Practice provides guidance on mooring and unmooring, a high risk activity which may on some occasions be carried out by stevedores. Comments are sought on:

- whether additional guidance is needed and if so, what the guidance should include, and
- whether the section should be provided separately in a guide to support the Code of Practice.

#### ***How do you make a submission?***

You can provide your comments as an individual or you may wish to contribute to a joint submission through your employer or union organisation, professional association or community forum. Where possible, you should include evidence and examples to support your views on the Code.

A Public Comment Submission Cover Sheet and the Public Comment Response Form are provided for making written submissions. These are available on the Safe Work Australia website at [www.safeworkaustralia.gov.au](http://www.safeworkaustralia.gov.au).

It is preferred that submissions are typed and submitted electronically to the following email address: [stevedoring@swa.gov.au](mailto:stevedoring@swa.gov.au). If you are unable to email your submission, you can post it to:

Safe Work Australia  
Attn: Stevedoring Public Comment  
GPO Box 641  
Canberra ACT 2601

When a submission is received by Safe Work Australia via email, an automatic response will be sent to confirm receipt. We do not send individual responses to submissions received by mail.

All submissions will be made accessible to the public on the Safe Work Australia website, unless marked 'IN CONFIDENCE'. However, legal requirements such as those imposed by the *Freedom of Information Act 1982* may affect the confidentiality of public submissions.

The closing date for making a submission is **Friday 19 July 2013**.

#### ***What happens after the public comment period closes?***

Safe Work Australia will analyse all written submissions that are received during the public comment period. Safe Work Australia will review and as necessary revise the Code.

The revised Code will then be considered by the Ministerial Council for adoption as a model Code of Practice.

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## FOREWORD

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This Code of Practice on managing health and safety risks in stevedoring is an approved code of practice under section 274 of the *Work Health and Safety Act* (the WHS Act).

An approved code of practice is a practical guide to achieving the standards of health, safety and welfare required under the WHS Act and the Work Health and Safety Regulations (the WHS Regulations).

A code of practice applies to anyone who has a duty of care in the circumstances described in the code. In most cases, following an approved code of practice would achieve compliance with the health and safety duties in the WHS Act, in relation to the subject matter of the code. Like regulations, codes of practice deal with particular issues and do not cover all hazards or risks which may arise. The health and safety duties require duty holders to consider all risks associated with work, not only those for which regulations and codes of practice exist.

Codes of practice are admissible in court proceedings under the WHS Act and Regulations. Courts may regard a code of practice as evidence of what is known about a hazard, risk or control and may rely on the code in determining what is reasonably practicable in the circumstances to which the code relates.

Compliance with the WHS Act and Regulations may be achieved 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 the code.

An inspector may refer to an approved code of practice when issuing an improvement or prohibition notice.

This Code of Practice has been developed by Safe Work Australia as a model code of practice under the Council of Australian Governments' *Inter-Governmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety* for adoption by the Commonwealth, state and territory governments.

## SCOPE AND APPLICATION

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This Code provides practical guidance for persons conducting a business or undertaking on how to manage health and safety risks associated with stevedoring. This Code has been developed to support the WHS Act and Regulations and applies to all workplaces where stevedoring activities are carried out. This Code covers the loading and unloading of vessel cargo, stacking and storing on the wharf, as well as receipt and delivery of cargo within a terminal or facility.

Stevedores work on shore and on board ships and are therefore subject to both the WHS Act and Regulations and to Marine Orders under the *Navigation Act 2012*<sup>1</sup>. In some circumstances these laws will operate concurrently, for example when a stevedore operates a ship-mounted crane. Marine Order 32 (*Cargo handling equipment*) regulates the use of material handling equipment, whether ship or shore equipment, when it is used for loading or unloading ships. It will apply to the safety of the ship-mounted crane, whereas the WHS Act will apply to the systems of work associated with the stevedore operating the ship-mounted crane.

Therefore this Code should be used in conjunction with relevant Marine Orders, including Marine Order 42 (*Cargo stowage and securing*), Marine Order 44 (*Safe containers*) and any relevant port specific regulation (harbour master's direction).

This Code should be read in conjunction with other codes of practice on specific hazards and control measures relevant to the stevedoring industry including but not limited to:

- How to Manage Work Health and Safety Risks
- Work Health and Safety Consultation, Cooperation and Coordination

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<sup>1</sup> The *Navigation Act 1912* regulated loading and unloading of ships covered by the Act docked in Australian wharves by way of Marine Orders (these allow for the concurrent operation of state and territory WHS laws); arrangements under the new *Navigation Act 2012* (administered by the Australian Maritime Safety Authority) are still to be settled.

- Hazardous Manual Tasks
- Managing the Risk of Falls at Workplaces
- Managing Noise and Preventing Hearing Loss at Work
- Managing the Work Environment and Facilities
- First Aid in the Workplace
- Managing Risks of Plant in the Workplace
- Managing Risks of Hazardous Chemicals in the Workplace
- Managing electrical risks at the workplace
- Cranes
- Industrial Lift Trucks.

***How to use this code of practice***

In providing guidance, the word 'should' is used in this Code to indicate a recommended course of action, while 'may' is used to indicate an optional course of action.

This Code also includes various references to provisions of the WHS Act and Regulations to provide context with legal requirements. These references are not exhaustive. The words 'must', 'requires' or 'mandatory' indicate legal requirements exist which must be complied with.

# 1. INTRODUCTION

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## 1.1 What is stevedoring?

**Stevedoring** involves all activities that are directly connected with:

- loading or unloading of vessel cargo
- stacking and storing on the wharf, and
- receiving and delivering cargo within the terminal or facility.

Stevedoring operations are diverse, comprising container terminals, bulk and general stevedoring facilities.

**Facility** means a workplace where stevedoring activities are undertaken, this includes common user sites.

**Terminal** means a maritime container terminal where containerised cargo is moved between different transport mediums for onward transportation. A typical container terminal consists of the water-side berth for docking the ships, a large paved yard for the short-term storage of containers, specialized cranes, tractors and other equipment for handling the containers and a secured gatehouse to control entry and exit of containers.

The following table provides examples of the different type of stevedoring operations:

Stevedoring operations	Details
Containers	Loading and unloading of container cargo.
Roll on roll off (RoRo)	Loading and unloading of cargo via ramp to vessel (e.g. cars, bulldozers).
Pure car carriers (PCC)	Loading and unloading of cars only.
Break bulk	Loading and unloading of non-containerised cargo transported as individual pieces due to it being oversized and overweight, e.g. construction equipment, oil and gas equipment, wind towers, steel
Bulk	Any product that is not separately packaged, but rather is loaded in bulk onto a ship, e.g. grain, liquids, iron ore, coal.
Passenger vessels	Primary function is to carry passengers

## 1.2 Who has health and safety duties in relation to stevedoring?

Everyone involved in stevedoring activities has health and safety duties when carrying out the work.

**A person conducting a business or undertaking** has the primary duty under the WHS Act to ensure, so far as is reasonably practicable, 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. In stevedoring this duty means that a person conducting a business or undertaking must eliminate risks arising from stevedoring, or if that is not reasonably practicable, minimise the risks so far as is reasonably practicable.

In addition to the primary duty of care, the WHS Regulations include specific requirements to manage risks in areas relevant to stevedoring activities including noise, hazardous manual tasks, falls, hazardous chemicals, and plant.

Duty holders include those who operate a business involved in stevedoring activities and those who have management or control of a workplace where stevedoring activities are carried out, for example ship owners and port authorities.

**Designers, manufacturers, importers, suppliers and installers of plant or structures** used in stevedoring activities must ensure, so far as is reasonably practicable, that the plant or structure is designed, manufactured, imported, supplied or installed without risks to health and safety.

Further guidance is available in the *Code of Practice: Safe design, Manufacture, Import and Supply of Plant*.

**Officers**, including company directors, have a duty to exercise due diligence to ensure that the business or undertaking complies with the WHS Act and Regulations. This includes taking reasonable steps to ensure that the business or undertaking has and uses appropriate resources and processes to eliminate or minimise risks that arise from stevedoring activities.

**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 people. 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 business or undertaking, the worker must use it in accordance with the information, instruction and training provided.

**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 other people. They must comply, so far as they are reasonably able, with any reasonable instruction given by the person conducting a business or undertaking to allow that person to comply with the WHS Act.

### 1.3 What is required to manage risks associated with stevedoring activities?

The WHS Regulations require a person conducting a business or undertaking to 'manage risks' associated with specific hazards, including noise, hazardous chemicals, confined spaces, plant and electricity.

**Regulation 34-38:** In order to manage risk under the WHS Regulations, a duty holder must:

- identify reasonably foreseeable hazards that could give rise to the risk
- eliminate the risk so far as is reasonably practicable
- if it is not reasonably practicable to eliminate the risk, minimise the risk so far as is reasonably practicable by implementing control measures in accordance with the hierarchy of control
- maintain the implemented control measure so that it remains effective, and
- review, and if necessary revise, risk control measures so as to maintain, so far as is reasonably practicable, a work environment that is without risks to health and safety.

Chapter 2 of this Code provides guidance on how to manage the risks associated with stevedoring activities by following a systematic process that involves:

- identifying hazards
- if necessary, assessing the risks associated with these hazards
- implementing and maintaining risk control measures, and
- reviewing risk control measures.

Further guidance on the general risk management process is available in the *Code of Practice: How to Manage Work Health and Safety Risks*.

#### **Consulting your workers**

**Section 47:** A person conducting a business or undertaking must consult, so far as is reasonably practicable, with workers who carry out work for them who are (or are likely to be) directly affected by a work health and safety matter.

**Section 48:** If workers are represented by a health and safety representative, the consultation must involve that representative.

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

Workers are entitled to take part in consultation arrangements and to be represented in relation to work health and safety by a health and safety representative who has been elected to represent their work group.

In deciding how to control risks, you must consult with your workers who will be affected by this decision, either directly or through their health and safety representative. Their experience may help you identify hazards and choose practical and effective control measures.

Consultation may occur through:

- general or workplace induction processes
- toolbox talks
- WHS committee meetings
- participative risk assessment processes
- phone, email or fax
- sessions or events called for a specific purpose.

Toolbox talks can be used to provide information to and receive feedback from your workers as well as assist in raising the awareness of how stevedoring work can be carried out in a safe and healthy manner. For example, toolbox talks may include discussions on:

- any changes to the work environment that may impact on health and safety
- safe working instructions for particular tasks
- any recent incidents or 'near misses' and ways to prevent them

When using toolbox talks it is good practice to:

- keep a written record of the topic covered, attendees and any feedback received
- organise a program of toolbox talks to ensure workers are given sufficient opportunity to provide input into how risks should be controlled
- review the effectiveness of toolbox talks and the level of worker understanding in the discussions.

### ***Consulting, co-operating and co-ordinating activities with other duty holders***

**Section 46:** The WHS Act requires that where more than one person has a duty in relation to the same matter, each person with the duty must, so far as is reasonably practicable, consult, cooperate and coordinate activities with all other persons who have a work health and safety duty in relation to the same matter.

