



**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

Implementing the Health and Safety at Work Act 2015: Better Regulation

Plant, Structures and Working at Heights

DISCUSSION PAPER

July 2019





**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

Ministry of Business, Innovation and Employment (MBIE)

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ISBN 978-1-98-857018-1 (online)

ISBN 978-1-98-857095-2 (print)

July 2019

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How to have your say

We want to know what options you think will effectively manage risks at work involving plant, structures, heights, scaffolding and excavations. Your feedback will help shape reforms to relevant regulations under the Health and Safety at Work Act 2015.

Submissions process

The Ministry of Business, Innovation and Employment (MBIE) seeks written submissions on the issues raised in this document by 5pm on **4 October 2019**.

Your submission may respond to any or all of these issues. You do not have to answer all of the questions. We prefer you use the online submission forum provided at: www.mbie.govt.nz/plant-and-structures. This will help us to collate submissions and ensure that your views are fully considered.

We will also accept submissions that do not use the online submission forum. Please include your name and (if applicable) the name of your organisation in your submission. Please include your contact details in the cover letter or e-mail accompanying your submission.

You can make your submission:

- By using the online forum at www.mbie.govt.nz/plant-and-structures
- By sending your submission as a Microsoft Word document to HSWregs@mbie.govt.nz.
- By mailing your submission to:

Health and Safety Policy
Labour and Immigration Policy
Ministry of Business, Innovation & Employment
PO Box 1473
Wellington 6140

Please direct any questions that you have in relation to the submissions process to HSWregs@mbie.govt.nz.

Use of and release of information

The information provided in submissions will be used to inform MBIE's policy development process, and will inform advice to Ministers about health and safety at work regulatory reform. We may contact submitters directly if we require clarification of any matters in submissions.

MBIE intends to upload PDF copies of submissions received to MBIE's website at www.mbie.govt.nz. When you make a submission, MBIE will consider you to have consented to it being uploaded to the website unless you clearly specify otherwise. If your submission contains any information that is confidential or you otherwise wish us not to publish, you can clearly mark this within the text and provide a separate version excluding the relevant information for publication on our website.

Submissions remain subject to request under the Official Information Act 1982. Please clearly indicate in the cover letter or e-mail accompanying your submission if you have any objection to the release of any information in the submission, and which parts you consider should be withheld, together with the reasons for withholding the information. MBIE will take such objections into account and will consult with submitters when responding to requests under the Official Information Act 1982.

The Privacy Act 1993 applies to submissions. Any personal information you supply to MBIE in the course of making a submission will only be used for the purpose of assisting in the development of policy advice in relation to this review. Please clearly indicate in the cover letter or e-mail accompanying your submission if you do not wish your name, or any other personal information, to be included in any summary of submissions that MBIE may publish.

Minister's Foreword



Everyone in New Zealand should come home from work healthy and safe. Where work involves machinery, equipment, tools, vehicles, structures, heights or excavations this is sadly often not the case.

Machinery, equipment, tools and structures are involved in 76 per cent of fatal injuries at work. That's 58 people every year who don't make it home to their families.

We need to and can do better for our workers, businesses and communities. A sound, comprehensive regulatory framework is fundamental to ensure businesses know what to do to keep people healthy and safe and ensure that workers are protected from harm.

The Royal Commission of Inquiry on the Pike River Coal Mine tragedy and the Independent Taskforce on Workplace Health and Safety found that regulations and guidance for health and safety at work were piecemeal and ad hoc, were weak and outdated in places, contained gaps, were hard to understand, and did not support businesses to fulfil their obligations.

Since those inquiries, the Health and Safety at Work Act 2015, new regulations, and efforts from regulators and industry, have done a lot to strengthen our framework. The new Health and Safety at Work Strategy 2018-2028 sets an ambitious vision for the system over the next ten years. But there is more work to do. Outdated regulations carried over from the previous Health and Safety in Employment regime must be modernised, clarified and strengthened to effectively address harm.

Machinery, equipment, tools, structures, heights and excavations are the priority topics I am progressing in this next stage of reform because they target the most harm for the most people.

These things cause unacceptable harm. They are prevalent in our most risky sectors – forestry, agriculture, construction and manufacturing.

This discussion paper seeks to confirm the nature and scale of the problems workers and businesses are facing and asks for feedback on options to address them. It's not about regulating for the sake of it – it's about taking a targeted and proportionate approach to supporting businesses to be good employers and protecting workers from death, serious injury and ill-health.

I encourage workers, businesses and others alike to give feedback on the options in this paper. Your responses will help find the best ways forward.

Hon Iain Lees-Galloway
Minister for Workplace Relations and Safety

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Contents by sector/interest

We recommend all audiences read Sections [1 Overview](#) and [8 Offences and transitional arrangements](#).

Area of interest	Relevant sections	
Machinery, equipment, tools, vehicles, aircraft, ships (plant)	2 Protections for people working with plant.....	23
Vehicles and other mobile plant used for work	3 Protections for people working with mobile plant.....	48
Designers, manufacturers, suppliers, importers and installers of plant	4 Designing, manufacturing, importing, supplying, and installing plant or structures.....	67
Installing, constructing and commissioning structures	4 Designing, manufacturing, importing, supplying, and installing plant or structures.....	67
Cranes, boilers, boom elevating work platforms, prefabricated scaffolding, building maintenance units, forestry equipment	5 High-risk plant.....	87
Theme park and amusement rides	5 High-risk plant.....	87

Sector	Relevant sections	
Agriculture	2 Protections for people working with plant.....	23
	<ul style="list-style-type: none"> E.g. irrigation and milking equipment 	
	3 Protections for people working with mobile plant.....	48
	<ul style="list-style-type: none"> E.g. agricultural vehicles such as quad bikes, trucks and tractors 	
Amusements and theme parks	2 Protections for people working with plant.....	23
	<ul style="list-style-type: none"> All amusement devices 	
	3 Protections for people working with mobile plant.....	48
	<ul style="list-style-type: none"> Mobile amusement devices 	
	5 High-risk plant.....	87
	<ul style="list-style-type: none"> All amusement devices 	
Construction	2 Protections for people working with plant.....	23
	<ul style="list-style-type: none"> Powered hand-held tools, powder-actuated tools, hoists, laser equipment, lifting equipment and other construction equipment 	
	3 Protections for people working with mobile plant.....	48
	<ul style="list-style-type: none"> Trucks, bulldozers, excavators, forklifts, other vehicles 	

	4 Designing, manufacturing, importing, supplying, and installing plant or structures.....	67
	• Installing, constructing and commissioning structures	
	5 High-risk plant.....	87
	• Cranes, building maintenance units, concrete pump booms and materials handling equipment	
	6 Working at heights and scaffolding.....	111
	• Risks from heights in construction work	
	• Erecting and inspecting scaffolding	
	7 Excavation work	126
	• Excavating and trenching in construction work	
<hr/>		
Engineering	2 Protections for people working with plant.....	23
	• Guarding, maintenance and inspection of plant	
	3 Protections for people working with mobile plant.....	48
	4 Designing, manufacturing, importing, supplying, and installing plant or structures.....	67
	5 High-risk plant.....	87
	• Design verification and registration of high-risk plant	
<hr/>		
Fisheries	2 Protections for people working with plant.....	23
	• Vessels and plant on vessels	
<hr/>		
Forestry	2 Protections for people working with plant.....	23
	• E.g. hoists, chainsaws, log haulers and lifting equipment	
	3 Protections for people working with mobile plant.....	48
	• E.g. feller-bunchers, skidders, mulchers, harvesters	
	5 High-risk plant.....	87
	• Forestry equipment like log haulers	
<hr/>		
Manufacturing	2 Protections for people working with plant.....	23
	• Fixed manufacturing plant e.g. press brakes, CNC machines, industrial robots	
	3 Protections for people working with mobile plant.....	48
	• Forklifts, trucks and other mobile plant	
	4 Designing, manufacturing, importing, supplying, and installing plant or structures.....	67
	5 High-risk plant.....	87
	• Gantry cranes	
<hr/>		
Transport	2 Protections for people working with plant.....	23
	• Loading and unloading equipment	
	3 Protections for people working with mobile plant.....	48
	• Trucks, cars, vessels, aircraft and other vehicles used at work	

List of key terms and acronyms

Amusement Devices Regulations	<u><i>Amusement Devices Regulations 1978</i></u>
General Risk and Workplace Management Regulations	<u><i>Health and Safety at Work (General Risk and Workplace Management) Regulations 2016</i></u>
Health and Safety in Employment Regulations	<u><i>Health and Safety in Employment Regulations 1995</i></u>
HSW Act	<u><i>Health and Safety at Work Act 2015</i></u>
MBIE	Ministry of Business, Innovation and Employment
PCBU / business	Person conducting a business or undertaking ¹
Plant	Includes any machinery, vehicle, vessel, aircraft, equipment (including personal protective equipment), appliance, container, implement, or tool; and any component of those things; and anything connected to any of those things ²
Prescribed Risk Management Process	Set out in regulations 5 to 8 of the General Risk and Workplace Management Regulations (see p 21)
Pressure Equipment, Cranes, and Passenger Ropeway Regulations	<u><i>Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999</i></u>
Structure	Means anything that is constructed, whether fixed, moveable, temporary, or permanent; and includes buildings, masts, towers, frameworks, pipelines, quarries, bridges, and underground works (including shafts or tunnels); and any component of a structure; and part of a structure. ³

Data

Unless otherwise indicated, data in this discussion paper is based on WorkSafe’s System for Work-related Injury Forecasting and Targeting (SWIFT). It combines WorkSafe fatality notifications and approved Accident Compensation Corporation claims for fatal injury to workers. It excludes fatalities

¹ Section 17, HSW Act.

² Section 16, HSW Act.

³ Section 16, HSW Act.

involving bystanders, people under the age of 15, gradual process injuries and work-related disease. The term 'serious injury' refers to injuries resulting in more than a week away from work.

1 Overview

We want to improve how risks from plant, structures, heights, scaffolding and excavations are managed because ...

They are everywhere and affect everyone

We are looking at plant, structures, heights, scaffolding and excavations because they are used in, or a part of, many different sectors and types of work.

They are used heavily in agriculture, construction, forestry, manufacturing and transport. They are also found in many other workplaces that use vehicles and other equipment.

Plant is any machinery, vehicle, vessel, aircraft, equipment, appliance, container, implement, or tool.

E.g. cranes, scaffold components, conveyors, forklifts, power tools, boilers, theme-park rides.

Structures are anything that is constructed, whether fixed or moveable, temporary or permanent, including buildings, masts, towers, framework, pipelines, quarries, bridges, and underground works (like tunnels and shafts).

It's not just workers that are affected. It's the businesses (big and small) that own, design, manufacture, import, supply and install them, as well as businesses and people that contract others to do work involving these things. We want to ensure workers are protected from harm and that regulations don't put disproportionately costly or unnecessary hurdles in the way of getting things done.

Other people present in workplaces where these things are being used are also affected. Whether you're having a new home built, boarding a plane, taking your family to a theme park, or walking near a construction site – every day you're coming across plant, structures, heights, scaffolding and excavations.

Managing these risks is at the core of keeping people healthy and safe at work ... and it's not always done well

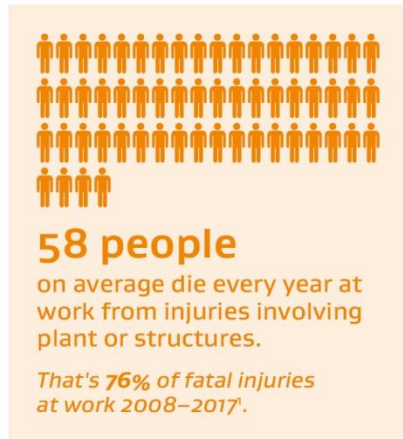
Risks associated with plant, structures, heights, scaffolding and excavations kill and seriously injure individuals every day. While lots of businesses are managing these risks well and industries have made considerable efforts to improve their performance, there is still a significant amount of harm occurring.

MBIE are working with WorkSafe to get a complete picture of the harm occurring from these things. The data on the following page is what we know now based on WorkSafe's SWIFT data.

Work-related harm involving plant, structures, heights, excavations and young people

PLANT is any machinery, vehicle, vessel, aircraft, equipment, appliance, container, implement or tool.

STRUCTURES are anything that is constructed, whether fixed or moveable, temporary or permanent – including buildings, masts, towers, framework, pipelines, quarries, bridges, tunnels and shafts.



Most fatal injuries in **HIGH RISK SECTORS** from 2008 to 2017 involved plant or structures:



84% of **AGRICULTURE DEATHS:**
77 DEATHS



39% of **FORESTRY DEATHS:**
19 DEATHS



82% of **CONSTRUCTION DEATHS:**
73 DEATHS



69% of **MANUFACTURING DEATHS:**
32 DEATHS



93% of **FISHING & SHEARING DEATHS:**
95 DEATHS



95% of **TRANSPORT, POSTAL AND WAREHOUSING DEATHS:**
108 DEATHS

WORK-RELATED DISEASE:

Significant numbers of people die every year from work-related disease associated with plant. These are mainly cancers and chronic obstructive pulmonary diseases (e.g. chronic bronchitis) caused by dusts, gases, vapours, fumes and fibres from plant.

2015–2018

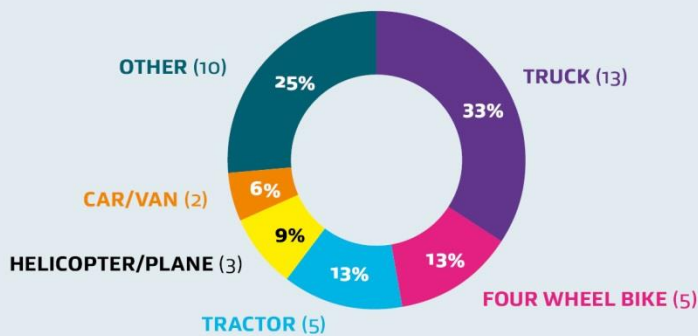


9 work-related deaths
under age 18



On average **38 people** die every year at work from injuries involving vehicles.

Average annual fatal work-related injuries involving VEHICLES



The **CONSTRUCTION SECTOR** has high severe injury² rates for falls from height



2008–2017



4 died and 27 injured²
From ground/excavation collapse

¹ This excludes fatalities from the Pike River Coal Mine Tragedy.
² Resulting in more than a week away from work.

It can be easy to overlook the importance of plant, structures, heights, scaffolding and excavations to health and safety at work. While catastrophic events such as mining disasters or failures of major hazard facilities can be devastating and kill lots of people in a single event, they tend to happen relatively infrequently. You might hear less about deaths and injuries from the risks in this document, but they occur at a frequency and rate that make them as important as catastrophic events.

They also make up a consistently large number of investigations, enforcement actions and prosecutions by regulators.

Plant, structures, heights, scaffolding and excavations affect many people and involve significant costs and risks. Poor management of these risks can have huge effects on individuals, businesses and society, impacting on families whose loved ones are killed at work and individuals whose lives are changed forever because of injury. Projects seeking good social outcomes – like building more homes, planting a billion trees, or rebuilding after a natural disaster – could be tarnished if risks are not managed well.

We can make it easier for businesses and workers to manage these risks

Despite the importance of keeping people healthy and safe, the rules for plant, structures, heights, scaffolding and excavations are:

- **hard to understand** – old language, gaps and inconsistent ways of dealing with similar risks mean the framework doesn't always make sense
- **out of date** – most of the regulations haven't been updated since they were made and have failed to keep up with changes in practice and technology
- **ad hoc** – many of the rules are cobbled together from old law, and were added to address specific issues as they came up
- **full of gaps** – some key risks (including risks associated with automated machines and industrial robots) are not dealt with properly, or at all.

This leads to problems including ...



It's not good enough – we need to and can do better

It's important to get this right. We know good health and safety at work can be hard, and we want to make sure that our framework is sound and effective so that people in New Zealand:

- are not killed or seriously hurt at work
- are able to make sense of the framework so compliance and transaction costs can be reduced.

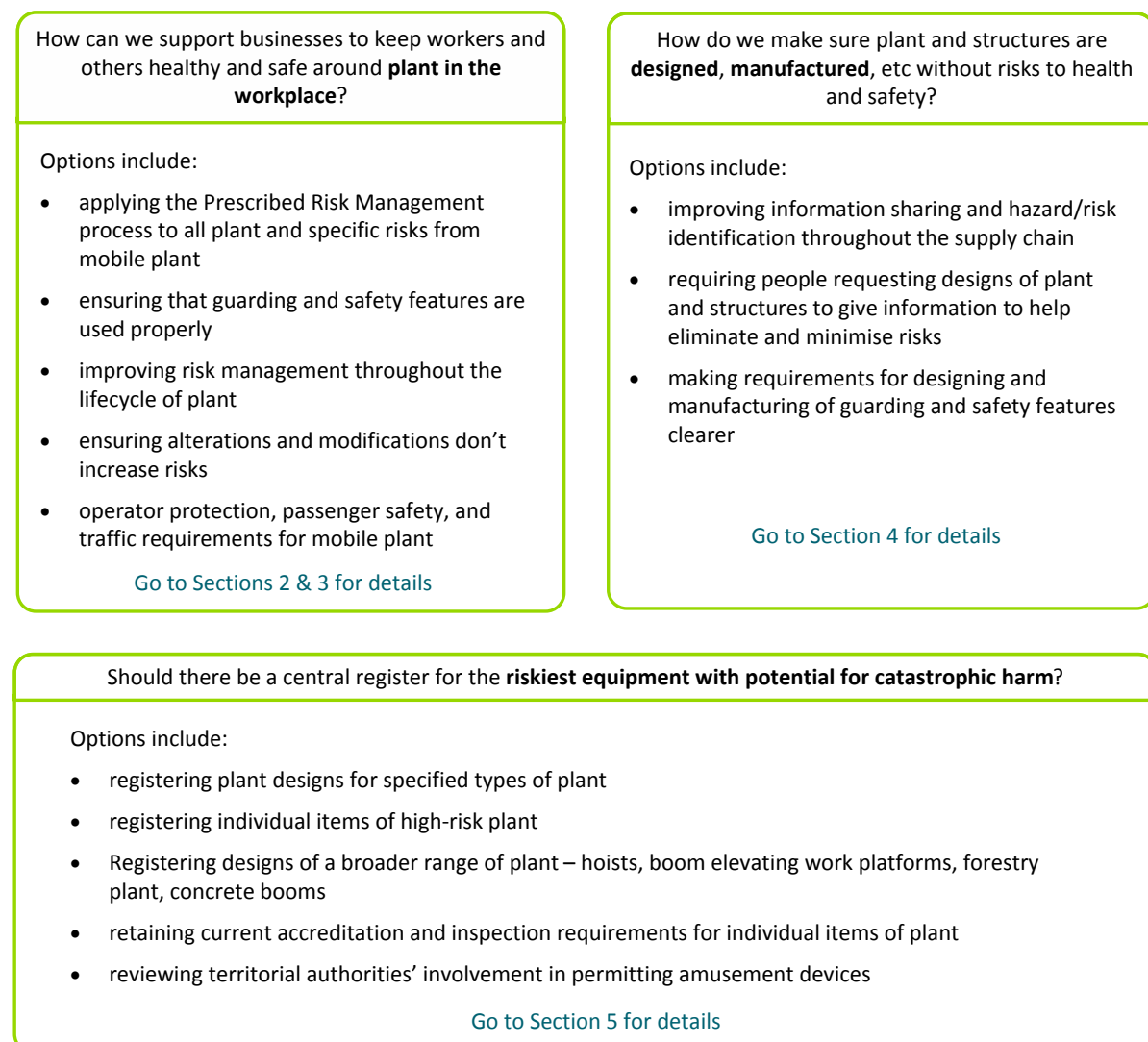
We've got some ideas for how we can do better

We've talked to key people, organisations, and stakeholders in forestry, agriculture, construction, manufacturing and transport to identify and test issues.

We've come up with some ideas for how we can make the rules effective, proportionate, clear, certain, cost effective, flexible and durable. Our ideas to make the system better include ...



Using these ideas, here are some of options we are thinking about for each of the topic areas:



How do we make **work at heights and scaffolding** requirements clear to reduce compliance costs?

Options include:

- applying the Prescribed Risk Management process to all work at height
- introducing a mandatory hierarchy of controls for work at heights in construction
- excluding work under a certain height and/or of short duration from some or all of the hierarchy of controls
- requiring a competent person to construct scaffolding over 6m and conduct monthly inspections
- retaining notifications for scaffolding

[Go to Section 6 for details](#)

How do we make **excavation work** requirements clearer and consistent with good practice?

Options include:

- applying the Prescribed Risk Management process
- managing specific risks from falling in, collapse, falling objects, and airborne contaminants
- preventing unauthorised access
- minimising risks of collapse for trenches deeper than 1.5m
- requiring checking for underground services

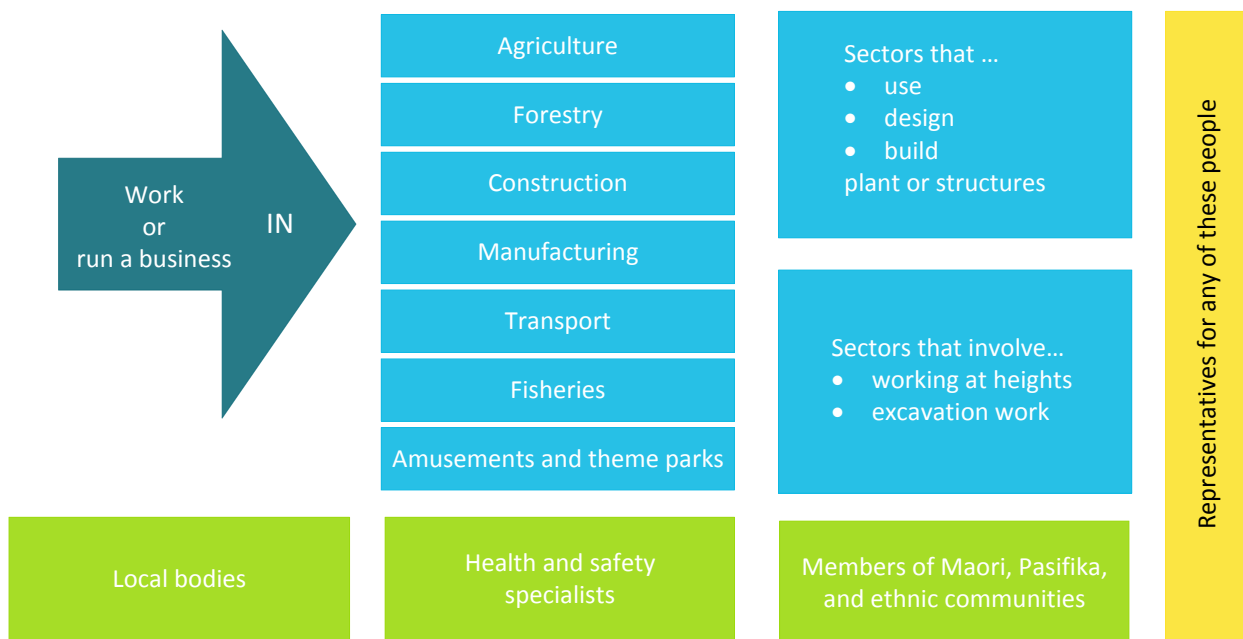
[Go to Section 7 for details](#)

With your help, we want to get this right

Based on your experience and information, we want to know what proposals and options you think will be most effective to achieve the change we want to see for workers and businesses. Tell us what is going to work in practice. Your feedback will help us identify the best options for change and inform the government's final policy decisions.

There is a range of options we want to test with you, and a lot of questions. You don't have to answer all the questions – only answer the ones that are relevant to you. Or if you'd prefer not to use the questions, we'd still like your feedback – so send us something that suits you.

You'll be interested in the options in this document if you ...



Describe the impacts on your business or workplace

This document covers a very broad set of issues for workplaces. It also describes a wide range of options and proposals for change.

Even though all of the sections in this document are related, some are different from others. For some of the topics, the issues and risks are well understood and the range of options is fairly straightforward.

Others issues are trickier and require more input from you before we can develop options. For these areas, we've asked you questions that allow you to drive the conversation. It will help build a strong understanding of the issues and how they affect all sectors so we can develop options that work.

When you respond to proposals, please describe the impacts of proposals on your business or your work – in terms of costs and benefits – in as concrete terms as you can.

We will use your responses to compare proposals and make recommendations for government policy decisions. Clear information on the impacts on your business, work or workplace will help us to choose the best options for change, and complete better regulatory impact analysis, including cost benefit analysis for proposals.

Our approach to the reform

This is part of a wider regulatory reform programme under the Health and Safety at Work Act

The HSW Act came into effect in April 2016 with nine sets of newly-made regulations and a further seven sets of pre-existing regulations carried over from the old Act.

In the first set of new regulations, we focused on general regulations needed to support the new HSW Act and on work that has catastrophic risk – major hazard facilities, adventure activities, asbestos, petroleum, and mining and quarrying. The HSW Act and this first set of regulations were based on the Australian Model Act and Regulations.

We are now reforming the remaining old regulations. These old regulations are out of date, piecemeal, often prescriptive, and ad hoc. Reform is required in key risk areas to ensure risks are effectively managed. This is a big and complex multi-year reform programme.

We are doing this reform because we want the health and safety regulatory framework to be:

- **effective** – by reducing harm at work and preventing regulatory failure
- **proportionate** – so the level of regulation and regulator’s actions are proportionate to risk and target key risks
- **clear** – so it is logical, consistent and easy to understand
- **certain** – so everyone understands their role in the framework and complies with it
- **cost effective** – so compliance and transitional costs are minimised
- **flexible and durable** – so it is responsive and can deal with changes, such as in technology and ways of working.

Reforming HSW regulations is part of our work to address issues identified by both the **Royal Commission of Inquiry on the Pike River Coal Mine tragedy** and the **Independent Taskforce on Workplace Health and Safety**. They found that regulations and guidance:

- did not support duty holders to comply with their duties
- did not adequately manage the risk of catastrophic harm
- were a piecemeal collection of legacy requirements
- lacked a coherent logical structure, were weak and outdated in places, and contained gaps or were inaccessible and hard to understand.

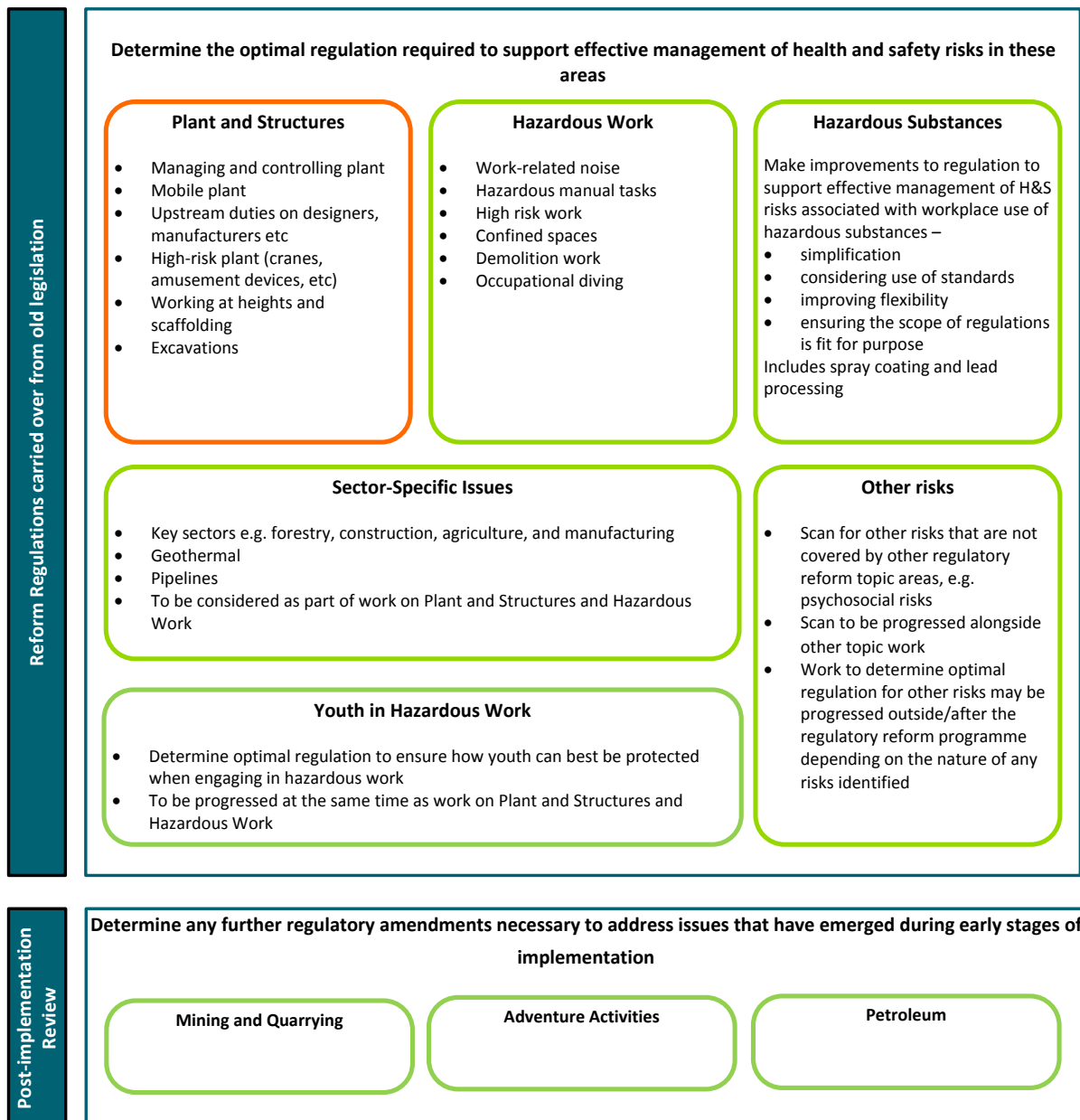
These topics are our first priorities

Plant and structures and working at heights are priority topics for the Minister for Workplace Relations and Safety. We have also included excavations and scaffolding with this work. We think it makes sense to reform the topics in this document together because they have many of the same risks, they overlap, and they have implications for the same people and sectors.

The diagram below sets out the entire health and safety at work regulatory reform programme. The sections in orange are the topics covered in this discussion paper. [Annex 1](#) provides further

information about where this work sits amongst the individual pieces of regulation under the HSW Act.

Sector-specific issues are being considered across the regulatory reform programme. The options in this discussion paper raise many of the biggest risks in sectors like agriculture, forestry and construction. Some of the other key risks in those sectors relate to ways of working, operators, and relationships within the sectors. These risks will be considered during the rest of the multi-year reform programme, e.g. under hazardous work.



We've taken a best practice and principled approach

The Australian Model Regulations have been used as a starting point

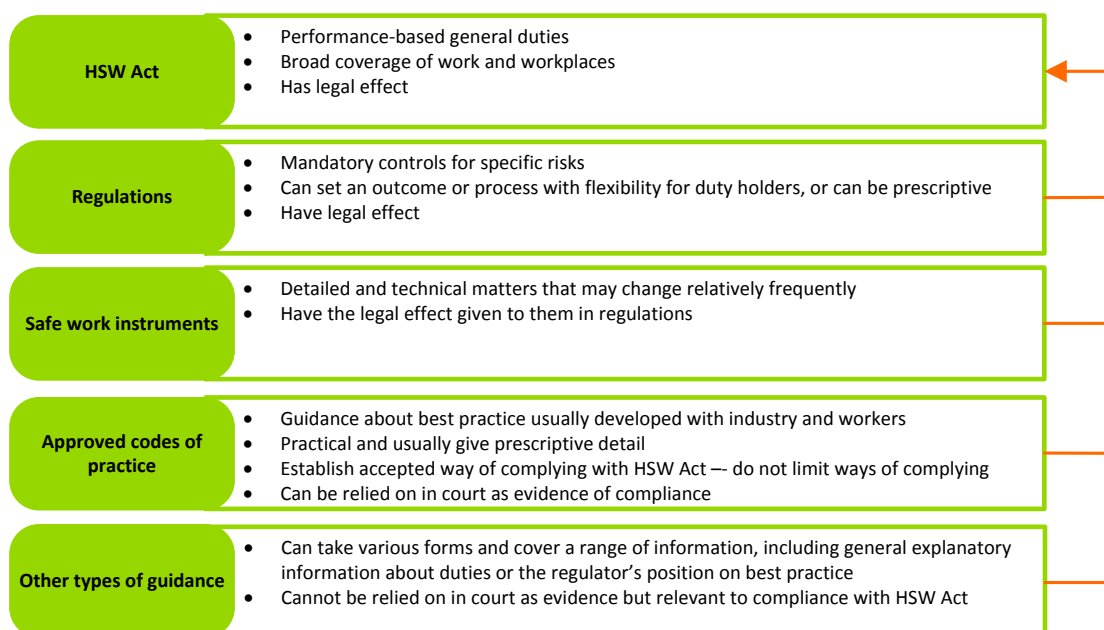
The HSW Act and first set of new regulations in 2016 were based on the Australian Model Regulations. Australia has similar practices, problems, and performance in health and safety at work, and the Model Regulations provide a well-developed and tested basis for managing them. Adopting the Model Regulations means we can learn from Australia's experiences, draw on their case law and compare developments over time. However, we want to know if there are any differences between us and Australia – your feedback will help us identify where we should depart from the Australian approach.

