(Health &) Safety in Design

CCG Steering Group Position Statement

Wendi Croft, B.Sc., CRSP

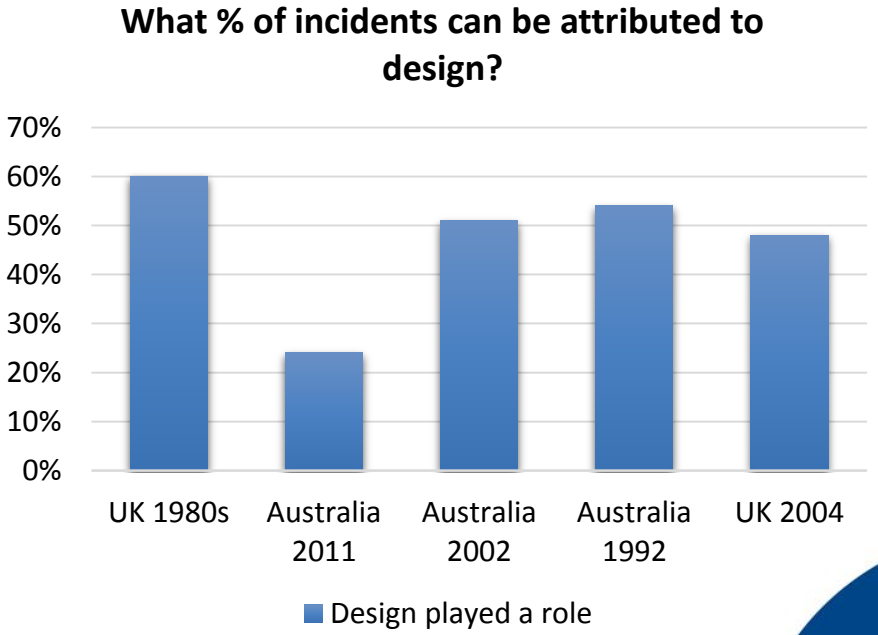
MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

The purpose of this group is to establish a consistent understanding of safety in design under the new legislative regime and create a forum for sharing, challenging and empowering its members to apply these principles.

Construction Clients' Group
CONSTRUCTING EXCELLENCE

THE ENGINE OF THE NEW NEW ZEALAND

SID – Why worry?



What design elements are causing fatalities?

% of Design Related Fatalities

- Inadequate guarding
- Lack of roll-over protection / seat belts
- Lack of residual current device (RCD)

Case Study – Abbeystead, UK

May 1984, 16 died after a methane gas explosion destroyed a waterworks' valve house

Source of the methane gas as coal seams 1,200 m below the pipeline

55% liability - Designers for failing to exercise "reasonable care" in assessing the risk of methane

30% liability – Water Authority for failing to ensure the plant was safe for visitors and employees by testing for methane

15% liability – Contractor for failing to carry out systematic tests for methane

Casey Study – Luton Airport, UK

2009

Elderly woman died on a pedestrian crossing at Luton Airport

- 75% Liability – owner, Luton Airport
- 25% Liability – design subcontractor

Total fines NZD $1million.