Stevedoring activities can involve more than one business or undertaking, each with health and safety duties. Duty holders are required to consult, cooperate and coordinate activities with each other. Duty holders should exchange information on planned activities and consider who is best placed to minimise or eliminate the risks.

The outcome of consulting, cooperating and coordinating activities with other duty holders is that each duty holder understands how their activities may impact on health and safety and that the actions they each take to control risks are complementary.

For example when a vessel arrives at a terminal or facility, pre planning is completed prior to vessel arrival. The stevedoring company may provide information such as safe work procedures and vessel inspection checklists to the ship prior to undertaking stevedoring activities. This gives the vessel master an opportunity to cooperate with the stevedoring company to ensure the vessel is safe for the stevedores to work on. The stevedoring company conducts a vessel inspection upon the ship's arrival. Any safety problems are communicated to the vessel master / officer in charge and local agent. In the case of any outstanding issues, the stevedoring company may meet and work with the vessel master to try and resolve the issue. If the issues remain unresolved, then the stevedoring company contacts the shipping line or local agent to try and resolve the issue.

Further guidance on consultation is available in the *Code of Practice: Work Health and Safety Consultation, Co-operation and Co-ordination*.

## 2. RISK MANAGEMENT

Risk management is a key process to eliminate or minimise the potential for harm to people. The steps to manage workplace risks are:

1. Identify the hazard
2. Assess the risk
3. Control the risk
4. Maintain and review the control measures.

An example of the risk management process is at Appendix A.

### 2.1 Identifying the hazards

The first step in managing stevedoring risks is to find out what could potentially cause harm to people by collecting information about systems of work and work practices. This may be done by:

- inspecting the working environment and talking to workers about how work is carried out
- inspecting equipment and materials used during stevedoring
- reading product labels and manufacturer's instruction manuals
- talking to manufacturers, suppliers, industry associations and health and safety specialists
- reviewing reports of incidents, injuries and dangerous occurrences.

Table 1 lists common hazards found in stevedoring workplaces, examples of when they could occur and the potential harm they can cause.

**Table 1:** Hazards associated with stevedoring activities

Hazard	Examples of tasks	Potential harm
Manual tasks	<ul style="list-style-type: none"> <li>• Lashing and unlashng</li> <li>• Fitting/removing twist locks</li> <li>• Working above shoulder height</li> </ul>	<ul style="list-style-type: none"> <li>• Strains and sprains</li> <li>• Cuts and abrasions</li> </ul>
Working at height	<ul style="list-style-type: none"> <li>• Working near an open hatch</li> <li>• Accessing cargo</li> <li>• Climbing ladders</li> </ul>	<ul style="list-style-type: none"> <li>• Falls causing disabling injury or fatality</li> </ul>
Working in restricted or enclosed spaces	<ul style="list-style-type: none"> <li>• Working in holds</li> <li>• Working in between cargo</li> </ul>	<ul style="list-style-type: none"> <li>• Crush injuries</li> <li>• Respiratory conditions</li> </ul>
Falling objects	<ul style="list-style-type: none"> <li>• Working with suspended cargo or unsecured loads</li> </ul>	<ul style="list-style-type: none"> <li>• Crush injuries</li> <li>• Fractures</li> <li>• Fatalities</li> </ul>
Mobile plant and people interaction	<ul style="list-style-type: none"> <li>• Working in and around plant and equipment e.g. Straddles, internal transfer vehicles (ITVs), reach stackers, rubber tyred gantries (RTGs), forklifts</li> </ul>	<ul style="list-style-type: none"> <li>• Crush injuries</li> <li>• Disabling injuries</li> <li>• Fatalities</li> </ul>
Working environment	<ul style="list-style-type: none"> <li>• Working in extreme weather conditions</li> <li>• Working in holds and on deck</li> <li>• Working near refrigerated containers</li> </ul>	<ul style="list-style-type: none"> <li>• Sunburn/skin cancer</li> <li>• Heat stress, Strains and sprains due to slips and trips</li> </ul>
Electricity	<ul style="list-style-type: none"> <li>• Lashing next to refrigerated containers</li> <li>• Starting vehicles prior to load and discharge</li> <li>• Isolating equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Electric shock</li> <li>• Burns</li> <li>• Fatalities (electrocution)</li> </ul>
Stored energy	<ul style="list-style-type: none"> <li>• Pressurised liquids and gases</li> </ul>	<ul style="list-style-type: none"> <li>• Disabling injuries</li> <li>• Fatalities</li> </ul>

Noise	<ul style="list-style-type: none"> <li>Using noisy machinery or power tools</li> </ul>	<ul style="list-style-type: none"> <li>Hearing loss</li> </ul>
Hazardous chemicals	<ul style="list-style-type: none"> <li>Loading and unloading hazardous cargo</li> <li>Exposure to chemicals used to fumigate ship's holds</li> </ul>	<ul style="list-style-type: none"> <li>Respiratory conditions</li> <li>Burns</li> <li>Skin conditions</li> </ul>
Fire	<ul style="list-style-type: none"> <li>Hot works e.g. Welding or oxy-cutting</li> <li>Handling combustible cargo</li> </ul>	<ul style="list-style-type: none"> <li>Burns</li> <li>Fatalities (explosion)</li> </ul>

A number of controls may be needed to manage various hazards that co-exist in the workplace, for example, stevedoring activities may involve being near dangerous moving parts and performing strenuous manual tasks in the presence of excessive noise.

Hazards may arise from systems of work, working environments and work practices including:

- blocked entries and exits to work sites preventing escape in emergencies
- damaged or poorly maintained equipment such as damaged ladders, electrical cables, ropes, stretched chains, defective hooks
- inadequate communication, including a failure to report unsafe situations
- safety procedures not being followed, for example using lifting gear without checking service history or verifying safe working limits.

## 2.2 Assessing the risks

A risk assessment involves considering what could happen if someone was exposed to a hazard (the consequence) and the likelihood of this happening. A risk assessment can help you determine:

- if there is further action you should take to control the risk
- how urgently the action needs to be taken.

If you already know the risk and how to control it effectively, a risk assessment may be unnecessary. However, if circumstances or conditions change then the risk needs to be re-assessed.

Factors to consider when assessing risks arising from stevedoring activities include:

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

## 2.3 Controlling the risks

The ways of controlling stevedoring risks are ranked from the highest level of protection and reliability to the lowest. This ranking is known as the *hierarchy of risk control*. You must always aim to eliminate a hazard, which is the most effective control. If this is not reasonably practicable, you must minimise the risk by working through the other alternatives in the hierarchy.

### ***The hierarchy of control measures***

*Elimination* – the most effective control measure is to remove the hazard or hazardous work practice. For example, eliminate the need for workers to carry out work at heights by replacing manual twist locks with automatic twist locks.

If elimination is not reasonably practicable, you must minimise the risk by the control measures along the hierarchy below.

*Substitution* – substitute the work practice or equipment with something safer. For example substitute a hazardous chemical with a less hazardous chemical.

*Isolation* – physically separate the source of harm from people by distance or by using barriers. For example, use physical barriers to separate pedestrians from mobile plant.

*Engineering controls* – are physical control measures including mechanical devices or processes. For example, install guards on conveyor systems or speed limiters on forklifts.

*Administrative controls* – if a risk remains, it must be minimised with administrative controls such as training workers to use safe work procedures, using warning signs or arranging work to minimise the time spent near noisy machinery.

*Personal protective equipment (PPE)* – any remaining risk must be minimised with suitable PPE, for example by providing workers with high visibility clothing, gloves, non-slip footwear and hearing and eye protection.

Administrative control measures and PPE do not control the hazard at the source. They rely on human behaviour and supervision and used on their own tend to be the least effective control measures to minimise risks.

In many cases a combination of control measures provides the best solution.

When selecting and implementing a combination of control measures it is important to consider whether any new risks might be introduced as a result and, if so, whether the combination of the control measures should be reviewed.

## 2.4 Maintaining and reviewing control measures

**Regulation 37:** Control measures must be maintained so that they continue to protect workers and other people from the hazards associated with plant. The control measures must be:

- fit for purpose
- suitable for the nature and duration of the work
- installed, set up and used correctly.

**Regulation 38:** A person conducting a business or undertaking must review and as any necessary revise control measures:

- when the control measure is not effective in controlling the risk
- before a change at the workplace that is likely to give rise to a new or different health and safety risk that the control measure may not effectively control
- if a new hazard or risk is identified
- if the results of consultation indicate that a review is necessary
- if a health and safety representative requests a review.

Reviewing the hazard and the risk controls is an important part of the risk management process. The aim is to ensure:

- that the implemented controls are effective and working
- there are no further risks previously not identified
- circumstances or practises have not changed that have introduced other hazards
- opportunities may now exist to manage the risk with a higher level of control

A review can be done by using the same methods as the initial hazard identification process. Common methods include workplace inspection, consultation, testing and analysing records and data. Reviewing the control measures also involves considering whether a higher order control measure is now reasonably practicable.

You should consult your workers and any health and safety representatives as part of the review process and consider the following questions:

- Are all foreseeable hazards being identified?
- Are the control measures working effectively in both their design and operation?
- Have the control measures introduced new problems?
- 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 new information has become available, does it indicate the current controls may no longer be the most effective?
- Have any changes occurred that affect health and safety, for example has new plant or equipment been introduced? Are new procedures required?

If areas are identified for a change or improvement, review your information and make further decisions about risk control.

### 3. PLANNING

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#### 3.1 Pre-arrival planning

Stevedoring activities 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/companies, transport companies and other duty holders in the supply chain.

In the planning stage the person(s) conducting the business or undertaking should consider:

- load and discharge sequences (the order of work)
- pre-work inspections
- vessel type, cargo type (heavy lifts) and presentation
- the length of time required to do the work
- allocation of resources (e.g. people, plant, skills)
- weather conditions, time of day, tide levels and surge impact.

#### 3.2 Emergency Planning

##### *Emergency plans*

**Regulation 43:** A person conducting a business or undertaking must ensure that an emergency plan is prepared for the workplace that provides for:

a) emergency procedures, including:

- an effective response to an emergency
- evacuation procedures
- notification of emergency services at the earliest opportunity
- medical treatment and assistance; and
- effective communication between the person authorised by the person conducting the business or undertaking to coordinate the emergency response and all persons at the workplace.

b) testing of the emergency procedures, including how often they should be tested

c) information, training and instruction to relevant workers in relation to implementing the emergency procedures.

Emergency plans should be site-specific and should be covered in induction training, and made known to visitors. Regular refresher training should be provided to workers and procedures established and maintained to ensure there is effective communication between ship and shore (stevedores and the person in charge of the vessel).

The emergency plan should include information on:

- allocation of roles and responsibilities for specific actions in an emergency to persons with appropriate skills, for example appointment of area wardens
- access and egress for retrieval and escape including a contingency plan for alternative access and egress
- safe and timely evacuation procedures. This may include an evacuation checklist and procedures for assisting injured people
- warning systems and what to do when they activate
- shutting down of equipment (e.g. cranes)
- planning for drills (e.g. to ensure alarms are audible to everyone)
- fire risks and provision of fire fighting and rescue equipment at appropriate locations
- the establishment of a reliable means of communication between all 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 any necessary emergency services
- the display of evacuation procedures in appropriate location(s).
- access for emergency services (such as ambulances)

Further guidance on emergency plans is available in the *Code of Practice: Managing the Work Environment and Facilities*.