Our approach is consistent with how the regulatory framework is designed

Our health and safety at work regulatory framework aims to provide a balanced approach to secure the health and safety of workers by placing general duties on businesses that allow flexibility to do what is best in the circumstances, rather than relying on prescriptive requirements that focus on a narrow range of risks. The key features of the framework are:

- Performance-based general duties provide broad coverage of work and workplaces
- Industry- or risk-specific regulations, approved codes of practice and other guidance underpin the general duties when further clarity is required
- Regulations are most appropriately used where they are needed to effectively address risks – the riskier something is the more likely it is to need mandatory controls through regulations
- There is an emphasis on promoting health and safety by non-legislative means, such as codes of practice and guidance that support duty holders to meet their general duties, where these means can effectively address risks.

The diagram below shows how the parts of the regulatory framework fit together. The arrow indicates how the instruments all go towards supporting the general duties and what is “reasonably practicable” under the HSW Act.



The Prescribed Risk Management Process should be applied where it is justified according to risk or to ensure appropriate flexibility

The General Risk and Workplace Management Regulations set out a risk management process (the Prescribed Risk Management Process) that PCBUs must follow where it is specified in regulations. It requires businesses to:

- identify hazards and eliminate risks where reasonably practicable
- otherwise to minimise risks so far as is reasonably practicable by using one or more of the following control measures:
 - substitution
 - isolation
 - engineering controls
- if a risk still remains, implement administrative controls
- if a risk still remains, provide personal protective equipment
- maintain and review the control measures.

The duty in section 30 of the HSW Act applies to all workplace risks. In addition, the Prescribed Risk Management Process applies to some specified risks, including work in confined spaces, falling objects, loose materials and work under raised loads. It provides a generic process of risk management with more detail to support the principles in section 30, while allowing the flexibility needed for a wide range of work and workplaces.

The Australian Model Regulations use the Prescribed Risk Management Process for risks in most areas covered by those Regulations. They tend to use the Process as the most basic level of control for all health and safety risks, with extra control measures for specific risks. For example, the Australian Model Regulations require PCBUs to follow the Prescribed Risk Management Process for risks in relation to plant, then provide specific additional controls for guarding, maintenance, lifting plant, etc. This means the Prescribed Risk Management Process acts as a catch-all for risks that do not have specific controls.

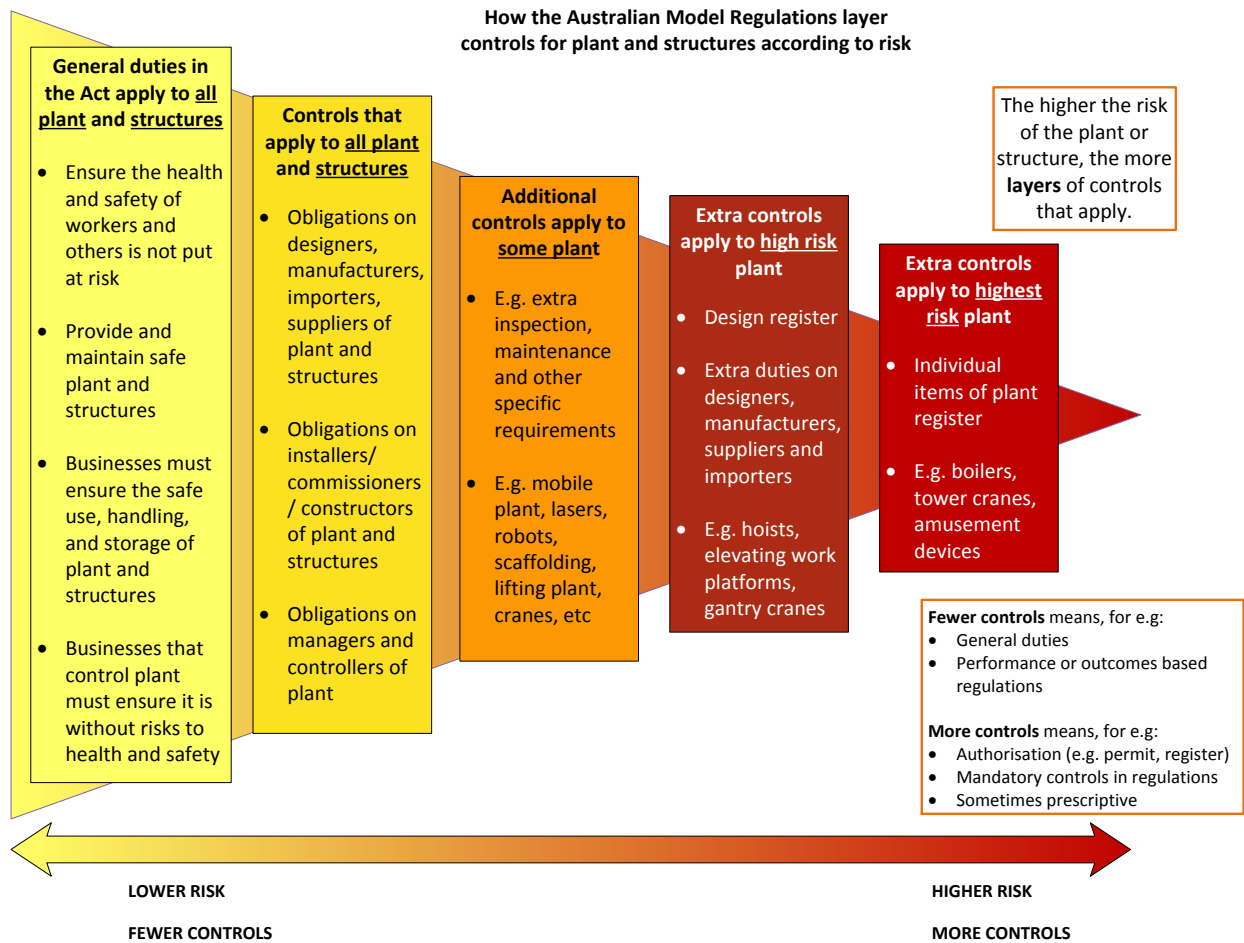
We want to know how you think this Process will work in practice in your workplace or sector.

There are some overlaps between topic areas and with other parts of the reform programme

Sometimes the topic areas in this document overlap with each other because some risks might be best addressed through a combination of controls.

The Australian Model Regulations tend to layer controls according to how risky things are. Below is a diagram of how controls are layered for plant and structures. This means that options in the first four sections are related, and our final approach once we have received your feedback may change accordingly. Controls for work at heights and excavation work are layered in a similar risk-based way.

E.g. high-risk equipment like a mobile crane will have the controls for all machinery and equipment ([Section 2](#)), more controls for mobile plant ([Section 3](#)), and more controls again for high-risk plant ([Section 5](#)).



Some things dealt with in this document may also come up in future parts of our regulatory reform programme. We’re asking you about some of these issues now, to make sure we’re taking a coordinated approach to risks. Full consultation on other relevant topics in the wider regulatory reform programme will happen later. We’ve tried to highlight where these overlaps occur throughout the document.

E.g. we’re looking at risks from equipment like forklifts in this document, but tickets for forklift operators will be looked at under the hazardous work part of the programme.

Next steps

After we’ve received your feedback, we will analyse it and use it to develop policy options for the Minister for Workplace Relations and Safety. We expect we will need to consult further on those issues that are less developed to ensure we have the right evidence of costs and impacts to inform policy decisions.

We expect new regulations to be in place in 2021.

2 Protections for people working with plant

Plant causes significant harm at work.⁴

43% of deaths in **manufacturing**

19% of serious injuries in **manufacturing**

77% of deaths in **agriculture**

14% of serious injuries in **construction**

This indicates that the risks from plant used in New Zealand are not always managed well.

Risks from the plant itself	<ul style="list-style-type: none">• Guarding and safety features are not adequate or are being removed• Cleaning and maintaining machinery is particularly risky
Risks from the lifecycle of plant	<ul style="list-style-type: none">• Commissioning, storage and decommissioning are not well managed• Poorly maintained plant may increase risks of harm• Plant is often modified and used for purposes it was not designed for
Risks arising from the wide range of plant in use in New Zealand	<ul style="list-style-type: none">• The regulations only cover some risks• The wide range of risks is not always being managed properly

Here are some [ideas to address these problems](#). Tell us what you think.

Ensure guarding and safety features are adequate and used properly
Manage the risks from cleaning and maintenance

Ensure plant is adequately maintained
Ensure alterations don't create risks to health and safety

Extend coverage to all plant, including lifting plant, industrial robots and lasers

Apply the Prescribed Risk Management Process to risks from plant

You'll find more information about these problems and ideas in the detail of this section.

⁴ From 2008 to 2017.

This section applies to plant used at work. You will be interested in this section if you:

- use machinery, equipment, and tools at work
- run a business that uses machinery, equipment and tools
- provide or hire plant to others.

The HSW Act defines plant as:

- any machinery, vehicle, vessel, aircraft, equipment, appliance, container, implement or tool
- any component of these things
- anything fitted or connected to these things.

We note that this section applies to plant, including mobile plant. [Section 3](#) deals specifically with protections for people working with mobile plant.

This section concerns duties on PCBUs that manage or control plant.

Machinery, equipment and tools cause significant harm in our workplaces

Poor use of plant causes significant harm in WorkSafe's priority sectors: agriculture, forestry, construction and manufacturing. Injury and fatality statistics show that machinery and tools are a common factor in serious injuries that result in more than a week away from work. WorkSafe indicates that from 2008 to 2017 machinery and tool use were involved in:

- 77 per cent of fatalities in the agricultural sector
- 43 per cent of fatalities and 19 per cent of serious injuries in the manufacturing sector
- 14 per cent of serious injuries in construction.

Significant numbers of people die every year from work-related disease associated with plant. These are mainly cancers and chronic obstructive pulmonary diseases (e.g. chronic bronchitis) caused by dusts, gases, vapours, fumes and fibres from plant.

We need to improve the management of the risks from plant

Although plant is a key cause of harm, New Zealand's requirements for plant are not coherent. Plant is currently managed by the general duties in the HSW Act, a few specific regulations, and a range of non-legislative measures.

The HSW Act and General Risk and Workplace Management Regulations came into force in 2016 and are based on the new, performance-based

HSW Act

Section 36:

- Businesses must ensure that the health and safety of workers and other persons is not put at risk.
- Businesses must provide and maintain safe plant and structures.
- Business must ensure the safe use, handling and storage of plant and structures.

Section 38:

- Businesses managing or controlling plant must ensure that fixtures, fittings or plant are without risks to the health and safety of any person.

Businesses are only required to meet these duties so far as is reasonably practicable. They are not absolute.

Australian Model Laws. Other regulations for plant were carried over from the old Health and Safety in Employment regime and are outdated and no longer fit for purpose. These old regulations narrowly focus on a few risks from plant and are detailed in a way that is inconsistent with the modern, comprehensive and flexible approach under the HSW Act and new regulations.

The Machinery Act 1950 had specific provisions for managing the risks from machinery, requiring guarding, maintenance, and safety and locking devices. This Act was repealed in 2016 when the new HSW Act came into effect, with the intention that the specific provisions covering plant would be replaced with modernised requirements in this phase of regulatory work.

The importance of guarding machinery to ensure worker safety is long standing, going back to the Machinery Act of the 1950s and earlier. New Zealand workplaces using plant should be familiar with the dangers and the need to manage the risks.

Health and Safety in Employment Regulations 1995

- Businesses must ensure lock-out controls or another method is used to manage the risks of the machine moving while being cleaned, repaired or maintained, and ensure a process is established for keeping the cleaner, maintenance person, or repair person safe if other parts of the machine are still moving. Businesses are required to do this so far as is reasonably practicable (regulation 17).
- Businesses must ensure suitable protective devices or apparatus are provided for wood working and abrasive grinding machinery (listed in Schedule 1). Again, this obligation applies so far as is reasonably practicable (regulation 18).
- Businesses must ensure that people using powder-actuated tools (a type of nail gun that relies on a controlled explosion created by detonating an explosive cartridge) hold a certificate of competence (regulation 52).

General Risk and Workplace Management Regulations 2016

Businesses must ensure workers have adequate knowledge, supervision and training for the safe use of plant and personal protective equipment.

Pressure Equipment, Cranes, and Passenger Ropeways Regulations and Amusement Device Regulations 1999

Cranes are primarily managed through the Pressure Equipment, Cranes, and Passenger Ropeways Regulations. Fairgrounds and rides are managed under the Amusement Device Regulations. This plant is higher risk and is therefore subject to more requirements (see [Section 5](#)).

Other countries have more comprehensive regulations to manage risks from plant

Australia and the United Kingdom have more comprehensive regulations to manage the risks from plant, compared to New Zealand, providing more certainty and clarity to duty holders. The Australian Model Regulations have requirements for plant and comprehensively deal with the risks from plant, whereas in New Zealand our Regulations only manage a few specific risks (e.g. lock-out controls for cleaning) and a few specific kinds of plant (e.g. woodworking and abrasive grinding machinery). The Machinery Act covered all machinery and required guarding, maintenance and safety devices.

The Australian Model Regulations require PCBUs managing or controlling plant to:

- apply a risk management process and hierarchy of controls (as set out in the Prescribed Risk Management Process) to managing plant
- manage the risks from the plant throughout its life cycle, from installation to demolition
- maintain plant and ensure it is not a risk when not in use
- only use plant for what it is designed for, unless there are no additional risks to health and safety
- follow a hierarchy of controls for guarding where it is used as a control measure
- ensure safety features like emergency stop controls and warning devices are appropriate.

The Australian Model Regulations also contain additional controls for powered mobile plant, plant that lifts people and loads, industrial robots and lasers. Risks from mobile plant are covered in [Section 3](#).

Non-legislative measures used to address risks from plant

- Approved codes of practice
- Other guidance from WorkSafe and industry
- Industry or manufacturing standards, including New Zealand Standards (used as a technical point of reference)
- Industry norms.

WorkSafe provides a range of guidance, including on the main risks from particular plant (e.g. powder-actuated tools), specific work practices (e.g. load-lifting rigging), and for different sectors (e.g. forest operations).

Non-legislative measures cover a wider range of risks and control measures, as well as practical guidance, than the Health and Safety in Employment Regulations and the repealed Machinery Act 1950.

Regulations in the United Kingdom broadly cover the same risks as Australia, while being more specific and detailed about what duty holders have to do. The two key regulations covering plant in the United Kingdom are:

- The Provision and Use of Work Equipment Regulations 1998
- The Lifting Operations and Lifting Equipment Regulations 1998.

2.1 Identified risks and issues

Together with key stakeholders we have identified a number of issues with how the regulatory framework currently manages the risk of harm from plant.

The current regulatory framework is not adequately managing the following risks:



2.1.1 Risks from plant itself

Some plant has particular design features, or specific parts, that need to be managed to avoid harming the operator of the plant and people working around it. Examples of the harm caused by plant include:

- being caught or trapped in the machinery
- being hit by moving parts
- crushing injuries
- cutting injuries
- abrasion
- burns
- people being hit by pressurised fluids or materials thrown from the plant
- electric shock
- diseases and illness from dust, chemicals, fumes, and particles generated when plant is used.

Guarding and safety features do not meet acceptable standards, are being removed, or are not fitted at all

Guarding manages the risk of physical harm from dangerous machinery parts, or materials thrown from the plant. WorkSafe's website defines a guard as a fixed screen or cover to prevent access to the dangerous part of a machine.

Guarding also includes presence-sensing safeguarding systems. These systems detect when a person (or part of their body) enters the danger zone and stops the machine. Photoelectric light beams, laser scanners, and pressure triggers are examples of these types of guards.

Other safety features include emergency stop controls, operational controls, and warning devices.

Not using guarding appears to be a persistent issue in New Zealand and internationally. Often, guarding is removed during cleaning or maintenance, and not replaced. Research shows that not guarding machinery and removing guarding are key factors in machinery incidents. In the manufacturing sector between 1 January 2008 and 31 December 2014:⁵

- being caught or trapped in machinery made up 24 per cent of fatalities
- tools and machinery were involved in 26 per cent of serious injuries, of which:
 - 33 per cent involved hitting moving objects
 - 43 per cent involved hitting a stationary object
 - 24 per cent involved being trapped between machinery and equipment.

People are also harmed by materials, pressurised fluids and machine parts being thrown from the plant. Foreign bodies becoming lodged in someone's eye accounted for 12 per cent of all tools and machinery injuries in manufacturing in 2008-2014,⁶ although most of these injuries were not serious.

The Safety of Machinery Series Standard (AS/NZ 4024) addresses adequate guarding and safety features, as a technical point of reference and guidance from WorkSafe. The Machinery Act 1950 required specified machinery guarding. The Act was repealed in 2016 when the HSW Act came into force, with the intention that regulations for plant and structures would be addressed in the second phase of regulatory reform.

WorkSafe and stakeholders have reported that, since the repeal of the Machinery Act 1950, people are not always clear what guarding they are legally required to have. The Safety of Machinery Series Standard (AS/NZS 4024) and associated WorkSafe guidance are well regarded, but the relationship between them HSWA requirements is not always clear for businesses, engineers and others.

Cleaning and maintaining machinery is particularly risky

Cleaning and maintenance activities are a key cause of harm here and internationally. These activities were identified as factors in machinery-related fatalities in manufacturing in 2008-2015.

⁵ Source: WorkSafe Manufacturing Environmental Scan (17 April 2015).

⁶ Ibid.

Cleaning and maintenance have specific risks that need to be managed. Often, the rest of the machine will still be operating while a particular part of the plant is turned off for cleaning or maintenance.

Lock-out controls protect operators from injury from the inadvertent release of hazardous energy in machines, usually by isolating energy from part of the machine. Not using lock-out controls is a key factor in machinery-related incidents internationally. Machines can also start up unexpectedly if the lock-out or other control system can be accidentally bypassed, or the control circuit itself malfunctions. This can result in the operator being caught in unexpectedly moving machinery, or hit by flying material.

New Zealand, Australia and the United Kingdom all require adequate lock-out controls during cleaning and maintenance. Australia also requires PCBUs to minimise the risks to maintenance workers and cleaners when the rest of the plant is still running, to reduce the heightened risk to these workers.

Canadian research suggests that lack of training in the use of lock-outs and when it is safe to use alternative methods is a factor in the failure of lock-out systems. Research indicates that good management of risks from inadvertent starting requires trained operators working through a stepped process.

2.1.2 Risks from the life cycle of the plant

Risks throughout the life of the plant are not well managed

The lifecycle of the plant stretches from design through to decommissioning. Ensuring the safe use of plant throughout its lifecycle requires PCBUs to manage risks at all stages.

PCBUs managing and controlling plant in the workplace are in a special position to oversee installation, assembly, storage, commissioning⁷, decommissioning and dismantling of plant and ensure it is done without risks to health and safety. This is because they have knowledge of the risks in the workplace and about the plant. These activities usually occur at the site where the plant will be used and where the PCBU has the control or management of the plant.

If commissioning is not managed well, the plant can have risks during operation and ultimately decommissioning. Similarly, poor storage can increase risks when plant is used again. For example, dust, dirt, and debris can interfere with the operation of the plant when it is used again. Some stakeholders we spoke to raised concerns like this about inappropriate storage.

⁷ Operationalising a plant to bring it into working condition.

Poorly maintained plant may increase risks of harm

Health and safety risks increase when plant is not in good repair. Poor maintenance was a factor in vehicle incidents on construction sites between 2008 and 2017. Research suggests that poor maintenance is a factor in machinery-related incidents in the United States.

Issues with poor repair are exacerbated by New Zealand's large market for second-hand plant. Stakeholders raised general concerns about the poor repair of plant and machinery in New Zealand and were particularly concerned that it can be sold as second-hand plant on that basis. Section 42(6) of the HSW Act allows second-hand plant to be sold 'as is'. PCBUs still have general obligations to provide safe and maintained plant.

It is particularly important to ensure that older imported and supplied plant is maintained. Allowing plant that is approaching the end of its design life to fall into disrepair can increase the risks of harm from mechanical failure. We understand that older plant is being imported into New Zealand that is approaching the end of its design life. Importing and supplying second-hand plant is discussed further in Section 4 on design, manufacture, import and supply of plant and structures.

Australia and the United Kingdom have specific regulations clarifying what PCBUs must do to adequately maintain their plant. This includes inspection and testing, when appropriate. The United Kingdom also requires PCBUs to keep maintenance logs. In New Zealand, the primary duty in the HSW Act on PCBUs also requires the provision and maintenance of safe plant. However there are no specific regulatory provisions clarifying how to meet this duty.

Plant is often altered or modified and used for purposes it is not designed for

Using plant for purposes it is not designed for can increase health or safety risks. For example, guarding that was adequate when the plant was designed may not be sufficient to manage the risks from the new use.

New Zealand has a culture of altering and modifying plant either to improve its intended use or so it can be used for a different purpose from what it was originally designed for. Stakeholders indicated that this is particularly prevalent in the agriculture and forestry sectors where the necessary plant may not be available in New Zealand.

We need to make sure that alterations and modifications to plant do not create or exacerbate risks to health or safety, while not stifling innovation.

2.1.3 Risks from the wide range of plant in use in New Zealand

The regulations only cover specific risks from plant or specific types of plant

Most of the regulations under the HSW Act are provisions carried over from the previous Health and Safety in Employment regime. They are outdated, have gaps and are too specific and narrow when they do apply. The repealed Machinery Act 1950 contained specific provisions about guarding and safe use of machinery. The pre-existing Health and Safety in Employment regulations cover:

- lock-out controls for cleaning and maintaining plant
- guarding on woodworking and abrasive machinery
- certificates of competence for powder-actuated tool operators.

This means that most plant does not have regulatory controls other than for lock-out when cleaning and maintaining plant. The evidence of harm indicates that these controls are not sufficient to manage the range of risks from the wide range of plant that we and stakeholders have identified.

The definition of plant in the HSW Act includes tools. Regulations and non-legislative measures have focused on managing plant and tools powered by an external source such as electricity, pneumatic, or hydraulic rather than powered manually.

Tool use is a key cause of harm in the manufacturing and construction sectors. Hitting or cutting oneself with a tool was a factor in 12 per cent of serious injuries in construction from 2012 to 2017.⁸ It is difficult to identify the specific types of tool or machinery that are higher risk, due to how our data is collected and the varied nature of work using tools.

Powder-actuated tools

A powder-actuated tool is a type of nail gun that relies on a controlled explosion created by detonating an explosive cartridge, similar to the process that discharges a firearm. They are commonly referred to in New Zealand as “Ramset guns” or “Hilti guns”. The Australian Model Regulations refer to them as explosive power tools.

Powder-actuated tools have the potential to do serious damage to people and property. Their explosive power means they are a lot more dangerous than other kinds of nail guns or hand-held tools.

PCBUs are not always adequately managing the range of risks from plant

Stakeholders we spoke to raised concerns about whether the level of risk management in New Zealand to address the harm from plant was sufficient. Not applying good risk management processes, poor risk management during cleaning and maintenance, and poor operator practice can contribute to the harm caused by plant.⁹

⁸ Source: WorkSafe Construction Sector Environmental Scan (17 July 2016).

⁹ Antonio C Caputo, Pacifico M Pelagge, and Paolo Salini, ‘AHP Methodology for selecting safety devices of industrial machinery’, *Safety Science* 53 (2013) pp 202-218; Yuvin Chinniah, Barthelemy Aucort, and Real Bourbonniere, ‘Safety of industrial machinery in reduced risk circumstances’, *Safety Science* 93 (2017) pp 152-161; Yuvin Chinniah, ‘Analysis and prevention of serious and fatal accidents related to moving parts of machinery’, *Safety Science* 95 (2015) pp163-173.

Risk management by PCBUs is not always thorough enough

Identifying hazards and assessing risk is fundamental to good health and safety.

Inadequate risk assessment has been identified by researchers as a factor in machinery-related incidents. Research highlights that choosing the appropriate combination of guarding and safety measures takes skill.¹⁰

Researchers stress applying a hierarchy of controls for managing risks from plant and machinery.¹¹ Controls should start with inherently safe design, followed by proper safety devices and guarding, and using personal protective equipment and training to control any residual risk.

WorkSafe and stakeholders suggest that many PCBUs do not always apply a thorough risk management process and there is a tendency to jump to less effective control measures first, such as administrative controls and personal protective equipment.

Research has identified inexperienced workers, lack of appropriate supervision, and failure to follow safe work procedures as key factors in machinery-related incidents.¹² WorkSafe and other stakeholders have suggested that plant operators often do not have appropriate knowledge of good safety practices like:

- understanding the risks of different types of plant
- understanding the controls typically used to manage these risks
- knowing what purpose specific plant is designed for and whether it can be safely used for other purposes.

¹⁰ Caputo et al, *ibid*; Chinniah, et al (2017) *ibid*.

¹¹ Caputo et al, above n 5; Chinniah (2015), above n 5.

¹² Caputo et al, above n 5.

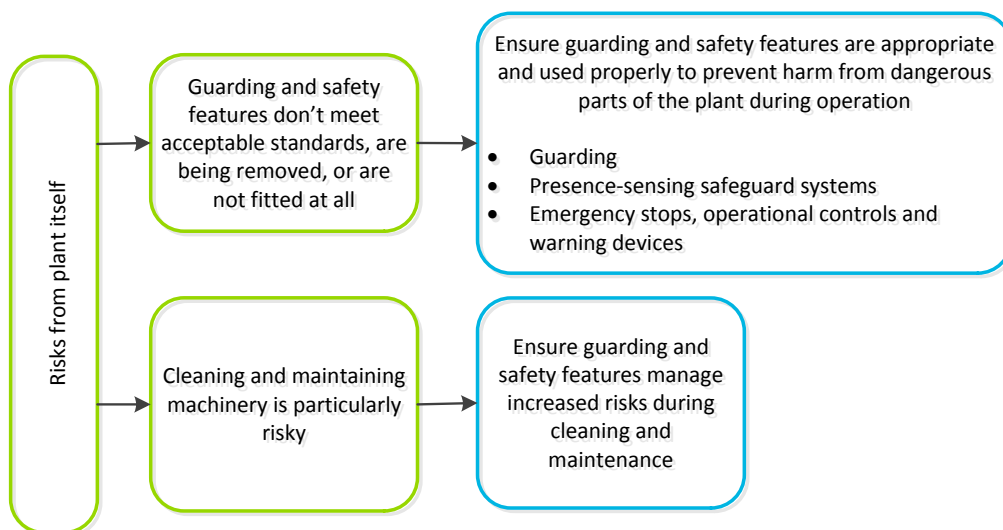
2.2 Options and questions for discussion

We propose replacing the existing regulations for plant in the Health and Safety in Employment Regulations with a new set of regulations. These will apply to plant, with additional controls for specific types of risky plant, covering a much wider range of plant than the existing regulations.

We have adopted the Australian Model Regulations as a starting point. This is because we consider Australia's model laws to be the latest, most modern approach to health and safety at work. This is also consistent with the HSW Act and first set of regulations, which were also based on the Australian Model Laws.

For some risks, we have also provided alternative options based on the United Kingdom's regulations for managing plant. We want to test with you which option you think is more appropriate in the New Zealand context.

2.2.1 Managing risks from the plant itself



(a) Ensure guarding and safety features are appropriate and used properly to prevent harm from dangerous parts of plant during operation

More controls are needed to ensure guarding and safety features of plant are appropriate and used in a way that minimises the risk of physical injury from plant, including from specific parts.

The options in this part would place obligations on PCBUs managing or controlling plant at work. Requirements about guarding, safety features and proper training in the use of these features are longstanding (dating back to the Machinery Act 1950) and have always been essential to plant safety. The options should therefore not be wholly unfamiliar to PCBUs.

Apply a hierarchy of guarding controls

We propose following the approach in the Australian Model Regulations:

- Where **guarding** is used as a control measure, require the PCBU:
 - to follow a hierarchy of guarding controls, from permanently fixed physical barriers and interlocking guarding to presence-sensing safe guarding systems (see regulation 208 of the Australian Model Regulations)
 - ensure guarding is solidly constructed, bypassing or disabling is as difficult as is reasonably practicable, does not create a risk in itself, and is properly maintained
 - ensure that guarding will control risks from broken or ejected parts and workpieces.
- Require the PCBU to ensure, so far as is reasonably practicable, that hot and cold parts of the plant are **guarded** or **insulated**.

Guarding would be used as a control measure where it is identified as necessary to manage a hazard identified by the PCBU when using the Prescribed Risk Management Process which we are proposing will apply to plant (see section below). Where guarding is a necessary control measure, the hierarchy of guarding controls would need to be followed. This approach is consistent with the process set out in the Safety of Machinery Safety Series Standard (AS/NZS 4024).

The section on upstream duties below follows a similar approach for designers of plant when considering guarding (as discussed in [Section 4](#)).

Set a mandatory requirement for plant to be guarded

Instead of purely relying on the Prescribed Risk Management Process to determine whether guarding is required as a control measure, this option would require the PCBU managing or controlling the plant to ensure all dangerous parts of the plant are adequately guarded, so far as is reasonably practicable. They would then need to follow the hierarchy of guarding controls as proposed above.

This is an adaptation of the approach taken in the Machinery Act 1950 and the 1995 Regulations, combined with the flexibility provided by the guarding hierarchy in the Australian Model Regulations (rather than setting prescriptive guarding for each type of plant).

2.1	Should there be a default hierarchy of controls for guarding?
2.2	Should there be a mandatory requirement to ensure appropriate guarding?

Presence-sensing safeguarding systems

Presence-sensing safeguard systems are a type of guarding that detects when a person (or part of a person's body) enters the danger zones and stops the machine.

They are lower down the hierarchy of guarding control measures in WorkSafe guidance on the Safe Use of Machinery and the hierarchy in the Australian Model Regulations).

Presence-sensing systems can pose more risks than other types of guarding because they do not create a physical barrier between the person and the dangerous part of the machine. They rely on light beams, lasers or pressure triggers to be tripped and stop the machine, which means these controls need to be in working order for them to be effective.

We **propose** to follow the approach in the Australian Model Regulations:

- Require the person with management or control of plant with a presence-sensing safeguarding system to keep a record of safety integrity tests, inspections, maintenance, commissioning, decommissioning, dismantling and alterations of the plant.
- Records must be kept for the life of the plant or until the person no longer has control of the plant, or in any other case for 5 years.
- Records must be available for inspection under the Act.
- The person managing or controlling the plant must make records available to any person to whom the control of the plant is relinquished.
- Presence-sensing safeguard system is defined as including:
 - a sensing system that uses one or more forms of radiation either self-generated or otherwise generated by pressure
 - the interface between the final switching devices of the sensing system and the machine primary control elements
 - the machine stopping capabilities, by which the presence of a person or part of a person within the sensing field will cause the dangerous parts of a machine to be brought to a safe stop.

2.3 Should record-keeping be required for presence-sensing safeguarding systems?

Emergency stops, operational controls and warning devices

We **propose** following the approach in the Australian Model Regulations:

Require the PCBU managing or controlling the plant to:

- ensure plant with multiple **emergency stops** are the kind that prevent the plant from being restarted until the emergency stop is reset.
- ensure any **emergency stop** is clearly marked, essential features are coloured red, and cannot be adversely affected by electrical or electronic malfunction.
- ensure any **operational controls** are identified on the plant, located so they are readily accessible to people using the plant, located or guarded to prevent unintentional activation, and able to be locked off so as to disconnect from all motive power.

- ensure any **warning devices** are positioned on the plant to ensure they are most effective.

These requirements reflect proposed requirements on designers for emergency stops, operational controls, and warning devices – see [Section 4](#).

Information, training and instructions

We **propose** following the approach in the Australian Model Regulations:

- Require the PCBU managing or controlling the plant to take all reasonable steps to ensure that safety features and warning devices are used in accordance with instructions, information and training provided by the PCBU under regulation 9 of the General Risk and Workplace Management Regulations.

2.4 Should there be requirements for emergency stop controls, operational controls, and warning devices on plant, and a requirement to ensure proper use of plant?

(b) Ensure guarding and safety features manage increased risks during cleaning and maintenance

There need to be more effective ways to ensure people cleaning and doing maintenance work on plant are safe during these particularly risky activities.

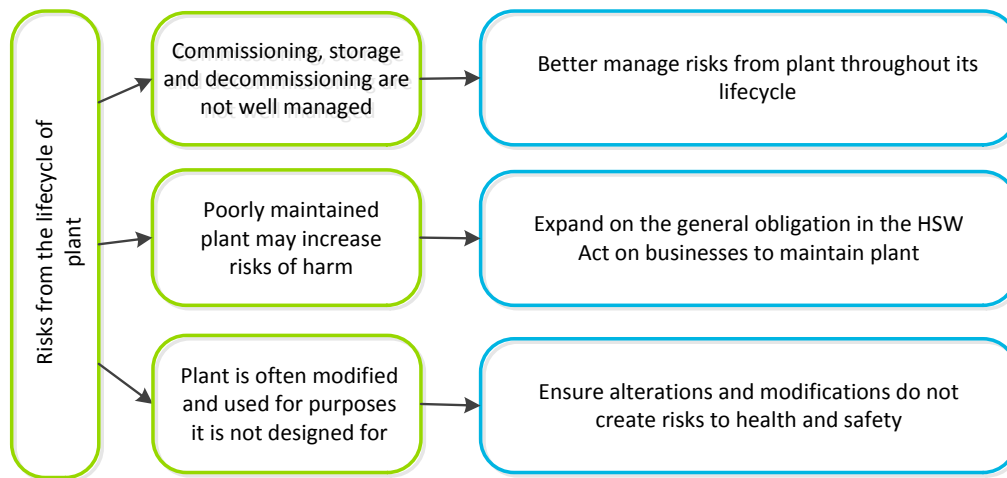
The options would modernise the requirements on PCBUs managing and controlling plant at work. Like guarding, requirements ensuring safety during cleaning and maintenance of plant are longstanding, such as Regulation 17 of the Health and Safety in Employment Regulations.