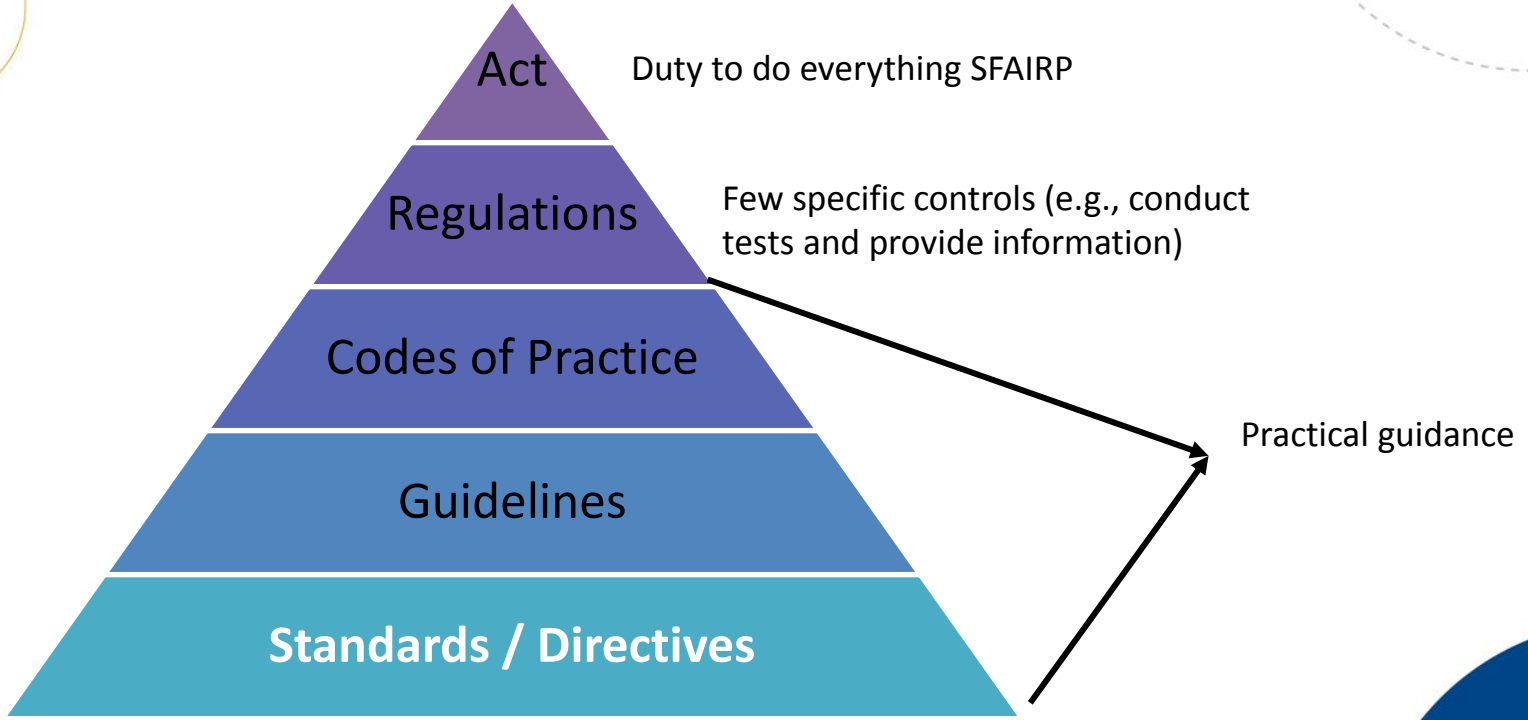
Casey Study – Hamilton Zoo, NZ

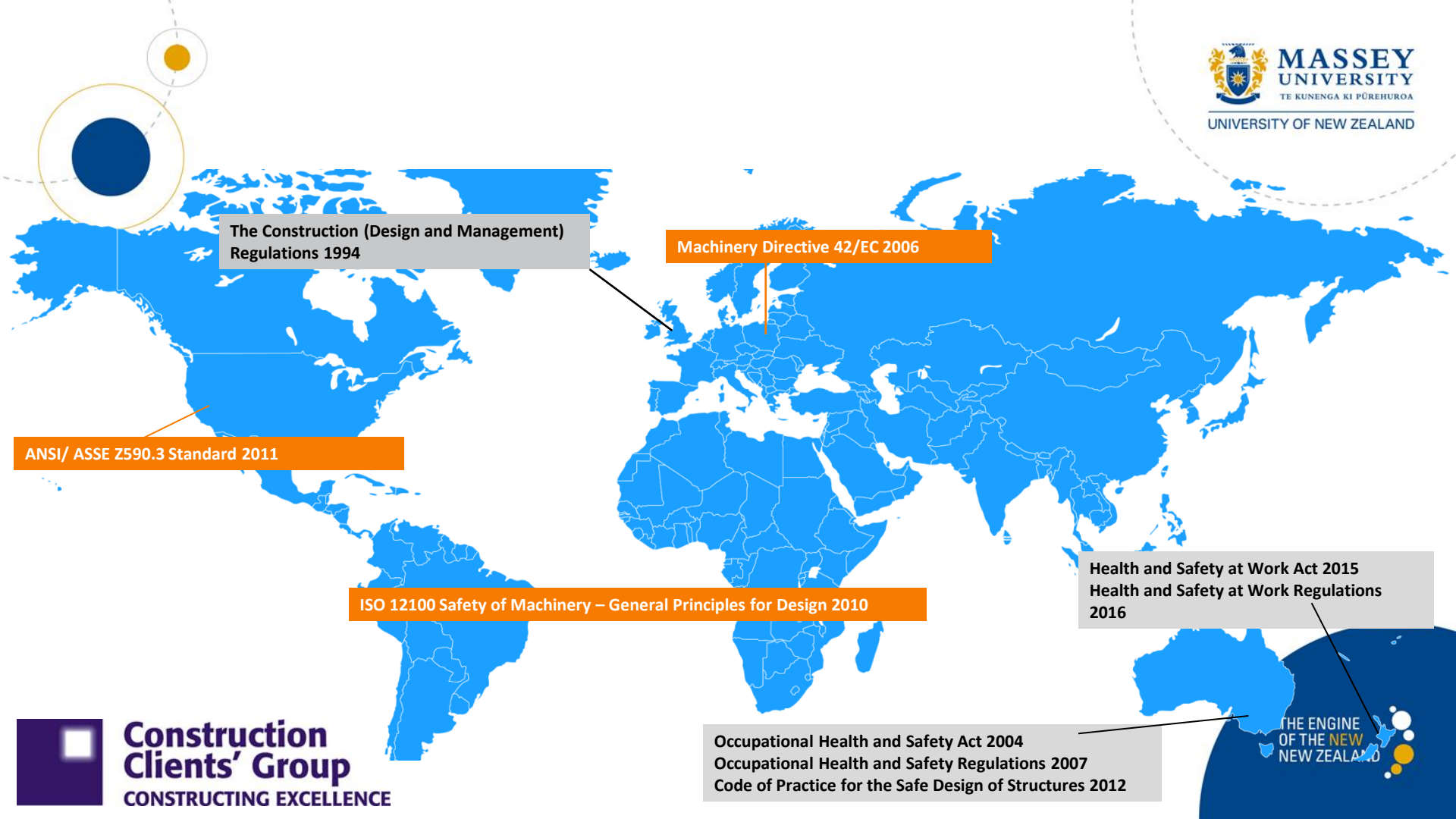
September 2015

Zoo keeper killed by a Sumatran tiger when she entered the cage thinking that the tiger was locked in its night enclosure.

Hamilton City Council found guilty for failing to take **all practical steps.**

How does the law work?





MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

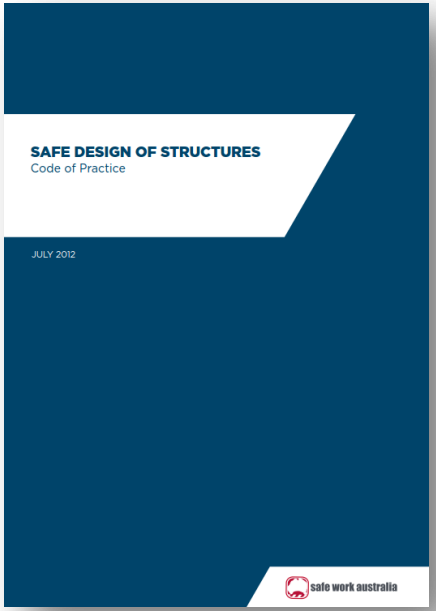
Construction Clients' Group
CONSTRUCTING EXCELLENCE