### **First aid arrangements**

**Regulation 42:** A person conducting a business or undertaking must:

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

First aid kits must be accessible at the workplace.

Further guidance on providing first aid and the contents of first aid kits is available in the *Code of Practice: First Aid in the Workplace*.

### **3.3 Traffic management**

There is a risk of death and injury in workplaces where vehicles, mobile plant and people share the same work areas.

**Regulation 215:** Persons with management or control of powered mobile plant must ensure that the risk of powered mobile plant colliding with pedestrians or other plant is controlled, so far as is reasonably practicable. If there is a possibility of collision, the powered mobile plant must have a warning device that will warn persons who may be at risk from the movement of the powered mobile plant and measures must be taken to eliminate or minimise the risk.

#### **Vessel and Landside**

Wherever possible, the work environment should be designed so that vehicles and powered mobile plant are separated from pedestrians.

When managing traffic risks in ports consider:

- vehicle and pedestrian movements
  - on the wharf
  - on and off ships
  - on decks and in cargo storage, receipt and delivery areas within the terminal or facility
  - during truck loading and unloading, reversing, queuing and parking activities
- controlling contractor and visitor movement at the site
- the condition of travel surfaces.

#### **Traffic management plans**

The development of a traffic management plan assists in managing risks and communicating information about control measures.

A traffic management plan should be developed in consultation with workers. It can provide details about:

- the desired flow of pedestrian and vehicle movements
- the expected frequency of interaction of mobile plant, vehicles and pedestrians
- 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 work site or temporary hazard

- exclusion zones
- roles and responsibilities of persons in the workplace for traffic management
- instructions or procedures associated with the control of traffic, including in an emergency.

Traffic management plans should be updated to address any changes in traffic movements.

More information about how to manage traffic at a workplace is available in the *Code of Practice: Traffic Management in Workplaces*.

### **Common user facilities**

In managing port and terminal activities, particularly when more than one business or undertaking may be working in the same area, traffic routes for neighbouring operations should be considered, ensuring that different activities can safely be conducted without increasing the risk.

The common user operator should develop a traffic management plan in consultation with the relevant stakeholders working onsite. Each stevedoring company should develop its own traffic management plan.

### **Roll on roll off (RoRo) and pure car carriers (PCC)**

A traffic management plan should be implemented to control vehicle and pedestrian movements for each entrance and exit ramp and for ramps within the vessel. Where the ramp design prevents physical separation other control measures should be used to prevent the simultaneous use of the ramp by vehicles and pedestrians.

All workers involved in the operations should be kept informed of this plan and of any changes to it.

In preparing a traffic management plan for RoRo or PCC consider:

- traffic configurations
- speed limits
- co-ordination of ro-ro activities across multiple decks
- management of pedestrian movement including separating them from vehicles on ramps by using separate walkways, or separate access times
- management of multi-use roadways

Before the start of roll-on/roll-off (ro-ro) operations, any hazardous routes or areas that could be mistaken for normal drive-on/drive-off routes should be identified. These routes should then be clearly marked and barricaded. Suitable warning notices should be posted on ramp. A nominated person (a competent signaller/guide) should direct all vehicles being reversed or manoeuvred into stowage positions on deck.

Consider using exclusion or 'no go' zones to separate people and plant. Workers entering or exiting a vessel using external or internal ramps should observe traffic movement and only enter or exit the ramp when it is safe to do so.

A safe system of work should be implemented to manage the movement of vehicles on decks. This should consider vehicle speeds, restricted driver visibility, safe stowage or positioning and whether any other activities are being carried out at the same time.

A person guiding a vehicle into a final position on the vessel should ensure they are always visible to the driver, either directly or via vehicle mirrors and by wearing high visibility clothing. Where this is not possible they must position themselves clear of the vehicle and trailer movement and away from the risk of being trapped or crushed. Before signalling a driver to proceed they must ensure it is safe to do so.

Signals for guiding drivers should be agreed and understood prior to work starting, such as using a hand signal to indicate an emergency stop. Only authorised people should be on deck while loading or discharging operations are being conducted and everyone should be provided with high visibility clothing.

### ***Traffic movement within a terminal or facility***

Truck routes and loading/unloading points should be marked out or otherwise indicated.

Loading and unloading areas should be clear of other traffic, pedestrians and people not involved in the activity.

Trucks should not be loaded/unloaded in any other position without permission of the supervisor or foreman. Truck ranking should not be allowed inside the loading/unloading areas and the vehicle twist locks should be released before entry and locked after exit.

Truck drivers should follow site safety rules and traffic management plans, including being aware of exclusion or no-go zones when loading/unloading. Traffic management includes designating safe zones for the driver to exit the cab to allow for the release of twist locks. If there are no site rules, a risk assessment should be undertaken to determine the safest location for the driver and other workers.

### **Movement of vehicles in cargo storage areas**

Where vehicles are used to handle cargo, the area should be kept separate from all pedestrians and other operations, where practicable. Barriers should be used for permanent stacking areas that are adjacent to a pedestrian route. Signs should be displayed warning that unauthorised entry to the area is prohibited.

### **Reversing vehicles**

Where practicable design the flow of traffic to avoid reversing. Where it is necessary to reverse vehicles (e.g. in RoRo activities) control measures may include:

- mirrors, reversing cameras, sensors and alarms that can help drivers detect movement
- all around the vehicle
- visual (flashing lights) warning devices
- high-visibility markings for powered mobile plant
- effective communication systems (e.g. between signallers and drivers and between plant operators including straddles and trucks).

### **Vehicles queuing and parking**

Work areas should have clearly visible speed limit signs and lines showing truck queuing and vehicle parking areas. In order to control unexpected truck queuing and congestion, a truck marshalling area can be used.

Private vehicle parking should be allowed only in designated areas.

### ***Landside - straddle carriers***

Straddle carriers often operate in proximity to other vehicles and pedestrians. Where straddles are used the person conducting a business or undertaking should ensure:

- a straddle grid is maintained for the safe movement of vehicles and loading/unloading operations
- safe areas are designated within the grid to allow safe manoeuvring of straddles, other vehicles and movement of workers

A safe system of work for the loading and unloading of trucks should be part of your traffic management plan.

### **Grids**

Loading and unloading of containers from road vehicles should be carried out on identified straddle carrier exchange grids. Grids provided where straddle carriers are used to load or unload 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 unloading and then leave the vehicle by moving away from the vehicle's rear
- approach a grid slot from the opposite direction of road vehicles

Provide ample space for road vehicles to reverse into a slot on a grid safely if this manoeuvre is necessary. Any oversize 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 their 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 in relation to the grid layout, the width of the straddle carriers and other relevant operational factors.

When loading or unloading 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 unloading 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 the driver of the truck cannot be seen.

### **3.4 Information, training, instruction and supervision**

**Section 19:** The WHS Act requires a person conducting a business or undertaking to provide relevant information, instruction, training and supervision necessary to protect all persons from risks to their health and safety arising from work carried out.

**Regulation 39:** A person conducting a business or undertaking must ensure that information, training and instruction provided to a worker is suitable and adequate having regard to:

- the nature of the work carried out by the worker
- the nature of the risks associated with the work at the time of the information, training and instruction, and
- the control measures implemented.

The training provided must be readily understandable by any person to whom it is provided.

#### ***Provision of information to workers***

The information provided to workers, including contractors, undertaking stevedoring activities should include:

- results of any relevant risk assessment
- information on relevant safe work procedures
- manufacturer's instructions on the safe use of plant and equipment where available.

Procedures should be in place so all workers (including contractors and sub-contractors) are informed of the hazards and risks involved in the activities they are about to undertake, in particular, at the change of shift.

#### ***Licenses***

Some work activities, such as dogging, rigging, the operation of reach stackers, forklifts and some types of cranes, require workers to hold a relevant high risk work licence under the WHS Regulations. The licence is issued by the work health and safety regulator.

**Regulation 85:** A person conducting a business or undertaking must not direct or allow a worker to carry out high risk work for which a licence is required unless the person sees written evidence provided by the worker that the worker has the relevant licence for that work, or is undertaking a course of training for the licence, or has applied for the relevant licence and is awaiting a decision on that application.

## ***Training***

Training in work health and safety equips workers with the knowledge and skills to recognise hazardous situations and take steps to ensure they and others are not placed at risk.

### *Training Needs Analysis*

A needs analysis can help identify knowledge and skill requirements. These can be considered at the:

- organisational level - what workplace hazards, control measures and other arrangements should all workers be familiar with?
- job or task level - what duties and responsibilities are part of the job or task and what knowledge and skills are required to competently carry out the duties and responsibilities safely and without risk to health?
- individual level:
  - are workers aware of their duties under legislation to take reasonable care of their own and others' health and safety and cooperate with measures put in place by the person conducting a business or undertaking?
  - what knowledge and skills do they have?
  - are there specific requirements for particular people in the workforce, for example:
    - supervisors, foremen or those with particular responsibility for others
    - workers required to operate particular plant or equipment with legal requirements for licensing
    - new starters requiring general awareness and task specific training
    - casual workers or workers who work infrequently or who have had a long period of absence from the workplace, or
    - workers with limited reading and writing skills
    - workers from culturally and linguistically diverse backgrounds.

### *Who should receive training?*

Training at the workplace should be provided to:

- workers engaged by a stevedoring business or undertaking, who participate in activities which have the potential to expose them to risk of injury or work-related illness
- managers and supervisors of workers carrying out stevedoring activities considered at risk of injury or work-related illness and/or who have responsibility for implementing safe work procedures
- staff responsible for purchasing plant or PPE, and for designing, scheduling and organising work activities.

### *Training delivery plan*

Consultation with workers is required when making decisions about the procedures for providing information and training for workers.

A training plan should address the training required, who is to be trained, how the training will be delivered, particular competencies that need to be attained by workers, and the measures used to ensure workers have developed the necessary skills or competencies.

The content and methods of presenting training material should be tailored to meet the specific needs of each group. Training should be provided by a competent person.

### Training topics

Stevedoring specific training should cover the following where relevant to the work being undertaken:

- the work health and safety duties of everyone involved in stevedoring activities
- the nature and extent of stevedoring hazards and risks, including the risk associated with the dynamic nature of the work
- hazard and incident reporting systems
- systems for reporting defects in plant or equipment used for stevedoring activities
- consultation arrangements
- 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, and
  - other control measures.
- accessing health and safety information
- access, egress and security

Workplace specific training may be delivered in a variety of ways, including:

- toolbox talks
- pre-start meetings
- on-the-job training
- one-off sessions or events for a specific purpose
- training courses

### Training records

Training records should be kept to assist a person conducting a business or undertaking check what training has been provided, what extra training is needed, and to demonstrate compliance with WHS legislative requirements.

Training records may include training needs analysis documents, training plans, workers who have successfully completed training programs and the dates of completion, details of any competency-based training completed, and copies of licenses, certificates, or other qualifications.