We **propose** following the approach in the Australian Model Regulations:

- Require the PCBU managing or controlling the plant to ensure **guarding** is of a kind that can be removed to allow maintenance and cleaning at any time that the plant is not in normal operation, and if it is removed it cannot be restarted unless the guarding is replaced.
- If the need for operation of plant during maintenance or cleaning cannot be eliminated, require the PCBU managing or controlling the plant to ensure the **operational controls** permit operation during cleaning or maintenance, and:
 - the plant cannot be operated by anyone other than the person cleaning or maintaining it, or
 - if it must be operated by someone other than the person cleaning or maintaining it, then the person operating it must be authorised by the PCBU
 - allows the plant to be operated in such a way that any risks to a person cleaning or maintaining the plant can be eliminated or otherwise minimised.

2.5 Should there be requirements for guarding and operational controls to ensure the safety of people cleaning and maintaining plant?

2.2.2 Managing risks from the lifecycle of plant



(a) Better manage risks from plant throughout its lifecycle

Options in this part would place obligations on PCBUs managing and controlling plant at work. Although the Machinery Act 1950 had one provision around ensuring machinery was soundly constructed of proper materials, these options would put a new and extended focus on the lifecycle of plant from installation to dismantling. Some of these requirements may be new to some PCBUs, but are consistent with the duty on PCBUs in the HSW Act to provide and maintain safe plant.

To ensure risks at the beginning and end of the plant's lifecycle are well managed, we **propose** following the approach in the Australian Model Regulations:

- Prohibit PCBUs managing or controlling plant from **commissioning** the plant (bringing it into working condition) unless the person has established, so far as reasonably practicable, that the plant is without risks to the health and safety of any person.
- Prohibit the PCBU with management or control of plant from **decommissioning** or **dismantling** plant unless it can be carried out without risks to health and safety of any person, so far as reasonably practicable.
- Require the PCBU managing or controlling plant to ensure that a person who installs, assembles, constructs, commissions, or decommissions or dismantles is a **competent** person and is provided with the available information for eliminating or minimising risks to health or safety.
- Require the PCBU managing or controlling plant to ensure that installation, construction, commissioning, decommissioning or dismantling plant includes **inspection** that ensure risks from the activities are monitored, so far as reasonably practicable.
- Require the PCBU managing or controlling plant to ensure that **plant not being used** does not create a risk to health and safety, so far as reasonably practicable.

These requirements support and complement the duties on PCBUs who install, commission and construct plant – see [Section 4](#).

2.6 Should there be requirements on PCBUs managing or controlling plant, to address the risks from installing, constructing, commissioning, and decommissioning and dismantling plant?

2.7 Should there be a requirement to manage the risks of plant that is not in use?

(b) Expand on the general obligation on PCBUs in the HSW Act to maintain plant

Adequate maintenance will prevent harm to workers and others in the workplace, and help ensure second-hand plant meets health and safety standards. The Machinery Act 1950 contained requirements to ensure plant was maintained in a safe working condition. PCBUs should not be unfamiliar with this kind of requirement, though the options in this part provide more detail than the equivalent in the Machinery Act.

To support PCBUs to fulfil their duty to maintain plant in section 36 of the HSW Act, we **propose** following the approach in the Australian Model Regulations:

- Require the PCBU managing or controlling the plant to ensure that maintenance, inspection and testing of the plant is carried out by a competent person
- Require maintenance, inspection and testing to be carried out:
 - according to the manufacturer’s recommendations if there are any
 - if there are no manufacturer’s recommendations, then according to the recommendations of a competent person
 - if it is not reasonably practicable to do either of the first two, then inspection must be done annually.

2.8 Should there be a requirement to ensure plant is maintained, inspected and tested by a competent person either to the manufacturer’s recommendations or otherwise according to a competent person?

(c) Ensure alterations and modifications do not create risks to health and safety

More measures are needed to ensure that plant is not used for a purpose it was not designed for and to make sure alterations or a new purpose do not create risks to health and safety. These options would create new obligations on PCBUs managing or controlling plant.

Option 1 – Follow the approach in the Australian Model Regulations:

- Require the PCBU managing or controlling the plant to prevent alterations to or interference with the plant that are not authorised by the person.

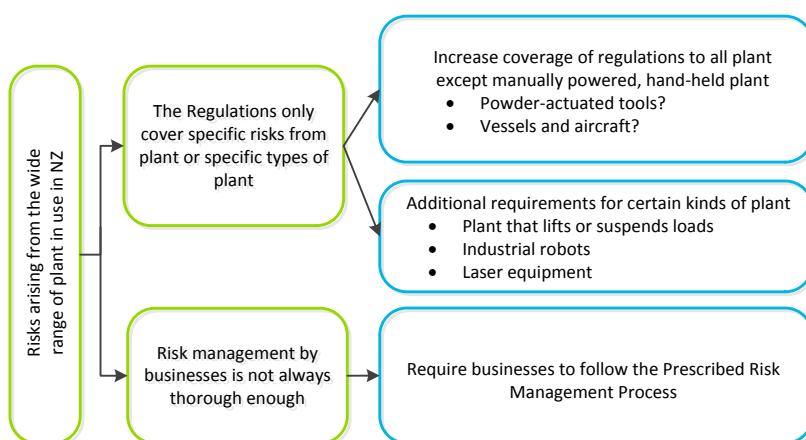
- Require the PCBU managing or controlling the plant to take all reasonable steps to ensure that plant is used only for the purpose for which it was designed, unless the person has determined that the proposed use does not increase risks to health or safety.
- When deciding whether or not a proposed use of the plant increases the risks to health or safety, the PCBU managing or controlling the plant must get a competent person to assess the risk.

Option 2 – Enhance education and guidance:

- Enhance education and guidance about design capacity and appropriate uses for specific plant and making safe alterations.

2.9	Should there be a requirement to ensure health and safety risks from plant are not created or increased by using plant for new purposes or altering it?
2.10	Is it necessary to require a competent person to assess whether or not the proposed new use increases risks to health or safety?

2.2.3 Managing risks arising from the wide range of plant in use in New Zealand



(a) Cover plant, except manually powered, hand-held plant

To ensure plant is managed effectively, we **propose** that the options set out above should apply to plant. This would increase coverage from the existing Health and Safety in Employment regulations but reflect the long standing coverage under the Machinery Act provisions. Powered hand-held tools were covered by old sector-specific legislation such as the Construction Act 1969 and Bush Workers Act 1945 and more recently the duties in the Health and Safety in Employment Act 1992.

We do not think regulations should apply to plant that is manually powered and hand-held because it does not have the same risk as plant powered by an external source such as electricity.

We **propose** following the approach in the Australian Model Regulations which:

- apply to plant, including powder-actuated tools
- do not apply to plant that exclusively relies on manual power to operate and is designed primarily to be supported by hand.

This would mean that plant that exclusively relies on manual power *and* is designed to be primarily supported by hand would be managed by the general duties in the HSW Act, rather than the regulations.

Powder-actuated tools

Powder-actuated tools (or explosive power tools as they are referred to in the Australian Model Regulations) have the potential to do serious damage to people and property and their explosive power means they are a lot more dangerous than other kinds of nail guns or manually powered, hand-held tools.

New Zealand regulations manage risks from powder-actuated tools by requiring people to have a certificate of competence to operate them and there is an Approved Code of Practice. The Health and Safety in Employment Regulations require:

- PCBUs to ensure, so far as is reasonably practicable, that every worker operating a powder-actuated tool has a current certificate of competence
- To apply for a certificate of competence, the operator needs to have a thorough knowledge of the operation, safe practices and suitable recent training (including recent experience) in the operation of powder-actuated tools. The operator must also be physically and mentally capable of operating the tool and be of good character and reputation.

We need to ensure regulations are appropriate to ensure the additional risks from this kind of plant are managed.

Option 1 – Follow the Australian Model Regulations:

- Apply the options set out above for plant to powder-actuated tools

Option 2 – Retain the current certificate of competence requirements to use a powder-actuated tool (which would be subject to review in the next phase of regulatory work on hazardous work).

Vessels and aircraft

The definition of plant in the HSW Act includes vessels (ships) and aircraft. The Australian Model Act does not include these in its definition. We want to test whether the options for managing plant in this section should apply to the ships and aircraft themselves, or just the plant on board them. Maritime rules and civil aviation rules apply already to the safety and integrity of vessels and aircraft.

2.11	Do you agree with extending requirements to plant (except manually powered, hand-held plant)?
2.12	Should the general requirements for plant apply to vessels and aircraft? What are the impacts of this?
2.13	Should the general requirements for plant apply to powder-actuated tools?

(b) Additional requirements for certain kinds of plant

We are proposing to apply regulations to plant (except manually powered, hand-held plant). There are some kinds of plant that pose risks that may require additional controls to those for all plant.

Plant that lifts or suspends loads

Plant that lifts or suspends loads includes cranes, forklifts, hoists, telehandlers, excavators or any other kind of plant that lifts or suspends things.

In addition to the risks from all kinds of plant, plant that lifts or suspends loads has extra risks to health and safety because:

- there are increased stability risks when the centre of gravity shifts as loads are lifted
- overloaded and stressed lifting attachments can fail and the load and/or the lifting attachment can fall and hit people or things
- risks from sloped or uneven ground increase when loads are being suspended or lifted
- poor lifting practices, like uncontrolled lifting and unsecure or unbalance loads, increase the risks associated with lifting plant
- plant used to lift people has the additional risk of the person falling while being suspended or lifted.

Stakeholders identified that plant is often used to lift or suspend loads when it is not designed to do so. Altering and repurposing plant is dealt with earlier in this section but altering and repurposing plant to lift or suspend loads is commonly recognised as a significant risk.

Mobile and fixed cranes are covered by the Pressure Equipment, Cranes, and Passenger Ropeways Regulations and associated guidance. This is dealt with in [Section 5](#). Forklifts also have additional risks and have a relevant approved code of practice. Options for forklifts are covered in [Section 3](#). Any requirements for plant that lifts or suspends loads would also apply to forklifts and cranes in addition to their specific requirements.

The General Risk and Workplace Management Regulations require PCBUs to manage risks associated with work being done under any raised or lifted objects and with falling objects that are reasonably likely to fall, in accordance with the Prescribed Risk Management Process.

Additional requirements may be needed to manage the extra risks from plant that lifts or suspends loads.

Follow the approach in the Australian Model Regulations:

All plant that lifts or suspends loads

- Require the person managing or controlling the plant to ensure that the plant used is specifically designed to lift or suspend the load.
- If using plant specifically designed to lift or suspend the load is not reasonably practicable, the person must ensure that the plant used does not cause a greater risk to health and safety than if specifically designed plant were used.
- The person must ensure that suitable lifting attachments and the plant are used within their safe working limits.
- The person must ensure that no loads are lifted or suspended over a person unless the plant is specifically designed for that purpose.
- The person must ensure that loads are lifted or suspended in a way that ensures that the load remains under control.
- The person must ensure that no load is lifted simultaneously by more than one item of plant (unless the load placed on each item of plant is within its rated capacity).

Plant not specifically designed to lift or suspend a person

- If plant is used to lift people and it is not specifically designed to do so, then the person must ensure people are lifted in a workbox (with a safety harness and exit) attached to the plant.
- This does not apply to plant used for stunt work, acrobatics or theatrical performances.
- Workboxes are not required for tree lopping if:
 - a risk assessment shows that lifting or suspending a person in a safety harness with a crane to place them in a tree is safer than using plant specifically designed to lift a person or climbing a tree, and
 - the person doing the tree lopping is competent in using a harness, and
 - the crane has safety mechanisms to prevent inadvertent falling, and
 - while attached to the crane, the person doing the tree lopping is in visual, audio or radio communication with the crane operator.
- Harnesses used for tree lopping must be designed and certified with AS/NZS 1891.1:2007 (industrial fall-arrest systems – harnesses and ancillary equipment) for the purpose of lifting and suspending a person.

2.14 Should there be specific requirements for plant that lifts or suspends loads?

2.15	Do we need a specific requirement that, when plant is not specifically designed for lifting, it must not cause a greater risk to health and safety? Please consider what extra benefit or impact this would have in addition to what is proposed for all plant (refer to question 2.9) – that if plant is used for a purpose other than which it was designed, a person must ensure it does not have risks to health and safety (as assessed by a competent person).
2.16	Are the exemptions for stunt work, acrobatics or theatrical performances appropriate? Is there anything else that should be excluded?
2.17	Should an alternative control method be provided for tree-logging?
2.18	Is it necessary to refer in regulations to AS/NZS 1891 for harnesses?
2.19	“Plant that lifts or suspends loads” is not defined in the Australian Model Regulations. Should this be defined in our regulations?

Industrial robots and laser equipment

The options in this part would place requirements on PCBUs managing or controlling robots and laser equipment. There are no existing regulatory requirements to this effect, so these would be new. However, there is guidance about robotics in WorkSafe’s Safe Use of Machinery Best Practice Guideline.

Using industrial robots can remove traditional risks for people working with machinery. However, some of the risks that are the same for plant are increased for robots from automation, such as errors during use, ejection of materials, trapping points, and failures and malfunctions. Robots also have serious risks of impacts with workers and people – they can move at high speeds and in unexpected directions.

WorkSafe’s *Safe Use of Machinery* guidance sets out best practice for working with robotic plant. This includes risks and control measures.

Laser equipment is used in a range of sectors and industries for different things. It includes:

- industrial lasers used for cutting and welding, as on construction sites
- scientific lasers
- medical lasers used in surgeries.

There are risks of radiation and burns from laser equipment, particularly for eyes and skin.

Additional requirements may be needed to manage the extra risks from industrial robots and laser equipment on plant.

Option 1 – Follow the approach in the Australian Model Regulations:

- Require persons managing or controlling an **industrial robot** to have suitable control measures in place before directing or allowing a worker to work in the immediate vicinity of the plant if it could start without warning and cause a hazard.

- Require persons managing or controlling an **industrial robot** to ensure that access to the area in the immediate vicinity of the plant is controlled at all times by isolating the area or using a hierarchy of control measures from high ranking controls such as interlocking guards and presence sensing safe guard systems to providing permit-to-work systems for administrative control of any residual risk.
- These requirements apply to **industrial robots** or other remotely or automatically energised plant.
- Require persons managing or controlling plant to ensure **laser equipment** intended for use on plant is designed, constructed and installed so as to prevent accidental irradiation.
- Require persons managing or controlling plant to ensure **laser equipment** on plant is protected so the operator or any other person is not exposed to direct radiation, radiation from reflection or diffusion or secondary radiation.
- Require the person managing or controlling plant to ensure visual equipment used for observation or adjustment of **laser equipment** on plant does not create a risk to health or safety from laser rays.
- Require the person managing or controlling plant to ensure operators of **laser equipment** are trained in the proper operation of the equipment.
- Prohibit lasers that emit either Class 3B and Class 4 lasers (defined in AS 2397:1993) from use in construction work. Class 3B lasers emit either invisible or visible radiation potentially hazardous to the eye and skin. Class 4 lasers are high-powered devices capable of producing diffuse reflections hazardous to the eye. Skin exposure to the direct beam of Class 4 lasers is also hazardous.

Option 2 – Follow the approach in the UK:

- Require persons managing or controlling plant to ensure that where remote-controlled self-propelled work equipment involves a risk to safety while in motion that it stops automatically once it leaves its control range and that guarding is incorporated to address risks of crushing or impact unless there are other appropriate devices to do so.

This is a much narrower option than following the Australian Model Regulations. It does not apply to remote-controlled plant that is fixed, or other kinds of industrial robots. There are no specific requirements in the UK for laser equipment.

Option 3 – No additional regulatory requirements for industrial robots or lasers – reliance on approved codes of practice or guidance:

- This option would mean that only the requirements for plant would apply, with no additional requirements in regulations for industrial robots or lasers.

- Develop an approved code of practice or guidance on best practice to address risks from industrial robots and laser equipment.

2.20	Do you think there should be additional controls in regulations for industrial robots and other remotely or automatically energised plant? If yes, what do you think of the approach in the Australian Model Regulations?
2.21	Does existing guidance on robotic plant sufficiently address the risks and possible control measures from this kind of plant?
2.22	Do you think there should be additional controls in regulations for laser equipment?
2.23	Do you think any classes of lasers should be prohibited from use in certain kinds of work? E.g. Classes 3B and 4 are prohibited from being used in construction work in the Australian Model Regulations.
2.24	Would guidance alone be sufficient to address the risks from laser equipment?
2.25	What are the benefits of an approved code of practice or other guidance for industrial robots and/or laser equipment?

(c) Require PCBUs to follow the Prescribed Risk Management Process

More measures are needed so that PCBUs managing or controlling plant adequately identify the risks associated with plant and manage these with a suitable combination of control measures. These options would put new requirements on PCBUs managing or controlling plant. However, PCBUs should already be familiar with and following this kind of process to fulfil their duties under section 30 of the HSW Act to eliminate so far as is reasonably practicable, and where it is not practicable to eliminate them, to minimise them so far as is reasonably practicable. These options therefore build on the requirement in the HSW Act and provide further clarity.

Option 1 – Apply the Prescribed Risk Management Process to health and safety risks from plant:

- Require PCBUs to:
 - identify hazards and eliminate associated risks where reasonably practicable
 - otherwise minimise risks so far as is reasonably practicable by using one or more of the following control measures:
 - substitution
 - isolation
 - engineering controls
 - if a risk still remains, implement administrative controls
 - if a risk still remains, provide personal protective equipment
 - maintain and review the control measures.

This option would work to manage risks from plant that are not captured by the more specific options above (e.g. guarding, maintenance etc.).

Importantly, this option would help address **risks to health** arising from plant. The general duties in the HSW Act require that risks to health are managed as well as safety risks, and some of the options to manage risks throughout this section refer to risks to safety **and health**. Significant numbers of people die every year from work-related disease associated with plant. These are mainly cancers and chronic obstructive pulmonary diseases (e.g. chronic bronchitis) caused by dusts, gases, vapours, fumes and fibres from the use of plant.¹³ This option would complement the provisions in the General Risk and Workplace Management Regulations that require PCBUs to manage substances hazardous to health, which cover many but not all health risks arising from plant.¹⁴ PCBUs would be required to identify and manage the health risks, both acute and chronic/long-term risks, arising from the use plant, including airborne contaminants, fatigue, noise and emissions, as appropriate.

This option would also work to address **safety critical faults** – faults that significantly compromise the plant's safety and that could lead to serious injuries or death, such as damaged safety features, instability, reduced control, faulty brakes etc. WorkSafe has raised concerns that some PCBUs continue to operate plant when it is faulty. Operating plant with serious faults is very dangerous, and there may be pressures on operators to continue using faulty plant. While not all faults require immediate action, the Prescribed Risk Management Process will support PCBUs to manage their risk in a dynamic way and so identify safety critical faults as they arise. This process would make it clear that serious faults require immediate action, requiring the plant to be taken out of service where necessary, and triggering a review of control measures, ensuring the fault is fixed and preventing potential harm. Supporting guidance for this option could outline how the process could be used to address safety critical faults.

Option 2 (in addition to, or instead of, option 1) – Enhance education and guidance:

At the moment, guidance on how to adequately assess the risks is provided by WorkSafe, sector and health and safety organisations, and health and safety professionals. Enhanced guidance could also highlight when to use different controls with specific plant.

Regulation 9 of the General Risk and Workplace Management Regulations currently requires PCBUs to ensure that every worker who uses plant has adequate knowledge and experience, including appropriate supervision and training. For specific plant and industries, this requirement is reinforced by guidance and Approved Codes of Practice.

Requiring PCBUs to follow the Prescribed Risk Management Process should – in conjunction with Regulation 9 – help to further reinforce operator knowledge and training of the risks arising from the plant that they use. We are interested in whether these requirements working together are sufficient or need to be bolstered further.

¹³ The estimate of work-related health fatalities associated with plants and structures is approximately 600 per year. This significant number reflects that most work-related health exposures involve the use of plant (e.g. dust, fibres or fumes created by a tool or machine).

¹⁴ Substances hazardous to health means a substance, or product containing a substance, that is known or suspected to cause harm to health, and includes hazardous substance under the Hazardous Substances and New Organisms Act 1996, substances that have been specified in a safe work instrument, or for which there are prescribed exposure standards.

2.26	Should PCBUs managing or controlling plant be required to apply the Prescribed Risk Management Process when managing risks from plant?
2.27	Would education and guidance on the risk management process alone improve PCBUs' ability to identify and manage risks from plant?
2.28	Are there any further requirements needed, in addition to the Prescribed Risk Management Process, to specifically manage risks to health from the use of plant?

2.2.4 Assessing the impact

We will use your responses to compare proposals and make recommendations for government policy decisions. Clear information on the impacts on your business, work or workplace will help us to choose the best options for change, and complete better regulatory impact analysis, including cost benefit analysis for proposals.

Some examples of costs and benefits include, but are not limited to things like improved health and safety; time; compliance burden; training costs; need for specialist external advice; business efficiencies, for example, increase productivity; investment in capital expenditure.

2.29	Based on the proposals in this section on protections for people working with plant, are there any significant costs and/or benefits that will affect you or your organisation?
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3 Protections for people working with mobile plant

Mobile plant causes significant harm at work.

53% of fatal injuries at work involve mobile plant (2008 - 2017)
(that's 92% of plant related fatal injuries)

41% of deaths in **construction** (2008 - 2016)

73% of deaths in **agriculture** (2008 - 2017)

28% of deaths in **manufacturing** (2008 - 2015)

30% deaths in agriculture involved quad bikes (2008 - 2017)

23% of deaths in agriculture involved tractors (2008 - 2017)

Mobile plant has additional risks and they are not always managed well.

People can be thrown from mobile plant

There are risks from colliding with other plant, people or things

Mobile plant is particularly prone to rolling over

Operators can be hit by falling objects

Current regulations only cover some risks and there are a lot of exemptions

Here are some [ideas to address these problems](#). Tell us what you think.

Apply the Prescribed Risk Management Process to risks from all mobile plant

Require a suitable combination of "operator protective devices" on all mobile plant

Specific requirements to manage risks of collisions

Passenger safety requirements for all mobile plant

You'll find more information about these problems and ideas in the detail of this section.

This section is about mobile plant. Mobile plant is plant that is powered or self-propelled, such as vehicles and equipment, e.g. mobile cranes, bulldozers, quad bikes, elevating work platforms, forklifts, and vehicles such as cars, vans, and trucks used for work.

You will be interested in this section if you:

- use mobile plant at work
- run a business that uses mobile plant
- supply mobile plant to people or PCBUs.

Mobile plant causes significant harm at work ...

Mobile plant is the most common type of machine involved in work-related fatal injuries. Between 2008 and 2017, mobile plant made up 92 per cent (38) of plant-related fatal injuries at work, and 53 per cent of all fatalities at work.

Mobile plant also causes significant harm in WorkSafe's priority sectors – agriculture, forestry, construction, and manufacturing.

HSW Act

The general duties in sections 36 and 38 of the HSW Act for all plant apply to mobile plant. These are set out in [Section 2](#).

WorkSafe indicates that mobile plant or vehicles were involved in:

- 73 per cent of fatalities in agriculture between 2008 and 2017, with quad bikes (30 per cent) and tractors (23 per cent,) involved in over half of all agricultural work-related fatalities
- 41 per cent (32) of fatalities in construction between 2008 and 2016¹⁵
- 28 per cent (7) of fatalities in manufacturing between 2008 and 2015.¹⁶

... and has additional risks on top of those from plant

On top of the risks discussed in the previous section for plant, mobile plant has additional risks because it moves around, often in dynamic working environments such as construction sites or warehouses, or on variable terrain. This means it poses additional risks including:

- overturning or colliding with things or other mobile plant
- operators and passengers being hit by falling objects, or thrown from the mobile plant.

¹⁵ Source: WorkSafe Construction Sector Environmental Scan (17 July 2016).

¹⁶ Source: WorkSafe Manufacturing Sector Environmental Scan (17 April 2015).

The number of mobile plant-related fatalities is evidence of their additional risks compared to other kinds of plant.

Health and Safety in Employment Regulations

- PCBUs must ensure that all mobile plant is fitted with a roll-over protective structure and a seat belt, and that they are suitable for the purposes for which the mobile plant will be used.
- PCBUs must replace or restore damaged roll-over protective structures – restored roll-over protection must be restored to a condition approved by the manufacturer or the manufacturer’s principal agent, or a chartered professional engineer.
- Excludes:

<ul style="list-style-type: none"> - mobile plant that weighs 700kg or less - tractors used in agricultural work - paving machinery - forklifts with telescopic booms - power operated work platforms (also known as mobile elevated work platforms) - agricultural harvesters 	<ul style="list-style-type: none"> - cranes - cars, trucks, vans, and buses - log haulers - drag lines - mobile plant designed to be used on level ground (and the PCBU has taken steps to ensure workers use it only in this way)
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- People can apply to WorkSafe for an exemption for additional types of plant – none issued to date.

Pressure Equipment, Cranes, and Passenger Ropeways Regulations

- Manage cranes (both fixed and mobile). See [Section 5](#).

Other countries have more comprehensive regulations to manage risks from mobile plant

As with plant ([Section 2](#)), Australia and the United Kingdom have more comprehensive regulations to manage the risks from mobile plant, compared to New Zealand.

The Australian Model Regulations place duties on people who manage and control powered mobile plant. These requirements are **additional** to those for all plant (as discussed in [Section 2](#)). Broadly, they provide requirements on PCBUs managing or controlling powered mobile plant to:

- manage risks to health and safety associated with:
 - the plant overturning
 - things falling on the operator
 - the operator being ejected
 - collisions with persons or things
 - release of pressurised fluid in the event of mechanical failure
- ensure, so far as is reasonably practicable, that a suitable combination of operator protective devices is provided, maintained, and used
- ensure, so far as is reasonably practicable, that passengers have the same level of protection as provided to the operator
- ensure that the plant does not collide with pedestrians or other powered mobile plant.

The Australian Model Regulations have additional requirements for PCBUs for:

- roll-over protection on tractors
- forklifts.

The Australian Model Regulations are more flexible than New Zealand regulations. They are designed in a way to allow PCBUs to decide what is suitable in the circumstances, while ensuring minimum safety standards.

The United Kingdom regulates similarly for mobile plant in the Provision and Use of Work Equipment Regulations 1998 and the Agriculture (Tractor Cabs) Regulations 1974. Broadly, those regulations require employers to manage:

- safety of passengers
- risks from roll-over (roll-over protection and restraints)
- risks from unauthorised starting, collision of rail mounted mobile plant, braking, emergency braking, using mobile plant at night, and flammable parts
- risks from remote-controlled mobile plant
- risks from seizure of drive shafts
- risks from roll-over of tractors (safety frame or cab requirements).

The United Kingdom requirements are generally more specific and less flexible than equivalent requirements in Australia.

Non-legislative measures

- Manufacturer's instructions and manuals detailing conditions of use and requirements for repairs and maintenance
- Approved codes of practice (risks from forklifts, forestry operations (including using mobile plant), the use of operator protection structures on mobile plant, and the use of roll-over protection for tractors)
- Other guidance from WorkSafe and industry
- Industry or manufacturing standards, including New Zealand Standards
- Industry norms.

Other regulatory regimes in New Zealand

- Mobile plant that is used on public roads is subject to safety and other requirements under the transport system, including driver licensing and vehicle registration.

3.1 Identified risks and issues

We have talked with WorkSafe and key stakeholders and identified risks from mobile plant and a range of issues with how these are being managed. Since the Australian Model Regulations are our starting point for this work, we have grouped the issues and risks identified according to that framework.

As well as the risks identified for all plant (see [Section 2](#)), mobile plant has additional risks from:

- overturning or rolling over
- operators being hit by falling objects
- operators being thrown from mobile plant
- colliding with other mobile plant, persons, or things.

Stakeholders also identified that these risks are particularly problematic for forklifts, tractors and quad bikes.¹⁷

We think that more comprehensive and modern regulations are required to support PCBUs managing risks from mobile plant and to help reduce serious injury and death resulting from those risks. We want to know what you think is needed to address the risks below.

3.1.1 Mobile plant is particularly prone to rolling over

The risk of rolling over is common and a well-known risk associated with mobile plant. Some form of protection from roll-over is a consistent feature of legislation for mobile plant around the world.

All mobile plant can overturn if its centre of gravity becomes unbalanced. When mobile plant rolls over, it can crush or trap operators or passengers, resulting in serious injuries and, in some cases, fatalities.

The risk of overturning can be exacerbated by:

- attachments on the plant
- towing
- moving loads (e.g. fertiliser)
- weather conditions
- lack of training or experience driving the type of plant.
- overloading
- carrying extra passengers
- speed
- driving on sloped or uneven terrain, or off-road tracks
- operators who do not operate plant safely (e.g. due to fatigue, inattention, multi-tasking, or productivity pressure)

Most mobile plant that carries loads will have maximum load limits provided by the manufacturer. Some plant will also come with recommendations to only carry the operator on the plant, or a limited number of passengers.

¹⁷ Additional controls for mobile plant that are high-risk are set out in Section 5, e.g. telehandlers and mobile cranes.

Tractors, forklifts, quad bikes, compact dumpers, dump trucks, telehandlers, and ground spreader fertiliser trucks are particularly prone to overturning because they have a higher centre of gravity.

The United Kingdom reports that overturning caused 17 per cent of vehicle-related deaths at work in 1998/99-2004/05.

New Zealand, Australia and the United Kingdom all require persons managing or controlling plant to ensure protection for people on mobile plant in case the plant rolls over (though New Zealand has exceptions, as noted above).

Tractors have particular risks of overturning because of their high centre of gravity. Between 2008 and 2017, tractor accidents made up 13 per cent of all mobile plant-related fatalities at work, and 23 per cent of fatalities in the agriculture sector. Indicative data from WorkSafe estimates there were 400 injuries involving tractors between 2008 and 2017 that resulted in at least a week away from work. Sixty-nine per cent of these occurred in agricultural industries.

In New Zealand, agricultural tractors are exempt from mandatory requirements and the need for roll-over protection is managed by an approved code of practice. Australia and the United Kingdom require PCBUs to ensure there is roll-over protection for tractors (with some exclusions). It is widely recognised that roll-over protection on tractors is not suitable in every case, and in some cases would increase risks to health and safety (e.g. working in low spaces or with things hanging down that might collide or catch on the tractor). This is consistent with WorkSafe's guidance on Safe Use of Tractors on Farms and is reflected in the Australian and United Kingdom regulations which exclude tractors used for hop or orchard work, in and around buildings, and in places that are too low (subject to other control measures), respectively.

3.1.2 Mobile plant can collide with other plant, people or things

When mobile plant hits things, the operators can be thrown out of the plant, get whiplash, or be thrown around inside the plant (if they are not suitably restrained). Operators (both in and temporarily outside the plant), passengers, and people in the vicinity of operating mobile plant can be hit by the plant, or crushed between the plant and stationary objects.

The risk of collision can be exacerbated by:

- poor light or adverse weather conditions
- lack of training or experience driving the type of plant
- operator blind spots (e.g. from the width of the plant, cab arrangements, or tools and attachments)
- high speeds
- dynamic and busy work sites with lots of plant and people moving around
- operators who do not operate plant safely (e.g. due to fatigue, inattention, multi-tasking, or productivity pressures)

WorkSafe analysis indicates that between 2008 and 2016, 38 per cent (10) of vehicle-related fatalities on construction sites involved victims outside of the mobile plant.¹⁸ Not planning for where

¹⁸ Source: WorkSafe Construction Sector Scan (17 July 2016).

and how people move in the same environment is a key factor in people being harmed by mobile plant.

Operators being hit by their own tractors were a feature of mobile plant agricultural deaths in Australia between 2010 and 2014. Stakeholders identified this as an issue in New Zealand. Often, this appears to involve getting out of the plant, but leaving it running and being trapped or run over when the plant inadvertently starts moving again.

Aside from the general duties in the HSW Act, there are no specific requirements for PCBUs to manage the risks of mobile plant hitting people or things. By contrast, Australia has clear duties on PCBUs to manage the risk of collision, and where there is a risk of collision mobile plant must have warning devices. The United Kingdom requires mobile plant to have visibility aids, and lighting during night operation.

3.1.3 People can be thrown from mobile plant

If operators or passengers are thrown from mobile plant, the risks of serious injury or death are high because the plant will often continue to move and can run over the person who is thrown out. Harm can result at both low and high speeds. For mobile plant that operates at higher speeds (e.g. quad bikes and other vehicles) there is an additional risk of harm if operators or passengers are thrown out and hit the ground or another thing with a lot of force. Being thrown out of or off mobile plant at low speeds can still result in crushing or other injuries.

Being thrown out of or off mobile plant can occur when plant rolls over, is operated on uneven or sloped ground (e.g. driving over potholes or on hills), when the operator takes unexpected sharp turns or manoeuvres (e.g. to avoid a collision), if something falls onto the plant or operator, or if mobile plant collides with another plant or thing and the driver is not secured with a seatbelt. Sometimes drivers try to get out of a vehicle when it loses control, but if the vehicle has roll-over protective structures and a seatbelt, it is safer to stay protected inside the vehicle.