THE ENGINE OF THE NEW NEW ZEALAND

Comparison of Key Elements

Key Element	Australia Safe Design of Structures	International ISO 12100	USA ANSI/ ASSE Z590.3	Europe Machinery Directive	UK CDM Regulations
Knowledge & Capability	X				X
Consultation, Collaboration	X				X
Consider the Full Lifecycle	X	X	X		X
Risk Management Approach	X	X	X	X	X
Information Transfer	X	X	X	X	X
Level	*Code of Practice*	*Standard*	*Standard*	*Directive*	*Regulation*
Application	*All*	*Machinery*	*All*	*Machinery*	*Construction*

Our Position – the Australian CoP



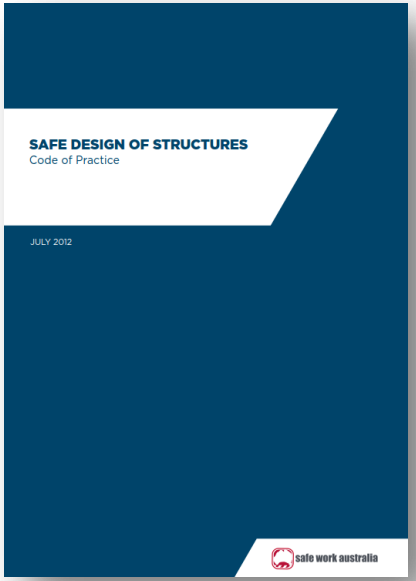
It is our position that the **key elements of safety in design** as outlined in the CoP be implemented by PCBUs in New Zealand to achieve their duty of care.

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Construction Clients' Group
CONSTRUCTING EXCELLENCE

THE ENGINE OF THE NEW NEW ZEALAND

BUT… it requires context…



Consider in **context** for the size and complexity of the product or project.

The core principles should be made **relevant to other industries** or aspects of design including:

- manufacturing or heavy industry
- retrofits, upgrades or refurbishments
- plant, equipment, control systems or substances.

Scope

New Zealand organisations should specifically include **health (and environmental)** factors into their safety in design frameworks.

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Construction Clients' Group
CONSTRUCTING EXCELLENCE

THE ENGINE OF THE NEW NEW ZEALAND

Scope

Special consideration should be made to apply health and safety in design principles to the **software and control systems** associated with any plant, substance or structure.

Risk Management Approach

Each PCBU should identify the **risk tool** which is appropriate to their operations and designs.

Controls should be implemented based on the risk **regardless of the industry** in which they are being applied.

Risk Management Approach

Tests, calculations and analysis should be applied as required by the relevant technical standards and over-arching quality process.

Testing should form a **critical part of a pre-commissioning** phase especially where there are multiple designs, PCBUs or discreet bodies of work which come together to provide one functional unit.

Consider the Lifecycle

PCBUs should consider all potential **uses and misuses** of the plant, substance, structure or control system being designed, especially where the **potential consequences are high.**

Knowledge & Capability

Where a PCBU identifies itself as a “designer”, it should **establish resources, roles and responsibilities** to manage this duty of care.