### Review of training

All training should be reviewed and where necessary, updated to reflect any changes associated with the nature of hazards and risks, changes to work practices or risk control measures.

Reviewing training is important in stevedoring where the workforce may change frequently and may only be employed for short periods or intermittently.

### **Supervision**

In addition to ensuring workers receive appropriate training, adequate supervision must also be provided to ensure workers, including contractors, can carry out their tasks safely. The supervision requirements will depend on the workplace hazards, the level of exposure, the experience and competence of workers and the effectiveness of existing risk control measures. High-risk or complex activities may have greater supervision requirements.

A person who is gaining experience in stevedoring activities should be under the direct supervision of a person with appropriate skills and experience until they demonstrate they have the skills to perform 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 at all times.

New starters or others with special needs may require more direct supervision and ongoing instructions than more experienced workers.

Contractors have particular supervisory requirements. Often the safety of contractors is at greater risk due to their lack of familiarity with the working environment, organisational policies and work procedures (particularly relevant in stevedoring where people often work for different organisations). An effective induction and training program can assist.

To determine the level of supervision required, shift and scheduling arrangements (e.g. the time of day, length of shift, or number and skills of available workers) should also be considered.

## 4. INSPECTIONS

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### 4.1 Vessel inspections

The vessel type and condition of its equipment and gear may impact on safety. Before working on-board, the condition of the work area should be assessed by the person in charge or the designated responsible person prior to work starting, throughout the discharge process as required, and as working conditions change.

A system of inspections and the use of checklists can assist in identifying hazards. Examples of checklists for container operations and bulk and general operations are provided at [Appendix B and C](#).

The person in charge may delegate vessel inspections to be conducted by the designated responsible person who may be a supervisor or foreman. Inspections should not be 'one-off' activities (e.g. at the start of a shift) but occur regularly throughout the process. This may identify any new hazards and assess the suitability of work processes and control measures. Health and safety representatives may participate in vessel inspections.

**Section 68(2)(a):** A health and safety representative may inspect the workplace or any area where work is carried out by a worker in the work group

- at any time after giving reasonable notice to the person conducting the business or undertaking
- at any time without notice in the event of an incident or any situation involving a serious risk to health or safety emanating from an immediate or imminent exposure to a hazard.

Depending on the circumstances, other personnel such as the ship's master, a member of the crew or a person with particular skills should be invited to participate in the inspection process.

Work procedures should support the implementation of inspections, and ensure relevant follow-up actions are taken. There should be a process for dealing with unresolved issues.

When conducting a vessel inspection, some points to consider are:

- working environment, including access and egress
- cargo presentation
- condition of the ship's lifting equipment if it will be used during the work.

#### ***Cargo presentation***

Working conditions and circumstances may change significantly during transit. The inspection should check that cargo has not moved during the voyage and that lashing is secure for cargo not being discharged adjacent to the work area. Any identified changes in the condition of cargo should be communicated to other relevant ports.

For further information on vessel inspections refer to *Marine Orders*.

### 4.2 Plant inspections

There are specific requirements under the WHS Regulations in relation to the inspection of plant.

**Regulation 213:** A person with management or control of plant at a workplace must ensure that maintenance, inspection, and if necessary testing, of plant is carried out by a competent person in accordance with manufacturer's recommendations, or if those aren't available, in accordance with recommendations of a competent person. If it is not reasonably practicable to comply with the manufacturer's recommendations or the recommendations of a competent person, the inspection and testing must occur annually.

Further information is available in the *Managing Risks of Plant in the Workplace Code of Practice*.

## 5. THE WORKING ENVIRONMENT

**Regulation 40:** A person conducting a business or undertaking 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 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 each worker to carry out work safely, persons to move around safely and safe evacuation in an emergency
- ventilation enables workers to carry out their work without risk to their health and safety
- workers exposed to extremes of heat or cold are able to carry out work without risk to their health and safety
- work in relation to or near essential services (such as gas, electricity, water, sewerage and telecommunications) do not affect the health and safety of persons at the workplace.

### 5.1 Access and egress

The means of entry (access) and exit (egress) to a workplace must be safe. Some matters that should be checked include:

- gangways, walkways and hand rails are in good condition, free from obstructions and residue build-up
- gangways remain rigged
- hinged and pontoon hatch covers are secured to prevent them from accidentally closing during access
- there is sufficient space between containers to accommodate work processes, gear and safe access and egress
- where work is in a cargo compartment, that there are two means of access.<sup>2</sup>

Requirements relating to safe access and egress on vessels are contained in Marine Orders.

Guidance on safe access and egress for landside operations is available in the Code of Practice: *Managing the Work Environment and Facilities*.

### 5.2 Housekeeping

The work environment landside and on vessels should be maintained in a safe condition. The vessel inspection should check housekeeping practices on the vessel, including that:

- suitable storage areas for tools and equipment including lashing bars are identified and used
- loose items that may create a hazard from potential vessel movement are secured
- walkways in use have sufficient clear space to allow workers to move about safely
- reefer cables have been secured prior to unloading to ensure no snagging of loose hanging cables.

Housekeeping on landside includes providing designated storage areas for loose items (e.g. provide twist lock bins) and ensuring 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.

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<sup>2</sup> Marine Order 32, issue 3 - *Cargo handling equipment* (Schedule 2 Clause 7) sets out the requirement for two means of access for each cargo compartment in ships built on or after 1 August 1998 (except ships used exclusively as bulk carriers or as cellular container ships).

The *Code of Practice: Managing the Work Environment and Facilities* provides more information about housekeeping procedures on landside.

### **5.3 Lighting**

Adequate lighting must be provided and maintained landside and on vessels to ensure stevedoring activities can be carried out safely. Examples of lighting include external lighting towers, portable lights and crane lights.

- Before carrying out stevedoring activities on vessels ensure there is suitable deck and under-deck lighting provided for the task being undertaken, particularly for:
- access routes, including access to lifting equipment
- ladders providing access to the ship
- working areas on board and adjacent to the ship.

Lighting levels should provide sufficient light for night time operations as well as enabling good visibility in cargo holds, taking into account glare, reflections or shadows. If portable lighting is used on vessels, electrical cables should be protected from accidental damage.

Marine Orders Part 32 provides information about lighting requirements.

### **5.4 Air quality**

Emissions from plant and the atmosphere 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 and vapours, fumigants
- eliminating use of combustion-powered plant or equipment in poorly ventilated spaces, for example by using flame-proof forklift trucks
- managing the length of time plant is used (switching off engines when not in use or limiting the number of vehicles allowed to run at any one time)
- access to Safety Data Sheets (SDS) for hazardous chemicals
- training workers in emergency response related to hazardous atmospheres
- providing appropriate PPE such as respiratory equipment and ensuring these are worn and properly maintained.

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

The *Code of Practice: Managing the risks of Hazardous Chemicals in the Workplace* provides further guidance on managing the risks associated with contaminated or oxygen-deficient atmosphere.

### **5.5 Weather conditions**

A risk assessment should consider how changes in weather may impact safe working practices, for example:

- when operating in proximity to reefers in wet conditions
- operating cranes in high winds or when lightning is present
- stability of container stacks in high winds
- when conditions create poor visibility
- in periods of extreme low or high temperatures.

Control measures may include:

- using weather forecasts to plan activities

- using wind speed measuring devices (for example, anemometers) on plant such as cranes and ceasing activities when these exceed safe levels
- stacking containers so that they are stable
- providing hydration such as water in extreme heat and appropriate breaks and shelter
- providing appropriate PPE such as wet weather gear.

Information about managing cranes in adverse weather conditions is in Section 7.2 *Crane operations - weather conditions*.

The *Code of Practice: Managing the Work Environment and Facilities* provides further information about managing the risks associated with working in extremes of heat and cold.

## 5.6 Managing the risk of falls and falling objects

Working at height, including accessing the hold of a ship or working on top of containers, all involve the risk of a fall.

**Regulation 78:** A person conducting a business or undertaking must manage the risk of a fall from one level to another that is reasonably likely to cause injury to the person or another person.

Wherever reasonably practicable, the risk of a fall must be eliminated by working on the ground or on a solid construction. In this case ensure the area has:

- a surface structurally capable of supporting people, material and any other loads on it
- barriers erected around any open penetrations
- an even and readily negotiable surface and gradient
- a safe means of access and egress.

If it is not reasonably practicable to work on the ground or on solid construction, a safe system of work must be provided using the following control measures in order of priority:

- fall prevention devices (for example, temporary work platforms and guard railing)
- using a work positioning system that ensures workers work within a safe area
- implementing fall arrest/restraint systems to minimise any distance of a fall (e.g. within hold of vessel or when securing tops of containers)

Stevedoring activities where control measures for fall prevention are required include when:

- accessing the ship's decks, hatchways and holds
- using ladders, stairs, ramps, landing stages or gangways
- working in the vicinity of holes or cavities on board ship (e.g. near hatchways or on top of cargo where voids are created during discharge/ loading)
- working on top of containers
- working on any equipment at an elevated height
- accessing crane cabins.

For example, if it is necessary to access the top of a container, safe means of access including a mobile elevating work platform or an access cage should be provided. If this equipment is not available, fall arrest equipment must be worn.

### **Ship movement and ramps**

Pontoons supporting shore ramps or passenger walkways should be as steady as practicable in all weather and tide conditions and should be capable of withstanding the maximum forces to which they may be subjected during mooring. This should include likely ramp movement resulting from the local tidal movements, and ranging and drifting of the ship or pontoon at its moorings. Walkways should be designed to tolerate forces in all three planes and torsional forces. Transitional flaps at their ends should be included if necessary.

More information about how to manage the risks of working at heights is available in the *Code of Practice: Managing the Risk of Falls at Workplaces*.

## ***Falling objects***

**Regulation 54:** A person conducting a business or undertaking at a workplace must manage risks to health and safety associated with an object falling on a person if the falling object is reasonably likely to injure the person.

**Regulation 55:** If it is not reasonably practicable to eliminate the risk referred to in regulation 54 the person conducting the business or undertaking at a workplace must minimise the risk of an object falling on a person by providing adequate protection against the risk.

The person provides adequate protection against the risk if the person provides and maintains a safe system of work, including:

- preventing an object from falling freely, so far as is reasonably practicable; or
- if it is not reasonably practicable to prevent an object from falling freely—providing, so far as is reasonably practicable, a system to arrest the fall of a falling object.

Falling objects pose a significant risk when carrying out stevedoring activities. Control measures may include:

- using the appropriate equipment to raise and lower cargo, including ensuring that working load limits are not exceeded (see Chapter 7)
- stacking containers and other cargo so that they are stable
- providing overhead protective structures on mobile plant to protect plant operators
- establishing exclusion zones over areas where loads are being lifted.

### **5.7 Noise**

**Regulation 57:** A person conducting a business or undertaking at a workplace must manage risks to health and safety relating to hearing loss associated with noise and ensure that the noise that a worker is exposed to at the workplace does not exceed the exposure standard for noise.

**Regulation 58:** A person conducting a business or undertaking must provide audiometric testing for a worker who is carrying out work for the business or undertaking if the worker is required to frequently use personal hearing protectors as a control measure for noise that exceeds the exposure standard.