WorkSafe analysis shows that between 2008 and 2016 most driver fatalities in the construction sector were caused by drivers being crushed and/or thrown from their mobile plant when operating on slopes. Failure to wear seatbelts was a significant contributory factor to the driver's death in 80 per cent (8) of the cases where the driver was in the vehicle at the time control was lost.¹⁹

3.1.4 Risks to operators from being hit by falling objects

Heavy objects in the area can hit the operator and passengers in mobile plant. Australian health and safety regulators include equipment, material, tools, and debris that can fall or be released sideways or upwards in their guidance on falling objects.

¹⁹ Source: WorkSafe Construction Sector Environmental Scan (17 July 2016).

This is a particular risk for mobile plant because:

- it is often used to lift objects and loads that could fall onto operators, passengers, or other people nearby (e.g. mobile cranes, forklifts, hay bales on tractor forks)
- it is often used to carry objects that need to be loaded and unloaded from the mobile plant (e.g. trucks, forklifts)
- it is often operated in dynamic work environments where other machinery is operating, and objects are being lifted by other plant in the vicinity, or in workplaces where objects and people can fall from heights (e.g. construction sites and warehouses).

Lifting, moving, unloading and loading objects are key causes of harm from mobile plant. Objects falling on people was the third biggest cause of fatalities (19 per cent, 15 deaths) in construction between 2008 and 2016.²⁰ Forty per cent of these occurred when people were hit while unloading objects from trucks, shipping containers, crates etc. From 2008-2015, 28 percent of deaths (7) in manufacturing involved people being hit by falling objects. Unloading goods contributed to half of these deaths.²¹

The General Risk and Workplace Management Regulations require businesses to use the Prescribed Risk Management Process to manage risks to health and safety associated with falling objects reasonably likely to fall on and injure a person. It sets out a hierarchy of control measures from eliminating to minimising through preventing objects from falling freely, fall arrest system for the object, or providing an exclusion zone.

3.1.5 Quad bikes have particular risks

From 2008 to 2017, 50 people died using all-terrain vehicles at work.

Vehicles are a critical risk across workplaces, and in agriculture over the last three years have been a factor in almost 80 per cent of fatalities. Quad bikes account for 28 per cent of fatalities in agriculture since 2000, and despite various short and long term education and campaign programmes and guidance by WorkSafe this percentage has been relatively consistent across that period.

Quad bikes have the same risks as other kinds of mobile plant – roll-over, collision, operators being thrown out and things falling on operators – but they are greater. Quad bikes are ubiquitous and used in a wide variety of situations.

The incidence of fatalities and serious injuries involving quad bikes reflects their greater risks and prevalence, and shows that we are not always managing the risks well. Approximately 90 per cent of quad-related fatalities at work between January 2000 and October 2017 occurred when a person was trapped by the quad bike after it rolled over.

The factors that increase the risk of rolling over and collision are common in quad bike use, particularly on farms. These include:

²⁰ Source: WorkSafe Construction Sector Environmental Scan (17 July 2016).

²¹ Source: WorkSafe Manufacturing Sector Environmental Scan (17 April 2015).

- using quad bikes on **difficult terrain they are not designed for** – a lot of farms have very steep, rough, slippery or loose terrain
- **overloading** – using quad bikes to carry tools and animals (which increases weight, affects braking and stability, and can alter the centre of gravity)
- **towing** – trailers or other attachments that are too heavy, too wide, or are unsuited to the terrain
- carrying **passengers** – most quad bikes are not built for passengers, but are nonetheless often used with passengers (including children)
- unsafe **operator behaviour** – not using the active riding technique that quad bikes require (e.g. because of insufficient upper body strength in younger or older drivers), riding with divided attention, riding when fatigued, not understanding the design limitations of quad bikes.

Quad bikes are often used as “all-terrain” and “all-purpose” vehicles, and their design limitations are not well understood. This means they are often purchased and used for inappropriate jobs where there are better performing or safer alternatives such as motorbikes, side by side vehicles, utes or four wheel drives, small trucks, or small farm tractors.

Existing requirements for roll-over protection and seat belts do not apply to quad bikes because they weigh less than 700kg. Risks from quad bikes are covered by the general duties in the HSW Act and General Risk and Workplace Management Regulations (e.g. requirements about providing personal protective equipment such as helmets, and training and supervision), guidance from WorkSafe, and safety messages from manufacturers in the bikes’ operating manuals.

As part of the WorkSafe Safer Vehicles – Safer Farms programme of work, a multi-faceted set of interventions has been designed. The underlying premise is that the vehicle itself is unstable, highly dependent on user competence and attention, and unsuited to many farming tasks. A major part of the current programme is encouraging farmers to consider substituting different vehicles rather than relying on quad bikes as a ‘go-to’ vehicle.

Working with the sector, WorkSafe is also developing educational tools for farmers to assess their own and worker competence, which in turn is seen as a key to increasing the currently low levels of formal training.

In addition, as many fatalities involve the operator being trapped by the vehicle during rollover, WorkSafe is looking at the evidence about engineering solutions (including interventions in Australia) that may reduce the likelihood of entrapment.

Australians use quad bikes for farming and the same kinds of uses as we do in New Zealand. They have similar problems managing the risks, and also have an unacceptably high level of fatalities and injuries from quad bikes. In six years from January 2011 to December 2016, there were 114 quad bike fatalities in Australia – about half of these occurred while work was being done.

The Australian Model Regulations manage quad bikes through their requirements for all plant and mobile plant, including ensuring suitable operator protective devices and passenger safety requirements (including roll-over protection, falling object protection, restraints, and seat belts). This approach allows flexibility for PCBUs to manage the risks in a way that is best in their circumstances.

The Australian Competition and Consumer Commission published its final report on quad bike safety in April 2019. It recently consulted on an exposure draft mandatory safety standard for quad bikes under Australian Consumer Legislation which would require key safety information to be provided to consumers, provide a minimum level of stability that quad bikes must meet, and require crush protection devices to be fitted. These options would apply to all general-use quad bikes, whether used at work or for recreational use, but not sports model bikes.

Recreational quad bike use is not within the scope of this discussion document. The health and safety at work regime only applies to quad bikes used at work. Recreational quad bike use is managed by the transport system when they are used on roads (and some beaches), including vehicle registration and driver licensing.

3.1.6 Forklifts have particular risks

WorkSafe's Approved Code of Practice defines powered industrial lift trucks as vehicles drawn or propelled by mechanical, electrical or manual power that are designed incorporating a powered lift principally to lift, carry or stack goods with:

- a fork consisting of one or more arms to support the load
- a platform
- any attachment or other mechanism.

This includes forklifts, order pickers, reach trucks, pallet trucks, platform trucks and lateral stacking trucks.

Forklifts have the same risks as other mobile plant, but the risks of overturning and colliding with people or things is increased because:

- of shifting or off centre loads, making the forklift less stable
- they are often operated in busy warehouses with lots of people on foot, and often members of the public as well as other workers
- moving with an elevated mast and load makes them less stable
- loads carried on forklifts can impair the operator's vision meaning they can collide with people or things

There are also risks from lifting attachments on forklifts. These need to be the right attachment for the load or the forklift will become unstable.

Carrying passengers in forklifts that are not designed to do so is also a problem. People sometimes ride on the side or back of forklifts, or on the forks themselves (e.g. by standing on a pallet as a platform to gain extra height).

The Approved Code of Practice for Training Operators and Instructors of Powered Industrial Lift Trucks (1995) manages operator competence. The Approved Code of Practice does not address risks from forklifts other than those relating to the operator. There is also a voluntary operator certificate of competence scheme. Discussions with stakeholders indicated that the compliance rates with the

voluntary competence scheme are very high. Current regulations only cover some risks and there are lots of exemptions

The Health and Safety in Employment Regulations only have regulations for roll-over protection and seat-belts. These requirements help address risks from roll-over and being thrown from mobile plant, but there are no requirements to address risks from collisions with other mobile plant or pedestrians, or things falling on operators.

Further, the roll-over protection and seatbelt requirements we do have in place have a long list of exemptions (see above), including agricultural tractors, agricultural harvesters, trucks and buses, and quad bikes (because they are less than 700kg).

There were no provisions about mobile plant in the Machinery Act 1950 – so it is an area that has always been sparsely regulated.

Together, the sparse coverage of risks and the long list of exemptions mean that the regulatory interventions for mobile plant do not address the risks and the level of harm occurring.

3.2 Options and questions for discussion

3.2.1 Require PCBUs to apply the Prescribed Risk Management Process to specific risks from mobile plant

To improve the way the risks identified in this section are managed, an option is to apply the Prescribed Risk Management Process to risks from mobile plant associated with:

- the plant overturning
- things falling on the operator
- the operator being thrown 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.

This follows the approach in the Australian Model Regulations.

If the approach in the Australian Model Regulations is followed so that the Prescribed Risk Management Process must be used when managing risks from all plant (see [Section 2](#)), then specifying these risks for mobile plant would create an additional, express requirement to draw PCBUs' attention to the specific risks from mobile plant. This requirement would be new; however, PCBUs should already be familiar with and following this kind of process to fulfil their duties under section 30 of the HSW Act to eliminate or minimise risks so far as is reasonably practicable. The options therefore build on the requirement in the HSW Act and provide further clarity.

We consider good risk management through identifying, eliminating and minimising risks is an absolute basic of good health and safety. Requiring PCBUs to follow the Prescribed Risk Management Process would make it clearer for them and the regulators about what process is expected to be followed and what controls should be considered to manage the specific risks from mobile plant.

3.1	We are proposing to apply the Prescribed Risk Management Process to plant (see Section 2 of the discussion paper). When applying the Prescribed Risk Management Process, should it specify the key risks of mobile plant? (The keys risks from mobile plant are overturning, falling objects, being thrown from the plant, mechanical failure of pressurised elements, and collisions).
3.2	Do you think the Prescribed Risk Management Process should not apply to any of these key risks?

3.2.2 Require PCBUs to ensure a suitable combination of “operator protective devices” on all mobile plant

We need to ensure operators of mobile plant are kept safe from harm – particularly, but not only, risks from overturning, falling objects, being thrown from plant, and colliding with people or things.

An option is to follow the approach in the Australian Model Regulations and require PCBUs to ensure, so far as is reasonably practicable, that a suitable combination of operator protective devices is provided, maintained, and used.

The Australian Model Regulations define “operator protective devices” as including roll-over protective structures, falling object protective structures, restraints, and seatbelts. This is not an exhaustive list and could include other things that protect operators, such as other forms of crush protection or helmets. This would allow PCBUs flexibility to determine what kind of protection is the best in their circumstances with support from regulator guidance.

This approach is similar to existing requirements for roll-over protection and seatbelts which have to be suitable for the purpose for which the mobile plant is used. However the Australian approach is broader and allows for a wider range of operator protective devices, rather than just roll-over protection and seatbelts, so addresses a wider range of risks.

3.3 Should there be specific requirements for operator protective devices on all mobile plant?

3.4 Is it appropriate for PCBUs to determine what is a suitable combination of operator protective devices?

3.5 Are there any types of mobile plant that require specific kinds of devices?

3.6 What other kinds of operator protective devices are appropriate for the mobile plant you use or manage at work?

3.2.3 Ensure risks of collision are managed effectively

There is a range of harm that can result from collisions depending on whether a person, thing, or other mobile plant is hit. We want to know whether you think specific requirements are needed in addition to the Prescribed Risk Management Process and operator protective devices.

The options in this part would be new for PCBUs managing or controlling mobile plant. There are no equivalent requirements in existing regulations.

Option 1 – Follow the Australian Model Regulations:

The Australian Model Regulations take a graduated approach for collisions with pedestrians and other mobile plant. Being thrown out of mobile plant, hit by a falling object, or overturning are mainly significant risks for the operator (though in some cases they can result in harm to passengers or others in the vicinity). Comparatively, collisions with people or other mobile plant will often mean harm to people other than just the operator.

In addition to the Prescribed Risk Management Process, Australia has additional controls where there is a risk of hitting a pedestrian or other mobile plant.

- PCBUs must ensure that mobile plant does not collide with pedestrians or other powered mobile plant

- If there is a possibility of collision with pedestrians or other powered mobile plant, the PCBU must ensure the plant has a warning device.

Option 2 – (in addition to option 1) Add some of the requirements from the United Kingdom:

Being able to see plant, things, or people is essential to ensure operators can avoid collisions. The UK have specific requirements about the operator’s direct field of vision. They require PCBUs to ensure that there are adequate devices to improve the operator’s vision where the operator’s direct field of vision is inadequate to ensure safety.

Option 3 – (in addition to options 1 and/or 2) Include traffic management around mobile plant in guidance or approved codes of practice for specific plant or industries.

This could include practical and specific information about what to do to ensure traffic is managed at work e.g. keeping pedestrians and vehicles apart, minimising vehicle movements, reversing vehicles, traffic management plans, and signs, warning devices and visibility.

3.7	Should there be a requirement to ensure plant does not collide or to ensure warning devices, because of the extra risk of harm?
3.8	Should there be a requirement to ensure an adequate field of vision?
3.9	Are other requirements needed to manage risks from collision? (For example, requiring that mobile plant is switched off when operators are not in the cab to avoid it moving unexpectedly).
3.10	Should information on traffic management be included approved codes of practice or other guidance?

3.2.4 Ensuring passengers are protected

The risks discussed in the first half of this section tend to focus on operators, but equally apply to passengers when they are present.

Passengers can increase risks from mobile plant, such as the risk of it rolling over, and they increase the chances of harm occurring if there is a collision or accident involving mobile plant – because the operator and the passengers are harmed.

We need to ensure that passengers are suitably protected when they are on mobile plant. The options in this part would put new requirements on PCBUs managing or controlling mobile plant. There are no equivalent requirements in existing regulations. There is some WorkSafe guidance about carrying passengers (e.g. on forklifts or farm vehicles) so PCBUs should be familiar with best practice about passengers and mobile plant.

Option 1 – Follow the Australian Model Regulations:

The Australian Model Regulations require the PCBU to ensure, so far as is reasonably practicable, that no passengers ride on mobile plant unless the passenger is provided with the same level of protection as the operator.

If we follow the approach in the Australian Model Regulations for the risks outlined above, this would mean ensuring that passengers have the benefit of a suitable combination of operator protective devices (including roll-over protection, falling object protection, restraints and seatbelts).

This requirement would combine with the requirement about *only using plant for the purpose for which it is designed* to mean that in most cases passengers could only be carried where plant was designed to carry them and they had the same protection as the operator.

Option 2 – (instead of option 1) Prohibit passengers on mobile plant unless it is designed to carry passengers:

This option would provide less flexibility than option 1 because it expressly ties passenger safety to the design limitations of any particular piece of mobile plant. The Australian Model Regulations, for example, have requirements like this for forklifts.

This option would be more explicit than relying on applying the proper design purpose requirement for all plant with equal passenger protection requirements (as per option 1).

3.11 Do you agree that passengers should have the same level of protection as operators when on mobile plant? For example, there may be situations where you think it would be safe for passengers to have more or less protection than the operator.

3.12 Do you think passengers should be expressly banned unless mobile plant is specifically designed to carry them? If yes, is this general or are there specific examples that should be covered. If not, why?

3.2.5 Coverage of requirements

We need to ensure that any requirements for mobile plant apply appropriately, proportionately and realistically for different kinds of mobile plant and the circumstances in which they are used.

The definition of mobile plant and providing exemptions from requirements are two ways of ensuring the right kinds of things are covered.

The existing regulations:

- do not define mobile plant but WorkSafe guidance defines it as any self-propelled mechanical plant
- exempt a lot of kinds of mobile plant from the requirements to ensure roll-over protection and seat belts are fitted on mobile plant.

Definition of mobile plant

We suggest using the term ‘powered mobile plant’ in any regulations and define it as in the Australian Model Regulations as “plant that is provided with some form of self-propulsion that is ordinarily under the direct control of an operator”.

Exemptions from requirements for mobile plant

Option 1 – No exemptions if the approach in the Australian Model Regulations is adopted:

If the approach in the Australian Model Regulations is adopted, it may not be necessary to specifically exempt mobile plant from regulatory requirements.²² This would mean PCBUs managing or controlling plant would have more requirements because:

- the Australian approach covers a wider range of risks and control measures – not just roll-over protection and seatbelts, and
- the requirements for roll-over protection and seatbelts have a large list of exemptions.

Exemptions may not be required because the approach in the Australian Model Regulations would allow flexibility for PCBUs to determine what is appropriate for different kinds of mobile plant in different circumstances, rather than prescribing specific ways of doing things regardless of circumstances. Flexibility is provided in the Australian Model Regulations by requiring PCBUs to:

- follow the Prescribed Risk Management Process to manage risks associated with plant overturning, collisions with any person or thing, things falling on the operator, and the operator being thrown from the plant
- ensure a “suitable combination of operator protective devices” which include, but are not limited to, roll-over protection, falling object protection, restraints, and seatbelts – this is not an exhaustive list so can manage a range of risks, as well as leaving it up to PCBUs to determine what is “suitable” in their circumstances
- ensure that mobile plant does not collide with pedestrians or other mobile plant (and if there is possibility of a collision, then there is a warning device) – although there is no “so far as is reasonably practicable” test for this requirement, it is still an outcome focused requirement, rather than requiring a specific action to be taken
- ensure passengers, so far as is reasonably practicable, have the same level of protection as the operator (or they cannot ride) – the test “so far as is reasonably practicable” allows flexibility for PCBUs to determine what is right in their circumstances.

²² Note that WorkSafe would be able to grant exemptions from compliance with regulations under s 220 of the HSW Act.

Option 2 – Some exemptions if less flexible options are followed

If we follow some of the more prescriptive and less flexible options, it might be appropriate to exempt some kinds of mobile plant. We want to know which ones and why.

The less flexible options in this section are:

- Requirements (based on the United Kingdom) for adequate devices to improve operator’s vision where the direct field of vision is inadequate to ensure safety.
- Prohibiting passengers on mobile plant unless it is designed to carry them.

3.13	Do you agree with the suggested definition of "mobile plant" (i.e. plant that is provided with some form of self-propulsion that is ordinarily under the direct control of an operator)?
3.14	If we follow the flexible approach in the Australian Model Regulations, are exemptions for specific types of mobile plant necessary?
3.15	If we follow a less flexible approach, for example, field of vision or banning passengers, are there any specific types of mobile plant that should be exempt from any of the requirements?
3.16	Vehicles less than 700kg are currently exempt from roll-over protection and seatbelt requirements. Are there any vehicles under 700kg that you think should be exempt from the approach in the Australian Model Regulations for mobile plant?
3.17	Are there any types of mobile plant that require specific types of requirements additional to those discussed already for all mobile plant? Please give examples.

3.2.6 Ensure the extra risks from forklifts are effectively managed

Forklifts have the same risks as mobile plant, but the risks of overturning, colliding with people or things, and risks to passengers are increased. This is because of the nature of forklifts, the environments they are used in, and unsafe operator behaviour.

Some of these risks are managed (though not directly) through the Approved Code of Practice for Training Operators and Instructors of Power Operated Lift Trucks and a voluntary certificate of competence regime.

We note that we will consider operator competence (e.g. a ticket or permit) fully for forklifts in the hazardous work part of our regulatory reform programme. However, we are interested to know now whether you think a ticket should be required to operate a forklift. At the moment in New Zealand forklift tickets are not mandatory, but there is a very high level of voluntary compliance. The Australian Model Regulations require forklift operators to have a ticket.

We want to know whether you think we need additional requirements for forklifts in addition to those for all mobile plant, or whether these can be managed through the Approved Code of Practice and certificate of competence regime.

Option 1 – Follow the approach in the Australian Model Regulations:

- Require the PCBU to ensure that the forklift has lifting attachments suitable for the load.
- Require the PCBU to ensure that the forklift is operated in a manner that ensures the risks to the operator of the truck and other persons that arise from systems of work and the environment in which the truck is used are eliminated so far as is reasonably practicable, or minimised if they cannot be eliminated.
- Require the PCBU to ensure that the forklift is not used to carry passengers unless it is designed to carry a seated passenger and the passenger seat is fitted with suitable seat restraints and located within the zone of protection provided by any operator protector device.
- Require the PCBU to do what is reasonably practicable to ensure that a passenger is seated in a seat that complies with the requirements.

This option would create new requirements on PCBUs managing and controlling forklifts. Current regulations do not have specific requirements for forklifts, requirements for seatbelts and roll-over protection expressly exclude forklifts with telescopic booms, and the Approved Code of Practice only addresses operator competence and licensing. Addressing these risks in regulations would provide a clear minimum standard and might help ensure sustained and consistent good practice compared to indirectly relying on operator competence to manage these risks.

Option 2 – Develop an approved code of practice or other guidance expressly addressing these risks

An approved code of practice or other guidance could include information to support best practice along the lines of what is covered in the Australian Model Regulations.

Option 3 – Rely on operator competence to address risks

Instead of addressing these risks specifically in regulations or directly in an approved code of practice, this option relies on operator competence (e.g. a ticket) to manage the risks indirectly. Note that we are looking at tickets for forklifts fully during the hazardous work part of the regulatory reform programme.

3.18	Are specific requirements for forklifts needed to effectively address the risks?
3.19	Do the requirements for operator protective devices for all mobile plant effectively address risks for forklifts?
3.20	Should these risks be addressed in regulations, an approved code of practice, other guidance, or a combination of those things?
3.21	Should operators require a ticket (e.g. licence or certificate of competence) to use a forklift?
3.22	Do operator competency regimes sufficiently address the risks identified from forklifts?

3.2.7 Assessing the impact

We will use your responses to compare proposals and make recommendations for government policy decisions. Clear information on the impacts on your business, work or workplace will help us to choose the best options for change, and complete better regulatory impact analysis, including cost benefit analysis for proposals.

Some examples of costs and benefits include, but are not limited to things like improved health and safety; time; compliance burden; training costs; need for specialist external advice; business efficiencies, for example, increase productivity; investment in capital expenditure.

3.23

Based on the proposals in this section on protections for people working with mobile plant, are there any significant costs and/or benefits that will affect you or your organisation?

4 Designing, manufacturing, importing, supplying, and installing plant or structures

Plant and structures should be designed, manufactured, imported, supplied, and installed to be without risks to health and safety.

We've heard there are some problems with how upstream duties are fulfilled, and some risks from plant and structures that could be better addressed upstream ...

Limited or confused understanding of duties and how to comply, especially for **structures** and **alterations** to plant

Challenges to **enforcement**

Adequate information about risks is not always provided or implemented downstream

Imported and second-hand plant doesn't meet health and safety standards

Guarding and safety features are especially risky if not designed or manufactured properly

Here are some ideas to fix these problems. Tell us what you think.

Regulations to support clarity and understanding of duties in HSW Act and enforcement

Requirements to support information sharing and hazard/risk identification throughout the supply chain

Clearer requirements on importers of plant to obtain information from overseas designers and manufacturers

Require suppliers of second-hand plant to identify any faults and provide information to person being supplied

Clearer requirements about designing and manufacturing guarding and safety features

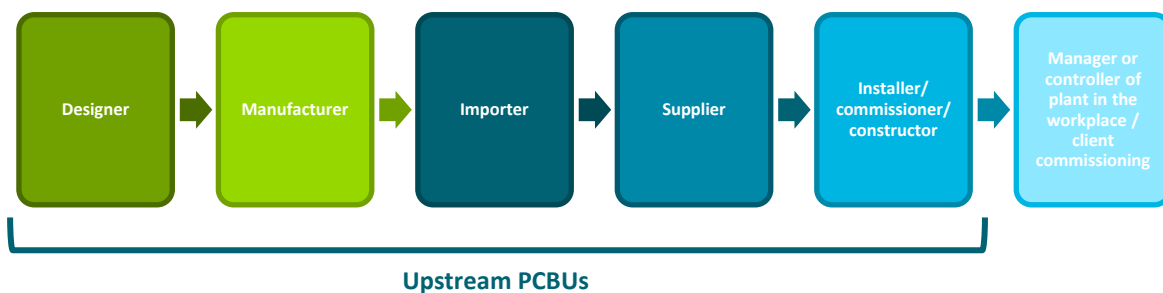
Provide guidance to make it clear that designer's duties apply to people altering or modifying plant

You'll find more information about these problems and ideas in the detail of this section.

This section concerns duties on PCBUs that:

- design plant or structures
- manufacture plant or structures
- import plant or structures
- supply plant or structures
- install, construct, or commission plant or structures.

These are sometimes referred to as “upstream duties” and “upstream PCBUs” because the PCBUs usually come first in the supply chain for plant or structures. That is, they are usually upstream from the PCBU managing or controlling the plant or structure in the workplace.



In practice, these roles are not always clearly defined or sequential in the supply chain. The term “upstream” is used here to identify a group of duty holders, but does not mean that those roles are fixed, and responsibilities can extend beyond “upstream”. Designers should be involved with PCBUs ordering plant or structures and end users (e.g. people using or constructing the plant or structure), and can become involved at later stages of the supply chain. Sometimes manufacturers, importers, and suppliers can become “designers” if they alter or modify plant or structures – see the discussion below about alterations.

It is important for upstream PCBUs to fulfil their duties given the high risk of death and serious injury arising from plant and structures

Seventy-six per cent of fatalities involve plant and structures.²³ While it is difficult to determine from the data where those fatalities and injuries result from poor design, manufacture, import, supply or installation of the plant or structure, issues at the upstream stages of the supply chain for plant and structures are common. Research in Australia found that inspectors identified upstream issues in 43 per cent of workplace visits.²⁴

Failure to fulfil upstream duties can lead to inherently unsafe plant and structures ending up in workplaces through:

- poorly designed and manufactured plant and structures

²³ This excludes fatalities from the Pike River Coal Mine tragedy.

²⁴ E Bluff, R Johnstone, M McNamara, and M Quinlan *Enforcing Upstream: Australian Health and Safety Inspectors and Upstream Duty Holders* (2012) Australian Journal of Labour Law at pp 29 – 30.

- importation and supply of sub-standard equipment
- installation and construction that can exacerbate or create new risks to health and safety.

This means the responsibility – including time, costs, and risk of harm – of making plant and structures safe shifts to PCBUs managing and controlling plant and structures in the workplace. This is often less effective and cost efficient than making plant inherently safe upstream.

Upstream PCBUs are in a strong position to eliminate or minimise risks to health and safety in plant and structures

Because of their early position in the supply chain, upstream PCBUs are in a strong position to eliminate or minimise risks to health and safety in plant and structures before they are used at work.

Eliminating or minimising safety risks at the early, upstream stage is often a more effective control measure and means that PCBUs, workers, or others using or working around the plant or structure do not have to retrofit systems, ways of working, or the plant or structure itself to make it safe. It is also often cheaper and more practical to eliminate or minimise risks early in the supply chain than later in the lifecycle.

Upstream PCBU obligations are governed by duties in the HSW Act

Sections 39-43 of the HSW Act set out duties on PCBUs that design, manufacture, import, supply, or install/construct/commission plant or structures. The purpose of upstream duties is to help close the gaps in the supply between upstream PCBUs and end users/PCBUs managing plant or structures where risks to health and safety could slip through.

Meanings of design, manufacture, import, supply, install, construct and commission:

Term	Meaning
Design	Includes the design of part of the plant, substance or structure; and the redesign or modification of a design – s 16, HSW Act
Manufacture	Not defined in the HSW Act – we consider that for purposes of s 40, it means to make something on a large scale using machinery
Import	Bringing goods to arrive in New Zealand in any manner, whether lawfully or unlawfully, from a point outside New Zealand – s 16 HSW Act (s 5(1), Customs and Excise Act 2018)
Supply	Includes supply or resupply of a thing by sale, exchange, lease, hire, or hire purchase, whether as principal or an agent – s 21, HSW Act Excludes returning the thing at the end of a lease or other agreement, supply by a person without authority or control, a supply prescribed in regulations – s 21, HSW Act
Install	Not defined in the HSW Act – we consider that for purposes of s 43, it means placing or fixing plant or structure in position ready for use
Construct	Includes assemble, erect, reconstruct, reassemble, and re-erect – s 16, HSW Act
Commission	Not defined in the HSW Act – we consider that for purposes of s 43, it means operationalising a plant or structure to bring it into working condition

PCBUs who design, manufacture, import, or supply plant and structures must:

- ensure, so far as is reasonably practicable, that the plant or structure is without risks to the health and safety of persons who:
 - use the plant or structure
 - store the plant
 - construct the structure
 - carry out any reasonably foreseeable activity in relation to the plant or structure throughout its lifecycle
 - are in the vicinity of the workplace and are exposed to the plant or structure.
- carry out, or arrange the carrying out of, calculations, testing, analysis, or examination necessary to ensure the plant or structure is without risks
- give information to persons provided with the design or the plant or structure
- on request, make reasonable efforts to give that information to persons using, storing, constructing, etc. the plant or structure.

PCBUs who install, construct, or commission plant or structures must ensure, so far as is reasonably practicable, that the plant or structure is without risks to the health and safety of persons; however, they do not have duties about calculations, testing, etc., and providing information.

The duties to ensure plant and structures are without risks to the health and safety of persons are not absolute. PCBUs are only required to meet these duties so far as is reasonably practicable.

These duties in the HSW Act are based on equivalent provisions in the Australian Model Act.

There are no regulations supporting upstream duties in the HSW Act, except for high-risk plant

There are no regulations supporting upstream duties in the HSW Act for plant and structures, except specifically in relation to high-risk plant – that is, pressure equipment, cranes, and passenger ropeways. These are discussed in [Section 5](#) on high-risk plant.

Other countries have more comprehensive regulations supporting upstream duties

The Australian Model Regulations have a comprehensive set of regulations to support the general upstream duties in the Australian Model Act. Broadly, the Australian Model Regulations provide:

For plant –

- requirements for how to design safety features of plant (e.g. guarding (where used as a control measure), operational controls, emergency stop controls, and warning devices)
- requirements setting out processes for providing information downstream, and in relation to second-hand plant
- requirements setting out processes for hazard identification during manufacture and importation

- extra requirements for high-risk plant.

For structures –

- requirements on installers, constructors or commissioners to have regard to information provided from upstream PCBUs.

The United Kingdom also has a comprehensive set of regulations supporting the upstream duties in the Health and Safety at Work etc Act 1974 (UK). The duties in that Act are broadly similar to those in the HSW Act and Australian Model Act. However, the Supply of Machinery (Safety) Regulations 2008 (UK) are different to, and more complex than, the Australian Model Regulations because machinery and equipment in the United Kingdom has to comply with European standards through a certification process.

The Construction (Design and Management) Regulations 2015 (UK) are also much more complex than Australia's regulations, with detailed requirements on upstream PCBUs to manage risks arising from constructing structures and completed structures use at, or as, workplaces.

The Australian Model Regulations also have requirements on clients and designers about construction work. These provisions are about ensuring risks to health and safety from the design of the structure *during construction work* are managed. These are supported through a system of requirements about safe and healthy construction work.

We are not considering these kinds of requirements in this discussion document because they are about the safety of construction work (as opposed to the inherent safety of a structure itself) and are better suited to be considered alongside other construction work requirements. We will do this in the hazardous work part of the regulatory reform programme.

4.1 Identified risks and issues

We have met with key stakeholders in manufacturing, construction, agriculture and forestry to discuss how risks from plant and structures are managed. We have identified some issues with how upstream duties are being fulfilled and some risks that could be better addressed upstream.



4.1.1 There is some awareness, but limited or confused understanding about upstream duties and how to comply with them

The upstream duties in the HSW Act came into effect in 2016. Some people think that the duties are entirely new despite previous duties on designers, manufacturers and suppliers (including hirers) of plant in the Health and Safety in Employment Act 1992, Health and Safety in Employment Regulations, and the now repealed Machinery Act 1950. There are also current upstream duties for pressure equipment, cranes and passenger ropeways.

Generally there is some awareness of the existence of upstream duties for plant and structures in the HSW Act. However, detailed knowledge of the duties and understanding about what they mean in practice and how to comply with them varies amongst different types of PCBUs and between sectors. To improve understanding about good design practice WorkSafe has recently put out good practice guidelines *Health and Safety by Design – An Introduction*.

Upstream duties are not new and they are still not being done well.

4.1.2 There are challenges to enforcing upstream duties

Discussions with WorkSafe have indicated that it is often difficult to enforce the upstream duties in the HSW Act. Enforcement includes issuing improvement, prohibition, non-disturbance and infringement notices, as well as undertaking investigations and prosecutions.

Since 1992, there have been a total of 36 prosecutions for upstream duties under the HSW Act, Health and Safety in Employment Act 1992, and Health and Safety in Employment Regulations. The breakdown of relevant charges is below.

Legislation	Provision	Duty holder	Frequency
Health and Safety in Employment Act 1992	s 18A	Sellers and suppliers	27
Health and Safety in Employment Regulations 1995	r 66	Designer	1
	r 67	Manufacturers or suppliers	7
HSW Act 2015	s 43(2)	Installer	1

There have been 1,725 notices for upstream duties issued between 1999 and 2018.

Upstream duties can be difficult to enforce because:

- upstream duty holders are further away from the harm occurring
- it can be difficult to gather sufficient evidence of fault
- designers/manufacturers may be based overseas.