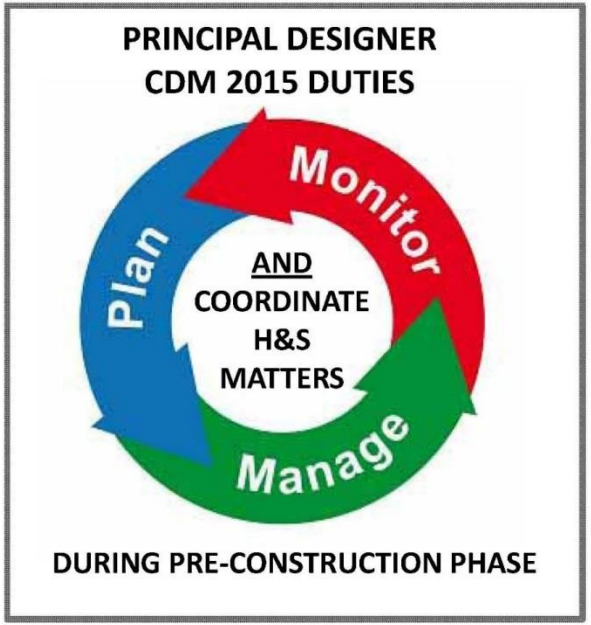
A foundation for all competencies should include **awareness of the key elements** of health and safety in design as they are relevant to the individual’s duty of care.

Knowledge & Capability

PCBUs should assess the core competencies for each designer individually. This should be based on **core technical competencies** associated with the professional advise or technical contribution to the design.

Peer reviews should be included as an independent check that the relevant professional standards have been met, especially where there are high risks.

Consultation, cooperation and co-ordination



Where there is a shared duty by multiple PCBUs, the **responsibility for should be assigned to a specific individual** to lead, coordinate and monitor.

PCBUs should ensure **consultation is completed early** with those affected.

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

WorksafeNZ Icebreaker 6

Construction Clients' Group
CONSTRUCTING EXCELLENCE

THE ENGINE OF THE NEW NEW ZEALAND

Information Transfer

Manuals, reports, registers or other **<u>expected method of information transfer should be identified at the beginning</u>** of any contract or engagement.

Cost effective prevention

Cost to control health or design risk

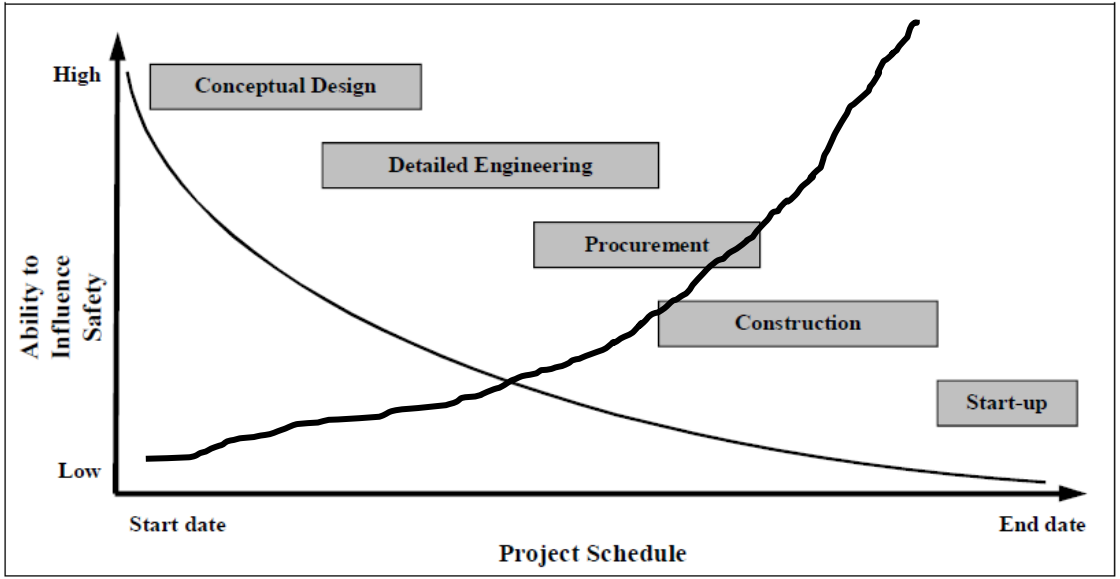


Figure 2 Ability to influence safety on a project (Szymberski, 1997))

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Thank You

Construction Clients' Group
CONSTRUCTING EXCELLENCE

THE ENGINE OF THE NEW NEW ZEALAND