Noise monitoring provides a means of assessing noise levels and length of exposure and the data obtained can be used to determine suitable control measures to minimise the risk of hearing loss.

Ambient noise from vehicles, engines and transmission equipment used in an enclosed space such as a ship's hold may be hazardous to operators in the vicinity.

The *Code of Practice: Managing Noise and Preventing Hearing Loss at Work* provides further guidance on the noise exposure standard, control measures and audiometric testing.

### **5.8 Managing Fatigue**

Fatigue increases the chance of workplace injuries and if prolonged can negatively affect a person's health and wellbeing.

Control measures for managing fatigue include providing workers with adequate breaks between shifts.

A fatigue management plan may be developed to help control the risks of fatigue. It can include procedures for ensuring:

- hours of work or shift rostering are designed to minimise fatigue
- resources are available to carry out the work
- consideration of environmental conditions (e.g. working in adverse weather contributes to fatigue) and individual factors.

## 6. HANDLING LOADS AND CARGO

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There should be safe work procedures for loading and unloading. If the procedures do not address the hazards of the work to be undertaken, then a risk assessment should be conducted such as a job safety analysis.

### 6.1 Suspended loads

**Regulation 219:** The person with management or control of plant at a workplace must ensure, so far as is reasonably practicable, that plant that is used to lift or suspend persons or things is specifically designed to lift or suspend the load. If it is not reasonably practicable to use plant that is specifically designed to lift or suspend the load, the person must ensure that the plant does not cause a greater risk to health and safety than if specifically designed plant were used.

The person must ensure that the lifting and suspending is carried out with lifting attachments that are suitable for the load being lifted or suspended, and within the safe working limits of the plant.

The person must ensure, so far as is reasonably practicable:

- a) that no loads are suspended or travel over a person unless the plant is specifically designed for that purpose.
- b) that loads are lifted or suspended in a way that ensures that the load remains under control during the activity
- c) that no load is lifted simultaneously by more than 1 item of plant unless the method of lifting ensures that the load placed on each item of plant does not exceed the design capacity of the plant.

Handling suspended loads is a high risk activity and involves various plant including mobile cranes, vessel cranes, gantry cranes, forklifts and other specialised cargo handling equipment. A risk assessment should be undertaken. Control measures for handling suspended loads may include:

- implementing exclusion zones to ensure workers are clear of the active arc of suspended travel while suspended loads are being lifted or lowered. An example of the accepted exclusion zone for consideration is the minimum of three cells, but may be the whole loading bay
- providing a designated walkway on the outboard side while vessel loading or unloading is in progress and other people are on the landside
- prohibiting working under suspended loads
  - no part of the body is to be underneath the load
  - workers should stand back until a suspended load is at a safe height and is stationary then move forward to approach and stabilise the load (working adjacent to the load).

#### ***Pre-slung loads***

Extra caution should be applied when working with pre-slung loads as the condition of the load and equipment may be uncertain. For example, gear may have been certified, but damage may have occurred and is concealed under the load. If a ship cannot produce the required certificate, your own lifting gear should be used.

The following control measures should be considered for work involving pre-slung loads:

- a system of inspection is maintained and documented. Inspection should be done by qualified personnel and completed prior to the use of all gear
- damaged gear is removed and appropriately tagged out of service exclusion zones are implemented in the vicinity of the lift
- workers are competent to judge if they have the right gear

- information is supplied prior to a ship's arrival and pre-operational inspections and checks are part of the general inspection regime
- there is an auditable system of certification, with rated safe working load (SWL) and working load limit (WLL)
- gear is only used with reference to actual marked SWL/WLL (and not based on colour coding).

## **6.2 Lashing and unlashng containers**

The workers who will be performing the lashing or unlashng must be provided with information and instruction about the lashing plan, for example at a pre-shift tool box talk or a planning meeting. Workers who are required to work on or near the vessel will need to be aware of the exclusion zone protocols.

The safety of lashing positions of all visiting ships carrying containers should be assessed. Lashing activities should not be carried out if lashing positions do not provide adequate protection against falls (see Section 5.6).

### ***Before lashing and unlashng***

As part of the vessel inspection, check for the following:

- slippery surfaces, grease and oil contamination, salt residue and water on walking surfaces
- obstructions or uneven surfaces which may cause workers to trip and fall
- equipment faults including any which may affect the integrity of the fall restraint safety system, for example jagged metal on railings or containers
- ships ground/floor areas designed with holes or which are damaged around container stow areas
- lashing gear is undamaged and in serviceable condition
- outboard cells are provided with safety rails sufficient to prevent a person falling overboard
- provision for railing (top and mid-rail) around open hatches and outboard cells including safety chains
- rails (rope or wire) are taut and in good condition
- adequate lighting
- electrical cables are stowed away from walkways, wet areas and power is disconnected in proximity to lashing activities.

### ***During lashing and unlashng***

Workers lashing and unlashng should never work alone. If there are teams working near each other, for example one lashing and one loading, ensure effective communication is maintained between the teams, supervisors, managers and ship's crew so that each team is aware of what the other is doing and safe areas of work are identified. Toolbox talks can be used to inform workers at the change of shift about exclusion zones.

Issues to be considered in planning and undertaking lashing include the weight and length of lashing bars, obstructions, working around raised hatch lids, container size and ship configuration.

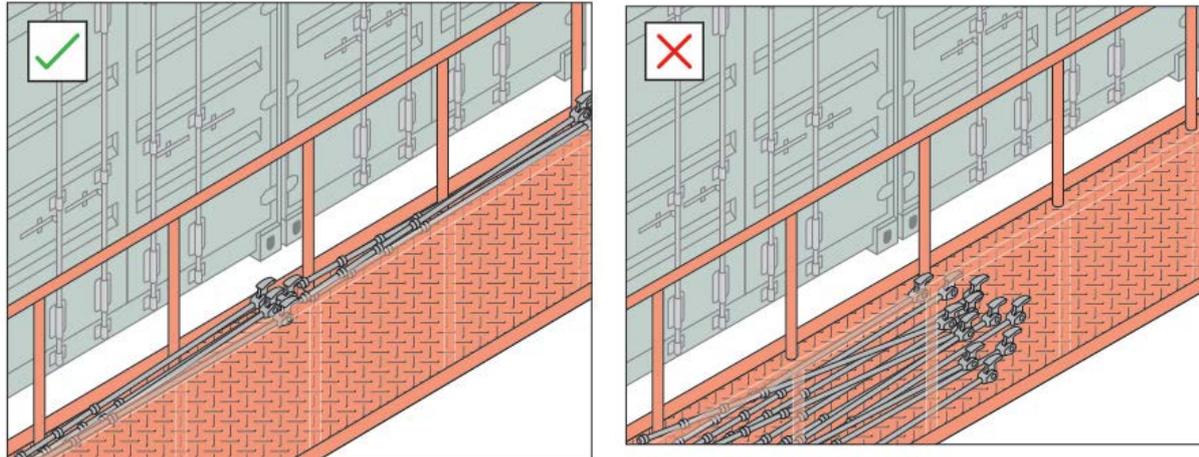
Control measures for lashing and unlashng activities may include:

- a system of inspections, for example rope inspections by a qualified person
- only working from a stable, level base
- body positioning to keep out of reach of lashback
- ensuring that hatchway access covers can be pinned back
- maintaining an awareness of other operations in the area including cranes and not working under or in close proximity to portainer crane movements
- ensuring at least one worker maintains control over the lashing gear when it is elevated
- never leaving lashing rods hanging

- where practical, eliminating the practice of leaning lashing bars against containers during lashing work
- using appropriate PPE, for example cut-resistant gloves suitable for the task.

Where lashing equipment is to be re-used in the same work area it should be stored safely on the side of a walkway to minimise the risk of a trip hazard, as shown at Figure 1. Marine Order 32 applies.

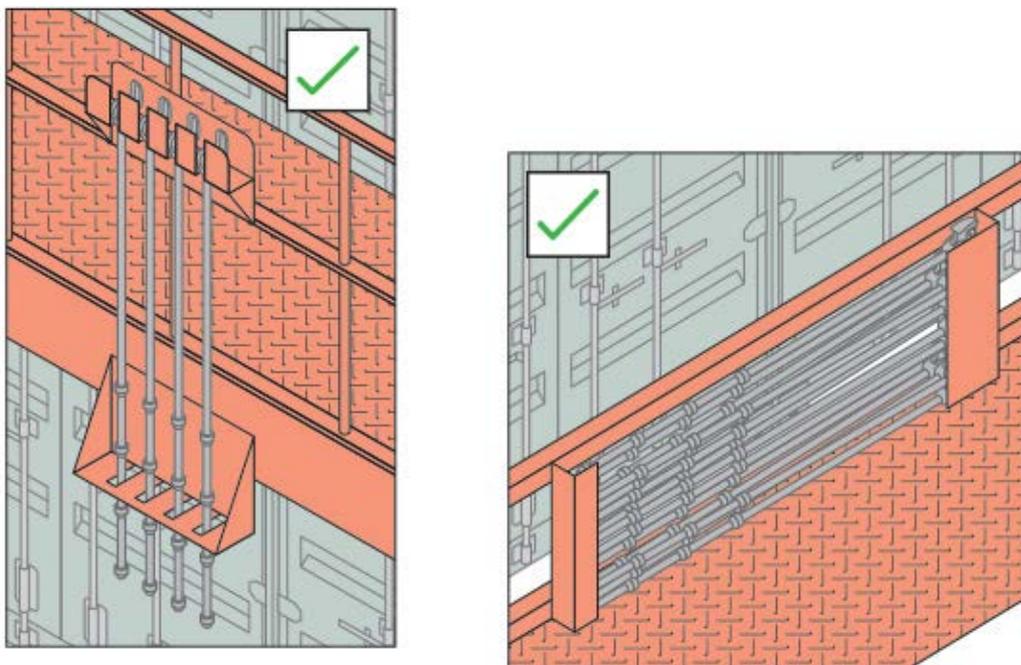
**Figure 1**



***Before ship departure***

Once lashing and unlashng activities have finished, all excess lashing gear should be safely secured in designated stowage compartments (where available) in accordance with the vessel master’s requirements. See Figure 2 below.

**Figure 2:** Preferred storage methods for lashing bars



### 6.3 Working in ships' holds

Management of the risks associated with ships' holds includes the management of the atmosphere in a hold (see section 5.4) and the prevention of falls (see section 5.6). This section provides further details on control measures for hatches and openings, ladders and for moving cargo in holds.

#### **Hatches and openings**

For hatches and openings that provide access to holds, ensure:

- these are protected by coamings
- there is adequate clear space around the coamings to allow easy access
- hinged and pontoon hatch covers are secured to prevent them from accidentally closing during access (or removed if not adequately secured)
- approaches to a hold and an access hatch are kept unobstructed to reduce the risk of falls and to enable holds to be evacuated quickly in an emergency
- stevedores are alert to the risk openings into holds have been incorrectly left open or unfenced, or are hidden or obstructed by cargo
- means of access include a ladder which is clear of the hatchway through which cargo is loaded or unloaded<sup>3</sup>.