While WorkSafe's enforcement approach to upstream duties is still developing, generally inspectors are aware of upstream duties and the potential for them to have influenced health and safety risks arising from plant and structures in workplaces. Australian research into enforcing upstream duties found:²⁵

- Although inspectors identified upstream issues in 43 per cent of accompanied workplace visits, upstream issues were often not pursued or were treated as lower order issues.
- If the issues were addressed, inspectors tended to focus on non-compliance in a specific context and required retrofitting of control measures or remedial measures – rather than seeking to ensure the inherent safety of plant or structures e.g. for people who might encounter them in another context.
- Enforcement action for upstream duties tended to focus on suppliers because they are the most proximate duty holder, and so the easiest to identify and deal with.
- Similar issues were found in relation to prosecutions.

Regulations would support better outcomes by providing more detail for duty holders and regulators, and clearly setting enforceable expectations about what is reasonably practicable in the circumstances.

²⁵ E Bluff, R Johnstone, M McNamara, and M Quinlan *Enforcing Upstream: Australian Health and Safety Inspectors and Upstream Duty Holders* (2012) Australian Journal of Labour Law at pp 29 – 30. Note that the Australian Model Laws were not in place at the time of this research but occupational health and safety statutes at the time typically imposed obligations on designers, manufacturers, suppliers and importers of plant. For a summary of the relevant duties at the time of this research, see R Johnstone *Occupational Health and Safety Law and Policy: Text and Materials* (Lawbook Co, Sydney, 2004, 2nd ed) at pp 270-272, 275-280.

4.1.3 Adequate information about health and safety risks is not always being provided to downstream duty holders and passed on to persons being provided with and using the plant

Stakeholders identified that there is often no, or inadequate, information provided with plant when it is supplied – for both plant designed and manufactured in New Zealand, and imported or second-hand plant.

In some cases, this information is provided by the designer to another upstream PCBU but:

- it is not passed on further to other upstream PCBUs or end users such as PCBUs managing or controlling the plant, or workers or others using the plant
- it is not used by other upstream PCBUs in fulfilling their roles.

In other cases, the information does not exist or its quality is poor so it cannot be relied on. For example, the information may not be adequate about the conditions necessary to ensure the plant or structure is without risks to health and safety when used for a reasonably foreseeable activity or the information may be in another language.

While there are some examples of good information being provided throughout the supply chain, it is not systematic or consistent.

Good information provides a foundation for:

- upstream PCBUs to carry out calculations, tests and analysis, and ensure their work does not lead to risks to health and safety
- PCBUs managing or controlling plant to maintain, modify, repair and operate plant safely throughout its lifecycle
- workers and other PCBUs to commission, use or decommission plant safely.

4.1.4 Imported plant often does not meet New Zealand health and safety standards

A lot of plant in New Zealand is imported from overseas. For machinery and equipment not designed in New Zealand, importers are a crucial link in the supply chain that can influence the safety of plant.

Consistent feedback from stakeholders and WorkSafe suggests that imported plant often does not meet health and safety expectations in New Zealand, for example it does not have suitable guarding fitted. This was the most consistent concern raised by stakeholders across a range of sectors.

Importers have a duty to ensure, so far as is reasonably practicable, that plant is without risks to health and safety of persons. Stakeholders identified that imported plant often has risks to health and safety, for example it may have risks arising from poor maintenance or it doesn't meet relevant Standards.

WorkSafe guidance provides that Australian Standard AS/NZS 4024 Safety of Machinery Series is the most applicable Standard that machinery and equipment should meet. International Standards that are as good or better can also be used. Upstream duty holders can work to other Standards, but WorkSafe guidance provides that they need to show that they can reach the same level of safety, or better, in the circumstances in which they are used.

4.1.5 Second-hand plant often does not meet health and safety standards

Second-hand plant is everywhere in New Zealand.

Like imported plant, stakeholders have consistently identified the quality of second-hand plant as an issue and are concerned that in many cases it does not meet health and safety expectations.

Suppliers have a duty to ensure, so far as is reasonably practicable, that plant is without risks to health and safety. Poor quality second-hand plant is likely a result of suppliers not complying with their duties under the HSW Act, but may also be attributed to poor maintenance and repair of plant by previous owners of the plant (see [Section 2](#) on protections for people working with plant, which deals with maintenance and repair of plant).

Poor quality second-hand plant can mean that purchasers are inheriting plant that is risky without knowing it.

The duties on suppliers in section 43 of the HSW Act to ensure the health and safety of persons, test, and provide adequate information do not apply to the sale of second-hand plant sold “as is”.²⁶ Suppliers of all other second-hand plant must comply with these duties.

4.1.6 Plant and structures are often altered and modified in a way that creates risks to health and safety

New Zealand has a culture of altering and modifying plant and structures, either to enhance it for its intended purpose or to use it for a purpose other than that which it was designed for. Stakeholders have indicated that this is particularly prevalent in agriculture and forestry sectors where the situations where plant and structures are used vary.

It is not widely understood that when a person alters or modifies a plant or structure they are “designing” under the HSW Act so the duties on PCBUs that design plant or structures under section 39 apply.²⁷ Apart from this duty, there are no requirements under existing regulations providing oversight or controls when altering or modifying plant, except in relation to pressure equipment, cranes, passenger ropeways and amusement devices.²⁸ Without understanding their role

²⁶ Second-hand plant sold “as is” is defined in the HSW Act as plant sold without any representations or warranties about its quality, durability, or fitness, and with the entire risk in those respects borne by the buyer.

²⁷ “Design” is defined in the HSW Act as including “the redesign or modification of a design”.

²⁸ Under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations, manufacturers of pressure equipment, etc. must obtain the designer’s approval for alterations that affect the structural strength or safety of equipment made during manufacture and, if required, must get design verification for the alteration. Under

as designers, people often alter or modify plant without taking into account health and safety risks or the impacts it may have.

Stakeholders emphasised the need to support innovation, but acknowledged that this has to be done safely so that alterations and modifications do not create new, or exacerbate existing, risks from plant or structures.

4.1.7 Safety features of plant are especially risky if not designed or manufactured properly

Safety features of plant are fundamental to minimising risks that cannot be eliminated, and to ensuring plant can fail safely. If safety features are designed or manufactured poorly, there is greater risk that harm will occur or be more serious, or unsafe practices will occur (for example, removing poorly designed guarding that inappropriately interferes with the operation of a machine).

In discussions with stakeholders, guarding on machinery was identified as a fundamental safety feature of plant. Some stakeholders noted that guarding on machinery does not always meet health and safety standards or in some cases is not fitted on machinery where it should be.

The risk of poorly designed and manufactured safety features such as guarding can mean operators and others around the plant can suffer serious injuries from the working parts of the plant, including entanglement, abrasions and crushing.

It is a difficult task to ensure that a piece of equipment operates and is operated without risks to health and safety at all times. Safety features like emergency stop controls and operational controls are crucial to ensure that when something does go wrong on the plant, there are features that will allow it to fail safely.

WorkSafe's best practice guide on Safe Use of Machinery provides information on guarding measures, including guard design. The Machinery Act 1950 also had provisions about designing and manufacturing guarding and power controls for plant. That Act was repealed in 2016 when the HSW Act and first phase of regulations came into force, with the intention that new plant and structures regulations would be looked at in the second phase of regulatory reform.

4.1.8 Upstream PCBUs are uncertain about how to fulfil their duties in relation to structures

Stakeholders identified that there is uncertainty about how to comply with upstream duties in the HSW Act in relation to structures. Compared to plant, the supply chain for structures is often more dynamic, less linear and involves more participants. There are particular uncertainties about:

the Amusement Devices Regulations 1978, where an amusement device is materially altered or repaired, the owner shall notify an inspector who may require the owner to produce evidence that it can be safely operated.

- what documents designers must prepare and provide, and how they should be provided
- expectations about collaboration and coordination with PCBUs and workers involved in constructing structures, e.g. who is part of (or should be part of) the design team, other upstream PCBUs, clients commissioning structures, PCBUs and workers constructing the structure, and end users.

The focus of this section is on how upstream duty holders can improve the safety of the structure itself as an end product, rather than the safety of the construction work for the structure. The relationships and work systems affecting the safety of construction work (as in the construction chapter of the Australian Model Regulations and the Construction (Design and Management) Regulations (UK)) will be considered in the hazardous work part of the regulatory reform programme.

Risks arising from completed structures when they are being used in, or as, a workplace are primarily governed by the requirements in the Building Act 2004 and Building Code. There is crossover between those requirements and the general duty on designers in relation to structures imposed by the HSW Act. Some structures, e.g. scaffolding, are not covered by the Building Code.

4.1 Do you agree with the risks and issues identified in section 4.1 of the discussion paper?

4.2 From your experience, are there any other risks and issues arising for upstream duty holders? Think about the life cycle of a plant or structure – from design, construction, maintenance, repair, modification, operation, and decommissioning or demolition.

4.2 Options and questions for discussion

4.2.1 Ensuring upstream duty holders understand their duties and how to comply with them

To increase understanding about upstream duties and how to comply with them, upstream duty holders need to:

- be clear about what the definition of design, manufacture, import, supply, install/commission/construct mean in the context of the HSW Act, and when they are engaging in those activities and the upstream duties apply
- understand how to fulfill their duties under the HSW Act to ensure plant is designed, manufactured, imported, supplied, installed/commissioned/constructed without risks to health and safety; to test; and to provide information.

The options in this section set out ways to improve understanding about upstream duties in relation to specific aspects of the duties. The options clarify and provide more detail about what upstream duty holders need to do to fulfil their duties in the HSW Act. Although this will mean PCBUs have more express obligations, it reiterates what they should be doing already and should be familiar because requirements about designing, manufacturing and supplying plant are longstanding in legislation.

An overarching question is what regulatory tool is best to achieve the change. Broadly, there are four main options:

- Regulator education campaigns, and other intervention tools such as work programmes and areas of focus
- Approved codes of practice
- Other types of guidance provided by regulators (e.g. best practice guides²⁹)
- Regulations.

The options are not mutually exclusive, and in some cases the best option may be to have a combination.

The upstream duties in the HSW Act alone are unlikely to increase understanding of upstream duties. Stakeholders considered that there is a lack of guidance and regulatory oversight, and noted opportunities for guidance and regulations to clarify roles and processes to support upstream duties.³⁰ Some stakeholders also identified enforceable legal duties as a motivator that encouraged good health and safety practices upstream.

²⁹ Such as the new good practice guidelines *Health and Safety by Design – An Introduction*.

³⁰ This feedback was given before WorkSafe published the good practice guidelines *Health and Safety by Design – An Introduction* in September 2018.

There is some guidance about upstream duties on WorkSafe’s website and in its Safe Use of Machinery Best Practice Guidelines. Health and safety by design is a strategic priority for WorkSafe and it has released an introduction to best practice on health and safety by design to support compliance with the general duties in the HSW Act.

We consider there is a case for creating regulations for upstream duties because:

- risks are not being effectively managed through the duties in the HSW Act, tools such as guidance, or regulator campaigns.³¹
- upstream duties and the risks they are intended to address are not new. They have been in previous regulations and guidance since the Machinery Act 1950 and they are still not always being done well.
- the risks alone do not encourage people to fulfil their duties – the risks from failing to fulfil upstream duties are not immediate because there is distance between upstream duty holders and harm occurring in the workplace from the plant or structure, especially where the designer works in isolation from end users of the plant or structure.
- regulations would help to stop duty holders from externalising the risk of harm and pushing the responsibility to make plant and structures safe downstream by requiring them to follow processes and think about the risk upstream.
- regulations would provide clarity about roles and processes and set minimum expectations about what is reasonably practicable in the circumstances – this sets a level playing field for all duty holders and reduces compliance costs, especially for small and medium sized businesses that do not have the same access to health and safety specialist advice.
- regulations would help support enforcement of the general upstream duties in the HSW Act through mandatory controls that are legally enforceable.
- comparable jurisdictions have regulations for upstream duties, which indicates a consistent international view that the risks and nature of upstream duties warrants regulation.

Some of these objectives could also be achieved through an approved code of practice and/or other guidance – e.g. supporting enforcement and providing clarity about roles and processes. However, given the long history of legislation and guidance about upstream duties, we think there is a case that these things are still not being done well, lesser controls have not been effective, and mandatory controls through regulations that can be legally enforced should be explored. An approved code of practice does not have the same legal status or perceived weight as a mandatory control that can be legally enforced.

³¹ Note new good practice guidelines *Health and Safety by Design – An Introduction* were published in September 2018.

While following comparable jurisdictions is not a sufficient reason to regulate by itself, it is a relevant and compelling factor alongside the issues we have heard about.

4.3 What tool, or combination of tools, do you think will be most effective to ensure upstream duties in the HSW Act are complied with in general, and in relation to each of the issues and options below?

4.2.2 Ensuring hazards are identified and adequate information is provided, obtained and acted on in relation to plant

To help close the gap between upstream duty holders and end-users/PCBUs managing plant in the workplace, duty holders need to have the right information so they can ensure plant is used and managed without risks to health and safety.

Identifying hazards is the first step in addressing risks and designing and manufacturing plant safely. Without identifying hazards, risks cannot be eliminated or minimised by designers, manufacturers and others before plant is used in the workplace.

Providing adequate information is essential to protect people from negative outcomes. Information equips people to make decisions and manage risks. Information provision requirements are a common way to protect people in regimes like financial markets where information must be disclosed about financial products and services, and consumer laws where information must be provided about used vehicles under the Fair Trading Act. In the health and safety regime, information is fundamental to protect and equip end users, PCBUs managing plant, and others who encounter plant to avoid harm and manage risk.

To ensure upstream duty holders understand how to fulfill their duty to ensure plant is without risks to health and safety, we **suggest a process** to support identification of hazards across, and provision of information between, duty holders.

We **suggest controls** so that:

- designers are clear about what information they need to provide downstream (including about hazards and risks)
- PCBUs downstream from designers should try and obtain this information
- PCBUs downstream should have regard to information when carrying out their role – i.e. when manufacturing, importing, supplying, installing, or managing and controlling plant
- hazards identified upstream are acted on when they are identified.

Option 1 – Follow the Australian Model Regulations:

- Set out the information a **designer** needs to provide to a **manufacturer** about a plant. This includes information on manufacture, installation, use, storage, decommissioning, testing and inspections required, hazards and risks, safe systems of work, competency of operators required, and emergency procedures.

- Require **manufacturers, importers** and **suppliers** to take all reasonable steps to obtain information from the person upstream and pass it on to the person being supplied with the plant.
- Require **manufacturers** and **importers** to ensure the plant is manufactured, inspected and tested in accordance with the information provided by the designer.
- Require **manufacturers** to take action if hazards are identified during the manufacturing process:
 - consult with the designer if a hazard is identified with no control measure (and a corresponding requirement on designers to respond to manufacturers)
 - eliminate or, where elimination is not possible, minimise risks arising from identified hazards.
- Require **importers** to take action if hazards are identified during importation:
 - ensure plant is not supplied until risks are eliminated
 - where elimination is not possible, inform the person supplied about the risks
 - consult designers and manufacturers about any alteration made to control identified risks.

Option 2 – Require clients to give information to designers to help eliminate and minimise risks:

An additional option is to require PCBUs requesting or ordering designs of plant to provide designers with information about risks and hazards at the workplace where the plant will be used or that could arise from the intended end use of the plant.

This would help designers to eliminate or minimise risks, and ensure that designers have the right information to ensure their design is without risks to health and safety.

4.4	Should we follow the approach taken in the Australian Model Regulations for providing information and identifying hazards and risks in plant?
4.5	What information should designers have to provide to manufacturers about plant? Should it include information about design life or safety critical components?
4.6	Are there other ways to ensure adequate information is provided, obtained, and implemented?
4.7	The Australian Model Regulations only put requirements on designers, manufacturers and importers of plant about identifying hazards. Should suppliers, and installers/ commissioners/ constructors of plant have similar requirements?
4.8	Do you think there should be a duty on PCBUs requesting or ordering new designs of plant to provide designers with information about risks and hazards at the workplace or that could arise from the intended use of the plant?

4.2.3 Ensuring imported plant meets New Zealand health and safety standards

The poor quality of imported plant was the most consistent concern raised by stakeholders across a range of sectors. Given New Zealand's position as a small country that imports a lot of machinery and equipment, importers play important roles as gatekeepers in the system. To improve the quality of imported plant, we **suggest controls** to support importers to fulfil their duties under the HSW Act.

Option 1 – Follow the approach in the Australian Model Regulations:

We have asked above about what requirements should be on upstream duty holders, including importers, to support better hazard identification and information provisions throughout the supply chain. We think these options would help address the quality of imported plant.

In addition to those requirements, the Australian Model Regulations also expressly require importers to take all reasonable steps to obtain information from the overseas manufacturer and designer equivalent to that which would be required if the designer or manufacturer were based domestically.

Option 2 – Recognise requirements of overseas jurisdictions:

Another option is to create a list of overseas jurisdictions that the regulator considers to have adequate health and safety requirements that can be relied on by importers in New Zealand.

4.9

Do you think importers should have to take all reasonable steps to get information from overseas manufacturers and designers equivalent to that which would be required if the designer or manufacturer were based in New Zealand? Think about how this would work in practice and what the implications might be.

4.10

Should we have a list of recognised jurisdictions that importers could rely on to ensure plant meets New Zealand health and safety requirements?

4.2.4 Ensuring second-hand plant meets health and safety requirements

The quality of second-hand plant was another issue that stakeholders consistently raised. [Section 2](#) on protections for people working with plant deals with maintenance and repair of plant. If plant is well-maintained, this should help improve the quality of plant when it is on-sold. However, there also needs to be transparency about the condition of the second-hand plant so purchasers can make informed decisions and manage risks appropriately.

We suggest clearer requirements on suppliers of second-hand plant to ensure it meets health and safety requirements.

We suggest following the approach taken in the Australian Model Regulations:

- Require **suppliers** to identify any faults in second-hand plant and give information to the person who it is supplied to.

Any controls on suppliers of second-hand plant would not apply to plant sold “as is” because this is excluded from the duty on suppliers in the HSW Act. Requirements on PCBUs managing and controlling plant in Section 2, such as inspection, testing, maintenance and controlling risks arising from installation or commissioning, would apply to all plant regardless of whether it is sold “as is”.

We note that the definition of supplier in the HSW Act includes supply or resupply by sale, exchange, lease, hire or hire purchase (and includes the conduct of agents as well as principals).

4.11

Do you think suppliers of second-hand plant should be required to identify faults in the plant and give information to the person they supplied it to?

Note that any controls on suppliers of second-hand plant would not apply to plant sold “as is” because this is excluded from the duty on suppliers in the HSW Act.

4.2.5 Ensuring modifications and alterations to plant do not create risks to health and safety

Proposed mechanisms for ensuring that modifications and alterations to plant do not create health and safety risks are dealt with largely by [Section 2](#) on protections for people working with plant.

However, it is not always clear to duty holders that by altering or modifying plant they are “designing” it for the purposes of the HSW Act. Without understanding this connection, duty holders cannot fulfill their obligations as designers under section 39 to ensure plant (and alterations to it) is inherently safe.

We suggest the relationship between alterations and designers’ duties could be made clearer in guidance material issued by WorkSafe.

4.12

Do you think guidance would help make it clearer that altering plant is “designing” under s39 of the HSW Act? Do you have any suggestions for what this guidance might cover?

4.2.6 Ensuring safety features of plant are designed and manufactured properly so they do not create risks to health and safety

If risks cannot be eliminated, designers may need to build in safety features to protect people from harm. When they are used, guarding and safety features like emergency stops, operational controls and warning devices are fundamental to minimising risks and ensuring plant can fail safely.

To address the issues identified in relation to risks of poor quality guarding and other safety features, we suggest specific requirements on designers and manufacturers to ensure guarding, when it is used as a control measure, and other safety features are designed to be safe.

Requirements for safety-critical features of plant would set minimum standards and provide more consistency in their design.

One option is to follow the approach in the Australian Model Regulations:

- Require the **designer** to ensure guarding, if used as a control measure, will prevent access to the dangerous part of the plant.
- Require the **designer** to follow a hierarchy of control measures depending on whether access to the part of the plant is required – ranging from a permanent physical barrier, interlocked physical barrier, barrier that can only be removed by tools, to presence-sensing safe guarding system.
- Require the **designer** to ensure guarding is of solid construction, bypassing or disabling is difficult, and the guarding does not create a risk in and of itself.
- Set out complementary requirements on **manufacturers** for guarding.
- Require the **designer** to ensure that design of operational controls provides for the controls to be identified, accessible to operators, located or guarded to prevent accidental starting, and able to be locked off.
- If the plant needs to be operated during maintenance or cleaning, the **designer** must ensure that the design provides for operator's controls that permit operation of the plant while a person is cleaning or doing maintenance work; that the plant cannot be operated by anyone other than the person doing that work; and that will allow the plant to be operated in a manner that eliminates or minimises any risk associated with the cleaning or maintenance.
- If plant has multiple emergency stops, require the **designer** to ensure the stops are the kind that prevent the plant from being restarted after the stop has been used until the emergency stop is reset.
- Require the **designer** to ensure that the design of any emergency stop provides the stop is clearly marked, essential features are coloured red, and the stop cannot be adversely affected by electrical or electronic malfunction.
- Require the **designer** to ensure that any warning devices on the plant are positioned in a manner that makes them most effective.

4.13

Do you think requirements are needed for the safe design and manufacture of:

- guarding where it is used as a control measure
- operational controls
- emergency stops
- warning devices?

4.14

What do you think of the way these are managed in the Australian Model Regulations?

4.2.7 Make it clearer how upstream PCBUs can fulfil their duties in relation to structures

To improve clarity for PCBUs about how to fulfil their duties in relation to structures, we suggest controls that clearly establish processes in relation to structures. Upstream PCBUs need to manage risks arising from the completed structure when it is being used in, or as, a workplace.

Risks arising from completed structures when they are being used in, or as, a workplace are primarily governed by the requirements in the Building Act 2004 and Building Code. There is crossover with the general duty on designers in relation to structures. Some structures, e.g. scaffolding, an oil rig, or electrical plant in a substation, are not covered by the Building Code.

We do not propose detailed requirements in health and safety regulations for the safety of structures, but rather processes to facilitate health and safety by design of structures that are not regulated under the Building Act 2004.

Option 1 – Follow the Australian Model Regulations:

Installers, constructors or commissioners of structures must have regard to information provided by upstream PCBUs or the instructions provided by a competent person.

There are no express requirements in the Australian Model Regulations on other upstream duty holders in relation to structures. Only the general duties (like those in HSW Act) apply.

Option 2 – Require process controls to ensure the safety of the structure itself:

- Require **designers** to prepare a health and safety file for a structure, setting out information likely to be needed to ensure the health and safety during any subsequent work, such as maintenance, cleaning, refurbishment, or demolition of the structure.
- Require **designers** to ensure the health and safety file is appropriately reviewed, updated and revised taking into account the work and changes that have occurred.
- Put a duty on contractors to provide information during construction to be included in the health and safety file.
- Require the **client** to retain the file and pass it on to anyone who may need it as long as it is relevant (e.g. new clients, owners, leaseholders, etc.).
- A health and safety file is only required for projects involving more than one contractor.

Option 3 – (in addition to options 1 or 2) Require PCBUs ordering or requesting designs of structures to help eliminate and minimise risks:

An additional option is to require PCBUs requesting or ordering designs of structures to help the designer eliminate and minimise risks, and provide designers with information about risks and

hazards at the workplace where the structure will be used or that could arise from the intended end use of the structure.

This would ensure that designers have the right information to ensure their design is without risks to health and safety.

4.15	Do you prefer option 1 or 2 for structures other than those regulated under the Building Act 2004?
4.16	If we followed the Australian approach (option 1), what would make someone a competent person?
4.17	If we prescribe process controls (option 2), should these requirements apply to construction work where there is only one contractor?
4.18	Do you think there should be a duty on PCBUs requesting or ordering designs of structures to provide designers with information about risks and hazards at the workplace or that could arise from the intended use of the structure?
4.19	What information should designers of structures have to provide to downstream duty holders? Should this be in regulations (as we are proposing for designers of plant)?

4.2.8 Assessing the impact

We will use your responses to compare proposals and make recommendations for government policy decisions. Clear information on the impacts on your business, work or workplace will help us to choose the best options for change, and complete better regulatory impact analysis, including cost benefit analysis for proposals.

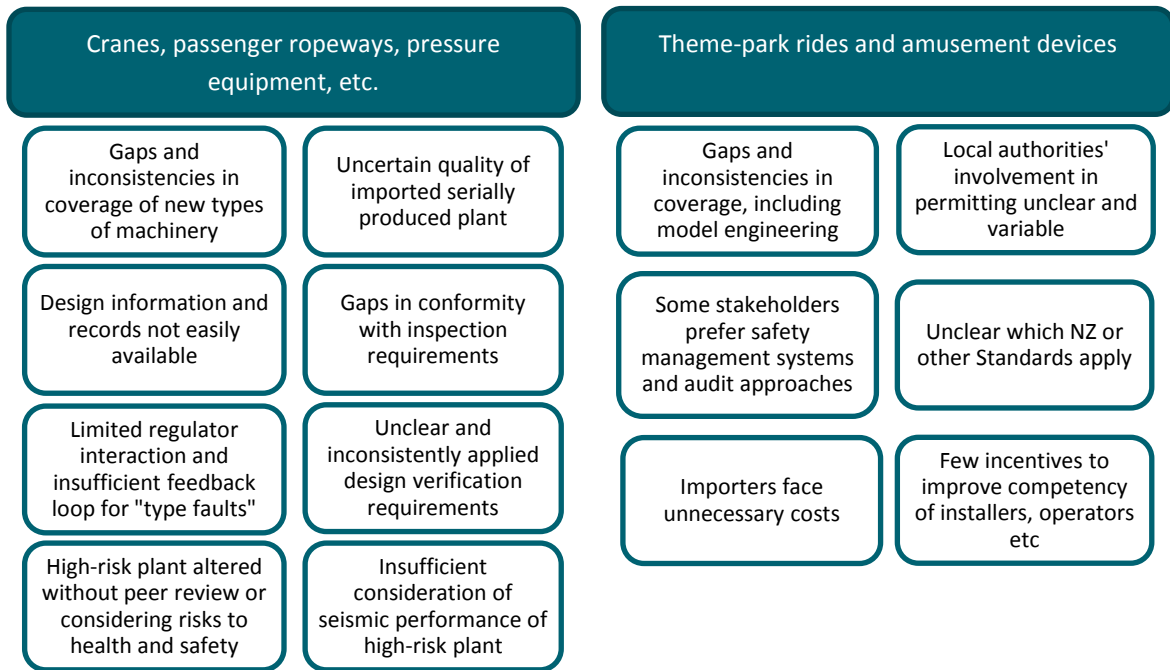
Some examples of costs and benefits include, but are not limited to things like improved health and safety; time; compliance burden; training costs; need for specialist external advice; business efficiencies, for example, increase productivity; investment in capital expenditure.

4.20	Based on the proposals in this section on designing, manufacturing, importing, supplying, and installing plant or structures, are there any significant costs and/or benefits that will affect you or your organisation?
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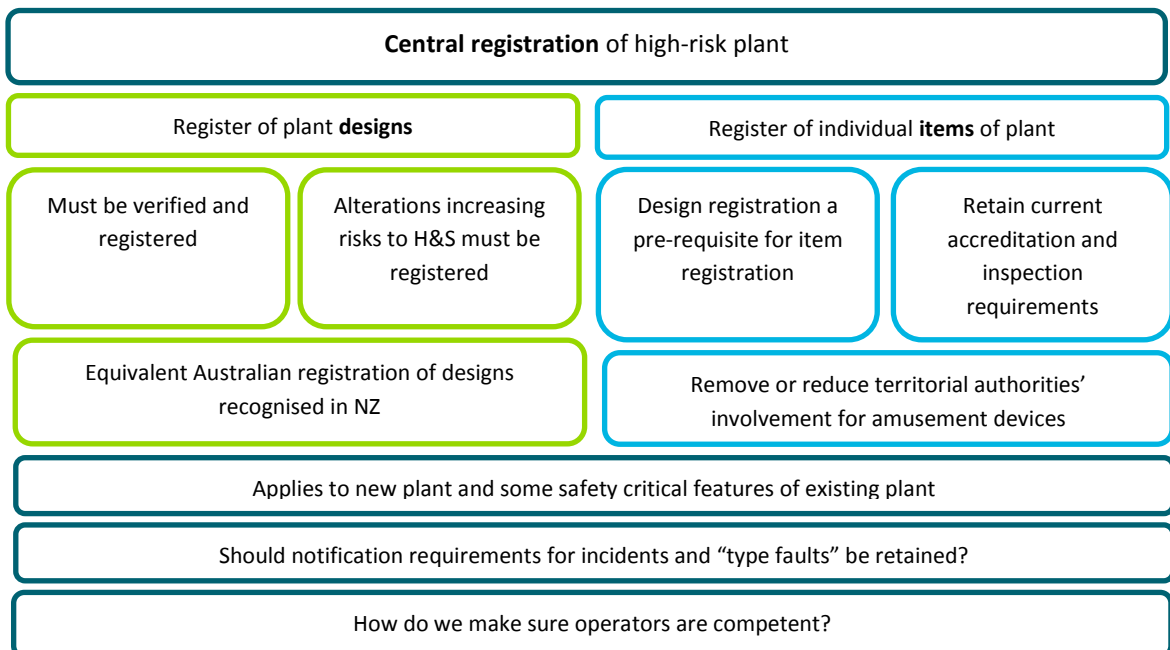
5 High-risk plant

High-risk plant can have catastrophic consequences if businesses do not continue to manage the risks well.

We know there are opportunities to improve how businesses manage high-risk plant.



Here are some ideas to improve the framework for high-risk plant. Tell us what you think.



We propose repealing the Amusement Device Regulations 1978 and the Pressure Equipment, Cranes and Passenger Ropeways Regulations and developing a single set of regulations that applies to both types of plant in the manner of the Australian Model Regulations, with appropriate modifications for the New Zealand context.

The Australian Model Regulations contain a range of mandatory controls for different classes of high-risk plant, depending on the level of risk that they represent. These include maintenance and inspection requirements, licensing of operators, record keeping, and, most notably, requirements for equipment to be registered with the regulator.

All types of high-risk plant (i.e. plant that presents a potential for serious injury or death to operators and/or users) must be of a registered design. In addition, plant that presents the highest level of risk to operators and others must be registered as individual items.

Existing standards will be maintained

There is strong support from stakeholders for continuing the regulation of these types of plant, which have long been accepted as presenting higher risks to workers and others who are either riding on them or in proximity of the plant should it fail.

There is a long history of regulation for high-risk plant, and there are well established industry and professional groups concerned with the operation, inspection and maintenance of these types of plant. In general, the greater the potential harm and the number of people at risk, the more regulatory controls are in place. This matches the situation in comparable jurisdictions – see the diagram in the [Overview](#) which shows how the Australian Model Regulations layer controls for plant according to risk.

We consider that, although incident and injury rates suggest that current design verification, inspection and registration duties are generally working, there are gaps in coverage and the level of conformity provided by the current regulations.

There is also scope for improving consistency of application of the regulations and reducing compliance costs in relation to imported serially produced plant (i.e. individually or batch produced, but not mass produced).

We consider this would be best achieved by introducing a new central register of plant designs for items of high-risk plant and a central register of those items of plant that present the greatest risk to the public, mainly for the categories of plant currently covered by the Pressure Equipment, Cranes, and Passenger Ropeways Regulations. Existing inspection, competency and accreditation requirements for these types of plant would be broadly retained.

New regulations would apply more consistent processes and standards to the different types of high-risk plant, while including new types of equipment that have become more prevalent, and providing flexibility to allow for new types of plant. Because of the risks to public safety these kinds of plant represent, the provisions would also apply to high-risk plant that is *not* in a workplace, used in carrying out work or operated by someone who is not otherwise a PCBU (as provided by section 12 which applies the HSW Act in these situations where plant is prescribed by regulations as high-risk).

We are also seeking your views on whether territorial authorities should continue to issue permits for amusement devices.

Existing regulatory framework

Pressure equipment, cranes and passenger ropeways

The Pressure Equipment, Cranes, and Passenger Ropeways Regulations apply to the three categories of plant referred to in their title. While “cranes” and “passenger ropeways” are fairly narrowly defined, “pressure equipment” includes a wide range of boilers, refining, heating and cooling equipment found across numerous industries.

The Pressure Equipment, Cranes, and Passenger Ropeways Regulations are the most recent version of legislative controls on these types of machinery that date back to the nineteenth century. Although the types of equipment involved have varied over time, the use of different types of high-risk equipment in workplaces remains pervasive.

The Regulations create duties for operators, manufacturers, importers and suppliers of plant, including a duty for equipment to be inspected by authorised inspection personnel who are engaged by recognised inspection bodies. Inspection bodies are accredited by International Accreditation New Zealand (IANZ), and inspection personnel are certified by a national Certification Board for Inspection Personnel (CBIP).

The controller/owner of an item of plant (usually a PCBU) is required to hold a current certificate of inspection for that item. A prerequisite of a certificate of inspection is that the item of plant has been certified as “design verified”. This is effectively a process of independent peer review of each design.

The sector involves a range of engineering specialties – principally mechanical, but also petrochemical, geothermal, chemical and other disciplines. There are currently 42 inspection bodies recognised to inspect the different types of plant (15 New Zealand based, 3 Australian, and 24 international). There are approximately 80 inspection personnel approved by CBIP, and 8 design verifiers.