Where hatch covers are raised, temporary fencing can be used as a control measure to prevent falls. In this instance do not use slack ropes. Fencing uprights should be no more than 2.5 metres apart and the fence is erected correctly.

#### **Ladders**

The ship's permanent access should be the primary means of accessing cargo holds. Portable ladders should only be used if all permanent access ways are obstructed or otherwise unable to be used.

When using portable ladders in holds ensure:

- all ladders are secured at least one metre from the top
- all work environments are inspected to ensure people are not positioning themselves into the path of equipment or lifts when using the ladder
- people check for obstructions at the top or base of the ladder prior to accessing (i.e. always look up and down before using ladder).

The *Code of Practice: Managing the Risk of Falls at Workplaces* provides further guidance on the areas of risk relating to work around openings and ladders.

#### **Monitoring cargo operations**

Marine Order 32, Schedule 6 includes the following requirements for monitoring cargo operations.

Loading or unloading by means of a crane or derrick must not be carried out unless:

- (a) the driver has an unrestricted view of the load at all times during loading or unloading; or
- (b) a hatchman is employed for each crane or set of derricks who is clearly visible to the driver or drivers.

Where persons are in a cargo space in connection with loading or unloading, whether or not a crane or derrick is being used, there must be a lookout who:

- (a) has a good view of the space; and
- (b) is able to see potential dangers to the persons in the space; and
- (c) is able to communicate with the persons in the space;

<sup>3</sup> Note Marine Order 32, issue 3 - *Cargo handling equipment* (Schedule 2 Clause 7) sets out the requirement for two means of access for each cargo compartment in ships built on or after 1 August 1998 (except ships used exclusively as bulk carriers or as cellular container ships).

and who must warn persons in the space of any perceived danger.

The cargo space lookout may be a person with other duties, such as a hatchman or the crane driver, provided that the person is capable of performing the duties assigned effectively.

Loading or unloading must not be carried out in a cargo space where 2 or more cranes or sets of derricks are working simultaneously and separately unless:

- (a) a separate hatchman is provided for each crane or set of derricks; and
- (b) where work is to be carried out at different levels, a net or other equivalent protection is rigged in such manner as to prevent persons and cargo falling from the upper level; and
- (c) each hatchman is provided with a safe operating area on deck at a location that affords adequate visibility for the hatchman to carry out his or her function.

Further information on the use of cranes is set out in section 7 of this code.

## **6.4 Types of Cargo**

### ***General cargo***

Each type of cargo has its own requirements. A risk assessment for general cargo should include inspection of wires, ropes, chains, lifting gear and dunnage.

Workers should be provided with the relevant information, instruction and training to handle the relevant cargo safely.

A licensed dogman should assess the load before discharging and loading and apply the principles of dogging. Cargo should be handled within safe work loads and work load limits. To do this:

- establish cargo weights and consider these when assessing working load limit
- ensure the working load limit is established and marked on appliances
- ensure the plant or crane operator knows the weight of the load.

The work environment should be safe for plant to operate and clear of obstructions and risks of falling cargo. The plant or crane operator should have a clear and unobstructed view of the area of operation and, if determined appropriate through a risk assessment, be assisted by a person (who may be a hatchman or cargo space lookout) who has a clear view of that area of operation.

Provisions for monitoring cargo are in the section 6.3 of this code.

Marine Orders 32 - *Cargo handling equipment* provides additional guidance on bulk cargo properties.

### ***Dry bulk***

Dry bulk is cargo shipped in large unpackaged amounts for example fertilisers, grain, gravel, sand, salt, concentrates, wood chips, coal and mineral ores.

Prior to loading or discharge ensure dry bulk is assessed for dangerous and hazardous substances. Dry bulk may consist of materials that emit dangerous gases, spontaneously combust, liquefy, develop hot spots, develop biological hazards or become unstable. SDSs should be used in assessing the risks of hazardous substances.

Dust levels, wind speed and direction should be monitored to prevent risk from exposure (e.g. to the general public, in utilities rooms and to other vessel operations). Dust types include explosive, toxic and nuisance dust. Any fire risks should be identified and adequate trained personnel and equipment provided at the workplace in response.

Gangs should load away from each other. People and mobile plant in the hold should be kept separate.

Ensure that plant and equipment used for loading and unloading dry bulk, including conveyors, are fit for purpose, maintained and inspected as required.

Marine Orders 33 - *Grain cargo*, Marine Orders 34 - *Solid bulk cargoes* and Marine Orders 35 – *Additional safety measures for bulk carriers* provide additional information on bulk cargo properties.

### **Liquid bulk**

For further information about bulk cargo including liquid, refer to Marine Orders 41 - *Carriage of dangerous goods*, Marine Orders 17 – *Liquefied gas carriers and chemical tankers* and local jurisdictional authorities.

### **Containers**

When working with containers, so far as is reasonably practicable, conduct activities without workers having to access the top of containers (section 5.6 provides information on managing the risk of falls).

### **Roll-on roll-off activities**

Roll-on roll-off (ro-ro) activities involve the loading, unloading, lashing and unlashings of wheeled cargo. Critical areas for control in ro-ro operations are the management of vehicle movements and of manual tasks. Information on traffic management for ro-ro is also included in section 3.3 of this Code.

Ensure whenever multiple gangs are working (e.g. lashing, unparking/breakout, driving) that one gang does not adversely impact the safety of another.

### Manual tasks

**Regulation 60:** A person conducting a business or undertaking must manage the risk of a musculoskeletal disorder associated with hazardous manual tasks.

Control measures for managing manual tasks for ro-ro may include:

- using levers, ratchet binders, extension bars
- having power units ready to jump start cars (units that plug into car cigarette lighters, as opposed to 'jump packs')
- using correct techniques for lashing and unlashings
- task rotation to reduce exposure to highly repetitive manual tasks
- ensuring lashing straps under cars are reasonably easy to get on/off.

Further guidance about managing the risks associated with hazardous manual tasks is available in the *Hazardous Manual Tasks Code of Practice*.

### **Livestock**

Information on provisions for loading and stowage of livestock can be found in Marine Order 43 - *Livestock cargoes*.

## **6.5 Storage and stowage**

Goods not in containers (e.g. coils, pipes and beams) should be stored or stowed in stable stacks. Cargo may be moved repeatedly during loading, discharging and storage and this involves dynamic risk management.

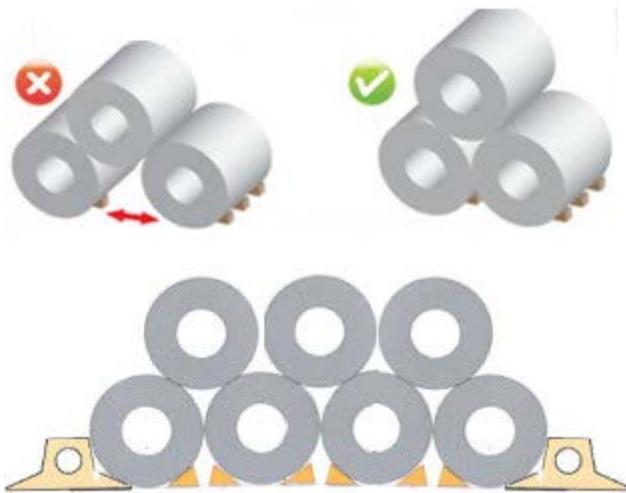
Ensure there is a plan for stacking goods. The plan should take into account floor capacity, type of dunnage, type, dimensions and weight of cargo and of its potential energy, and provide for safe walkways. Other considerations include:

- types of mechanical handling equipment available and the space in which they are to be used
- whether goods are classified as hazardous chemicals
- length of time the goods or material will be kept
- different methods of safely securing cargo

Control measures for safe stowage may include:

- ensuring stacks of goods remain stable at all times, the maximum height of the stack is determined by the need to ensure the stability
- ensuring coils:
  - are used with end stops in the vicinity of pedestrian walkways
  - are supported by coil collapse arrest systems when in the vicinity of amenities or offices (see Figure 2)
- using racking systems where appropriate
- using jersey curbs
- correct use of dunnage, including:
  - using means other than hands to place dunnage under loads
  - avoiding placing hands or limbs under loads during glutting
  - a system for correct selection and placement of dunnage to prevent dislodgment of stow in transit and allow for efficient and safe stowage for discharge.
- correct chocking methods (e.g. three chocks on end and two in the middle)
- fixed chocks at the end of walkways.
- ensuring materials used for chocking and dunnage is fit for purpose and:
  - sufficient to withstand the weight of the load chocking is made of hardwood and cut at 90 degree angle
- using bolsters at the end of walkways
- identifying and communicating the load bearing capacity of floors
- keeping pedestrians clear of the area
- lashing plans are compatible with the design of the vessel and gear fit for purpose is available.

**Figure 2:** Examples of stacking methods



## 7. PLANT AND EQUIPMENT

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The WHS Regulations include specific duties for a person conducting a business or undertaking with management or control of plant to manage health and safety risks associated with the plant, as well as requirements for powered mobile plant and plant that lifts or suspends loads.

### 7.1 Powered mobile plant

Stevedoring activities include the use of powered mobile plant such as mobile cranes, reach stackers, straddle carriers and forklifts.

**Regulation 214:** The person with management or control of powered mobile plant at a workplace must manage risks to health and safety associated with the following:

- the plant overturning
- things falling on the operator of the plant
- the operator being ejected from the plant
- the plant colliding with any person or thing
- mechanical failure of pressurised elements of plant that may release fluids that pose a risk to health and safety.

### 7.2 Cranes and work boxes

Inspections, tests and preventative maintenance must be carried out according to the manufacturer's instructions or those of a competent person to control the risk of structural or mechanical failure, collapse and decreased safety in crane operations.

Lifting procedures should be developed to help define roles and responsibilities and ensure the crane operation is approached in a systematic way, particularly in the following situations:

- heavy lifts
- lifting work boxes
- multiple crane lifts.

Procedures should be implemented to enable workers to report any signs of damage or defect associated with the crane.

#### ***Ship-based cranes***

A pre-operational inspection should be carried out for ship based cranes to check:

- crane brakes, limiting devices and emergency controls are fully operational
- for any obstructions impairing safe operation, such as oil, debris or structures (cable trench, rollers and rail tracks)
- the ship's gear register to ensure the gear is in compliance with Marine Orders, and
- the safety of crane access ladders or stairs (surfaces and lighting)

For rail-mounted cranes, inspections include ensuring:

- that track wheels at deck level are fitted with foot guards
- where more than one crane is located on the same track, a device is fitted to prevent collisions
- locking devices on overside extensions are engaged.