The Regulations contain the key duties in relation to the plant they cover as well as accreditation processes and other procedural requirements. They are supported by detailed Approved Codes of Practice for each of the three main types of plant they address. The Codes in turn refer to a wide range of AS/NZS and other Standards. There is no central register of plant, although inspection bodies maintain records of the individual items of plant they inspect and the controller is required to maintain records. WorkSafe do not hold data on the numbers of different plant involved and, in practice, records relating to individual items of plant can be difficult for inspectors and others to obtain. There are similar questions concerning the availability of professional capability to ensure design verification and inspection of all types of plant covered by the regulations.

Pressure Equipment, Cranes, and Passenger Ropeways Regulations have not been revised since promulgation in 1999, although there have been amendments to and revisions of codes of practice and other supporting documents, some of which are now out of date.

Amusement devices

Public safety is maintained for a wide range of fairground rides, most bungee operations (i.e. those that use a winch) and a wide range of other mechanical amusements by the Amusement Devices Regulations 1978.

These Regulations were recommended after a commission of inquiry into the deaths of two teenagers from the failure of a Ferris wheel at Palmerston North in 1973. They were made under the now repealed Machinery Act 1950 and require the two yearly registration (or less) of individual items of plant with WorkSafe and a territorial authority to permit each installation of an amusement device.

Before a device can be registered by WorkSafe it must be inspected and certified by a Chartered Professional Engineer (CPEng). The certifying engineer must be satisfied that the design and construction of the device is safe, is compliant with the technical requirements and maintained and operated safely. To issue a permit, a territorial authority must be satisfied that the device is properly assembled and sited, and is used in accordance with any specified permit to operate criteria.

The Regulations are framed primarily to ensure the safe operation of machinery and require the existence of a “prime mover” (i.e. driving motor) for coverage. However, increasingly this requirement has been interpreted liberally and beyond the intention of the original Regulations because technology and innovation have overtaken the definition.

Registration can be subject to conditions, and there has been an increasing emphasis on imposing conditions on training, operational procedures, and other “human factors” relating to operators of devices.

There are about 350 individual amusement devices on WorkSafe’s register. They are extremely varied and range from small scale trailer rides and amusements aimed at smaller children, to large-scale roller coasters and log-flume rides. A registrar is employed full time in Wellington and inspection and certification is completed by a relatively small and very committed specialist group of professional engineers within Engineering New Zealand. (The Ferris wheel that led to the 1978 Regulations is still operating, in a modified form, and is recorded as Device 117 on the register.)

There have been few deaths or serious injuries on amusement devices since the regulations were passed, although serious injuries and incidents occur from time to time. The most recent fatality on an amusement device involved an employee at Auckland’s Rainbow’s End amusement park in 2008.

The Amusement Devices Regulations are complemented by the Health and Safety at Work (Adventure Activities) Regulations 2016. These Regulations were initially developed in 2011 to address the risks of guided outdoor adventure activities following a five-year period with more than 20 deaths in that sector. They require the maintenance of formal safety systems and processes, and require operators to complete a safety audit before offering or providing operations to the public.

There is some overlap between certain activities covered by the Adventure Activities Regulations and the Amusement Devices Regulations.

Some other high-risk plant is not regulated

There is an increasing use of high-risk plant and equipment in workplaces that is not subject to mandatory controls under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations or other existing regulations. Stakeholders have referred in particular to a range of new types of hoists, lifting equipment, and elevating booms that are sold increasingly and at varying levels of safety.

5.1 The case for change

Accident and injury rates suggest that current design verification, inspection and registration duties are generally working but there are gaps in coverage and the level of conformity provided by the current Regulations. There is also scope for improving consistency of application of the regulations and reducing costs in relation to imported serially produced plant, which is being imported in increasing quantities.

We have identified the following broad drivers for a review of each set of regulations.

5.1.1 Under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations

There are gaps and inconsistencies in the coverage of new types of machinery

We asked representatives of the manufacturing, construction, agriculture and forestry sectors whether the Pressure Equipment, Cranes, and Passenger Ropeways Regulations covered the right types of high-risk machinery and plant and whether there were gaps or inconsistencies in coverage.

We concluded that no types of plant currently covered should be excluded from the regulations, although there is scope for clarifying coverage. Some types of high-risk plant have increased in use and significance since the regulations were passed in 1999 and present risks that may warrant design verification and/or registration of individual items of plant, such as:

- forestry equipment, including for mechanical harvesting and cable logging
- elevating work platforms and building maintenance units
- certain categories of cranes, straddle trucks, swing lifts, and other large scale lifting equipment
- concrete pumping/placing booms and some other hydraulic arms
- hydraulic hoists and some other lifting mechanisms currently excluded
- prefabricated scaffolding.

Most of this equipment is imported and, as discussed below, it can be difficult for businesses and regulators to determine its adequacy and safety.

Certification bodies also advise that the coverage of boilers, pressure vessels, cylinders and piping could be clarified and simplified. The Australian Model Regulations do not include pressure piping but the Pressure Equipment, Cranes, and Passenger Ropeways Regulations do. Conversely, the Australian Model Regulations include smaller cylinders that the HSW Act covers under hazardous substances regulations.

We are consulting generally on the types of plant that should be subject to regulation. This is discussed further below.

It is not always clear to PCBUs or the regulator whether imported serially produced plant is properly constructed and/or maintained and fit for purpose

We consider this to be a significant issue in the construction industry in particular, but also industries such as manufacturing and retail. There is a lack of assurance for businesses importing and purchasing plant from New Zealand suppliers or from overseas, whether new or second-hand (for which there is a significant market). It was described as a particular issue for the types of equipment referred to above, proprietary scaffolding, and access assemblies and componentry.

Design information and inspection records are not easily available to PCBUs and others

The current regulations do not require public records or disclosure of design verification, inspection, or other records in relation to a particular item or model of plant. Controllers of plant are required to have all relevant documents available in the workplace but in practice records are usually held and maintained by inspection bodies. This makes it difficult for the health and safety inspectorate and others to determine compliance, other than for cylinders and other plant and equipment meeting requirements under the hazardous substances regulations.

There are significant gaps in conformity with current inspection requirements

WorkSafe, Engineering New Zealand and businesses all describe gaps in conformity with the current regulations. WorkSafe estimates that at any given time about 75-80 per cent of plant covered by the regulations has a current inspection certificate.

There is limited interaction with the regulator and not a sufficient feedback loop for “type faults” or failures of individual plant items

Although the Pressure Equipment, Cranes, and Passenger Ropeways Regulations 1999 require the notification of a range of incidents and type faults of machinery, and suppliers and manufacturers to remedy such faults, in practice there are very low levels of reporting. This is inconsistent with a culture of continuous improvement and active engagement with the regulator. There is, however, a better level of reporting for incidents involving this equipment under section 56 of the HSW Act.

Design verification requirements are not always clear, and are applied inconsistently

Design verification requirements are a prerequisite for inspection certificates under current regulations, and are usually prepared by inspection bodies with respect to an item of plant that they will be inspecting for the owner. Engineering New Zealand and WorkSafe have advised that this means that inspection bodies have to draw from a very narrow pool of recognised design verifiers for a particular class of equipment.

Practising engineers have also advised that design verifiers apply varying degrees of peer review and professional rigour when verifying designs and seldom recommend amendments or impose conditions on designs before certifying equipment. This raises the question of whether a separate

register of designs would encourage more professional rigour through more transparent accountability and encouraging more consistent practices.

There is also a considerable amount of older plant installed before the 1999 regulations that has not been design verified. This issue is diminishing over time as older plant is decommissioned or significantly altered and therefore requires design verification.

Plant is often altered without peer review or full consideration of the impacts

Practising engineers describe many situations where plant has been altered from original designs without sufficient consideration of the impacts on safety. This is a problem for higher risk equipment, where the Pressure Equipment, Cranes, and Passenger Ropeways Regulations inspection regime applies, but a more prevalent problem for equipment such as elevating work platforms, scaffolding systems, and other such equipment not currently subject to design verification or inspection requirements.

There is an established body of inspection personnel, but some scope for tightening standards

Overall, the current system of accrediting inspection bodies and inspection personnel is seen as effective and working well for the inspection of equipment like that mainly covered by the Pressure Equipment, Cranes, and Passenger Ropeways Regulations.

There is scope for further work to review and refine the competencies for the inspection and certification of particular types of plant.

This could include determining the right scope of engineering practice for particular sectors such as petrochemicals, where particular competency standards should apply, and looking at broader issues such as the use of trainees to inspect and recommend certification of plant.

There is insufficient consideration of seismic performance of certain types of plant and structures in workplaces

Recent earthquakes have placed attention on the seismic performance of not only buildings but plant and structures, including plant and structures both in and beyond buildings. Plant and structures covered by the Pressure Equipment, Cranes, and Passenger Ropeways Regulations are beyond the scope of the Building Act 2004. The Regulations require consideration of seismic performance but the engineering profession and others note a lack of consistency in standards, particularly for older equipment and where there is not a clear indication of the standards that should apply.

Because seismic performance is most relevant to individual items of plant it should be addressed under both design verification processes and in considering the registration of individual items of plant.

Further work is needed to ensure requirements and processes are appropriate for the seismic risks in New Zealand, versus those that Australian or other Standards are based on.

5.1.2 Under the Amusement Devices Regulations

Coverage issues

Because the current Regulations only apply to amusement devices where there is a “prime mover”, there are anomalies and inconsistencies in terms of the amusement devices they apply to. WorkSafe has not, for example, been able to apply the regulations to inflatable devices, some of which are large slides and other structures that present real risks to patrons. There have also been difficulties in applying the Regulations to pedal powered, gravity driven, and inflatable amusements, and inconsistencies in coverage of organised quad bike activities and similar.

The sector also comprises a combination of the traditional fairground rides and amusements, alongside constant development of new rides and experiences for patrons. Operators of amusement devices have requested more clarity of coverage, particularly to allow the inclusion of larger inflatables, and there is support for replacing the current definition of “amusement device” with one that is risk-based and allows for the amusements in use today, while allowing for future innovation.

We consider the issue of coverage to be related to the question of the definition and terminology for the risks that the regulations are to address and are seeking your views on this.

Local authorities’ involvement in permitting is unclear and variable

Operators report wide variation in the extent of involvement and the expectations of territorial authorities in permitting amusement device installations. They have questioned the need for territorial authority permits.

Local Government New Zealand (LGNZ) has expressed concerns that the currently low level of fees discourages authorities from maintaining the required capability and this represents a risk to the public and authorities. LGNZ has surveyed territorial authorities on their involvement in the Regulations and found the wide variability of responses and expertise referred to by operators.

LGNZ proposes removing the permit requirement from the regulations.

It is accepted that if territorial authority permits are retained, there needs to be a consistent standard and application of permits. This could potentially include narrowing the types of amusements for which permits are required and providing clearer direction in the Regulations on aspects of operations, e.g. for ensuring geotechnical support and stability, and operations that require inspection and/or approval for permits.

An alternative response could involve transferring responsibility for inspection to operators themselves, by requiring them to ensure devices are inspected by a competent person.

Increasing the emphasis on safety management systems and audit approaches

As noted above, there is some overlap between certain activities covered by the Adventure Activities Regulations and the Amusement Devices Regulations. For example, some bungee operations that do not use a powered winch are deemed adventure activities and are subject to that regime, while those that use a winch are considered amusement devices.

The Adventure Activities Regulations require the maintenance of formal safety systems and processes, and operators must complete a safety audit before offering or providing the activity to the public. This may include engineering or other certification.

The Amusement Devices Regulations, although focused on the mechanical aspects of the operation, may also require systems audits as a condition of registration.

There has been discussion among operators of bungee and similar activities regarding which regulatory approach or combination of approaches provides the most safety assurance.

Operators have referred to the benefits, despite considerably higher costs, of completing audits under the Adventure Activity Regulations. They support the incorporation of these approaches, as appropriate, into the regulations concerning amusement devices.

It is unclear which NZ or other Standards apply in any given situation

The current regulations do not refer specifically to NZ or other Standards, and which Standards apply to any particular amusement device is left to the professional judgement and discretion of the chartered professional engineer (CPEng) that issues the certificate to allow registration.

Similarly, the regulations do not formally require design verification and the extent to which this is completed is left to the discretion of the certifying CPEng. Engineers tend to design verify imported devices in the light of the European, American or Australian Standard to which they have been designed and built, and adjust for local conditions accordingly.

In practice these requirements seem to be working with respect to amusement devices, but we are consulting on formalising the design verification and registration of designs for amusement devices.

Model engineering and heritage boilers

Model railway and steam engine clubs that carry passengers have been exempt from the requirement for a certificate from a CPEng since an amendment to the regulations made in 2011. Instead they may be registered after an audit by a competent person from another club. The Model Engineering Association of New Zealand Incorporated supports the retention of the existing requirements, but has proposed that model railways operated by their membership are not required to register individually under the regulations.

There has not been a review of the 2011 amendments since they were made. We are seeking views on the suitability of the provisions for ensuring the safety of model engineering passenger rides. We are also seeking views on the optimum level of regulation for (full scale) heritage boilers used on land, such as traction engines.

Importers of equipment may face unnecessary costs

We have heard differing views on the costs faced by importers of amusement devices. Because most amusement devices are serially produced items of plant built to overseas Standards, the issue is similar to that discussed under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations above. We propose a central register of designs of amusement devices as high-risk plant, with corresponding access to Australian registers. We would like your views on whether this would improve consistency of standards and reduce costs for importers of serially produced amusement devices.

There are limited incentives for building competency of those installing, operating and maintaining amusement devices

We think that new regulations should support improvements in competencies within the sector, particularly for workers who operate devices are responsible for patrons' safety.

There are training and competency standards in the current Regulations, but they are criteria based and do not refer to specific competency standards.

Operators have suggested that the mandatory training, inspection and other controls on operators in the Regulations are the most effective and fairest way of achieving an improvement in competencies in the sector. If new inspection requirements are placed on operators, competencies will also need to be specified for those completing inspections.

We want to know what you think would best improve competencies in the sector and whether there is a role for the regulations in this.

5.2 Proposals for change and questions for discussion

5.2.1 Develop new regulations that follow more consistent approaches for all types of high-risk plant

Responding to the issues discussed above, we propose repealing the Amusement Device Regulations and Pressure Equipment, Cranes, and Passenger Ropeways Regulations and developing new regulations that apply to both types of plant in the manner of the Australian Model Regulations, with appropriate modifications for the New Zealand context.

Central registration

There are numerous commonalities and linking principles between the two existing sets of regulations. Amusement devices are the only category of plant requiring central registration at present. This is premised on the degree of risk they represent to the public should a device fail mechanically or otherwise – sometimes referred to as a “risk of catastrophic failure”.

Injury rates suggest that central registration of individual items of plant that present this highest level of risk has worked in the case of amusement devices. We propose that a range of other individual items of plant that present a similar degree of risk and are currently managed under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations would benefit from central registration of individual items of plant. This includes plant such as larger boilers, tower cranes, and passenger ropeways including ski-lifts, gondolas etc. Design registration would be a prerequisite for registration of these individual items of plant.

There is an increasing proliferation of other plant – such as elevating work platforms, hoists and lifting equipment, smaller boilers and pressure equipment, and other equipment that can present significant risks to workers and others – for which there is uncertainty of design and manufacturing standards. We propose a central design register for these types of plant, while maintaining inspection, maintenance and competency requirements. Recognising designs registered in Australian states would maintain standards, while removing the need for many designs to be design verified and registered for use in New Zealand.

The Pressure Equipment, Cranes, and Passenger Ropeways Regulations are based on formal inspection processes. We consider there are advantages in retaining these aspects of the regulations, while strengthening and extending the design verification requirements currently in place and introducing a central register for individual items of plant that present the greatest risk.

References to Standards

We are not proposing the adoption of a single set of design Standards for all or any categories of equipment. In some cases the regulations would refer to particular Standards for the determination of risk levels only. But, as is the case currently, the regulations would rely on guidance and the professional judgement of designers, design verifiers and inspection bodies to determine the appropriate Standards with respect to a particular design or item of plant.

Consistent with this approach, and for transparency of process, the regulations would follow the Australian Model Regulations and require designers and design verifiers to document the accepted standards or design principles that they adopt with respect to a particular plant design.

We prefer this approach for a number of reasons. Most notably, it is flexible and futureproof and avoids the anomalies and inflexibility that can arise from embedding Standards in regulations. It is also most suitable for a small open economy such as New Zealand's, which produces relatively little industrial plant and equipment and imports from each of the world's trade blocs.

Although this places some significance on the credentials and competency of engineers and designers, we consider the engineering professions in New Zealand to be well developed and able to continue this approach.

Including amusement devices

In reviewing requirements for amusement devices we propose retaining the features of the current regulations that are working well, while updating terminology, definitions, linking to HSW Act principles, and reviewing the role of local authorities.

We do not consider there is justification for retaining separate regulations for amusement devices. This is because, in addition to the practical issues described above, the Amusement Device Regulations are based on the now repealed Machinery Act 1950 and only remain in place through transitional provisions, which is not sustainable.

They also operate largely at the discretion of a single certifying engineer for each device, which has worked well in practice to date, but would be improved by strengthening the requirement for independent design verification, as is required under the Australian Model Regulations.

Engineering New Zealand has recommended replacing the term "amusement device" with "engineered recreational activities", which better reflects the broader range of equipment encompassed by a risk-based approach. We propose that the regulations are recast in this way.

We also propose that amusement devices (along with pressure equipment) are covered by the regulations in accordance with the risk classifications contained in schedule 5 in the Australian Model Regulations (see below).

The regulation of amusement devices in Australian states is currently under scrutiny and could change. This stems from the deaths in 2016 of four people after a malfunction of the Thunder River Rapids ride at the Dreamworld amusement park on Queensland's Gold Coast. Prior to that, in 2014 a child died when thrown from a ride at the Adelaide Easter Show. Australian regulators are awaiting the results of an inquiry and any Court action resulting from the Dreamworld incident. In the interim, the Queensland government has announced regulatory changes centred on four key areas:

- mandatory requirements for ride operators to be fully trained and competent
- mandatory major inspections of all amusement and theme park rides
- major theme parks to develop and implement a comprehensive and integrated safety management system
- additional record keeping requirements for show circuit and other amusements.

The changes will be supported by more auditing and inspection activity by the regulator. The development of a code of practice to support the regulations is also being considered.

Improving design standards

We consider that proposed new regulations would improve the safety and conformity of high-risk plant by imposing duties on:

- persons with management or control of an item of plant – to ensure it is either of a registered design or is registered as an item of plant
- persons with management or control of an item of plant – to maintain a range of functions in relation to the plant, including inspection and maintenance, recordkeeping, storage and its safe operation
- designers – to record design standards or principles used in a design
- persons with management or control of an item of plant – to register altered plant designs where an alteration may affect health and safety.

Fees and charges

The Amusement Devices Regulations contain prescribed fees that have not increased since 1978. LGNZ and operators have commented on this in relation to permitting, but registration fees are also very low. However, most of the compliance costs to operators are from certification and inspection to achieve registration, not registration fees themselves, and in most cases this is unlikely to change.

All fees will be reviewed for the new regulations.

Table 1 below contains a summary of fees and charges in the Australian jurisdictions that maintain registers.

5.1	Should amusement devices and plant currently regulated under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations be regulated under a single set of provisions for high-risk plant?
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5.2	Should the regulations refer to “engineered recreational activities” instead of amusement devices?
5.3	Will the proposed registers of plant improve the transparency of the regulations and improve conformity in the manner outlined above?
5.4	Do you agree with the approach to the use of Standards that is proposed?
5.5	Are bungy operations better regulated as “adventure activities” under the applicable regulations, or as high-risk plant?
5.6	Should requirements for log books for amusement devices be strengthened to require better record keeping of operator training, maintenance and inspection of items of plant?
5.7	Should training requirements for amusement device operators be tightened, and, if so, how?

5.2.2 Establish a central register of designs for specified types of plant

We propose establishing a new central register of plant designs, maintained by WorkSafe or a delegated agency, and recognising similar Australian state registers. This would formalise and centralise processes currently performed by certifying inspection bodies under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations, and to some extent CPEng when they certify amusement devices.

Registration would be made by designers or a person with management or control of the item of plant. Applicants would submit the design and an accompanying design verification statement from an approved design verifier for the type of plant.

Registration would be made once only, unless a design was altered (in a way that may affect the health and safety of its operation), when it would need to be design verified and re-registered.

For specified types of plant, the owner and/or operator would need to show they are of a registered design and show a registration number on the item of plant. This would be an authorisation in terms of section 205 of the HSW Act, and section 12 would make the requirement apply to plant whether or not it is being used in a workplace or by a PCBU.

For serially produced plant, this could be a design registration number and certificate from an Australian state jurisdiction. The register would be publicly available, subject to protections of intellectual property rights and commercially sensitive information, and as provided for in the Australian Model Regulations.

For individual items of plant requiring registration (i.e. presenting the highest-risk), a design verification certificate and number would be a precondition for registration.

We consider such a register would address many of the current concerns regarding the quality of imported high-risk plant, while utilising work that has been done in Australian jurisdictions and minimising the costs to businesses. More broadly, creating a formal requirement of design verification will also encourage independent peer review of designs submitted in New Zealand and support the maintenance of professional standards. Engineering New Zealand has indicated that it will support the development of additional engineering expertise for independent design verification.

Overall, we expect there to be minimal additional costs to businesses and others, and some savings where importers of serially produced plant will be able to rely on access to Australian state design registers to avoid repeating design verification and registration processes here. Australian jurisdictions' design registration fees are low, at about \$200 in most cases. If introduced here, the costs of professionals involved would be commensurate with professional services charges currently encountered by owners. Depending on the types of plant that are covered, there will be some additional costs for designers, manufacturers and importers of any equipment not previously subject to regulation.

Application to existing plant

Currently there is considerable high-risk plant covered by inspection requirements under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations, but which was commissioned before the introduction of design verification requirements under those regulations and which it is not practical to design verify. This issue is diminishing over time as older plant is decommissioned or significantly altered and therefore requires design verification. A similar issue will arise with plant currently in use which new regulations will require to be of a registered design.

In response we propose transitional provisions requiring that when an existing item of plant requires a certificate of design registration for registration and this hasn't been completed, that the regulations do not require full design verification, but do require consideration of safety critical aspects of the design as a precondition of registration. For certain categories of high-risk plant, such as cranes, or pressure equipment, there should also be an assessment of the remaining design life for the item of plant.

We do not propose new design registration requirements apply to other categories of existing plant, but we do propose that those requirements apply to new plant after a transitional period. This would result in a similar situation while the new regulations are established.

We would like your views on any costs and/or benefits of a register of designs.

5.8	Should there be a new central register of plant designs, maintained by WorkSafe or a delegated agency?
5.9	What types of plant should be included (based on, but not limited to, the list in Annex One), with attention to the inclusion of pressure piping, cylinders, refrigeration systems, model engineering, heritage boilers and new types of plant discussed at p 92?
5.10	What standards should apply, and what regard should be had, to seismic performance when registering designs, as distinct from individual items of plant?

5.11	Is an “alteration that may affect health or safety” an appropriate threshold for requiring alterations of designs to be verified/re-registered?
5.12	What threshold(s) should apply to the registration of designs of heating/cooling equipment?
5.13	Should designs of model engineering and/or (full scale) heritage boilers be required to be registered?
5.14	Should designs registered on Australian state registers be recognised in New Zealand?
5.15	Would you expect benefits from alignment and interoperability with the Australian state registers?

5.2.3 Establish a central register of individual items of high-risk plant

We propose regulations establishing a new central register of individual items of high-risk plant. It would be operated by WorkSafe or a delegated agency.

The register would formalise and centralise the record keeping function currently performed by certifying inspection bodies under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations and incorporate the current register of amusement devices.

Applications for registration of an individual item of plant must be accompanied by sufficient information by which to identify the plant, a certificate of design registration and number, and a statement that it has been inspected by an accredited inspection body.

The register would be publicly available. Entry would be controlled by WorkSafe under the regulations, with inspection bodies able to maintain the register in respect of the plant they inspect (in a similar manner to the way automotive engineers record warrants of fitness against vehicles recorded in the NZTA database).

This should result in similar or lower costs to those already incurred by inspection bodies maintaining their own records as they do presently.

Although public access is a key component of the registers, there will also need to be safeguards to ensure that intellectual property rights and commercially sensitive information are not compromised for owners and operators of equipment, and inspection bodies. Similar issues were encountered and addressed with a register operated by WorkSafe for hazardous substances sites, and we are confident that this could be achieved for the proposed new registers, as is the case with Australian state registers.

As noted above, there would be some new costs to owners and operators of existing equipment that would require registration, but this would be offset against costs already incurred through record keeping and administration costs of engineering firms.

As discussed above, we seek your views on the categories of individual items of plant that warrant registration. As a basis for discussion, the Australian Model Regulations include a range of lifting and access equipment that are currently excluded from the Pressure Equipment, Cranes, and Passenger Ropeways Regulations. Some of this, such as elevated work platforms, is subject to inspection periods under approved codes or guidance from WorkSafe. We are also aware that codes or guidance recommend some items of forestry plant be inspected by CPEng. We suggest that this equipment should be registered as items of plant.

There are also emerging issues with the use of hydrocarbons and other flammable or toxic refrigerants in cooling and heating systems. MBIE is consulting on this issue separately, but is interested in your views on what would be a suitable threshold for including such equipment in a high-risk plant register.

Australian jurisdictions charge a range of fees for the registration of individual items of plant, depending on the size and complexity of the information that must be assessed for registration and the ongoing assessment. These fees are summarised in the table below. We would not expect these costs to be high for initial registration in New Zealand because of the existing role of inspection bodies in maintaining inspection and other records in relation to plant.

Table 1: Registration fees comparison

State	Registration of design fee (once only)	Item of plant registration	Duration of item registration
Queensland	114.10	85.50 to 1,860	1 year
New South Wales	278.00	70.00 (2.00 per additional item at same time)	1 year
Victoria	284.00	--	--
South Australia	121.00	350.00	5 years
Tasmania	83.74	83.74 (15.80 renewal)	5 years
Western Australia	375.00	108.00	ongoing

5.16	Do you support the introduction of a centrally held register of individual items of high-risk plant currently subject to the Pressure Equipment, Cranes, and Passenger Ropeways Regulations?
5.17	What types of plant should be required to be registered (based on, but not limited to, the list in Annex Two), with attention to the inclusion of pressure piping, refrigeration systems, model engineering, heritage boilers and new types of plant discussed at p 92?
5.18	Should forestry plant, like that recommended to be inspected by CPEng under forestry codes or guidance, be required to be registered?
5.19	What scale or risk categories of pressure equipment should be required to be registered?
5.20	What threshold(s) should apply to the registration of individual items of heating/cooling equipment?

5.21	Should individual installations of model engineering and/or (full scale) heritage boilers be required to be registered?
5.22	Do you agree with the proposed requirements for registration?
5.23	Should registration be for a 5-year period for all items of plant or for a lesser period for different items of plant (refer to inspection requirements below)?
5.24	What regard should be had, and what standards should apply to the seismic performance of individual items of plant?
5.25	Should specified types of existing plant be required to be assessed for their “remaining design life” and/or should safety critical aspects of their design be reassessed as a precondition of their registration as items of plant?
5.26	Should other categories of existing items of plant be exempt from the requirement to be design registered before registration as items of plant?

Retain current accreditation requirements for inspection of individual items of plant

As noted above, stakeholders are agreed that regular and rigorous inspection, as distinct from registration itself, is the critical determinant of plant safety. This is the principle on which the current Pressure Equipment, Cranes, and Passenger Ropeways and Amusement Device Regulations are premised, and we propose that current inspection requirements and competencies are retained. For amusement devices this would see the retention of the requirement for a suitably qualified CPEng to certify an individual item of plant for registration.

For equipment under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations it would mean the retention of the existing accreditation processes for inspection bodies and inspection personnel. Discussions with stakeholders have indicated support for the retention of existing inspection bodies and personnel and suggest that the current professional competencies should be retained, while working with Engineering New Zealand and WorkSafe to make adjustments to codes of practice as appropriate. There is currently no provision in the regulations for a fee for authorising inspection personnel. We are considering whether there should be a provision to allow this.

There is also scope for extending the range of organisations able to accredit inspection bodies.

Retaining existing accreditations and competency requirements will mean there are limited additional training or accreditation costs compared with the current regulations.

There could be some additional costs to business arising from the inclusion of new types of plant, or if consultation suggests raising standards compared with those included in current regulations and codes.

These would be new costs for the affected businesses, although in many cases responsible businesses are already investing in engineering inspection and maintenance as part of good health and safety practice, e.g. as per approved codes of practice recommendations or in fulfilment of the general duties under HSW Act.

5.27	Should existing accreditation requirements for inspection bodies and inspection personnel be retained for equipment currently under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations?
5.28	Should the current requirement for a CPEng (or equivalent) to certify and inspect amusement devices be retained?
5.29	Should inspection bodies and personnel be able to maintain the register, based on their inspection work?

5.2.4 Retain current inspection periods and operational requirements for different categories of plant

Currently the Amusement Device Regulations require inspection for registration at least every two years. The Pressure Equipment, Cranes, and Passenger Ropeways Regulations allow inspectors to recommend issuing certificates for a period in accordance with a recognised industry standard. Approved codes of practice and guidance provide further detail on appropriate inspection periods. The Regulations provide that certificates of competence must only be issued to people who have the knowledge, training, skills, and experience to perform expected activities competently. More detailed competency requirements are set by the qualification issuing agency (currently CBIP).

We are not proposing any relaxation of the current requirements, but suggest there would be benefits in reviewing what is contained in regulations versus approved codes of practice, safe work instruments or guidance issued by WorkSafe.

The Australian Model Regulations specify inspection and competency requirements in relation to particular categories of plant. The following table lists these provisions by comparison with existing provisions under the Amusement Device and Pressure Equipment, Cranes, and Passenger Ropeways Regulations.

Table 2: Duties relating to high-risk plant: Comparison between Australian Model Law and current regulations

Australian Model Regulations		New Zealand Regulations Pressure Equipment, Cranes, and Passenger Ropeways Regulations	
214	Powered mobile plant: General control of risk	Duties of controllers	
215	Powered mobile plant: Specific control measures	8	Information to be held by controller
219	Plant that lifts or suspends loads	9	Accident notification
220	Plant not specifically designed to lift or suspend a person	10	Duties in relation to operation
221	Plant used in connection with tree lopping	11	Duties in relation to repairs or alteration
222	Industrial robots	Duties in relation to unsafe equipment	
223	Lasers	12	Employee's duty
224	Pressure equipment	13	Investigation of potentially unsafe equipment
225	Scaffolds	14	Notification of type fault
		15	Correction of type fault

Australian Model Regulations		New Zealand Regulations	
235	Major inspection of registered mobile cranes and tower cranes		
236	Lifts		
237	Records of plant in 5.3 (high-risk)		
Controls for amusement devices and passenger ropeways		Amusement Device Regulations	
238	Operation of amusement devices and passenger ropeways -- daily checks, operation without passengers, checks recorded	5	Device must be examined before certificate issued
239	Storage of amusement devices and passenger ropeways	7	Certificate may be issued subject to conditions
240	Maintenance, inspection and testing of devices and passenger ropeways	12	Alteration of or damage to device
241	Annual inspection of amusement devices and passenger ropeways	14	Erection, repair and maintenance of amusement device
242	Log book and manuals for amusement devices	15	Owner to inspect device and keep records of inspection
		16	Inspector may require repairs
		18	Notification of accident
		19	Notification of incident
		20	Operators to be trained
		21	Duties of operators
		Schd2	Devices where engineer must be satisfied of further matters

We are seeking your views on the best means of specifying inspection periods and competency requirements for the operation of particular categories of plant.

We propose to review the licensing and competency of operators of high-risk plant when developing separate regulations for high-risk work, but in the interim we are interested in your views on the level of detail in describing competencies that should be retained in regulations for plant and structures.

5.30	What level of detail should the regulations specify concerning the periods of inspection, the applicable standards, and the matters subject to inspection for different classes of plant?
5.31	What level of detail in describing competencies should be included in regulations for high-risk plant?
5.32	What inspection requirements should be contained in safe work instruments or approved codes of practice?

5.2.5 Remove or reduce the requirement for amusement devices to hold a territorial authority permit to operate

The nature of amusement devices, and the legal environment in which local government operates, has changed considerably since the Amusement Device Regulations were passed in 1978.

Responding to concerns raised by Local Government New Zealand and amusement device operators, we propose consultation on the following options, or combination of options, to replace the current territorial authority permitting requirement:

- Retaining the current requirement
- Requiring permits for temporary installations only
- Requiring permits for installations above an agreed level of risk (e.g. AS/NZS 3533 category 3 or more)
- Removing the requirement
- Replacing the requirement with specific inspection requirements (e.g. geotechnical, access, or electrical safety) for competent personnel employed or engaged by operators.

None of the options for change will incur additional costs to local authorities, although, depending on the degree of involvement by authorities, there will be additional fees for operators.

We are seeking local governments' and the sectors' views on the impact on safety of the different options for change described above.

5.33	Should territorial authority permits continue to be required for amusement device installations?
5.34	Which of the above options for territorial authority involvement in permitting is most suited to the risks from amusement devices?
5.35	Who should meet the costs of any territorial authority permitting?

5.2.6 Review the notification requirements for incidents involving individual items of plant, and “type faults” of registered designs

Pressure Equipment, Cranes, and Passenger Ropeways Regulations contain a requirement for the controllers of equipment to notify manufacturers and suppliers of type faults of individual items of plant.

Having received notice, manufacturers and suppliers are required to investigate and remedy any such type faults in plant they have manufactured or supplied. Although the Australian Model Regulations contain a range of duties for manufacturers and suppliers etc. of plant, they do not contain this specific provision. We are seeking your views on whether it should be retained in new regulations for high-risk plant.

We are also seeking industry's views on the incidents, other than injuries, that should be notified to WorkSafe in addition to those currently listed in section 24(1) of the HSW Act.

As discussed above, the levels of notification of all such incidents to WorkSafe is low.

5.36 Should the existing "type fault" provisions in the Pressure Equipment, Cranes, and Passenger Ropeways Regulations be retained in new regulations for high-risk plant?

5.37 Which incidents involving different categories of high-risk equipment should be notifiable to WorkSafe?

5.2.7 Further regulatory impact analysis and scoping of fees and charges

We will complete costing and regulatory impact analysis of final proposals.

5.2.8 Additional requirements on upstream duty holders for high-risk plant

Section 4 discusses the design, manufacture, import, supply, and installation/commission/construction of plant and structures. Upstream PCBUs are in a strong position to eliminate and minimise risks to health and safety in plant and structures.

Given the higher risk nature of this equipment we propose additional requirements on designers, manufacturers, importers, and suppliers of equipment required to be design and individually registered.

This is consistent with the approach in the Pressure Equipment, Cranes, and Passenger Ropeways Regulations which provide duties on designers, manufacturers, importers, and suppliers of equipment covered by those Regulations.

We propose basing the additional requirements on the Australian Model Regulations to work in with the proposed central registers. We propose:

- requiring designers of registered plant (either item or design) to record information about design and control methods, the information provided to the manufacturer under the Act and any regulations, and the standards or engineering principles used.
- requiring these records to be available for inspection under the Act and by the design verifier
- for equipment the design of which is required to be registered, prohibiting importers/suppliers/manufacturers from supplying plant that is not registered.

Another option is to rely on any general requirements on designers, manufactures, importers, etc. for all plant (see **Section 4**).

5.38 Do we need additional requirements on upstream duty holders in relation to high-risk equipment?

5.39 Do you agree with a prohibition on supplying plant that is not design registered when it is required to be?

5.2.9 Assessing the impact

We will use your responses to compare proposals and make recommendations for government policy decisions. Clear information on the impacts on your business, work or workplace will help us to choose the best options for change, and complete better regulatory impact analysis, including cost benefit analysis for proposals.

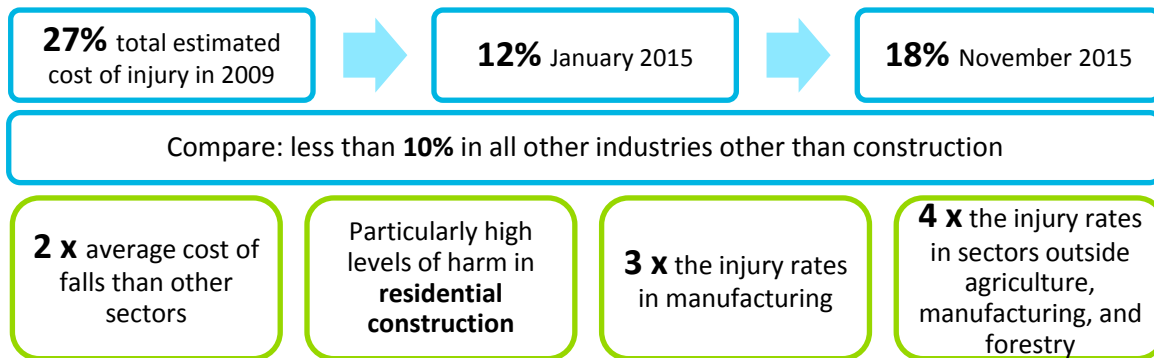
Some examples of costs and benefits include, but are not limited to things like improved health and safety; time; compliance burden; training costs; need for specialist external advice; business efficiencies, for example, increase productivity; investment in capital expenditure.

5.40

Based on the proposals you have commented on in this section on high-risk plant, are there any significant costs and/or benefits that will affect you or your organisation?

6 Working at heights and scaffolding

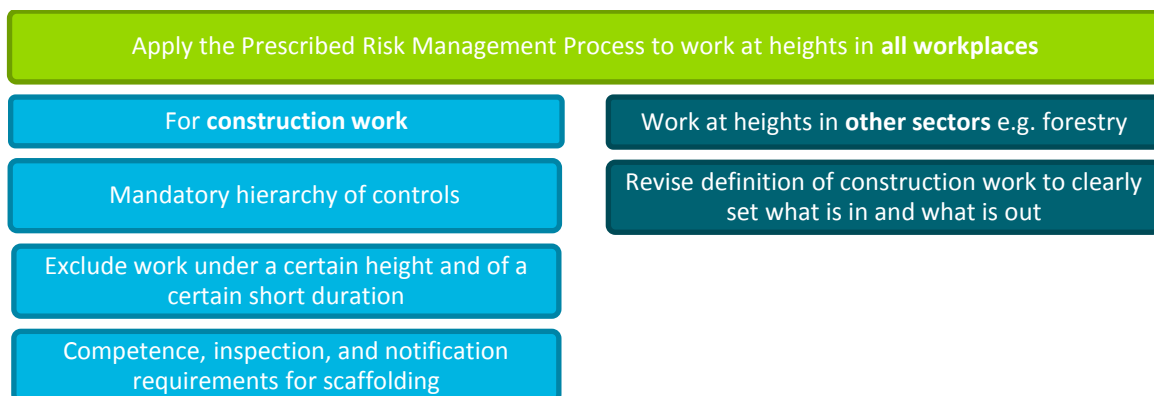
Falls from heights cause significant harm in the construction sector.



We know there are some problems that people are dealing with when working at height.



Here are some ideas to fix these problems. Tell us what you think.



You'll find more information about these problems and ideas in the detail of this section.

We are using this public consultation process to seek views on options to develop new regulations concerning work at heights and scaffolding.

Although scaffolding is directly related to plant and structures, work at heights has broader application, and regulations may therefore be more appropriately made by amendments to the Health and Safety at Work (General Workplace and Risk Management) Regulations 2016.

We will address this question after consultation on the content of regulations themselves.

The management of risks from work at heights involves a broad range of trades, occupations and sub-sectors. It is a leading health and safety issue for the construction sector, involving considerable effort and costs for businesses.

Recent changes to requirements for residential construction have been controversial

Scaffolding and access for work at heights on larger scale and commercial construction projects has been well regulated, and with continuing regulator involvement for at least the last 60 years. Scaffolding has been subject to legislation in New Zealand since the early 20th Century, and regulation of construction work generally was strengthened following a major collapse of scaffolding at the DIC Building in central Wellington in 1959.

Until 2012 residential construction, particularly single-storey housing, had been considered by many in the industry as exempt from scaffolding and other requirements to manage heights that applied to commercial construction.

Guidance published that year recommended the use of safety constraints (e.g. scaffolds, edging, or safety nets) for all single-storey new builds. They were accepted by the commercial building construction sector, but met some resistance from residential builders.

Existing regulatory requirements

Although the general duties of the Health and Safety at Work Act apply, New Zealand regulations concerning work at height contain very few mandatory controls and do not reflect construction industry practice.

Health and Safety at Work Act

Section 36 of the HSW Act creates the general duty of care for a PCBU to ensure the health and safety of all workers and others affected by the work of the business or undertaking. The general duty also refers to the PCBU's provision of a work environment that is without risk to health and safety, safe plant and structures, and safe systems of work.

Section 37 of the HSW Act creates a similar duty for a PCBU who manages or controls a workplace.

Both duties must be met to the extent it is “reasonably practicable” for the PCBU to do so, and this standard is defined at section 22 of the HSW Act. This is the standard for the requirements set in the current guidelines for working at heights and for scaffolding.

Mandatory controls set under the Health and Safety in Employment Regulations

Regulations 21 and 22 of the Health and Safety in Employment Regulations have been retained under the HSW Act.

Regulation 21 – “the 3 metre rule”

This regulation appears under the heading “Duty in relation to heights at some workplaces”. The scope of the regulation has therefore been interpreted differently at different times, but is currently read as applying to all workplaces, other than where agricultural work is performed.

The provision is generally referred to as “the 3 metre rule” and requires an employer in control of a workplace to do what is reasonably practicable to ensure that where any employee may fall more than 3 metres, means are provided to prevent them from falling. The means provided must be suitable for the purpose for which they are to be used.

Regulation 22 – scaffolding in construction work

Regulation 22 appears under the heading “duty in relation to scaffolding in construction work” and is the most recent iteration of scaffolding legislation first passed in New Zealand in 1906. It requires PCBUs to provide and maintain scaffolding in any construction work where the work cannot be carried out safely without it.

The regulations define “construction work” very broadly to include many different types of engineering works and structures, and all stages in their lifecycle, including building, repair and maintenance.

The regulations also describe “scaffolding” very broadly to include fall arrest systems, trestles and other basic scaffolding systems beyond the tube and coupler systems most commonly used on building sites. In practice, regulation 22 provides a regulatory basis for the management of work at heights on construction work. The provision is read in addition to the regulation 21 requirement, but in practice its broad scope makes the “3 metre rule” redundant in construction work.

The regulations do not set a single limit for heights at which “scaffolding” must be used. They require that scaffolding/fall prevention is provided by all PCBUs commissioning construction work or with management or control of a workplace where construction work is being carried out. Scaffolding provided must be:

- suitable for the purpose for which it is to be used; and
- properly constructed of sound material; and
- constructed with a sufficient reserve of strength having regard to the loads and stresses to which it may be subjected; and
- sufficient in amount for the purpose for which it is to be used.

Further scaffolding requirements

The Health and Safety in Employment Regulations also set competency requirements for persons constructing and using different types of scaffolding/fall prevention systems. They also set requirements for notifying WorkSafe of certain construction work, including the erection or dismantling of scaffolding over 5 metres in height.

6.1 The case for change

We have identified the following reasons for reviewing the regulations.

6.1.1 Work at height remains a significant source of harm for the construction sector

Falls from heights occur in all sectors, but rates continue to be significantly higher in the construction sector, particularly residential construction, and amongst the building trades.

Serious injury rates from falls from heights in the construction sector are persistently high. Although rates have nearly halved since 2009, they are still three times that of manufacturing, for example, and four times that for workplaces outside the four high-risk sectors of construction, manufacturing, forestry and agriculture.

Within the construction sector, three sub-sectors have significantly higher rates of injury from falls from heights – “residential building construction”, “building completion services” (carpentry, glazing, cladding etc.) and “building installation services” (plumbing, electrical etc.). Each of these sub-sectors is strongly associated with residential construction.

In terms of occupations affected, “labourers/other” (in practice, including a range of skilled construction workers and technicians) account for the most falls from heights on construction work, followed by “carpenters/joiners”. Together they make up over two-thirds of all falls from height in the sector, and each of these occupational groups has disproportionately high rates. Painters, plasterers, plumbers and electricians account for most of the remaining third of injuries, but a range of other trades are also affected.

One indicator of the relative significance of injury risks faced by industry is “total estimated life costs”. In January 2009, WorkSafe calculated that falls from heights accounted for 27 per cent of the total estimated life costs from all injuries in the construction sector. This figure had reduced to 12 per cent in January 2015, but increased again to 18 per cent by November 2015 (last available data). In all other industries falls from height are less prevalent, and account for less than 10 per cent of the total estimated life costs of injury.

Falls in the construction sector also tend to result in worse injuries. Average costs of individual claims for falls from height in the construction sector have been twice those for other sectors.

Changes in industry practice resulting from WorkSafe’s Preventing Falls from Heights campaign that began in 2012 have had significant effect in reducing injury rates for the construction sector. A focus on fall protection on single-storey houses and increased guidance has assisted the inspectorate and the industry alike. Notwithstanding this, aspects of the programme and guidance have been contentious and we consider it timely to review the guidance and regulations after five years of significant change, and progress in the industry.

6.1.2 Current regulations are ambiguous in their requirements and coverage

Some trade groups and independent observers have identified a lack of clarity for builders and others managing the risk of falls from heights in workplaces.

Sector groups we have spoken to describe inconsistency in interpretations of the Regulations and guidance, and variations in practice between regions and subsectors – even between individual inspectors or sector groups.

Compared with those in Australia and the United Kingdom, the current regulations do not describe a process for managing the risk of work at heights, or criteria for assessing what is “reasonably practicable”.

Regulations in other jurisdictions prescribe a clear hierarchy of mandatory controls for managing work at heights in construction. This may or may not be accompanied by a threshold, usually 2 or 3 metres, to make it easier for lower level, or residential construction work to be able to meet the hierarchy of controls by alternative means.

Similar to this, another issue raised by the sector is a need for a clarification of what “short duration” work means. This may be a matter of regulation or guidance, or both.

6.1.3 While residential construction suffers higher injury rates, injury prevention costs are proportionately higher and are often imposed directly on clients

Independent reports have highlighted the costs to residential builders of meeting current requirements if they are interpreted to require a “full scaffold” to the AS/NZS Standard in all circumstances.

There is evidence of a reduction in injury rates since the release of the 2012 guidelines for residential construction with accompanying productivity improvements due to the safer work environment, and improved access to the work surface for different trades.

There is some evidence of falling costs of scaffolding and equipment as changing work practices are embedded in the industry and, in some areas at least, there is increased capacity in the supply of scaffolding, and increased efficiencies and competitiveness amongst suppliers.

There has also been considerable innovation and uptake of new ways of working in the sector, such as the use of lighter and modular types of scaffolding systems, safety nets, and ladder stand platforms. However, there is considerable variation in quality and the adequacy of installation.

Notwithstanding these developments, the relative cost of scaffolding as a part of residential construction is often higher than for commercial construction.

6.1.4 It is unclear which NZ or other Standards apply in any given situation

Stakeholders referred to a wide range of Standards that apply to various aspects of work at heights, and that it was not clear which applied in any given situation.

Additionally, where guidance refers to Standards it is not always clear why one has been chosen over another and where compliance with the HSW Act could be achieved by another Standard or means than that specified in guidance.

Stakeholders felt that the inspectorate was not always able to clarify the options in these situations, which could leave builders and others uncertain about whether what they are doing is consistent with guidance, or the HSW Act.

6.1.5 Requirements for builders can increase costs, which may lead to homeowners and others completing work for themselves, perhaps less safely or competently

It has been suggested that some homeowners may be electing to do the work themselves rather than engaging a professional. Homeowners working on their own homes are excluded from duties under the HSW Act. The extent to which homeowners are choosing to complete work at height themselves is unclear, as is its impact on injury rates for homeowners. There have been references to a possible increase in our discussions with industry groups, mainly from builders. They have described the issue as emerging, rather than prevalent. Reliable injury data from the ACC Earners' Account is difficult to assemble and not conclusive.

We are interested in evidence of increasing amounts of work at heights being undertaken by homeowners and others on their own properties to avoid scaffolding or other access costs, and the impacts on injury rates.

6.1.6 Regulatory requirements for scaffolders to hold certificates of competence are out of step with industry practice and training

There are ambiguities in the regulatory requirements to use a certified scaffolder and to notify WorkSafe of the erection or dismantling of scaffolding over 5 metres in height. It is not clear whether the requirement should apply to all types of scaffolding, or if this remains a suitable threshold for requiring a certified scaffolder to build or inspect scaffolding in all circumstances.

Current regulations refer to three categories of scaffolding certificates of competence: basic, intermediate and advanced. The categories are no longer relevant to the scaffolding systems in regular use (eg proprietary systems versus "tube and clip"), the standards being applied by industry, or the prescribed qualifications in use.

6.1.7 Notification requirements are unclear

It is unclear to the sector what the purpose of the notification of scaffolding over 5 metres in height is, and the uses that are made of the notification information.

While general notification requirements under the HSW Act for different types of work are yet to be reviewed, at this stage we are interested in industry's views on the types and/or height of scaffolding that should be notifiable to WorkSafe.

6.2 Options and questions for discussion

6.2.1 Apply the Prescribed Risk Management Process to work at heights in all workplaces

We propose that work at heights in all workplaces is subject to the Prescribed Risk Management Process. For construction work this would be in addition to the mandatory controls discussed below.

The current WorkSafe guidelines for work at heights apply to all workplaces, and, notionally at least, are not limited to construction work. But in practice, the situations described in the guidance are more concerned with access issues arising during construction work. The guidelines therefore don't apply as well to more permanent installations, such as industrial plant and structures, or in situations such as forestry work, undertaking tree pruning for example.

The Prescribed Risk Management Process only applies to particular risks when specified in regulations. Currently these include work in confined spaces, loose materials and work under raised loads. We are proposing they apply to further plant and structures under the new regulations.

This approach provides a generic process of risk management, with additional criteria or thresholds included in relation to particular hazards, while allowing the flexibility needed for a wide range of work and workplaces.

We would expect the application of the Prescribed Risk Management Process to further improve clarity and consistency for workplaces, without requiring mandatory controls.

We would expect the impact on workplaces would be mainly procedural in nature, and the costs marginal.

6.1 Should the Prescribed Risk Management Process apply to work at heights in all industries? Why/ why not?

6.2.2 Set mandatory controls for work at heights in construction work

As discussed above, we consider that the nature of construction work and the sector's extensive use of sub-contracting mean that mandatory controls are justified.

The current regulations do not reflect construction industry practice, and the resulting gap has been filled through a range of guidance, which has been subject to variation in interpretation and acceptance.

We propose new regulations that better reflect industry best practice and provide a clearer basis for the development of guidance.

There is a case for imposing a mandatory hierarchy of controls for PCBUs with management or control of the workplace to address the risks of work at height, as is the case with other critical risks for the sector, such as excavations or work in confined spaces.

We consider this a preferable solution to imposing either one or more outcome requirements (such as to scaffold in all cases, or to always have a harness) or a process requirement (such as to complete a control plan or method statement for all work where there is a risk of falls).

This approach is also consistent with regulatory practice in Australia and the United Kingdom, although jurisdictions in both of those countries have accompanying procedural requirements and specific regulatory requirements for construction contracts.

We propose a mandatory hierarchy of controls for managing the risks of work at heights for the construction sector. It would be based on the Australian Model Regulations, which essentially uses the (descending) hierarchy of providing:

- a safe working platform (e.g. tubular scaffold or elevating work platform etc.), or, if not reasonably practicable
- fall prevention (e.g. edge protection, or railing on a sloping roof), or, if not reasonably practicable
- fall arrest (e.g. static line and harness, or nets).

The standard that would apply to the application of each step, or combination of steps, in the hierarchy, would be “reasonably practicable”, unless another threshold or criteria is included in the regulations which removes one or more step in the hierarchy of controls. We discuss two possibilities for this below.

There is further scope for using the regulations to set an acceptable standard of ‘safe working platform’ for different work situations, i.e. light vs heavy duty. This is currently specified in guidelines or by reference to Standards, but the Construction Regulations 1961, which were repealed in 1992, specified different standards of working platform according to loadings and height above ground and allowed, for example 600mm working platforms for loads of up to 100kg at 2.4m centres.

An alternative is to allow the use of approved proprietary systems in specified circumstances, or, as another example, a Safe Work Australia code of practice for work at heights in residential construction includes approved designs for timber scaffolds of up to 6m in height.

It is also important to remember that the hierarchy of controls would need to be read in conjunction with the need to review the controls required by the Prescribed Risk Management Process, as discussed above.

We consider the proposals discussed above will make compliance easier for the construction sector and reduce costs by making obligations clearer. It will also improve the ability of WorkSafe to develop guidance.

6.2 Should there be a default hierarchy of controls for work at heights on construction work?

6.3 Should the hierarchy of controls be the same as that described above?

6.4 Should the standards for moving from one step to another in the hierarchy of controls be ‘unless reasonably practicable’?

6.2.3 Revise the definition of “construction work”

Because of its significance for the regulation of work at heights and excavations, we propose replacing the current definition of “construction work”, which is contained in the Health and Safety in Employment Regulations, with a modified version of the definition contained in the Australian Model Regulations. The current definition is extremely broad in coverage, and includes the repair and maintenance, cleaning and removal of many different types of structures. It originated in the Construction Act 1959 and is formulated to list a series of activities as they apply to an inclusive list of different kinds of physical works), with a following list of illustrations of included situations, and an exemption of mines, quarries or tunnels.

The Australian Model Regulations follow a similar but slightly narrower definition, which is the same, but instead of listing the types of physical works applying, there is reference to “any structure” as defined in the primary Act. In particular, the Australian definition includes more detailed description of the aspects of prefabrication and pre-assembly that are considered construction work, as distinct from manufacturing, and a range of other functions that are ancillary to the actual construction of buildings.

The table in [Annex 4](#) summarises and compares the two definitions.

We think there is merit in using the Australian definition, with modification to include any additional activities that would otherwise be lost from the current definition. We think the approach better reflects current construction industry practices, and is more adaptable to future developments, such as increasing use of prefabrication techniques.

We are seeking your views on this proposal, particularly regarding whether the listed activities of cleaning and removal of any structure should be included in the definition.

6.5 Should the definition of “construction work” be revised to follow the Australian model regulations formulation?

6.6 What types of work or workplaces included in the current definition should be excluded?

6.7 What types of work or workplaces not included in the current definition should be included?

6.2.4 Set a height threshold below which some or all of the steps in the hierarchy of controls would not apply to work at heights on construction work

We accept that if the regulations were to provide for a “safe working platform” to be required for all work, then this would be problematic in many situations, notably where the work surface is of limited height or the work is of limited duration.

The residential construction sector and others completing single-storey construction work have asked for clarification in the regulations as to whether or not scaffolding is needed on single-storey construction in all cases. In response, we propose a height threshold below which a “safe working platform” can be achieved by other means than that specified for tubular scaffolding specified in the New Zealand Standard. If that approach is acceptable, we also want to know your views on the best way of describing an alternative standard. This is the simplest and clearest option and as used in other jurisdictions and previously in New Zealand.

We are seeking the construction sector’s views on the following options for creating a threshold:

- no height threshold (as in the UK, for example)
- 2 metre threshold (as in the Australian Model Regulations and most state jurisdictions)
- 3 metre threshold (as in Western Australia and Queensland).

Not creating a height threshold would, as now, place reliance on the term “reasonably practicable” for determining the situations where one or more mandatory controls are not required. This could be the subject of guidance, as now, or be subject of criteria included in the regulations themselves.

A threshold would reduce costs for those builders and others who have used full scaffold for all single storey structures to date, and who could move to more economic alternatives, such as trestle systems.

6.8 Should the regulations set a height threshold below which the full hierarchy of controls do not apply to work at heights in construction work?

6.9 If a height threshold is used, should it be set at 2 metres or 3 metres?

6.2.5 Set a work duration below which the full hierarchy of controls would not apply to work at heights on construction work

The current guidelines provide some guidance on what is considered short duration work at heights by saying that it is light work, involving a paint brush rather than a sledgehammer, and “measured in minutes and not hours”. However, although this suggests “no more than an hour”, this too depends on the nature of the work being done, materials and tools in use, and other factors, and so is subject to wide variation of interpretation.

Historically, regulations would describe these situations as “work from ladders” and prescribe additional controls on the use of ladders on construction work.

Some groups have asked that, if a hierarchy of controls is adopted, the regulations clarify expectations for people undertaking short duration construction work, such as satellite dish and alarm installation, and small-scale repairs or maintenance on buildings.

We are seeking the construction sector’s views on how this may, or may not, be achieved by one or more of the following options:

- no work duration threshold, leaving guidance and individual PCBUs to determine what is “reasonably practicable” in the circumstances when working through a mandatory hierarchy of controls
- a fixed period of time or total duration for work being completed, under which the hierarchy does not apply
- criteria for determining a maximum duration for work to which the hierarchy does not apply – referring to factors such time, materials, tools, height, etc.
- describing the circumstances where ladders may be used for short duration work, and conditions of use, such as attaching the ladder, using a second person, etc.

6.10 Should the regulations set a work duration threshold at which the full hierarchy of controls apply to work at heights in construction work?

6.11 If so, is there a preferred option from the list above?

6.2.6 Changes to regulations concerning scaffolding

The scaffolding sector is well regulated and supported by the construction industry generally.

There is a high level of uptake of qualifications, with skills shortages reported in some regions. If competency requirements are varied there could be some recertification costs for businesses.

We are not proposing wholesale changes to the regulations concerning scaffolding or Standards, but the changes discussed above would impact on the use of different types of scaffolding, edge protection and fall restraint equipment for residential construction, building maintenance and repair businesses.

We also propose some minor changes to the references to certificates of competency for scaffolding contained in the regulations, to better align with sector practice and potentially improve the availability of training and skills to the sector.

We are also proposing the continuation of the requirement to register the design of proprietary scaffolding systems, mobile elevating work platforms, and mobile scaffolds and access systems for workplaces, see [Section 5](#).

Review the competency and adequacy requirements for the construction of scaffolding

As noted above, current regulations contain a single provision specifying the fitness for purpose and adequacy of scaffolding in construction work, and another provision requiring persons constructing scaffolding over 5 metres in height to hold a certificate of competence issued under the Health and Safety in Employment Regulations.

The Australian Model Regulations do not contain adequacy or fitness for purpose requirements for scaffolding. There is a single provision requiring construction by a competent person of any scaffold where a person or thing may fall 4 metres or more. The competent person must notify the responsible PCBU that it is complete. There are requirements that the scaffold is inspected by a

competent person at least monthly and that unauthorised access to unattended scaffolds is prevented.

We propose a new single provision based on the Australian Model Regulations within the plant and structures regulations.

We are also seeking industry's views on whether there should be an additional reference to the adequacy and fitness for purpose of scaffolds as under current regulations.

Training providers and sector groups have pointed out that the current regulations refer to categories of scaffolding which are not aligned with qualifications offered through the qualifications framework. We are therefore seeking the sector's views on the best means of specifying competencies for those who construct and/or inspect scaffolding.

We will be seeking industry's views on the competency requirements for rigging, industrial rope work and work placement systems at a later date.

6.12	Should the Australian Model Regulation requirement for scaffolding be adopted?
6.13	Should the regulations retain the current requirement for the fitness for purpose and adequacy of scaffolding?
6.14	Should the authorisation of competencies for scaffolding (currently by certificates of competence) be required of individuals and/ or PCBUs?
6.15	Should the 5 metre threshold for an authorisation to erect scaffolding (currently a certificate of competence) be retained, or should it be set at 6m or higher?
6.16	Do the current classes of basic, intermediate and advanced scaffolding certificates of competence reflect the levels of competency required by the industry?
6.17	If not, what classes of scaffolding should replace them and how should this reflect increasing use of proprietary systems instead of 'tube and clip' scaffolds?
6.18	Who should authorise competency for scaffolders?

Retain the existing notification requirement for scaffolding work but review inspection requirements

Stakeholders have questioned the requirement to notify WorkSafe of all scaffolding work that involves a risk to the worker of falling 5 metres or more, and questioned the uses to which the notifications are put.

Notification is primarily a matter for the regulator. We are working with WorkSafe to determine its needs and/or uses for notifications of different construction work and other hazardous work more generally.

In the interim, and in the context of developing regulations concerning scaffolding standards, we are interested in the construction sector's views on the suitability of the current 5 metre notification threshold.

We are also seeking the sector's views on the best means of specifying competencies for those who inspect scaffolding. WorkSafe guidance currently requires that scaffolding in place must be inspected by a certified scaffolder weekly. In addition, scaffolding in a range of situations and over 33 metres in height must be designed or design verified by a CPEng.

6.19	Who should check scaffolding installations, and how often?
6.20	What competency standard/s should be required for the inspection of scaffolds, bearing in mind the different systems of scaffolding now in use?
6.21	What height or complexity of scaffolding structures should a CPEng (or equivalent) be required to design and/or inspect?
6.22	Should proprietary scaffolding systems and components be registered designs of high-risk plant (see section 5.2)?
6.23	What heights and/or types of scaffolding should be notifiable to WorkSafe?

6.2.7 Assessing the impact

We will use your responses to compare proposals and make recommendations for government policy decisions. Clear information on the impacts on your business, work or workplace will help us to choose the best options for change, and complete better regulatory impact analysis, including cost benefit analysis for proposals.

Some examples of costs and benefits include, but are not limited to things like improved health and safety; time; compliance burden; training costs; need for specialist external advice; business efficiencies, for example, increase productivity; investment in capital expenditure.

6.24	Based on the proposals in this section on working at heights and scaffolding, are there any significant costs and/or benefits that will affect you or your organisation?
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7 Excavation work

Excavations and trenches pose risks of collapsing and burying workers, falls into them, unsafe atmospheres, water and other hazards, and striking underground services

We've heard there are some problems with how excavation work is being completed.

Continued risks of harms and incidents of underground strikes

Increasing availability of excavation machines increase the frequency, size, and complexity of excavation work

Variation in industry practice e.g. for fencing, obtaining information about underground services

Existing regulations are comprehensive, but contain little detail

Here are some ideas to fix these problems. Tell us what you think.

Apply the Prescribed Risk Management Process to excavation work

Specifically require businesses to manage risks from falling in, being trapped by collapse, falling objects, and airborne contaminants in excavations

Require businesses to prevent unauthorised access, and minimise the risk of collapse by shoring trenches more than 1.5m (unless authorised by an engineer)

Express duty to check for underground services before excavating

You'll find more information about these problems and ideas in the detail of this section.

An excavation is a type of structure. It is timely to consult on the adequacy of current regulations for excavation work when developing plant and structures regulations. We are therefore seeking the views of the construction industry and others on the existing provisions, and new mandatory controls that could be introduced.

7.1.1 Extent of existing regulation

Excavations vary from small-scale trenching or site works to deeper pits and shafts, but all excavations present risks to workers and others. These include being buried under collapse of ground, falling into excavations, unsafe atmospheres, water and other hazards within excavations, and contact with underground services.

There are controls on excavation work under the Health and Safety in Employment Regulations, but these are limited compared with those imposed by Australian and UK regulations. There is, however, comprehensive and well accepted guidance published by WorkSafe which recommends similar controls to those in other jurisdictions. The regulations have not been reviewed since the guidance was created.

Over recent decades there has been increasing availability and use of excavation machinery which has increased the number, size and complexity of excavations completed. There has also been much greater use made of proprietary trench shoring systems, which are often used for all but the smallest excavations. Fencing of excavations is widely, but not universally, used in the construction sector and elsewhere.

Despite the notification requirements, improving industry practice, and general acceptance of the guidance, injuries and fatalities from trench collapse continue in the construction sector. There is also wide variation in the use and standard of fencing and covering of trenches, and there continues to be a relatively high incidence of workers striking underground electricity cables and gas mains when carrying out excavations.

7.1.2 Excavations remain a persistent source of risk for the construction sector

Trenching work and excavations involve a range of injuries and fatalities, not all of which result from falls of ground or trench collapse. In the ten years 2008 to 2017 there were four deaths caused by falls of ground/collapse and 27 serious injuries, all of which involved workers in the construction sector. No fatalities occurred in the last three years of data. Half of serious injuries were workers in the construction sector and half were from other sectors.

Other serious injuries and fatalities associated with excavation work include falls, unsafe atmospheres and injuries resulting from contact with underground services or machinery. These are not classified as excavation injuries in the data.

7.1.3 Existing regulations have comprehensive coverage but contain limited detail

The Health and Safety in Employment Regulations apply to excavations as part of “construction work”, which is defined very broadly, but excludes mining, quarrying or tunnelling (refer to the discussion of the definition of “construction work” in [Section 6](#)). The Regulations require the shoring of any excavation with a face or sides higher than 1.5 metres in specified circumstances³², and set criteria for ensuring the adequacy of shoring³³. The Regulations also require the person completing excavation work to be experienced or adequately supervised.

The Regulations require notification to WorkSafe of all construction work involving excavations over 1.5 metres depth.³⁴ The Regulations require fencing or exclusion of excavations that would otherwise be accessible to people. The requirement applies to any that are of hazardous depth, or contain water that is a hazard. Where there is not an employee present to prevent access, the excavation must be fenced or covered.

Current Regulations:

- do not create an explicit duty to check the location of underground services before excavations commence
- contain only general supervision and/or competency requirements for those carrying out excavations
- do not set a depth at which fencing or covering of an excavation is required to prevent unauthorised access
- do not contain explicit requirements for providing safe access for workers needing access to excavations.

These matters are all addressed in WorkSafe guidance. By comparison, other jurisdictions – i.e. the Australian Model Regulations and the United Kingdom – maintain specific regulatory requirements for each of these aspects of excavation work.

³² i.e. other than where—

- (a) the face is cut back to a safe slope; or
- (b) the material in the face is of proven good standing quality under all reasonably foreseeable conditions of work and weather; or
- (c) by reason of the nature of the work and the position of any employee in the vicinity, there is no danger to any employee; or
- (d) the provision of shoring is impracticable or unreasonable by reason of the nature of the work and the employer has, so far as is reasonably practicable, taken steps to ensure that other precautions are taken to make the face as safe as possible in the circumstances.

³³ See <http://www.legislation.govt.nz/regulation/public/1995/0167/latest/DLM202762.html>

³⁴ Over 1.5 metres depth, and deeper than they are wide, or other work with a face of over 5m that is at a slope greater than 2:1.

7.2 Proposals for change

7.2.1 Retain the existing provision with modifications

We propose retaining mandatory controls for excavations, with amendments along the lines of the issues discussed in the questions below.