Marine Order 32 covers the design of ship-based cranes to enable safe loading or unloading by stevedores operating these cranes, including that a crane, other than a crane fitted with remote controls in accordance with subclause 3.6 of Schedule 7, must not be used in loading or unloading unless, where the crane is provided with a cabin, the cabin:

- (a) provides the operator with a clear and unrestricted view of the load and area of operation or of a hatchman from the operating position of the crane; and

- (b) for any window that normally affords the operator a view of the load and area of operation or of a hatchman from the operating position of the crane — has a device that effectively clears rain or moisture; and
- (c) affords the operator ready access to the operating position and to all necessary controls and switches; and
- (d) is adequately heated in cold weather by means that do not emit noxious or objectionable fumes; and
- (e) is adequately ventilated by mechanical means; and
- (f) is equipped with a suitable seat and, where necessary, footrests;
- (g) if fitted with an access door, allows the door to be operated from both inside and outside the cabin, has an opening at least 550 mm wide and 1850 mm high (including any sill, the height of which must not exceed 450 mm), and, where the door is of a type which may become so obstructed as to prevent rescue in case of emergency, allows access to the cabin through a second opening; and
- (h) is constructed of fire-proof materials; and
- (i) in the case of an electrically operated crane or a crane in which electrical equipment connected with the crane's operation is installed, contains a suitable fire extinguisher complying with the appropriate Australian Standard or equivalent; and
- (j) has been so designed that noise and vibration remain within acceptable limits; and
- (k) shields the operating position and seat from the effects of radiated heat from the driving mechanism; and
- (l) if the crane is capable of hoisting a load to the level of the operating position — has any window that is at risk of being struck by a swinging load fitted with laminated glass, toughened safety glass or a material offering equivalent protection; and
- (m) is provided with illumination operable from the control position.

Information on monitoring cargo operations during loading and unloading is set out in section 6.3 of this Code.

### ***Shore-based cranes***

The inspection regime for shore-based cranes includes:

- annual inspections
- routine inspections and maintenance, and
- pre-operational inspections.

Further guidance is available in the *Code of Practice: Cranes*.

### ***Weather conditions***

Adverse weather conditions in which lifting operations may need to be reassessed include:

- high winds
- lightning
- poor visibility due to rain, snow and fog
- significant vessel movement

Crane operators should base their decision to make a lift based on the information provided by the crane manufacturer, advice provided by competent persons such as a rigger or engineer and their experience as a crane operator.

Decisions may include ceasing crane operations if there is a serious risk arising from exposure to an immediate or imminent hazard, for example the possibility of the crane being struck by lightning. Any crane struck by lightning must be thoroughly examined before being returned to service.

### **Brakes**

Brakes should be maintained in a safe and serviceable condition and able to prevent unpredictable movement in the known event of high wind. For example, a slewing brake on the

crane should be capable of holding the jib stationary, with the maximum safe working load suspended at its maximum radius when a maximum in-service wind acts in the most adverse direction.

### Securing Devices

When high wind speeds are expected, secure cranes in their appropriate out-of-service condition. If this requires the raising or lowering of a jib, 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.

Ropes attached to the load (tag lines) may be used to help control loads in light winds, but it is essential to ensure that workers holding tag lines are fully aware of the motions to be performed by the crane. Workers holding such lines should never attach them to, or wrap them around, their bodies as this can cause severe injury. Ensure that lines are held so that they can be instantly released if necessary.

### **Emergency procedures**

Check the workplace where the crane will operate has an emergency plan with an effective response to evacuate people from the vicinity of the crane in a controlled manner. See section 3.2 for further information about emergency plans.

A reliable and effective means of communication should be established between all workers in the vicinity of the crane to permit and ensure effective evacuation from danger areas.

Contact numbers for emergency services should be prominently displayed.

Emergency procedures should be communicated to relevant workers and include information about:

- how to use warning systems and what to do when they sound
- how to shut down the crane safely
- how to evacuate the crane and the area nearby in a controlled way
- how to access and provide first aid treatment
- how to use fire fighting and rescue equipment and where to find it

### **Crane workboxes**

**Regulation 220:** Plant not specifically designed to lift or suspend a person

The person with management or control of the plant at a workplace must ensure that:

- a) the persons are lifted or suspended in a work box that is securely attached to the plant; and
- b) the persons in the work box remain substantially within the work box while they are being lifted or suspended; and
- c) if there is a risk of a person falling from a height, a safety harness is provided and worn by the person in order to prevent, so far as is reasonably practicable, injury to the person as a result of the fall; and
- d) means are provided by which the persons being lifted or suspended can safely exit from the plant in the event of a failure in its normal operation.

Crane workboxes or personnel cradles should have:

- the safe working load, tare mass and design registration number marked on the workbox

- gates that are inward opening only, self-closing and provided with a latch to prevent unintentional opening
- fall-arrest anchorage points
- sides not less than one metre high.

When using a crane workbox, the crane should meet the following criteria:

- be equipped with a secondary back-up system that will prevent the load from falling if the primary lifting device fails
- have a minimum rated capacity of at least twice the total load of the workbox and its contents
- levers and foot pedals should be fitted with a constant pressure system that stops the crane's motions when the operator removes pressure from the controls
- if fitted with a free fall facility, the free fall function is positively locked out to prevent inadvertent activation.

Where a crane has a single brake acting directly on the drum, the braking efficiency of the hoisting drive train should be tested by hoisting and holding a load:

- equivalent to the line pull of the hoist winch, or
- not less than twice the maximum hoisted load.

When working from a crane workbox or personnel cradle ensure:

- the rated capacity of the workbox is not exceeded
- the workbox is not suspended over persons
- the workbox is designed for the task and securely attached to the crane
- the workbox, lifting attachments and records have been inspected by a competent person and deemed safe prior to use
- the workbox is only used to lift workers and materials necessary to carry out the work
- the crane is suitably stabilised at all times while the workbox is used
- the crane is not used to simultaneously raise, lower or suspend any other load while the workbox is suspended from it
- the crane operator remains at the controls of the crane
- there is direct visual communication or other equally effective method of communication between the crane operator and personnel in workbox
- all movements of the workbox are at slow speeds with minimum acceleration and deceleration
- flammable liquids, oxygen and acetylene cylinders are correctly secured and no more than the minimum quantities sufficient to carry out the work, are carried
- if flammable liquids or gases are carried, a suitable fire extinguisher is also carried
- workers are attached to the anchorage by a lanyard and harness unless the workbox is fully enclosed
- the workbox is not used in high winds or other adverse weather conditions (such as electrical storms) which could affect the safety of workers.

Information on the safe use of personnel cradles on ships is provided in Marine Order 32.

Information on crane workboxes is provided in the *Code of Practice: Cranes*.

### **7.3 Other lifting Equipment**

Lifting equipment (spreaders, slings, hooks, etc) used on shore and on board vessels to raise, suspend and lower loads should be well maintained and regularly inspected and tested (refer to Marine Order 32). Shipboard cranes maintenance records should be checked and any issues with the lifting equipment corrected before they are used.

#### ***Loose gear for lifting***

Ensure that the lifting equipment (spreader bars/beams, slings, chains, hooks) is:

- in serviceable condition
- suitable for the task and of adequate capacity for the load being lifted
- appropriately certified.

Developing a lifting plan which documents the control measures may assist in minimising the risk of incorrect equipment or methods being used. A rigging chart may be developed to ensure appropriate lifting techniques are used with the safest lift angles. Consider all securing methods, such as single/double wrap and chains and identify the 'weakest link' in a lift operation. Specific lifting or slinging methods may be necessary to eliminate or minimise the risk of a load slipping (e.g. double wrap or single choke with sliding ring). The age of equipment should also be taken into account.

It is important to check the gear register and certificates relating to lifting gear, but not to rely solely on paperwork, as it may be inaccurate or inadequate.

All lifting gear should be inspected by suitably qualified person, certified and tagged.

Regular visual inspection of lifting equipment should be carried out during operation by suitably qualified person, for example a rigger. Slings should be protected from sharp edges.

#### **7.4 Personal protective equipment**

**Regulation 44:** If personal protective equipment (PPE) is to be used at the workplace, the person conducting the business or undertaking must ensure that the equipment is:

- selected to minimise risk to health and safety
- suitable for the nature of the work and any hazard associated with the work
- a suitable size and fit and reasonably comfortable for the person wearing it
- maintained, repaired or replaced so it continues to minimise the risk
- used or worn by the worker, so far as is reasonably practicable.

**Regulation 46:** A worker must, so far as reasonably able, wear the PPE in accordance with any information, training or reasonable instruction and must not intentionally misuse or damage the equipment.

PPE provided and used for stevedoring work must be fit for purpose. PPE may include appropriate gloves and footwear, high visibility vests and wet weather gear.

## **8. MOORING AND UNMOORING**

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### **8.1 Prior to mooring**

Prior to mooring confirm positioning information is accurate, ensure ship-to-shore communication, ensure markers are set, advise of any special circumstances and check conditions are clear and ready for mooring.

Ensure that ship-to-shore gantry cranes are well clear of the berthing area or, if this is not possible, that they are positioned at the midpoint of the vessel well clear of potential strike points at the bow and stern as per the Harbour Master's Handbook in each port.

For night time operations ensure there is adequate lighting on the wharf and use an appropriate light such as a strobe light as bridge marker.

Prior to any lines being taken or released check the area for slip and trip hazards.

Ensure quick release hooks are locked and ready to take lines as part of pre-arrival check.

### **8.2 Mooring**

Check heaving lines for damage and suitability and only use ropes that are fit for purpose. Note minimum breaking loads are reduced in ropes that are deteriorated (e.g. through excessive wear, abrasion damage, or through contamination such as the practice of smearing ropes with grease).

Maintain visual contact with ship's crew as they are preparing to throw heaving lines.

Use capstans if available to tow heavy lines. Ensure the person holding the rope is also operating the capstan. If necessary, ensure sufficient linesmen used to lift heavy lines. If lines are heavy or difficult to dip ask for assistance.

When working with lines always:

- watch lines under tension and let them go if they fouled or are caught in wash from propeller or bow thrusters. If necessary, have the ship winch line back in
- move well away if the line is straining or making a noise – do not stand in snap back zones
- avoid unexpected tension on a slack line
- never step inside bight of a line or onto coiled ropes on wharf or around bollards
- ensure any line is stored or coiled as close to the line of tension as possible to reduce the possible consequences of any unexpected load, drum slippage or line movement
- ensure hands and fingers remain clear of rope and capstan
- keep clear of lines being tensioned
- be aware of the wharf edge when retrieving or placing lines
- be aware of others within the wharf area during mooring operations
- be aware of manual handling risks
- report any faults or problems
- use manual handling aids to assist e.g. poles to retrieve mooring lines as required
- ensure adequate assistance when lifting/pulling mooring lines
- do not use excessive force if a line is stuck. Instead, attempt to free the obstruction
- risk assess the potential hazard of falls into water and wear appropriate PPE as required.

To ensure safety around vehicles:

- the mooring supervisor should liaise with berth operators on crane and vehicle movements in the vicinity of the mooring activity
- provide each vehicle with support from a lines man on foot who has clear view of operations and can communicate to the driver
- driver must always be aware of location of other lines men, any wharf obstructions and be ready to activate hook release mechanism if necessary
- use a safe method of restraint and release of ships' lines

- take extreme care when removing line from hook to ensure the vehicle has stopped moving and ship's line has sufficient slack to enable it to be safely removed from the hook.