The current Regulations set mandatory controls for excavations, as described above. They require particular things to be done to maintain safety and set general competency and supervisory requirements for the work.

By contrast the Australian Model Regulations set more stringent risk management requirements and controls for excavation work. They:

- describe any excavation deeper than 1.5 m as “high hazard construction work”, requiring the preparation of a method statement and related processes
- require the management of risks of excavation work according to the Prescribed Risk Management Process
- describe the risks associated with all excavations that must be managed – a person falling in or being trapped in an excavation, or a person working in an excavation being struck by a falling thing or being exposed to an airborne contaminant.

In addition, the regulations describe specific controls that apply to trenches over 1.5 metres deep, particularly preventing unauthorized access, and controlling the risk of collapse by shoring, benching or battering, unless a geotechnical engineer provides advice in writing that all sides of a trench are safe from collapse.

We would like your views on the merits of replacing the current regulatory requirements with a risk management approach similar to that in the Australian Model Regulations.

We would also like your views on the levels of competency necessary for workers and supervisors carrying out excavation work, particularly trenching, and whether the regulations should prescribe qualifications and/or experience, particularly with respect to whether the faces of a trench are “of proven good standing quality”?

Requiring businesses to manage risk in the manner contained in the Australian Model Regulations is likely to impose additional costs on them, although we understand many businesses already follow well developed processes in accordance with the guidance.

If specific competency requirements are imposed for all excavations, there would be additional costs to some businesses, depending on the level of qualification required and the extent to which excavations occur in their work (eg plumbers and drainlayers versus earthmoving contractors).

In developing the new regulations we propose that more formalised risk management and competency requirements would reduce the need for regulator involvement in excavation work. This could include removal of the requirement to notify all excavations over 1.5 metres deep to WorkSafe.

7.1	Should the regulations be rephrased to follow a risk-based approach as described above?
7.2	Should the 1.5 metre threshold be retained, removed, or amended for notifications?
7.3	Should the 1.5 metre threshold be retained, removed, or amended for shoring etc?
7.4	Should the 1.5 metre threshold be retained, removed, or amended for fencing?
7.5	Should the depth threshold apply to all excavations, or only trenches?
7.6	Are the current criteria for determining whether shoring is required appropriate?
7.7	Who should determine if the faces of a trench are “of proven good standing quality” or its equivalent?
7.8	Are the current criteria for determining the adequacy of shoring suitable?
7.9	Should the current competency and supervision requirements for excavations be retained, or prescribed further?

7.2.2 Create an explicit duty to identify underground services before excavating

We propose a new duty under which any PCBU with management or control of a workplace where excavation work is to take place would be required to do what is reasonably practicable to identify all underground services before excavation work commences.

WorkSafe guidance places some emphasis on the identification of underground services, but it is not always clear from the guidance or industry practice who should obtain the necessary information, the form it should take, and who it should be provided to.

In response to the continuing high numbers of strikes of underground services being recorded by WorkSafe (including the 2017 incident involving the Marsden Point to Auckland fuel pipeline), we propose introducing a more explicit duty to identify underground services.

The Australian Model Regulations contain an explicit duty for the person (PCBU) with management or control of the workplace to take all reasonable steps to obtain current underground services information before directing or allowing excavation to commence. The information must be for the part or parts of the workplace where the work will be carried out, and any adjacent areas.

The person must then provide the information to any person they engage to carry out the excavation work and make the information available for inspection until the completion of the work, or, if there is a notifiable incident in connection with the work, for two years after the incident.

A PCBU receiving the information on underground services must have regard to it in carrying out, directing, or allowing the carrying out of the excavation work.

The new duties would provide a basis for utility companies, constructors and others to exchange information. They would be supported by WorkSafe guidelines in a similar manner to now, but the increased prescription of the regulations would improve consistency for all persons involved with excavations.

Utility companies already maintain processes for identifying, documenting and disclosing the location of underground services, particularly on public land. A mandatory requirement could result in more requests for information, and additional documentation requirements for construction firms and others involved in excavation works, particularly in urban areas. It is also likely to result in more effort being made to identify services before work begins.

We expect this would lead to productivity gains for the construction and utility sectors and significantly fewer incidents and less project and utility customer down time. There are also steadily improving location devices available to the sector.

We would expect the increase in costs to businesses to be marginal and offset by increased efficiency when excavations are being completed. We would expect the resulting reduction in the number of strikes of underground services to reduce not only injuries, but also direct costs and delays for businesses.

Many established businesses are already following variations of the practices that the regulations would require.

7.10 Should regulations create an explicit duty to obtain current underground services information before excavation work commences?

7.11 Who should the duty or duties apply to?

7.12 What form should the duty or duties take?

7.2.3 Assessing the impact

We will use your responses to compare proposals and make recommendations for government policy decisions. Clear information on the impacts on your business, work or workplace will help us to choose the best options for change, and complete better regulatory impact analysis, including cost benefit analysis for proposals.

Some examples of costs and benefits include, but are not limited to things like improved health and safety; time; compliance burden; training costs; need for specialist external advice; business efficiencies, for example, increase productivity; investment in capital expenditure.

7.13 Based on the proposals in this section on excavation work, are there any significant costs and/or benefits that will affect you or your organisation?

8 Offences and transitional arrangements

8.1 Regulatory offences

The HSW Act allows for regulations to be made that:

- create offences for the contravention of regulations, and
- provide for the imposition of fines not exceeding \$50,000.

There are three tiers of regulatory offences in our regulations, with maximum penalties for corporates and individuals:

- \$50,000 corporate / \$10,000 individual
- \$30,000 corporate / \$6,000 individual
- \$10,000 corporate / \$2,000 individual.

Appropriate offences and penalty levels will be identified once the substantive requirements of the regulations are finalised. We intend to use the Australian Model Regulations as a guide for this process, but subject to New Zealand regulatory practice.

8.2 Infringement offences

Infringement notices are a type of 'on-the-spot fine'. Regulations will set the penalty level for each infringement offence. Levels will usually be at a level far lower than the maximum penalty a court could impose. The amount of the penalty may also differ based on whether an individual or a body corporate has committed the offence.

On-the-spot fines can provide timely deterrence while minimising legal and administrative costs. However, the recipient of an infringement notice can elect not to pay the penalty and have the offence heard in the District Court instead.

We have taken our lead from Australia in thinking about which requirements of health and safety regulations are identified as infringement offences (i.e. regulations establishing offences for which an infringement notice is able to be issued if an inspector finds non-compliance while they are out and about).

Infringement offences in the regulations are limited to those that:

- are a minor breach of the law which warrants more than a warning, but less than the full sanction of prosecution
- relate to actions or omissions that involve straightforward issues of fact
- do not include qualifying phrases (such as ‘so far as is reasonably practicable’ or ‘as necessary’).

Based on these principles, on-the-spot fines are limited to things like failing to keep records, or possibly having the required signage.

With these principles in mind, provide us with any feedback about which of the proposed options in this document you think should be infringement offences.

8.1

Which of the proposed requirements in this paper should be infringement offences, and why?

8.3 Transitional arrangements

It is intended that new regulations resulting from this consultation will come into effect in 2020. However, we are aware that there may need to be transitional arrangements to allow duty holders time to comply with some of the new requirements – for example, if compliance involved replacing old machinery, or is dependent on the availability of training courses or trained individuals. In other instances, the regulator may need time to establish internal processes – for example, if a register for high-risk plant is adopted (see [Section 5](#)).

We are seeking feedback on any particular new regulations that duty holders will need an extended period of time to comply with, and reasons for that. In each section we have addressed where we think transitional arrangements might be required. We want your feedback on whether there are any other areas where transitional arrangements are required.

8.2

Will any of the proposals in the discussion paper need an extended period of time to allow duty holders to comply (i.e. beyond when any new regulations are proposed to come into effect)? Which ones, and why?

8.3

Are there any other transitional issues that you think should be considered?

Recap of questions

2 Protections for people working with plant

- | | |
|------|--|
| 2.1 | Should there be a default hierarchy of controls for guarding? |
| 2.2 | Should there be a mandatory requirement to ensure appropriate guarding? |
| 2.3 | Should record-keeping be required for presence-sensing safeguarding systems? |
| 2.4 | Should there be requirements for emergency stop controls, operational controls, and warning devices on plant, and a requirement to ensure proper use of plant? |
| 2.5 | Should there be requirements for guarding and operational controls to ensure the safety of people cleaning and maintaining plant? |
| 2.6 | Should there be requirements on PCBUs managing or controlling plant, to address the risks from installing, constructing, commissioning, and decommissioning and dismantling plant? |
| 2.7 | Should there be a requirement to manage the risks of plant that is not in use? |
| 2.8 | Should there be a requirement to ensure plant is maintained, inspected and tested by a competent person either to the manufacturer's recommendations or otherwise according to a competent person? |
| 2.9 | Should there be a requirement to ensure health and safety risks from plant are not created or increased by using plant for new purposes or altering it? |
| 2.10 | Is it necessary to require a competent person to assess whether or not the proposed new use increases risks to health or safety? |
| 2.11 | Do you agree with extending requirements to plant (except manually powered, hand-held plant)? |
| 2.12 | Should the general requirements for all plant apply to vessels and aircraft? What are the impacts of this? |
| 2.13 | Should the general requirements for plant apply to powder-actuated tools? |
| 2.14 | Should there be specific requirements for plant that lifts or suspends loads? |
| 2.15 | Do we need a specific requirement that, when plant is not specifically designed for lifting, it must not cause a greater risk to health and safety? Please consider what extra benefit or impact this would have in addition to what is proposed for all plant (refer to question 2.9) – that if plant is used for a purpose other than which it was designed, a person must ensure it does not have risks to health and safety (as assessed by a competent person). |

2.16	Are the exemptions for stunt work, acrobatics or theatrical performances appropriate? Is there anything else that should be excluded?
2.17	Should an alternative control method be provided for tree-logging?
2.18	Is it necessary to refer in regulations to AS/NZS 1891 for harnesses?
2.19	“Plant that lifts or suspends loads” is not defined in the Australian Model Regulations. Should this be defined in our regulations?
2.20	Do you think there should be additional controls in regulations for industrial robots and other remotely or automatically energised plant? If yes, what do you think of the approach in the Australian Model Regulations?
2.21	Does existing guidance on robotic plant sufficiently address the risks and possible control measures from this kind of plant?
2.22	Do you think there should be additional controls in regulations for laser equipment?
2.23	Do you think any classes of lasers should be prohibited from use in certain kinds of work? E.g. Classes 3B and 4 are prohibited from being used in construction work in the Australian Model Regulations.
2.24	Would guidance alone be sufficient to address the risks from laser equipment?
2.25	What are the benefits of an approved code of practice or other guidance for industrial robots and/or laser equipment?
2.26	Should PCBUs be required to apply the Prescribed Risk Management Process when managing risks from all plant? If not, why?
2.27	Would education and guidance on the risk management process alone improve PCBUs’ ability to identify and manage risks from plant?
2.28	Are there any further requirements needed, in addition to the Prescribed Risk Management Process, to specifically manage risks to health from the use of plant?
2.29	Based on the proposals in this section on protections for people working with plant, are there any significant costs and/or benefits that will affect you or your organisation?

3 Protections for people working with mobile plant

- 3.1 We are proposing to apply the Prescribed Risk Management Process to plant (see Section 2 of the discussion paper). When applying the Prescribed Risk Management Process, should it specify the key risks of mobile plant? (The key risks from mobile plant are overturning, falling objects, being thrown from the plant, mechanical failure of pressurised elements, and collisions).
- 3.2 Do you think the Prescribed Risk Management Process should not apply to any of these key risks?
- 3.3 Should there be specific requirements for operator protective devices on all mobile plant?
- 3.4 Is it appropriate for PCBUs to determine what is a suitable combination of operator protective devices?
- 3.5 Are there any types of mobile plant that require specific kinds of devices?
- 3.6 What other kinds of operator protective devices are appropriate for the mobile plant you use or manage at work?
- 3.7 Should there be a requirement to ensure plant does not collide or to ensure warning devices, because of the extra risk of harm?
- 3.8 Should there be a requirement to ensure an adequate field of vision?
- 3.9 Are other requirements needed to manage risks from collision? (For example, requiring that mobile plant is switched off when operators are not in the cab to avoid it moving unexpectedly).
- 3.10 Should information on traffic management be included approved codes of practice or other guidance?
- 3.11 Do you agree that passengers should have the same level of protection as operators when on mobile plant? For example, there may be situations where you think it would be safe for passengers to have more or less protection than the operator.
- 3.12 Do you think passengers should be expressly banned unless mobile plant is specifically designed to carry them? If yes, is this general or are there specific examples that should be covered. If not, why?
- 3.13 Do you agree with the suggested definition of "mobile plant" (i.e. plant that is provided with some form of self-propulsion that is ordinarily under the direct control of an operator)?
- 3.14 If we follow the flexible approach in the Australian Model Regulations, are exemptions for specific types of mobile plant necessary?
- 3.15 If we follow a less flexible approach, for example, field of vision or banning passengers, are there any specific types of mobile plant that should be exempt from any of the requirements?

3.16	Vehicles less than 700kg are currently exempt from roll-over protection and seatbelt requirements. Are there any vehicles under 700kg that you think should be exempt from the approach in the Australian Model Regulations for mobile plant?
3.17	Are there any types of mobile plant that require specific types of requirements additional to those discussed already for all mobile plant? Please give examples.
3.18	Are specific requirements for forklifts needed to effectively address the risks?
3.19	Do the requirements for operator protective devices for all mobile plant effectively address risks for forklifts?
3.20	Should these risks be addressed in regulations, an approved code of practice, other guidance, or a combination of those things?
3.21	Should operators require a ticket (e.g. licence or certificate of competence) to use a forklift?
3.22	Do operator competency regimes sufficiently address the risks identified from forklifts?
3.23	Based on the proposals in this section on protections for people working with mobile plant, are there any significant costs and/or benefits that will affect you or your organisation?

4 Designing, manufacturing, importing, supplying, and installing plant and structures

4.1	Do you agree with the risks and issues identified in section 4.1 of the discussion paper?
4.2	From your experience, are there any other risks and issues arising for upstream duty holders? Think about the life cycle of a plant or structure – from design, construction, maintenance, repair, modification, operation, and decommissioning or demolition.
4.3	What tool, or combination of tools, do you think will be most effective to ensure upstream duties in the HSW Act are complied with in general, and in relation to each of the issues and options below?
4.4	Should we follow the approach taken in the Australian Model Regulations for providing information and identifying hazards and risks in plant?
4.5	What information should designers have to provide to manufacturers about plant? Should it include information about design life or safety critical components?
4.6	Are there other ways to ensure adequate information is provided, obtained, and implemented?
4.7	The Australian Model Regulations only put requirements on designers, manufacturers and importers of plant about identifying hazards. Should suppliers, and installers/ commissioners/ constructors of plant have similar requirements?

4.8	Do you think there should be a duty on PCBUs requesting or ordering new designs of plant to provide designers with information about risks and hazards at the workplace or that could arise from the intended use of the plant?
4.9	Do you think importers should have to take all reasonable steps to get information from overseas manufacturers and designers equivalent to that which would be required if the designer or manufacturer were based in New Zealand? Think about how this would work in practice and what the implications might be.
4.10	Should we have a list of recognised jurisdictions that importers could rely on to ensure plant meets New Zealand health and safety requirements?
4.11	Do you think suppliers of second-hand plant should be required to identify faults in the plant and give information to the person they supplied it to? Note that any controls on suppliers of second-hand plant would not apply to plant sold “as is” because this is excluded from the duty on suppliers in the HSW Act.
4.12	Do you think guidance would help make it clearer that altering plant is “designing” under s39 of the HSW Act? Do you have any suggestions for what this guidance might cover?
4.13	Do you think requirements are needed for the safe design and manufacture of: <ul style="list-style-type: none"> (a) guarding where it is used as a control measure (b) operational controls (c) emergency stops (d) warning devices?
4.14	What do you think of the way these are managed in the Australian Model Regulations?
4.15	Do you prefer option 1 or 2 for structures other than those regulated under the Building Act 2004?
4.16	If we followed the Australian approach (option 1), what would make someone a competent person?
4.17	If we prescribe process controls (option 2), should these requirements apply to construction work where there is only one contractor?
4.18	Do you think there should be a duty on PCBUs requesting or ordering designs of structures to provide designers with information about risks and hazards at the workplace or that could arise from the intended use of the structure?
4.19	What information should designers of structures have to provide to downstream duty holders? Should this be in regulations (as we are proposing for designers of plant)?
4.20	Based on the proposals in this section on designing, manufacturing, importing, supplying, and installing plant or structures, are there any significant costs and/or benefits that will affect you or your organisation?

5 High-risk plant

- 5.1 Should amusement devices and plant currently regulated under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations be regulated under a single set of provisions for high-risk plant?
- 5.2 Should the regulations refer to “engineered recreational activities” instead of amusement devices?
- 5.3 Will the proposed registers of plant improve the transparency of the regulations and improve conformity in the manner outlined above?
- 5.4 Do you agree with the approach to the use of Standards that is proposed?
- 5.5 Are bungy operations better regulated as “adventure activities” under the applicable regulations, or as high-risk plant?
- 5.6 Should requirements for log books for amusement devices be strengthened to require better record keeping of operator training, maintenance and inspection of items of plant?
- 5.7 Should training requirements for amusement device operators be tightened, and, if so, how?
- 5.8 Should there be a new central register of plant designs, maintained by WorkSafe or a delegated agency?
- 5.9 What types of plant should be included (based on, but not limited to, the list in [Annex One](#)), with attention to the inclusion of pressure piping, cylinders, refrigeration systems, model engineering, heritage boilers and new types of plant discussed at p 92?
- 5.10 What standards should apply, and what regard should be had, to seismic performance when registering designs, as distinct from individual items of plant?
- 5.11 Is an “alteration that may affect health or safety” an appropriate threshold for requiring alterations of designs to be verified/re-registered?
- 5.12 What threshold(s) should apply to the registration of designs of heating/cooling equipment?
- 5.13 Should designs of model engineering and/or (full scale) heritage boilers be required to be registered?
- 5.14 Should designs registered on Australian state registers be recognised in New Zealand?
- 5.15 Would you expect benefits from alignment and interoperability with the Australian state registers?
- 5.16 Do you support the introduction of a centrally held register of individual items of high-risk plant currently subject to the Pressure Equipment, Cranes, and Passenger Ropeways Regulations?

5.17	What types of plant should be required to be registered (based on, but not limited to, the list in <i>Annex Two</i>), with attention to the inclusion of pressure piping, refrigeration systems, model engineering, heritage boilers and new types of plant discussed at p 92?
5.18	Should forestry plant, like that recommended to be inspected by CPEng under forestry codes or guidance, be required to be registered?
5.19	What scale or risk categories of pressure equipment should be required to be registered?
5.20	What threshold(s) should apply to the registration of individual items of heating/cooling equipment?
5.21	Should individual installations of model engineering and/or (full scale) heritage boilers be required to be registered?
5.22	Do you agree with the proposed requirements for registration?
5.23	Should registration be for a 5-year period for all items of plant or for a lesser period for different items of plant (refer to inspection requirements below)?
5.24	What regard should be had, and what standards should apply to the seismic performance of individual items of plant?
5.25	Should specified types of existing plant be required to be assessed for their “remaining design life” and/or should safety critical aspects of their design be reassessed as a precondition of their registration as items of plant?
5.26	Should other categories of existing items of plant be exempt from the requirement to be design registered before registration as items of plant?
5.27	Should existing accreditation requirements for inspection bodies and inspection personnel be retained for equipment currently under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations?
5.28	Should the current requirement for a CPEng (or equivalent) to certify and inspect amusement devices be retained?
5.29	Should inspection bodies and personnel be able to maintain the register, based on their inspection work?
5.30	What level of detail should the regulations specify concerning the periods of inspection, the applicable standards, and the matters subject to inspection for different classes of plant?
5.31	What level of detail in describing competencies should be included in regulations for high-risk plant?
5.32	What inspection requirements should be contained in safe work instruments or approved codes of practice?
5.33	Should territorial authority permits continue to be required for amusement device installations?

5.34	Which of the above options for territorial authority involvement in permitting is most suited to the risks from amusement devices?
5.35	Who should meet the costs of any territorial authority permitting?
5.36	Should the existing “type fault” provisions in the Pressure Equipment, Cranes, and Passenger Ropeways Regulations be retained in new regulations for high-risk plant?
5.37	Which incidents involving different categories of high-risk equipment should be notifiable to WorkSafe?
5.38	Do we need additional requirements on upstream duty holders in relation to high-risk equipment?
5.39	Do you agree with a prohibition on supplying plant that is not design registered when it is required to be?
5.40	Based on the proposals you have commented on in this section on high-risk plant, are there any significant costs and/or benefits that will affect you or your organisation?

6 Working at heights and scaffolding

6.1	Should the Prescribed Risk Management Process apply to work at heights in all industries? Why/ why not?
6.2	Should there be a default hierarchy of controls for work at heights on construction work?
6.3	Should the hierarchy of controls be the same as that described above?
6.4	Should the standards for moving from one step to another in the hierarchy of controls be ‘unless reasonably practicable’?
6.5	Should the definition of “construction work” be revised to follow the Australian model regulations formulation?
6.6	What types of work or workplaces included in the current definition should be excluded?
6.7	What types of work or workplaces not included in the current definition should be included?
6.8	Should the regulations set a height threshold below which the full hierarchy of controls do not apply to work at heights in construction work?
6.9	If a height threshold is used, should it be set at 2 metres or 3 metres?
6.10	Should the regulations set a work duration threshold at which the full hierarchy of controls apply to work at heights in construction work?
6.11	If so, is there a preferred option from the list above?

6.12	Should the Australian Model Regulation requirement for scaffolding be adopted?
6.13	Should the regulations retain the current requirement for the fitness for purpose and adequacy of scaffolding?
6.14	Should the authorisation of competencies for scaffolding (currently by certificates of competence) be required of individuals and/ or PCBUs?
6.15	Should the 5 metre threshold for an authorisation to erect scaffolding (currently a certificate of competence) be retained, or should it be set at 6m or higher?
6.16	Do the current classes of basic, intermediate and advanced scaffolding certificates of competence reflect the levels of competency required by the industry?
6.17	If not, what classes of scaffolding should replace them and how should this reflect increasing use of proprietary systems instead of 'tube and clip' scaffolds?
6.18	Who should authorise competency for scaffolders?
6.19	Who should check scaffolding installations, and how often?
6.20	What competency standard/s should be required for the inspection of scaffolds, bearing in mind the different systems of scaffolding now in use?
6.21	What height or complexity of scaffolding structures should a CPEng (or equivalent) be required to design and/or inspect?
6.22	Should proprietary scaffolding systems and components be registered designs of high-risk plant (see section 5.2)?
6.23	What heights and/or types of scaffolding should be notifiable to WorkSafe?
6.24	Based on the proposals in this section on working at heights and scaffolding, are there any significant costs and/or benefits that will affect you or your organisation?

7	Excavation work
7.1	Should the regulations be rephrased to follow a risk-based approach as described above?
7.2	Should the 1.5 metre threshold be retained, removed, or amended for notifications?
7.3	Should the 1.5 metre threshold be retained, removed, or amended for shoring etc?
7.4	Should the 1.5 metre threshold be retained, removed, or amended for fencing?
7.5	Should the depth threshold apply to all excavations, or only trenches?
7.6	Are the current criteria for determining whether shoring is required appropriate?

7.7	Who should determine if the faces of a trench are “of proven good standing quality” or its equivalent?
7.8	Are the current criteria for determining the adequacy of shoring suitable?
7.9	Should the current competency and supervision requirements for excavations be retained, or prescribed further?
7.10	Should regulations create an explicit duty to obtain current underground services information before excavation work commences?
7.11	Who should the duty or duties apply to?
7.12	What form should the duty or duties take?
7.13	Based on the proposals in this section on excavation work, are there any significant costs and/or benefits that will affect you or your organisation?

8 Offences and transitional arrangements

8.1	Which of the proposed requirements in this paper should be infringement offences, and why?
8.2	Will any of the options need an extended period of time to allow duty holders to comply (i.e. beyond when any new regulations are proposed to come into effect)? Which ones, and why?
8.3	Are there any other transitional issues that you think should be considered?

Annex 1: Health and safety at work regulations

Health and Safety at Work Act 2015	
Activity/risk-focused regulatory requirements	<p>Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, covering:</p> <ul style="list-style-type: none"> • Specified risk management process • Information, training, instruction and supervision • Facilities, first aid and emergency planning • Personal protective equipment • Remote/isolated work • Atmospheres with potential for fire or explosion • Raised and falling objects • Containers of liquids • Loose but enclosed materials • Substances hazardous to health • Exposure monitoring and health monitoring • Duties towards young persons re hazardous work • Additional duties for operating limited child care centres
	<p>Health and Safety at Work (Worker Engagement, Participation, and Representation) Regulations 2016</p>
	<p>Health and Safety at Work (Asbestos) Regulations 2016</p>
	<p>Health and Safety at Work (Hazardous Substances) Regulations 2017</p>
Sector-focused regulation	<p>Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016</p>
	<p>Health and Safety at Work (Petroleum Exploration and Extraction) Regulations 2016</p>
	<p>Health and Safety at Work (Major Hazard Facilities) Regulations 2016</p>
Administrative regulation	<p>Health and Safety at Work (Rates of Funding Levy) Regulations 2016</p>
	<p>Health and Safety in Employment (Regulations 1995), covering:</p> <ul style="list-style-type: none"> • Certificates of competence for high risk work – divers, powder actuated tool operators, scaffolders • Noise • Notification of hazardous work • Cleaning, maintenance and repair of machinery • Woodworking and abrasive grinding machinery • Self-propelled mechanical plant • Construction excavations • Scaffolding • Working at heights
	<p>Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999</p>
	<p>Amusement Devices Regulations 1978 (made under the Machinery Act 1950)</p>
	<p>Spray Coating Regulations 1962 (made under the Health Act 1956)</p>
	<p>Lead Process Regulations 1950 (made under the Health Act 1956)</p>
	<p>Health and Safety in Employment (Pipelines) Regulations 1999</p>
	<p>Geothermal Energy Regulations 1961 (made under the Geothermal Energy Act 1953)</p>
	<p>Health and Safety at Work (Adventure Activities) Regulations 2016</p>
	<p>Health and Safety at Work (Infringement Offences and Fees) Regulations 2016</p>
Key	<p>Made under the Health and Safety at Work Act 2015</p>
	<p>Made under the Health and Safety in Employment Act 1995</p>
	<p>Made under other legislation</p>

In this discussion paper

Annex 2: Plant requiring design registration in Australia

This is the schedule as published in the Australian Model Regulations.

The schedule uses a risk based approach to determine coverage of pressure equipment and amusement devices in particular. This is consistent with the approach taken in the current Approved Code of Practice for Boilers, but at variance from what the Amusement Device Regulations allow.

Some categories of plant are additional to those included under the current Pressure Equipment, Cranes, and Passenger Ropeways or Amusement Devices Regulations, others follow different thresholds.

Others categories such as 'gas cylinders', and 'lifts, escalators and moving walkways', are covered by other New Zealand law, such as the Building Act 2004 (most lifts etc. other than on construction work) or the Health and Safety at Work (Hazardous Substances) Regulations 2016 (gas cylinders). We are not proposing changes in coverage of these categories.

All items in the schedule that would be at variance from existing coverage under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations or the Amusement Device Regulations are **[bold in square brackets]**.

Items of plant requiring registration of design

- Pressure equipment, **[other than pressure piping]**, and categorised as hazard level A, B, C or D according to the criteria in Section 2.1 of AS 4343:2005 (Pressure equipment—hazard levels)
- **[Gas cylinders covered by Section 1 of AS 2030.1:2009 (Gas cylinders—General Requirements)]**
- Tower cranes including self-erecting tower cranes
- **[Lifts and escalators and moving walkways]**
- **[Building maintenance units]**
- **[Hoists with a platform movement exceeding 2·4 metres, designed to lift people]**
- **[Work boxes designed to be suspended from cranes]**
- Amusement devices classified by Section 2.1 of AS 3533.1:2009 (Amusement rides and devices—Design and construction), **[except devices specified below]**
- Passenger ropeways
- **[Concrete placing booms]**
- **[Prefabricated scaffolding]**
- **[Boom-type elevating work platforms]**

- Gantry cranes with a safe working load greater than **[5 tonnes]** or bridge cranes with a safe working load of greater than **[10 tonnes]**, and any gantry crane or bridge crane which is designed to handle molten metal or **[Schedule 11 hazardous chemicals]**
- **[Vehicle hoists]**
- **[Mast climbing work platforms]**
- Mobile cranes with a rated capacity of greater than **[10 tonnes]**.

Exceptions

- The items of plant listed above do not include:
 - **[a heritage boiler]**
 - **[any pressure equipment (other than a gas cylinder) excluded from the scope of AS 1200:2000 (Pressure equipment)]**

Note

See section A1 of Appendix A to AS/NZS 1200:2000.

- a crane or hoist that is manually powered
 - **[a reach stacker]**
 - **[an elevating work platform that is a scissor lift or a vertically moving platform]**
 - a tow truck.
- The following devices are excluded from “amusement devices” above:
 - **[class 1 devices]**
 - playground devices
 - water slides where water facilitates patrons to slide easily, predominantly under gravity, along a static structure
 - wave generators where patrons do not come into contact with the parts of machinery used for generating water waves
 - inflatable devices, other than inflatable devices (continuously blown) **[with a platform height of 3 metres or more]**.

Annex 3: Individual items of plant requiring registration in Australia

All items in the schedule that would be at variance from existing coverage under the Pressure Equipment, Cranes, and Passenger Ropeways Regulations or the Amusement Device Regulations are **[bold in square brackets]**.

Items of plant requiring registration

- Boilers categorised as **[hazard level A, B or C]** according to criteria in Section 2.1 of AS 4343:2005 (Pressure equipment—Hazard levels)
- Pressure vessels categorised as **[hazard level A, B or C]** according to the criteria in Section 2.1 of AS 4343:2005 (Pressure equipment—Hazard levels), except:
 - **[gas cylinders]**
 - **[LP Gas fuel vessels for automotive use]**
 - **[serially produced vessels]**.
- Tower cranes including self-erecting tower cranes
- **[Lifts and escalators and moving walkways]**
- **[Building maintenance units]**
- [Amusement devices classified by Section 2.1 of AS 3533.1:2009 (Amusement rides and devices—Design and construction), **[except devices specified below]**
- **[Concrete placing booms]**
- Mobile cranes with a rated capacity of greater than **[10 tonnes]**
- **[Passenger ropeways]**

Exceptions

- The items of plant listed do not include:
 - **[any pressure equipment (other than a gas cylinder) excluded from the scope of AS/NZS 1200:2000 (Pressure equipment)]**
Note
See section A1 of Appendix A to AS/NZS 1200:2000.
 - a crane or hoist that is manually powered
 - a reach stacker.
- The following devices are excluded from “amusement device” above:
 - class 1 devices
 - playground devices

- water slides where water facilitates patrons to slide easily, predominantly under gravity, along a static structure
- wave generators where patrons do not come into contact with the parts of machinery used for generating water waves
- inflatable devices, other than inflatable devices (continuously blown) [**with a platform height of 3 metres or more**].

Annex 4: Definition of “construction work”

This compares the definition of “construction work” under the Australian Model Regulations and the Health and Safety in Employment Regulations. Key variations between the two are in **bold**.

Australian Model Regulations (regulation 289)	Health and Safety in Employment Regulations 1995 (regulation 2)
Any work carried out in connection with the construction, alteration, conversion , fitting out , commissioning , renovation , repair, maintenance, refurbishment , demolition, decommissioning , or dismantling of	Any work in connection with the alteration, cleaning , construction, demolition, dismantling, erection , installation, maintenance, painting, removal , renewal or repair of
<p>a structure (referring to regulation 290 for purpose of chapter)</p> <ol style="list-style-type: none"> 1) Same meaning as in Model Act 2) Doesn't apply to <ol style="list-style-type: none"> a) Plant unless: <ol style="list-style-type: none"> i) a ship or submarine, or ii) a pipe or pipeline, or iii) an underground tank, or iv) designed or used to provide support, access or containment during work in connection with construction work. b) Work on the plant relates to work that is carried out in connection with construction work. 	<ol style="list-style-type: none"> i) Any building, chimney, edifice, erection, fence, structure, or wall, whether constructed above or below ground ii) any aerodrome, cableway, canal, harbour works, motorway, railway, road or tramway iii) any thing for the purpose of drainage, flood control, irrigation, or river control iv) any aqueduct, bridge, culvert, dam, earthworks, pipeline, reclamation, reservoir or viaduct v) any scaffold
<p><u>Including:</u></p> <ol style="list-style-type: none"> a) Installation or testing b) Removal from demolition c) Prefabrication d) Assembly e) Installation, testing of an essential service f) Excavation g) Preparatory or site work h) Work under water or near water 	<p><u>Including:</u></p> <ol style="list-style-type: none"> i. Excavation, preparatory or sitework ii. any underwater work iii. use of any materials iv. inspection or related work.
<p><u>Excluding:</u></p> <ol style="list-style-type: none"> a) Manufacture of plant b) Prefabrication of elements c) Assembling a structure for transport to 	<p><u>Excluding:</u> a mine, quarry or tunnel</p>

another place

- d) Minor testing, maintenance or repair
- e) Mining or the exploration for or extraction of minerals