### ***Communication***

Always maintain effective radio communications, ensuring radios are fully charged and there are spare radios in vehicles as backup. Workers should be trained in radio procedures and in hand signals to be used if required.

Take care in conducting radio communications so operations between the pilot and tugs are not interfered with.

Ensure there are means of immediately alerting supervisors and asking for help if lines fail, people are injured, or if someone falls into the water.

### ***Connecting gangway and services***

Ensure all gangways and lifting equipment are safe and fit for purpose. Wherever possible, use mechanical means to move gangways. Vehicles should be parked as close as possible to drop off point to reduce carrying distances.

Never stand underneath gangways.

## **8.3 Unmooring**

Throughout unmooring procedures ensure there is effective communication between lines men and ship's crew.

Do not remove any lines until sufficient slack is given to enable their safe removal. Linesmen are to constantly watch the lines and take reasonable steps to ensure lines don't become fouled. If lines are jammed on the bollard, position lines so the ship's crew can recover them. Lines men are to watch out for tag lines flicking up upon release.

If lines are jammed on the bollard, position them so the ship's crew can recover them utilising the winches and ensure everyone is well clear during this operation.

## APPENDIX A: Example of managing risks in Stevedoring

### Example:

A general cargo vessel arrives for discharge, the vessel has pre-slung steel pipe in the hatch. The pipe is stacked approximately 6 m high in the hatch.

	What hazards are encountered when doing the task?	What risks do these pose to the health and safety?	How are these hazards and risks controlled?
<b>Handling Loads</b>	<ul style="list-style-type: none"> <li>• Suspended loads</li> <li>• Broken crane wires</li> <li>• Damaged Slings</li> <li>• Damaged Pre-slung wires</li> </ul>	<ul style="list-style-type: none"> <li>• Crane – damaged crane wires or slings could cause cargo to fall, causing a serious injury or fatality</li> </ul>	<ul style="list-style-type: none"> <li>• An assessment of the lift has been completed and the lift method and equipment has been checked by a competent person</li> <li>• Crane has a pre-operational inspection</li> <li>• Vessel to have pre-vessel inspection completed</li> <li>• The weight of the load is known and less than Safe Work Load (SWL) of the lifting equipment</li> <li>• Exclusion zones established to prevent people and forklifts interacting</li> <li>• Pre-slung wires, lift certificates are provided</li> <li>• Operators of powered lifting devices are trained and competent for the equipment</li> </ul> <p>Clear communication methods are maintained between ship and shore personnel</p>
<b>Manual Handling</b>	<ul style="list-style-type: none"> <li>• Attaching or detaching cargo to hook</li> </ul>	<ul style="list-style-type: none"> <li>• Heavy chains can cause injury when attaching or detaching to crane hook</li> </ul>	<ul style="list-style-type: none"> <li>• Manual handling training provided to reinforce safe lifting methods</li> <li>• Employees to assist each other when attaching wires/chains to crane hook</li> </ul>

<b>Working at Heights</b>	<ul style="list-style-type: none"> <li>Working on top of cargo</li> </ul>	<ul style="list-style-type: none"> <li>Fall from height</li> </ul>	<ul style="list-style-type: none"> <li>Workers must be trained in working at heights procedures</li> <li>Working at heights gear must be checked prior to use</li> <li>Anchor points are checked to withstand and capable meeting the load</li> </ul>
<b>Mobile Equipment</b>	<ul style="list-style-type: none"> <li>Collision mobile equipment and pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>Forklift colliding with workers, causing serious injury or fatality</li> <li>Trucks, moving cargo colliding with workers</li> </ul>	<ul style="list-style-type: none"> <li>Pre-operational checks are completed prior to operation of equipment</li> <li>Equipment is only operated by licensed and competent personnel</li> <li>Drivers do not use mobile phones or unauthorised electronic equipment whilst driving</li> </ul>
<b>Pedestrians</b>	<ul style="list-style-type: none"> <li>Integration with mobile plant and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Forklift colliding with pedestrians</li> <li>Visitors and contractors on site</li> </ul>	<ul style="list-style-type: none"> <li>Pedestrians must use marked walkaways</li> <li>Exclusion zones implemented on site to prevent pedestrians entering operational areas</li> <li>Traffic management plans developed on site, to ensure that all stakeholders are clear on requirements on site</li> <li>PPE is worn at all times in operational areas</li> </ul>

**APPENDIX B: Example Checklist – Vessel Inspection – Container Operations**

<b>Vessel:</b> <b>Date and Time:</b> <b>Inspection conducted by:</b> <b>Vessel Representative.....</b> <b>Terminal Representative.....</b>	<b>Terminal</b>
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Inspection Areas	Yes	No	N/A	Comments
<b>1. Access / Egress</b>				
Gangway in a suitable position, secured and netted				
Gangway provides access of at least 550mm width and 2 meters height clearance				
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 at all times				
Hatchway covers above ladders in place & can be secured				
Handgrips present at top of ladder				
Are access hatches of a suitable size to access freely				
Working space is clear of all obstructions over a width of at least 550mm				
Walkways are in good condition and free of all obstructions, with excess lashing gear suitably stacked to remove any slip / trip hazards				
Lashing points accessible				
Vertical ladders >3m have safety hoops - (bottom hoop is at least 2m from the base of the ladder)				
Provision of safe access / egress to under deck stows				
<b>2. Edge Protection</b>				
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 1m in height and no more than 2.5m apart and secured in position				
<b>3. Housekeeping</b>				
Lifebuoy accessible and visible				
Hazardous substance containers checked for leaks				
Fire and emergency equipment (including warning alarms) functional and in suitable positions				
<b>4. Lashing / Twistlocks</b>				
Lashing gear, unlashng poles, bars, spanners etc accessible and appear to be in serviceable condition				
3 high lashing bars can be handled using				

Inspection Areas	Yes	No	N/A	Comments
appropriate manual handling technique				
Are lashings/twistlocks of a consistent type and style				
Are twistlocks compatible with plant and equipment				
Bins/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 / configuration (20'/40') cause a change in the lashing/fall protection on the outboard cells with regard to protective fencing				
<b>5. Lighting</b>				
Adequate lighting is provided at all points of work for all lashing/ unlashings and cargo operations				
<b>6. Ships gear / cranes</b>				
Inspection and maintenance logs kept and available for all wires and lifting gear, only where applicable. (e.g. chains, slings etc)				
Ships 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				
<b>7. Reefers</b>				
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				
<b>8. Notice of Deficiency</b>				
Any outstanding Notice of Deficiencies (attach copy)				

## APPENDIX C: Example Checklist –Vessel Inspection – Bulk and General Operations

<b>Facility Name:</b>																			
<b>Vessel Name:</b>		<b>Date:</b>		<b>Time:</b>															
<b>Name of Person In Charge:</b>																			
<b>Signature:</b>																			
Item		Yes	No	Comment															
1	Safe Access from Wharf to Vessel	<input type="checkbox"/>	<input type="checkbox"/>																
2	Safe onboard access, clear alleyways to and from work areas	<input type="checkbox"/>	<input type="checkbox"/>																
3	Safe Access to cargo gear operating areas	<input type="checkbox"/>	<input type="checkbox"/>																
4	Safety Rails rigged in work areas and lashing platforms	<input type="checkbox"/>	<input type="checkbox"/>																
5	Confirmation ships gear conforms with Marine Orders	<input type="checkbox"/>	<input type="checkbox"/>	a) Date last Quadr/Quinqu-ennial: (Indicate Quadr/Quinqu as applicable) Surveying Authority: b) Date Last Annual: c) Random Gear Item Check															
		<table border="1"> <thead> <tr> <th>Item</th> <th>ID</th> <th>Sited</th> <th colspan="2">Endorsement</th> </tr> </thead> <tbody> <tr> <td>i)</td> <td></td> <td></td> <td>YES</td> <td>NO</td> </tr> <tr> <td>ii)</td> <td></td> <td></td> <td>YES</td> <td>NO</td> </tr> </tbody> </table>			Item	ID	Sited	Endorsement		i)			YES	NO	ii)			YES	NO
Item	ID	Sited	Endorsement																
i)			YES	NO															
ii)			YES	NO															
6	Are fire hoses and fire fighting equipment on board and ready with international shore connection	<input type="checkbox"/>	<input type="checkbox"/>																
7	Work spaces are adequately ventilated and atmosphere is safe	<input type="checkbox"/>	<input type="checkbox"/>																
8	Information regarding hazardous/dangerous goods cargo and confirmation hazardous cargos/dangerous goods are intact with no flammable or toxic spillage	<input type="checkbox"/>	<input type="checkbox"/>																
9	Confirmation an adequate mooring watch will be maintained	<input type="checkbox"/>	<input type="checkbox"/>																
10	Socialising vessels Emergency signal for company workers to cease operations and proceed ashore.	<input type="checkbox"/>	<input type="checkbox"/>																

11	Vessel and Wharf Operational areas adequately lit.	<input type="checkbox"/>	<input type="checkbox"/>	
12	Agreement regarding order of load, discharge and cargo placement.	<input type="checkbox"/>	<input type="checkbox"/>	
13	Specific advice regarding abnormal stow conditions or special requirements (e.g. lashing, tomming off, dunnaging, glutting, securing requirements etc.	<input type="checkbox"/>	<input type="checkbox"/>	
14	Vessel advised of Person in Charge, contact numbers, structure and allocation of workforce.	<input type="checkbox"/>	<input type="checkbox"/>	
15	Commence with and maintain a clear and uncluttered wharf face operational area.	<input type="checkbox"/>	<input type="checkbox"/>	
16	Confirm machinery to be used onboard and on wharf for practicality and suitability	<input type="checkbox"/>	<input type="checkbox"/>	
17	Stevedoring equipment to be used, with specific consideration given to suitability, condition and SWL of slings and rigs. This includes consideration of ship/shore gear SWL in regard of lifts to be taken.	<input type="checkbox"/>	<input type="checkbox"/>	
18	Establish traffic flow patterns to deliver cargo, or remove cargo from the wharf landing area (under hook). Any crossing of machinery paths shall be minimised and controlled. Ensure traffics way are clear and unobstructed.	<input type="checkbox"/>	<input type="checkbox"/>	
19	Wharf landing area (under hook) prepared with appropriate gluts, landing platforms or safe means by which cargo is positioned prior to slinging or unslinging.	<input type="checkbox"/>	<input type="checkbox"/>	
20	Stevedoring personnel equipped with the appropriate skills necessary to carry out the intended operation and fitted out with the appropriate PPE.	<input type="checkbox"/>	<input type="checkbox"/>	
21	Stevedoring Personnel have a clear understanding of gear and rigs to be used and how cargo is slung or unslung.	<input type="checkbox"/>	<input type="checkbox"/>	

22	In the case of bulk cargoes, wharf face personnel will have clear instructions regarding cargo receipt (e.g. backing trucks loaded with coal into dump bins prior to lifting on board) or delivery (e.g. operating a hopper to load product into a truck).	<input type="checkbox"/>	<input type="checkbox"/>	
23	Has the Person in Charge assessed Wharf Face operations and establish barricades separating operational aspects as required to maintain safe work areas.	<input type="checkbox"/>	<input type="checkbox"/>	